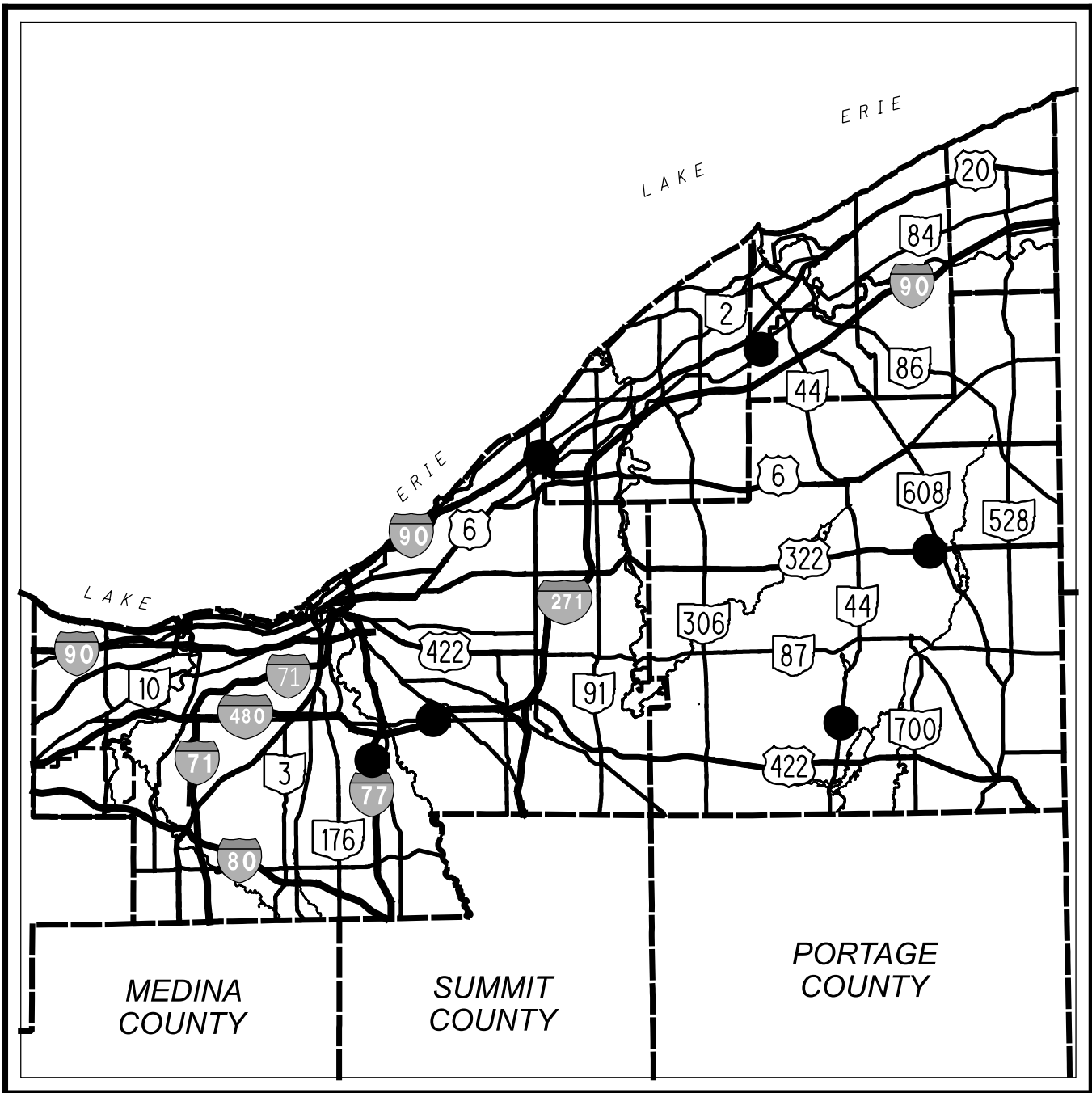
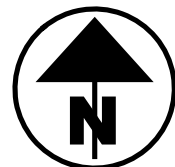




