PROGRESS CLAUSE

The Owner anticipates that construction on Saginaw Street can begin no earlier than **10 calendar days** after award or as directed by the Engineer. Construction on Torrey Road can begin no earlier than **June 24, 2019**.

In no case shall any work be commenced prior to receipt of formal notice of award by the Department.

The Contractor shall prepare and submit a complete, detailed, and signed MDOT Form 1130, Progress Schedule, according to 12SP-101A. The Engineer for this project is as follows:

Mark Adas, P.E.
City of Flint Engineer
1101 S. Saginaw Street
Flint, MI 48502
810-766-7340
madas@cityofflint.com

The Progress Schedule shall include, at minimum, the controlling work items for the completion of the project, as well as the planned dates or work days that these work items will be controlling operations. All contract dates including open to traffic, project completion, interim completion, and any other controlling dates in the contract, must be included in the progress schedule.

If the bidding Proposal specifies other controlling dates, these shall also be included in the Progress Schedule.

Saginaw Street (JN 129257):
The Project shall be completely open to traffic on or before **July 3, 2019**.

The Project shall be completed in its entirety including final site restoration and cleanup on or before **August 2, 2019**.

The project completion date for this project is **August 2, 2019.** This date is to accommodate the concrete curing time required for the epoxy overlay. All contract work except epoxy overlay must be completed in its entirety, by **July 3, 2019**. Epoxy overlay must be placed by **August 2, 2019**. The contractor has until **August 2, 2019** to meet the specifications associated with epoxy overlay. Failure to complete all contract work, except epoxy overlay by **July 3, 2019** will result in the Contractor being assessed liquidated damages in accordance with subsection 108.10.C.1 of the Standard Specifications for Construction.

Torrey Road (JN 126579):
All water main work including final connection to existing shall be complete on or before **July 10, 2019**. It is the intent of this project to complete the water main connection during GM's two-week summer shutdown.

No work shall be allowed in the creek prior to **June 30, 2019** in accordance with the DEQ permit.

The Project shall be completely open to traffic on or before **August 30, 2019**.

The Project shall be completed in its entirety including final site restoration and cleanup on or before **November 15, 2019**.

The project completion date for this project is **November 15, 2019.** This date is to accommodate an establishment period for turf and site restoration. All contract work except turf establishment and site restoration must be completed in its entirety, by **August 30, 2019**. Turf establishment and site restoration must be placed by **November 15, 2019**. The contractor has until **November 15, 2019** to meet the specifications associated with turf establishment. Failure to complete all contract work, except turf establishment and site restoration by **August 30, 2019** will result in the Contractor being assessed liquidated damages in accordance with subsection 108.10.C.1 of the Standard Specifications for Construction.

After award and prior to the start of work, the Contractor must attend a preconstruction meeting with the Engineer. The Engineer will determine the day, time and place for the preconstruction meeting. The meeting will be conducted after project award and may be rescheduled if there are delays in the award of the project. The named subcontractor(s) for Designated and/or Specialty Items, as shown in the Proposal, should attend the preconstruction meeting if such items materially affect the work schedule.

Liquidated Damages shall be assessed in accordance with Section 108.10 of the 2012 Standard Specifications for Construction.

NO WORK WILL BE ALLOWED ON THE FOLLOWING DATES:

- **FROM 3:00 PM ON FRIDAY, MAY 24TH THROUGH 7:00 AM ON TUESDAY, MAY 28TH (MEMORIAL DAY HOLIDAY WEEKEND)**
- **FROM 3:00 PM ON WEDNESDAY, JULY 3RD THROUGH 7:00 AM ON FRIDAY, JULY 5TH (4TH OF JULY HOLIDAY)**
- **FROM 3:00 PM ON FRIDAY, AUGUST 30TH THROUGH 7:00 AM ON TUESDAY, SEPTEMBER 3RD (LABOR DAY HOLIDAY WEEKEND)**

CITY OF FLINT
SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC

ROWE 1 of 3 2/1/19

a. Description. This work shall consist of detouring traffic for the culvert construction on Torrey Road (12th Street) over the Carman Creek and for bridge maintenance on Saginaw Street over the Flint River in the City of Flint (T7N-R6E).

b. General. The Contractor shall close Torrey Road and Saginaw Street at the bridge locations and detour through traffic throughout the project in accordance with Section 812 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, including any Supplemental Specifications, and as specified herein. All traffic control devices and their usage shall conform to the Michigan Manual of Uniform Traffic Control Devices (MMUTCD), 2011 edition.

The Contractor shall coordinate this work with any other Contractors performing work within the Construction Influence Area or adjoining areas to avoid conflicts in the maintenance of traffic, construction signing, and other orderly progress of the contract work. There will be no additional compensation for any coordination required with other projects. The Contractor's attention is directed to Section 104.08 of the MDOT 2012 Standard Specifications for Construction.

All work shall be conducted between 7 am and 7 pm only unless otherwise stated in the MDOT 2012 Standard Specifications for Construction. Night work shall be permitted only at the discretion of the Engineer. Any additional cost for maintaining traffic during night time hours and additional equipment needed for night work shall be borne by the Contractor.

The Contractor shall furnish, place, maintain, move and remove all signs, barricades, lights, sign supports, plastic drums, and other devices required for traffic control during construction. The Contractor is expected to perform inspections of the traffic control prior to starting and then again prior to quitting for that work day. Inspections of the traffic control each day shall be considered inclusive to applicable operating pay items.

The Contractor shall notify the Engineer a minimum of three (3) full working days prior to implementation of any lane closures and major traffic shifts.

Once the detour is initiated, work shall be continuous until completed.

<u>Torrey Road</u>

The detour route for Torrey Road shall be Torrey Road to Van Slyke Road, to Hemphill Road, to Fenton Road, and back to Torrey Road as shown in the plans.

The Contractor shall close the right lane on Hammerberg Road utilizing MDOT Maintaining Traffic Typical M0240a. Start taper at north spring point of exit ramp from EB Interstate 69. The closure shall include the additional right turn lane at the Torrey Road intersection. All ramps to and from Interstate 69 shall remain open utilizing plastic drums as required.

The Contractor shall close the right lane on Van Slyke Road utilizing MDOT Maintaining Traffic Typical M0240a. Start taper at north spring point of intersection of Atherton Road and Van Slyke Road.

Saginaw Street

The detour route for southbound Saginaw Street shall be Martin Luther King Avenue to W 2nd Avenue to Garland Road; Saginaw Street to W 1st Avenue to Garland Street; to W Kearsley Street and back to Saginaw Street as shown in the plans.

The detour route for northbound Saginaw Street shall be E Kearsley Street to Harrison Street and back to Saginaw Street.

The sidewalk over the bridge and the paths under the bridge shall be closed to pedestrian traffic utilizing temporary pedestrian barricades.

The Contractor shall maintain traffic during epoxy overlay operations utilizing MDOT Maintaining Traffic Typical M0240a. The Contractor shall conduct the epoxy overlay operations such that one lane in each direction is closed at a time; i.e. traffic is maintained on the inside lanes and the outside lanes are closed.

c. Construction Influence Area (CIA). The Construction Influence Area for this project shall consist of the width of the Torrey Road and Saginaw Street right of way, and the width of the right of way on intersecting streets, from a point where advance construction warning signing begins to a point where it ends.

d. Traffic Restrictions. No work will be conducted during weekends or holiday periods unless otherwise approved by the Engineer.

These holidays are:

- **FROM 3:00 PM ON FRIDAY, MAY 24TH THROUGH 7:00 AM ON TUESDAY, MAY 28TH (MEMORIAL DAY HOLIDAY WEEKEND)**
- **FROM 3:00 PM ON WEDNESDAY, JULY 3RD THROUGH 7:00 AM ON FRIDAY, JULY 5TH (4TH OF JULY HOLIDAY)**
- **FROM 3:00 PM ON FRIDAY, AUGUST 30TH THROUGH 7:00 AM ON TUESDAY, SEPTEMBER 3RD (LABOR DAY HOLIDAY WEEKEND)**

e. Traffic Control Devices. All traffic control devices and their usage shall conform to the Michigan Manual on Uniform Traffic Control Devices (MMUTCD), 2011 edition, and as specified herein. All diamond shaped warning signs shall be 36 inches by 36 inches with black legends on reflectorized orange background unless otherwise noted.

All temporary signs shall be constructed with legends and symbols flush to the signs face and not extending beyond the sign borders or edges. All temporary signs that will be in place for more than fourteen (14) days or signs that are part of a detour route shall be mounted on driven posts per MDOT Traffic and Safety Work Zone Device Special Detail WZD-100-A. All other temporary signs may be installed on portable supports. Where signs are no longer applicable, they shall be removed or have their legends completely covered with plywood or an approved equal. Bolts, nails, plastic, burlap, and duct tape are not to be used. The removal of these signs

or other material required is included in the payment for Minor Traf Devices. All MOT shall be removed within seven (7) days of open to traffic.

During non-working periods, any work site with incomplete work shall have advanced signs (W20-1 – Road Work Ahead) at specific locations.

Construction advisory signs, “Road Work Ahead” (W20-1), with supplemental plaque, shall be placed in advance of the project and on all intersecting streets. Advance Signing Treatment signs shall be placed as per the detail in the Maintaining Traffic sheets in the project plans, or as directed by the Engineer. Distances between construction warning signs and regulator signs as shown in MDOT Maintaining Traffic Typical M0020a is approximate and may require field adjustment, as approved by the Engineer.

Temporary signs used for traffic control shall be Type B, prismatic, temporary with a bottom height as shown in and installed as shown in MDOT Traffic and Safety Work Zone Device Special Detail WZD-125-E, unless otherwise directed by the Engineer.

Barricades used to control traffic shall be lighted.

The Contractor shall routinely maintain the traffic control devices. Routine maintenance includes, but is not limited to: maintaining proper placement and alignment, weighing with sand bags, and replacing damaged devices.

Maintaining Traffic sign quantities have been estimated based on the application of typical figures, depending on the Contractor’s operations and staging. Some duplicate temporary traffic control devices may be omitted, as approved by the Engineer.

f. Materials. The materials shall be in accordance with the requirement of Section 812 of the MDOT 2012 Standard Specifications for Construction.

g. Construction Methods. All work shall conform to the requirements of Section 812 of the MDOT 2012 Standard Specifications for Construction.

h. Measurement and Payment. Payment for maintaining traffic items shall be in accordance with Section 812 of the MDOT 2012 Standard Specifications for Construction, unless otherwise specified. Payment shall be based on field measured quantities. The completed work including all materials, labor, and equipment, as measured, will be paid for at the contract unit price for the contract items (pay items).

It shall be the Contractor’s responsibility to furnish, install, maintain, move and remove all traffic control devices necessary for maintaining traffic within the CIA.

Payment for quantities used to maintain traffic will be based on the maximum number of units required by the Engineer at any one time for the entire project and have been estimated based on the attached typicals and as shown in the plans.

Additional compensation shall not be made for unused quantities of traffic control, signing and/or pavement marking items. The Maintaining Traffic pay items will be paid for at the

contract unit price in accordance with the MDOT 2012 Standard Specifications for Construction, which shall be paid in full for all labor, material, and equipment need to accomplish this work.

Any additional signing or maintaining traffic devices required to expedite the construction shall be at the Contractor’s expense.

MINIMUM MERGING TAPER LENGTH "L" (FEET)

OFFSET	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
FEET	25	30	35	40	45	50	55	60	65	70	
1	10	15	20	27	45	50	55	60	65	70	TAPER LENGTH "L" IN FEET
2	21	30	41	53	90	100	110	120	130	140	
3	31	45	61	80	135	150	165	180	195	210	
4	42	60	82	107	180	200	220	240	260	280	
5	52	75	102	133	225	250	275	300	325	350	
6	63	90	123	160	270	300	330	360	390	420	
7	73	105	143	187	315	350	385	420	455	490	
8	83	120	163	213	360	400	440	480	520	560	
9	94	135	184	240	405	450	495	540	585	630	
10	104	150	204	267	450	500	550	600	650	700	
11	115	165	225	293	495	550	605	660	715	770	
12	125	180	245	320	540	600	660	720	780	840	
13	135	195	266	347	585	650	715	780	845	910	
14	146	210	286	374	630	700	770	840	910	980	
15	157	225	307	400	675	750	825	900	975	1050	

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

$$"L" = \frac{W \times S^2}{60}$$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" = S x W WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

L = MINIMUM LENGTH OF MERGING TAPER
S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
W = WIDTH OF OFFSET

TYPES OF TAPERS	TAPER LENGTH
UPSTREAM TAPERS	
MERGING TAPER	L - MINIMUM
SHIFTING TAPER	1/2 L - MINIMUM
SHOULDER TAPER	1/3 L - MINIMUM
TWO-WAY TRAFFIC TAPER	100 ' - MAXIMUM
DOWNSTREAM TAPERS (USE IS OPTIONAL)	100 ' - MINIMUM (PER LANE)

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TABLES FOR "L", "D" AND "B" VALUES

DRAWN BY: CON:AE:djf	JUNE 2006 PLAN DATE:	M0020a	SHEET 1 OF 2
CHECKED BY: BMM			
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn	REV. 08/21/2006		

DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D" AND LENGTH OF LONGITUDINAL BUFFER SPACE ON "WHERE WORKERS PRESENT" SEQUENCES

"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
	25	30	35	40	45	50	55	60	65	70
D (FEET)	250	300	350	400	450	500	550	600	650	700

GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE "B"

SPEED* MPH	LENGTH FEET
20	33
25	50
30	83
35	132
40	181
45	230
50	279
55	329
60	411
65	476
70	542

* POSTED SPEED, OFF PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

1 BASED UPON AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) BRAKING DISTANCE PORTION OF STOPPING SIGHT DISTANCE FOR WET AND LEVEL PAVEMENTS (A POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS), AASHTO. THIS AASHTO DOCUMENT ALSO RECOMMENDS ADJUSTMENTS FOR THE EFFECT OF GRADE ON STOPPING AND VARIATION FOR TRUCKS.

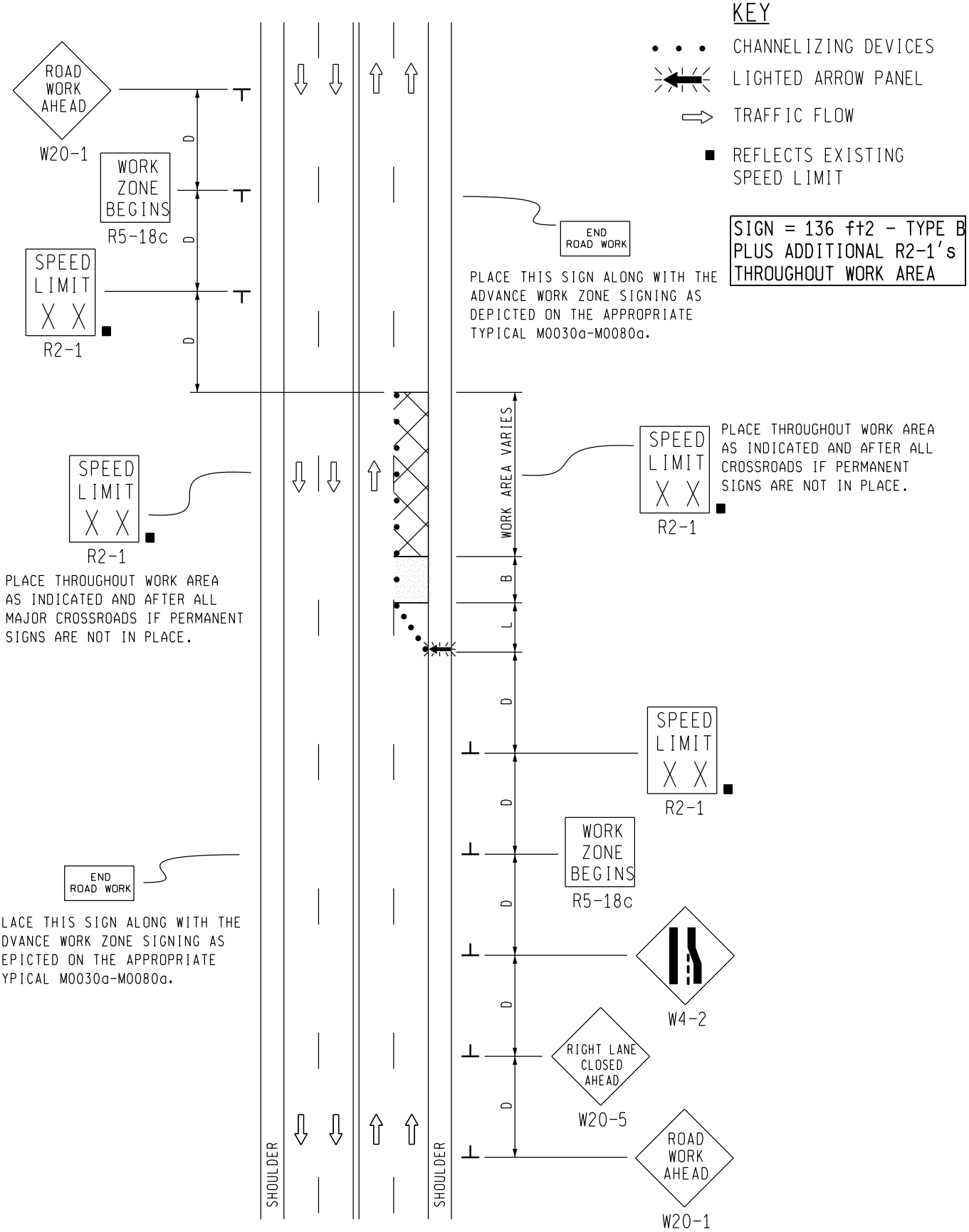
MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY

MAINTAINING TRAFFIC TYPICAL

TABLES FOR "L", "D" AND "B" VALUES

DRAWN BY: CON:AE:djf	JUNE 2006	M0020a	SHEET 2 OF 2
CHECKED BY: BMM	PLAN DATE:		
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn	REV. 08/21/2006		



NOT TO SCALE

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON AN UNDIVIDED MULTI-LANE ROADWAY, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0240a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0240a.dgn REV. 10/11/2011			

NOTES

1B. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE M0020a FOR "D," "L," AND "B" VALUES

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

21. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME-ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

26. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.

SIGN SIZES

DIAMOND WARNING - 48" x 48"
R2-1 REGULATORY - 48" x 60"
R5-18c REGULATORY - 48" x 48"

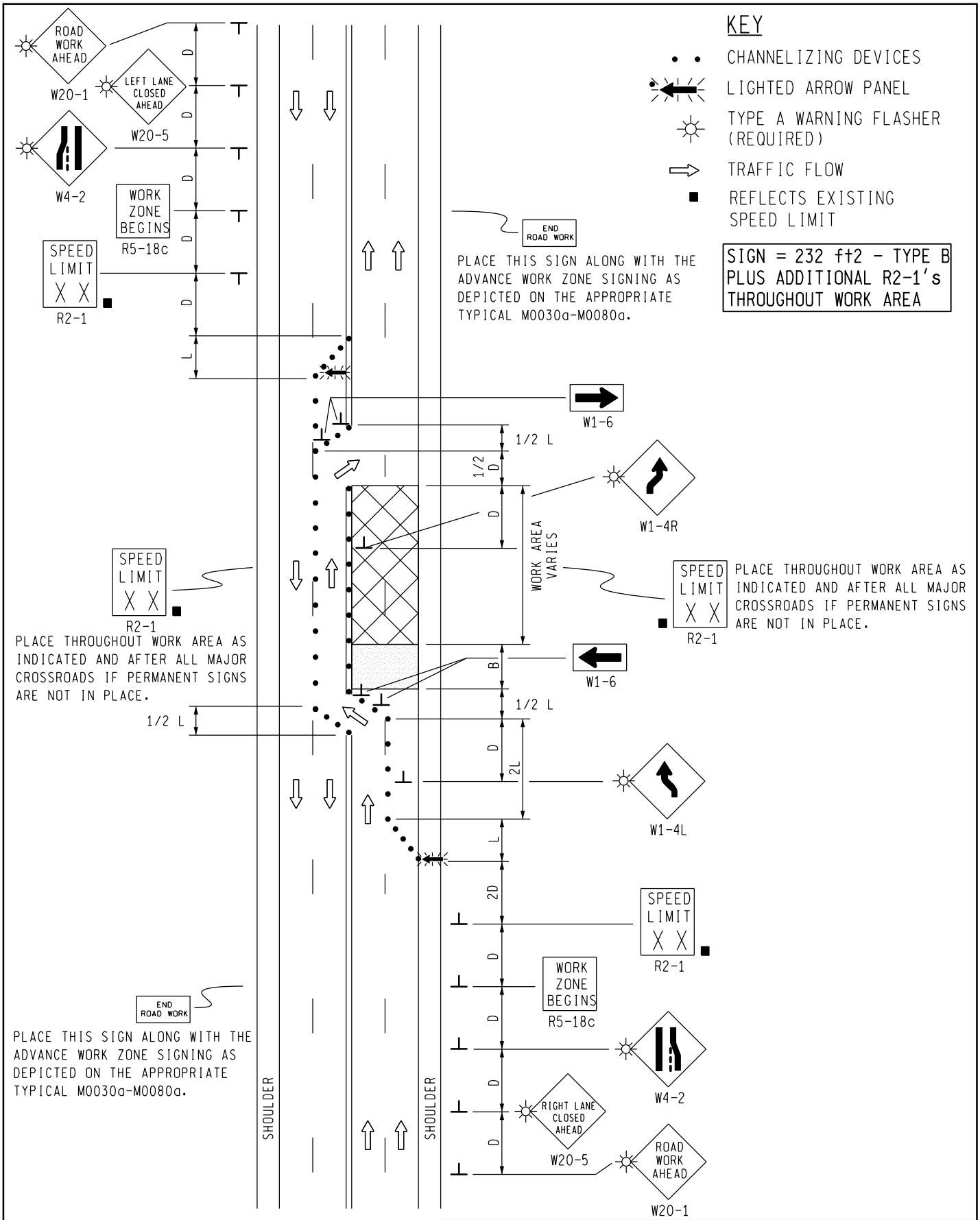
NOT TO SCALE

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON AN UNDIVIDED MULTI-LANE ROADWAY, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0240a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		

FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0240a.dgn REV. 10/11/2011



NOT TO SCALE

MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY

MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR CLOSING ONE-HALF OF A FOUR-LANE UNDIVIDED ROADWAY, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0300a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: K:-DGN-TSR-STDS-ENGLISH-MNTTRF-M0300a.dgn	REV. 10/18/2011		

NOTES

1C. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L & 1/2 L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE **M0020a** FOR "D," "L," AND "B" VALUES

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. THE TYPE A WARNING FLASHER SHOWN ON THE WARNING SIGNS SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

21. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME-ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

26. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.

SIGN SIZES

DIAMOND WARNING	- 48" x 48"
W1-6 WARNING	- 48" x 24"
R2-1 REGULATORY	- 48" x 60"
R5-18c REGULATORY	- 48" x 48"

NOT TO SCALE

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR CLOSING ONE-HALF OF A FOUR-LANE UNDIVIDED ROADWAY, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0300a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: K:-DGN-TSR-STDS-ENGLISH-MNTTRF-M0300a.dgn	REV. 10/18/2011		

SIGN MATERIAL SELECTION TABLE

	SIGN MATERIAL TYPE		
SIGN SIZE	TYPE I	TYPE II	TYPE III
≤ 36" X 36"		X	X
>36" X 36" ≤ 96" TO WIDE		X	
> 96" WIDE TO 144" WIDE	X	X	
> 144" WIDE	X		

TYPE I ALUMINUM EXTRUSION
TYPE II PLYWOOD
TYPE III ALUMINUM SHEET

ROUNDING OF CORNERS IS NOT REQUIRED FOR TYPE I OR II SIGNS.
VERTICAL JOINTS ARE NOT PERMITTED.
HORIZONTIAL JOINTS THROUGH SIGN LEGEND OR SYMBOLS ARE NOT PERMITTED.

POST SIZE REQUIREMENTS TABLE

	POST TYPE		
SIGN AREA (ft^2)	U-CHANNEL STEEL	SQUARE TUBULAR STEEL	WOOD
≤9	1 - 3 lb/ft*	1 - 2" 12 or 14 GA*	N/A
9 ≤ 20	2 - 3 lb/ft	2 - 2" 12 or 14 GA	1 - 4" X 6"*
> 20 ≤ 30	N/A	N/A	2 - 4" X 6"
> 30 ≤ 60	N/A	N/A	2 - 6" X 8"
> 60 ≤ 84	N/A	N/A	3 - 6" X 8"

*SIGNS 4 FEET AND GREATER IN WIDTH REQUIRE 2 POSTS.
SIGNS GREATER THAN 8 FEET IN WIDTH REQUIRE 2 OR 3 WOOD POSTS DEPENDING ON AREA OF SIGN.
A MAXIMUM OF 2 POSTS WITHIN A 7' PATH IS PERMITTED.

MDOT Michigan Department of Transportation

PREPARED BY DESIGN DIVISION

DRAWN BY: CON/ECH

CHECKED BY: AUG

DEPARTMENT DIRECTOR
Kirk T. Steudle

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

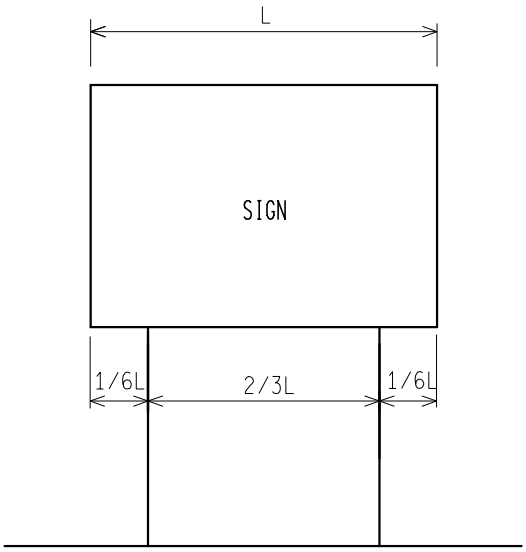
APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

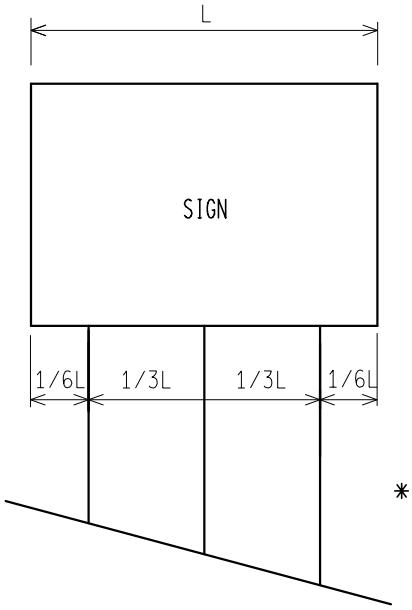
GROUND DRIVEN SIGN SUPPORTS FOR TEMP SIGNS

F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 1 OF 11

2 POST SIGN SUPPORT SPACING

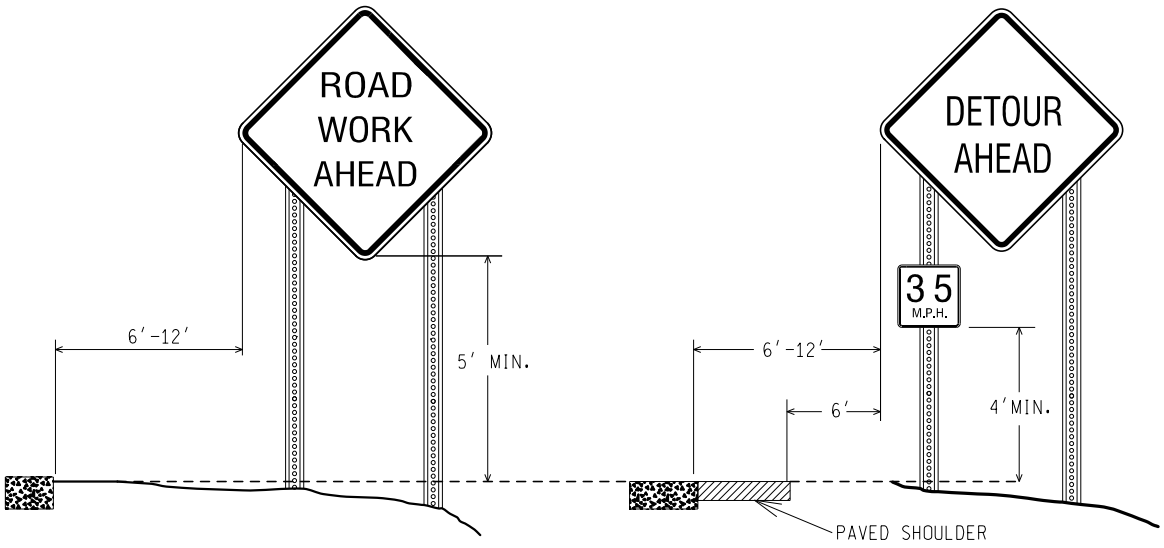


3 POST SIGN SUPPORT SPACING



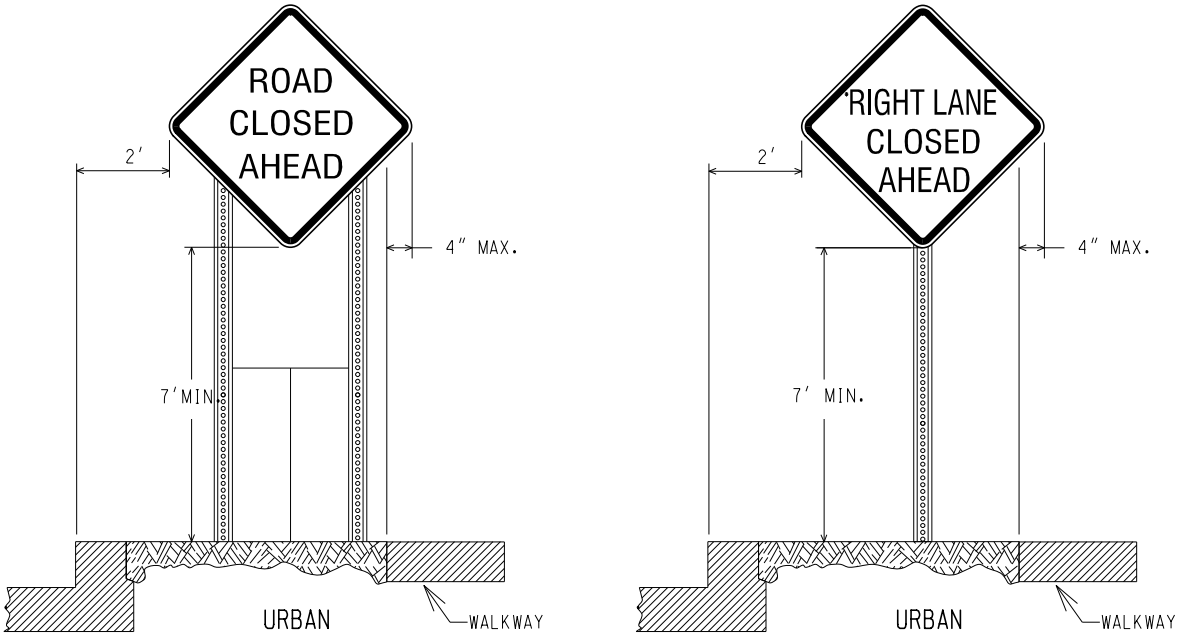
* FOR ALL 11' AND 12' LONG SIGNS ON 3 WOOD SUPPORTS, SPREAD POSTS SO AS TO HAVE A 8' MIN. TO 9' MAX. DISTANCE BETWEEN OUTSIDE POSTS.

