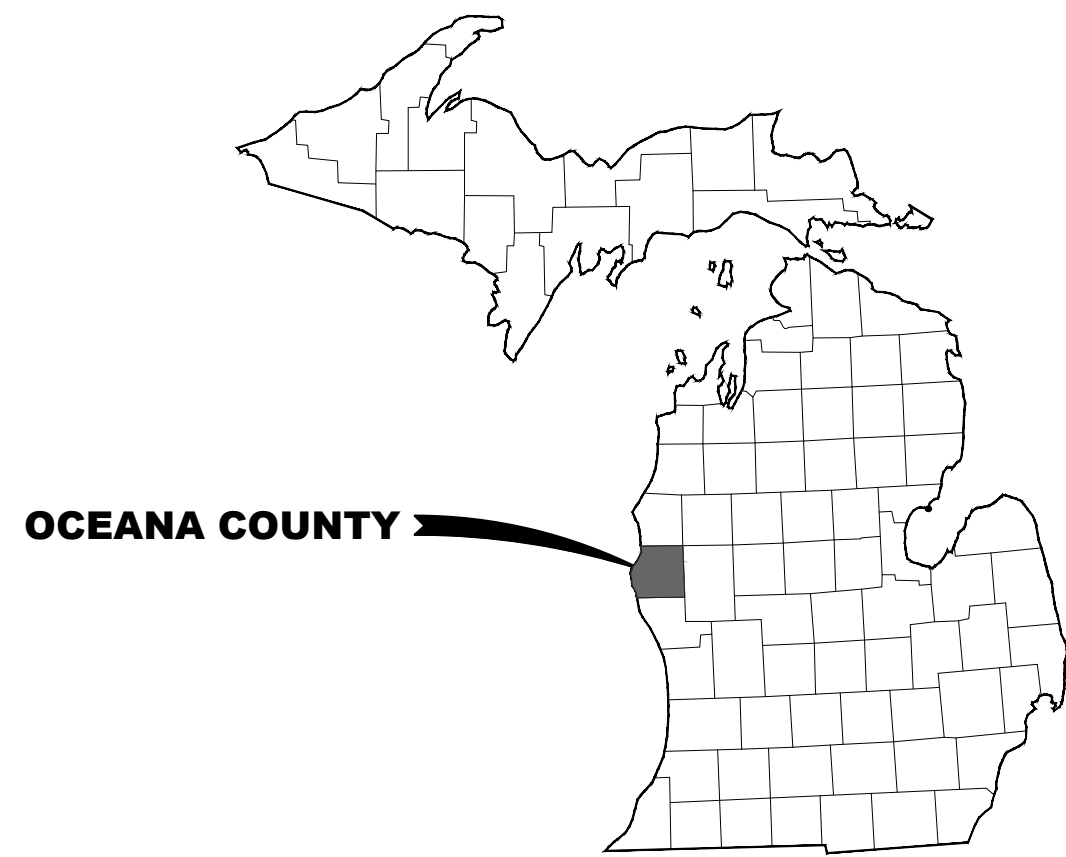




VICINITY MAP

OCEANA COUNTY ROAD COMMISSION

SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN

LEWIS ADVENTURE FARM & ZOO

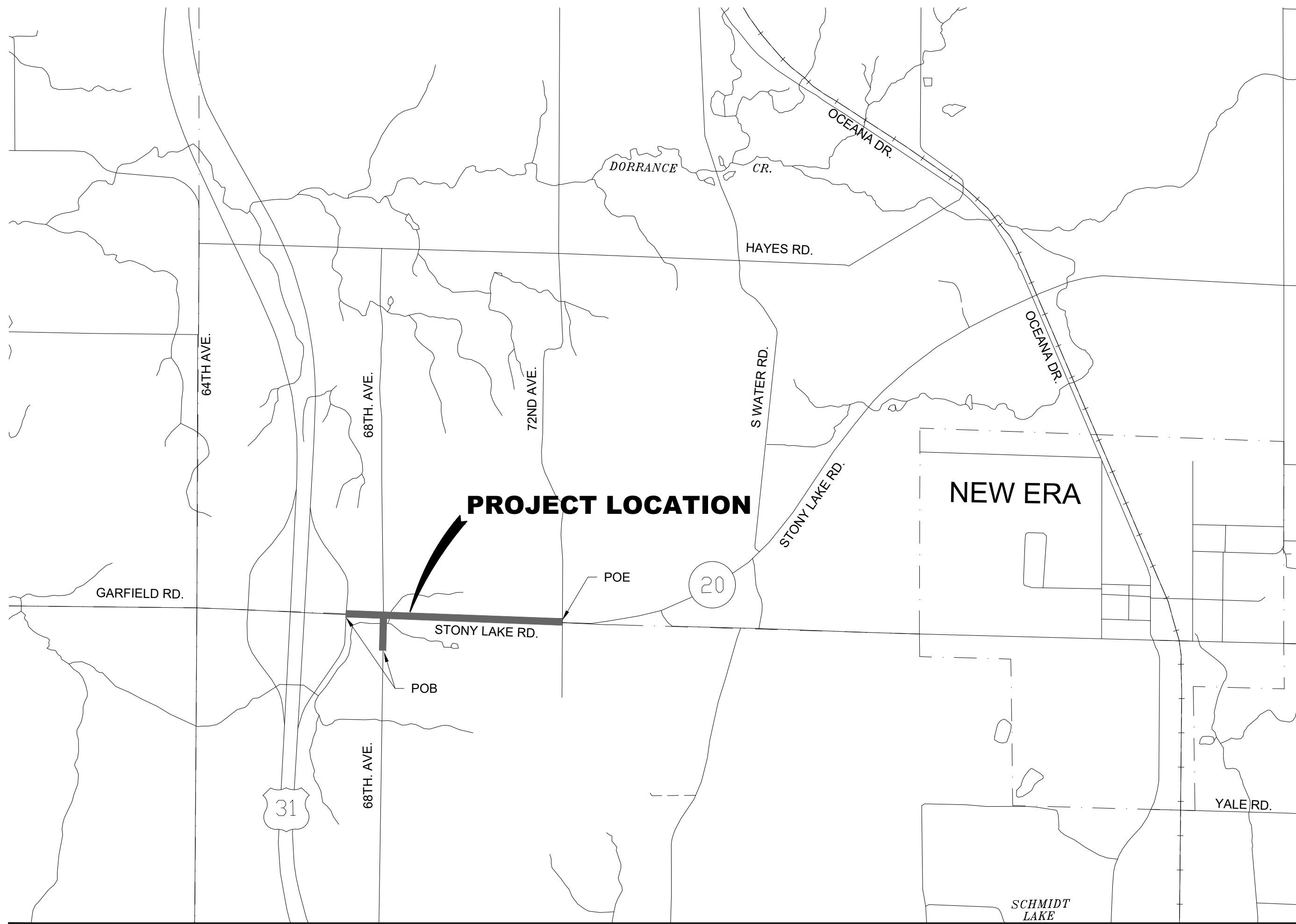
STRUCTURE 14792 STONY LAKE ROAD (M-20)

MDOT ID 64022-V01

DECEMBER 2025

INDEX OF DRAWINGS

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ELECTRICAL ONE-LINE DIAGRAM & SCHEDULES	E-301



LOCATION MAP

**FLEISH & VANDENBERG**
DESIGN. BUILD. OPERATE.

2960 Lucerne Drive SE
Grand Rapids, MI 49546
P: 616.977.1000
F: 616.977.1005

OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
LEWIS ADVENTURE FARM & ZOO
STRUCTURE 14792 STONY LAKE ROAD (M-20)
MDOT ID 64022-V01

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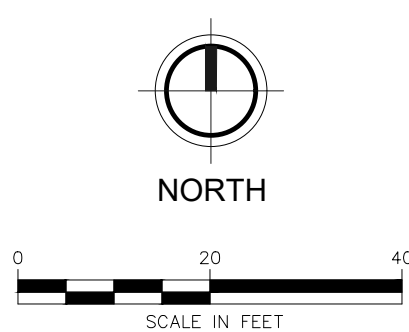
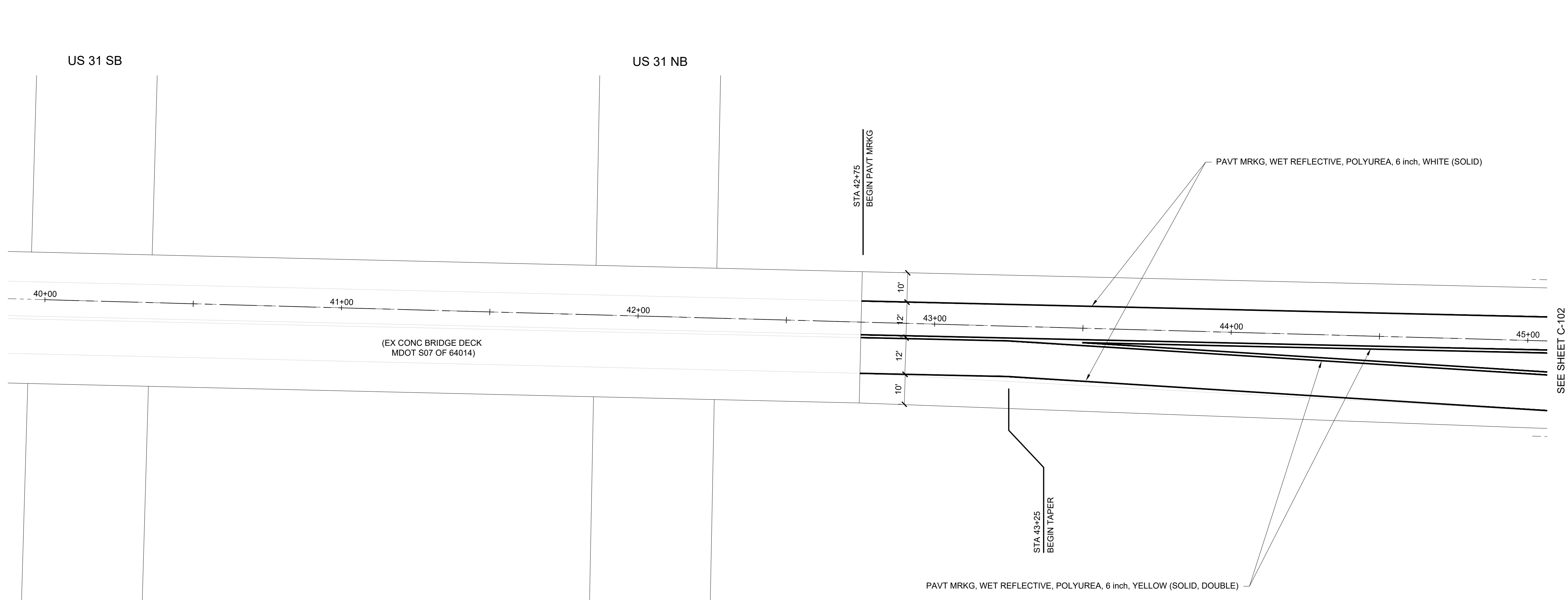
DECEMBER 2025
F&V PROJECT NO.
868960

G-001



Know what's below.
Call before you dig.

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STONY LAKE RD / M-20
EX. BIT. PAVEMENT

SESC LEGEND

- PERMANENT / TEMPORARY SEEDING
 - SILT FENCE
 - MULCH BLANKET
- NOTE: REFER TO MDOT STANDARD PLAN R-96 SERIES FOR KEYING.

PAVT MRKG QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
450	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, WHITE
800	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, YELLOW
1250	FT	RECESSING PAVT MRKG, LONGIT
900	FT	PAVT MRKG, LONGIT, 6 INCH OR LESS WIDTH, REM

OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)
PLAN

DESIGN TEAM:	PROJ MGR:	LEB
	DESIGNED BY:	RWT
	DRAWN BY:	PAD
CHECK BY:		

DRAWING INFORMATION:
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112525 plotted

DECEMBER 2025

F&V PROJECT NO.
868960

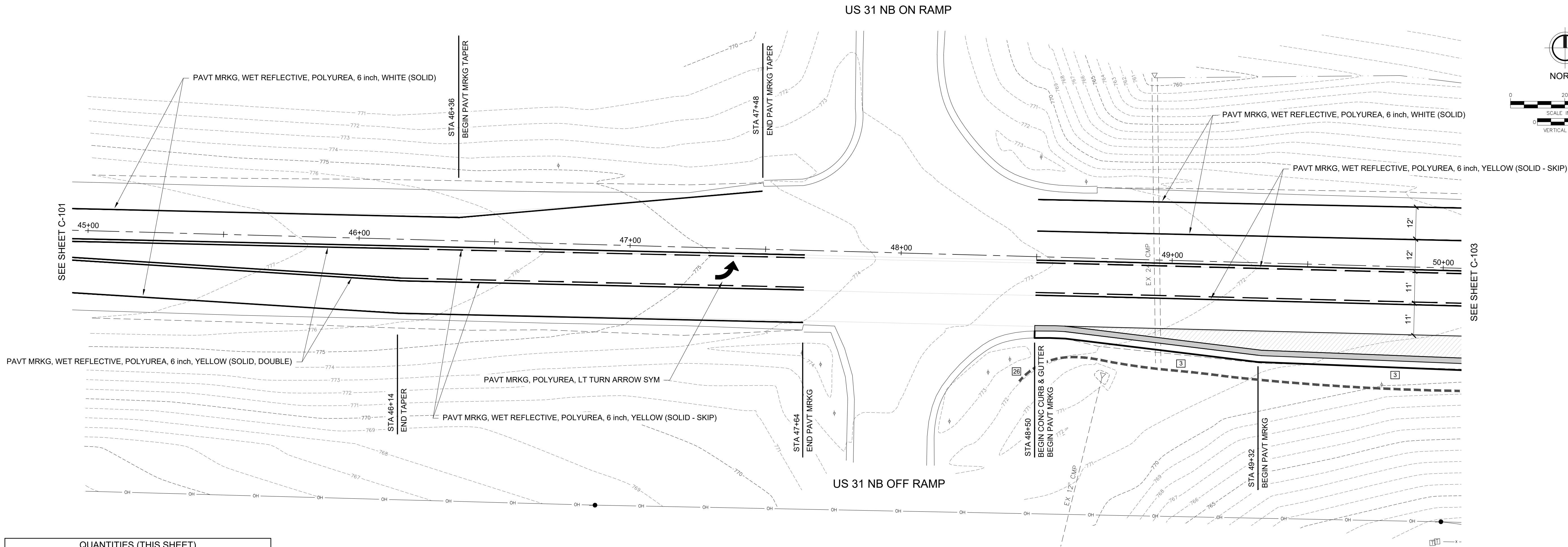
C-101

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QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
140	SYD	COLD MILLING HMA SURFACE
32	SYD	HMA SURFACE, REM
11	FT	CURB AND GUTTER, REM
1.4	STA	TRENCHING
40	CYD	SUBBASE, CIP
32	SYD	AGGREGATE BASE, 6 inch
150	FT	CURB AND GUTTER, CONC, DET B2
18	TON	HMA, 4EML
8	TON	HAND PATCHING
150	SYD	GRASS RESTORATION

PAVT MRKG QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
800	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, WHITE
1200	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, YELLOW
1	EA	PAVT MRKG, POLYUREA, LT TURN ARROW SYM
2000	FT	RECESSING PAVT MRKG, LONGIT
19	FT	RECESSING PAVT MRKG, TRANSV
2150	FT	PAVT MRKG, LONGIT, 6 INCH OR LESS WIDTH, REM

STONY LAKE RD / M-20
EX. BIT. PAVEMENT

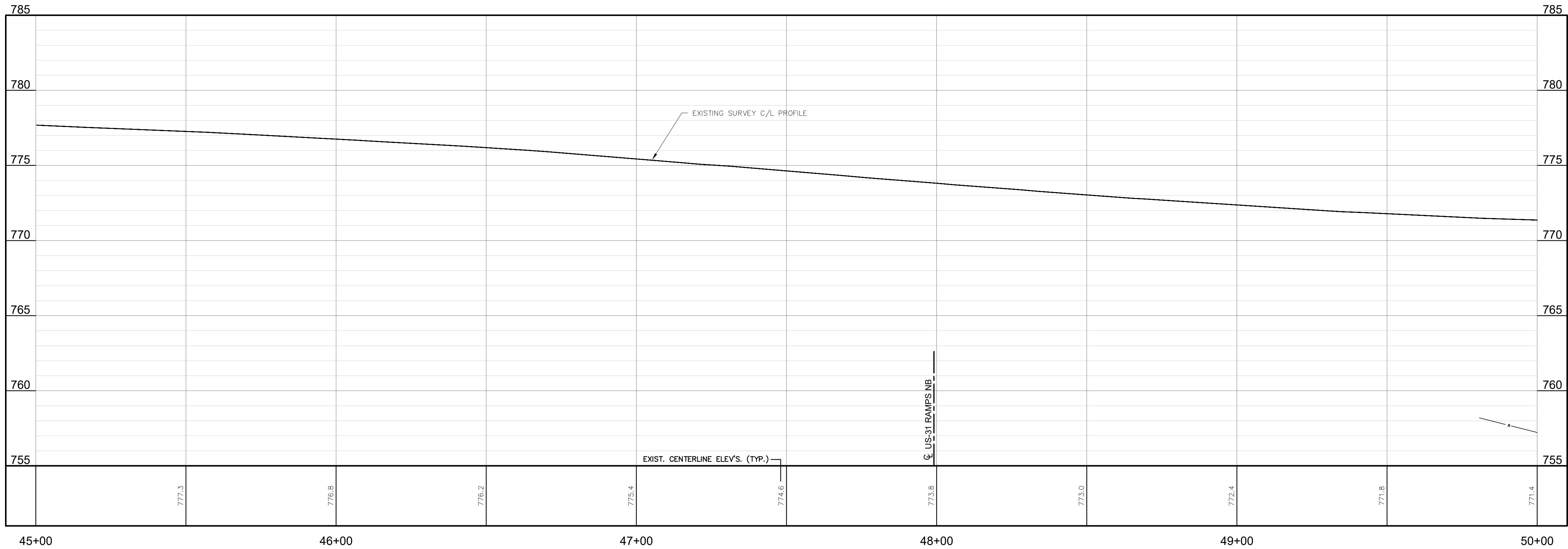


SESC LEGEND

- [3] PERMANENT / TEMPORARY SEEDING
 - [26] SILT FENCE
 - [33] MULCH BLANKET
- NOTE: REFER TO MDOT STANDARD PLAN R-96 SERIES FOR KEYING.