LOCATION MAP

SEE SHEET P.2 FOR CULVERT LOCATIONS



PROJECT LOCATIONS ●

DESIGN DESIGNATION

SEE SHEET P.2 FOR DESIGN DESIGNATIONS

DESIGN EXCEPTIONS

NONE REQUIRED

UNDERGROUND UTILITIES

Contact Two Working Days
Before You Dig


Before You Dig

OHIO811, 8-1-1, or 1-800-362-2764
(Non members must be called directly)

PLAN PREPARED BY:


AKRON / CLEVELAND / COLUMBUS
PO BOX 44331
P 330.375.1390 / F 800.855.1390
W ENVDESIGNGROUP.COM

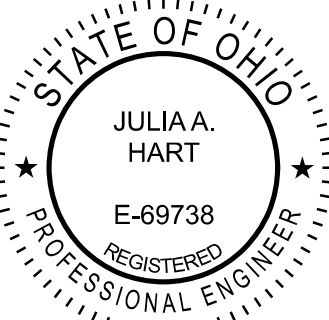
ENGINEER'S SEAL

FOR ENTIRE PLAN EXCEPT
GEA-322-13.88 & GEA-44-4.52
EXTENSION DETAILS



ENGINEER'S SEAL

GEA-322-13.88 & GEA-44-4.52
EXTENSION DETAILS



STANDARD CONSTRUCTION DRAWINGS								SUPPLEMENTAL SPECIFICATIONS	SPECIAL PROVISIONS
BP-3.1	1/21/22	RM-1.1	1/20/23	MT-95.45	7/21/23	TC-41.20	10/18/13	800-2023	1/17/25
BP-5.1	7/15/22	RM-4.2	4/17/20	MT-96.11	7/21/23	TC-42.10	10/18/13	821	4/20/12
BP-9.1	1/18/19			MT-96.20	7/21/23	TC-42.20	10/18/13	832	7/21/23
		HW-1.1	7/20/18	MT-96.26	1/18/19	TC-61.10	4/21/23	836	1/19/18
		HW-2.1	7/15/22	MT-97.10	4/19/19	TC-61.30	7/19/19	873	4/16/21
CB-2-2A, 2B, 2C	1/20/23	HW-2.2	7/20/18	MT-97.11	1/20/17	TC-65.10	1/17/14	899	7/20/23
CB-8	7/16/21			MT-99.30	1/17/20	TC-65.11	7/15/22	902	7/19/19
		F-1.1	7/19/13	MT-101.70	4/21/23			921	4/20/22
DM-1.1	7/17/20			MT-101.75	7/21/23				
DM-2.1	1/18/13			MT-102.10	7/21/23				
				MT-105.10	1/17/20				
MGS-1.1	7/16/21								
MGS-2.1	1/19/18								
MGS-4.2	7/19/13								
MGS-4.3	1/18/13								
MGS-5.3	7/15/16								

STATE OF OHIO

DEPARTMENT OF TRANSPORTATION

D12-CU-FY2024

CITY OF INDEPENDENCE, CITY OF EUCLID, &
CITY OF GARFIELD HEIGHTS
CUYAHOGA COUNTY
AUBURN & CLARIDON TOWNSHIPS
GEAUGA COUNTY
CONCORD TOWNSHIP
LAKE COUNTY

FEDERAL PROJECT NUMBER

E230111

RAILROAD INVOLVEMENT

NONE

PROJECT DESCRIPTION

REHABILITATION OF CULVERTS CUY-77-7.84 AND CUY-18271-0.13,
REPLACEMENT OF CULVERT CUY-90-29.92, EXTENSION OF
CULVERTS GEA-322-13.88 AND GEA-44-4.52, AND FILLING AND
PLUGGING CULVERT LAK-84-14.25.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA: * ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: * ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: * ACRES
* SEE PLAN AND PROFILE
AND CULVERT DETAIL SHEETS

LIMITED ACCESS

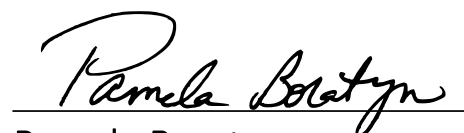
THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR
THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED
ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE
DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF
SECTION 5511.02 OF THE OHIO REVISED CODE.