NOT TO SCALE



RURAL

RURAL WITH ADVISORY
SPEED PLATE



(CURBED AREAS OR WHERE
WALKWAYS ARE PRESENT)

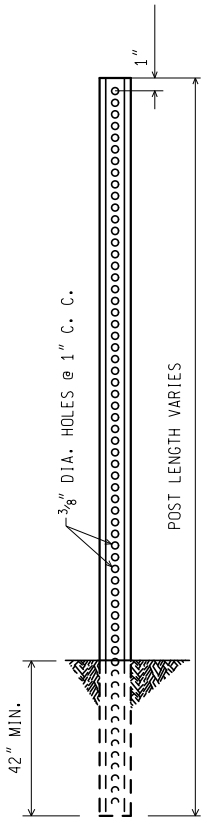
(CURBED AREAS OR WHERE
WALKWAYS ARE PRESENT)

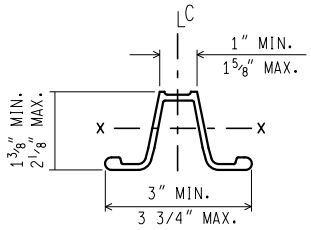
BOTTOM HEIGHT AND OFFSET

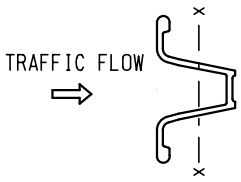
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 3 OF 11

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.







WEIGHT = 3 lbs/ft
SECT. MOD. X.-X. = 0.31 CUBIC INCHES MIN.

3 lb. U - CHANNEL STEEL POST
(NO SPLICE)

MOUNT SIGN ON OPEN FACE OF
U - CHANNEL STEEL POST

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 4 OF 11

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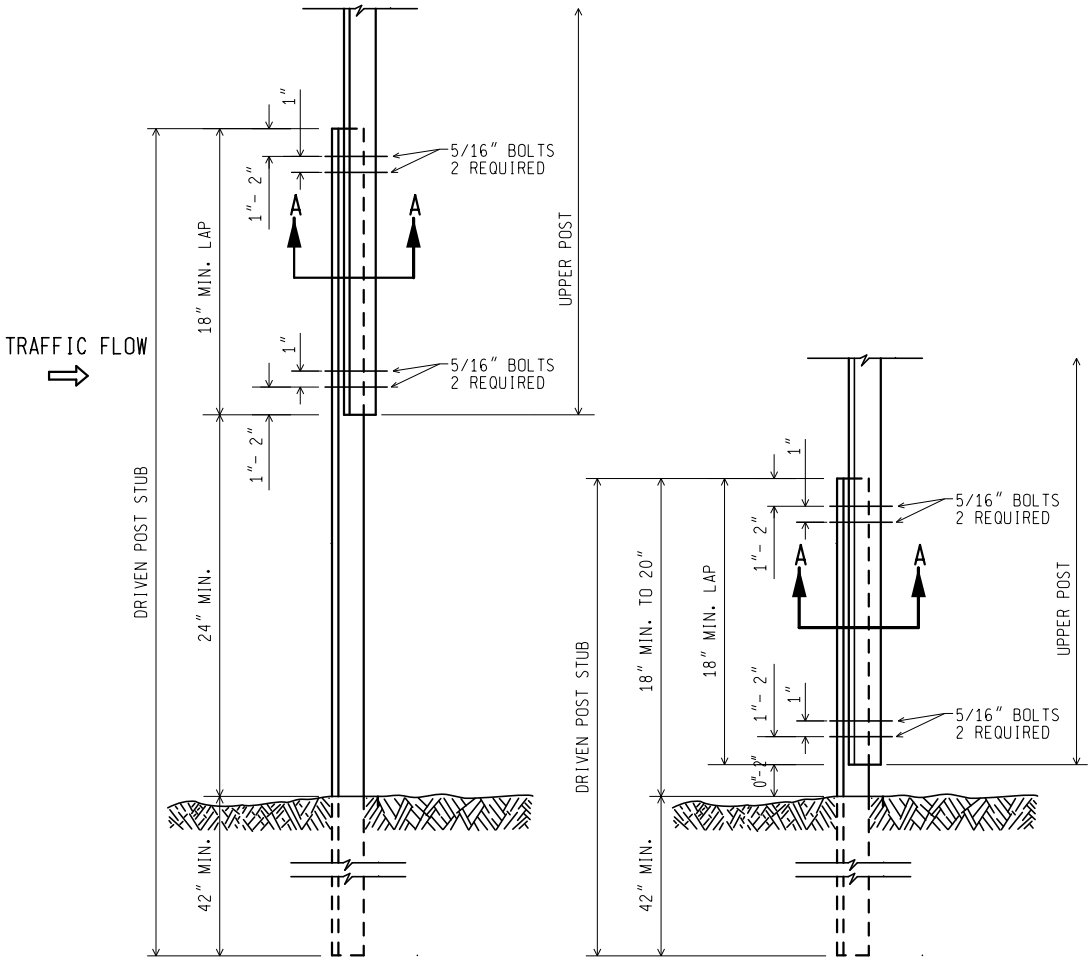

UPPER SPLICE

LOWER SPLICE

3 lb. U - CHANNEL STEEL POST
(WITH SPLICE)

MOUNT SIGN ON OPEN FACE OF
UPPER U - CHANNEL STEEL POST

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 5 OF 11

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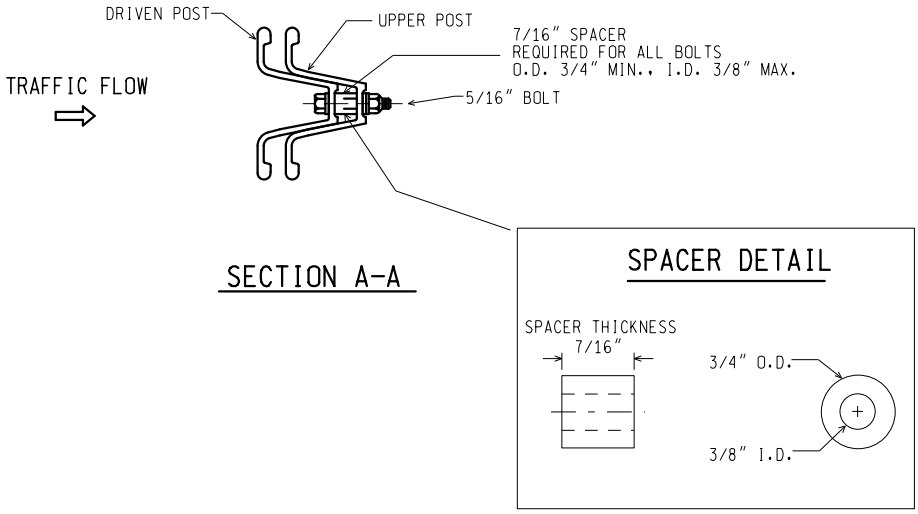


NOTES:

1. THE SPACER THICKNESS SHALL BE 1/16" LESS THAN THE GAP BETWEEN THE POST WHEN POSITIONED IN THE UNBOLTED CONFIGURATION.

2. THE EXTERIOR BOLT (CLOSEST TO LAP), SPACER, WASHER, AND NUT SHALL BE INSTALLED IN A PREPUNCHED HOLE 1" to 2" FROM THE END OF THE LAP.

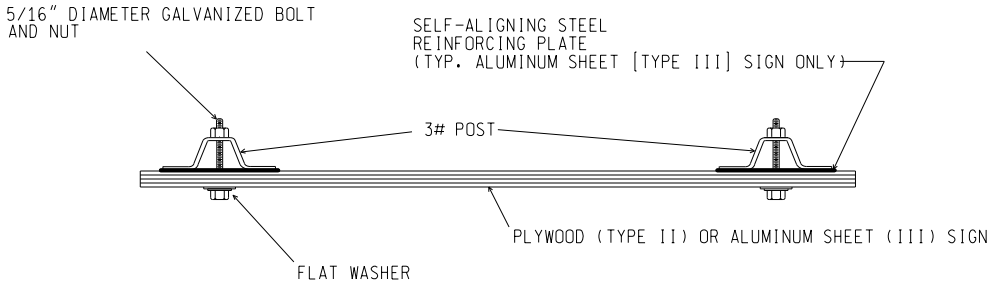
3. THE INTERIOR BOLT (FARTHEST FROM LAP), SPACER, WASHER, AND NUT SHALL BE INSTALLED IN THE NEXT PREPUNCHED HOLE.

4. THE DRIVEN POST SHALL ALWAYS BE MOUNTED IN FRONT OF THE UPPER POST WITH RESPECT TO THE ADJACENT ONCOMING TRAFFIC, REGARDLESS OF THE DIRECTION THE SIGN IS FACING.

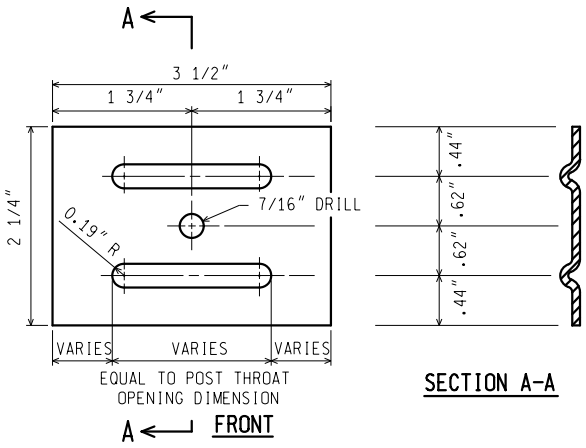
5. THE SPLICE LAP SHALL BE FASTENED BY FOUR-5/16" DIA. GALVANIZED A449 BOLTS (SAE J429 GRADE 5) OR GALVANIZED A325 BOLTS.

3 lb. U - CHANNEL STEEL POST
(WITH SPLICE)

NOT TO SCALE



SIGN TO 3 lb. POST CONNECTION



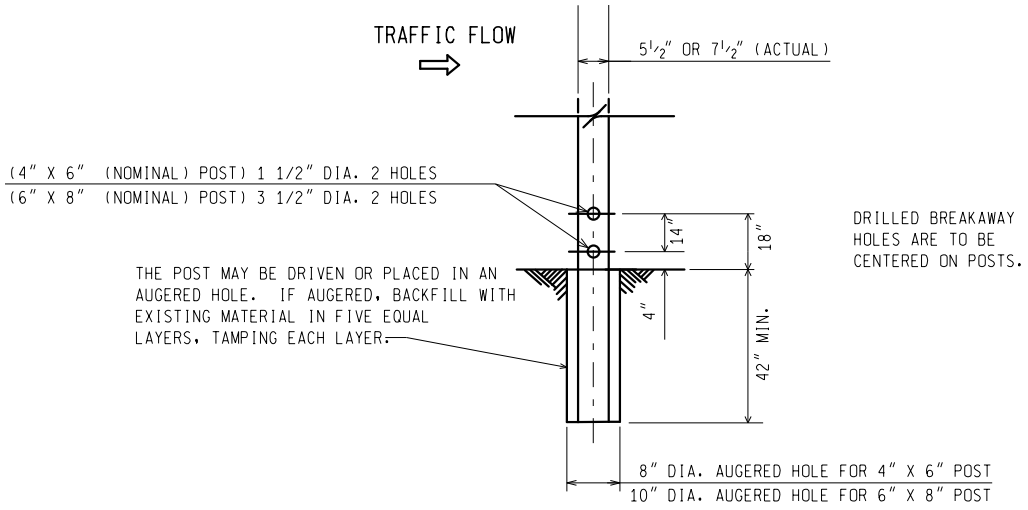
NOTES: (FOR STEEL SIGN REINF' PLATE)

1. MATERIAL: 12 GAUGE CARBON STEEL.
2. TOLERANCE ON ALL DIMENSIONS ± 0.0625"
3. FINISH-AFTER STAMPING AND PUNCHING, GALVANIZE ACCORDING TO CURRENT SPECIFICATIONS FOR ZINC (HOT GALVANIZE) COATINGS ON PRODUCTS FABRICATED FROM PLATES OR STRIPS

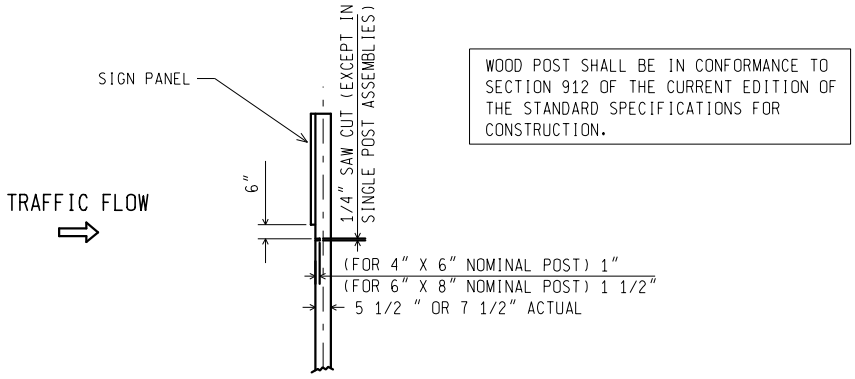
STEEL SIGN REINFORCING PLATE
REQUIRED FOR TYPE III SIGNS ONLY

3 lb. U - CHANNEL STEEL POST SIGN CONNECTION

NOT TO SCALE



WOOD POST BREAKAWAY HOLES/ DIRECT EMBEDMENT DETAILS



SAW CUT DETAIL (MULTIPLE POST INSTALLATIONS)

WOOD POST DETAILS

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 8 OF 11

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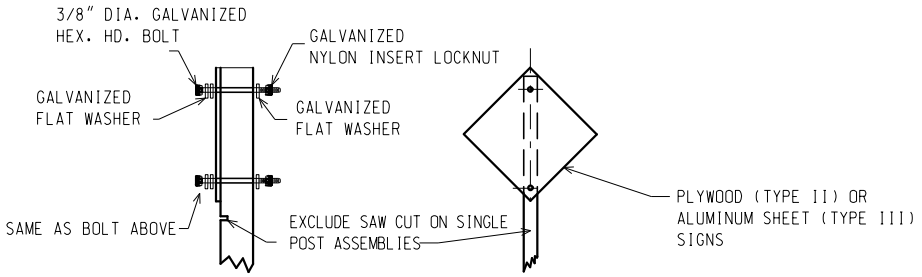
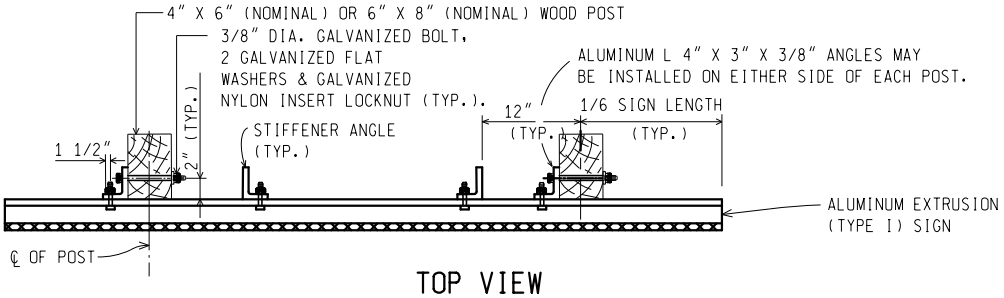
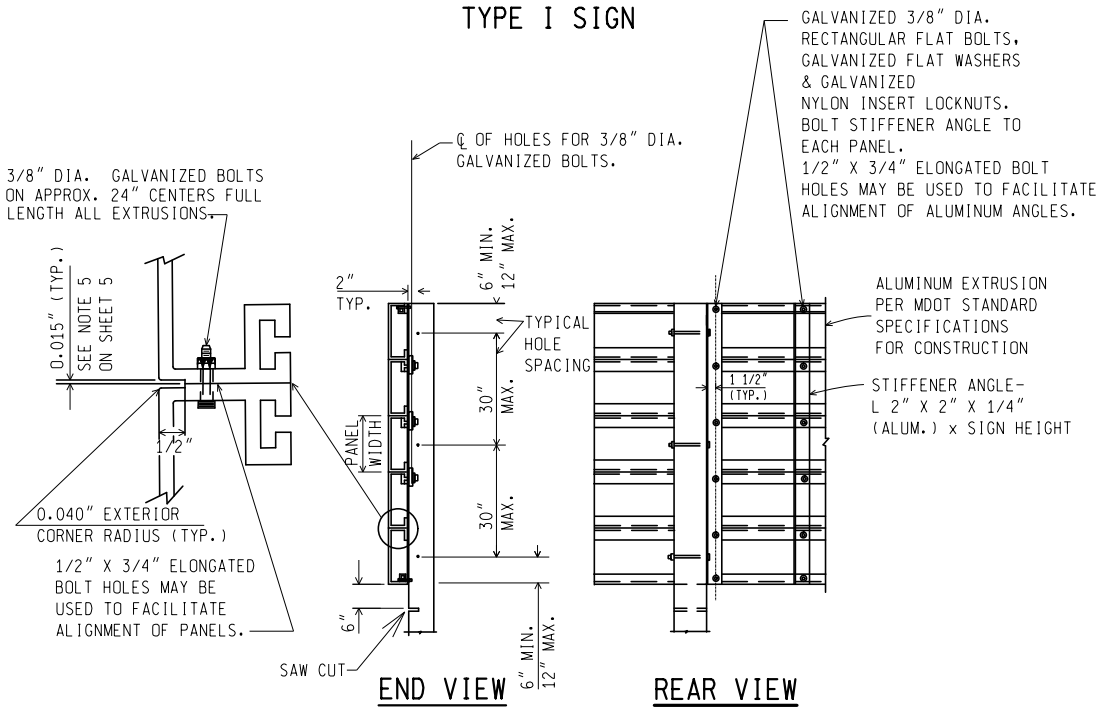


TYPE II AND TYPE III SIGNS



TOP VIEW
TYPE I SIGN



END VIEW
REAR VIEW

TYPE I SIGN - ERECTION DETAILS

WOOD POST CONNECTIONS

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 9 OF 11

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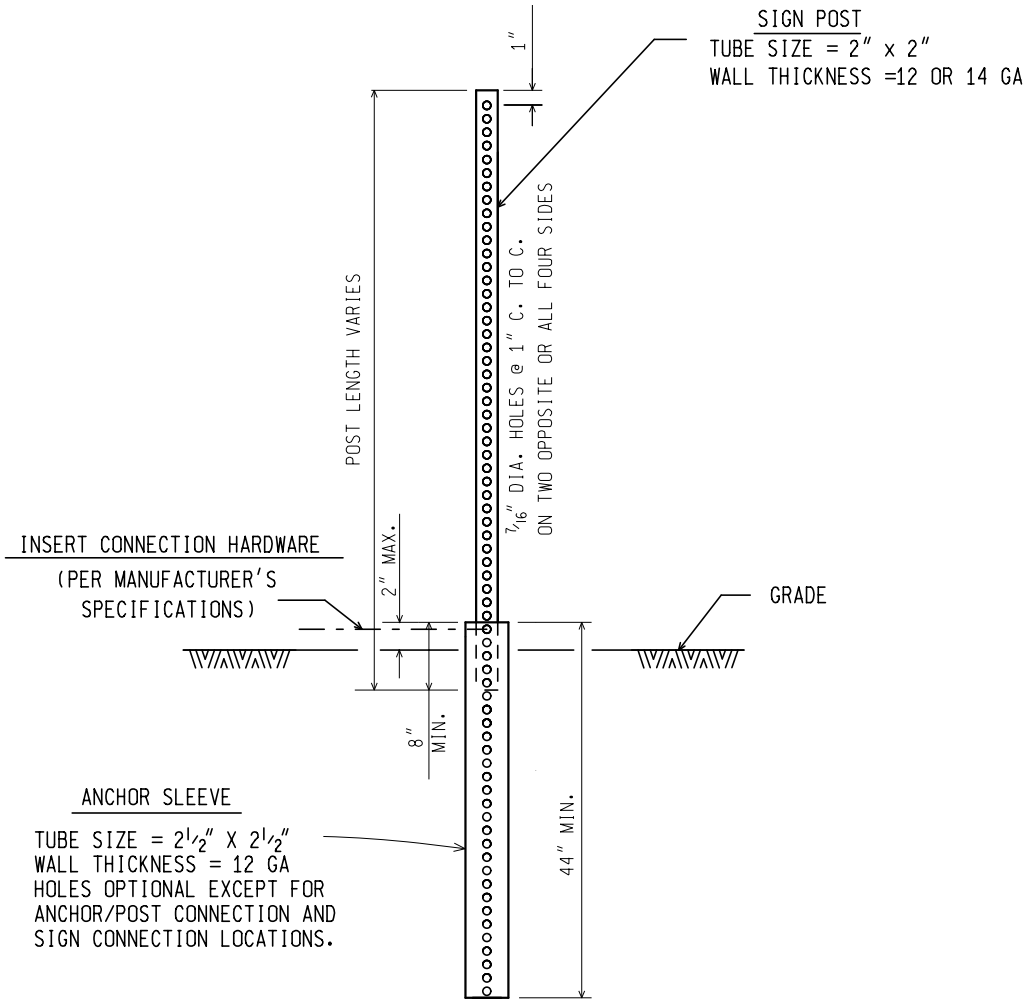

SQUARE TUBULAR STEEL POST

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 10 OF 11

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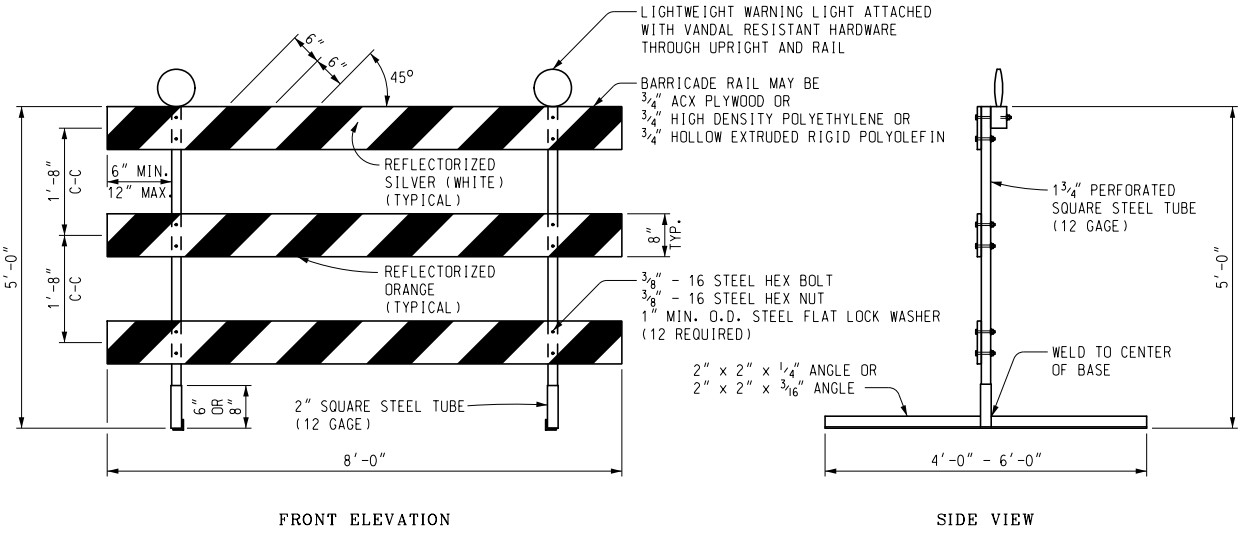
GENERAL NOTES:

1. A MAXIMUM OF TWO POSTS WITHIN A 7 FOOT PATH IS PERMITTED.
2. ALL SIGN POSTS SHALL COMPLY WITH NCHRP 350.
3. ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 42".
4. BRACING OF POST IS NOT PERMITTED.
5. SIGN SHALL BE LEVEL, AND UPRIGHT FOR THE DURATION OF INSTALLATION.
6. ERECT POSTS SO THE SIGN FACE AND SUPPORTS DO NOT VARY FROM PLUMB BY MORE THAN 3/16" IN 3'. PROVIDE A CENTER-TO-CENTER DISTANCE BETWEEN POSTS WITHIN 2 PERCENT OF PLAN DISTANCE.
7. NO MORE THAN ONE SPLICE PER POST, AS SHOWN, WILL BE PERMITTED.
8. POST TYPES SHALL NOT BE MIXED WITHIN A SIGN SUPPORT INSTALLATION.
9. NO VERTICAL JOINTS ARE PERMITTED IN SIGN. NO HORIZONTIAL JOINTS THROUGH SIGN LEGEND OR SYMBOLS ARE PERMITTED IN SIGN
10. REMOVE SIGN POSTS AND/OR POST STUBS IN THEIR ENTIRETY WHEN NO LONGER REQUIRED.
11. ALL LABOR, MATERIALS, AND EQUIPMENT, INCLUDING TEMPORARY SUPPORTS REQUIRED TO INSTALL, MAINTAIN, RELOCATE, AND/OR REMOVE THE TEMPORARY SIGN, INCLUDING SUPPORTS, ARE CONSIDERED TO BE INCLUDED IN THE COST OF THE TEMPORARY SIGN.
12. SAW CUTS IN WOOD POSTS ARE TO BE PARALLEL TO THE BOTTOM OF THE SIGN.
13. POSTS SHALL NOT EXTEND MORE THAN 4" ABOVE TOP OF SIGN.
14. TEMPORARY WOOD SUPPORTS DO NOT REQUIRE PRESERVATIVE TREATMENT.