LEGEND

- [Hatched Box] PROPOSED REMOVE & REPLACE HMA PAVEMENT
- [Solid Line] PROPOSED CURB & GUTTER, CONC, DET B2
- [Diagonal Lines] PROPOSED COLD MILL & HMA OVERLAY (2")



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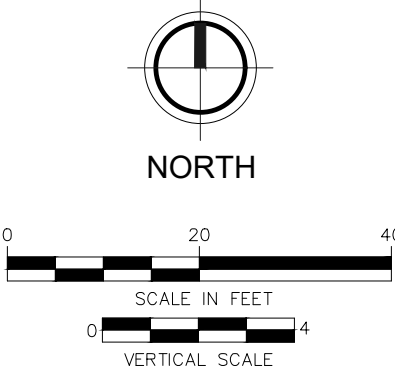
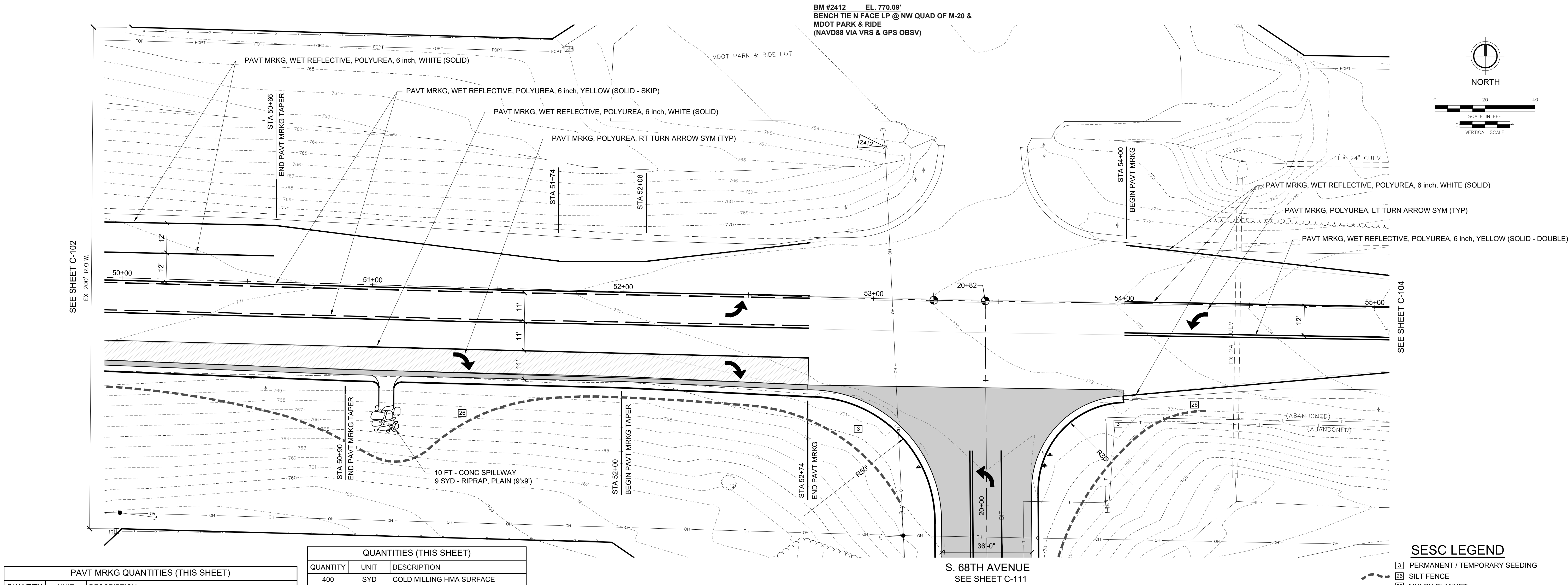
OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)
PLAN & PROFILE

DESIGN TEAM: PROJ MGR: LBH
DESIGNED BY: RWT
DRAWN BY: PAD
CHECK BY:

DRAWING INFORMATION:
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DECEMBER 2025
F&V PROJECT NO.
869960

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PAVT MRKG QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
885	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, WHITE
885	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, YELLOW
2	EA	PAVT MRKG, POLYUREA, LT TURN ARROW SYM
2	EA	PAVT MRKG, POLYUREA, RT TURN ARROW SYM
1770	FT	RECESSING PAVT MRKG, LONGIT
76	FT	RECESSING PAVT MRKG, TRANSV
2100	FT	PAVT MRKG, LONGIT, 6 INCH OR LESS WIDTH, REM

QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
400	SYD	COLD MILLING HMA SURFACE
62	SYD	HMA SURFACE, REM
2.8	STA	TRENCHING
85	CYD	SUBBASE, CIP
65	SYD	AGGREGATE BASE, 6 inch
274	FT	CURB AND GUTTER, CONC, DET B2
50	TON	HMA, 4EML
16	TON	HAND PATCHING
400	SYD	GRASS RESTORATION
100	SYD	MULCH BLANKET

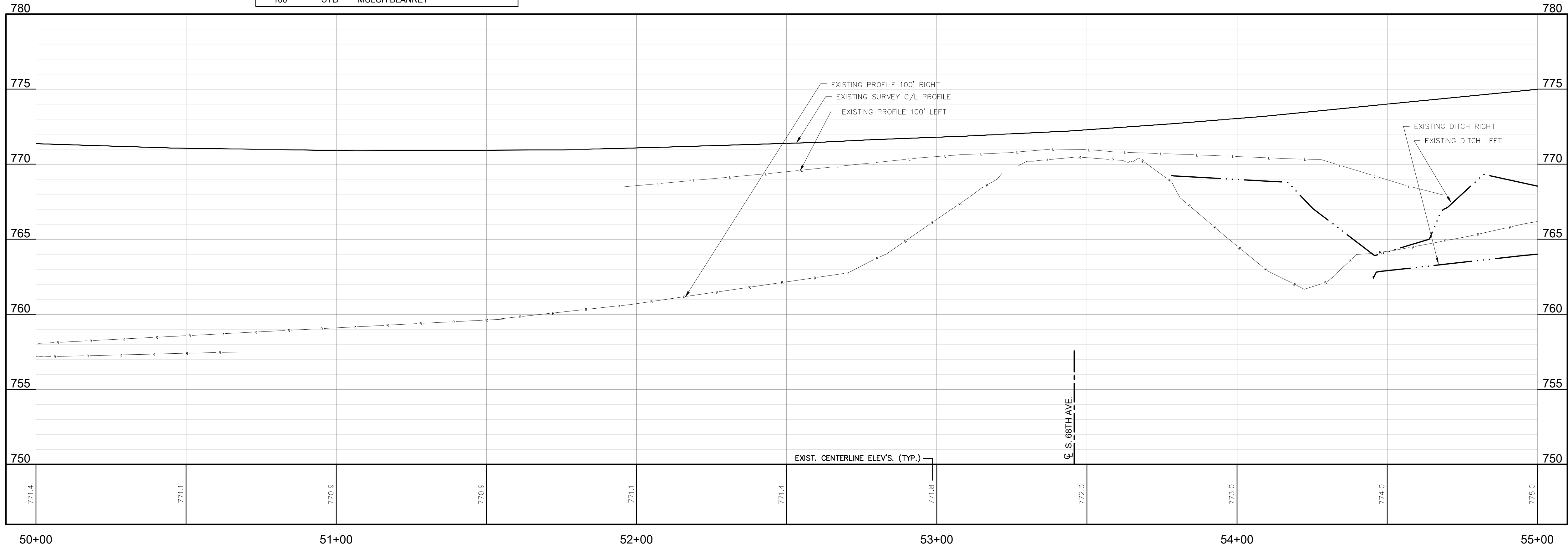
STONY LAKE RD / M-20
EX. BIT. PAVEMENT

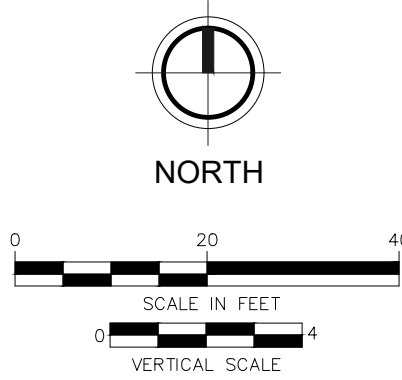
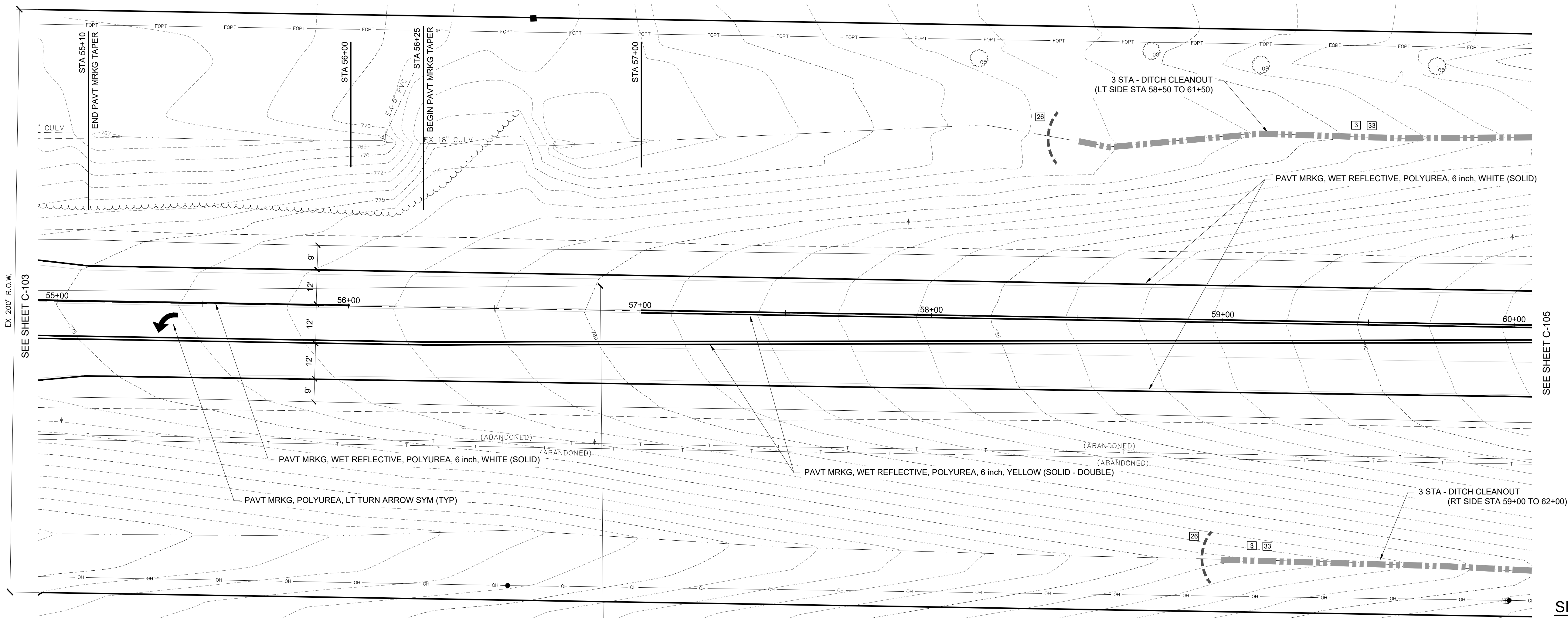
SESC LEGEND

- [3] PERMANENT / TEMPORARY SEEDING
- [26] SILT FENCE
- [33] MULCH BLANKET
- NOTE: REFER TO MDOT STANDARD PLAN R-96 SERIES FOR KEYING.

LEGEND

- [Hatched] PROPOSED REMOVE & REPLACE HMA PAVEMENT
- [Solid] PROPOSED REMOVE & REPLACE CONCRETE CURB & GUTTER
- [Dashed] PROPOSED COLD MILL & HMA OVERLAY (2")





QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
800	SYD	GRASS RESTORATION
400	SYD	MULCH BLANKET

PAVT MRKG QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
1100	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, WHITE
1600	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, YELLOW
1	EA	PAVT MRKG, POLYUREA, LT TURN ARROW SYM
2633	FT	RECESSING PAVT MRKG, LONGIT
2150	FT	PAVT MRKG, LONGIT, 6 INCH OR LESS WIDTH, REM

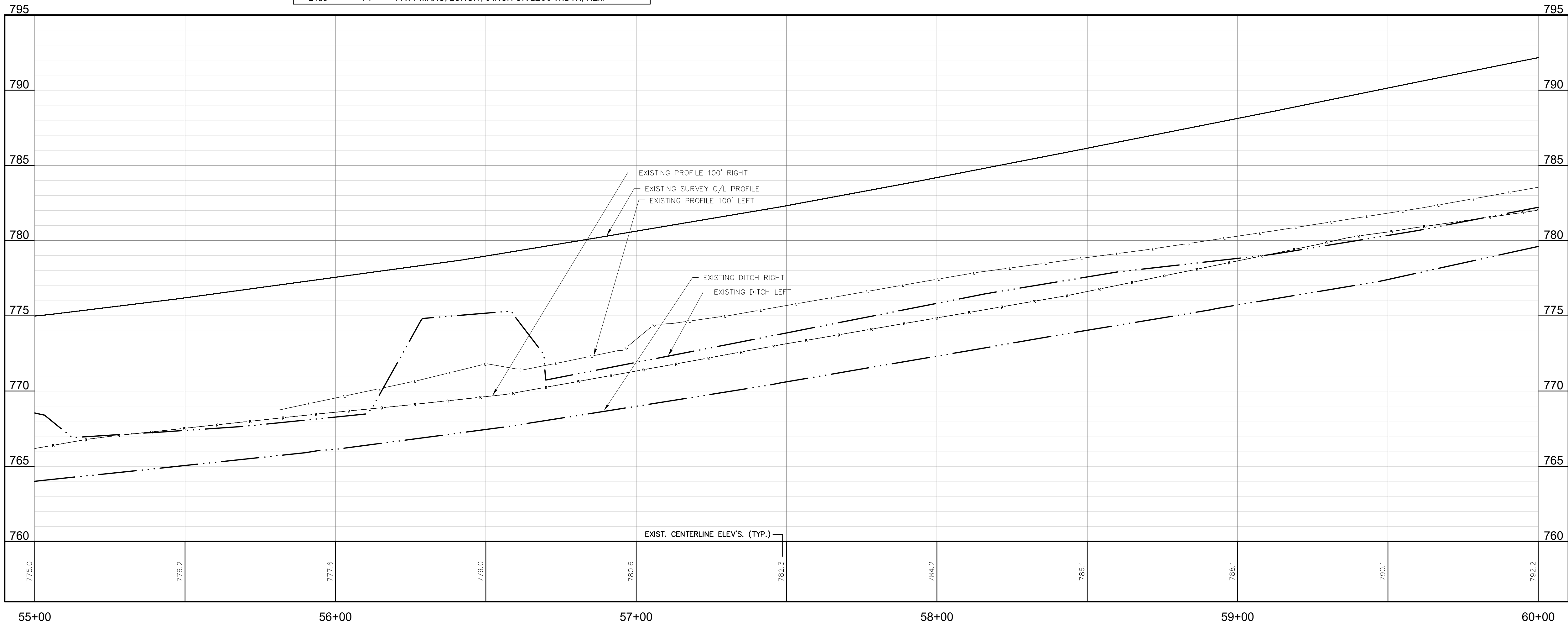
STONY LAKE RD / M-20

EX. BIT. PAVEMENT

LEGEND	
	PROPOSED REMOVE & REPLACE HMA PAVEMENT
	PROPOSED DITCH CLEANOUT

SESC LEGEND	
	PERMANENT / TEMPORARY SEEDING
	SILT FENCE
	INLET PROTECTION FABRIC DROP (PROVIDE AT ALL CATCH BASINS)
	MULCH BLANKET

NOTE: REFER TO MDOT STANDARD PLAN R-96 SERIES FOR KEYING.



OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)
PLAN & PROFILE

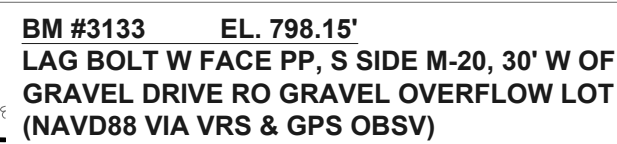
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	DESIGNED BY:	RWT
	DRAWN BY:	PAD
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DRAWING INFORMATION:
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112525 plotted

DECEMBER 2025

P&V PROJECT NO.
868960

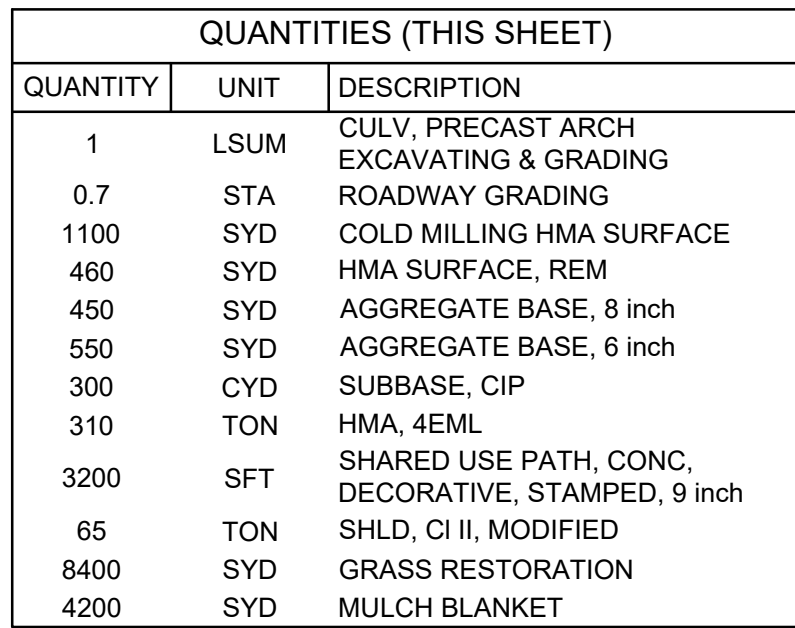
C-104



PAVT MRKG QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
1075	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, WHITE
1600	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, YELLOW
2675	FT	RECESSING PAVT MRKG, LONGIT
2150	FT	PAVT MRKG, LONGIT, 6 inch OR LESS WIDTH, REM

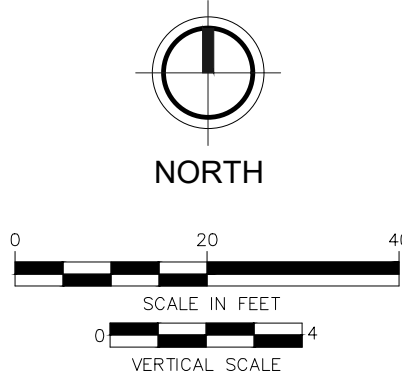
EX. BIT. PAVEMENT

PROPOSED STRUCTURE
SEE SHEET C-109



NOTE: SEE PROFILE VIEW OF STA 20+51
TO STA 22+51 ON SHEET C-109

* STRUCTURE PRECAST CONCRETE
WILL BE PROVIDED BY OTHERS
AND INSTALLED BY THIS CONTRACT



STONY LAKE RD / M-20
EX. BIT. PAVEMENT

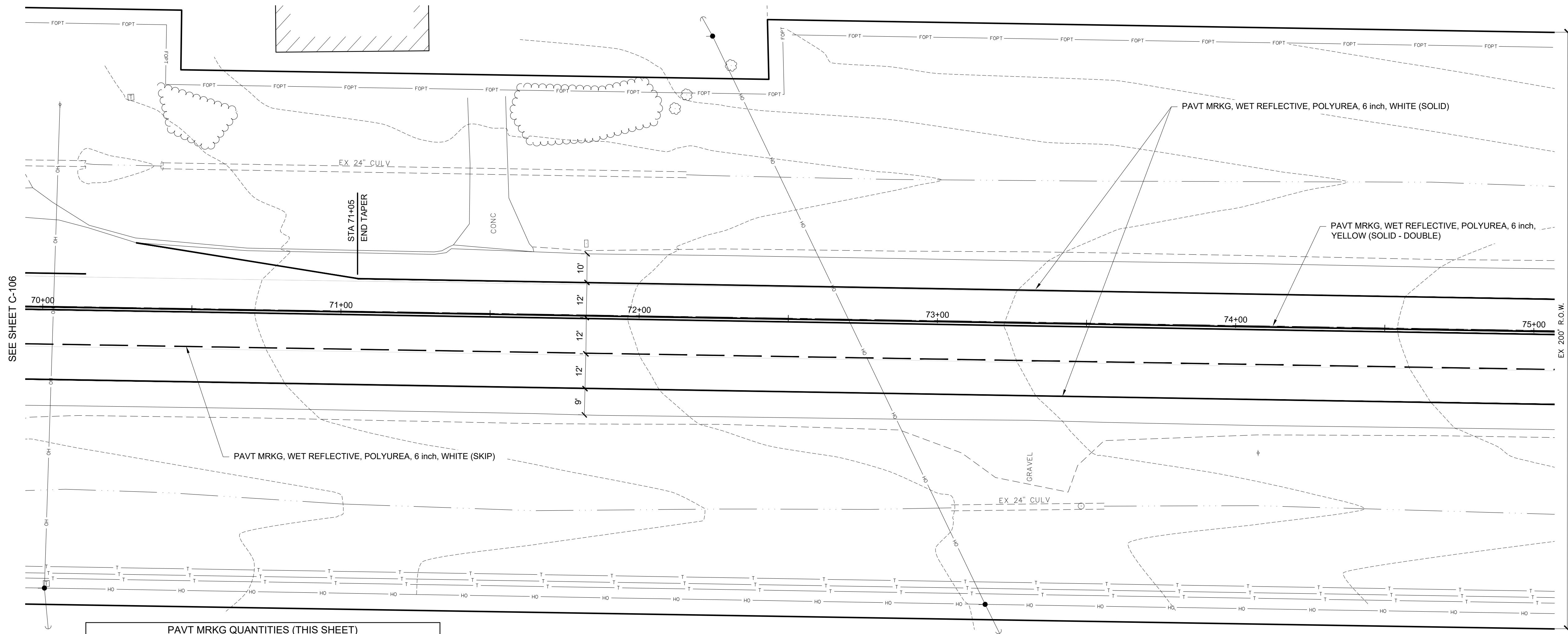
NOTE: REFER TO MDOT STANDARD PLAN R-96 SERIES FOR KEYING.