2023 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF
OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING
SUPPLEMENTAL SPECIFICATIONS LISTED IN THE
PLANS AND CHANGES LISTED IN THE PROPOSAL SHALL
GOVERN THIS IMPROVEMENT.

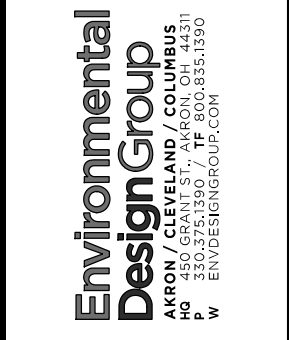
I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE
MAKING OF THESE IMPROVEMENTS WILL NOT REQUIRE THE
CLOSING TO TRAFFIC OF THE HIGHWAY, EXCEPT AS NOTED
ON SHEET P.24 AND THAT PROVISIONS FOR THE
MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET
FORTH ON THE PLANS AND ESTIMATES.


John Picuri, P.E., P.S.
District 12 Deputy Director


Pamela Boratyn
Director, Department of Transportation

TITLE SHEET

DESIGN AGENCY


AKRON / CLEVELAND / COLUMBUS
PO BOX 44331
P 330.375.1390 / F 800.855.1390
W ENVDESIGNGROUP.COM

DESIGNER

MSD

REVIEWER

SAC 12/29/23

PROJECT ID

112947

SHEET

P.1

TOTAL

86

DRAINAGE

CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEM.

ITEM SPECIAL - FILL AND PLUG EXISTING CONDUIT

THIS ITEM CONSISTS OF THE CONSTRUCTION OF BULKHEADS IN AN EXISTING CONDUIT (SIZE AS SHOWN IN THE PLANS) AND FILLING THE AREA SEALED OFF WITH ITEM 613, SAND OR OTHER MATERIAL APPROVED BY THE ENGINEER.

LOCATE THE BULKHEADS AT THE LIMITS OF THE AREA TO BE FILLED, AS INDICATED ON THE PLANS. THE BULKHEADS CONSIST OF BRICK OR CONCRETE MASONRY WITH A MINIMUM THICKNESS OF 12 INCHES.

PUMP THE FILL MATERIAL INTO PLACE OR BY OTHER MEANS APPROVED BY THE ENGINEER, SO THAT AFTER SETTLEMENT, AT LEAST 90 PERCENT OF THE CROSS- SECTIONAL AREA OF THE CONDUIT, FOR ITS ENTIRE LENGTH IS FILLED. THE LENGTH OF FILLED AND PLUGGED CONDUIT TO BE PAID FOR IS THE ACTUAL NUMBER OF FEET (MEASURED ALONG THE CENTERLINE OF EACH CONDUIT FROM OUTER FACE TO OUTER FACE OF BULKHEADS) FILLED AND PLUGGED AS DESCRIBED ABOVE.

IN LIEU OF FILLING AND PLUGGING THE EXISTING CONDUIT, THE PIPE MAY BE CRUSHED AND BACKFILLED PER 203, OR IT MAY BE REMOVED. THE LENGTH, MEASURED AS PROVIDED ABOVE, WILL BE PAID FOR AT THE CONTRACT PRICE PER FOOT FOR, ITEM SPECIAL, FILL AND PLUG EXISTING CONDUIT.

ITEM SPECIAL - PIPE CLEANOUT

THIS WORK CONSISTS OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE CONDUITS SPECIFIED IN THE PLANS. DISPOSE OF ALL MATERIAL PER 105.16 AND 105.17. CLEAN OUT TO THE APPROVAL OF THE ENGINEER.

CLEANOUT OF THE PIPE IS PAID FOR AT THE UNIT PRICE BID FOR ITEM SPECIAL, PIPE CLEANOUT. THIS PRICE INCLUDES THE COST FOR MATERIAL, EQUIPMENT, LABOR, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT.

ITEM 611 - CONDUIT, MISC.: REHABILITATE EXISTING 33" DIAMETER CONDUIT

THIS WORK SHALL CONSIST OF REHABILITATING THE EXISTING 33" CONDUITS UNDER INTERSTATE-77 AS SHOWN IN THE PLANS AND AS DIRECTED BY THE ENGINEER. ALLOWABLE METHODS FOR THE PIPE REHABILITATION INCLUDE THE FOLLOWING OPTIONS INDICATED BELOW.