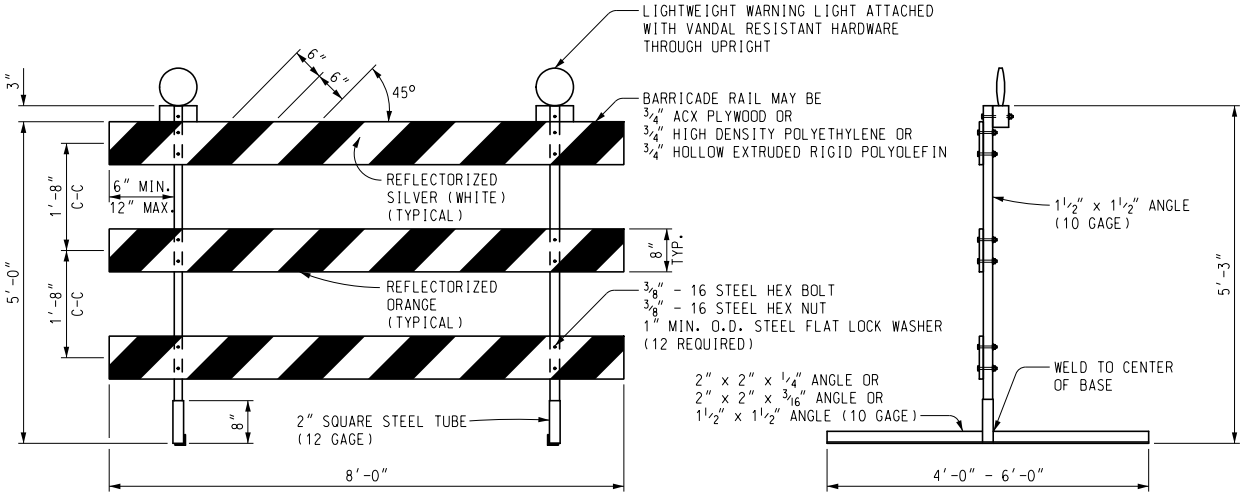
NOT TO SCALE



FRONT ELEVATION

SIDE VIEW

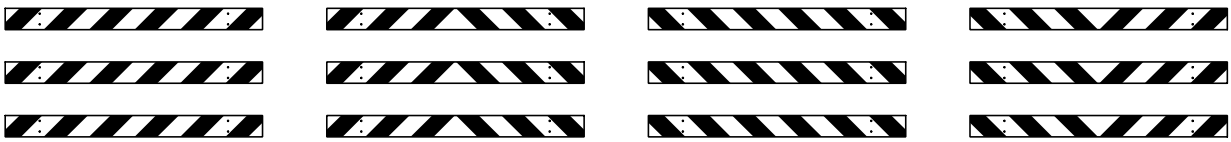
PERFORATED SQUARE STEEL TUBE OPTION



FRONT ELEVATION

SIDE VIEW

ANGLE IRON OPTION



LEFT DIRECTIONAL

BI-DIRECTIONAL

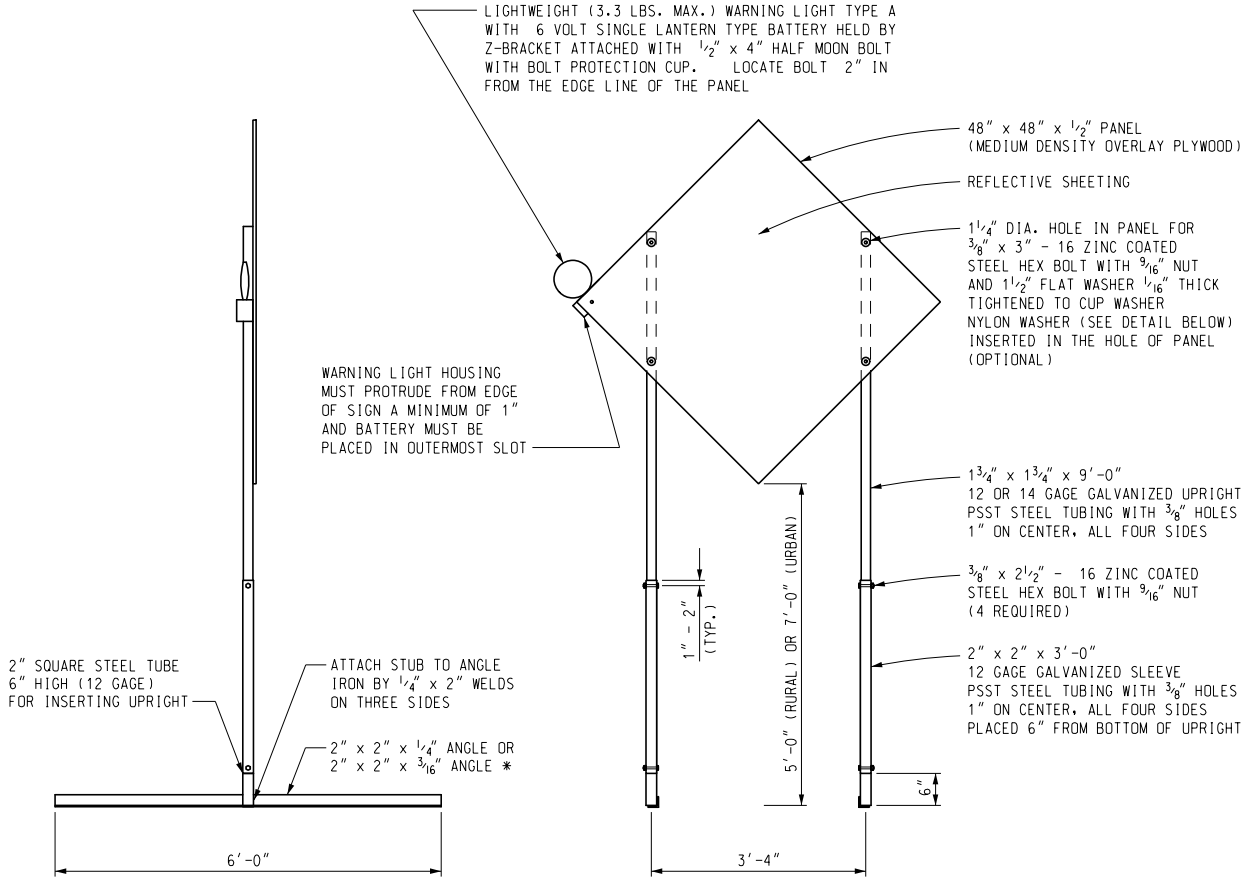
RIGHT DIRECTIONAL

CLOSURES

BARRICADE RAIL SHEETING OPTIONS
TYPE III BARRICADES

Other Type III Barricades meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm

MDOT Michigan Department of Transportation PREPARED BY DESIGN DIVISION DRAWN BY: ECH CHECKED BY: MWB	DEPARTMENT DIRECTOR Kirk T. Steudle APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES ENGINEER OF DEVELOPMENT APPROVED BY: (SPECIAL DETAIL) DIRECTOR, BUREAU OF DEVELOPMENT	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR Temporary Traffic Control Devices F.H.W.A. APPROVAL | 1/18/11 PLAN DATE | WZD-125-E | SHEET 1 OF 3



SIDE VIEW

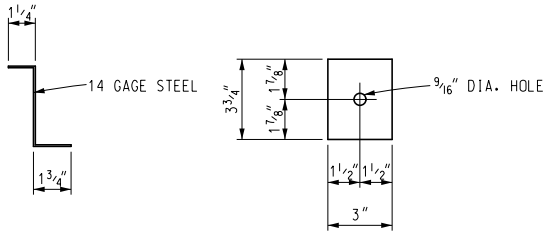
FRONT ELEVATION

TEMPORARY SIGN SUPPORT

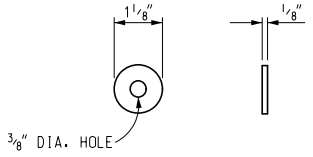
(WARNING LIGHT PLACED ON SIDE CLOSEST TO TRAFFIC)

* SIGN STAND IS BALLASTED WITH FOUR OR MORE 35 LB SANDBAGS. A MINIMUM OF ONE ON EACH END.

UPRIGHTS SHALL NOT EXTEND ABOVE THE SIGN PANEL.



Z-BRACKET DETAIL



OPTIONAL NYLON WASHER

Other temporary sign supports meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	SPECIAL DETAIL F.H.W.A. APPROVAL	1/18/11 PLAN DATE	WZD-125-E	SHEET 2 OF 3

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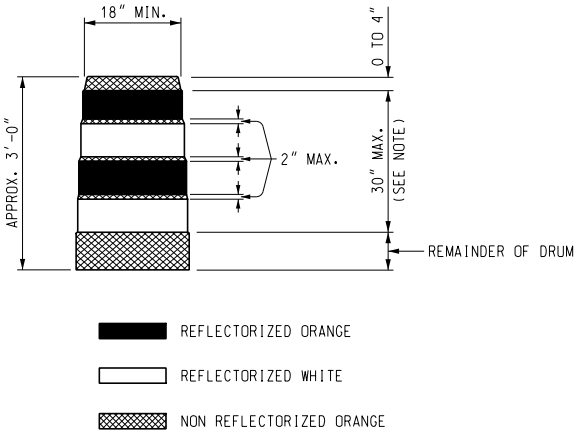
PLASTIC DRUM

PROPOSED TYPE III BARRICADE

EXISTING TYPE III BARRICADE

SYMBOLS TO BE USED ON PLANS



NOTE:
DRUMS SHALL HAVE AT LEAST 4 HORIZONTAL REFLECTORIZED STRIPES (2 ORANGE AND 2 WHITE) OF 6" UNIFORM WIDTH, ALTERNATING IN COLOR WITH THE TOPMOST REFLECTORIZED STRIPE BEING ORANGE. NON REFLECTORIZED SPACES BETWEEN THE HORIZONTAL REFLECTORIZED ORANGE AND WHITE STRIPES SHALL BE ORANGE IN COLOR AND EQUAL IN WIDTH.

PLASTIC DRUM

NOTES:

2" PERFORATED SQUARE STEEL TUBES MAY BE USED TO FABRICATE THE HORIZONTAL BASE OF THE TYPE III BARICADE.

WARNING LIGHTS SHALL BE PLACED ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND ALL OTHER PROVISIONS IN THE CONTRACT ON TYPE III BARRICADES.

SEE ROAD STANDARD PLANS R-113-SERIES FOR TEMPORARY CROSSOVERS FOR DIVIDED ROADWAY, AND R-126-SERIES FOR TYPICAL LOCATION AND SPACING OF PLASTIC DRUMS FOR PLACEMENT OF TEMORARY CONCRETE BARRIER.

SIGNS, BARRICADES, AND PLASTIC DRUMS SHALL BE FACED WITH PRESSURE-SENSITIVE REFLECTIVE SHEETING ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

SANDBAGS SHALL BE USED WHEN SUPPLEMENTAL WEIGHTS ARE REQUIRED TO ACHIEVE STABILITY OF THE BARRICADE. THE SANDBAGS SHALL BE PLACED SO THEY WILL NOT COVER OR OBSTRUCT ANY REFLECTIVE PORTION OF THE TRAFFIC CONTROL DEVICE.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	(SPECIAL DETAIL) F.H.W.A. APPROVAL	1/18/11 PLAN DATE	WZD-125-E	SHEET 3 OF 3

CITY OF FLINT
SPECIAL PROVISION
FOR
CLEARING, MODIFIED

ROWE 1 of 1 2/1/19

a. Description. This work shall consist of trimming, cutting, grubbing, removing, and disposal of trees (less than 3 inch diameter), brush, roots, stumps, rocks, shrubs and other vegetation from within ten feet behind the slope stake line limits in the road right-of-way or as directed by the Engineer. Previously downed trees shall be removed. This work shall be in accordance with Sections 201 and 202 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction except as modified herein.

b. Construction. The Contractor shall remove trees (less than 3 inch diameter) and brush as directed by the engineer. Debris shall be removed from the creek between the structure under Interstate 69, the Torrey Road structure, and the structure under the railroad.

Work shall be done as per Sections 201 and 202 of the MDOT 2012 Standard Specifications for Construction.

The Contractor is responsible to assess the site regarding the "Clearing, Modified" contract pay item. The following tree removal quantities are approximate and are given for information only and shall not be cause for additional claim for compensation if numbers vary.

Stumps	3 inch to 5 inch	24	Each
Stumps	6 inch to 18 inch	10	Each
Stumps	19 inch to 36 inch	1	Each
Stumps	37 inch and larger	0	Each

c. Measurement and Payment. The completed work shall be paid for at the contract unit price for the following pay item.

Contract Item (Pay Item) **Pay Unit**

Clearing, Modified .....Station

Clearing, Modified will be measured in place by the station along the centerline of the roadway and include both sides of the road from the project point of beginning (POB) to the point of ending (POE), gapped across the creek. Each side of roadway will not be paid for separately.

CITY OF FLINT
SPECIAL PROVISION
FOR
PAVT, REM, MODIFIED

ROWE 1 of 1 2/1/19

a. Description. This work item shall consist of removing pavement in accordance with Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, Section 204, except as specified herein and as shown on the plans.

b. Materials. None specified.

c. Construction Methods. The pay item Pavt, Rem, Modified shall include the removal and proper disposal of all pavement as noted on the plans, including curb and gutter, regardless of, material, pavement thickness, or number of layers. Sawcutting prior to pavement removal shall be included in Pavt, Rem, Modified pay item.

d. Measurement and Payment. Pavt, Rem, Modified will be measured by the square yard and will be paid for at the contract unit price per square yard, which price shall be payment in full for all labor, equipment, and material needed to accomplish the work, including any necessary sawcutting and disposal.

Contract Item (Pay Item)	**Pay Unit**
Pavt, Rem, Modified	Square Yard

CITY OF FLINT
SPECIAL PROVISION
FOR
PAVT, REM, SPECIAL

ROWE 1 of 1 2/1/19

a. Description. This work consists of providing all labor, equipment and disposal necessary to remove existing pavement in close proximity to bridge or retaining wall foundation struts and slabs, and utilities as identified on the plans according to Section 204 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, except that removal of all pavement as noted on the plans, including curb and gutter, regardless of, material, pavement thickness, or number of layers shall be included in Pavement Removal, Special or as directed by the Engineer.

b. Materials. None specified.

c. Construction. Conduct pavement removal operations in close proximity to bridge or retaining wall foundation struts and slabs or near shallow or critical utilities, as identified on the plans by saw cutting the pavement full depth and removing the existing pavement in such a manner as to not disrupt or damage the existing struts or slabs or footings or utility ducts. Use of impact type equipment such as a crane and ball or pneumatic hammers is prohibited. Sawcutting prior to pavement removal shall not be paid for separately.

In the case of shallow or critical utilities, the Engineer may require that contingency repair plans be approved by the Owner of the utility in the event of an emergency.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Contract Item (Pay Item)	**Pay Unit**
Pavt, Rem, Special	Square Yard

Pavt, Rem, Special includes standby equipment and materials if required, in anticipation of an emergency.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
CONSTRUCTION DAM AND BYPASS PUMPING

a. Description. This work consists of designing, installing, maintaining, and removing construction dams (including dewatering) and bypass pumping to work in a dry condition and to maintain water flows. This work must be in accordance with sections 208 and 704 of the Standard Specifications for Construction, MDEQ Permit, as directed by the Engineer and this special provision.

b. Materials. Steel sheet piling must be of the continuous interlocking type, either new or used in good condition. Temporary steel sheet piling must have a minimum nominal section modulus of 18.1 inches cubed per foot of wall. Cold-rolled sheeting will be permitted for all applications.

Geosynthetics 910
Sand and Stone Bags 916
Coarse Aggregate, 6A.....902
Open-Graded Aggregate, 34R 902
Filter Bags.....910

c. Construction. Install a construction dam, at the locations specified on the plans, in order to provide a dry construction site. The construction dam must only consist of one of the following: steel sheet piling, stone/sand bags, or an MDOT approved proprietary product.

1. Design and Installation. Design, installation, maintenance and removal of the temporary construction dam, dewatering, and bypass pumping are the responsibility of the Contractor. In accordance with subsection 104.02, the Contractor must submit a proposed design to the Engineer for review 10 working days before starting work. Work may begin after the Engineer's approval of the design.

2. Dewatering and Bypass Pumping. The dewatering and bypass pumping operations must be performed in a proper and predetermined sequence such as to create a dry and stable area to work in. Dewatering and bypass pumping must be performed and sufficiently maintained so as to not cause harmful affects to up and down stream properties, utilities and pavements. The consequences of surface runoff and surface flood water caused by climatic conditions must be taken in to consideration in designing the dewatering and bypass pumping system.

3. Filter Bags or Sediment Traps. Dewatering and bypass pumping operations must utilize a sediment basin or filter bag to settle out/filter out sediment from water discharged into the watercourse. The sediment basin or filter bag must be located a sufficient distance from the watercourse or wetland to allow for adequate settling or filtering through natural vegetation and/or gravel filter berm. The sediment trap or filter bag must be provided,

installed, maintained and removed as described in section 208 of the Standard Specifications for Construction.

A series of Gravel Filter Berms must also be used in conjunction with the sediment trap to filter the water prior to re-entry into the watercourse.

The Sediment Basin and Gravel Filter Berms must be of adequate size to still the water for a sufficient time to remove the suspended particles. If the water returning to the watercourse remains turbid, the Sediment Basin may need to be expanded. A second Sediment Basin may be required in conjunction with a Filter Bag, in addition to the original Sediment Basin and Gravel Filter Berms.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

Pay Item	**Pay Unit**
Construction Dam	Each
Bypass Pumping	Each

Construction Dam includes designing, furnishing, installing, maintaining and removing the temporary construction dam, including dewatering and filtration as noted in this special provision. The pay unit each for **Construction Dam** includes both the upstream dam and the downstream dam to isolate the construction area and provide a dry construction site.

Bypass Pumping includes designing, furnishing, installing, maintaining and removing the required materials, supplies, and equipment needed to maintain the watercourse while the construction dam(s) are in place. Also included in the contract unit price for **Bypass Pumping** is the design, construction, maintenance, and removal of the Sediment Basin, Gravel Filter Berms or Filter Bag required to settle/filter out sediment prior to discharging back to the watercourse. If a larger or second Sediment Basin in conjunction with a Filter Bag is required to reduce sediment, this work will not be paid for separately but will be considered included in the pay item for **Bypass Pumping**. **Bypass Pumping** will be paid for on an each basis for each dry construction site created.

CITY OF FLINT
SPECIAL PROVISION
FOR
AGGREGATE BASE, MODIFIED

ROWE 1 of 1 2/1/19

a. Description. The item of Aggregate Base, Modified shall be constructed as shown on the plans and in accordance with Section 302 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction except as herein specified.

b. Materials. The material placed as Aggregate Base, Modified shall be 21AA Limestone. No dolomite limestone will be allowed.

c. Construction. Aggregate Base, Modified shall be constructed in accordance with Section 302.

The 21AA Limestone shall be delivered to the site in a thoroughly blended condition and shall be handled in such a manner that there will be no mixing of underlying soil with the limestone material. The limestone base shall be placed and spread on the prepared subgrade in such a manner that the subgrade material will not become rutted or distorted.

d. Measurement and Payment. The completed work as measured will be paid for at the contract unit price for the following item (pay item):

Contract Item (Pay Item)	**Pay Unit**
Aggregate Base, Modified	Ton

Aggregate Base, Modified will be paid for at the contract unit price per ton, which price shall be payment in full for all material, labor and equipment necessary to accomplish this work.

CITY OF FLINT
SPECIAL PROVISION
FOR
AGGREGATE BASE, 8 INCH, MODIFIED

ROWE 1 of 1 2/1/19

a. Description. The item of Aggregate Base, 8 Inch, Modified shall be constructed as shown on the plans and in accordance with Section 302 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction except as herein specified.

b. Materials. The material placed as Aggregate Base, 8 Inch, Modified shall be 21AA Limestone. No dolomite limestone will be allowed.

c. Construction. Aggregate Base, 8 Inch, Modified shall be constructed in accordance with Section 302.

The 21AA Limestone shall be delivered to the site in a thoroughly blended condition and shall be handled in such a manner that there will be no mixing of underlying soil with the limestone material. The limestone base shall be placed and spread on the prepared subgrade in such a manner that the subgrade material will not become rutted or distorted.

d. Measurement and Payment. The completed work as measured will be paid for at the contract unit price for the following item (pay item):

Contract Item (Pay Item) **Pay Unit**

Aggregate Base, 8 Inch, Modified.....Square Yard

Aggregate Base, 8 Inch, Modified will be paid for at the contract unit price per square yard, which price shall be payment in full for all material, labor and equipment necessary to accomplish this work.

CITY OF FLINT
SPECIAL PROVISION
FOR
STEEL SHEET PILING, PERMANENT, MODIFIED

a. Description. This work shall consist of furnishing and installing the steel sheet piling and cap as shown on the plans. This item shall also include all work and materials necessary for attachment of the steel sheet piling to the precast box culvert and the existing wingwalls and the attachment of the cap to the steel sheeting. This work shall be done in accordance with the requirements of Sections 704 and 712 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction.

b. Materials. The steel sheet piling shall meet the requirements of Section 704 of the 2012 MDOT Standard Specifications for Construction. The steel sheet piling shall be hot rolled, shall have a minimum section modulus of 30.2 cubic inches per foot of wall and shall meet the requirements of AASHTO M 270 Grade 50. Alternate cold rolled steel sheet piling with a nominal section modulus of 32.4 cubic inches per foot of wall may be used at no additional cost.

The steel plates for attachment of the steel sheet piling to the precast box culvert and the existing wingwalls shall meet or exceed the requirements for AASHTO M 270 Grade 36 steel.

The cap shall be a steel channel or shall be a bent plate fabricated from steel plate with a minimum thickness of ¼". The cap shall be large enough to cover the steel sheet piling and allow welding of the cap to the sheeting. The steel for the cap shall be Grade 36 steel or better.

All attachment hardware shall be galvanized and shall meet the requirements for High Strength Steel Bolts, Nuts and Washers in Section 906.07 of the 2012 MDOT Standard Specifications for Construction. Adhesive anchors shall be selected from the MDOT Qualified Products List. Anchor bolts shall be hot-dipped galvanized in accordance with AASHTO M 232.

c. Construction. The sheeting shall be driven to the elevations detailed on the plans.

The channel for the cap shall be tack welded to the steel sheeting at sufficient intervals to provide an adequate attachment.

Final top of sheeting elevations are to be set as detailed in the plans.

d. Measurement and Payment. The completed work as measured for "Steel Sheet Piling, Permanent, Modified" will be paid for at the contract unit price for the following contract pay item and includes all material, equipment and labor to complete this item.

Contract Item (Pay Item)	**Pay Unit**
Steel Sheet Piling, Permanent, Modified	Square Foot

All equipment, materials, and labor required to install the sheeting, connections, and cap

are included in this pay item. The pay quantity will be based on plan quantity with adjustments made only for a design change or change in the final top of sheeting elevation. Costs for any steel sheet piling driven below the toe elevations specified on the plans will not be paid for, but will be at the Contractor's expense.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
TEMPORARY PEDESTRIAN TYPE II BARRICADE

OFS:RAL 1 of 2 APPR:CAL:CT:08-02-16

a. Description. This work consists of furnishing, installing, maintaining, relocating, and removing a temporary pedestrian Type II barricade section as identified in the proposal or on the plans. Use temporary pedestrian Type II barricades to close non-motorized facilities including sidewalks, bicycle paths, pedestrian paths, and shared use paths that are not part of the roadway. One pedestrian Type II barricade is defined as a barricade section at least 43 inches wide, including all supports, ballast, and hardware.

b. Materials. Provide a temporary pedestrian Type II barricade that meets the requirements of *National Cooperative Highway Research Program Report 350 (NCHRP 350)* or *Manual for Assessing Safety Hardware* (MASH), in addition to meeting the following requirements:

1. Provide barricade sections at least 43 inches wide, designed to interconnect to ensure a continuous *Americans with Disabilities Act (ADA)* compliant tactile barrier. Ensure the connection includes provisions to accommodate non-linear alignment as well as variations in elevation at the installation area.

2. Ensure the top surface of the barricade is designed to function as a hand-trailing edge, and has a height between 32 and 38 inches. Ensure the lower edge of the barricade is no more than 2 inches above the surface of the non-motorized facility. Ensure the top edge of the bottom rail of the barricade is a minimum of 8 inches above the surface of the non-motorized facility. The barricade may have a solid continuous face. Finally, all features on the front face of the barricade (the face in contact with pedestrians) must share a common vertical plane.

3. Equip both sides of the barricade with bands of alternating 6-inch wide orange and white vertical stripes of reflective sheeting. Two bands of sheeting 6 inches tall and a minimum of 36 inches long containing at least two orange and two white stripes each are required. One band placed near the top and one near the bottom if the barricade section has a solid face. If the barricade consists of two rails, affix one band of sheeting to each rail. Ensure the stripes of reflective sheeting are aligned vertically. Ensure this sheeting meets or exceeds the requirements of *ASTM D 4956* Type IV sheeting.

c. Construction. Construct the temporary pedestrian Type II barricade in accordance with the manufacturer's recommendations, Michigan Manual on Uniform Traffic Control Devices (MMUTCD), the plans, and the following requirements:

1. Install the barricade as shown on the plans and as directed by the Engineer. Interconnect all barricade sections using hinge components if necessary to ensure a continuous detectable edge for the entire installation. Ensure the barricade is ballasted according to the manufacturer's recommendations to ensure stability during wind events and contact with pedestrians.

2. When the barricade is installed near motor vehicle traffic, ensure reflective sheeting is visible to motorists.

3. When pedestrian Type II barricades are used to close a non-motorized facility, ensure a sufficient number of barricade sections are used to block the entire width of the facility. The barricade may extend outside the edge of the non-motorized facility but must not be less than the full width of the facility.

4. If sections of multiple colored barriers are used (i.e. safety orange and white) install the sections such that the colors alternate to increase conspicuity.

5. Ensure pedestrian Type II barricades are not used to close a motor vehicle facility. Ensure these barricades are not used to guide pedestrian traffic on a motor vehicle facility in the presence of active traffic. This prohibition includes bicycle/shared use lanes or shoulders in the presence of active traffic.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	**Pay Unit**
Pedestrian Type II Barricade, Temp	Each

Pedestrian Type II Barricade, Temp, includes all labor, equipment, and materials to furnish, install, maintain, relocate, and remove one barricade section that is at least 43 inches wide. Additional payment will not be made if wider sections are provided. This includes all rails, supports, ballast, hinge points, reflective sheeting, and miscellaneous hardware needed to install and maintain a barricade section.

CITY OF FLINT
SPECIAL PROVISION
FOR
TURF ESTABLISHMENT, PERFORMANCE-NO RYE, SPECIAL

a. Description. Delete Section 816 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction and replace with this special provision. The Contractor shall be responsible for the performance and quality of turf growth in the areas indicated on the plans and as identified by the Engineer. The Contractor shall comply with all local, state and federal laws and regulations in completing this work.

The Contractor shall establish a durable, permanent, weed-free, mature, perennial turf. The work consists of fundamental turf work, including but not limited to topsoiling, seeding, mulching, erosion control, maintenance, watering, and repair of turf as described herein during the life of the contract.

The Contractor shall choose and implement proven turf establishment industry practices; provide all necessary labor and equipment; select and provide all turf establishment materials; and control erosion and any subsequent sedimentation at all times.

The Contractor shall be responsible for a site analysis and its interpretation for their own use to ensure compliance with this specification. The site analysis will take into consideration topsoil needs, fertilizer and pH requirements, seed mix, existing and future soil moisture levels, slopes and grades, required erosion control items and devices, maintenance requirements, local highway snow deicing practices, and any other characteristics that influence and affect turf establishment.

Section 107.11 of the MDOT 2012 Standard Specifications for Construction is revised relative to the Contractor's responsibility for the repair of turf establishment work as follows. The Contractor shall be responsible, at no additional cost to the contract, for the repair of turf establishment work occasioned by storm events up to 3 inches of rain in a 24 hour period as documented by local meteorological data submitted to the Engineer for review and approval. All other portions of Section 107.11 remain unchanged.

1. **Contractor Turf Establishment Experience Requirements.** Weed control must be done by a commercial herbicide applicator, licensed by the State of Michigan and certified by the Michigan Department of Agriculture (MDA) in the appropriate category to apply herbicides. Use application procedures and materials according to federal, state and local regulations. Use of restricted use chemicals is prohibited. The Contractor must provide appropriate documentation and secure approval from the Engineer before application of herbicides.

At least 10 work days prior to start of turf establishment, the Contractor performing the turf establishment work shall provide the Engineer with documentation that they will meet one or both of the following requirements.

A. At least one person employed by the Contractor performing the turf establishment work and assigned to the job site shall have a degree or certificate in Turf Management, Horticulture, or related field.

B. At least one person employed by the Contractor performing the turf establishment work and assigned to the job site shall have at least five (5) years of experience in roadside turf establishment.

b. Materials. The Contractor shall provide topsoil, seed, mulch, pesticide, herbicide, mulch blankets, and any other unique erosion control materials as necessary to fulfill this specification, as detailed in the plans, and as indicated in the work plan. The Contractor may use additional materials as necessary to meet the standards set forth for turf establishment in this special provision. The use of any sod on the project requires the prior approval of the Engineer and if approved, may be used at limited site locations only.

Selection of all materials is the responsibility of the Contractor with the following minimum conditions.

1. **Soil.** The Contractor shall provide furnished or salvaged topsoil, which may be blended compost, that will support vigorous growth. It shall be humus bearing and of not less than 4 inches in depth. It shall be free of stones larger than 1 inch in diameter and other debris. The finished slope shall be trimmed and graded according to Section 205.03.N of the MDOT 2012 Standard Specifications for Construction.

2. **Seed.** The Contractor shall use a seeding mixture that is composed of a blend of four or more species of perennial grass. All species and their cultivars or varieties shall be guaranteed hardy for Michigan.

The following is a list of recommended species of perennial grasses: Kentucky Bluegrass, Hard Fescue, Creeping Red Fescue, Chewings Fescue, Turf-type Tall Fescue, Buffalo grass, and Alkaligrass-Fults Puccinellia distans. The cultivars or varieties of grasses selected shall be disease and insect resistant and good color. No one species in the mix shall be more than 25 percent of the mixture by weight. No one species in the mix shall be less than 5 percent of the mixture by weight. No grass species selected shall be considered noxious or objectionable, such as Quack Grass, Smooth Brome, Orchard Grass, Reed Canary Grass, and others.

A. The seed shall be legally saleable in Michigan. The seed product shall not contain more than 10 percent inert materials. The seed source shall be from an MDOT approved certified vendor.

B. The species and varieties of seed shall be adapted to all site conditions, to the site use, and to the soils, moisture, and local climate. Site use may include but is not limited to detention pond, wildlife habitat, playground, wetlands, forested wetland, rural roadside, urban roadside and highly maintained front yard.

C. At least two of the species in the mixture proposed to be planted within fifteen (15) feet behind the curb or the shoulder shall be salt tolerant.

3. **Mulch.** Seeded areas shall be mulched with the appropriate materials for the site conditions, shall promote germination and growth of seed and to mitigate soil erosion and sedimentation.

4. **Herbicides.** The Contractor shall comply with all federal, state and local laws as noted in Section 107 of the MDOT 2012 Standard Specifications for Construction. As part of the MDA weed control application, the Contractor is required to make proper notifications and/or postings as per label and MDA requirements for all locations that will be sprayed. The Contractor shall notify the Engineer 48 hours prior to any applications made. The Contractor shall furnish and apply herbicide(s) as needed. It shall be the Contractor's responsibility to select the herbicide(s) and the rate at which it will be used. The work methods and herbicide(s) shall be approved by the Engineer prior to the application of the material. A spray log will be required to be completed and submitted to the Engineer, each day an application is made.

No water shall be drawn from any waterway (i.e. river, ditch, creek, lake etc.) that is located on any state, county or municipal right-of-way, for mixing with herbicides.

5. **Fertilizers.** The Contractor shall furnish and apply fertilizer(s) as needed. It shall be the Contractor's responsibility to select the fertilizer(s) and the rate at which it will be used. Phosphorus can only be used at the time of planting and when soil conditions require it. The work methods and fertilizer(s) shall be approved by the Engineer prior to the application of the material.

6. **Water.** The Contractor shall furnish and apply water from an approved source as specified in the work plan at a rate to promote healthy growth.

c. Construction. The Contractor shall be responsible for all work and any and all construction methods used in completing this work. Any part or of MDOT 2012 Standard Specifications for Construction or standard plans chosen to be implemented by the Contractor shall not imply responsibility on the part of MDOT for acceptability of the Contractor's construction methods or for the quality of the Contractor's work outcome at any time.

1. **Inspection of the work.** The Contractor shall be responsible for all inspection of turf establishment work.

The Contractor shall use a Contractor's Daily Report approved by the Engineer, to report inspections made and to document turf establishment work performed on this project. The Contractor's Daily Report shall be completed and submitted to the Engineer when any work performed under this special provision is in progress.