AD COMMISSION IA COUNTY, MICHIGAN AKE ROAD (M-20) PLAN & PROFILE

F&V PROJECT NO.
868960

C-106



PAVT MRKG QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
1125	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, WHITE
1000	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, YELLOW
2125	FT	RECESSING PAVT MRKG, LONGIT
2150	FT	PAVT MRKG, LONGIT, 6 INCH OR LESS WIDTH, REM

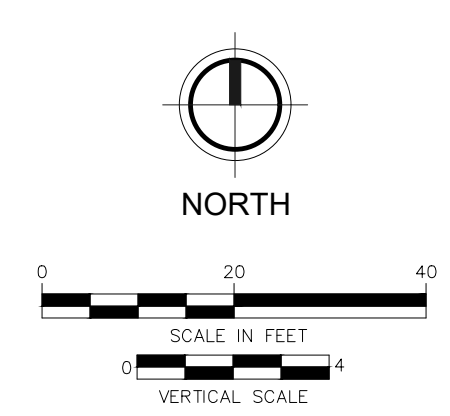
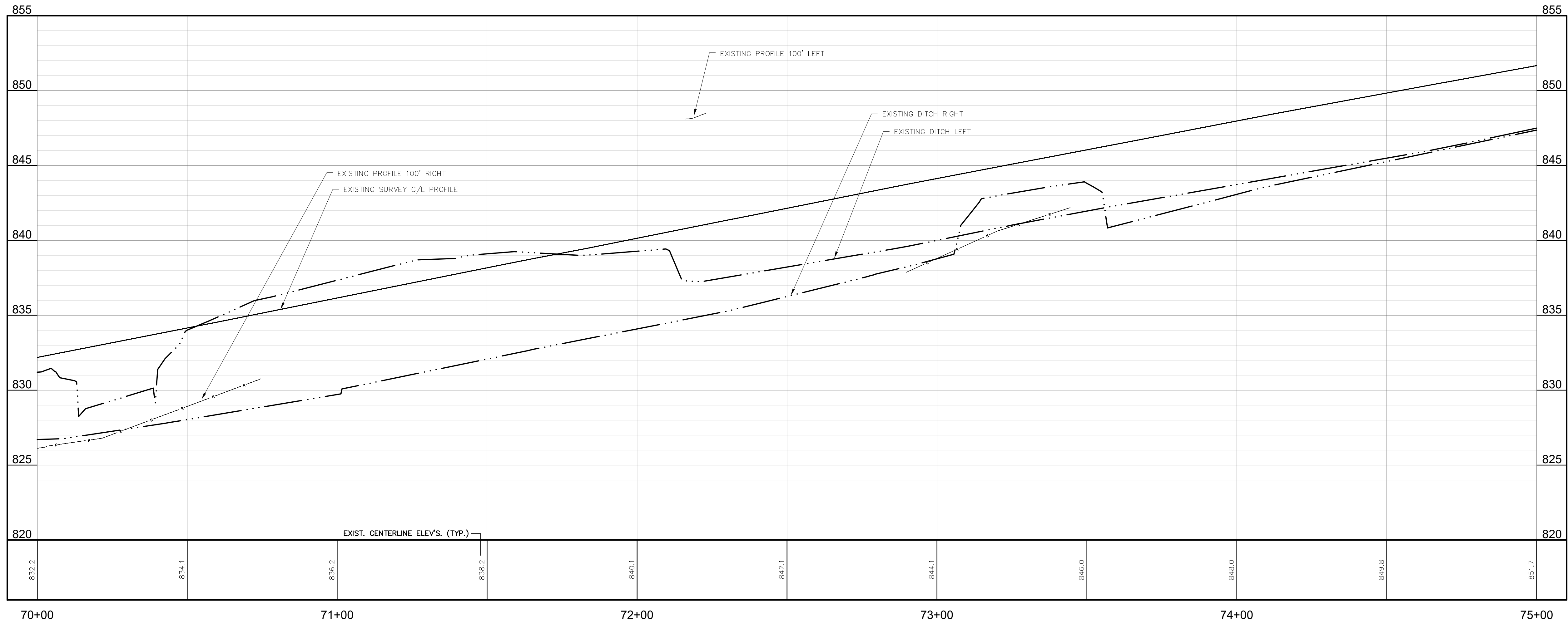
STONY LAKE RD / M-20
EX. BIT. PAVEMENT

SESC LEGEND

3 PERMANENT / TEMPORARY SEEDING

25 INLET PROTECTION FABRIC DROP (PROVIDE AT ALL CATCH BASINS)

NOTE: REFER TO MDOT STANDARD PLAN R-96 SERIES FOR KEYING.



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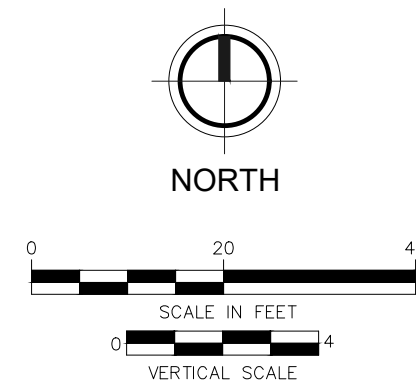
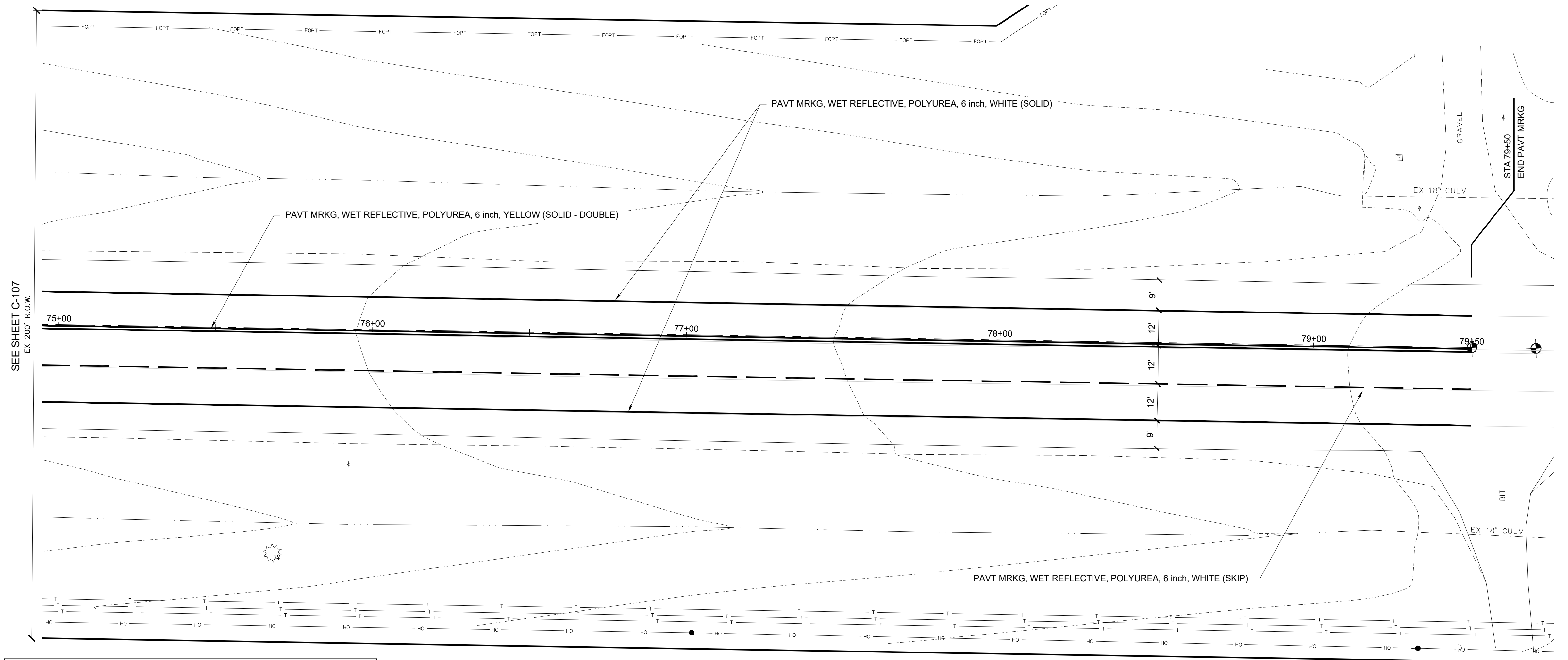
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DRAWING INFORMATION:
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DECEMBER 2025
F&V PROJECT NO.
868960

OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)

PLAN & PROFILE



PAVT MRKG QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
1025	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, WHITE
900	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, YELLOW
1925	FT	RECESSING PAVT MRKG, LONGIT
2150	FT	PAVT MRKG, LONGIT, 6 INCH OR LESS WIDTH, REM

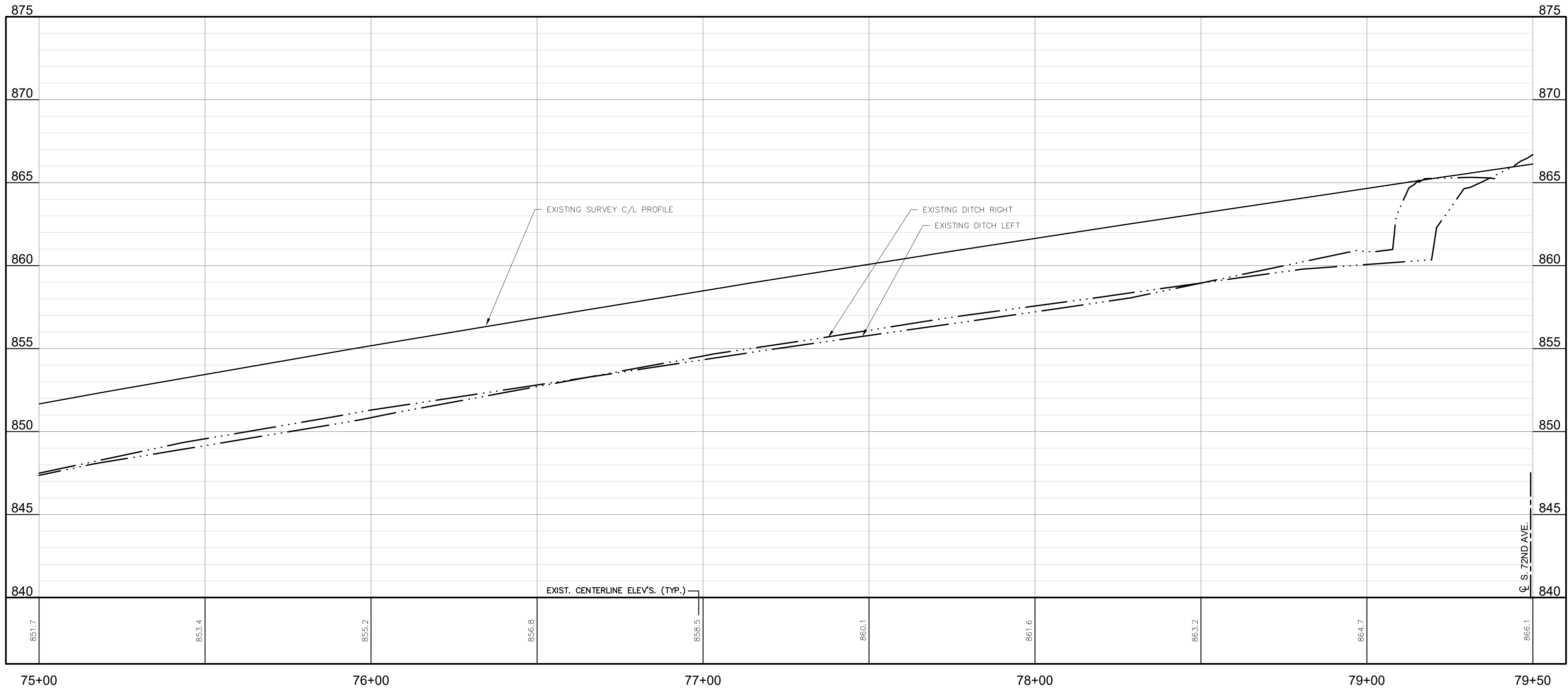
STONY LAKE RD / M-20
EX. BIT. PAVEMENT

S. 72ND AVENUE

SESC LEGEND

- 3 PERMANENT / TEMPORARY SEEDING
29 INLET PROTECTION FABRIC DROP (PROVIDE AT ALL CATCH BASINS)

NOTE: REFER TO MDOT STANDARD PLAN R-96 SERIES FOR KEYING.



REVISION:

OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)
PLAN & PROFILE

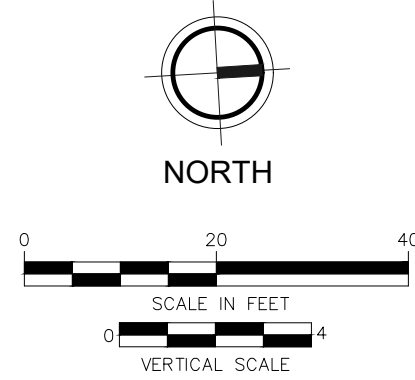
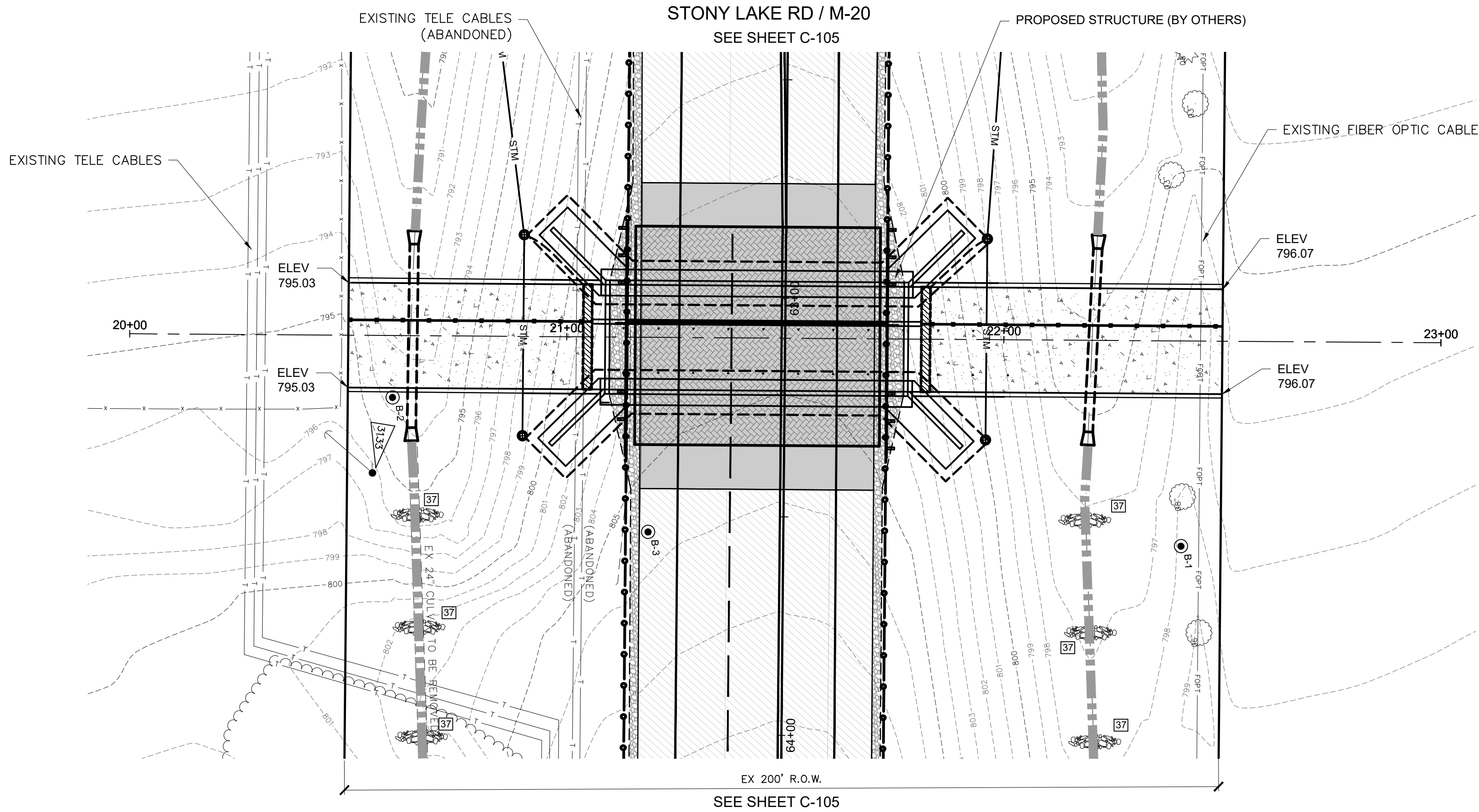
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DECEMBER 2025
F&V PROJECT NO.
868960

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BM #3133 EL. 798.15'
LAG BOLT W FACE PP, S SIDE M-20, 30' W OF
GRAVEL DRIVE RD GRAVEL OVERFLOW LOT
(NAVD88 VIA VRS & GPS OBSV)



LEGEND

- PROPOSED REMOVE & REPLACE HMA PAVEMENT
- PROPOSED COLD MILL & HMA OVERLAY (2")
- PROPOSED DITCH CLEANOUT

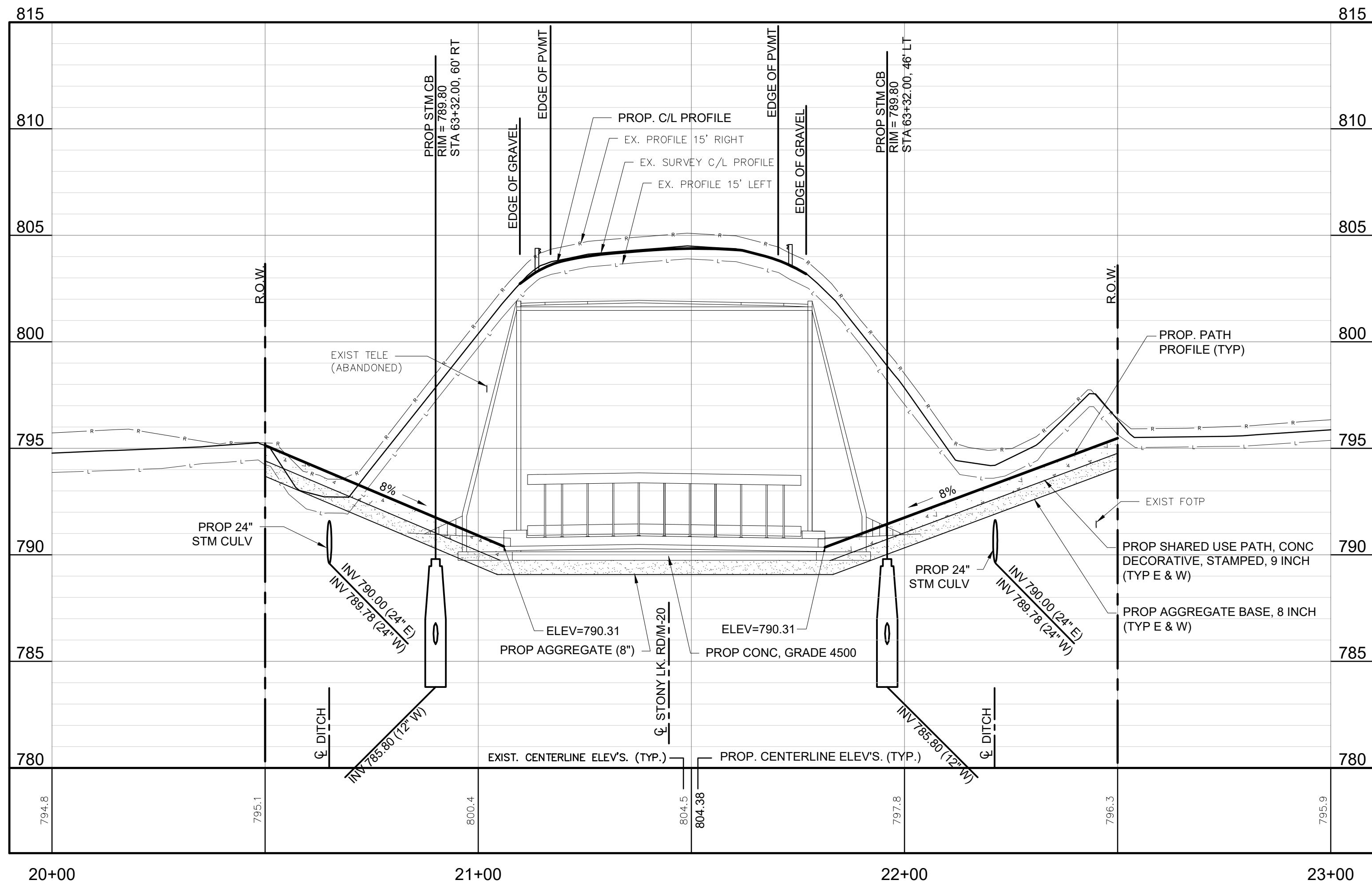
SESC LEGEND

- PERMANENT / TEMPORARY SEEDING
- SILT FENCE
- INLET PROTECTION FABRIC DROP (PROVIDE AT ALL CATCH BASINS)
- MULCH BLANKET
- CHECK DAM

NOTE: REFER TO MDOT STANDARD PLAN R-96 SERIES FOR KEYING.