ALL COSTS ASSOCIATED WITH THE WORK DESCRIBED HEREIN AND ALL EQUIPMENT, TOOLS, LABOR, MATERIALS, SUBMITTALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM SHALL BE INCLUDED IN THE UNIT BID PRICE PER FOOT OF ITEM 611 CONDUIT, MISC: REHABILITATE EXISTING 33" DIAMETER CONDUIT.

OPTION A: ITEM 899, CURED-IN-PLACE PIPE LINER. PROVISIONS FOR THIS ITEM ARE INDICATED IN SUPPLEMENTAL SPECIFICATION 899 (SS899).

OPTION B: EXPAND-IN-PLACE GLASS-FIBER LINER PIPE
INSTALL AN EXPAND-IN-PLACE GLASS-FIBER LINER PIPE THAT IS BONDED TO THE INTERIOR SURFACE OF THE CONCRETE HOST PIPE TO BE REHABILITATED. ENSURE THE LINER PIPE FITS TIGHTLY AND CONFORMS TO THE SHAPE OF THE EXISTING PIPE WHEN THE EXPANSION IS COMPLETE. GLASS ALL SEAMS AND JOINTS A MINIMUM THICKNESS EQUAL TO THE DESIGN THICKNESS TO PRODUCE A CONTINUOUS JOINT-LESS LINER THAT IS IMPERVIOUS TO INFILTRATION AND EXFILTRATION.

PROVIDE CALCULATIONS PERFORMED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER. DESIGN THE PIPE AS A STATE III LINER THAT INDEPENDENTLY SUPPORTS THE DEAD LOAD, LIVE LOAD, AND HYDRAULIC LOAD PER ASCE MOP 145, DESIGN OF CLOSE-FIT LINERS. USE A DESIGN SERVICE LIFE OF 50 YEARS. INCLUDE A LOAD RATING ANALYSIS, IF REQUIRED, PER THE BRIDGE DESIGN MANUAL SECTION 900 TO THE DISTRICT BRIDGE ENGINEER.

PROVIDE LINER PIPE CONFORMING TO 707.75.

PROVIDE A 2-PART BONDING SYSTEM CONSISTING OF A PRIMER AND BONDING AGENT, BOTH SOURCED FROM THE SAME PRODUCER, DESIGNED TO WORK IN CONJUNCTION TO BOND THE LINER PIPE TO THE CONCRETE HOST PIPE. FILL VOIDS WITH GROUT COMPATIBLE WITH THE 2-PART BONDING SYSTEM WHERE THEY EXIST BETWEEN THE LINER AND HOST PIPE DUE TO DETERIORATION OF THE HOST PIPE (SPALLING, JOINT SEPARATION / MISALIGNMENT) AND FULL CONTACT CANNOT BE ACHIEVED.

CURED BONDING AGENT PROPERTIES	
TENSILE STRENGTH	1700 PSI (MINIMUM)
ELONGATION	480% (MAXIMUM)
MODULUS (100%)	430 PSI (MINIMUM)

INSTALL LINER PIPE AND BONDING SYSTEM AS PER THE DIRECTION OF THE MANUFACTURER USING ONLY MANUFACTURER CERTIFIED PERSONNEL.

CLEAN AND REMOVE DEBRIS FROM THE HOST PIPE PRIOR TO INSTALLING THE LINER PIPE. DEWATER PIPE AND BYPASS FLOW DURING INSTALLATION. RESTORE ACTIVE SERVICE CONNECTIONS AFTER INSTALLATION OF THE LINER PIPE. PERFORM A POST-INSTALLATION VIDEO SURVEY OF THE PIPE AND PROVIDE A COPY OF THE VIDEO TO THE ENGINEER AS DESCRIBED IN SS902 SECTION 902.01 C.

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR, ALONG WITH LOCAL REPRESENTATIVES, SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCE SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE STATE.

ALL NEW CONDUITS, INLETS, CATCH BASINS, AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEMS.