The Contractor's Daily Report shall be accompanied by all necessary materials documentation including tests slips, certifications, etc.

The Engineer shall determine the acceptability of these reports in terms of their completeness and accuracy. The Engineer reserves the right to verify all submitted measurements and computations. Failure by the Contractor to submit acceptable and timely reports to the Engineer may result in withholding of progress pay estimates on turf-related items until such time as reports are submitted and deemed acceptable.

The Engineer reserves the right to inspect the project for any reason in accordance with Section 104.01 of the MDOT 2012 Standard Specifications for Construction, including the fulfillment of other inspection requirements such as soil erosion and sedimentation control, NPDES, etc. These inspections made by the Engineer shall not relieve the Contractor of the

inspections required by this special provision or the Contractor's responsibilities for erosion control and turf establishment.

2. **Erosion Control.** Erosion shall be controlled at all times according to Section 208 of the MDOT 2012 Standard Specifications for Construction. Control of soil erosion is the responsibility of the Contractor. However, sedimentation controls shall be placed as indicated on the plans or as directed by the Engineer. The site shall be continuously monitored by the Contractor for needed erosion repair from any cause as addressed in the contract documents. All eroded areas shall be returned to their original grade as detailed in the contract documents.

If sedimentation occurs in drainage structures or any watercourse or water containment area, corrective action shall be taken immediately and all disturbed areas contributing to this sedimentation shall be stabilized within 24 hours of erosion occurrence. Sediment deposited as a result of the Contractor's inability to control the soil erosion shall be removed at the Contractor's expense.

The Contractor shall reimburse the Department for any costs levied against the Department, such as fines, environmental costs, costs for remedies required, or any other costs as a result of the Contractor's failure to comply with this specification and with all federal, state, and local laws.

3. **Erosion Repair.** The Contractor is responsible for all repairs and liable for all consequences (legal, monetary, or other) associated with erosion or sedimentation damage to finished or unfinished work.

All erosion occurrences and the repairs made by the Contractor shall be reported to the Engineer in the format and at the frequency required by the Engineer. Any erosion, displacement, or disturbance to ongoing or completed work by any cause shall be repaired by the Contractor at no additional cost to the contract unless otherwise noted herein.

The Contractor shall be responsible and liable for all traffic control and safety measures required to repair and protect damaged turf areas. Any eroded area that may affect the support of the roadbed or safety of the public shall be repaired within 24 hours of the erosion occurrence.

Protection devices such as barriers, directional sign/signals, temporary fence, or any other safety measures shall be placed by the Contractor immediately after any erosion damage occurs that has the potential of endangering the public. In these instances, the Contractor shall, within 24 hours of the occurrence of the damage, provide the Engineer with a written summary of the immediate action taken describing the repairs made and the safety measures taken.

4. **Mowing and Weeding.** The Contractor shall maintain the turf to a visually appealing level and not more than 8 inches in height at any time prior to acceptance. Weeds must be controlled to less than 10 percent of the Turf Establishment area at all times during construction.

5. **Final Acceptance**

A. **Final Acceptance Parameters.** Before final acceptance of the turf establishment work, all of the following minimum parameters shall be met throughout all exposed areas of the project designated on the plans or identified by the Engineer as turf establishment areas.

There shall be no exposed bare soil and the turf shall be fully germinated, erosion free, weed free, disease free, dark green in color and in a vigorous growing condition.

The Engineer will notify the Contractor of the dates and times of all acceptance inspections. The Contractor may accompany the Engineer while these inspections are being made. If the Contractor does not agree with the decision made by the Engineer, the Contractor can request an inspection by a mutually agreed upon third party (Michigan State University Extension service or other). A joint inspection, including the Engineer, the Contractor, and the third party, will be scheduled. All expert fees and expenses charged by the third party will be paid by the Contractor.

Any and all claims for extra compensation shall be according to Section 104.10 of the MDOT 2012 Standard Specifications for Construction.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price for the following contract item (pay item):

Contract Item (Pay Item)	**Pay Unit**
Turf Establishment, Performance-No Rye, Special	Square Yard

Turf Establishment, Performance-No Rye, Special shall be measured in place by area in square yards. All materials, labor, and equipment required or selected by the Contractor to install, maintain, inspect, repair, and meet the acceptance parameters for turf establishment specified in this special provision, including preparation, updating, and submittal of the Contractor's work plan and Contractor's Daily Reports, will not be paid separately but will be considered included in the contract unit price bid for Turf Establishment, Performance, Special.

Repairs made to damaged turf establishment areas as a result of a documented storm by local meteorological data resulting in rainfall amounts of more than 3 inches in a 24 hour period will be paid for as an increase to original quantities as described in Section 109.05 of the MDOT 2012 Standard Specifications for Construction.

The following schedule of payment applies to work performed according to this special provision. Upon completion of topsoil surfacing stage, 50 percent of the authorized amount for Turf Establishment, Performance-No Rye, Special will be paid to the Contractor. The remaining authorized amount will be paid upon completion of all other work necessary to comply with this special provision and to meet all final acceptance parameters for Turf Establishment, Performance-No Rye, Special.

CITY OF FLINT
SPECIAL PROVISION
FOR
WATER MAIN CONSTRUCTION

a. Description. Water main work includes all labor, equipment, and materials necessary to complete the water main, water services, hydrants, and other related construction.

b. Materials. All materials shall be of United States manufacture. The Contractor shall direct all requests for any variances to the Engineer in writing. The manufacturer shall supply a sworn statement (certification) that all pipe, hydrant valves, fittings, gaskets, and all appropriate appurtenances furnished comply with the standards referenced in theses specifications. Catalog cuts for all materials to be installed shall be provided to the Engineer for review prior to or at the pre-construction meeting. No materials shall be installed prior to the approval of the catalog cuts by the Engineer.

1. Ductile Iron Pipe. Ductile iron pipe shall meet or exceed the requirements of ANSI/AWWA C150/A21.50-81 for zinc-coated Thickness Class 52 or 54 and ANSI/NSF Standard 61. Ductile iron pipe shall be cement-mortar lined in accordance with ANSI/AWWA C104/A21.4. Gaskets for ductile iron pipe shall be push-on type and shall meet ANSI/AWWA C111/A21.11. One gasket per length of pipe shall be furnished. Gaskets shall be compatible with the pipe joint furnished. Gasket lubrication meeting the requirements of ANSI/AWWA C111/A21.11 shall be furnished for each gasket. ALL hydrant leads shall be ductile iron pipe.

2. The exterior of ductile iron pipe shall be coated with a layer of arc-sprayed zinc per ISO 8179. The mass of the zinc applied shall be 200 g/m2 of pipe surface area. A finishing layer topcoat shall be applied to the zinc. The coating system shall conform in every respect to IS 8179-1 “Ductile iron pipes – External zinc-based coating – Part 1: Metallic zinc with finishing layer. Second Edition 2004-06-01.

3. Polyethylene Encasement. Ductile iron water main, fittings, and appurtenances and non-copper service connections shall be encased with polyethylene in accordance with ANSI/AWWA C105/A21.5. Encasement material shall be linear low-density polyethylene film with a minimum thickness of 8 millimeters (mil).

4. Polyvinyl Chloride (PVC) Pipe. PVC pipe shall meet the requirements of ANSI/AWWA C900 for Pressure Class 305, DR14 pipe and ANSI/NSF Standards 14 and 61. All PVC pipe shall be stamped “NSF-pw” on the exterior pipe wall. PVC pipe is not allowed where it may be exposed to significant concentrations of pollutants comprised of low molecular weight petroleum products or organic solvents or their vapors. Joints shall be gasket, push-on type. Joints and gaskets shall meet the requirements of ASTM D3139 and ASTM F477. One gasket per length of pipe shall be furnished. Gaskets shall be compatible with the pipe joint furnished. Gasket lubrication shall be furnished for each gasket.

High Density Polyethylene (HDPE) – Directional Drilling Only. Pipe shall be manufactured from a PE 3608 resin listed with the Plastic Pipe Institute (PPI) as TR-The resin material will meet the specifications of ASTM D3350 with a cell classification of 345464C. Pipe shall have a manufacturing standard of ASTM F714. Pipe shall be DR 17 (100 psi WPR) unless

otherwise specified on the plans. The pipe shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification form the same raw material.

5. Fittings. All fittings shall be ANSI/AWWA C110/A21.10 or C153/A21.53, mechanical joint type, and be cement-mortar lined in accordance with ANSI/AWWA C104/A21.4.

6. Mechanical Joint Bolts. Mechanical joint bolts (T-bolts) shall be high-strength, low-alloy steel meeting ANSI/AWWA C111/A21.11 requirements.

7. Mechanical Joint Restraints. Mechanical Joint Restraint shall be MJ FIELD LOK® Gasket or devices that consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of ANSI/AWWA C110/A21.10 and ANSI/AWWA C111/A21.11. The gripping wedges shall have individually actuated wedges with torque limiting twist off nuts. Gland body, wedges, and wedge actuating components shall be ductile iron conforming to ASTM A536.

8. Ductile iron pipe mechanical joint restraints shall have a working pressure rating of 350 psi and be EBAA Iron Megalug Series 1100, Uni-Flange Series UFR 1400, or Engineer approved equal.

9. PVC Pipe mechanical joint restraints shall meet the requirements of ASTM F1674 and have a working pressure rating of 200 psi. PVC joint restraints shall be EBBA Iron Series 2000PV, Uni-Flange Series UFR 1500-C, or Engineer approved equal.

10. MJ FIELD LOK® Gasket. The restraint system shall be completely integral to the gasket, requiring only standard mechanical joint assembly techniques. The restraining system for ductile iron shall be pressure rated to 350 psi. The restraining system for PVC shall be rated at a 2:1 safety factor for the pipe on which it is installed. The restraining system shall be rated in accordance with the performance requirements of ANSI/AWWA C111/A21.11 Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings.

11. Pipe Bell Restraints. Ductile iron pipe bell restraint shall be locking gasket or devices that consist of a restraint ring on the spigot joined to a ring behind the bell. The restraint ring shall have individually actuated wedges with torque limiting twist off nuts. Bell restraint rings and wedging components shall be made of ductile iron conforming to ASTM A536. Connecting tie rods shall be made of low alloy steel that conforms to ANSI/AWWA C111/A21.11. The assembly shall have a rated pressure of 350 psi. Ductile iron bell restraint shall be the EBAA Iron Series 1700 Megalug restraint harness, Uni-Flange Series UFR 1450, or Engineer approved equal.

12. Locking Gasket. Locking gaskets for ductile iron pipe shall be a boltless, integral restraining system and shall be rated for 350 psi in accordance with the performance requirements of ANSI/AWWA C111/S21.1. Gaskets for TYTON® joints shall be Field Lok 350 manufactured by U.S. Pipe. Gaskets for American, pipe shall be Fast-Grip® manufactured by American Cast Iron Pipe Co.

PVC pipe bell restraint devices shall meet the requirements of ASTM F1674 and consist of split serrated rings to grip behind the pipe bell and on the connecting pipe. The restraint shall be manufactured of ductile iron conforming to ASTM A536. Connecting tie rods shall

be made of low alloy steel that conforms to ANSI/AWWA C111/A21.11. The assembly shall have a minimum working pressure rating of 200 psi. The restraint shall be the EBAA Iron Series 1500, Uni-Flange Series UFR 1390-C, or Engineer approved equal.

13. HDPE Fittings. Butt Fusion Fittings: Fittings shall be PE3608 HDPE, minimum cell classification of 345464C as determined by ASTM D3350. Molded fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans. Fabricated fittings are to be manufactured using a Data Logger. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the quality control records.

14. Electrofusion Fittings: Fittings shall be PE3608 HDPE, minimum cell classification of 345464C as determined by ASTM D3350. Electrofusion fittings shall have a manufacturing standard of ASTM F1055. Fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans.

15. Hydrants. Hydrants shall conform to ANSI/AWWA C502. Hydrants shall be Mueller Super Centurion BR-250 with the following:

5'-6" bury
OPEN VALVE CLOCKWISE
5-1/4" valve opening
Mechanical joint inlets with accessories
7/8" square operating nut (top nut) Nozzle caps shall have 7/8" square nuts
One 4-1/2" pumper nozzle (facing curb or pavement) Two 2-1/2" hose nozzles
Hose nozzles shall be national standard fire hose coupling thread
Drains shall be open before installation
O-ring seals
Hydrants shall be painted YELLOW above the ground line
Hydrant caps shall be color coded per Standard Detail SD-1W

16. Gate valves. Gate valves shall be resilient seated gate valves, mechanical joint on both ends, 2-inch square operating nut, O-ring seals, and **open right**. Valves shall conform to ANSI/AWWA C509 or C515 and be supplied with accessories. Valves shall be CLOW R/W, Kennedy Kenseal R/W, US Pipe Metroseal 250 R/W, East Jordan Iron Works Flowmaster, or American Flow Control Series 2500. American AVK Series 25 may be used for hydrant leads.

17. Tapping Valves. Tapping valves shall be resilient seated gate valves with mechanical joint on one end and flange with alignment ring on the other end. Tapping valves shall accommodate a full-size shell cutter. Valves shall have 2-inch square operation nut, O-ring seals, and **open right**. Valves shall conform to ANSI/AWWA C509 or C515 and be supplied with accessories. Valves shall be CLOW R/W, Kennedy Kenseal R/W, US Pipe Metroseal 250 R/W, East Jordan Iron Works Flowmaster or American Flow Control Series 2500.

18. Tapping Sleeves. Tapping sleeves, nuts, bolts, and lugs shall be 304 stainless steel. Lugs shall be of extra-heavy gauge construction, welds must be fully passivated to ensure maximum corrosion protection, sleeves shall have full circle virgin SBR or neoprene gasket in accordance with ASTM D2000 with 360 degrees of sealing surface, and flanges shall be

recessed for tapping valve alignment. Sleeves shall be Powerseal 3490, Ford FTSS, Romac SST III, or JCM 432.

19. Valve Boxes. Valve boxes shall be buffalo-type complete, 5¼-inch shaft, screw-type with #6 base. Sleeves shall be Tyler 6860 series, Item D or Bibby 45 to 66 inches extension, or Bingham & Taylor (B&T) Figure No. 4906, size D. Lids shall be marked "WATER."

20. Service Lines. Water service connections shall be ASTM-B88 Type-K soft temper copper.

21. Corporation Stops. Corporation stops for copper service pipes shall conform to ANSI/AWWA C800 with AWWA corporation stop inlet threads and outlet external threads for use with flared copper pipe (no compression types). Corporation stops shall be Mueller Company (H-15000), McDonald (4701), or Ford Meter Box (F-600).

22. Service Saddles. Service saddles for 2 inches and smaller service connections to PVC water pipe shall conform to ANSI/AWWA C800. Saddles shall be cast brass construction with internal threads compatible with AWWA corporation stop inlet threads. O-ring gasket shall be EPDM rubber conforming to ASTM D2000. The saddle shall provide full support around the circumference of the pipe. Service Saddles shall be Mueller Company (BR2B), McDonald (3805), or Ford Meter Box (S90).

23. Curb Stops (Service Stops). Curb stops for copper service pipe shall conform to ANSI/AWWA C800 with threading for use with flared copper pipe (no compression types). Curb stops shall be Mueller (B-25204), McDonald (6100), or Ford Meter Box (ball valve B22).

24. Service Boxes (Curb Stop Boxes). Curb boxes shall be buffalo-type complete, screw-type 2½-inch shaft, extension 41 to 64 inches, Tyler 6500 series, Item 95E, or Bibby 95E or B&T Figure No. 4901, Size 94F with Figure No. 4901-A old-style top and cover. Lids shall be marked "WATER."

25. Cast Couplings. Cast coupling shall be Rockwell 441, Power Seal System 3503, Dresser Style 253, or Dresser Hymax.

c. Installation. Ductile iron water main pipe shall be installed in accordance with ANSI/AWWA C600, "Installation of Ductile Iron Water Mains and Their Appurtenances." PVC water main pipe shall be installed in accordance with ANSI/AWWA C605, "Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water". Additional requirements are as indicated on the construction drawings and standard details, and as specified herein.

1. Laying Pipe. Pipe shall be laid to line and grade and shall have bearing over its entire length except at joints where joint holes shall be of such size as to give adequate room for working. Depth of excavation shall be such as to give between 5 feet and 6 feet of cover over the pipe. The bottom of the trench shall be excavated to the required grade so that the pipe shall have a full 4 inches of bedding. Where pipe is being laid in future streets, the depth of excavation shall be sufficient to provide a minimum of 5½ feet of cover below established grades as indicated on the drawings.

2. Temporary Plugs. Plugs with watertight seals shall be installed to keep water, sand, mud, animals, etc. out of newly installed water pipe. A plug shall be placed into the open end of each pipe section as it is installed into the trench and shall remain in place until immediately before the next section of pipe is connected to it. Non-pressure plugs with rubber gaskets shall be as manufactured by Plug-It Products, Taylor Made Plastics, or other plug acceptable to the Engineer.

3. Isolation. The new water main shall be kept isolated from the active distribution system using a physical separation (see standard detail drawing) until satisfactory bacteriological testing has been completed and the disinfectant water flushed out. Water required to fill the new main for hydrostatic pressure testing, disinfection, and flushing shall be supplied through a temporary connection between the distribution system and the new main. The temporary connection shall include an appropriate cross-connection control device consistent with the degree of hazard and shall be disconnected (physically separated) from the new main during the hydrostatic pressure test. It will be necessary to re-establish the temporary connection after the completion of the hydrostatic pressure test to flush out the disinfectant water before final connection of the new main to the distribution system.

4. Insulation. Where water and sewer are approximately the same elevation, the water shall pass over the sewer where possible. If in going over sewers, the minimum required cover cannot be maintained, 2-inch by 4-foot by 8-foot Styrofoam insulation shall be used. The inspector will provide needed instructions. Cost of insulation and installation shall be included in cost of water main installation.

5. Separation of water mains and storm and sanitary sewers shall meet Michigan Department of Public Health recommendations as outlined in the Recommended Standards for Water Works.

A. Parallel Installation. Water main shall be laid at least 10 feet horizontally from any existing or proposed sewer. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10-foot separation, the reviewing authority may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the water main closer to a sewer, provided that the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer.

B. Crossings. Water mains crossing sewers shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. At crossings, one full length of water pipe shall be located so both joints will be as far from the sewer as possible. Special structural support for the water and sewer pipes may be required.

C. Exception. The reviewing authority must specifically approve any variance from the above requirements when it is impossible to obtain the specified separation distances. Where sewers are being installed and these requirements cannot be met, the sewer materials shall be water pipe or equivalent and shall be pressure tested to ensure water tightness.

D. Force Mains. There shall be at least a 10-foot horizontal separation between water mains and sanitary sewer force mains. There shall be an 18-inch vertical separation of crossings as required above.

E. Sewer Manholes. No water pipe shall pass through or come in contact with any part of a sewer manhole.

6. Joints. Push-on joints shall be used and installed in strict accordance with the manufacturer's specifications.

7. Mechanical Restraints for 12-inch and Smaller Pipe. All tees, bends, dead ends, reducers, valves and hydrant watch valves, and hydrants for water main 12 inches and smaller are to be restrained by mechanical joint retainer glands, bell restraint harnesses, or locking gaskets. Restrained lengths shall be a minimum of 2 pipe lengths on either end of all appurtenances including connection to HDPE directional drill piping. Other methods of restraint shall be only as authorized by the Engineer and may include the following:

A. Thrust blocks (poured against undisturbed earth with concrete. No precast blocks).

B. Tie rod joint restraints using Duc-lugs or 3/4-inch Corten Steel Anchor Eyebolts. Two restraints per joint are required for 4-inch through 8-inch pipe. Four restraints per joint are required for 10- and 12-inch pipe.

8. Thrust Blocks for Pipe Larger than 12 inches. All tees, bends, and dead ends for water main larger than 12 inches are to be restrained by thrust blocks. Thrust blocks shall be concrete (no precast) having a compressive strength of 3,000 psi at 28 days, placed between the pipe and undisturbed earth of the trench wall. Exposed bolts and/or flanges shall not be covered with concrete. Concrete shall extend from the bottom of the trench to the top of the pipe within the limits of laying length of the fitting. Thrust block dimensions shall be as specified on the Standard Water drawings.

9. Polyethylene Encasement of Ductile Iron Pipe. The polyethylene encasement shall prevent contact between the pipe and the surrounding backfill and bedding material, but is not intended to be a completely airtight or watertight enclosure. All lumps of clay, mud, cinders, etc., on the pipe surface shall be removed before installation of the polyethylene encasement. During installation, care shall be exercised to prevent soil or embedment material from becoming trapped between the pipe and the polyethylene. The polyethylene film shall be fitted to the contour of the pipe to affect a snug, but not tight, encasement with minimum space between the polyethylene and the pipe. Sufficient slack shall be provided in contouring to prevent stretching the polyethylene where it bridges irregular surfaces, such as bell-spigot interfaced, bolted joints or fittings, to prevent damage to the polyethylene due to backfilling operations. Overlaps and ends shall be secured with adhesive tape, string, or any other material capable of holding the polyethylene encasement in place until backfilling operations are complete.

For installations below the water table, both ends of the polyethylene tube shall be sealed as thoroughly as possible with adhesive tape at the joint overlap.

Installation of polyethylene encasement shall be in accordance with ANSI/AWWA C105, Method A, and as described below unless otherwise authorized by the Engineer.

A. Cut polyethylene tube to a length approximately 2 feet longer than the pipe section. Slip the tube around the pipe, centering it to provide a 1-foot overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears the pipe ends.

Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at joints to facilitate installation of the polyethylene tube.

After assembling the pipe joint, make the overlap of the polyethylene tube. Pull the bunched polyethylene from the preceding length of pipe, slip it over the end of the new length of pipe and secure it in place. Then slip the end of the polyethylene from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe. Secure the overlap in place. Take up the slack width at the top of the pipe to make a snug, but not tight, fit along the barrel of the pipe, securing the fold at the quarter points.

Any cuts, tears, punctures, or other damage to the polyethylene shall be repaired as described herein. Proceed with installation of the next section of pipe in the same manner.

B. Pipe-shaped Appurtenances. Cover bends, reducers, offsets, and other pipe-shaped appurtenances with polyethylene in the same manner as the pipe.

C. Odd-shaped Appurtenances. When it is not practical to wrap valves, tees, crosses, and other odd-shaped pieces in a tube, wrap with a flat sheet of split length of polyethylene tube by passing the sheet under the appurtenance and bringing it up around the body. Make seams by bringing the edges together, folding over twice and taping down. Handle width and overlaps at joints as described above. Tape polyethylene securely in place at valve stem and other penetrations.

D. Repairs. Repair any cuts, tears, punctures, or damage to the polyethylene with adhesive tape or with a short length of polyethylene sheet or a tube cut open, wrapped around the pipe to cover the damaged area and secured in place.

E. Openings in Encasement. Provide openings for branches, service taps, blowoffs, air valves, and similar appurtenances by making an x-shaped cut in the polyethylene and temporarily folding back the film. After the appurtenance is installed, tape the slack securely to the appurtenance and repair the cut, as well as any other damaged areas in the polyethylene with tape. Service taps may also be made directly through the polyethylene with any resulting damaged areas being repaired as described above.

F. Junctions Between Wrapped and Unwrapped Pipe. Where polyethylene wrapped pipe joins an adjacent pipe that is not wrapped, extend the polyethylene wrap to cover the adjacent pipe for a distance of at least 3 feet. Secure the end with circumferential turns of tape.

G. Service lines of dissimilar metals shall be wrapped with polyethylene or a suitable dielectric tape for a minimum clear distance of 3 feet away from the ductile iron pipe.

H. Exercise care to prevent damage to the polyethylene wrapping when placing backfill. Backfill material shall be free from cinders, refuse, boulders, rocks, stones, or other material that could damage polyethylene.

10. Fire Hydrants. All hydrants shall stand plumb and shall have their nozzles parallel with or at right angles to the curb, with the pumper nozzle facing the curb, except that the hydrants having two-hose nozzles 90 degrees shall be set with each nozzle facing the curb at an angle of 45 degrees.

A. Set to Grade. Hydrants shall be set to the established grade, with the center of the lowest nozzle at least 18 inches above the ground. The lowest nozzle shall be installed away from the curb line at a sufficient distance to avoid damage from or to vehicles. Traffic model hydrants shall be installed so that the breakaway flange is not less than 2 inches nor more than 6 inches above the established grade. Any fittings used to set the hydrant to grade shall be included in the unit price bid for hydrant installation.

B. Hydrant Valve. Each hydrant shall be connected to the main with a 6-inch diameter branch controlled by an independent valve, unless otherwise specified. The valve shall be restrained to allow shutoff when the hydrant is to be removed.

C. Drainage. When a hydrant is set, drainage shall be provided at the base of the hydrant by placing coarse gravel or crushed stone mixed with coarse sand from the bottom of the trench to at least 6 inches above the drain port opening in the hydrant and to a distance of one foot around the elbow. Where ground water rises above the drain port or when the hydrant is located in contaminated soils or when the hydrant is located within 10 feet of a sanitary or storm sewer main, the drain port shall be plugged.

D. Backfill. All backfill within the influence of the road shall be Michigan Department of Transportation (MDOT) Class II, compacted to 95 percent maximum density in accordance with Standard Detail SD-7W.

11. Valve and Fitting Installation.

A. Prior to installation, valves shall be inspected for direction of opening, number of turns to open, freedom of operation, tightness of pressure containing bolting and test plugs, cleanness of valve ports, and especially seating surfaces, handling damage, and cracks. Defective valves shall be marked and held for disposition as required. All bolts and nuts, with the exception of seat adjusting bolts or screws in butterfly valves, shall be checked for proper tightness. Seat adjusting bolts in butterfly valves shall be adjusted only on the recommendation from the manufacturer.

B. Placement. Valves, fittings, plugs, and caps shall be set and joined at the pipe according to ANSI/AWWA C600 or ANSI/AWWA C605, as applicable. Valves connecting to PVC pipe and all valves 12 inches or larger shall be provided with special support, such as crushed stone, concrete pads, or a sufficiently tamped trench bottom so that the pipe will not be required to support the weight of the valve. Valves shall be installed in the closed position.

C. Drainage Branches and Blowoffs. Mains shall be drained through drainage branches or blowoffs. Drainage branches, blowoffs, and appurtenances shall be provided with control valves and shall be located and installed as indicated on the drawings. Drainage branches or blowoffs shall not be directly connected to any storm or sanitary sewer, submerged in any stream, or be installed in any manner that will permit a back siphonage into the distribution system.

D. Vents. Air-release of vacuum vents shall be provided at high points in the line and in areas of potential negative pressure. The air release or vacuum vents shall not be connected to any storm or sanitary sewer and they shall be protected from freezing.

E. Valve Box. A valve box shall be provided for every valve that has no gearing or operating mechanism, or in which the gearing or operating mechanism is fully protected with a gear case. The valve box shall not transmit shock or stress to the valve. The valve box shall be centered over the operating nut of the valve with the box cover flush with the surface of the finished area or another level as specified.

F. Valve Vault. A vault designed to prevent settling on the pipe shall be provided for every valve that has exposed gearing or operating mechanisms. The operating nut shall be readily accessible for operation through the opening in the valve vault. The opening shall be set flush with the surface of the finished pavement or another level as specified. Vaults shall be constructed to permit minor valve repairs and to protect the valve and pipe from impact where they pass through the vault walls.

G. Plugs and Caps. All dead ends on new mains shall be closed with plugs or caps that are suitably restrained to prevent blowing off under test pressure. If a blowoff valve precedes the plug or cap, it too shall be restrained against blowing off. All dead ends shall be equipped with suitable blowoff or venting devices.

H. Valve Manholes (Gatewells). Gatewells (gate valve in manhole) and well structures (check valve in manhole) shall be built in accordance with the details and at the locations shown on the plans and in accordance with the applicable portions of section 403 of the MDOT 2012 Standard Specifications for Construction, and as specified in this Special Provision.

Manhole bottoms shall be of "Class A" concrete floated smooth. Sidewalls shall be of brick or manhole blocks. Brick or block shall be laid with the long dimension radially in the manhole. Every brick or block shall have full mortar joints on the bottom and sides, which shall be formed at one operation by placing sufficient mortar on the bed and forcing the brick or block into it. Horizontal joints shall not exceed ¾-inch except for exterior joints in the domed portion of the manhole and the vertical joints on the inside of the manhole are built up. Brick or block manholes shall be plastered on the outside with a 2-inch coat of mortar. Mortar used for masonry work shall only be mixed in quantities which are immediately useable. Any mortar which is set sufficiently to require retempering shall not be used. When the manhole is completed, cast iron ring and cover are to be set in place to line and grade.

If the Contractor is approved to use precast manholes, the gatewell shall be in accordance with section 403 of the MDOT 2012 Standard Specifications for Construction, and as shown on the plans. Where Contractor is approved to use precast

manhole components, it shall be the Contractor's responsibility to order manhole components with proper pipe hole location and orientation and Contractor accepts all costs for re-ordering new components and disposition of unacceptable components.

12. Backfilling. After the water line has been properly positioned for grade and horizontal alignment, the trench shall be backfilled in accordance with the following described methods.

A. Pipe Bedding and Initial Backfill. Pipe bedding and initial backfill shall be performed to properly set the pipe. Bedding shall conform to details indicated on the drawings and as specified herein. Pipe laid in sandy soils will be bedded with hauled-in Class IIIA granular material or approved on-site material. Pipe laid in a rocky, dry trench will be bedded with Class IIIA granular material. Use coarse aggregate 6A as directed by the Engineer for bedding pipe in unstable soil conditions. The Engineer reserves the right to use alternate pipe bedding.

Initial backfill to 12 inches above the pipe shall be with Class IIIA granular material or approved onsite material. The Contractor shall take all necessary actions and precautions to ensure that initial backfill is properly placed around the pipe, especially from the spring line of the pipe to the bottom of the trench. This shall be accomplished to the satisfaction of the Engineer. Initial backfill shall be compacted to a minimum of 90 percent of the maximum unit weight.