PROPOSED STRUCTURE ON STONY LAKE RD / M-20

EX. BIT. PAVEMENT



OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)

PLAN & PROFILE

DESIGN TEAM: PROJ MGR: LBN
DESIGNED BY: RWT
DRAWN BY: PAD
CHECK BY:

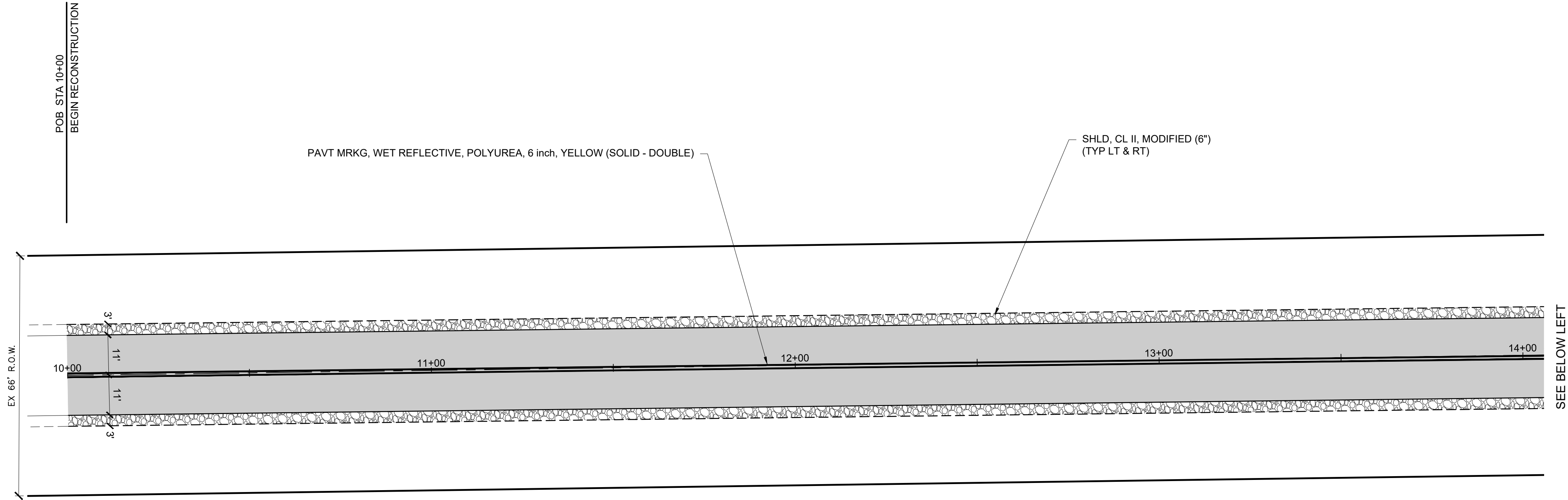
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DECEMBER 2025

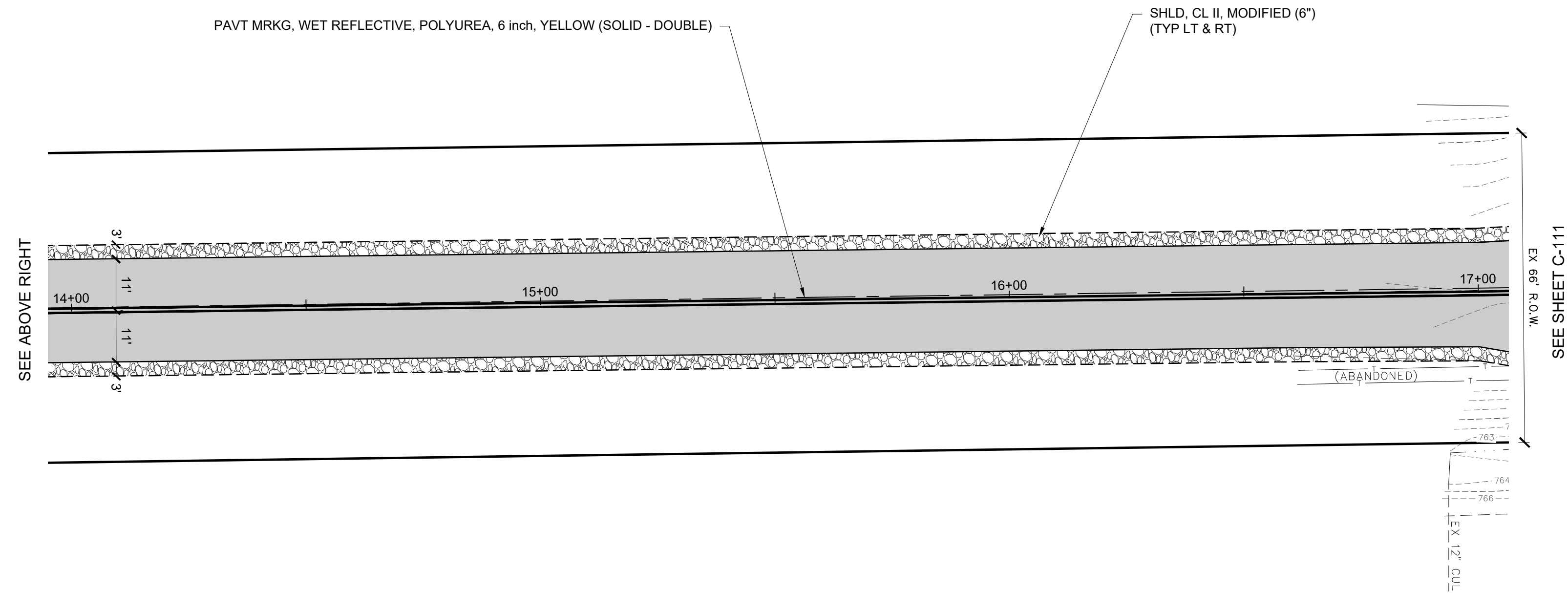
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868960

C-109

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68TH AVENUE
EX. BIT. PAVEMENT



68TH AVENUE
EX. BIT. PAVEMENT

LEGEND

- PROPOSED REMOVE & REPLACE HMA PAVEMENT
- PROPOSED SHOULDER, CL II, MODIFIED

SESC LEGEND

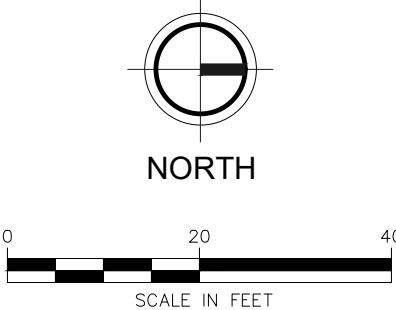
- PERMANENT / TEMPORARY SEEDING
- SILT FENCE
- MULCH BLANKET

NOTE: REFER TO MDOT STANDARD PLAN R-96 SERIES FOR KEYING.

QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
14.0	STA	TRENCHING
1800	SYD	HMA SURFACE, REM
550	SYD	AGGREGATE BASE, 6 inch
1800	SYD	AGGREGATE BASE, CONDITIONING
50	TON	AGGREGATE BASE
480	TON	HMA, 4EML
160	TON	SHLD, CL II, MODIFIED
1050	SYD	GRASS RESTORATION
600	SYD	MULCH BLANKET

PAVT MRKG QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
1400	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, YELLOW
1400	FT	RECESSING PAVT MRKG, LONGIT

NOTE: AGGREGATE BASE (TON) TO BE PLACED WHERE DIRECTED BY ENGINEER TO CORRECT IRREGULARITIES AND RESTORE CROSS SLOPE OF EXISTING BASE.



OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)
PLAN

DESIGN TEAM	PROJ MGR	LEAD
DESIGNED BY: RWT	DRAWN BY: PAD	CHECK BY:

DRAWING INFORMATION:
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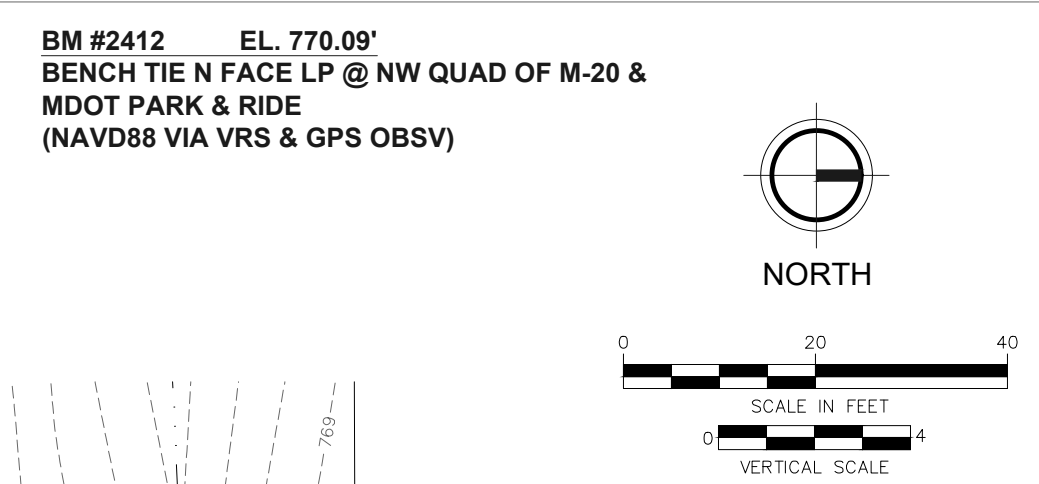
DECEMBER 2025

F&V PROJECT NO.
688960

C-110

FLEISCHMANN
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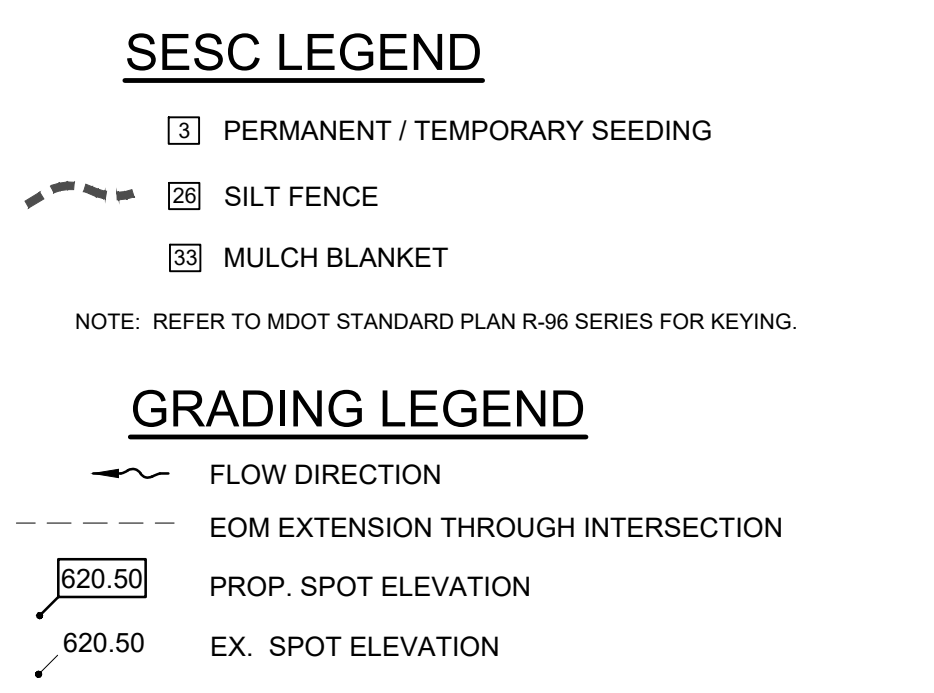


 **FLEIS & VANDENBRINK**
DESIGN. BUILD. OPERATE.

2960 Lucerne Drive SE
Grand Rapids, MI 49546
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F: 616.977.1005

LEGEND

	PROPOSED REMOVE & REPLACE HMA PAVEMENT
	PROPOSED HMA APPROACH
	PROPOSED REMOVE & REPLACE CONCRETE PAVEMENT
	PROPOSED CONCRETE CURB & GUTTER
	PROPOSED SHOULDER, CL II, MODIFIED



QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
3.5	STA	ROADWAY GRADING
1200	SYD	HMA SURFACE, REM
190	FT	CURB AND GUTTER, REM
1500	SYD	AGGREGATE BASE, 6 inch
850	CYD	SUBBASE, CIP
320	TON	HMA, 4EML
40	TON	SHLD, CL II, MODIFIED
1700	SYD	GRASS RESTORATION
600	SYD	MULCH BLANKET

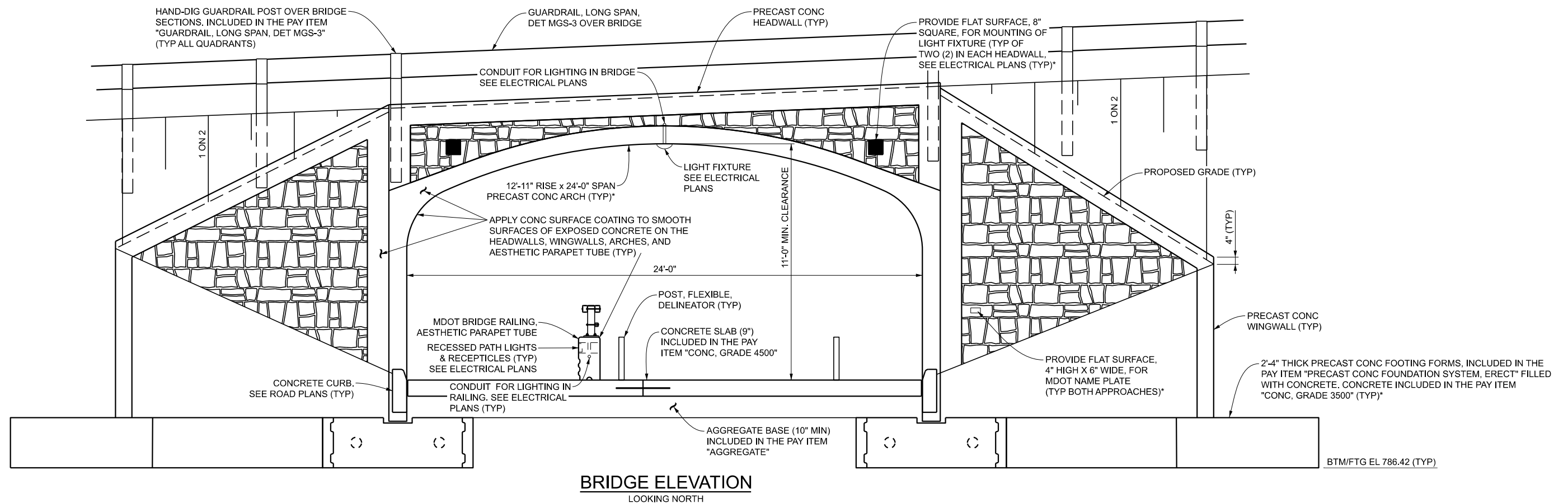
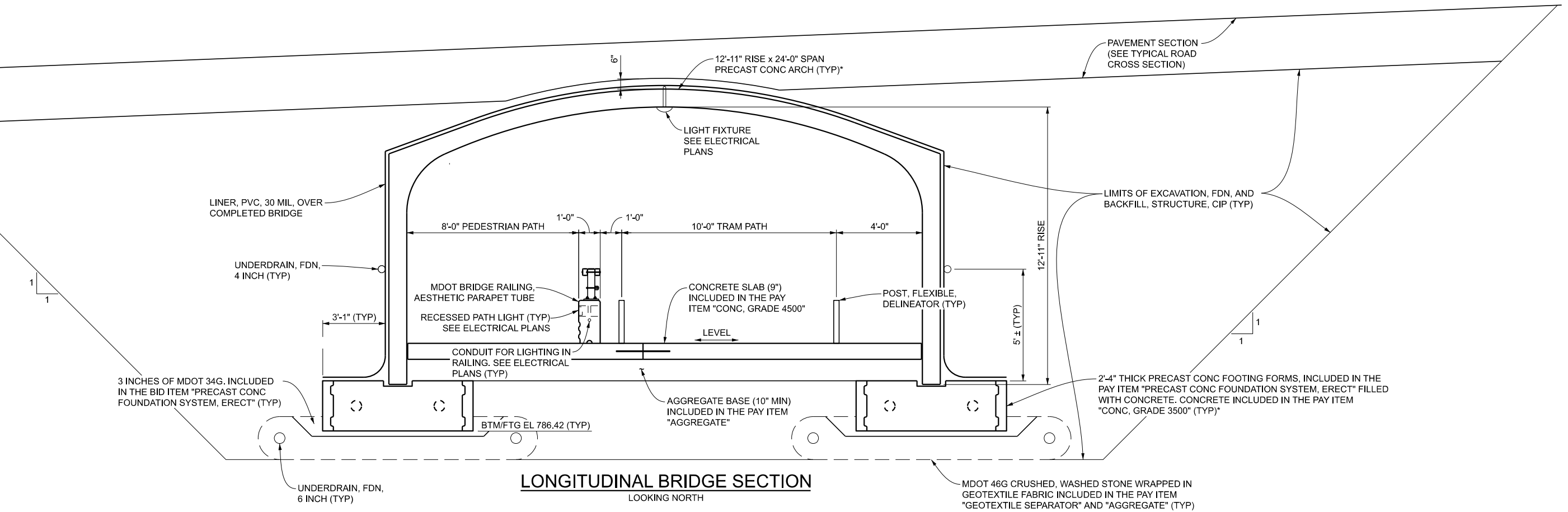
PAVT MRKG QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	DESCRIPTION
72	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, WHITE
850	FT	PAVT MRKG, WET REFLECTIVE, POLYUREA, 6 inch, YELLOW
922	FT	RECESSING PAVT MRKG, LONGIT
19	SFT	RECESSING PAVT MRKG, TRANSV
1	EAT	PAVT MRKG, POLYUREA, LT TURN ARROW SYM

**OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)**

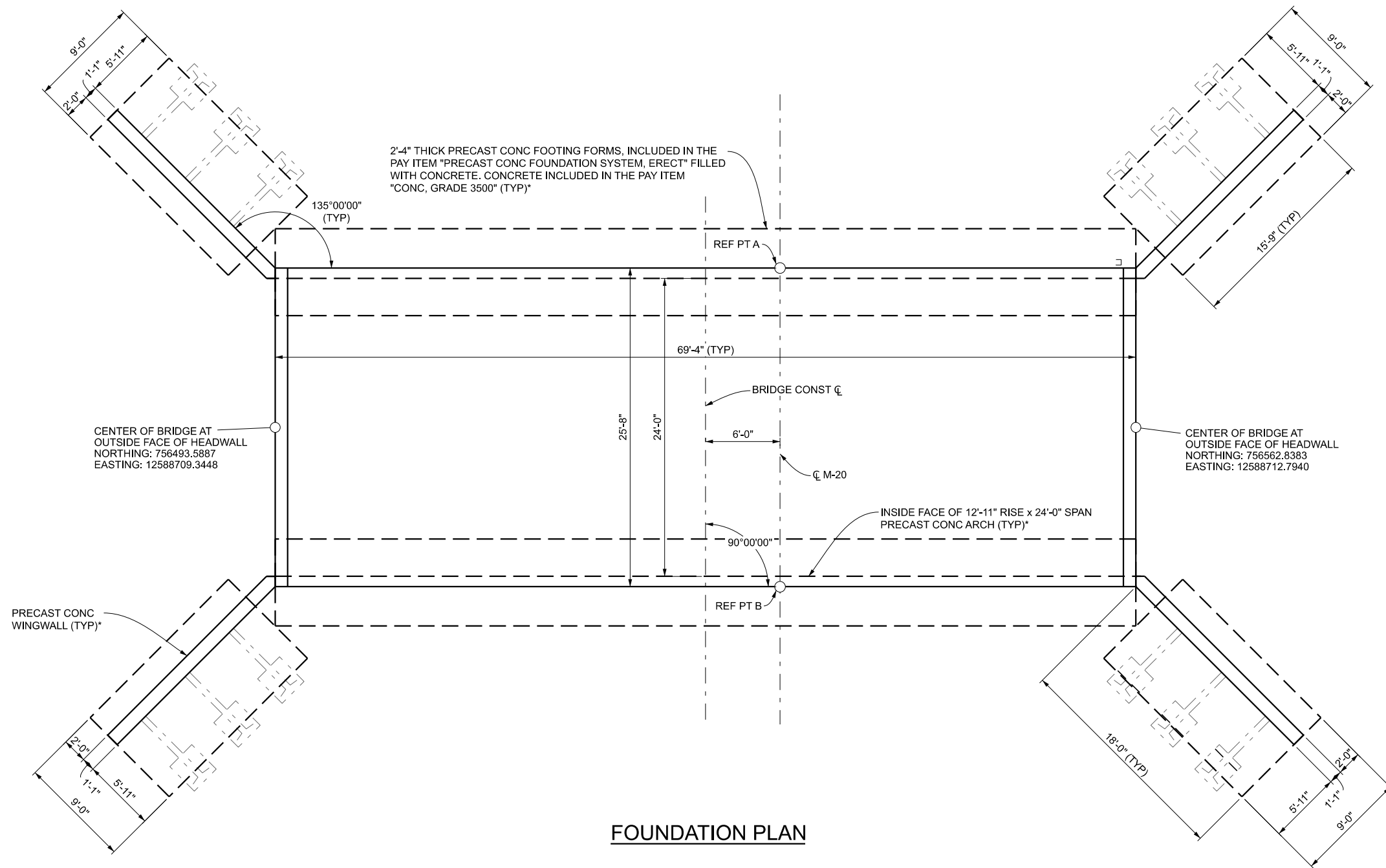
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CHECK BY:		
DRAWING INFORMATION: 868960_C-111_PP 120225 peted		

DECEMBER 2025

F&V PROJECT NO.
868960



FINAL ROW PLAN REVISIONS								SUBMITTAL DATE:		 GREAT LAKES ENGINEERING GROUP, LLC	NO SCALE	DRAWN BY: RZ		DATE: DEC 2025		REVISIONS:		CS: V01 OF 64022		LEWIS ADVENTURE FARM & ZOO STRUCTURE		DRAWING		SHEET			
NO.	DATE	AUTH	DESCRIPTION				NO.	DATE	AUTH			DESCRIPTION				CHECKED BY: MTL		DESIGN UNIT: GLEG		JN:		14792 STONY LAKE ROAD (M-20)		GPSTR 002		SECT 2 C-113	
																FILE: 974 OCP gpstr.dgn		TSC: MUSKEGON									



FOUNDATION PLAN

MIN. LAP TABLE	
EA03 BARS -	1'-5"
EA04 BARS -	1'-11"
EA05 BARS -	2'-5"
EA06 BARS -	2'-10"

MISCELLANEOUS QUANTITIES		
70	Ft	Culv, Precast Arch, Erect
1	LSUM	Precast Conc Foundation System, Erect
76	Ft	Joint, Contraction, Cp
120	Ft	Joint, Contraction, C3p
25	Ft	Lane Tie, Epoxy Anchored
450	Syd	Liner, PVC, 30 mil
135	Cyd	Conc, Grade 3500
55	Cyd	Conc, Grade 4500
76	Ft	Bridge Railing, Aesthetic Parapet Tube
28	Ea	Post, Flexible, Delineator

NOTES:

THE PRECAST CONCRETE ARCH SECTIONS, HEADWALLS, WINGWALLS, AND FOOTING FORMS WILL BE PROVIDED TO THE CONTRACTOR BY SHELBY TOWNSHIP AND INSTALLED IN THIS CONTRACT. SEE SPECIAL PROVISION FOR "CULV, PRECAST ARCH, ERECT", AND "PRECAST CONC FOUNDATION SYSTEM, ERECT".