PAVEMENT

PAVING UNDER GUARDRAIL

THIS OPERATION SHALL INCLUDES PAVING UNDER THE GUARDRAIL USING ITEM 441 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (449), (UNDER GUARDRAIL), AS PER PLAN.

PAVING UNDER GUARDRAIL SHALL CONSIST OF PLACING ITEM 441 ASPHALT CONCRETE TO A DEPTH AND WIDTH INDICATED IN THE TYPICAL SECTIONS USING ONE OF THE FOLLOWING METHODS:

METHOD A:

- SET GUARDRAIL POSTS
- PLACE ITEM 441

METHOD B:

- PLACE ITEM 441
- BORE ASPHALT AT POST LOCATIONS (MAY BE OMITTED IF STEEL POSTS ARE USED)
- SET GUARDRAIL POSTS
- PATCH AROUND POSTS. THE MATERIALS USED FOR PATCHING SHALL BE AN ASPHALT CONCRETE APPROVED BY THE ENGINEER. PATCHED AREAS SHALL BE COMPACTED USING EITHER HAND OR MECHANICAL METHODS. FINISHED SURFACES SHALL BE SMOOTH AND SLOPED TO DRAIN AWAY FROM THE POSTS.

ALL EQUIPMENT, MATERIALS AND LABOR REQUIRED TO PERFORM THE WORK OUTLINED ABOVE, WITH THE EXCEPTION OF SETTING GUARDRAIL POSTS, SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 441 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (449), (UNDER GUARDRAIL), AS PER PLAN

ITEM 441 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (449), PG70-22M, AS PER PLAN

THE COARSE VIRGIN AGGREGATE FOR THIS ITEM SHALL CONSIST OF A BLEND OF 60% MINIMUM AIR COOLED BLAST FURNACE SLAB (ACBFS) OR TRAP ROCK FROM ONTARIO WITH LIMESTONE COMPRISING THE REMAINING PERCENTAGE.

PART-WIDTH CONSTRUCTION

BECAUSE OF THE NECESSITY TO BUILD THIS PROJECT UNDER TRAFFIC AND TO CONSTRUCT THE FULL PAVEMENT WIDTH IN STAGES, EXERCISE CARE TO PREVENT THE CONSTRUCTION OF A BUTT JOINT IN THE BASE COURSES. LAP LONGITUDINAL JOINTS AS SHOWN ON STANDARD CONSTRUCTION DRAWING BP-3.1.

TRAFFIC CONTROL

ITEM 621 - RAISED PAVEMENT MARKER REMOVED, AS PER PLAN

THIS WORK PERTAINS TO THE RAISED PAVEMENT MARKERS ON I-77. REMOVE THE REFLECTORS OF THE EXISTING RAISED PAVEMENT MARKERS THAT ARE IN CONFLICT WITH THE WORK ZONE LANE CONFIGURATIONS PER MT-102.10.

ENVIRONMENTAL

ENDANGERED BAT HABITAT REMOVAL

NO TREES SHALL BE REMOVED UNDER THIS PROJECT FROM APRIL 1 THROUGH SEPTEMBER 30. ALL NECESSARY TREE REMOVAL SHALL OCCUR FROM OCTOBER 1 THROUGH MARCH 31. THIS REQUIREMENT IS NECESSARY TO AVOID AND MINIMIZE IMPACTS TO FEDERALLY AND STATE LISTED BAT SPECIES AS REQUIRED BY THE ENDANGERED SPECIES ACT. FOR THE PURPOSE OF THIS NOTE, A TREE IS DEFINED AS A LIVE, DYING, OR DEAD WOODY PLANT WITH A TRUNK THREE (3) INCHES OR GREATER IN DIAMETER AT A HEIGHT OF 4.5 FEET ABOVE THE GROUND SURFACE, AND WITH A MINIMUM HEIGHT OF 13 FEET.