B. Final Backfilling. After proper pipe bedding and initial backfill, the Contractor shall begin final backfill operations. Backfill shall be accomplished by placing layers, 12 inches maximum, of the appropriate backfill material in the excavation and compacting.

Trenches under road surfaces, pavement, curb, driveway, sidewalk, and within their zone of influence shall be backfilled with Class II granular material. Compaction shall be by the controlled-density method or other effective means and shall be a minimum of 95 percent of the maximum unit weight. Other trenches may be backfilled with suitable onsite material and compacted to a minimum of 90 percent of its unit weight.

Wherever utilities cross the trench, the backfill material shall be thoroughly compacted for the full depth beneath such pipe and a stone-free sand cushion tamped under and around the pipe a minimum of 12 inches measured in any direction.

Stones exceeding 6 inches in diameter, logs, stumps, and other debris shall not be allowed in the backfill material in the roadway or within 6 inches of the pipe. Muck or other unstable organic soils which may be encountered in excavation shall be hauled and disposed of and the Contractor shall furnish sufficient approved material to complete the backfill as required.

C. Granular Material. Granular material which is encountered in the excavated material may be used for the required MDOT Class II granular material if approved by the Engineer. The use of such material shall not be allowed without prior approval of the Engineer.

13. Damaged Materials. Any pipe, manholes, valves boxes, stop boxes, or structures which are damaged during construction shall be replaced by the Contractor at no expense to the Owner.

14. Salvaged Materials. Old fire hydrants removed as part of the work that will not be re-used shall remain city property and be set aside for pickup by the City of Flint Water Department. The Contractor shall exercise caution during removal to avoid damage to the hydrant and remove the head, barrel, and foot piece intact in one piece.

15. Connecting to Existing Water Lines. The Contractor shall make connections to existing water lines as indicated on construction drawings. All new water system mains shall be constructed, backfilled, pressure tested, chlorinated, and approved by the Engineer, and water tests shall be taken and approved for potable use by the Michigan Department of Environmental Quality or the City of Flint Water Department prior to connecting the new system mains to existing water distribution mains. Temporary connections for filling, chlorinating, and testing new mains shall be as specified herein and shown on the drawings.

16. Notification Prior to Shutting Off Water. Where water main construction under this contract requires shutting off water supply in existing mains supplying residents, the Contractor shall provide advance notice to the Owner and to all residents who will be affected. Residents and businesses shall be notified at least 24 hours prior to shutting off the water supply. Facilities with critical water needs may require more advance notice. Water supply shall not be shut off until approved by the Engineer. If faulty valves or other unforeseen conditions require expanding the area of shut off, the shut off shall be delayed until proper notification is provided. Delays will not be cause for extra compensation to the Contractor. Water supply shut off shall be limited to a period of not longer than four hours between 8 a.m. and 6 p.m. and this period shall be selected for the time of day which will least affect the residents and businesses. Other restrictions may be specified elsewhere in the contract documents. The Contractor shall be required to maintain an adequate water supply at all times (except as described above for brief periods) to all residents adjacent to the project, and change over to new mains or services shall be coordinated to eliminate any long periods for residents without water.

17. Filling New Water Main. Provision shall be made to fill the main at a proper rate of approximately 1 foot per second. Air shall be bled off the water main prior to testing. Unless approved otherwise, this will require one-inch corporations and bypass at main line valves. Tap and materials required to install 1-inch corporations shall be included in the cost of construction.

18. Service Connections. Minimum size shall be 1 inch. Water service connections shall be constructed with a minimum of 5 feet cover, at right angles to water main between main and curb stop, and as close as possible to the existing service that is being replaced. Where obstructions (e.g., trees) make open cut installation impractical or when directed by the Engineer, the service shall be installed by boring.

A. Service Taps. Service taps should be located at 10 o'clock or 2 o'clock on the circumference of the pipe. Service taps on ductile iron pipe may be screwed directly into the tapped and threaded main without any additional appurtenances.

B. All service taps on PVC pipe shall utilize a tapping saddle (NO DIRECT TAPS). The equipment and procedures specified in ANSI/AWWA C605 for saddle tapping shall be followed.

C. Service Taps in Polyethylene Encasement. Service taps may be accomplished by making an x-shaped cut in the polyethylene encasement and temporarily folding back the film. After the tap has been completed, cuts in the polyethylene and any other areas of damage to the film shall be repaired with tape as described in ANSI/AWWA C105/A21.5. Direct service taps may also be made through the polyethylene, with any resulting damaged areas being repaired as described previously. The preferred method of making direct service taps consists of applying two or three wraps of polyethylene adhesive tape completely around the pipe to cover the area where the tapping machine and chain will be mounted. After the direct tap is completed, the entire circumferential area should be closely inspected for damage and repaired if needed.

D. Disinfecting Service. Prior to connecting customer's service line to curb stop, the service in the street right-of-way shall be flushed and filled with a 200 milligrams/liter (mg/L) (200 parts per million (ppm)) minimum chlorine solution. Solution shall stand for a minimum of one hour after which time the service shall be flushed free of chlorine solution. A sample will then be taken by the Water Department after which the curb stop shall be installed, if not already in place, and the customer's service shall be reinstated.

E. Backfill. The service shall be bedded with Class IIIA granular material and backfilled with Class II granular material or approved onsite material. Backfill under road surfaces, curb, driveways, or sidewalk or within their zone of influence shall be compacted to 95 percent of the maximum unit weight. Other trenches shall be backfilled with suitable onsite material and compacted to a minimum of 90 percent of its maximum unit weight.

19. Directional Drilling.

A. Prior to beginning work, the Contractor must submit to the Engineer a work plan and, Engineer sealed, design detailing the procedure and schedule to be used to execute the project. The design shall include all design considerations, calculations, details including thrust restraints, and/or thrust collar for longitudinal expansion and contraction, mainline water main connection details and any other information necessary to complete the work. The work plan shall include a description of all equipment to be used, down-hole tools, a list of personnel and their qualifications and experience list of subcontractors, a schedule of work activity, a safety plan traffic control plan (if applicable), an environmental protection plan and contingency plans for possible problems. Work plan shall be comprehensive, realistic and based on actual working conditions for the project. Plan shall document the thoughtful planning required to successfully complete the project. All drilling fluids and loose cuttings shall be contained. No fluids shall be allowed to enter any unapproved areas or natural waterways. Upon completion of the directional drill project, all excess drilling fluid, drilling spoils, and other material shall be removed by the Contractor.

B. Contractor shall submit specifications on directional drilling equipment to be used to ensure that the equipment will be adequate to complete the project. Equipment shall include but not be limited to: drilling rig, mud system, mudmotors (if applicable), down-

hole tools, guidance system and rig safety systems. Calibration records for guidance equipment shall be included. Specifications for any drilling fluid additives that Contractor intends to use or might use will be submitted.

C. Specifications on material to be used shall be submitted to Engineer and material shall include the pipe, fittings, drilling mud, drilling additives, and any other item which is to be an installed component of the project or used during construction.

D. Work site as indicated on drawings, within right-of-way, shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work areas.

E. Entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on drawings. If Contractor is using a magnetic guidance system, drill path will be surveyed for any surface geo-magnetic variations or anomalies.

F. Contractor shall place silt fence between all drilling operations and any drainage, wetland, waterway, or other area designated for such protection by contract documents or state, federal, and local regulations. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berms, liners, turbidity curtains and other measures. Contractor shall adhere to all applicable environmental regulations. Fuel or oil may not be stored in bulk containers within 200 feet of any water-body or wetland.

G. Pipe shall be welded/fused together in one length. Pipe will be placed on pipe rollers before pulling into bore hole with rollers spaced close enough to prevent excessive sagging of pipe.

H. Pilot hole shall be drilled on bore path with no deviations greater than 5 percent of depth over a length of 100 feet. In the event that pilot does deviate from bore path more than 5 percent of depth in 100 feet, Contractor shall notify Engineer, and Engineer may require Contractor to pull-back and re-drill from the location along bore path before the deviation.

I. In the event that a drilling fluid fracture, inadvertent returns or returns loss occurs during pilot hole drilling operations, Contractor shall cease operations and shall discuss corrective options with the Engineer, work shall then proceed accordingly.

J. Upon approval of the pilot hole location by the Engineer, the hole enlarging or back reaming phase of the installation shall begin. The borehole diameter shall be increased to accommodate the pullback operation of the required size of PE pipe. The type of back reamer to be utilized in this phase shall be determined by the types of subsurface soil conditions that have been encountered during the pilot hole drilling operation. The reamer type shall be at the Contractor's discretion with the final hole diameter being a maximum of 20 percent larger than the outside diameter of the product pipe being installed in the borehole.

K. The open borehole may be stabilized by means of bentonite drilling slurry pumped through the inside diameter of the drill pipe and through openings in the reamer.

The slurry will also serve as an agent to carry the loose cuttings to the surface through the annulus of the borehole. These cuttings and bentonite slurry are to be contained at the exit hole or entry side of the directional bore in pits or holding tanks. The slurry may be recycled at this time for reuse in the hole opening operation or it shall be hauled by the Contractor to an approved dump site and properly disposed. A complete list of all drilling fluid additives and mixtures to be used in the directional operation will be submitted to the Engineer along with their respective material safety data sheets.

L. Excess pipe shall be removed and the bore hole associated with this excess pipe shall be filled with flowable fill or grout, unless the area of the excess pipe is excavated and backfilled as part of the tie-in operations.

d. Hydrostatic Testing. Hydrostatic testing shall be performed in accordance with ANSI/AWWA C600 (Ductile Iron pipe) or ANSI/AWWA C605 (PVC pipe), and as specified herein.

1. Test Restrictions. Test pressure shall not be less than 150 psi at the highest point along the test section. Test pressure shall not exceed pipe or thrust-restraint design pressures. The hydrostatic test shall be of at least a two-hour duration. Test pressure shall not vary by more than ±5 psi for the duration of the test. Valves shall not be operated in either direction at a differential pressure exceeding the rated valve working pressure. The test setup should include a provision, independent of the valve, to reduce the line pressure to the rated valve pressure on completion of the test. The valve can then be opened enough to equalize the trapped pressure with the line pressure, or the valve can be fully opened if desired. The test pressure shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves, or butterfly valves.

2. Pressurization. After the pipe has been laid, all newly-laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of at least 150 psi at the point of testing. Each valve section of pipe shall be slowly filled with water, and the specified test pressure shall be applied using a pump connected to the pipe. Valves shall not be operated in either the opened or the closed direction at differential pressures above the rated pressure. The system should be allowed to stabilize at the test pressure before conducting the hydrostatic test.

3. Air Removal. Before applying the specified test pressure, air shall be expelled completely from the section of piping under test. If permanent air vents are not located at all high points, corporation cocks shall be installed at these points to expel air as the line is filled with water. After the air has been expelled, the corporation cocks shall be closed and test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and the pipe plugged or left in place as required.

4. Examination. Any exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damage or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure test shall be repaired or replaced with reliable material, and the test shall be repeated until satisfactory results are obtained.

5. Testing Allowance Defined. Testing allowance shall be defined as the quantity of makeup water that must be supplied into the newly-laid pipe or any valved section thereof to

maintain pressure within 5 psi of the specified test pressure after the pipe has been filled with water and the air has been expelled. Testing pressure shall not be measured by a drop in pressure in a test section over a period of time.

6. Testing Allowance. No pipe installation will be accepted if the amount of makeup water is greater than that determined by the following formula:

Where:

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

L = testing allowance (makeup water), in gallons per hour
S = length of pipe section tested, in feet
D = nominal diameter of the pipe, in inches
P = average test pressure during the hydrostatic test, in pounds per square inch (gauge)

7. Hydrants in Test Section. When hydrants are in the test section, the test shall be made against the main valve in the hydrant.

8. Acceptance. Acceptance shall be determined on the basis of testing allowance. If any test of laid pipe discloses a testing allowance greater than that specified, repairs or replacements shall be accomplished. After this work has been done, the tests shall be repeated. Final acceptance of the lines will not be made until satisfactory tests are obtained.

e. Disinfection and Testing of Water Main. Water mains shall be disinfected and pass bacteriological test prior to hydrostatic testing. All pressure testing and disinfection of water mains shall be in accordance with these specifications, and shall be included in the cost of construction.

The effectiveness of disinfection depends, in large measure, on maintaining clean pipes and avoiding major contamination during construction. Therefore, it is strongly recommended that sanitary practices be used for handling and installing pipe, valves, fittings, and accessories.

The interiors of pipes, fittings, and valves shall be protected from contamination. Pipe delivered for construction shall be strung to minimize the entrance of foreign material. All openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons, such as rest breaks or meal periods. Rodent proof plugs may be used when watertight plugs are not practicable and when thorough cleaning will be performed by flushing or other means.

1. The Flint Water Department will disinfect the water main and appurtenances using the continuous feed method outlined in ANSI/AWWA C651. Either calcium hypochlorite (HTH) containing 65 percent available chlorine by weight or liquid sodium hypochlorite containing approximately 10 percent available chlorine, conforming with ANSI/AWWA B300, will be used for disinfection.

2. The Contractor shall provide all hoses and personnel needed to flush the mains in a manner that is safe and will not damage adjacent property. The Contractor shall not operate

any existing valve. Water Department personnel will control water flow with assistance from the Contractor.

3. Disinfectant Procedures.

A. Place 4 ounces minimum (½ cup) of HTH granules in each length of pipe as it is installed (optional).

B. Fill the main and appurtenances, including hydrants, with water from the distribution system through corporations at a rate of approximately 1 foot per second as follows:

Nominal Pipe Size

Size (inches)	Rate (gallons per minute)
6	80
8	160
12	360
16	640
24	1,410

Note: The existing distribution system shall be protected from backflow caused by hydrostatic pressure tests and disinfection procedures. The Contractor shall commence filling the main before 9 a.m.

C. Allow a minimum of two hours contact time with the HTH in the new main (if Step A is used).

D. With assistance from the Water Department, flush the main at a minimum velocity of 3.0 feet per second.

E. Chlorinate the main and appurtenances, including hydrants, using the "continuous feed method" as follows:

Water from the existing distribution system or other approved source shall be made to flow at a constant metered rate into the new main at a point not more than 10 feet downstream from the beginning of the new main.

Water entering the main shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 50 mg/L (50 ppm) free chlorine. Chlorine concentration will be measured by the Water Department at regular intervals using appropriate chlorine test kits or other approved method to ensure even distribution throughout the main.

(1) The chlorinated water shall be retained in the main for at least 24 hours during which time valves and hydrants shall be operated to ensure disinfection at the end of this 24-hour period.

(2) The treated water in all portions of the main after the 24-hour period shall have a residual of not less than 10 mg/L (10ppm) free chlorine.

4. Flushing Chlorinated Water. Heavily chlorinated water shall be flushed from the main and appurtenances until the chlorine measurements in the water leaving the main is absent or no higher than that normally maintained in the distribution system. Disposal of chlorinated water during flushing operations shall conform with AWWA Standard C655 (Field Dechlorination).

5. Bacteriological Samples. After the satisfactory chlorination of the mains has been completed as described above, the chlorinated water flushed out and the mains filled with potable water, the Water Department will take for analysis two consecutive bacteriological samples of the water in the mains, 24 hours apart. If the analysis of the samples shows the water to be non-potable as a result of unsatisfactory disinfection of the mains, the mains shall be re-chlorinated at the Contractor's expense until satisfactory samples are obtained.

f. Final Connections to Existing Mains. Water mains and appurtenances must be completely installed, flushed, disinfected, and have satisfactory bacteriological sample results received before permanent connections are made to the active distribution system. Sanitary construction practices shall be followed during installation of the final connection so that there is no contamination of the new or existing water main with foreign material or groundwater.

1. Disinfection of Fittings and Pipe Used for Connection. The new pipe, fittings, and valves required for the connections may be spray-disinfected or swabbed with a minimum of 1 percent to 5 percent solution of chlorine just prior to being installed if the total length of the connection from the end of a new main to the existing main is equal to or less than 18 feet. If the length is greater than 18 feet, the pipe required for the connection must be set up above ground, disinfected and bacteriological samples taken as described in the disinfection section above. After satisfactory bacteriological sample results have been received for the "pre-disinfected" pipe, the pipe can be used in connecting the new main to the active distribution system. Between the time the satisfactory bacteriological sample results are received and the time that the connection piping is installed, the ends of the piping must be sealed with plastic wrap, watertight plugs, or caps.

2. Flushing. To assure complete removal of foreign materials that might have entered the main during the course of the installation, the new water main shall be thoroughly flushed following connection to the existing system or any other procedure that exposes new components to external sources of contamination. This is in addition to flushing required under "Disinfection and Testing of Water Main." With assistance from the Water Department, flushing shall be done following connection to the existing water system, but before any service connections are made. The new water main shall be flushed again after all final tie-ins are completed. The Contractor shall coordinate flushing operations by submitting a support request to the Water Department at least one working day in advance. If no fire hydrants or other convenient outlets for flushing are available, the Contractor shall install temporary hydrants for flushing at no additional cost.

Whenever practical, initial connection to the existing system shall be to a larger main so that desired flushing velocity can be achieved. All valves and hydrants shall be fully opened and closed under water pressure to ensure proper operations during flushing and to dislodge foreign material.

Flush new mains, hydrant leads, and service connections to fire system risers thoroughly before connection is made to system piping. Flushing shall be of sufficient magnitude and duration to flush all foreign material out of the lines, valves, and hydrants. The flushing velocity shall be a minimum of 3.0 feet per second (5 feet per second preferred) for non-fire protection lines. Where the main supplies a fire protection system, the velocity shall meet the NFPA 24 requirement of 10 feet per second. The flow required to produce a velocity of 10 feet per second in various pipe sizes is as follows:

Nominal Pipe Size Inches (in)	Gallons per Minute (gpm)
6	880
8	1560
10	2240
12	3520
24	14,100

Direct flushing water away from traffic, pedestrians, and private property. Prevent erosion damage to streets, lawns, and yards by the use of tarpaulins and lead-off discharge devices.

g. Abandoning Water Mains. Mix flowable fill in automated batch plant and deliver it to site in ready-mix trucks. Performance additives may be added at placement site if required by mix design. Use concrete or grout pumps capable of continuous delivery at planned placement rate.

Abandon existing water mains underneath roadways and paved areas by completely filling pipes with flowable fill. Abandon manholes and other structures by removing the top 3 feet and filling with flowable fill, together with ballast as applicable, within depth of structures left in place.

Place flowable fill to fill volume between manholes or valves. Continuously place flowable fill from manhole to manhole or valve to valve with no intermediate pour points, but not exceeding 500 feet in length.

Have filling operation performed by experienced crews with equipment to monitor density of flowable fill and to control pressure.

Pump flowable fill through bulkheads constructed for placement of two 2-inch PVC pipes or use other suitable construction methods to contain flowable fill in lines to be abandoned. These pipes will act as injection points or vents for placement of flowable fill.

Place flowable fill under pressure flow conditions into properly vented open system until flowable fill emerges from vent pipes. Pump flowable fill with sufficient pressure to overcome friction and to fill pipes from downstream end, to discharge at upstream end when applicable.

Inject flowable fill through replaced ballast using grouting equipment and series of grout pipes discharging at bottom of placement, allowing fill to rise through ballast effectively filling all voids. Alternatively, sequentially place individual pieces of ballast at same time as flowable fill is placed. Do not fill with ballast more than 50 percent of volume at any level, to prevent nesting and void formation.

Remediate placement of flowable fill which does not fill voids in pipe and in manholes or other structures, or where voids develop due to excessive shrinkage or bleeding of fill, by using pressure grouting either from inside sewer or from surface.

Clean inside surface of pipes at least 12 inches from ends to achieve firm bond and seal grout plug or manufactured plug to pipe surface. Similarly, clean and prepare exterior pipe surface if manufactured cap is to be used.

When using grout plug, place temporary plug or bulkhead approximately 12 inches inside pipe. Fill pipe end completely with dry-pack grout mixture.

When using manufactured plug or cap, install fitting as recommended by manufacturer's instructions, to form water tight seal.

Backfill to surface, above pipe or structures left in place, with flowable fill in restricted areas, compacted bank run sand in unrestricted areas to be paved or select fill in unrestricted areas outside of pavement.

Collect and dispose of excess flowable fill material and other debris in accordance with local requirements or as directed by the AW Project Manager.

h. Disinfection When Cutting into or Repairing Existing Mains. The following procedures apply primarily when existing mains are wholly or partially dewatered. After the appropriate procedures have been completed, the existing main may be returned to service prior to the completion of bacteriological testing in order to minimize the time customers are without water. Leaks or breaks that are repaired with clamping devices while the mains remain full of pressurized water may present little danger of contamination and, therefore, may not require disinfection.

1. Trench Treatment. When an existing main is opened, either by accident or by design, the excavation will likely be wet and may be badly contaminated from nearby sewers. Liberal quantities of hypochlorite applied to open trench areas will lessen the danger from this pollution. Tablets have the advantage in this situation because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation.

2. Swabbing with Hypochlorite Solution. The interior of all pipes and fittings (particularly couplings and sleeves) used in making the repair shall be swabbed or sprayed with a 1 percent hypochlorite solution before they are installed.

3. Flushing. Thorough flushing is the most practical means of removing contamination introduced during repairs. If the valve and hydrant locations permit, flushing toward the work location from both directions is recommended until discolored water is eliminated.

4. Slug Chlorination. Where practical, in addition to the procedures previously described, the section of the main in which the break is located shall be isolated, all service connections shut off and the section flushed and chlorinated by the slug method. The dose may be increased to as much as 300 mg/L (300 ppm) and the contact time reduced to as little as 15 minutes. After chlorination, flushing shall be resumed and continued until discolored water is eliminated and the chlorine concentration in the water exiting the main is

no higher than the prevailing water in the distribution system or that which is acceptable for domestic use.

5. Bacteriological Samples. Bacteriological samples shall be taken after repairs are completed to provide a record for determining the effectiveness of the procedure. If the direction of flow is unknown, then samples shall be taken on each side of the main break. If positive bacteriological samples are recorded, the situation shall be evaluated by the Water Department to determine corrective action. Daily sampling shall be continued until two consecutive negative samples are recorded.

i. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price for the following pay items:

Contract Item (Pay Item)	**Pay Unit**
Water Main, ___ inch, Directional Drill	Foot
Water Main,____ inch, Cut and Plug, Modified	Each
Water Main, Connect New ___ inch to Existing ___ inch	Each
Abandon Water Main, _ inch	Foot

All additional work necessary for the completion of this work but not specifically listed as a pay item will be deemed included in one or more of the contract items listed in the proposal.

Water Main, Directional Drill, of the type, diameter and class specified, directional drilled, will be paid for at the contract unit price per linear foot. Price paid shall be payment in full for labor, material, and equipment necessary for designing, furnishing and installing directional bored water main and shall include, but is not limited to, specials and fittings, excavation, sheeting and bracing, shoring, draining, dewatering, excavating utility crossings, potholing, boring water main, jointing, grouting, testing, disinfecting, backfilling boring pits (including backfill with special materials where specified), excavating and installing fittings, disposal of excess excavated material, temporary blowoffs, thrust blocks, thrust restrainers, encasement, barricading, restoration, final cleanup, connections to existing mains and all other items necessary to complete the job, whether specifically mentioned or implied.

Measurement for water main directional drill will be in linear feet along the centerline of the pipe taken from end-to-end with no reduction for fittings, boring pits, and valves except for special structures, sections or connections for which either lump sum or unit prices have been taken will be deducted from the total length of water main and will be paid for at the prices bid therefore.

Water Main, Cut and Plug, Modified includes providing and installing plug or cap, polyethylene encasement, retainer glands, and any other materials needed to properly install specified items. Payment includes the removal of any valves, valve boxes, or valve manholes rendered unnecessary, bulkheading abandoned pipe with concrete and excavation and backfill with Class II sand or approved onsite material.

Water Main, Connect New ___ inch to Existing ___ inch includes providing and installing bends, couplings, retainer glands, and any other materials needed to properly make the connection. Pay item includes coordination deemed necessary by the Engineer with the city and

adjacent property owners. Payment includes the removal of any valves, valve boxes, or valve manholes rendered unnecessary by the new connection, bulkheading abandoned pipes with concrete and excavation and backfill with Class II sand or approved onsite material. Water main will be paid separately as measured between the connection point to the existing main and the center of the new main. Water valves will also be paid separately.

Abandon Water Main, _ inch of the size specified will be paid for at the contract unit price for the actual length of water main abandoned in-place. Payment for abandoning water main includes providing all work and materials required to completely fill the pipe with flowable fill.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
NON-STRUCTURAL FLOWABLE FILL

C&T:TES 1 of 1 C&T:APPR:DMG:JAB:08-17-11

a. Description. This work consists of furnishing and placing non-structural flowable fill for abandoning pipes and miscellaneous structures; constructing miscellaneous bulkheads or forms; and backfilling. This specification is not intended to address flowable fill used as structural backfill.

b. Materials. Supply non-structural flowable fill consisting of a mixture of Portland cement, fly ash, sand (2NS) and water. Use materials conforming to the standard specifications except as modified by this special provision. All non-structural flowable fill is intended to be removable using conventional mechanical excavation methods.

Use either Type I or IA Portland cement conforming to section 901 of the Standard Specifications for Construction and Class F or C fly ash as specified by ASTM C 618 except that there is no limit on loss on ignition.

Produce a mix of cement, fly ash, sand and water in the following proportions.

Portland Cement	50 lb/cyd
Fly Ash	500 lb/cyd
Sand	2850 lb/cyd
Water	approx. 376 lb/cyd (sufficient to produce desired flowability)

c. Construction. Produce and deliver the non-structural flowable fill at a minimum temperature of 50 degrees F. Transport mixture to the point of placement in a revolving drum mixer or agitator.

Secure all pipes and conduits within the backfill area to counteract the buoyant effect of non-structural flowable fill. Place the material evenly around manholes and in utility trenches to avoid dislocating pipes and conduits.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	**Pay Unit**
Flowable Fill, Non-Structural	Cubic Yard

Flowable Fill, Non-Structural includes all labor, equipment and materials required to supply and place flowable fill for the purpose of abandoning pipes and miscellaneous structures, and includes any necessary miscellaneous bulkheads for forms.

CITY OF FLINT
SPECIAL PROVISION
FOR
PERMIT REQUIREMENTS

ROWE 1 of 1 2/1/19

a. Description. The work includes all labor, equipment and materials required to obtain and pay for all required permits and licenses necessary to the lawful prosecution of the work.

All Provisions of Section 107.02 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction shall apply except as stated herein.

Contractor shall obtain and complete required information on the SESC permit from the Genesee County Drain Commission Water and Waste Services (GCDC-WWS) and pay all applicable permit fees and furnish all required bonds. The permit fees are estimated to be $100, Contractor to confirm with GCDC-WWS prior to bidding. A copy is on file at the GCDC-WWS. The Contractor is also responsible to provide a $3,000 cash or surety bond to the GCDC-WWS. No claims for additional compensation or extension of contract time will be considered or approved resulting from cost or time to comply with GCDC-WWS requirements.

Genesee County Drain Commission – Waste and Water Services
SESC Contact: Mark Stephens
G-4610 Beecher Road, Flint, MI 48853-2617
(810) 732-7870
mstephens@gcdcwws.com
Torrey Road Bridge (L19-010)

The above is for information only and is not intended to be a complete list of possible permit requirements.

a. Materials. None specified.

b. Construction. None specified.

c. Measurement and Payment. All permit fees, as described in Section 107 of the MDOT Standard Specifications for Construction, will be paid for using the following pay item:

Pay Item	**Pay Unit**
Reimbursed Permit Fees	Dollar

Reimbursed Permit Fees includes the reimbursement for the eligible permit fees with supporting receipts or other proof of payment documentation from the Contractor.

CITY OF FLINT
NOTICE TO BIDDERS
FOR
COORDINATION CLAUSE

The Contractor is hereby notified that there may be other construction projects in the vicinity of this project under construction during the contract time. The Contractor shall coordinate their operations with the Contractor performing work on other projects within or adjacent to the Construction Influence Area (CIA). These projects include, but are not limited to:

Michigan Department of Transportation
I-69 Reconstruction (Ballenger Hwy to Fenton Rd)
JN 115799A
Start Date: On-going
Completion Date: September 19, 2020

The Contractor's attention is called to the requirements of cooperation with others as covered in Article 104.08 of the 2012 Michigan Department of Transportation Standard Specifications for Construction. Other contracts or maintenance operations may occur during the life of the project.

No claim for extra compensation in contract unit prices will be allowed on account of delay or failure of others to complete work units as scheduled.

NOTICE TO BIDDERS
FOR
UTILITY COORDINATION

The Contractor shall cooperate and coordinate construction activities with the owners of utilities as stated in Section 104.08 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction. In addition, for the protection of underground utilities, the Contractor shall follow the requirements in Section 107.12 of the MDOT 2012 Standard Specifications for Construction. Contractor delay claims, resulting from a utility, will be determined based upon Section 108.09 of the MDOT 2012 Standard Specifications for Construction.

For protection of underground utilities and in conformance with Public Act 53, 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 three full working days, excluding Saturdays, Sundays, and holidays prior to beginning each excavation in areas where public utilities have not been previously located. Members will thus be routinely notified. This does not relieve the Contractor of the responsibility of notifying utility owners who may not be a part of the “Miss Dig” alert system.

Public Utilities

The following Public Utilities have facilities located within the Right-of-Way:

AT&T
Matt Silwa
248-877-0762
Ms6913@att.com

Sprint
Gerry A. Crain
847-445-1869
gerry.a.crain@sprint.com

City of Flint
Mark Adas
810-610-7771
madas@cityofflint.org

Consumers Energy – Electric
Tracy Mahar
517-204-9018
tracy.mahar@cmsenergy.com

Flint City Water Service Center
Cheri Priest (Sanitary Sewer)
810-766-7079
cpriest@cityofflint.com

Consumers Energy – Gas
Matthew Cox
810-760-3486
Matthew.Cox@cmsenergy.com

Flint City Water Service Center
Rob Binscik (Water Main)
810-766-7202
rbinscik@cityofflint.com

The owners of existing service facilities that are within grading or structure limits will move them to locations designated by the Engineer or will remove them entirely from the highway Right-of-Way. Owners of Public Utilities will not be required by the County to move additional poles or structures in order to facilitate the operation of construction equipment unless it is determined by the Engineer that such poles or structures constitute a hazard to the public or are extraordinarily dangerous to the Contractor's operations.