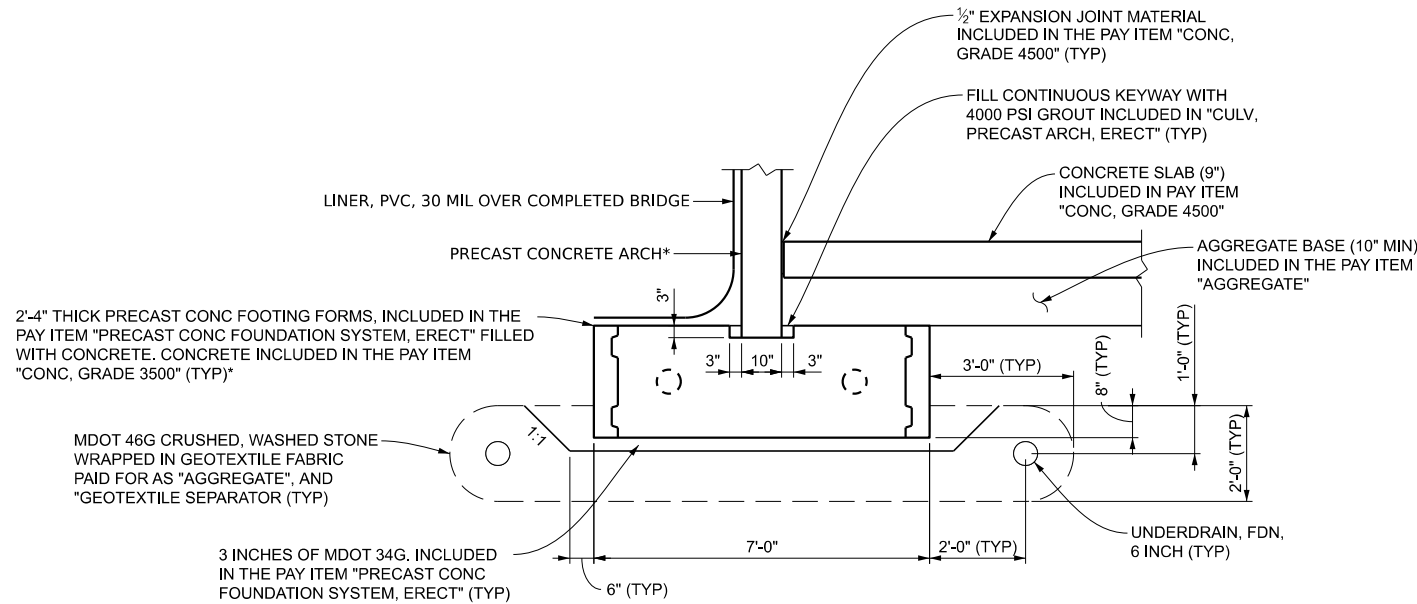
THE 9 INCH CONCRETE SLAB SHALL RECEIVE THE SAME DECORATIVE, STAMPED SURFACE AS THE SHARED USE PATH. INCLUDED IN THE PAY ITEM "CONC, GRADE 4500". SEE ROAD PLANS AND SPECIAL PROVISION.

THE STEEL COMPONENTS OF THE AESTHETIC PARAPET RAILING SHALL BE SHOP COATED FOLLOWING MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 716. THE COLOR SHALL BE BLACK AND MATCH THE COLOR OF THE ALUMINUM FENCE TO BE PLACED ON THE PATH (SEE ROAD PLANS).

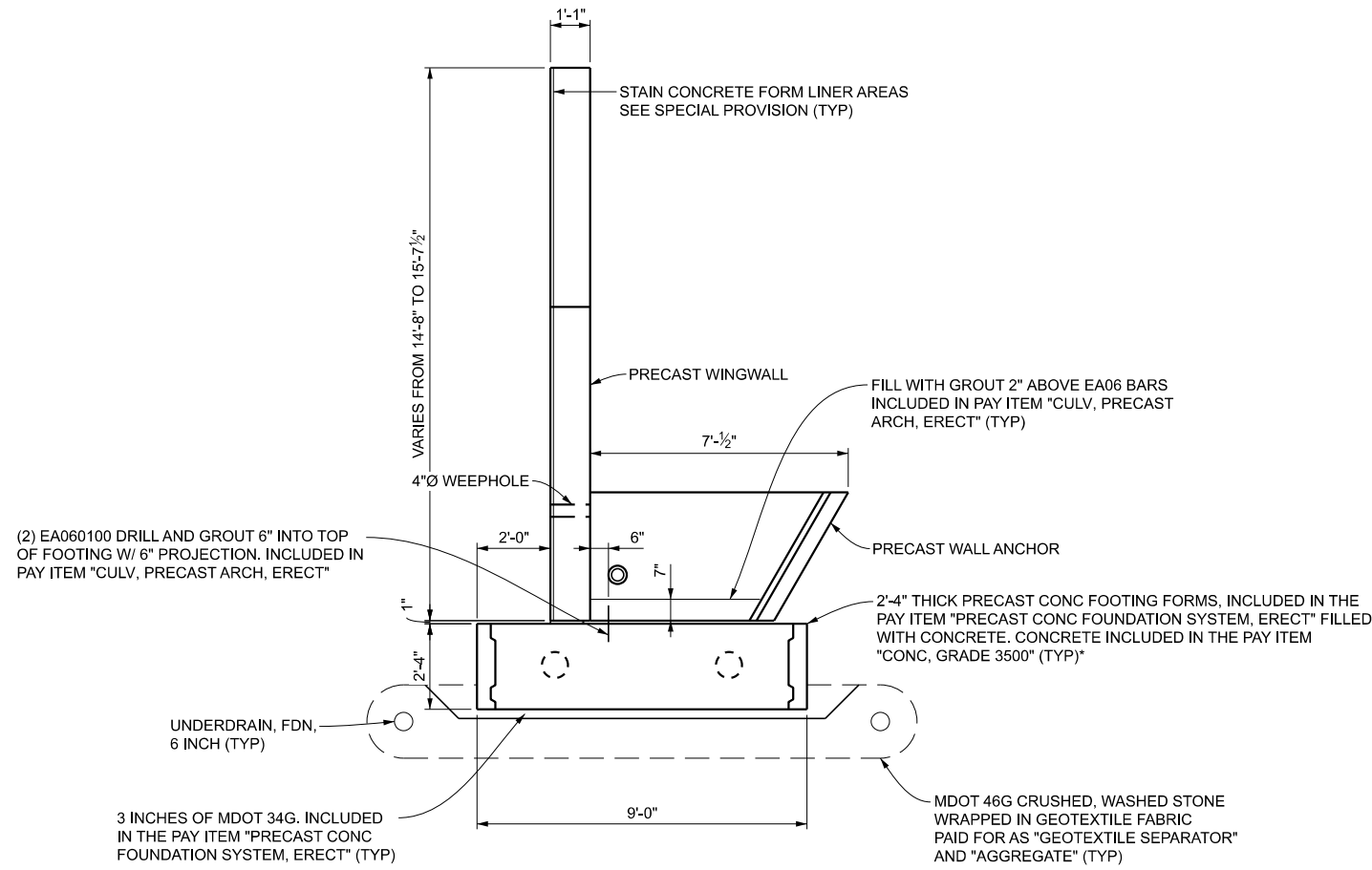
SEE ROAD SHEETS FOR DRAINAGE AND TRENCH DRAIN DETAILS.

SEE MDOT SPECIAL DETAIL B-103 SERIES FOR NAME PLATE DETAILS.

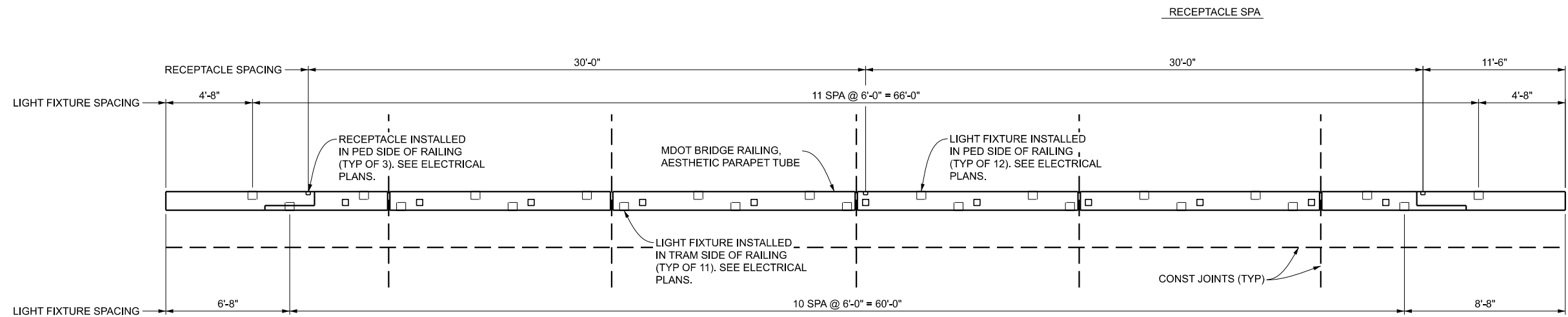
FINAL ROW PLAN REVISIONS								SUBMITTAL DATE:			NO SCALE	DRAWN BY: RZ	DATE: DEC 2025	REVISIONS:	CS: V01 OF 64022	LEWIS ADVENTURE FARM & ZOO STRUCTURE		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION		NO.	DATE	AUTH	DESCRIPTION				CHECKED BY: MTL	DESIGN UNIT: GLEG		JN:	14792 STONY LAKE ROAD (M-20)		ABUT 001	SECT 2
												FILE: 974 OCP ab.dgn	TSC: MUSKEGON						



BRIDGE FOOTING DETAIL



WINGWALL SECTION



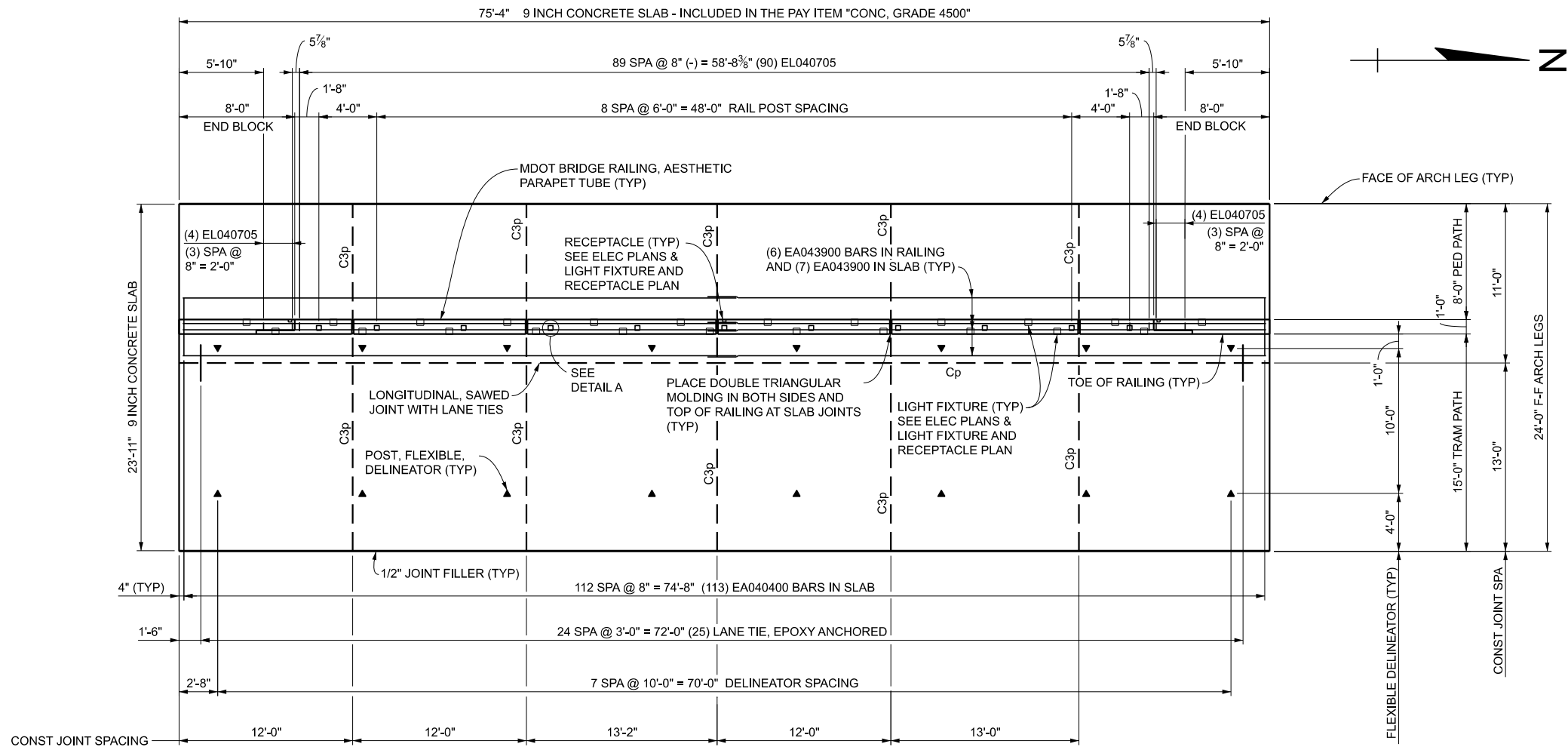
**LIGHT FIXTURE & RECEPTACLE PLAN
IN AESTHETIC PARAPET RAILING**

NOTES:

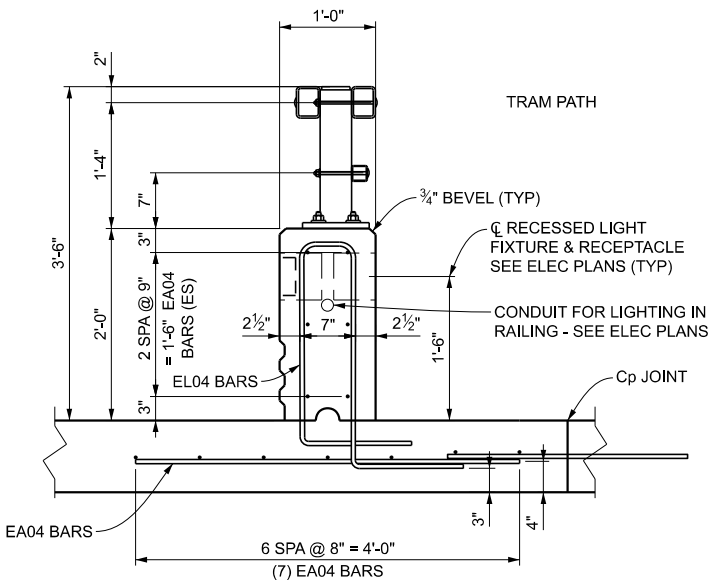
ADJUST REINFORCING STEEL IN RAILING TO ALLOW PLACEMENT OF LIGHT FIXTURES.
SEE ELECTRICAL PLANS FOR ADDITIONAL DETAILS.



FINAL ROW PLAN REVISIONS								SUBMITTAL DATE:			NO SCALE	DRAWN BY: RZ	DATE: DEC 2025	REVISIONS:	CS: V01 OF 64022	LEWIS ADVENTURE FARM & ZOO STRUCTURE		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION	CHECKED BY: MTL	DESIGN UNIT: GLEG			JN:	14792 STONY LAKE ROAD (M-20)		ABUT 002	SECT 2	C-115		
								FILE: 974 OCP ab.dgn	TSC: MUSKEGON										

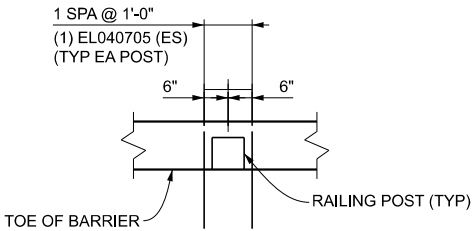


PLAN OF RAILING AND SLAB

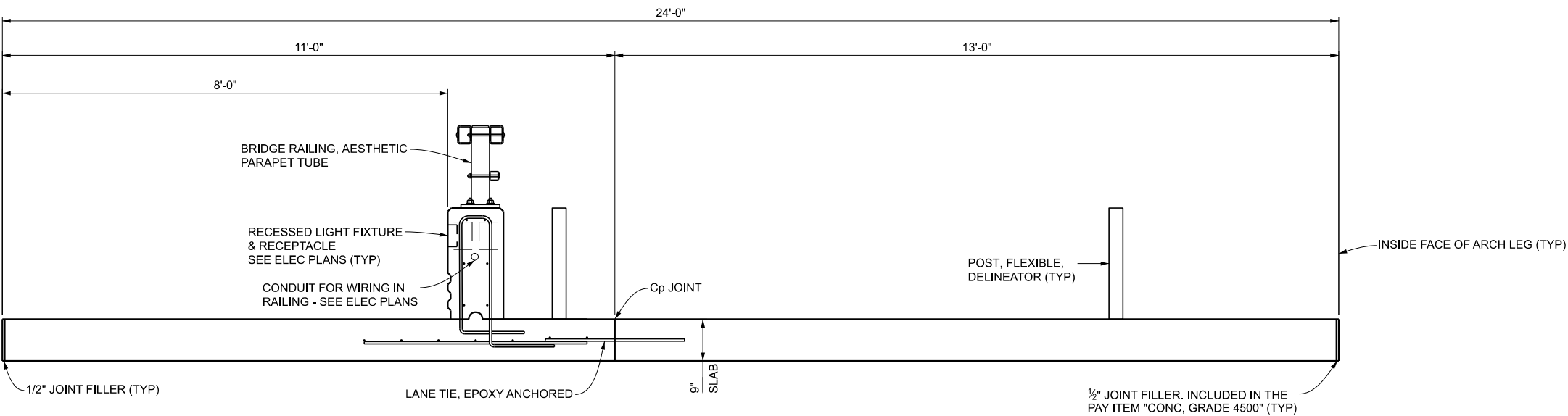


TYPICAL RAILING SECTION

(1) EL040705 (ES)
(TYP EA POST)