 Environmental Design Group ANN ARBOR / CLEVELAND / COLUMBUS 248.263.2500 / 216.290.8550 www.edginc.com	
DESIGN AGENCY	
DESIGNER	MSD
REVIEWER	SAC 12/29/23
PROJECT ID	112947
SHEET	TOTAL
P.29	86

SHEET NO.	REFERENCE NO.	STATION		SIDE	202	202	202	202	SPECIAL	SPECIAL	202	202	601	602	611	611	611	611	611	611	611	611	611	611	611	899
					HEADWALL REMOVED	PIPE REMOVED, 24" AND UNDER	PIPE REMOVED, OVER 24"	CATCH BASIN REMOVED	FILL AND PLUG EXISTING CONDUIT, 12" DIAMETER	FILL AND PLUG EXISTING CONDUIT, 36" DIAMETER	SPECIAL - PIPE CLEANOUT, 24" AND UNDER	SPECIAL - PIPE CLEANOUT, 27" TO 48"	ROCK CHANNEL PROTECTION, TYPE C, WITH FILTER	CONCRETE MASONRY	15" CONDUIT, TYPE C	24" CONDUIT, TYPE B, 706.02	30" CONDUIT, TYPE C, 706.08	FIELD PAVING OF EXISTING PIPE, CPP, 33" DIAMETER	FIELD PAVING OF EXISTING PIPE, CMP, 42" DIAMETER	CONDUIT - BORED OR JACKED, TYPE B, 42", 748.06	CATCH BASIN, NO. 8	CATCH BASIN, NO. 2-2B	MANHOLE, NO. 3	CONDUIT, MISC: REHABILITATE EXISTING 33" DIAMETER CONDUIT	CURED-IN-PLACE PIPE LINER (42" DIAMETER)	
		EACH	FT		FT	EACH	FT	FT	FT	FT	CY	CY	FT	FT	FT	FT	FT	FT	FT	EACH	EACH	EACH	FT	FT		
		FROM	TO																							
		CUY-77-7.84																								
P.51	D-1	413+31.40	415+02.48	LT							174															
P.51	D-2	415+00.55	415+02.48	LT/RT								91					10								91	
P.51	D-3	415+02.48	415+02.51	LT								72					10								72	
CUY-77-7.84 SUBTOTAL											174	163					20								163	
		CUY-90-29.92																								
P.52	D-1	49+33.82	49+35.02	LT/RT									2.8	7.2					294	1						
P.52	D-2	49+33.82	49+57.87	LT													25									
P.52	D-3	49+48.25	49+50.60	LT/RT	1		8			285																
P.52	D-4	49+50.60	49+57.87	LT			10	1																		
CUY-90-29.92 SUBTOTAL					1		18	1		285			2.8	7.2			25			294	1					
		CUY-18271-0.13 (CULVERT BASELINE)																								
P.53	D-1	3+00.00	7+13.00	LT/RT								413						152							413	
CUY-18271-0.13 SUBTOTAL												413						152							413	
		LAK-84-14.25																								
P.36	D-1	366+73.00	366+85.00	RT		12										12						1				
P.36	D-2	366+74.00		RT	1	10																				
P.36	D-3	366+79.00		RT		10																				
P.36	D-4	366+74.00	366+76.00	LT/RT					42																	
P.36	D-5	366+79.00	366+81.00	LT/RT					42																	
P.36	D-6	366+79.00		RT											11						1					
P.36	D-7	366+65.00	366+72.00	RT		7																				
P.36	D-8	366+71.00	366+74.00	RT		5																				
P.36	D-9	366+79.00	366+79.00	RT		5																				
P.36	D-10	366+80.00	366+82.00	RT		5																				
P.36	D-11	366+82.00	366+93.00	RT		11																				
LAK-84-14.25 SUBTOTAL					1	65			84						11	12						1	1			
TOTALS CARRIED TO GENERAL SUMMARY					2	65	18	1	84	285	174	576	3	7.2	11	12	25	20	152	294	1	1	1	163	413	

MODEL: I12947_DP10I PAPERSIZE: 34x22 (in.) DATE: 4/24/2025 TIME: 3:20:49 PM USER: scook
E:\0007\21-00121-010 000T D-12 Culvert+ Replacement I12947\N12947_400-Engineering\Drainage Sheets\I12947_DP10I.dgn

SIGNER	
MSD	
REVIEWER	
AC	12/29/23
OBJECT ID	
112947	
FEET	TOTAL
2.51	86