The existing utilities shown on the plans represent the best information available as obtained from survey and existing records. This information does not relieve the Contractor of the responsibility of protecting all existing utilities, in case utilities have been constructed or removed since the survey date or if utilities are encountered in different locations, or if any utilities are not shown on the plans.

All existing utilities shall be located as to both horizontal and vertical position prior to starting any structure removal or excavation. Cost shall be included in the project.

The contractor's attention is directed to the requirements for cooperation with others, as covered in Section 104.08 of the MDOT 2012 Standard Specification for Construction.

NOTICE OF AUTHORIZATION

Permit Number: WRP014497 v. 1
Site Name: 25-Torrey Road over the Carman Creek

Date Issued: November 26, 2018
Expiration Date: November 26, 2023

The Michigan Department of Environmental Quality, Water Resources Division, P.O. Box 30458, Lansing, Michigan 48909-7958, under provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; specifically:

- ☒ Part 31, Floodplain Regulatory Authority of the Water Resources Protection.
- ☒ Part 301, Inland Lakes and Streams.
- ☐ Part 303, Wetlands Protection.
- ☐ Part 315, Dam Safety.
- ☐ Part 323, Shorelands Protection and Management.
- ☐ Part 325, Great Lakes Submerged Lands.
- ☐ Part 353, Sand Dunes Protection and Management.

Authorized Activities: Remove the existing bridge and construct a 61.7 foot long, 25.0 foot span, 14.0 foot rise concrete box culvert at the Torrey Road crossing of Carman Creek. All activities shall be completed in accordance with approved plans and conditions of this permit.

To be conducted at property located in: Genesee County, Waterbody: Carman Creek
Section 24, Town 07N, Range 06E, City of Flint

Permittee:
City of Flint
1101 Saginaw Street
Flint, MI 48502

John Skubinna
Transportation Review Unit
Water Resources Division
517-256-1469

This notice must be displayed at the site of work.
Laminating this notice or utilizing sheet protectors is recommended.
Please refer to the above permit number with any questions or concerns.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER RESOURCES DIVISION PERMIT

Issued To:

City of Flint
1101 Saginaw Street
Flint, MI 48502

Permit No: WRP014497 **v.1**
Submission No.: HNH-MCF6-JP4M6
Site Name: 25-Torrey Road over the Carman Creek
Issued: November 26, 2018
Revised:
Expires: November 26, 2023

This permit is being issued by the Michigan Department of Environmental Quality (MDEQ), Water Resources Division, under the provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); specifically:

- ☒ Part 301, Inland Lakes and Streams
- ☐ Part 303, Wetlands Protection
- ☐ Part 315, Dam Safety
- ☒ Part 31, Water Resources Protection (Floodplain Regulatory Authority)
- ☐ Part 323, Shorelands Protection and Management
- ☐ Part 325, Great Lakes Submerged Lands
- ☐ Part 353, Sand Dunes Protection and Management

Permission is hereby granted, based on permittee assurance of adherence to State of Michigan requirements and permit conditions, to:

Authorized Activities: Remove the existing bridge and construct a 61.7 foot long, 25.0 foot span, 14.0 foot rise concrete box culvert at the Torrey Road crossing of Carman Creek. All activities shall be completed in accordance with approved plans and conditions of this permit.

Waterbody Affected: Carman Creek
Property Location: Genesee County, City of Flint, Town/Range/Section 07N06E24, Property Tax No.

Authority granted by this permit is subject to the following limitations:

A. Initiation of any work on the permitted project confirms the permittee's acceptance and agreement to comply with all terms and conditions of this permit.
B. The permittee, in exercising the authority granted by this permit, shall not cause unlawful pollution as defined by Part 31 of the NREPA.
C. This permit shall be kept at the site of the work and available for inspection at all times during the duration of the project or until its date of expiration.
D. All work shall be completed in accordance with the approved plans and specifications submitted with the application and/or plans and specifications attached to this permit.
E. No attempt shall be made by the permittee to forbid the full and free use by the public of public waters at or adjacent to the structure or work approved.
F. It is made a requirement of this permit that the permittee give notice to public utilities in accordance with 2013 PA 174 (Act 174) and comply with each of the requirements of Act 174.
G. This permit does not convey property rights in either real estate or material, nor does it authorize any injury to private property or invasion of public or private rights, nor does it waive the necessity of seeking federal assent, all local permits, or complying with other state statutes.
H. This permit does not prejudice or limit the right of a riparian owner or other person to institute proceedings in any circuit court of this state when necessary to protect his rights.
I. Permittee shall notify the MDEQ within one week after the completion of the activity authorized by this permit by completing and forwarding the attached preaddressed postcard to the office addressed thereon.

J. This permit shall not be assigned or transferred without the written approval of the MDEQ.
K. Failure to comply with conditions of this permit may subject the permittee to revocation of permit and criminal and/or civil action as cited by the specific state act, federal act, and/or rule under which this permit is granted.
L. All dredged or excavated materials shall be disposed of in an upland site (outside of floodplains, unless exempt under Part 31 of the NREPA, and wetlands).
M. In issuing this permit, the MDEQ has relied on the information and data that the permittee has provided in connection with the submitted application for permit. If, subsequent to the issuance of a permit, such information and data prove to be false, incomplete, or inaccurate, the MDEQ may modify, revoke, or suspend the permit, in whole or in part, in accordance with the new information.
N. The permittee shall indemnify and hold harmless the State of Michigan and its departments, agencies, officials, employees, agents, and representatives for any and all claims or causes of action arising from acts or omissions of the permittee, or employees, agents, or representative of the permittee, undertaken in connection with this permit. The permittee's obligation to indemnify the State of Michigan applies only if the state: (1) provides the permittee or its designated representative written notice of the claim or cause of action within 30 days after it is received by the state, and (2) consents to the permittee's participation in the proceeding on the claim or cause of action. It does not apply to contested case proceedings under the Administrative Procedures Act, 1969 PA 306, as amended, challenging the permit. This permit shall not be construed as an indemnity by the State of Michigan for the benefit of the permittee or any other person.
O. Noncompliance with these terms and conditions and/or the initiation of other regulated activities not specifically authorized shall be cause for the modification, suspension, or revocation of this permit, in whole or in part. Further, the MDEQ may initiate criminal and/or civil proceedings as may be deemed necessary to correct project deficiencies, protect natural resource values, and secure compliance with statutes.
P. If any change or deviation from the permitted activity becomes necessary, the permittee shall request, in writing, a revision of the permitted activity from the MDEQ. Such revision request shall include complete documentation supporting the modification and revised plans detailing the proposed modification. Proposed modifications must be approved, in writing, by the MDEQ prior to being implemented.
Q. This permit may be transferred to another person upon written approval of the MDEQ. The permittee must submit a written request to the MDEQ to transfer the permit to the new owner. The new owner must also submit a written request to the MDEQ to accept transfer. The new owner must agree, in writing, to accept all conditions of the permit. A single letter signed by both parties that includes all of the above information may be provided to the MDEQ. The MDEQ will review the request and, if approved, will provide written notification to the new owner.
R. Prior to initiating permitted construction, the permittee is required to provide a copy of the permit to the contractor(s) for review. The property owner, contractor(s), and any agent involved in exercising the permit are held responsible to ensure that the project is constructed in accordance with all drawings and specifications. The contractor is required to provide a copy of the permit to all subcontractors doing work authorized by the permit.
S. Construction must be undertaken and completed during the dry period of the wetland. If the area does not dry out, construction shall be done on equipment mats to prevent compaction of the soil.
T. Authority granted by this permit does not waive permit requirements under Part 91, Soil Erosion and Sedimentation Control, of the NREPA, or the need to acquire applicable permits from the County Enforcing Agent (CEA).
U. Authority granted by this permit does not waive permit requirements under the authority of Part 305, Natural Rivers, of the NREPA. A Natural Rivers Zoning Permit may be required for construction, land alteration, streambank stabilization, or vegetation removal along or near a natural river.
V. The permittee is cautioned that grade changes resulting in increased runoff onto adjacent property is subject to civil damage litigation.
W. Unless specifically stated in this permit, construction pads, haul roads, temporary structures, or other structural appurtenances to be placed in a wetland or on bottomland of the water body are not authorized and shall not be constructed unless authorized by a separate permit or permit revision granted in accordance with the applicable law.
X. For projects with potential impacts to fish spawning or migration, no work shall occur within fish spawning or migration timelines (i.e., windows) unless otherwise approved in writing by the Michigan Department of Natural Resources, Fisheries Division.
Y. Work to be done under authority of this permit is further subject to the following special instructions and specifications:
    1. Authority granted by this permit does not waive permit or program requirements under Part 91 of the NREPA or the need to acquire applicable permits from the CEA. To locate the Soil Erosion Program Administrator for your county, visit www.mi.gov/deqstormwater and select "Soil Erosion and Sedimentation Control Program" under "Related Links."
    2. The authority to conduct the activity as authorized by this permit is granted solely under the provisions of the governing act as identified above. This permit does not convey, provide, or otherwise imply approval of any other governing act, ordinance, or regulation, nor does it waive the permittee's obligation to acquire any local, county, state, or federal approval or authorization necessary to conduct the activity.
    3. No fill, excess soil, or other material shall be placed in any wetland, floodplain, or surface water area not specifically authorized by this permit, its plans, and specifications.

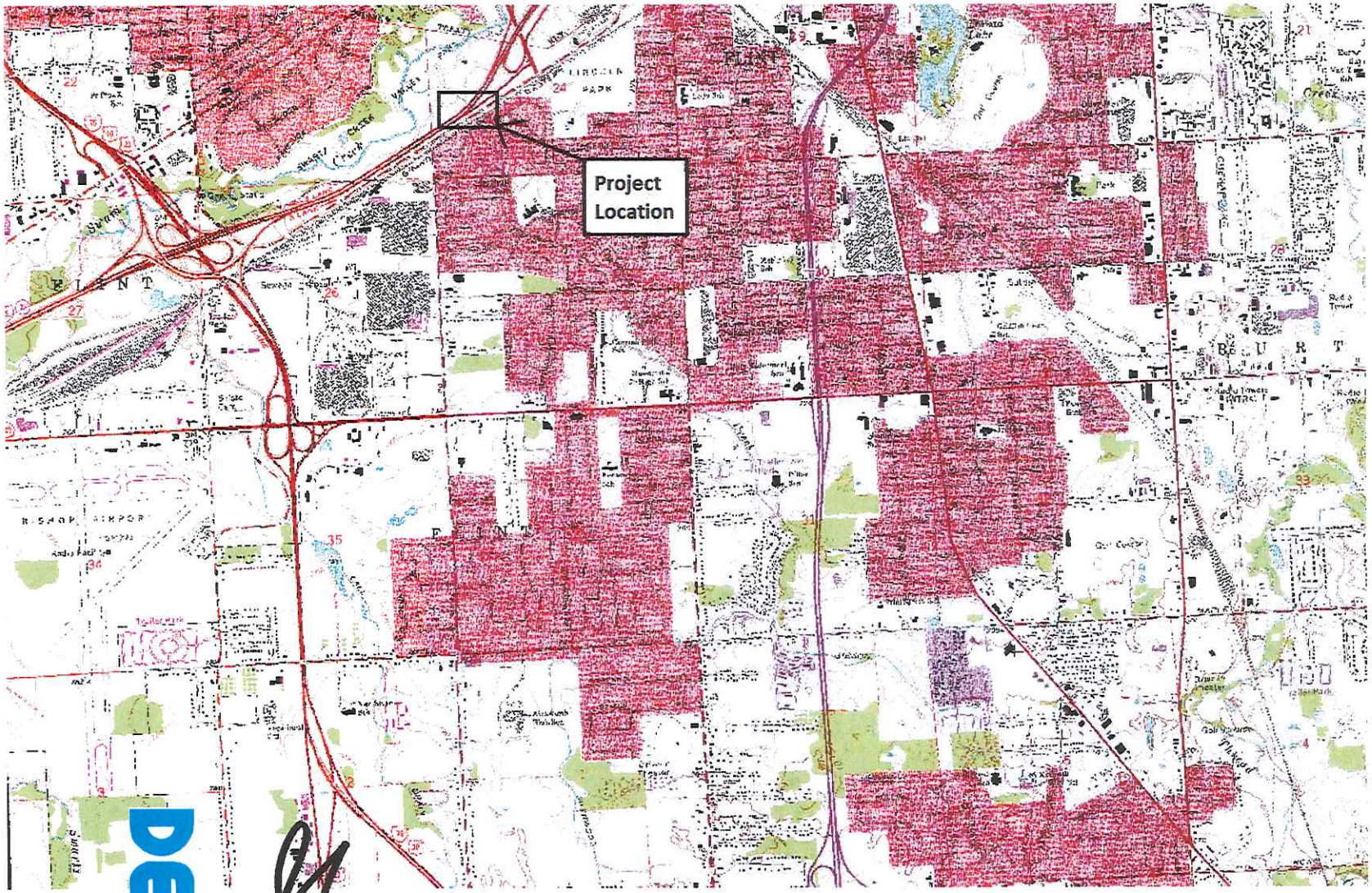
4. This permit does not authorize or sanction work that has been completed in violation of applicable federal, state, or local statutes.
5. The permit placard shall be kept posted at the work site, in a prominent location at all times for the duration of the project, or until permit expiration.
6. This permit is being issued for the maximum time allowed and no extensions of this permit will be granted. Initiation of the construction work authorized by this permit indicates the permittee's acceptance of this condition. The permit, when signed by the MDEQ, will be for a five-year period beginning on the date of issuance. If the project is not completed by the expiration date, a new permit must be sought.
7. This permit does not authorize or sanction work that has been completed in violation of applicable federal, state, or local statutes.
8. The permittee is responsible for acquiring all necessary easements or rights-of-way before commencing any work authorized by this permit. All construction operations relating to or part of this project shall be confined to the existing right-of-way limits or other acquired easements.
9. Temporary soil erosion and sedimentation control measures shall be installed before or upon commencement of the earth change and shall be maintained daily. Temporary soil erosion and sedimentation control measures shall be maintained until permanent soil erosion and sedimentation control measures are in place and the area is stabilized. Permanent soil erosion and sedimentation control measures for all slopes, channels, ditches, or any disturbed area shall be installed within five (5) calendar days after final grading or the final earth change has been completed.
10. All raw areas in uplands resulting from the permitted construction activity shall be effectively stabilized with sod and/or seed and mulch (or other technology specified by this permit or project plans) in a sufficient quantity and manner to prevent erosion and any potential siltation to surface waters or wetlands. Temporary stabilization measures shall be installed before or upon commencement of the permitted activity and shall be maintained until permanent measures are in place. Permanent measures shall be in place within five (5) days of achieving final grade.
11. All raw earth within 100 feet of a lake, stream, or wetland that is not brought to final stabilization by the end of the active growing season shall be temporarily stabilized with mulch blankets in accordance with the following dates: September 20th for the Upper Peninsula, October 1st for the Lower Peninsula north of US-10, and October 10th for the Lower Peninsula south of US-10.
12. This permit placard shall be kept posted at the work site, in a prominent location at all times for the duration of the project, or until permit expiration.
13. This permit is being issued for the maximum time allowed and no extensions of this permit will be granted. Initiation of the construction work authorized by this permit indicates the permittee's acceptance of this condition. The permit, when signed by the MDEQ, will be for a five-year period beginning at the date of issuance. If the project is not completed by the expiration date, a new permit must be sought.
14. All dredge/excavated spoils including organic and inorganic soils, vegetation, and other material removed shall be placed on upland (non-wetland, non-floodplain or non-bottomland), prepared for stabilization, revegetated and reseeded with native Michigan species appropriate to the site, and mulched in such a manner so as to prevent and ensure against erosion of any material into any waterbody, wetland, or floodplain.
15. During removal or repair of the existing structure, every precaution shall be taken to prevent debris from entering any watercourse. Any debris reaching the watercourse during the removal and/or reconstruction of the structure shall be immediately retrieved from the water. All material shall be disposed of in an acceptable manner consistent with local, state, and federal regulations.
16. Prior to the removal of the existing structures, cofferdams of steel sheet piling, gravel bags, clean stone, coarse aggregate, concrete or other acceptable barriers shall be installed to isolate all construction activity from the water. The barriers shall be maintained in good working order throughout the duration of the project. Upon project completion, the accumulated materials shall be removed and disposed of at an upland site.
17. All cofferdam and temporary steel sheet pile shall then be removed in its entirety, unless specifically shown to be left in plan on the accepted plans. Cofferdam and sheet pile that is left in place shall be cut off at the elevation shown on the plans and shall be a minimum of one foot below the stream bottom.
18. The existing structure shall be kept open to pass the stream flow during removal of the existing road fill.
19. The placement of the new culvert and the initial placement of fill in the stream shall be done immediately after removal of the existing culvert. The placement shall be conducted in such a manner that all flow is immediately passed through the new culverts, allowing the major placement of fill to be done in the dry or in still water where erosion and sedimentation will be minimized. The fill material used in this initial placement shall be washed gravel, coarse aggregate, or rock and shall be placed at both ends of the culvert to a level above normal water level before backfill material is placed.

20. The culvert shall be installed to align with the center line of the existing stream at both the inlet and outlet ends and must be recessed into the stream bed to provide a natural channel substrate throughout the structure, as shown on the approved plans.
21. Road fill side slopes shall not be steeper than 1-on-2 (1 vertical to 2 horizontal) except where headwalls of reinforced concrete, mortar masonry, dry masonry, or other acceptable methods are used.
22. Road fill side slopes terminating in the stream and any raw streambanks resulting from the construction shall be stabilized with temporary measures in accordance with appropriate Best Management Practices based on site conditions, and if necessary, may be riprapped extending above the ordinary high water mark, before or upon commencement of the permitted activity. Temporary stabilization measures shall be maintained until permanent measures are in place.
23. All other road fill slopes, ditches, and other raw areas draining directly to the stream may be protected with riprap, sod and/or seed and mulch as may be necessary to provide effective erosion protection. The placement of riprap shall be limited to the minimum necessary to ensure proper stabilization of the side slopes and fill in the immediate vicinity of the structure.
24. If the project, or any portion of the project, is stopped and lies incomplete for any length of time other than that encountered in a normal work week, every precaution shall be taken to protect the incomplete work from erosion, including the placement of temporary gravel bag riprap, temporary seed and mulch, or other acceptable temporary protection.
25. No work shall be done in the stream during periods of above-normal flows except as necessary to prevent erosion.
26. No work or dredging within the water authorized by this permit is allowed from March 15 to June 30 due to critical spawning, migration, and/or recreational use periods.

Issued By:

John Skubinna
Transportation Review Unit
Water Resources Division
517-256-1469

cc: Genesee County Drain Commissioner
Genesee CEA
Ms. Michelle Conklin, Local Agency Programs, MDOT
Ms. Amanda Hemeyer, Rowe Professional Services Co
Ms. Cheri Meyer, MDEQ
Mr. Chris Clampitt, MDEQ



Torrey Rd (12th St) over the Carman Creek

BENCHMARKS

BENCHMARK #2
ELEVATION = 743.20
SET CHISELED "X" ON WEST-SOUTHWEST FLANGE BOLT OF HYDRANT, 9'± NORTH OF BACK OF CURB OF TORREY ROAD (12TH STREET) & 240'± EAST OF BRIDGE

BENCHMARK #4
ELEVATION = 741.83
SET SPIKE IN SOUTHEAST FACE OF POWER POLE, 15'± SOUTH OF BACK OF CURB OF TORREY ROAD (12TH STREET) & 160'± WEST OF BRIDGE

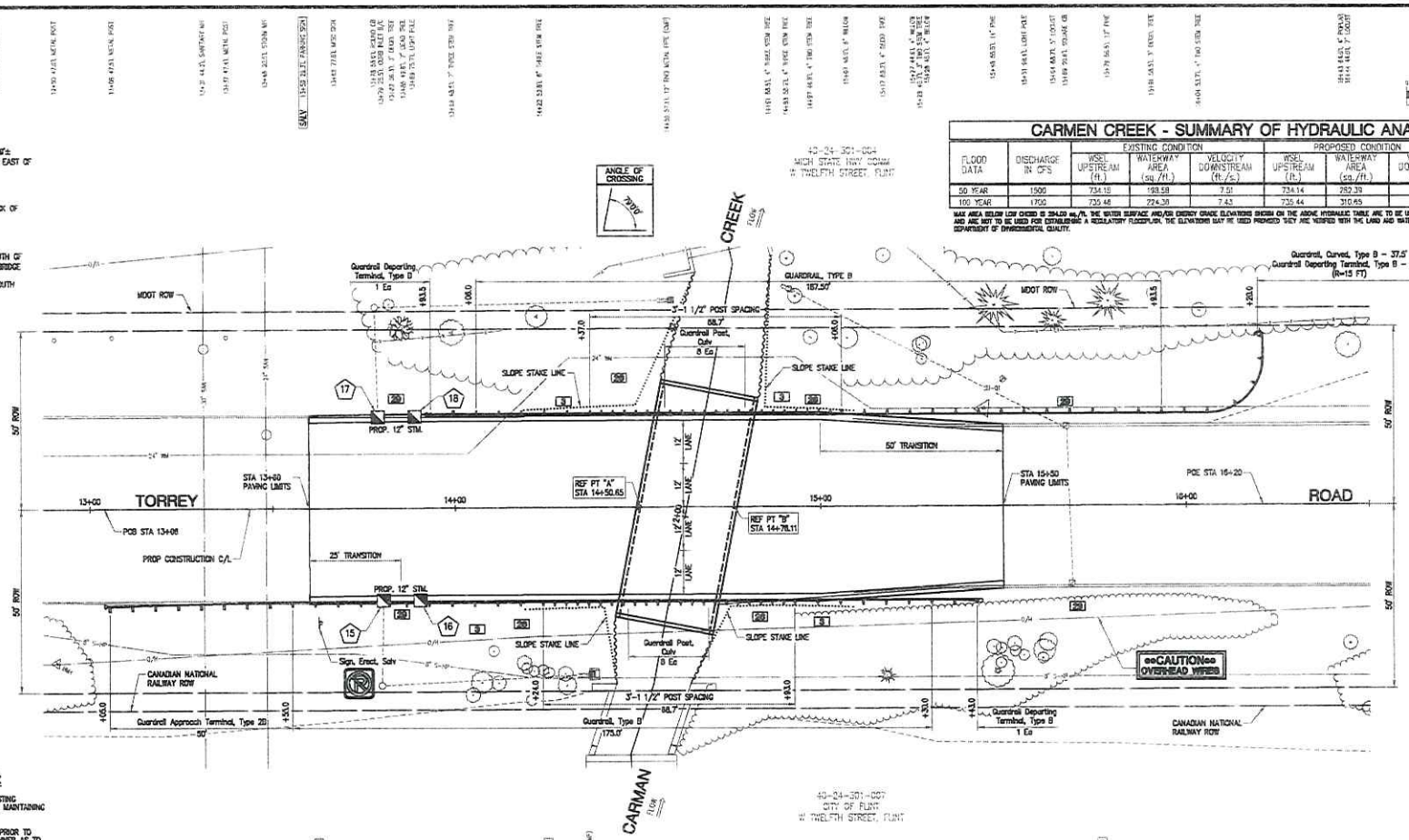
BENCHMARK #5
ELEVATION = 741.54
SET SPIKE IN SOUTHWEST FACE OF POWER POLE WITH LIGHT, 3'± SOUTH OF BACK OF CURB OF TORREY ROAD (12TH STREET) & 225'± EAST OF BRIDGE

HORIZONTAL DATUM: MICHIGAN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE NAD83 (2011)
VERTICAL DATUM: NAVD88

CARMEN CREEK - SUMMARY OF HYDRAULIC ANALYSIS

FLOOD DATA	DISCHARGE IN CFS	EXISTING CONDITION WSEL UPSTREAM (ft.)	EXISTING CONDITION WATERWAY AREA (sq./ft.)	EXISTING CONDITION VELOCITY DOWNSTREAM (ft./s.)	PROPOSED CONDITION WSEL UPSTREAM (ft.)	PROPOSED CONDITION WATERWAY AREA (sq./ft.)	PROPOSED CONDITION VELOCITY DOWNSTREAM (ft./s.)	CHANGE IN ELEV. CHANGE IN WSEL UPSTREAM
50 YEAR	1500	734.16	198.58	7.51	734.14	282.39	7.51	-0.01
100 YEAR	1700	735.48	224.38	7.43	735.44	310.65	7.43	-0.02

MAX AREA BELOW LOW CHORD IS 334.00 sq./ft. THE WATER SURFACE AND/OR ENERGY GRADE ELEVATIONS SHOWN ON THE ABOVE HYDRAULIC TABLE ARE TO BE USED FOR COMPARISON PURPOSES ONLY AND ARE NOT TO BE USED FOR ESTABLISHING A REGULATORY FLOODPLAIN. THE ELEVATIONS MAY BE USED PROVIDED THEY ARE VERIFIED WITH THE LAND AND WATER MANAGEMENT DIVISION, MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY.



PLAN
SCALE: 1" = 15'

GENERAL PLAN OF SITE NOTES:

THE WORK COVERED BY THESE PLANS INCLUDES REMOVAL OF THE EXISTING STRUCTURE, CONSTRUCTION OF THE NEW STRUCTURE, PLACING RIPRAP, MAINTAINING TRAFFIC, AND RELATED APPROACH WORK TO THE LIMITS SHOWN.

THE CONTRACTOR SHALL LOCATE ALL ACTIVE UNDERGROUND UTILITIES PRIOR TO STARTING WORK AND SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.

THE GROUND ADJACENT TO THE STRUCTURE SHALL BE GRADED BY THE CONTRACTOR TO PROVIDE DRAINAGE.

THE WATER LEVEL IS SUBJECT TO CHANGE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING A DETERMINATION OF WATER LEVELS THAT MAY EXIST DURING CONSTRUCTION.

SOIL CLASSIFIED AS UNSTABLE MATERIAL BELOW CULVERT SHALL BE UNDER CUT AND REPLACED WITH Backfill, Structure, CIP COMPACTED TO 95% OF ITS MAXIMUM UNIT WEIGHT. ACTUAL LIMITS OF EXCAVATION WILL BE DETERMINED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. COST FOR THIS WORK TO BE PAID FOR AS Excavation, Fdn AND Backfill, Structure, CIP.

TEMPORARILY STORED EXCAVATED MATERIAL SHALL BE STORED ON AN UPLAND SITE, AND SHALL NOT BE ALLOWED TO ERODE INTO THE WATERCOURSE.

MEASURES SHALL BE TAKEN TO PREVENT DEBRIS FROM FALLING FROM THE STRUCTURE INTO THE CREEK. IF DEBRIS FALLS INTO THE CREEK, IT SHALL BE REMOVED IMMEDIATELY.

THE CARMAN CREEK AT TORREY ROAD IN SECTION 24, T7N-R8E, CITY OF FLINT, GENESEE COUNTY, HAS A DRAINAGE AREA OF 12.9 SQUARE MILES. THE 50, 100, 500, AND 1000 CFS CHANGE PEAK FLOWS ARE ESTIMATED TO BE 1000, 1500, 1700, AND 2200 CFS, RESPECTIVELY.

PLAN ELEVATIONS REFER TO NAVD88 DATUM.