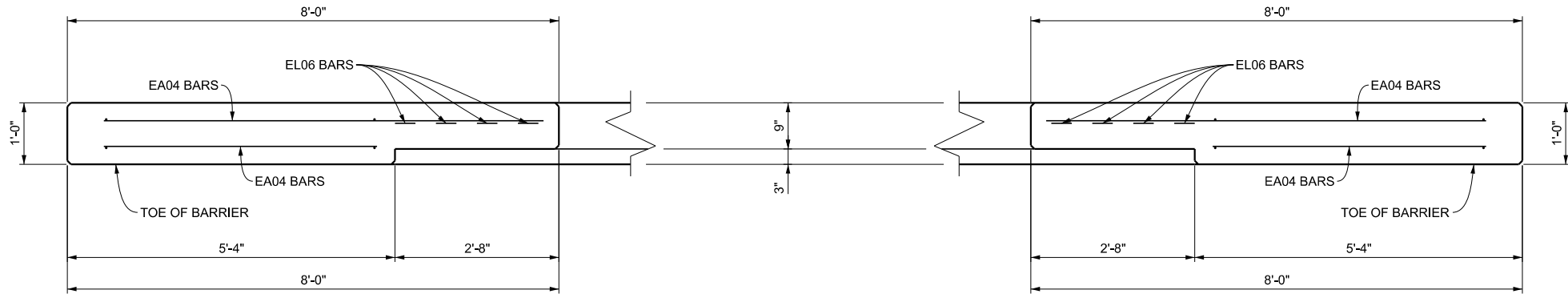


DETAIL A



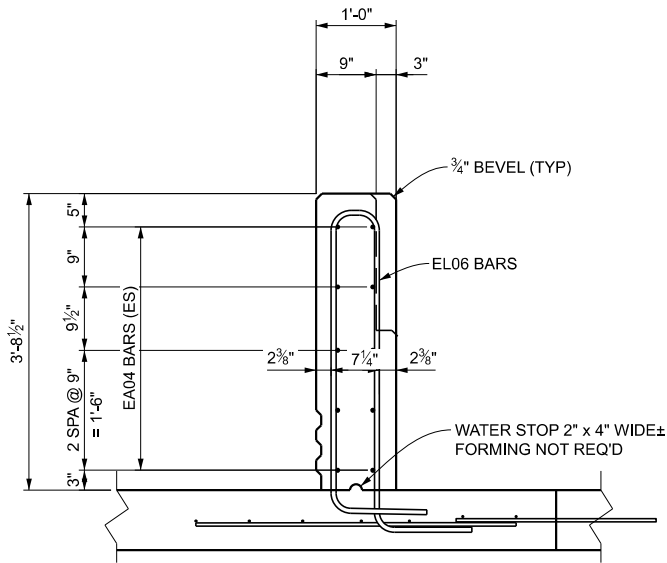
TYPICAL SLAB SECTION

FINAL ROW PLAN REVISIONS								SUBMITTAL DATE:			NO SCALE	DRAWN BY: RZ	DATE: DEC 2025	REVISIONS:	CS: V01 OF 64022	LEWIS ADVENTURE FARM & ZOO STRUCTURE		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION	CHECKED BY: MTL	DESIGN UNIT: GLEG			JN:	14792 STONY LAKE ROAD (M-20)		ABUT 003	C-116	SECT 2		
								FILE: 974 OCP ab.dgn	TSC: MUSKEGON										

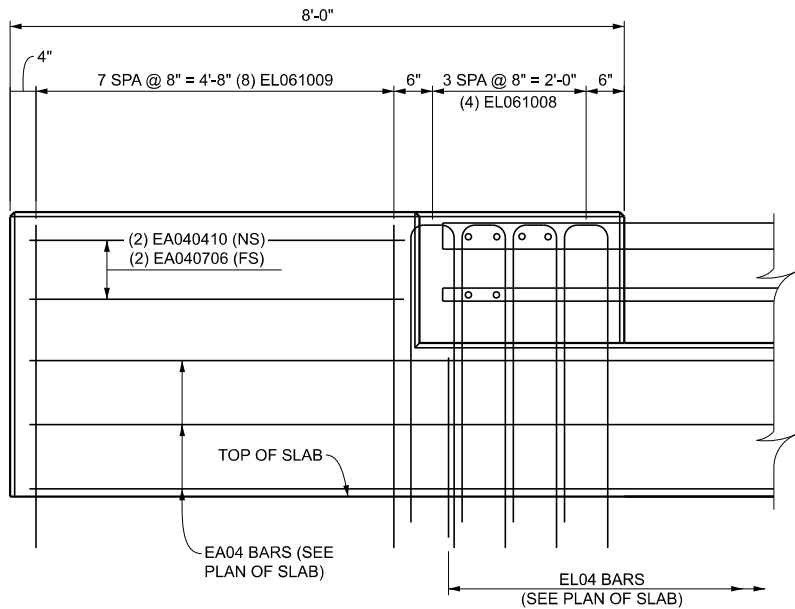


PLAN OF SOUTH END BLOCK
(LIGHT FIXTURES NOT SHOWN)

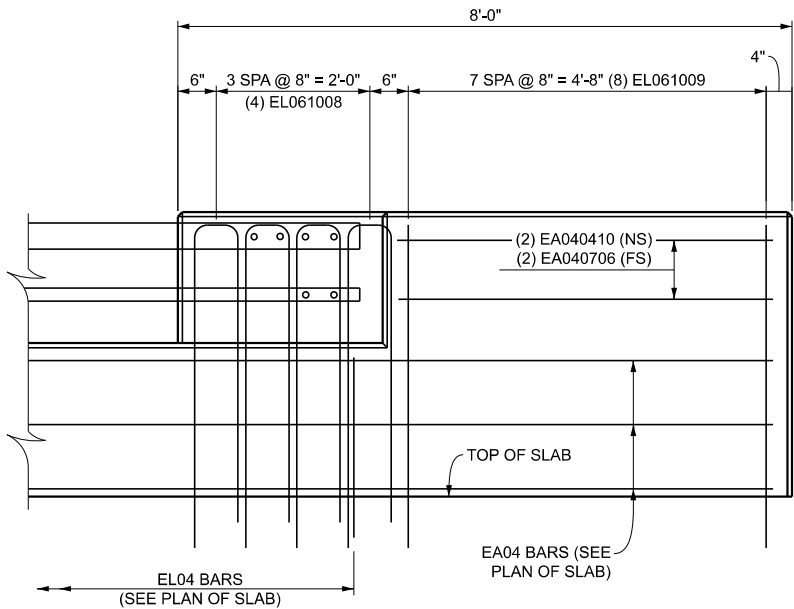
PLAN OF NORTH END BLOCK
(LIGHT FIXTURES NOT SHOWN)



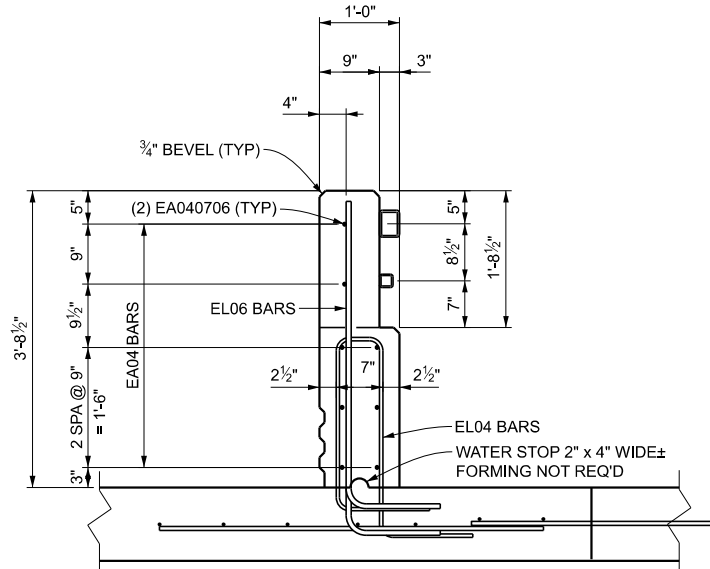
TYPICAL END BLOCK SECTION
AT FULL CONCRETE AREA
(LIGHT FIXTURES NOT SHOWN)



ELEVATION OF SOUTH END BLOCK
(LIGHT FIXTURES NOT SHOWN)



ELEVATION OF NORTH END BLOCK
(LIGHT FIXTURES NOT SHOWN)

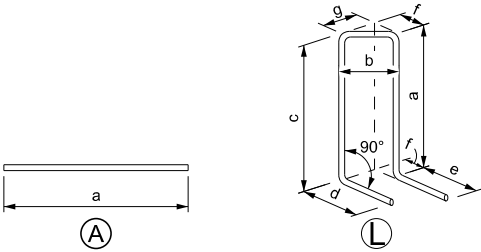
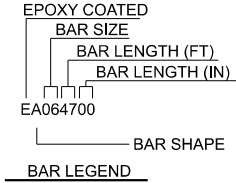


TYPICAL END BLOCK SECTION
AT TUBE CONNECTION AREA
(LIGHT FIXTURES NOT SHOWN)

FINAL ROW PLAN REVISIONS								SUBMITTAL DATE:			NO SCALE	DRAWN BY: RZ	DATE: DEC 2025	REVISIONS:	CS: V01 OF 64022	LEWIS ADVENTURE FARM & ZOO STRUCTURE		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION	CHECKED BY: MTL	DESIGN UNIT: GLEG			JN:	14792 STONY LAKE ROAD (M-20)		ABUT	004	SECT 2		
								FILE: 974 OCP ab.dgn	TSC: MUSKEGON								C-117		

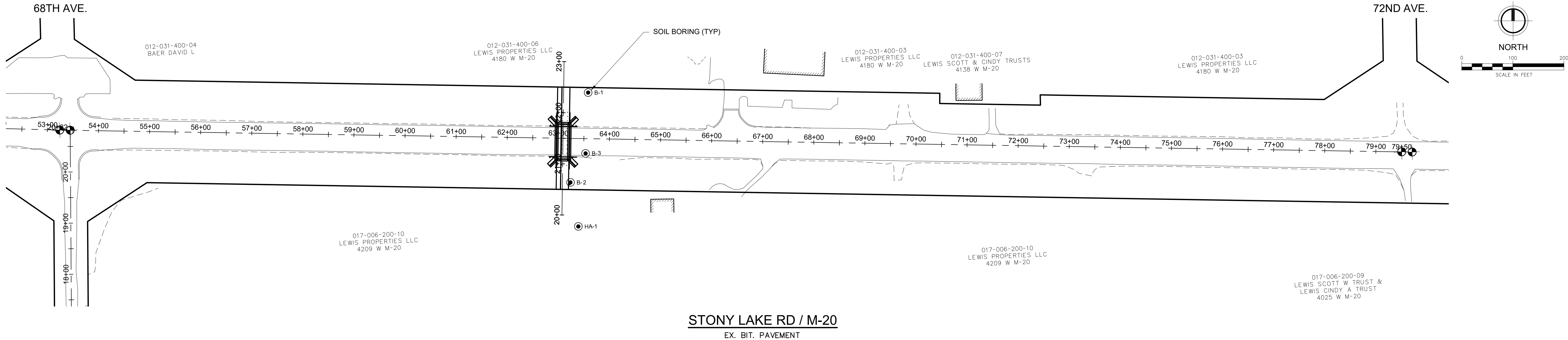
	BAR	DIMENSIONS								NUMBER REQUIRED	TOTAL WEIGHT	
		a	b	c	d	e	f	g	h			j
	SLAB											
	EA040400	4'-0"									113	302
	EA043900	39'-0"									14	365
	RAILING											
	EL040705	2'-4 1/4"	7"	2'-1 1/4"	1'-2 1/4"	1'-2 1/4"	7"	0"			120	595
	EA043900	39'-0"									12	313
	END BLOCK											
	EL061008	3'-9"	6 3/4"	4'-0"	1'-2 1/8 "	1'-2 1/8"	0"	6 3/4"			8	129
	EL061009	4'-0"	7 1/4"	3'-9"	1'-2 3/8"	1'-2 3/8"	7 1/4"	0"			16	259
	EA040706	7'-6"									4	21
	EA040410	4'-10"									4	13
							REINFORCEMENT, STEEL, EPOXY COATED SUBTOTAL					1,997

MISCELLANEOUS QUANTITIES		
1,997	LB	Reinforcement, Steel, Epoxy Coated



NOTES:
BUNDLE AND TAG REINFORCEMENT ACCORDING TO THE LOCATION
AS SHOWN ON THIS SHEET.

FINAL ROW PLAN REVISIONS								SUBMITTAL DATE:				 GREAT LAKES ENGINEERING GROUP, LLC	NO SCALE	DRAWN BY: JLS		DATE: DEC 2025	REVISIONS:	CS: V01 of 64022	STEEL REINFORCEMENT DETAILS		DRAWING	SHEET			
NO.	DATE	AUTH	DESCRIPTION				NO.	DATE	AUTH	DESCRIPTION				CHECKED BY: MTL		DESIGN UNIT: GLEG		JN:	LEWIS ADVENTURE FARM & ZOO STRUCTURE		REBAR	SECT 2			
														FILE: 974 OCP rs.dgn		TSC: MUSKEGON			14792 STONY LAKE ROAD (M-20)		001	C-118			



STONY LAKE RD / M-20
EX. BIT. PAVEMENT

LOG OF BORING		Project No.: 241884 Boring No.: B-1 Sheet: 1 of 2	
Project: M-20 Pedestrian Culvert Client: Fies & VandenBrink Location: New Era, Michigan Drill Type: CME 55LC Crew Chief: KB Field Eng.: MS Rev. By: AD Coordinates: N=756611.6 E=12588753.7 (MI South IT) Elevation: 795.6 ft Datum: NAVD 88 (GPS Observation) Notes: Offset approx. 10' North toe of slope due to utilities, wetland area Plugging Record: Backfilled borehole with compacted cuttings, hole plug, and well sand. Cave in at 5.0 ft.		Date Begin: 04/10/2025 Date End: 04/10/2025 Tooling Type Dia. Groundwater, ft. Casing HSA 4 1/4" During 6.5 / 8 Sampler SPT 2" End 3 Core Seepage Tube Date Depth, ft. SPT Hammer Auto	
Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%		Depth Drilled: 60.0 ft.	
Elev. Depth Sample Recov. Penetration *USCS FT. FT. Number FT. (Blows Per FT) Group ASTM D 1586 Symbol	*DESCRIPTION	QP tsf	MST % DD pcf REMARKS
794.6 1 S-1 1.5 3-6-5 N=11 SP 0.4	5" Silty Topsoil		Fill: 0.0 to 3'
793.6 2 S-1 1.5 3-6-5 N=11 SP 3.0	Brown poorly graded SAND; mostly fine sand, trace silty fines, trace fine gravel, moist, Fill		
792.6 3 S-1 1.5 3-4-4 N=8 CL 1.75 17.3	Brown lean CLAY; mostly clayey fines, trace silty fines, moist		S-2: LL=24, PL=13
791.6 4 S-2 1.5 3-4-4 N=8 CL 3.0	Grades with occasional wet sand lenses		
790.6 5 S-2 1.5 3-4-4 N=8 CL 8.0	Brown poorly graded SAND; mostly fine sand, trace silty fines, wet		Augers charged with water from 7.5'
789.6 6 S-3 1.5 3-4-6 N=10 SP 12.0	Brown lean CLAY; mostly clayey fines, moist with occasional wet silt lenses		
788.6 7 S-3 1.5 3-4-6 N=10 SP 4.5+	Brown lean CLAY; mostly clayey fines, little fine sand, moist		
787.6 8 S-4 1.5 3-5-9 N=14 CL 12.0	Gray lean CLAY; mostly clayey fines, trace fine gravel, moist		S-3: LL=18, PL=10
786.6 9 S-4 1.5 7-10-12 N=22 CL 4.5+	Gray SILT with sand; mostly silty fines, little fine sand, moist		
785.6 10 S-4 1.5 10-12-14 N=26 CL 12.0	Grades without sand		
784.6 11 S-5 1.5 11-24-41 N=65 ML 2.5	Grades wet		Augers charged with water from 30'
783.6 12 S-5 1.5 25-34-50 N=84 ML 2.5	Grades with occasional clay lenses		
782.6 13 S-7 1.5 8-10-17 N=27 ML 2.5	(continued next page)		
781.6 14 S-7 1.5 15-21-50 N=71 ML 2.5			
780.6 15 S-7 1.5 15-22-28 N=50 ML 2.5			
779.6 16 S-7 1.5 15-22-28 N=50 ML 2.5			
778.6 17 S-7 1.5 15-22-28 N=50 ML 2.5			
777.6 18 S-7 1.5 15-22-28 N=50 ML 2.5			
776.6 19 S-7 1.5 15-22-28 N=50 ML 2.5			
775.6 20 S-6 1.5 6-9-11 N=20 CL 2.0 14.3	End of Boring		

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING		Project No.: 241884 Boring No.: B-2 Sheet: 1 of 2	
Project: M-20 Pedestrian Culvert Client: Fies & VandenBrink Location: New Era, Michigan Drill Type: CME 55LC Crew Chief: KB Field Eng.: MS Rev. By: AD Coordinates: N=756461.3 E=12588723.3 (MI South IT) Elevation: 794.7 ft Datum: NAVD 88 (GPS Observation) Notes: Plugging Record: .		Date Begin: 04/09/2025 Date End: 04/09/2025 Tooling Type Dia. Groundwater, ft. Casing HSA 4 1/4" During 3 / 27 Sampler SPT 2" End Core Seepage Tube Date Depth, ft. SPT Hammer Auto	
Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%		Depth Drilled: 58.4 ft.	
Elev. Depth Sample Recov. Penetration *USCS FT. FT. Number FT. (Blows Per FT) Group ASTM D 1586 Symbol	*DESCRIPTION	QP tsf	MST % DD pcf REMARKS
793.7 1 S-1 1.5 2-3-4 N=7 SC 0.8	10" Silty Topsoil		
792.7 2 S-1 1.5 2-3-4 N=7 SC 3.0	Brown clayey SAND; mostly fine sand, some clayey fines, moist		
791.7 3 S-2 1.5 3-4-4 N=8 CL 1.75	Brown sandy lean CLAY; mostly clayey fines, some fine sand, moist with occasional wet silt lenses		
790.7 4 S-2 1.5 3-5-9 N=14 CL 4.5+	Gray lean CLAY; mostly clayey fines, trace fine gravel, moist		S-3: LL=18, PL=10
789.7 5 S-3 1.5 7-10-12 N=22 CL 4.5+	Gray SILT with sand; mostly silty fines, little fine sand, moist		
788.7 6 S-3 1.5 10-12-14 N=26 CL 12.0	Grades without sand		
787.7 7 S-4 1.5 11-24-41 N=65 ML 2.5	Grades wet		Augers charged with water from 30'
786.7 8 S-4 1.5 25-34-50 N=84 ML 2.5	Grades with occasional clay lenses		
785.7 9 S-7 1.5 8-10-17 N=27 ML 2.5	(continued next page)		
784.7 10 S-7 1.5 15-21-50 N=71 ML 2.5			
783.7 11 S-7 1.5 15-22-28 N=50 ML 2.5			
782.7 12 S-7 1.5 15-22-28 N=50 ML 2.5			
781.7 13 S-7 1.5 15-22-28 N=50 ML 2.5			
780.7 14 S-7 1.5 15-22-28 N=50 ML 2.5			
779.7 15 S-7 1.5 15-22-28 N=50 ML 2.5			
778.7 16 S-7 1.5 15-22-28 N=50 ML 2.5			
777.7 17 S-7 1.5 15-22-28 N=50 ML 2.5			
776.7 18 S-7 1.5 15-22-28 N=50 ML 2.5			
775.7 19 S-7 1.5 15-22-28 N=50 ML 2.5			
774.7 20 S-6 1.5 6-9-11 N=20 CL 2.0 14.3	End of Boring		

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING		Project No.: 241884 Boring No.: B-3 Sheet: 1 of 1	
Project: M-20 Pedestrian Culvert Client: Fies & VandenBrink Location: New Era, Michigan Drill Type: CME 55LC Crew Chief: KB Field Eng.: MS Rev. By: AD Coordinates: N=756514.8 E=12588739.9 (MI South IT) Elevation: 805.3 ft Datum: NAVD 88 (GPS Observation) Notes: EB Right lane, S of yellow centerline Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 8.8 ft.		Date Begin: 04/09/2025 Date End: 04/09/2025 Tooling Type Dia. Groundwater, ft. Casing HSA 4 1/4" During 9.8 Sampler SPT 2" End NA Core Seepage Tube Date Depth, ft. SPT Hammer Auto	
Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%		Depth Drilled: 20.0 ft.	
Elev. Depth Sample Recov. Penetration *USCS FT. FT. Number FT. (Blows Per FT) Group ASTM D 1586 Symbol	*DESCRIPTION	QP tsf	MST % DD pcf REMARKS
804.3 1 S-1 1.5 7-19-18 N=37 SP 0.5	6" HMA		Fill: 0.0 to 9.8'
803.3 2 S-1 1.5 7-19-18 N=37 SP 1.0	6" Gravel Base		
802.3 3 S-2 1.5 18-28-18 N=46 SP 0.8	Brown poorly graded SAND; mostly fine sand, trace silty fines, moist, Fill		
801.3 4 S-2 1.5 18-28-18 N=46 SP 0.8	Grades with trace fine sand		Driller noted obstruction; possible coarse gravel / COBBLE at 4' and 7'
800.3 5 S-2 1.5 13-25-24 N=49 SP 9.8	Brown poorly graded SAND; mostly fine sand, trace silty fines, wet		Augers charged with water from 10'
799.3 6 S-3 1.5 8-11-13 N=24 SP 12.0	Brown sandy lean CLAY; mostly clayey fines, some fine sand, moist		
798.3 7 S-3 1.5 3-5-3 N=8 CL 2.5	Grades gray		
797.3 8 S-6 1.5 6-9-11 N=20 CL 2.0 14.3	End of Boring		

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING		Project No.: 241884 Boring No.: HA-1 Sheet: 1 of 1	
Project: M-20 Pedestrian Culvert Client: Fies & VandenBrink Location: New Era, Michigan Drill Type: Hand Auger Crew Chief: Field Eng.: MS Rev. By: AD Coordinates: N=756370.4 E=12588741.7 (MI South IT) Elevation: 796.8 ft Datum: NAVD 88 (GPS Observation) Notes: Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 6.6 ft.		Date Begin: 04/10/2025 Date End: 04/10/2025 Tooling Type Dia. Groundwater, ft. Casing Hand Auger 3 1/4" During 3.8 Sampler Hand Auger 3 1/4" End 4 Core Seepage Tube Date Depth, ft. SPT Hammer	
Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%		Depth Drilled: 7.0 ft.	
Elev. Depth Sample Recov. Dyn Core *USCS FT. FT. Number FT. (Blows Per FT) Group ASTM D 1586 Symbol	*DESCRIPTION	QP tsf	MST % DD pcf REMARKS
796.8 0.5 A-1 N=9 SP 0.8	9" Silty Topsoil		
795.8 1.0 A-1 N=9 SP 0.8	Brown poorly graded SAND; mostly fine sand, trace silty fines, trace fine gravel, moist		
794.8 2.0 A-1 N=20+ SP 2.5	Grades wet at 3.8' (Perched)		
793.8 3.0 A-1 N=20+ SP 4.2	Brown lean CLAY; mostly clayey fines, trace fine gravel, moist		
792.8 4.0 A-1 N=20+ SP 2.0 14.2	End of Boring		Auger refusal due to cave-in and side resistance in clay.