REFERENCE POINTS ARE LOCATED AT THE INSIDE EDGE

PROPOSED STORM SEWER STRUCTURE TABLE						
STRUCT NO.	DIA.	COVER TYPE	RIM ELEVATION	INVERT	STATION	OFFSET
15	48"	K	T/C=738.03	12" 733.15 NE (PVC Pipe)	13+80.3	25.0 R
16	48"	K	T/C=738.05	12" 733.20 SW (PVC Pipe)	13+90.3	26.0 R
17	48"	K	T/C=738.03	12" 733.15 NE (PVC Pipe)	13+78.9	25.9 L
18	48"	K	T/C=738.07	12" 733.20 SW (PVC Pipe)	13+88.9	26.0 L

PROPOSED STORM SEWER PIPE TABLE						
PIPE NUMBER	DIAMETER	PAY ITEM	TOTAL LENGTH	SLOPE	TRENCH DETAIL A (T.D. A)	TRENCH DETAIL B (T.D. B)
10	12"	Sewer, Cl A, 12 Inch, Tr Det B	10'	0.50%	0'	10'
11	12"	Sewer, Cl A, 12 Inch, Tr Det B	10'	0.50%	0'	10'

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DATE OF PLAN: OCTOBER 2018

ROWE PROFESSIONAL SERVICES COMPANY
The Rowe Building
540 S. Saginaw St., Suite 200
Flint, MI 48502
O: (810) 341-7500
F: (810) 341-7573
www.rowepsc.com

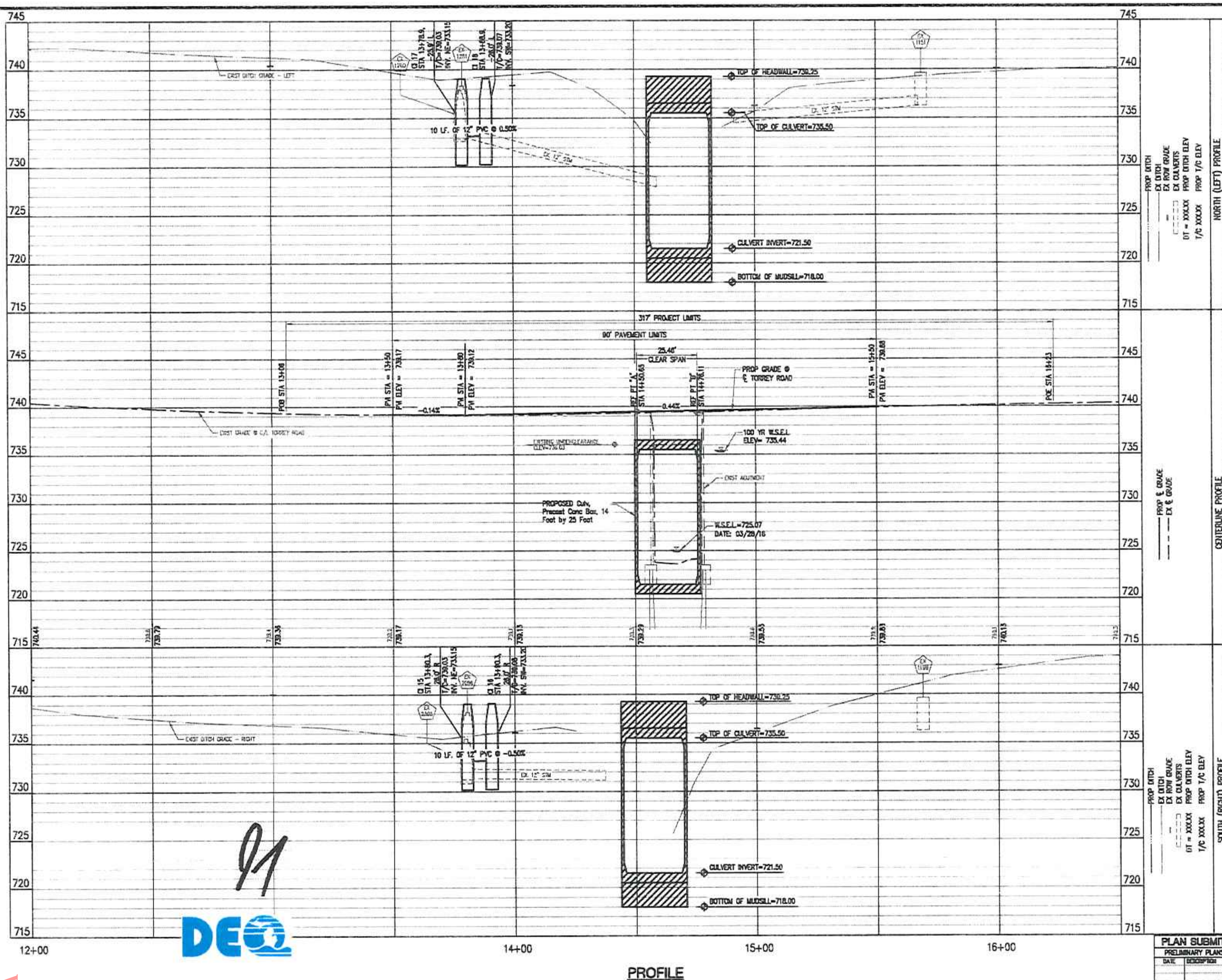
PLAN SUBMITTALS AND CHANGES
PRELIMINARY PLANS - **NOT FOR CONSTRUCTION**

DATE	DESCRIPTION

CITY OF FLINT
GENERAL PLAN OF SITE
TORREY ROAD OVER THE CARMAN CREEK

APPROVED _____

SPOT UNIT	
CONSULT UNIT	
DRAWN BY	MJG 9/18
CHECKED BY	ANH 10/18
SHEET	08 OF 13
STR NO.	2828



PROFILE

SCALE: HORIZ- 1" = 20'
VERT- 1" = 5'

91

PLAN SUBMITTALS AND CHANGES
PRELIMINARY PLANS – **NOT FOR CONSTRUCTION**

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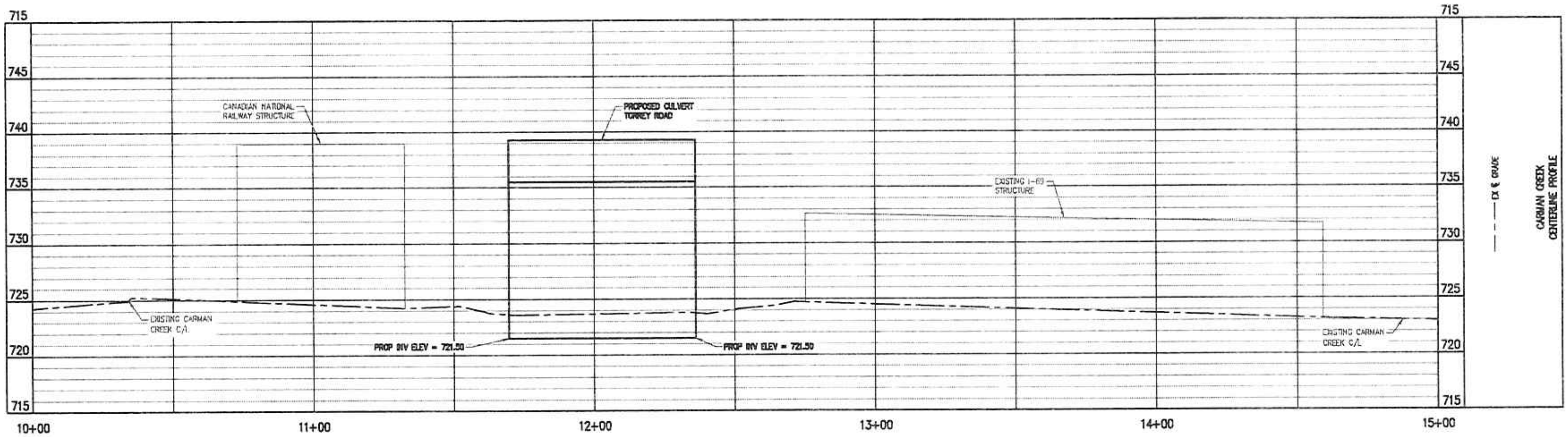
CITY OF FLINT
GENERAL PLAN OF SITE
TORREY ROAD OVER THE CARMAN CREEK

APPROVED

SHEET 09 OF 13

STR NO. 2828



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PLAN SUBMITTALS AND CHANGES

PRELIMINARY PLANS - **NOT FOR CONSTRUCTION**

DATE	DESCRIPTION

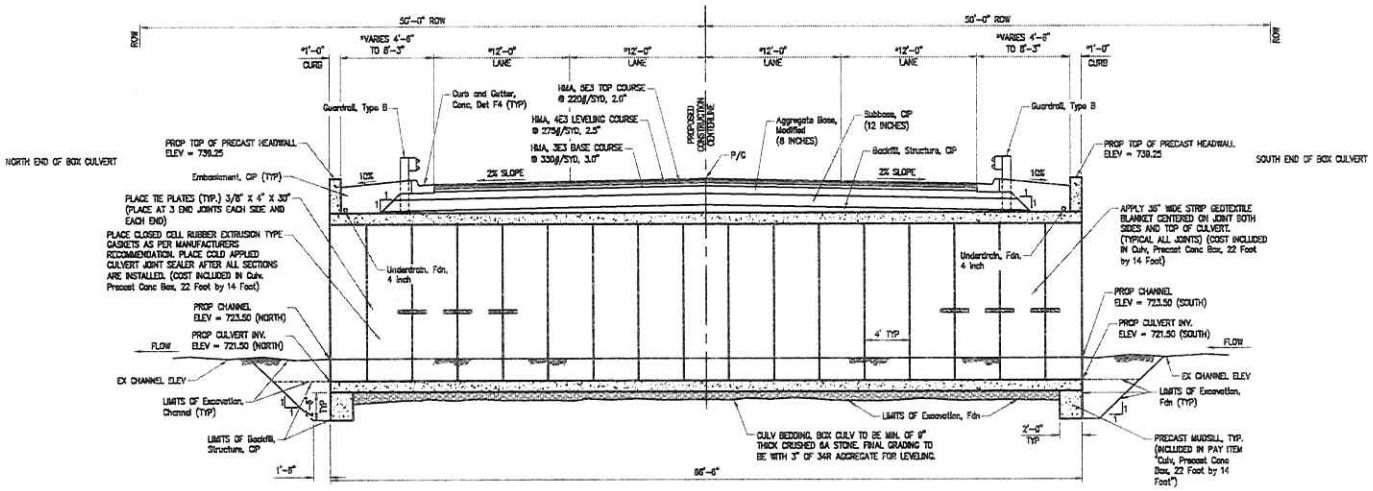
CITY OF FLINT

CARMAN CREEK PROFILE

TORREY ROAD
OVER THE
CARMAN CREEK

APPROVED ____________

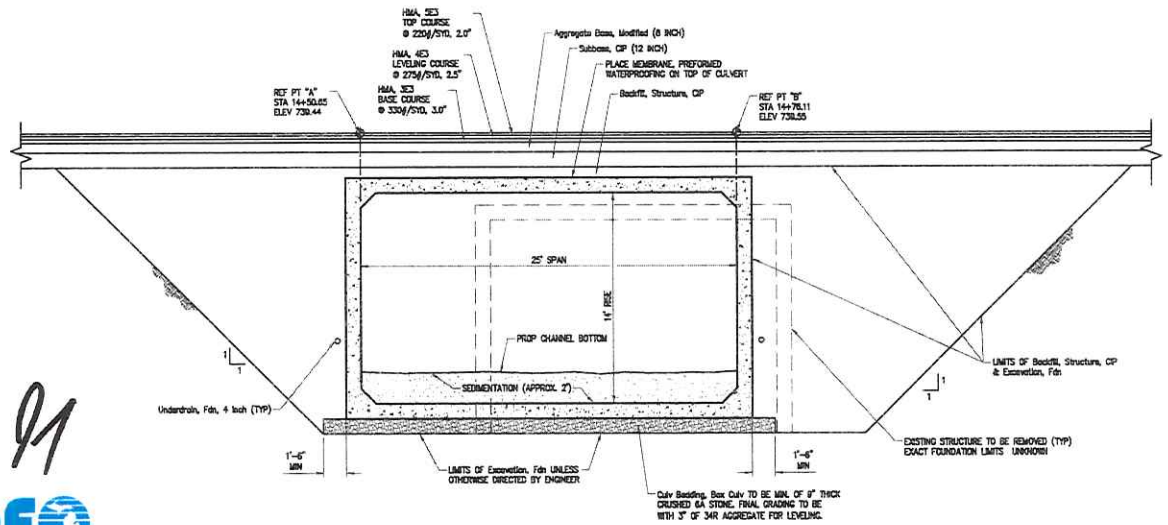
STR NO. 2828



PROFILE VIEW OF BOX CULVERT

SCALE: 3/16" = 1'-0"

NOTE: * DENOTES DIMENSIONS PERPENDICULAR TO CONSTRUCTION ℄



BOX CULVERT SECTION AT CENTERLINE

SCALE: 1/4" = 1'-0"

91

DEQ

IDEQ-WRD
WRP014497 v1.0
Approved
Issued On:11/26/2018
Expires On:11/26/2023

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PLAN SUBMITTALS AND CHANGES	
PRELIMINARY PLANS – **NOT FOR CONSTRUCTION**	
DATE	DESCRIPTION

CITY OF FLINT

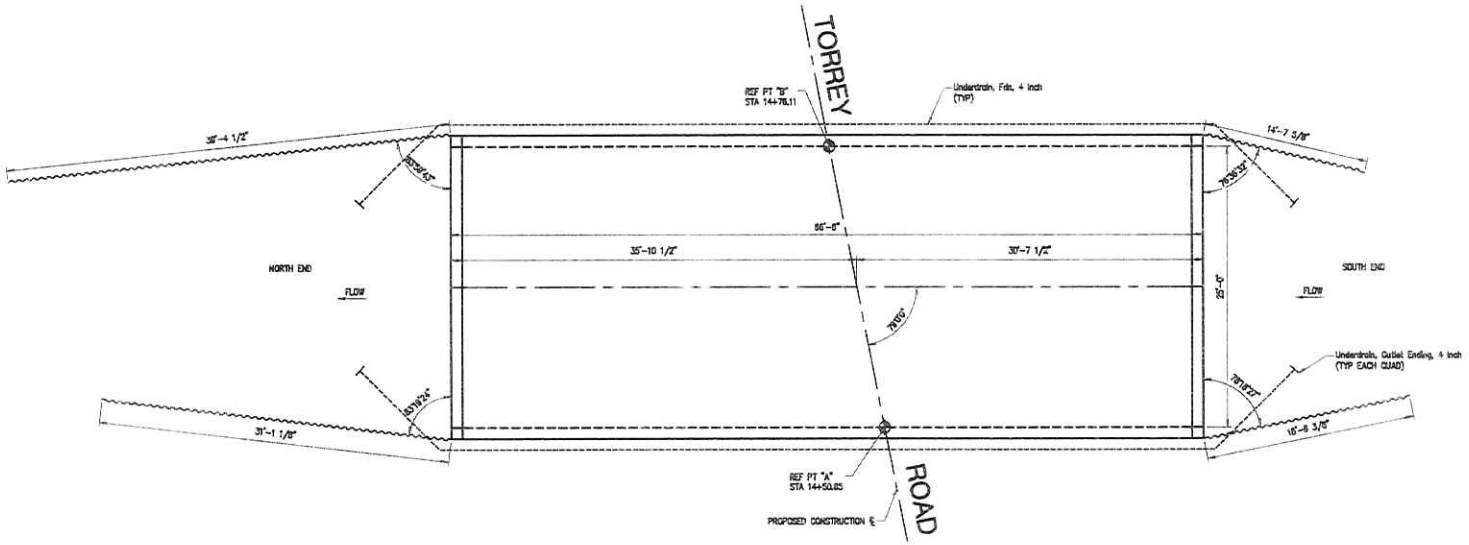
CULVERT DETAILS

TORREY ROAD OVER THE CARMAN CREEK

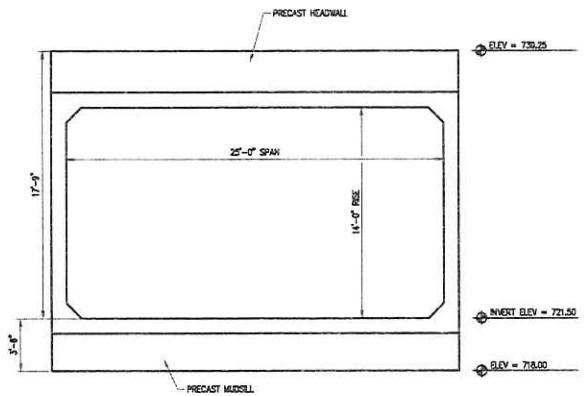
APPROVED _____

PROJECT UNIT		
CONTRACT UNIT		
DRAWN BY	SJS	06/18
CHECKED BY	KMH	06/18
SHEET	10 OF	13

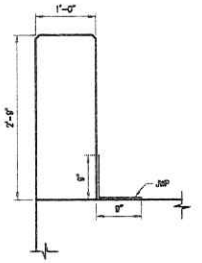
STR NO. 2828



PLAN
SCALE: 3/16" = 1'-0"



END VIEW OF BOX CULVERT
SCALE: 1/4" = 1'-0"



PRECAST HEADWALL DETAIL
SCALE: 1"=1'-0"
*NOTE: JWP DENOTES JOINT WATERPROOFING.

BOX CULVERT MISC QUANTITIES		
PAY ITEM	UNIT	AMOUNT
CULV BEDDING, BOX CULV	CYD	63
JOINT WATERPROOFING	SFT	88
MEMBRANE, PREFORMED WATERPROOFING	SFT	1340
UNDERDRAIN, FDN, 4 INCH	FT	128
UNDERDRAIN OUTLET, 4 INCH	FT	40
UNDERDRAIN, OUTLET ENDING, 4 INCH	EA	4
STEEL SHEET PILING, PERMANENT, MODIFIED	SFT	4526

DEQ

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PLAN SUBMITTALS AND CHANGES	
PRELIMINARY PLANS – **NOT FOR CONSTRUCTION**	
DATE	DESCRIPTION

CITY OF FLINT
CULVERT DETAILS
TORREY ROAD
OVER THE
CARMAN CREEK

ROUT. UNIT		
CONSULT. UNIT		
DRAWN BY	MJS	06/18
CHECKED BY	MH	06/18
SHEET	11 OF	13

APPROVED _____
STR NO. 2828

STEEL SHEET PILING NOTES

THE PAY ITEM "Steel Sheet Piling, Permanent, Modified" SHALL INCLUDE THE FOLLOWING:

- FURNISHING AND DRIVING THE STEEL SHEETS
- FURNISHING, FABRICATING, AND INSTALLING THE STEEL SHEETS FOR ATTACHMENT TO THE ABUTMENTS
- DESIGNING THE CONNECTION OF THE PERMANENT SHEETING TO THE BACK OF THE PRECAST CULVERT. THE DESIGN OF THE CONNECTION SHALL BE COMPLETED BY A LICENSED ENGINEER IN THE STATE OF MICHIGAN AND SUBMITTED TO THE ENGINEER A MINIMUM OF 14 DAYS PRIOR TO INSTALLATION FOR APPROVAL BY THE ENGINEER.
- FURNISHING AND INSTALLING THE ATTACHMENT PLATES
- FURNISHING AND INSTALLING ALL ATTACHMENT HARDWARE
- FURNISHING, FABRICATING, AND WELDING THE CAP TO THE SHEETING

ALL PERMANENT SHEET PILING SHALL BE XXXX. WHERE ALLOWED BY THE ENGINEER, SELECT ALTERNATE HOT ROLLED STEEL PILING WITH A NOMINAL SECTION MODULUS OF AT LEAST 18.1 CUBIC INCHES PER FOOT OR COLD ROLLED SHEET PILING WITH A NOMINAL SECTION MODULUS OF AT LEAST 28.8 CUBIC INCHES PER FOOT.

THE STEEL PLATES FOR ATTACHMENT OF THE SHEET PILING TO THE CONCRETE ABUTMENTS SHALL MEET OR EXCEED THE REQUIREMENTS OF AASHTO M270 GRADE 36 STEEL.

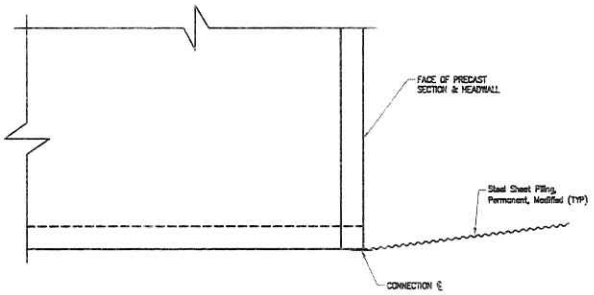
THE CAP SHALL BE A STEEL CHANNEL OR SHALL BE A BENT PLATE FABRICATED FROM STEEL PLATE WITH A MINIMUM THICKNESS OF 1/4". THE CAP SHALL BE LARGE ENOUGH TO COVER THE STEEL SHEET PILING AND ALLOW WELDING OF THE CAP TO THE SHEETING. THE STEEL FOR THE CAP SHALL BE GRADE 36 STEEL OR BETTER.

ALL ATTACHMENT HARDWARE SHALL BE GALVANIZED AND MEET THE REQUIREMENTS FOR HIGH STRENGTH STEEL BOLTS, NUTS AND WASHERS.

THE CAP SHALL BE TACK WELDED TO THE STEEL SHEETING AT SUFFICIENT INTERVALS TO PROVIDE ADEQUATE ATTACHMENT.

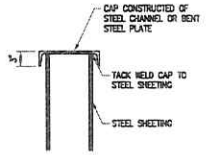
THE CAP SHALL BE A CONTINUOUS PIECE ALONG THE LENGTH OF SHEETING WHEREVER POSSIBLE. WHERE THE CAP CAN NOT BE INSTALLED AS ONE CONTINUOUS PIECE, BUT THE TOP OF THE STEEL SHEETING IS NOT STEPPED, THE SECTIONS SHALL BE WELDED TOGETHER.

BECAUSE OF THE VARIABILITY IN SHEET PILING LAYING LENGTHS, THE PAY QUANTITY WILL BE PLAN QUANTITY REGARDLESS OF THE AREA DRIVEN UNLESS THERE IS A DESIGN CHANGE.



PERMANENT SHEETING CONNECTION

SCALE: 3/8"=1'-0"



STEEL PILING CAP DETAIL

NOT TO SCALE

Know what's below. Call before you dig.

DATE OF PLAN: OCTOBER 2018

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PLAN SUBMITTALS AND CHANGES	
PRELIMINARY PLANS – **NOT FOR CONSTRUCTION**	
DATE	DESCRIPTION

CITY OF FLINT

CULVERT DETAILS

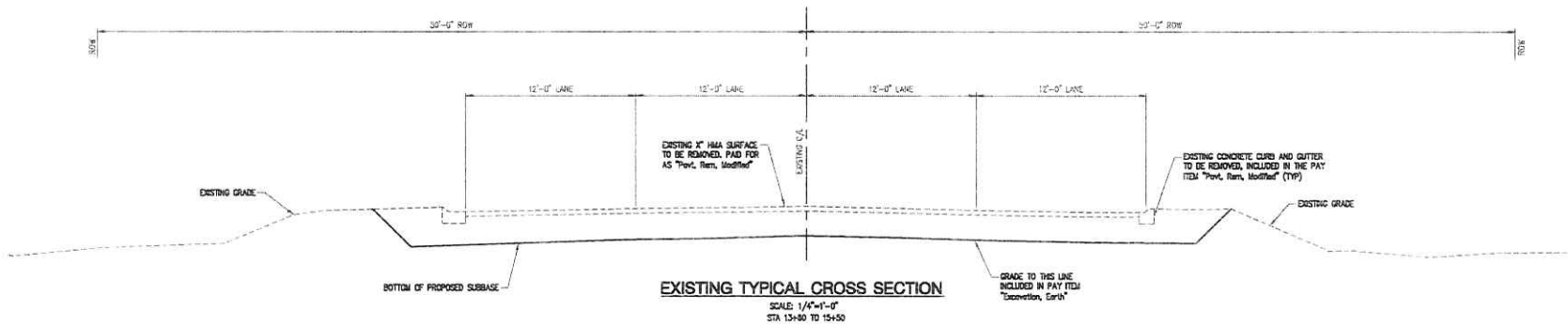
TORREY ROAD OVER THE CARMAN CREEK

ROOT UNIT		
CONSULT UNIT		
DRAWN BY	NJS	09/18
CHECKED BY	WMH	09/18
SHEET	12 OF	13

APPROVED _____

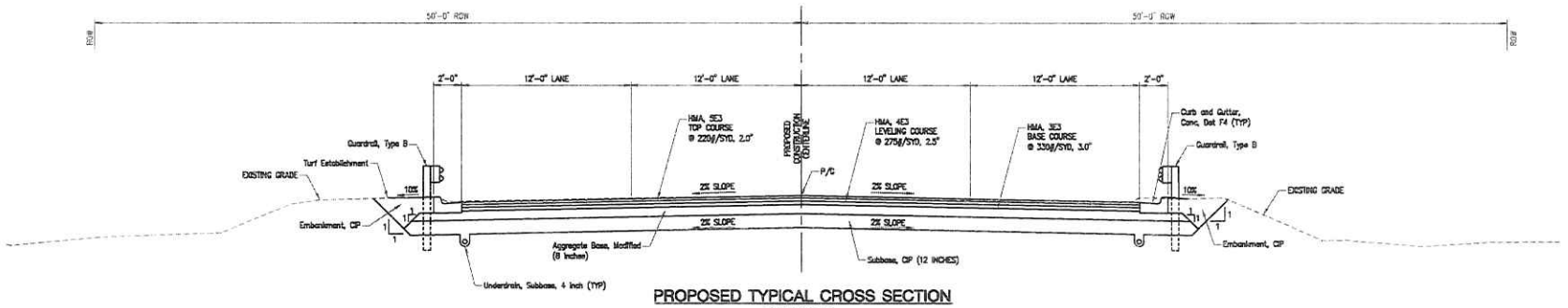
STR NO. 2828

DEQ-WRD
WRP014497 v1.0
Approved
Issued On:11/26/2018
Expires On:11/26/2023



EXISTING TYPICAL CROSS SECTION

SCALE: 1/4"=1'-0"
STA 13+80 TO 15+50



PROPOSED TYPICAL CROSS SECTION

SCALE: 1/4"=1'-0"
STA 13+80 TO STA 15+50

HMA SURFACING APPLICATION CHART			
ITEM	RATE OF APPLICATION	ESTIMATED THICKNESS	PERFORMANCE GRADE
HMA, 5E3 (TOP COURSE)	220 #/SYD	2.0"	64-28
HMA, 4E3 (LEVELING COURSE)	275 #/SYD	2.5"	64-28
HMA, 3E3 (BASE COURSE)	330 #/SYD	3.0"	64-28

HMA BOND COAT SHALL BE APPLIED AT A RATE OF 0.05 TO 0.15 GAL/SYD FOR TACK COAT AS DIRECTED BY THE ENGINEER. COST INCLUDED IN HMA ITEMS.

WHERE RECLAIMED ASPHALT PAVEMENT (RAP) IS TO BE USED, A MAXIMUM OF 17% RAP BINDER BY WEIGHT OF THE TOTAL BINDER IN THE MIXTURE (TIER 1) SHALL APPLY. NO SHINGLES SHALL BE USED IN RAP. THE ENGINEER SHALL APPROVE THE MIX DESIGN PRIOR TO THE PLACEMENT OF THE MIXTURE.

TESTING COMPACTION PROVISION 12SP501J S ECT DENSITY METHOD PER SPECIAL ON LOCAL AGENCY PROJECTS.

AGGREGATE WEAR INDEX	
HMA MIXTURE	REQ. AWI, #
E3	260

THE AGGREGATE WEAR INDEX (AWI) NUMBER REQUIRED FOR THE AGGREGATE USED IN THE PRODUCTION OF THE HMA MIXTURE USED IN THE TOP COURSE OF THE TRAVELED WAY ON THIS PROJECT IS SHOWN IN THE TABLE ABOVE. THIS AWI NUMBER APPLIES TO ALL AGGREGATE SOURCES (NATURAL OR MANUFACTURED).

EARTHWORK TABLE		
ITEM	UNIT	QUANTITY
Excavation, Earth	CYD	621
Embankment, CIP	CYD	1

EARTHWORK NOTES:
1. CONTRACTOR MAY USE EXCAVATED MATERIAL AS EMBANKMENT ONLY IF IT IS SUITABLE MATERIAL APPROVED BY THE ENGINEER.
2. FINAL PAYMENT FOR Excavation, Earth AND Embankment, CIP PAY ITEMS WILL BE BASED ON PLAN QUANTITIES UNLESS OTHERWISE APPROVED BY THE ENGINEER.

Know what's **below.** Call before you dig.

DATE OF PLAN: OCTOBER 2018

ROWE PROFESSIONAL SERVICES COMPANY
The Rowe Building
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Flint, MI 48502
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PLAN SUBMITTALS AND CHANGES
PRELIMINARY PLANS – **NOT FOR CONSTRUCTION**

DATE	DESCRIPTION

CITY OF FLINT

TYPICAL CROSS SECTIONS

TORREY ROAD
OVER THE
CARMAN CREEK

APPROVED _____

ROOT UNIT		
CONDUIT UNIT		
DRAWN BY	AJG	10/18
CHECKED BY	WH	10/18
SHEET	06 OF	13
STR NO.	2828	

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2018-AGL-15678-OE

Issued Date: 08/21/2018

Mike Soteropoulos
ROWE PSC
540 S. Saginaw St, Suite 200
Flint, MI 48502

****DETERMINATION OF NO HAZARD TO AIR NAVIGATION FOR TEMPORARY STRUCTURE****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Crane Torrey Road over Carman Creek
Location:	Flint, MI
Latitude:	42-59-31.60N NAD 83
Longitude:	83-42-34.70W
Heights:	740 feet site elevation (SE)
	99 feet above ground level (AGL)
	839 feet above mean sea level (AMSL)

This aeronautical study revealed that the temporary structure does not exceed obstruction standards and would not be a hazard to air navigation provided the condition(s), if any, in this letter is (are) met:

SEE ATTACHMENT FOR ADDITIONAL CONDITION(S) OR INFORMATION

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of a structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination did not include an evaluation of the permanent structure associated with the use of this temporary structure. If the permanent structure will exceed Title 14 of the Code of Federal Regulations, part 77.9, a separate aeronautical study and FAA determination is required.

This determination concerns the effect of this temporary structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Aviation Administration Flight Procedures Office if the structure is subject to the issuance of a Notice To Airman (NOTAM).

If you have any questions, please contact our office at (718) 553-4199, or Dianne.Marin@FAA.GOV. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2018-AGL-15678-OE

Signature Control No: 372229761-382203942 (TMP)
Dianne Marin
Technician

Additional Condition(s) or Information for ASN 2018-AGL-15678-OE

Proposal: To construct and/or operate a(n) Crane to a height of 99 feet above ground level, 839 feet above mean sea level.

Location: The structure will be located 2.22 nautical miles northeast of FNT Airport reference point.

Case Description for ASN 2018-AGL-15678-OE

Replace 23 foot long bridge with a 22 foot precast concrete box culvert

Part 77 Obstruction Standard(s) Exceeded and Aeronautical Impacts, if any:

Aeronautical study revealed that the temporary structure will not exceed any Part 77 obstruction standard. Aeronautical study confirmed that the temporary structure will have no effect on any existing or proposed arrival, departure or en route instrument/visual flight rules (IFR/VFR) operations or procedures. Additionally, aeronautical study confirmed that the temporary structure will have no physical or electromagnetic effect on the operation of air navigation and communications facilities and will not impact any airspace and routes used by the military. Based on this aeronautical study, the FAA finds that the temporary structure will have no adverse effect on air navigation and will not impact any aeronautical operations or procedures.

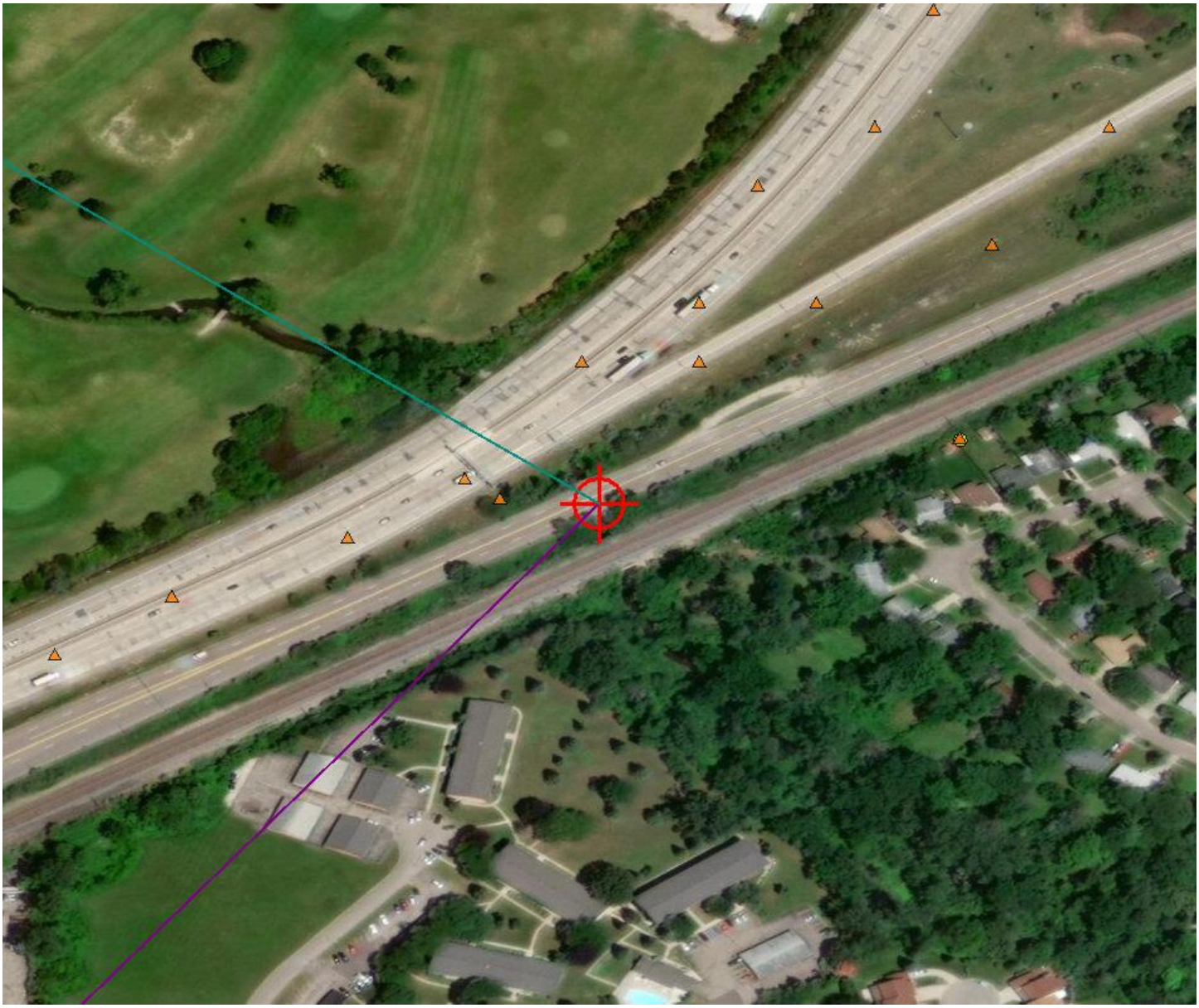
Based on this aeronautical study, the structure would not constitute a substantial adverse effect on aeronautical operations or procedures because it will be temporary. The temporary structure would not be considered a hazard to air navigation provided all of the conditions specified in this determination are strictly met.

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 1.

This determination expires on 02/21/2020 unless extended, revised, or terminated by the issuing office.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

Verified Map for ASN 2018-AGL-15678-OE



MDOT
Michigan Department of Transportation

INDIVIDUAL CONSTRUCTION PERMIT
For Operations within State Highway Right-of-Way

Issued To:
City of Flint

1101 S. Saginaw St
Flint MI 48502

Contact:
Mark Adas
810-766-7135(O)
madas@cityofflint.com

Permit Number: **25085-060248-19-012919**
Permit Type: **Individual Application**
Permit Fee: $.00
Effective Date: Jan 29, 2019 **to** Jan 29, 2020
Bond Numbers:
Liability Insurance Expiration Date:

Contractor:

Amanda Hemeyer

540 S Saginaw St, Suite 200
Flint MI 48502

Contact:

Amanda Hemeyer

ahemeyer@rowepsc.com

THIS PERMIT IS VALID ONLY FOR THE FOLLOWING PROPOSED OPERATIONS:

PURPOSE:

Culvert replacement at the Carman Creek on 12th street (Torrey Rd), including related approach and guardrail work. Project includes removing and replacing the steel sheeting from the north end of the proposed culvert connecting into the existing wingwalls of the culvert under I-69. Other work in the MDOT ROW includes placing fencing from back of guardrail to MDOT ROW fence behind sheeting and removing/abandoning existing storm sewer from 12th Street.

Maintaining traffic: 12th Street will be closed to traffic from Hammerberg Rd to Van Slyke Rd. The detour route is shown in the plans. The right lane on Hammerberg will be closed utilizing MDOT Maintaining Traffic typical M0240, which includes the additional right turn lane at 12th Street. A special sign will be placed on the EB Exit 135 ramp (12th Street Closed...) see plans. No other signs will be placed in MDOT ROW.

All disturbed areas shall be restored per the Turf Establishment SP.

STATE ROUTE: I-69 **CITY OF:** Flint **COUNTY:** Genesee County

NEAREST INTERSECTION:	SIDE OF ROAD:	DISTANCE TO NEAREST INTERSECTION: (in feet)	DIRECTION TO NEAREST INTERECTION:
Exit 135	E	1,600.00	East

CONTROL SECTION:	MILE POINT FROM:	MILE POINT TO:	LOCATION: LEFT	MEDIAN	RIGHT	TRANSVERSE
25085	1.390	1.390	☐	☐	☒	☐

REQUISITION NUMBER:	WORK ORDER NUMBER:	MDOT JOB NUMBER:	ORG JOB NUMBER:
		126579	18c0064

25085-060248-19-012919 Issued To:City of Flint

This permit is incomplete without "General Conditions and Supplemental Specifications"

I certify that I accept the following:

1. I am the legal owner of this property or facility, the owner's authorized representative, or have statutory authority to work within state highway Right-of-Way.
2. Commencement of work set forth in the permit application constitutes acceptance of the permit as issued.
3. Failure to object, ***within ten (10) days*** to the permit as issued constitutes acceptance of the permit as issued.
4. If this permit is accepted by either of the above methods, I will comply with the provisions of the permit.
5. I agree that Advance Notice for Permitted Activities for shall be submitted **5 days prior** to the commencement of the proposed work.

   I agree that Advance Notice for Permitted Utility Tree Trimming and Tree Removal Activities shall be submitted **15 days prior** to the commencement of the proposed work for an annual permit.

CAUTION

Work shall NOT begin until the Advance Notice has been approved.

Failure to submit the advance notice may result in a Stop Work Order.

City of Flint	**Keith Brown**	January 29, 2019
	MDOT	**Approved Date**

TSC Contact Info	**Davison TSC**	**(810) 653-7470**

THE STANDARD ATTACHMENTS, ATTACHMENTS AND SPECIAL CONDITIONS MARKED BELOW ARE A PART OF THIS PERMIT.

STANDARD ATTACHMENTS:

1 Special Conditions For Underground Construction (2205C)
2 MDOT's Storm Drainage System Tap-Ins (3718)
3 General Conditions for Permit (General Conditions)

ADDITIONAL ATTACHMENTS:

1 TORREY RD Plan Set.pdf
2 Torrey Rd MOT SP.pdf
3 816-Turf Establishment, Performance.pdf
4 CityofFlint.pdf
5 SIGNED PERMIT WRP014497 for Torrey Road over the Carman Creek.pdf

25085-060248-19-012919 Issued To:City of Flint

AMENDMENT ATTACHMENTS:

SPECIAL CONDITIONS:

1 All disturbed areas within the right of way shall be top-soiled, seeded and mulched to match existing areas per current MDOT standards and specifications.

Michigan Department
Of Transportation
2205C (03/10)

SPECIAL CONDITIONS FOR UNDERGROUND CONSTRUCTION

The following special permit specifications shall apply when the permittee is excavating or performing any underground activity within trunkline right of way and discovers existing contaminated soil and/or an abandoned underground storage tank:

1. In the event the permittee encounters environmental contamination and/or an underground storage tank in the right of way, the Michigan Department of Transportation (MDOT) shall be immediately notified. All Michigan Department of Natural Resources and Environment (MDNRE) and Federal Environmental Protection Agency (EPA) environmental requirements shall be complied with by the permittee. Unless the Department agrees in writing the following steps are to be taken:

    a. The contaminated material that has been removed shall be temporarily stockpiled per MDNRE requirements. If stockpiled on the right of way, the site shall not interfere with MDOT operations or create a traffic safety problem. Also, the contaminated material shall be placed on plastic sheeting or tarp having a minimum thickness of 6 mils or in trucks, roll off boxes, or other containers, such that no liquid may escape from the containment. At the end of each work day, the contaminated material shall be covered securely with plastic sheeting of 6 mil thickness or greater.

    b. Upon completion of any testing deemed necessary by the Department or the MDNRE, the material shall be disposed of in an approved waste disposal site unless otherwise directed by the MDNRE.

    c. In no case shall the contaminated material be stockpiled for longer than 45 days prior to disposal.

2. The permittee shall cooperate with MDOT personnel and pertinent regulatory agencies in resolving the contamination problem as required by law.

    a. The manner in which the permittee manages and secures the site shall not interfere with the MDOT's interests.

    b. The permittee shall not excavate as part of any site management operation within the one-on-one slope from the edge of shoulder without the permission of MDOT.

3. MDOT shall not indemnify or compensate the permittee for any costs or damages of any kind that the permittee incurs as the result of contamination encountered within the right of way. It is understood that the possibility of encountering contamination and the damages which might be incurred by the permittee because of the contamination are business risks the permittee assumes in choosing to locate and maintain facilities within the Right-of-Way.

    The permittee is responsible for any costs that it incurs to secure the contaminated site in such a manner as to meet the requirements of the MDNRE and/or EPA and the requirements of MDOT.

4. The permittee, upon approval of MDOT, may continue to place its facility through the contaminated area providing remedial actions that meet the approval of MDOT and other enforcement agencies involved are followed.

    a. All additional costs the permittee incurs, as a result of continuing to place its facilities within the contaminated area, are the responsibility of the permittee.

    b. All contaminated material must be removed and properly disposed of as directed by MDOT and/or the MDNRE. All backfill material must be clean material, unless otherwise directed by the MDNRE. Excavation must be backfilled in a manner to prevent the creation of a pathway for migration of contamination off site.

5. The permittee is solely responsible to develop an alternate route for its facility in the event approval cannot be given to continue to place the facility within the contaminated area of the Right-of-Way. The permittee shall restore the original site as directed by MDOT.

What You Need to Know Before You Tap Into MDOT's Storm Drainage System

It is illegal to discharge substances other than storm water into MDOT's storm sewer system. As the Tap-In/Discharge Permit holder, it is your responsibility to plan, install, and maintain appropriate waste-handling processes and facilities to prevent illicit discharges to MDOT's storm drainage system.

The checklists below offer pollution prevention strategies to help you remain in compliance with your discharge permit. MDOT's Storm Water Management Plan includes a program to eliminate illicit discharges, but we need your help.

Do your part to keep pollutants out of storm drains!

- ☐ Keep wastes of all varieties from entering floor drains and storm drains.
- ☐ Train employees on pollution prevention activities.
- ☐ Educate customers on proper recycling and/or disposal.
- ☐ Provide trash containers in common areas and routinely empty them.
- ☐ Periodically hire a parking lot cleaning service.
- ☐ Don't overuse de-icers, follow package instructions.
- ☐ Consider "green" parking alternatives: minimize dimensions of parking spaces, use alternative pavers in overflow areas, use bioretention to treat storm water.

Pollution Prevention Strategies by Business Type:

Gas Stations and Oil Change Facilities

- ☐ Properly store and recycle waste oil, antifreeze and other auto fluids.
- ☐ Quickly clean up spills of all sizes and properly dispose of waste.
- ☐ Use drip pans when working to catch spills and discharges.
- ☐ Cover fueling areas to prevent storm water from picking up spilled fuel.

Commercial Car Wash Facilities

- ☐ Ensure car wash water is discharging to sanitary sewers, not storm drains.
- ☐ Keep water traps and grates around the facility clean of trash and debris.
- ☐ Use biodegradable, phosphate-free products whenever possible.

Dry Cleaning Facilities

- ☐ Keep all containers labeled and covered to prevent evaporation and spills.
- ☐ Check equipment frequently for leaks. Make repairs immediately.
- ☐ Provide secondary containment in areas where solvents are stored.
- ☐ Keep storage and work areas clean and well organized.

Restaurants

- ☐ Store grease away from storm drains in an airtight container.
- ☐ Never pour or rinse fat, oil or grease (FOG) down the drain - it can lead to sewer backups. Scrape or wipe off FOGs and dispose of in a sealed container.
- ☐ Keep drains clean with a vinegar and warm water rinse.

Car wash water entering storm drain

Overflowing dumpster

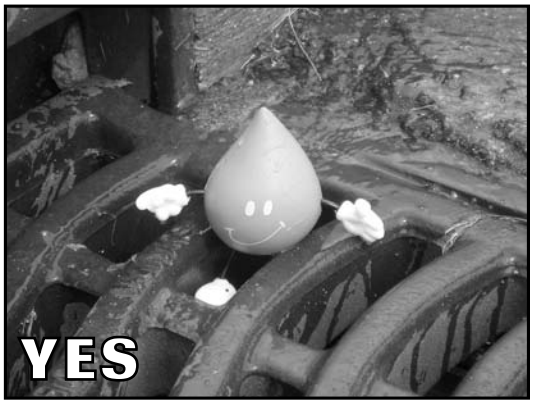
Food for Thought:

...Only rain in the drain!

...If you can't drink it, don't dump it!

...Four quarts of motor oil = an eight-acre oil slick

...Anything on the ground (trash, de-icers, fertilizer, oil, detergent, etc.) can be carried to rivers by storm water runoff



Only rain belongs in a storm drain

Storm Water Management MDOT Michigan Department of Transportation

for more information:
www.michigan.gov/stormwatermgt

Together... **Better Roads, Cleaner Streams**

GENERAL CONDITIONS

(See new condition 23)

This permit is issued subject to the following conditions:

1. This permit grants to the permittee only those rights specifically stated and no other. Maintenance work within the trunkline right of way may require a separate permit unless authorized within the scope of the annual permit.

2. Issuance of this permit does not relieve permittee from meeting any and all requirements of law, or of other public bodies or agencies. The permittee shall be responsible for securing including but not limited to any other permissions including or required by law including but not limited to cities, villages, townships, corporations, or individuals for the activities hereby permitted.

3. The permittee agrees as a condition of this permit to:

   a. Have in the permittee's or the permittee's representative's possession on the job site at all times the approved permit, advanced notice and any necessary plans or sketches.

   b. Submit Advance Notice through the online Construction Permit System (CPS) at least five (5) working days prior to commencement of any operations covered by this permit. No work shall start until an approved Advance Notice is e-mailed to the permittee.

   c. Perform no work except emergency work, unless authorized by the Department, on Saturdays, Sundays, or from 3:00 p.m. on the day proceeding until the normal starting time the day after the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

   d. Provide and maintain all necessary precautions to prevent injury or damage to persons and property from operations covered by this permit.

   e. Furnish, install and maintain all necessary traffic controls and protection during permittee's operations in accordance with the Michigan Manual of Uniform Traffic Control Devices and any supplemental specifications set forth herein.

   f. Notify the Department of completion of work authorized by this permit through CPS, so that final inspection may be made and surety deposit released (where applicable). Surety deposit will not be released until the work authorized by the permit has been completed and inspected, and all inspection charges billable to the permittee are paid.

4. Nothing in this permit shall be construed to grant any rights what so ever to any public utilities, except as to the consent herein specifically given, nor to impair any existing rights granted in accordance with the constitution or laws of this state.

5. Any operations in the trunkline right of way not covered by permit and the appropriate Department specifications are in violation of the jurisdictional authority of the Department, with respect to the control of the trunkline right of way, unless approved by the Department. Any change or alteration in the permit activities requires prior approval of the Department and may require a new permit.

6. Performance of the requirements of this permit is the responsibility of the permittee. The permittee shall complete all operations for which this permit is issued in accordance with the conditions of this permit, by the specified completion date. The permittee shall meet all requirements of the current Department Standard Specifications for Construction, and the Supplemental Specifications set forth on/or incorporated as a part of this permit.

7. The construction, operation and maintenance of the facility covered by this permit shall be performed without cost to the Department unless specified herein. The permittee shall be responsible for the cost of restoration of the state trunkline and right of way determined by the Department to be damaged as a result of the activities of the permittee.

8. Facilities allowed on state trunkline right of way shall be placed and maintained in a manner which will not impair the state trunkline or interfere with the reasonable safe and free flow of traffic. Failure of the permittee to maintain the facilities located within the State trunkline right of way so as not to interfere with the operation, maintenance or use of the state trunkline by the traveling public may result in revocation of the permit.

9. The permittee is solely and fully responsible for all activities undertaken pursuant to the permit. Any and all actions by the Department and those governmental bodies performing permit activities for the Department pursuant to a maintenance contract, including but not limited to any approved reviews and inspections of any nature, permit issuing, and final acceptance or rejection of the work or activity authorized by the permit shall not be construed as a warranty or assumption of liability on the part of the Department or those governmental bodies. It is expressly understood and agreed that any such actions are for the sole and exclusive purposes of the Department and the governmental bodies acting in a governmental capacity. Any such actions by the Department and governmental bodies will not relieve the permittee of its obligations hereunder, nor are such actions by the Department and the governmental bodies to be construed as a warranty as to the propriety of the permittee's performance. The permittee shall indemnify and save harmless the State of Michigan, Michigan Transportation Commission, the Department and all officers, agents and employees thereof, and those governmental bodies performing permit activities for the Department and all officers, agents and employees thereof, pursuant to a maintenance contract, against any and all claims for damages arising from operations covered by this permit except claims resulting from the sole negligence or willful acts or omissions of said indemnities, its agent, or employees. In addition, permittee upon request shall furnish proof of insurance coverage for the term of this permit in an amount pre-specified.

10. The permittee or representative must ensure that all insurance policies and binders include an endorsement by which the insurer agrees to notify the Department in writing at least 30 days before there is a cancellation or material change in coverage. The permittee or representative must stop operations if any insurance is cancelled or reduced, and must not resume operations until new insurance is in force. The State of Michigan, Michigan Transportation Commission, Department of Transportation, and governmental bodies performing permit activities under a maintenance contract, and all officers, agents, and employees of all the above, for claims arising out of, under, or by reason of operations covered by the permits issued to the permittee.

11. This permit is not assignable and not transferable unless specifically agreed to by the Department.

12. The permittee, upon request of the Department, shall immediately remove, cease operations, and surrender this permit, or alter or relocate, at the permittee's own expense, the facility for which this permit is granted. Upon failure to do so, the Department may take any necessary action to protect the trunkline interest and the permittee shall reimburse the Department for its costs in doing same. The permittee expressly waives any right to claim damages or compensation in the event this permit is revoked.

13. The permittee shall, upon request by the Department, furnish a performance surety deposit in the form of a bond, cash, certified check, or (when authorized by the Department) an irrevocable letter of credit in such amount as deemed necessary by the Department to guarantee restoration of the trunkline highway or performance under the conditions of the permit.

14. The permittee hereby acknowledges and agrees that the Department has the right to demand completion by the permittee, or the performance surety, or to complete any uncompleted activity authorized by this permit which adversely affects the operation and/or maintenance of the state trunkline highway, or which is not completed by the expiration date of the permit, including:

    a. Completion of construction of driveway and/or approach (not authorized by annual permit).
    b. Removal of materials.
    c. Restoration of the trunkline facilities and right of way as necessary for the reasonably safe and efficient operations of the trunkline highway.

    The permittee further agrees to immediately reimburse the Department in full for all such costs incurred by the Department upon receipt of billing, and that upon failure to pay, the Department may affect payment with the performance surety deposit. Should the surety deposit be insufficient to cover expenses incurred by the Department, the permittee shall pay such deficiency upon billing by the Department. If the surety deposit exceeds the expense incurred by the Department, any excess will be returned or released to the depositor upon completion of the work to the satisfaction of the Department.

15. The Department reserves the right during the time any or all of the work is being performed to assign an inspector to protect the trunkline interest, and to charge the permittee all such costs incurred. In addition, the permittee may be billed any engineering and review fees incurred by the Department or its agent in connection with the work covered by this permit.

16. Emergency Operations: In time of disaster or emergency, or when utility lines or facilities are so damaged as to constitute a danger to life and/or property of the public, access to the same may be had by the most expeditious route. Work is to be completed in a manner which will provide the traveling public with maximum possible safety and minimize traffic distribution. Notice of such situations shall be given to the nearest police authority and the department as soon as can reasonably be done under the circumstances. During normal Department work hours, the facility owner shall advise the Department of any operations within right of way which affect traffic operations or the highway structure or facilities prior to performance of the work. After normal Department work hours, the permittee, at the beginning of the first working day after the emergency operation, shall advise the Department of any operations which affect traffic operations or the highway structures and facilities. If determined necessary by the Department, the permittee shall secure an individual permit for such work after notification.

17. Upon the Department's request, as built drawings of work performed will be furnished to the Department within 30 days after completion of the work.

18. The permittee shall give notice to public utilities in accordance with Act 174 of 2013, as amended, and comply with all applicable requirements of this act. The permittee shall also comply with requirements of Act 451, P.A. of 1994, as amended.

19. The permittee acknowledges that the Department is without liability for the presence of the permittee's facility which is located within the trunkline right of way. Acceptance by the Department of work performed, and/or notice of termination of performance obligations for the surety and/or the permittee do not relieve the permittee of full responsibility for the permittee's work or for the presence of the permittee's facility in the trunkline right of way.

20. Where the Department has accepted an Indemnification Commitment in lieu of bond and/or insurance policies, such commitment is incorporated into this permit by reference.

21. It is illegal to discharge substances other than storm water into the Department's storm sewer system unless permission has been obtained in writing for other discharges.

22. The permittee shall be responsible for obtaining information on permitted environmental site closures within MDOT right of way. MDOT has implemented a program that allows environmental contamination to remain within the right of way by use of a permit. Issued permit information can be obtained from the Region/TSC in which the permit is issued. If the permittee will encounter a site area identified as a site closure permit area, the permittee shall follow instructions and conditions set forth in Supplemental Specifications #3 and specifications found in form 2205-C, "Special Conditions for Underground Construction".

    >>>NEW>>>

23. Other than for normal daily vehicle and equipment usage requirements, the permittee shall not use or store unattended equipment, or the following types of hazardous materials on, over, under, or immediately adjacent to Department or Local Agency owned buildings, bridges and structures, unless expressly approved by the Department in writing;

    Explosive, flammable gas, non-flammable gas, inhalation hazard, oxygen, flammable liquids, fuel oil, combustible, gasoline, flammable solids, spontaneously combustible, dangerous-when-wet, oxidizer organic peroxide, toxic, poisonous, inhalation hazard, infectious, radioactive, corrosive, or any other potentially hazardous material.

    Furthermore, the permittee shall not allow hazardous or unreasonably objectionable smoke, fumes, vapor, or odors to emit from any permitted operation. No junk, garbage, refuse or unused construction materials shall be stored or accumulated within the MDOT Right-of-Way.

SUPPLEMENTAL SPECIFICATIONS

1. Construction and Maintenance of Facilities – To construct and maintain utility crossings of limited access highways, access for the utility's service vehicles may be from county roads, service roads, and openings authorized in limited access right of way fences. The construction of utilities across limited access highways should be for the purpose of serving a general area rather than providing individual services, unless extenuating circumstances necessitate such crossings.

   Equipment, vehicles or personnel will not operate within a distance of 30 feet from the edge of the pavement of roadways or ramps on limited access highways. At locations where utilities have been constructed in medians having a width greater than 80 feet or have otherwise been allowed to remain or to be constructed in limited access right of way, ingress and egress shall be by such routes as specified by the Department, which may also specify additional safety provisions.

2. Restoration- Restoration of the trunkline highway and right of way will be such that it will provide a condition equal to or better than the original condition, in accordance with Michigan Department of Transportation Standard Specifications.

3. Excavation and Disposal of Excavated Material – The permittee shall provide and place the necessary sheeting, shoring and bracing required to prevent caving, loss or settlement of foundation material supporting the pavement, or any other highway installation such as sewers, culverts, etc. The permittee shall assume the full responsibility for this protection and shall not proceed in these areas before approval of the methods by the Department.

   Construction equipment and excavating material shall not be stocked in such locations that it creates a traffic hazard or interferes with the flow of traffic; and on limited access highways, shall be a minimum of 30 feet from the traveled way. Sod and topsoil shall be stacked separately from other excavated material. The permittee shall dispose of all surplus and unsuitable material outside of the limits of the highway, unless the permit provides for disposal at approved locations within right of way. In the latter case, the material shall be leveled and trimmed in an approved manner.

   When the permittee is excavating within trunkline right of way and discovers existing contaminated soil and/or an abandoned underground storage tank, special permit specifications entitled "Special Conditions for Underground Construction" (Form 2205-C) shall apply.

4. Utility Cuts, Trenches and Pavement Replacement – Utility crossing by pavement cutting and removal are generally prohibited. If extenuating circumstances make tunneling, boring and jacking impractical pavement cutting may be used with approval of the Department. All utility cuts, trenching and pavement replacement shall comply with the requirements of the Standard Specifications and the Standard Plan "Utility Cuts, Trenches and Pavement Replacement". Unless otherwise specified, cuts in concrete residential and commercial drives shall be as above; except that the patch width shall be a minimum of 3 feet and the remaining slab from patch to existing joint shall be a minimum of 3 feet. Backfill shall be made with sand-gravel as specified in the Standard Specifications, unless otherwise directed. After the backfill has been placed and compacted by controlled density method, the pavement shall be replaced with new pavement of the original type and quality, unless at the season of the year when it is not feasible to replace pavement in kind. In this case, a temporary surface of bituminous material shall be placed with Department approval and later replaced with pavement of the original type at the applicant's expense. Other pavement types may be allowed with prior approval of the Department.

5. Crossing Roadbed by Tunneling or Boring and Jacking – All crossing of roadbed operations involving tunneling, boring and jacking shall comply with the Department's special provisions for such work.

6. Backfilling and Compacting Backfill – Unless otherwise specified, all trenches, holes and pits shall be filled with sound earth or with sand-gravel if so provided, placed in successive layers not more than 9 inches in depth, loose measure, and each layer shall be thoroughly compacted by tamping. All backfill compaction will be subject to check by the controlled density method.

7. Depth of Cover Method- Unless otherwise authorized, pipes shall be placed to a depth that will provide not less than 4 feet of cover between the top of the roadway surface and the pipe, 3 feet cover below the ditch line and the pipe.

8. Trees:

   a. The permittee is responsible for obtaining permission from abutting owners when trimming or removing trees on easement right of way.
   b. Tree removal or trimming may be undertaken only after submission of an "Advance Notice" through CPS, a field review by the Region Resource Specialist and an approved copy of the advanced notice is e-mailed to the permittee.
   c. Limbs, logs, stumps and litter shall be disposed of in a manner acceptable to the Department.
   d. Tree roots shall be bored a distance of one foot for each one inch of trunk diameter for underground utility installations

9. Aerial Wire Crossings – Vertical clearance of wires, conductors and cables over state trunkline shall not be less than required by Section 232 of the National Electrical Safety Code, except in no case shall the under-clearance below any wire, conductor, or cable, under any temperature or loading condition, be less than eighteen feet (18').

RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
MICHIGAN STATE HOUSING DEVELOPMENT AUTHORITY
STATE HISTORIC PRESERVATION OFFICE

EARL J. POLESKI
EXECUTIVE DIRECTOR

November 5, 2018

MARK G LEWIS
PROGRAM DEVELOPMENT UNIT MANAGER
FEDERAL HIGHWAY ADMINISTRATION
315 W ALLEGAN STREET ROOM 201
LANSING MI 48933

RE: ER18-753 Torrey Road Over Carman Creek Culvert Replacement, Sec. 2, T6N, R4E, Flint, Genesee County (FHWA)

Dear Mr. Lewis:

Under the authority of Section 106 of the National Historic Preservation Act of 1966, as amended, we have reviewed the above-cited undertaking at the location s noted above. Based on the information provided for our review, it is the opinion of the State Historic Preservation Officer (SHPO) that **no historic properties are affected** within the area of potential effects of this undertaking.

This letter evidences The FHWA's compliance with 36 CFR § 800.4 "Identification of historic properties," and the fulfillment of The FHWA's responsibility to notify the SHPO, as a consulting party in the Section 106 process, under 36 CFR § 800.4(d)(1) "No historic properties affected." **If the scope of work changes in any way, or if artifacts or bones are discovered, please notify this office immediately.**

We remind you that federal agency officials or their delegated authorities are required to involve the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties per 36 CFR § 800.2(d). The National Historic Preservation Act also requires that federal agencies consult with any Indian tribe and/or Tribal Historic Preservation Officer (THPO) that attach religious and cultural significance to historic properties that may be affected by the agency's undertakings per 36 CFR § 800.2(c)(2)(ii).

The State Historic Preservation Office is not the office of record for this undertaking. You are therefore asked to maintain a copy of this letter with your environmental review record for this undertaking.

If you have any questions, please contact Brian Grennell, Cultural Resource Management Specialist, at 517-335-2721 or by email at GrennellB@michigan.gov. **Please reference our project number in all communication with this office regarding this undertaking.** Thank you for this opportunity to review and comment, and for your cooperation.

Sincerely,

Brian G. Grennell
Cultural Resource Management Specialist

for Brian D. Conway
State Historic Preservation Officer

BGG:SAT

Copy: Mark Herbison, MDOT
Samantha Kenny, ROWE Professional Services Company