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)
SOIL BORINGS

DESIGN TEAM: PROJ MGR: LBN
DRAWN BY: RWT
CHECK BY: PAD

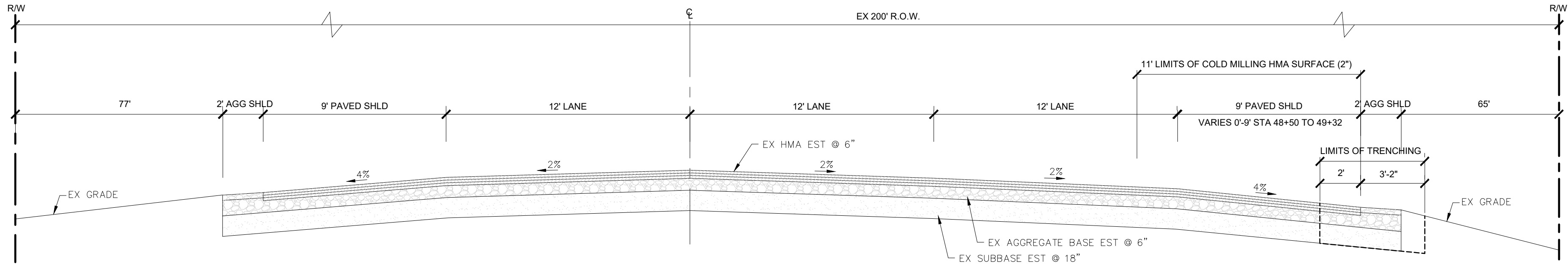
DRAWING INFORMATION:
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DECEMBER 2025

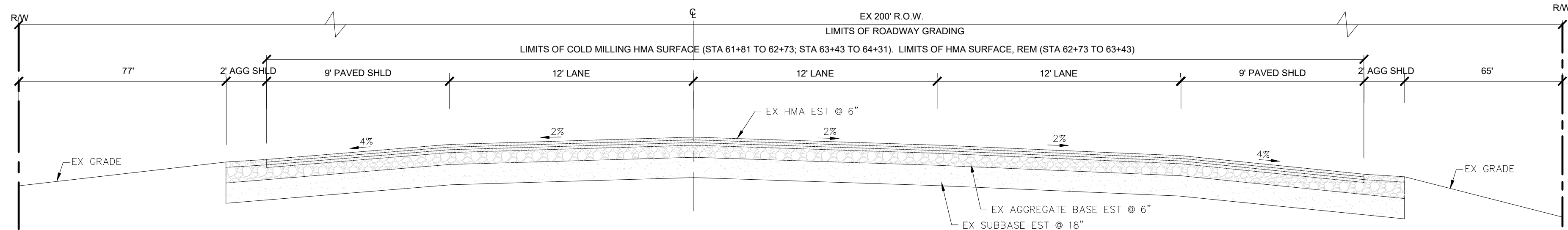
F&V PROJECT NO.
868960

C-119

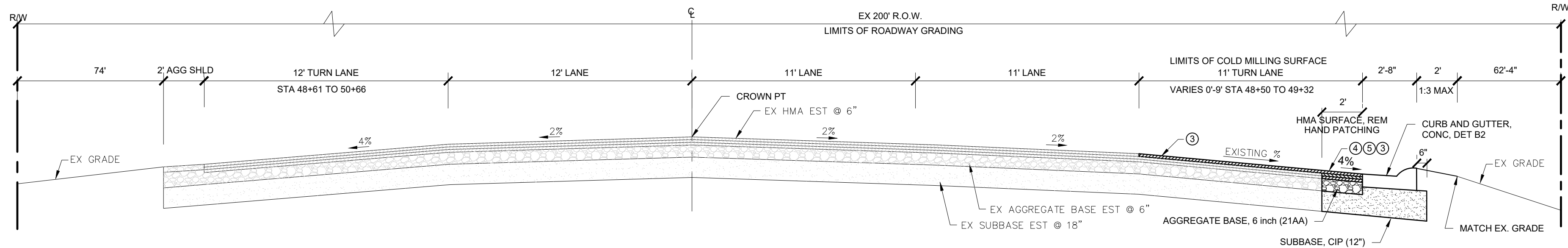
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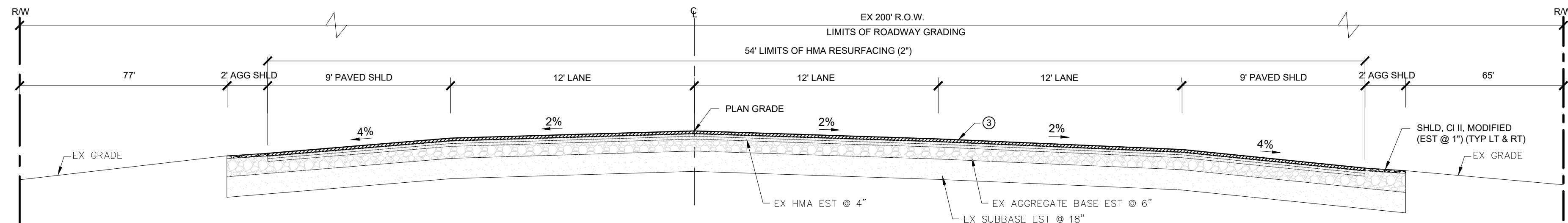
TYPICAL EXISTING CROSS SECTION - STONY LAKE ROAD (M-20)
STA 48+50 TO STA 52+74
N.T.S.



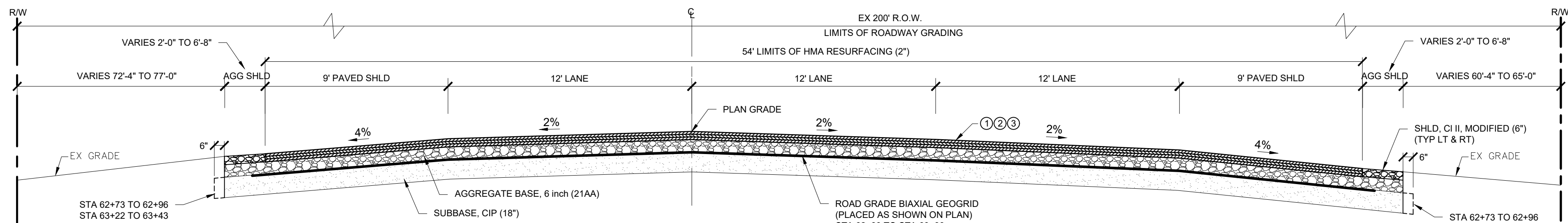
TYPICAL EXISTING CROSS SECTION - STONY LAKE ROAD (M-20)
STA 61+81 TO STA 64+31
N.T.S.



TYPICAL PROPOSED CROSS SECTION - STONY LAKE ROAD (M-20)
STA 48+50 TO STA 52+74
N.T.S.



TYPICAL PROPOSED CROSS SECTION - STONY LAKE ROAD (M-20)
STA 61+81 TO STA 62+73 AND STA 63+43 TO STA 64+31
N.T.S.

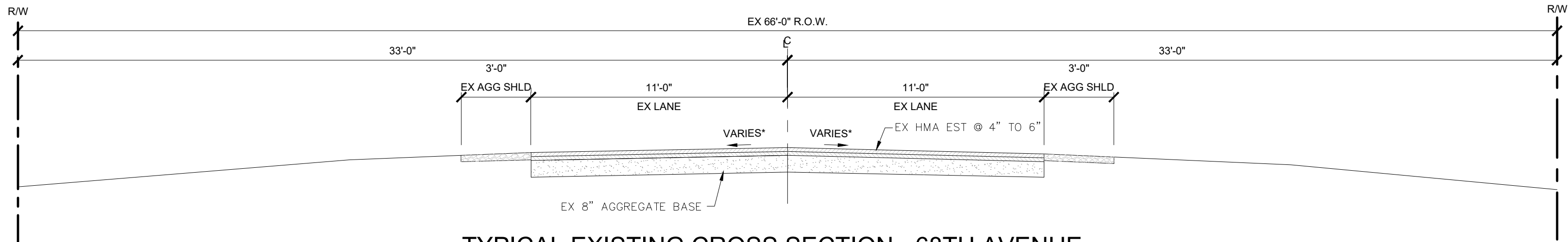


TYPICAL PROPOSED CROSS SECTION - STONY LAKE ROAD (M-20)
STA 62+73 TO STA 63+43
N.T.S.

HMA APPLICATION TABLE						
COURSE	TYPE	ITEM	EST. YIELD	BINDER GRADE	AWI	REMARKS
①	BASE	HMA, 4EML	220 LBS/SYD	PG 64-28	-	STONY LAKE RD / M-20
②	LEVELING	HMA, 4EML	220 LBS/SYD	PG 64-28	-	68TH AVE STONY LAKE RD / M-20
③	TOP	HMA, 4EML	220 LBS/SYD	PG 64-28	220	68TH AVE STONY LAKE RD / M-20
④		HAND PATCHING	220 LBS/SYD	PG 64-28	-	HMA, 4EML - BASE COURSE
⑤		HAND PATCHING	220 LBS/SYD	PG 64-28	-	HMA, 4EML - LEVELING COURSE
⑥		HMA, APPROACH	440 LBS/SYD	PG 64-28	220	HMA, 4EML - PLACED IN TWO 220 lb/SYD LIFTS

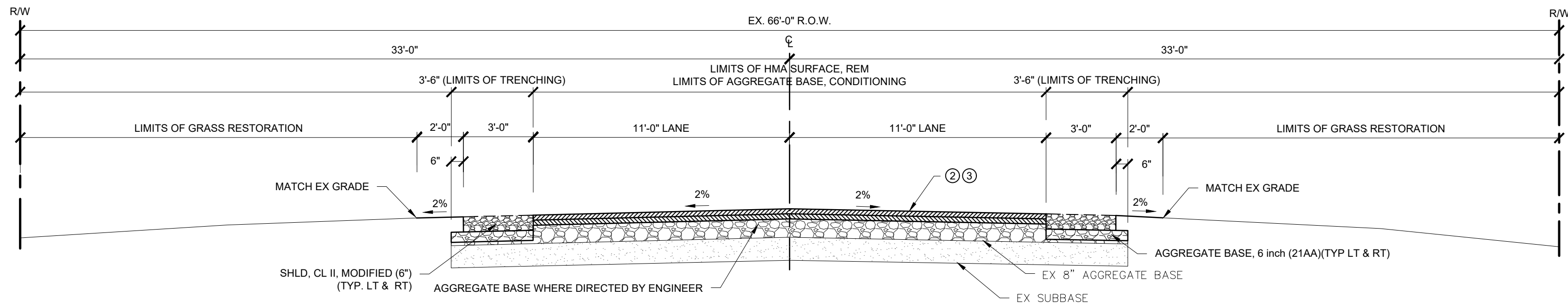
NOTES: BOND COAT SHALL BE APPLIED BETWEEN SUCCESSIVE
COURSES OF HMA (PAYMENT INCLUDED IN HMA MIX).
APPLICATION RATE 0.05 TO 0.15 GAL/SYD SS-1H, AS DIRECTED BY ENGINEER.

M:\V\967001-868960\868960 Ocean County Road Commission - M20 Tunnel Levels Forms 2024\City\Notes\868960_C-202_NOTES.dwg - Plotted on 12/2/2025 10:10 AM



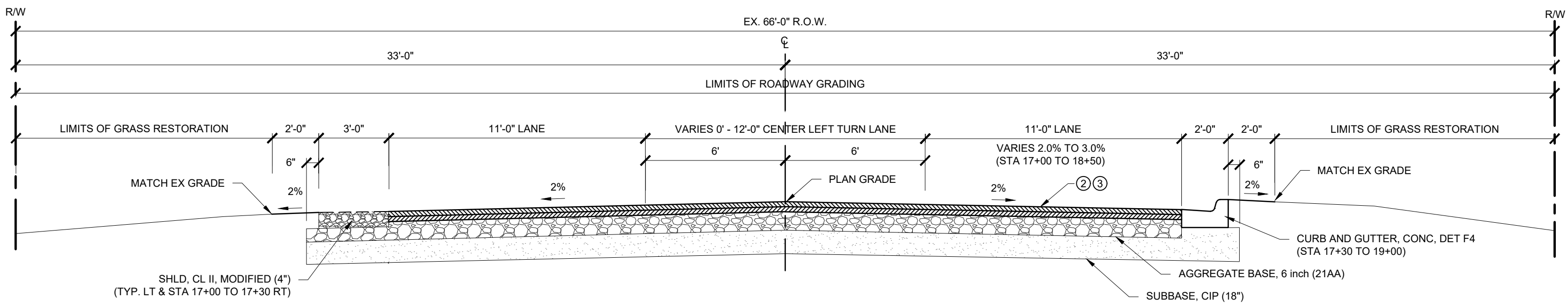
TYPICAL EXISTING CROSS SECTION - 68TH AVENUE

STA 10+00 (POB) TO STA 20+47 (POE)
N.T.S.



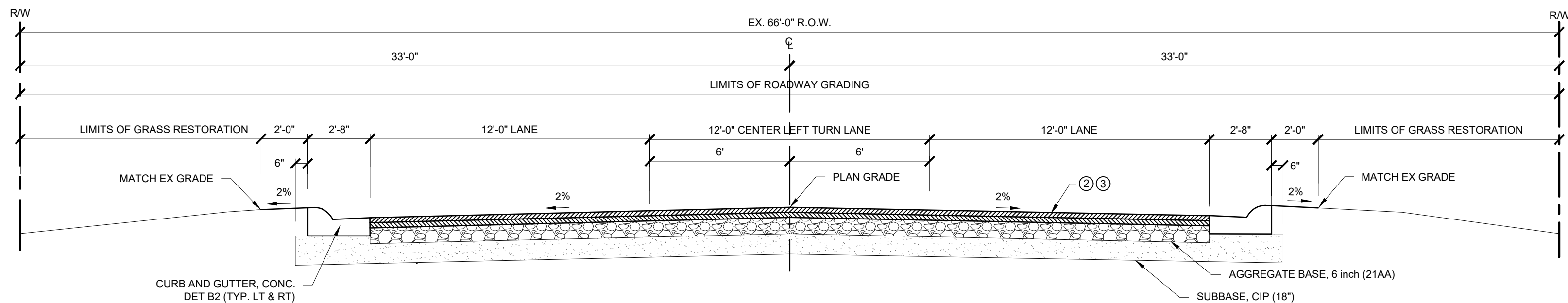
TYPICAL PROPOSED CROSS SECTION - 68TH AVENUE

STA 10+00 (POB) TO STA 17+00
N.T.S.



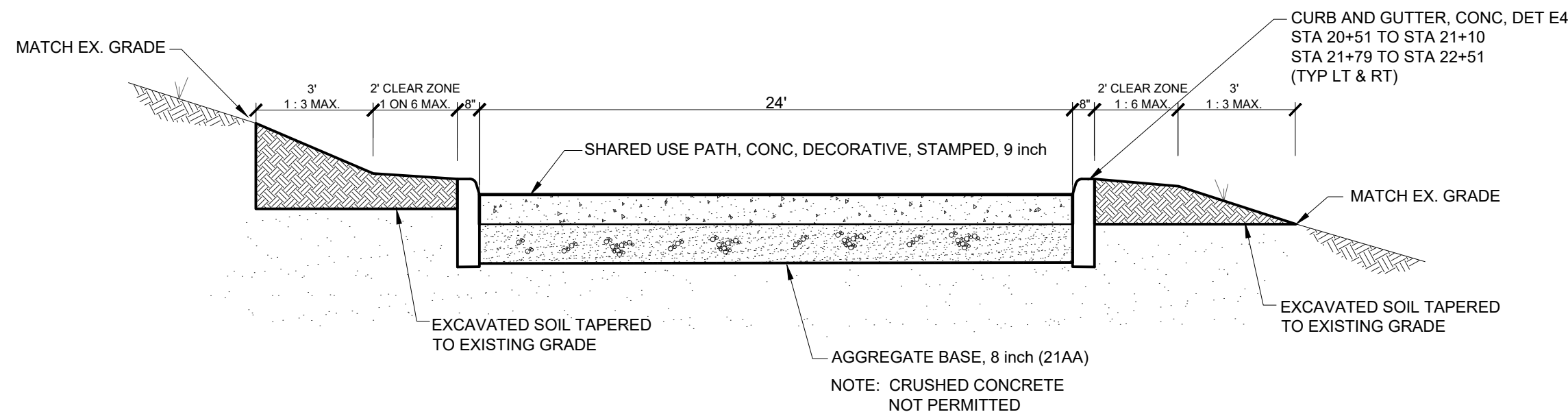
TYPICAL PROPOSED CROSS SECTION - 68TH AVENUE

STA 17+00 TO STA 19+00
N.T.S.



TYPICAL PROPOSED CROSS SECTION - 68TH AVENUE

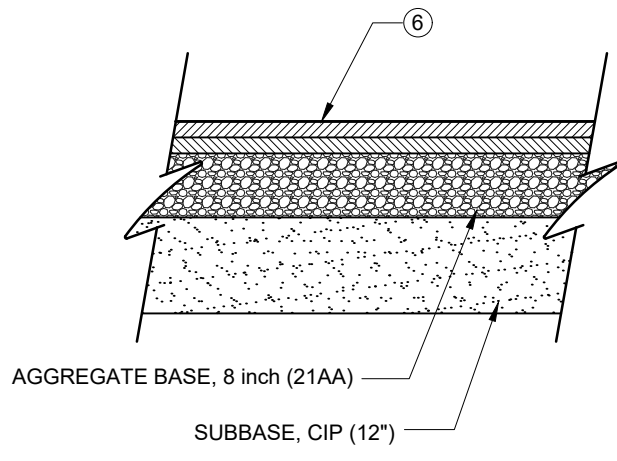
STA 19+00 TO STA 20+47 (POE)
N.T.S.



TYPICAL SHARED USE PATH, CONC SECTION

STA 20+94 TO STA 21+09
STA 21+79 TO STA 21+94

SCALE: NOT TO SCALE



HMA APPROACH DETAIL

68TH AVE. STA 10+40 TO 10+97 (RT SIDE)
NOT TO SCALE

CONSTRUCTION NOTES

PUBLIC UTILITIES

THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO SATISFY HIMSELF AS TO THEIR ACCURACY OR OF HIS RESPONSIBILITY IN CASE UTILITIES HAVE BEEN CONSTRUCTED OR REMOVED.

GAS	BARBARA SAUNDERS DTE GAS MSK_GASDESIGN@DTEENERGY.COM 313-235-5111	WATER & SEWER	JEREMIAH HELENHOUSE VILLAGE OF SHELBY DPWSUPERVISOR@SHELBYVILLAGE.COM 231-861-2500
FIBER OPTIC	CINDY WHITEMAN FRONTIER (PEARCE SERVICES) 860 TERRACE ST MUSKEGON, MI 49440 CYNTHIA.WHITEMAN2@FTR.COM 231-726-0290	ELECTRIC	AMRIN SHAHNOVZA CONSUMERS ENERGY 530 W. WILLOW ST. LANSING, MI 48906 517-374-2002 AMRIN.SHAHNOVZA@CMSENERGY.COM
FIBER OPTIC	HEATHER SHAWL EVERSTREAM 4273 58TH STREET HOLLAND, MI 49422 616-393-0138 EXT. 119 HEATHERS@WESTERNTL-COM.COM	CABLE TV/ INTERNET	PATRICK DELISI CHARTER COMMUNICATIONS 1392 TRADE CENTRE DR. TRAVERSE CITY, MI 49696 610-247-3699 PATRICK.DELISI@CHARTER.COM

THE CONTRACTOR SHALL EXPOSE AND VERIFY LOCATION AND DEPTH OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OF NEW UTILITY. CONFLICTS IN GRADES SHALL BE REPORTED TO ENGINEER AND ADJUSTMENTS SHALL BE MADE.

MISCELLANEOUS QUANTITIES		
THE FOLLOWING ITEMS OF WORK SHALL BE DONE AS THEY APPLY THROUGHOUT THE PROJECT. THESE ITEMS ARE NOT DETAILED OR INCLUDED ON THE PLAN AND PROFILE SHEETS BUT ARE TO BE USED AS DIRECTED BY THE ENGINEER, WHERE REQUIRED.		
QUANTITY	UNIT	DESCRIPTION
1	LSUM	GENERAL CONDITIONS, BONDS, AND INSURANCE, MAX 5%
1	LSUM	SOIL EROSION CONTROL
1	LSUM	CONTRACTOR STAKING
1	LSUM	SITE LIGHTING
1	LSUM	ELECTRICAL DISTRIBUTION
6000	DLR	CASH ALLOWANCE (ELECTRICAL SERVICE)
100	CYD	SUBGRADE UNDERCUTTING, TYPE II
50	CYD	TRENCH UNDERCUT AND BACKFILL
1	EA	MONUMENT BOX
1	EA	MONUMENT BOX ADJUST
1	EA	MONUMENT PRESERVATION
500	SYD	MULCH BLANKET
1196	FT	VIDEO TAPING SEWER AND CULV PIPE

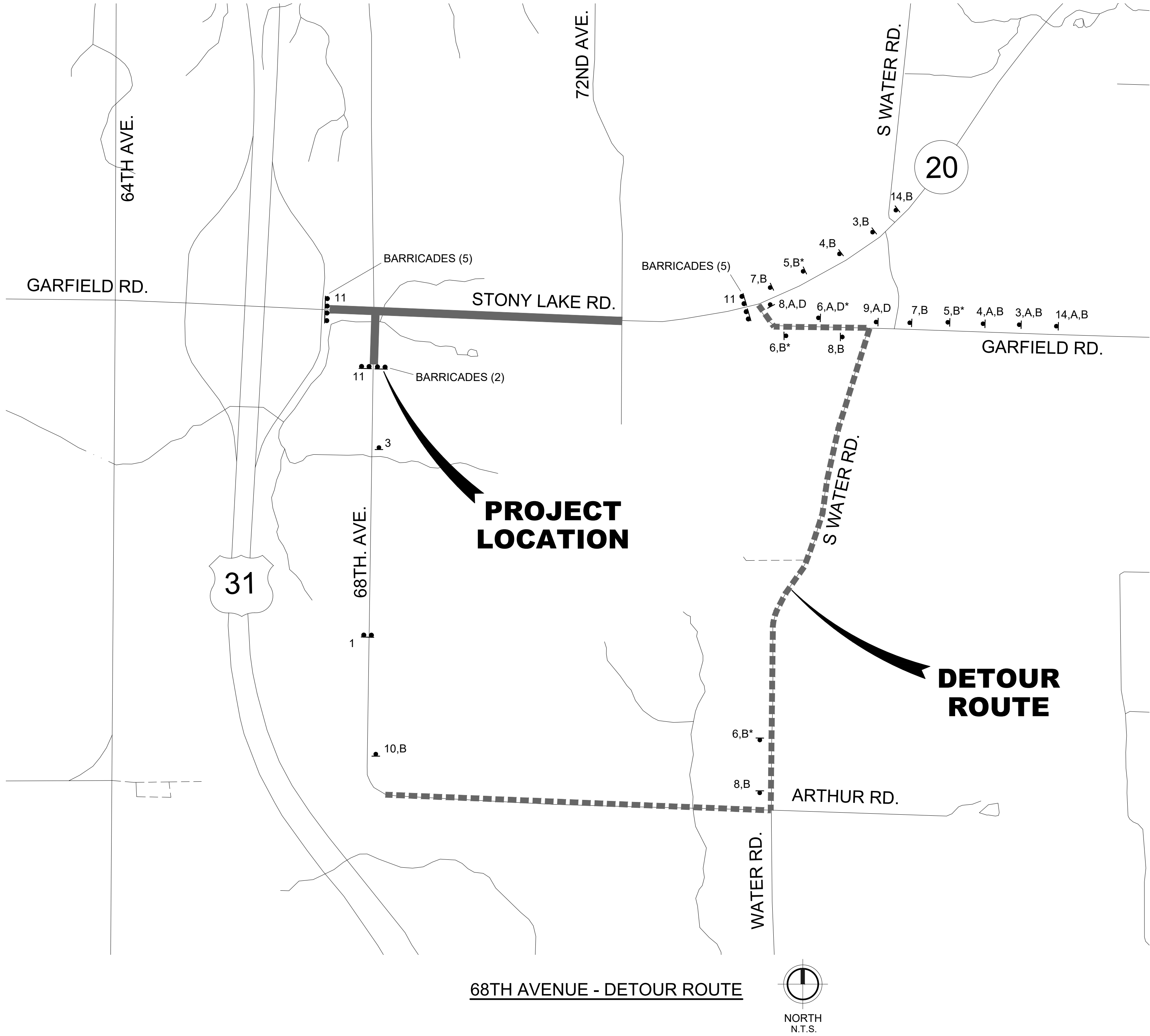
LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	TREE (DECIDUOUS)		CABLE BOX		SURVEY CONTROL POINT
	BUSH		TELEPHONE RISER		BENCHMARK
	TREE (CONIFEROUS)		TELEPHONE MANHOLE		SECTION CORNER
	DEAD TREE		ELECTRICAL RISER	BOUNDARY LINE	
	STUMP		ELECTRICAL MANHOLE	PROPERTY LINE	
	MANHOLE		POWER POLE	WATER MAIN	
	SANITARY CLEANOUT		LIGHT POLE	SANITARY SEWER	
	RD. CATCH BASIN		GUY POLE	STORM SEWER	
	SQ. CATCH BASIN		GUY ANCHOR	CULVERT (UNDER 10")	
	FIRE HYDRANT		RAILROAD	CULVERT (24" AND UP)	
	WATER VALVE		YARD LIGHT	CABLE T.V.	
	CURB STOP & BOX		SIGN	TELEPHONE	
	WELL		MAILBOX	ELECTRIC	
	WATER MANHOLE		GUARD POST	GAS	
	WATER METER		FOUND CONC. MONUMENT	OVERHEAD LINES	
	SOIL BORING		FOUND IRON ROD	GUARDRAIL	
	MONITORING WELL		SET IRON ROD	FENCE	
				WOODLINE	

NOTE: ALL ITEMS LISTED ON THE LEGEND MAY NOT BE PRESENT ON DRAWING.

REVISION:

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CONSTRUCTION NOTES

- PROVIDE STAKING FOR TEMPORARY CONSTRUCTION SIGN PLACEMENT AND MISS DIG NOTIFICATION. SIGN LOCATIONS SHOWN IN THE PLANS ARE SCHEMATIC. STAKE SIGN LOCATIONS BASED ON STANDARD OFFSETS WITH SPACINGS MODIFIED TO AVOID OBSTRUCTIONS FOR REVIEW BY THE ENGINEER. ADJUST AS NEEDED PRIOR TO CONTACTING MISS DIG.
- MAINTAIN LOCAL TRAFFIC TO ALL BUSINESSES AND RESIDENCES WITHIN PROJECT LIMITS. MAINTAIN EMERGENCY VEHICLE ACCESS AT ALL TIMES. PROVIDE 24 HOUR NOTICE IF ANY INTERRUPTION IS ANTICIPATED.
- PLACE "ROAD CLOSED AHEAD" SIGNS ON ALL CROSS STREETS WHERE SHOWN AND AS DIRECTED BY ENGINEER.
- PLACE DOUBLE 2-PT PAVT MRKG, WET REFLECTIVE, TYPE R, TAPE, YELLOW, TEMP. 6 inch, ALONG THE CENTERLINE OF STONY LAKE RD (M-20) AFTER PAVING BASE, LEVELING, OR TOP COURSE AND REMOVE THEM IMMEDIATELY PRIOR TO PLACING HMA LEVELING OR TOP COURSE OR PERMANENT PAVEMENT MARKINGS.

LEGEND

- DETOUR ROUTE
- PROJECT LOCATION
- SIGN
- BARRICADE, TYPE III, HIGH INTENSITY, LIGHTED

* PLACE SIGN STACK 500 FT IN ADVANCE OF NEXT DETOUR SIGN STACK

DETOUR SIGNAGE

- | | | | | | |
|---|-----------------------------|--|----|--|--|
| 1 | ROAD CLOSED TO THRU TRAFFIC | R11-4 (60" x 30")
12.5 Sft TYPE IIIB SIGN
MOUNT ON SEPARATE POSTS ABOVE AND BEHIND BARRICADE | 9 | DETOUR | M4-9 (30" x 24")
5 Sft TYPE IIIB SIGN |
| 2 | DETOUR | M4-10/L/R (48"x18")
6 Sft TYPE IIIB SIGN
MOUNT LEFT OR RIGHT ON BARRICADE | 10 | DETOUR ENDS | M4-8a (24" x 12")
2 Sft TYPE IIIB SIGN |
| 3 | ROAD CLOSED AHEAD | BARRICADE, TYPE III, HIGH INTENSITY, DOUBLE SIDED, LIGHTED | 11 | ROAD CLOSED | R11-2 (48" x 30")
10 Sft TYPE IIIB SIGN
MOUNT ON SEPARATE POSTS ABOVE AND BEHIND BARRICADE |
| 4 | DETOUR AHEAD | W20-3 (48" x 48")
16 Sft TYPE IIIB SIGN | 12 | WB M-20
CLOSED AT GARFIELD
FOLLOW DETOUR | D3-1 (60" x 30")
12.5 Sft TYPE IIIB SIGN |
| 5 | DETOUR | W20-2 (48" x 48")
16 Sft TYPE IIIB SIGN | 13 | EB M-20
CLOSED AT US-31
FOLLOW DETOUR | D3-1 (60" x 30")
12.5 Sft TYPE IIIB SIGN |
| 6 | DETOUR | M4-9UL (30" x 30")
6.25 Sft TYPE IIIB SIGN | 14 | ROAD WORK AHEAD | W20-1 (48" x 48")
16 Sft TYPE IIIB SIGN |
| 7 | DETOUR | M4-9UR (30" x 30")
6.25 Sft TYPE IIIB SIGN | A | M-20 | D3-1 (36" x 12")
3 Sft TYPE IIIB SIGN |
| 8 | DETOUR | M4-9L (30" x 24")
5 Sft TYPE IIIB SIGN | B | 68TH AVE | D3-1 (36" x 12")
3 Sft TYPE IIIB SIGN |
| | | M4-9R (30" x 24")
5 Sft TYPE IIIB SIGN | C | EAST | D3-1 (36" x 12")
3 Sft TYPE IIIB SIGN |
| | | | D | WEST | D3-1 (36" x 12")
3 Sft TYPE IIIB SIGN |

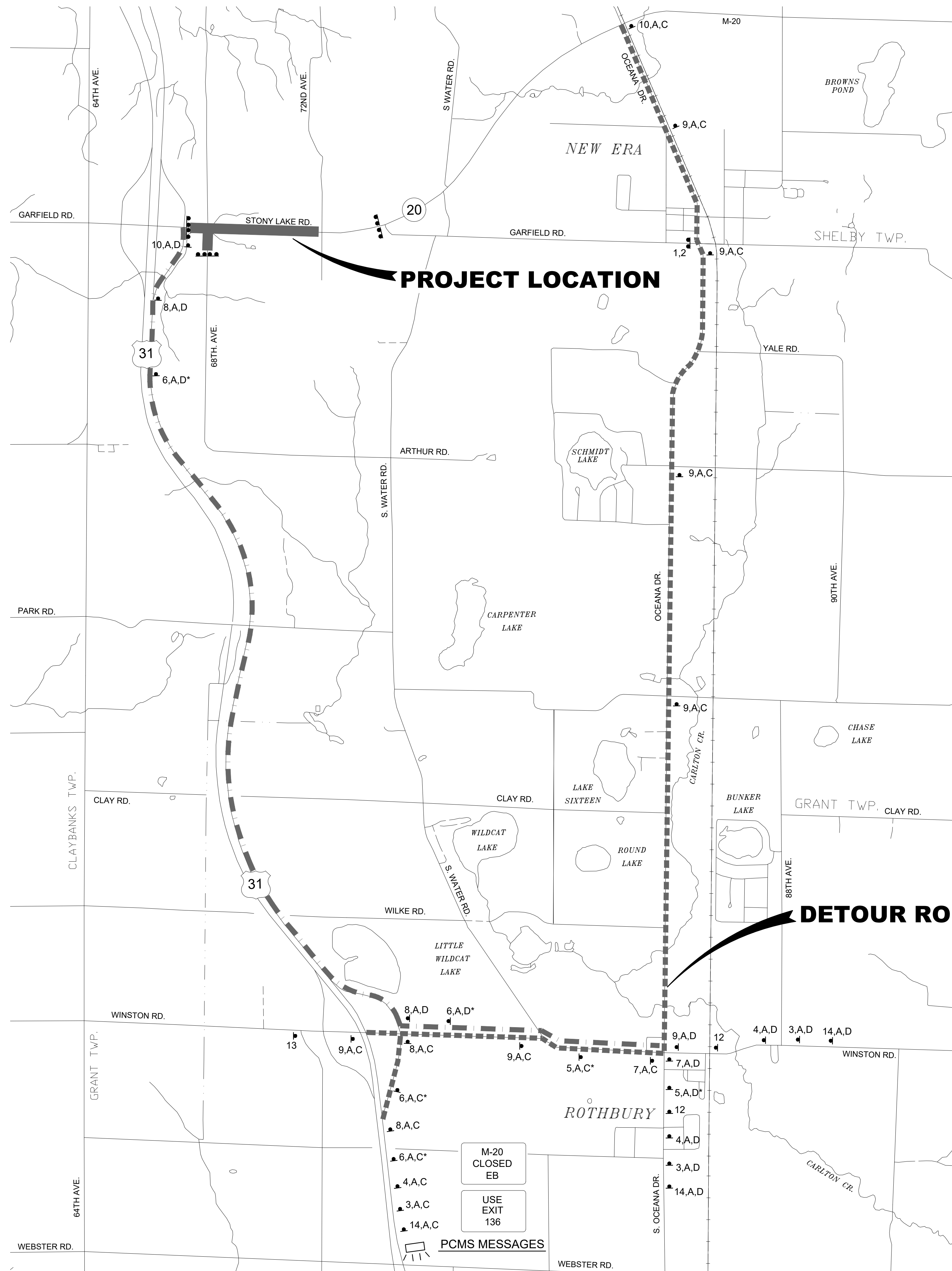
* D3-1 PLAQUES SHALL BE PLACED UNDER THE W20 SERIES SIGNS AND ABOVE THE M4-9 SERIES SIGNS PER MUTCD PART 6 TYPICAL INCLUDED IN THE PERMIT PACKAGE.

CONSTRUCTION SIGNING (FOR INFORMATION ONLY)					
SIGN	TYPE	SIZE	SIGN AREA (SFT)	NUMBER	TOTAL AREA (SFT)
1	R11-4	60"x30"	12.5	2	25.0
2	M4-10 L/R	48"x18"	6.0	1	6.0
3	W20-3	48"x48"	16.0	10	160.0
4	W20-2	48"x48"	16.0	9	144.0
5	M4-9UL	30"x30"	6.25	8	50.0
6	M4-9UR	30"x30"	6.25	15	93.75
7	M4-9L	30"x24"	5.0	9	45.0
8	M4-9R	30"x24"	5.0	15	75.0
9	M4-9	30"x24"	5.0	20	100.0
10	M4-8a	24"x12"	2.0	6	12.0
11	R11-2	48"x30"	10.0	3	30.0
12	D3-1	60"x30"	12.5	5	62.5
13	D3-1	60"x30"	12.5	3	37.5
14	W20-1	48"x48"	16.0	9	144.0
TOTAL:					964.75

SPECIAL CONSTRUCTION SIGNING (FOR INFORMATION ONLY)					
SIGN	TYPE	SIZE	SIGN AREA (SFT)	NUMBER	TOTAL AREA (SFT)
A	D3-1	36"x12"	3.0	85	255
B	D3-1	36"x12"	3.0	32	96
C	D3-1	36"x12"	3.0	25	75
D	D3-1	36"x12"	3.0	44	132
TOTAL:					558



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STONY LAKE RD. (M-20) - DETOUR ROUTE SOUTH OF PROJECT

OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)
MAINTENANCE OF TRAFFIC PLAN

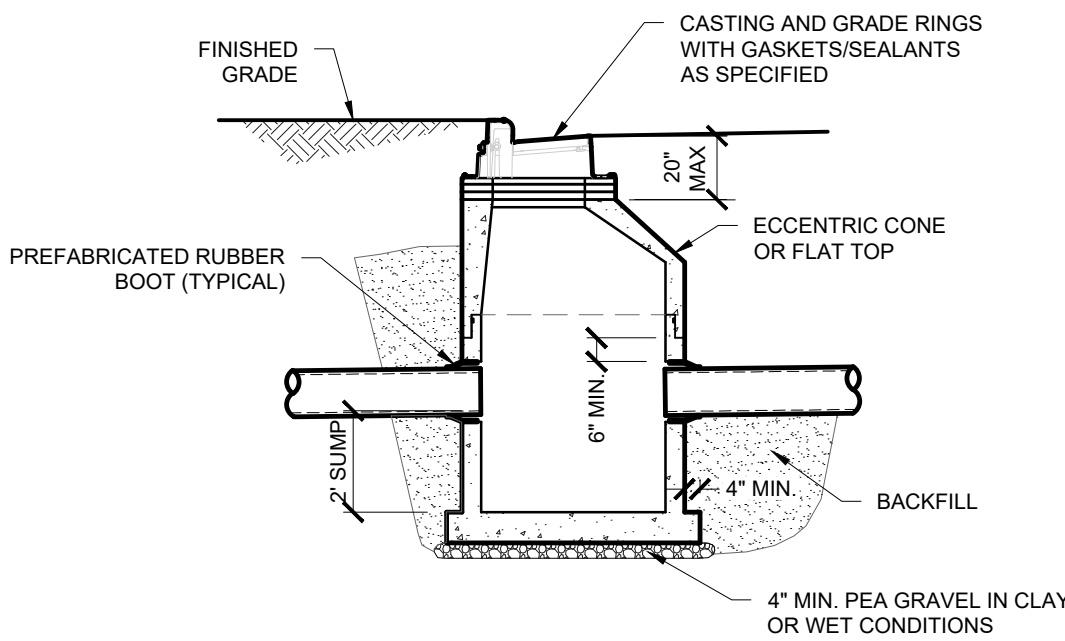
DESIGN TEAM: PROJ MGR: LBH
DESIGNED BY: RWT
DRAWN BY: PAD
CHECK BY:

DRAWING INFORMATION:
868960_C-303 MOT
112525 peted

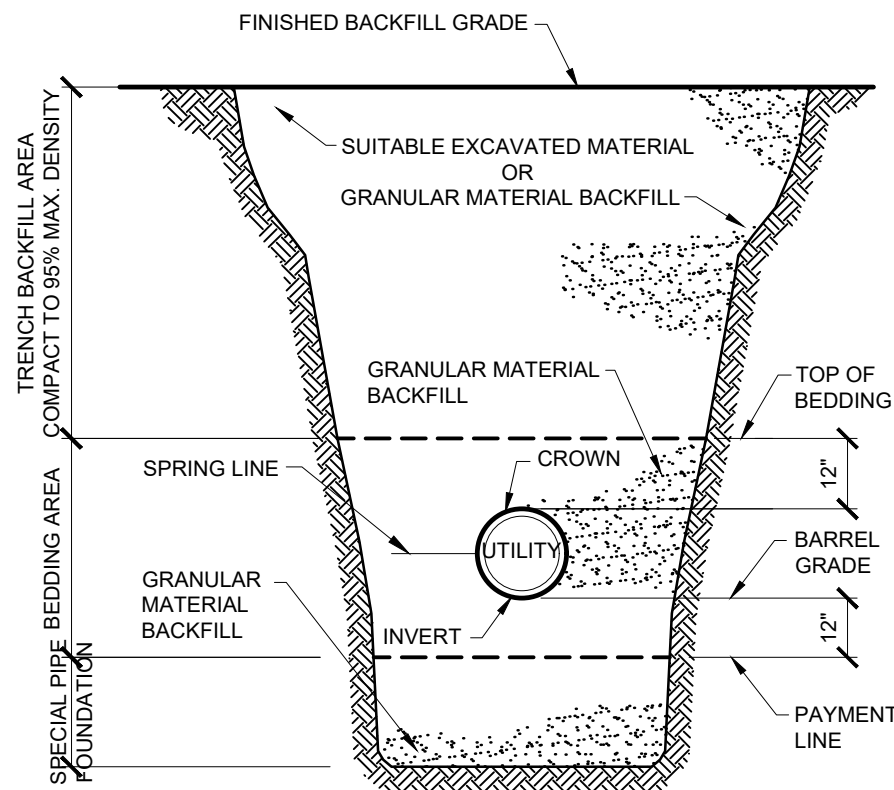
DECEMBER 2025
F&W PROJECT NO.
868960

C-303

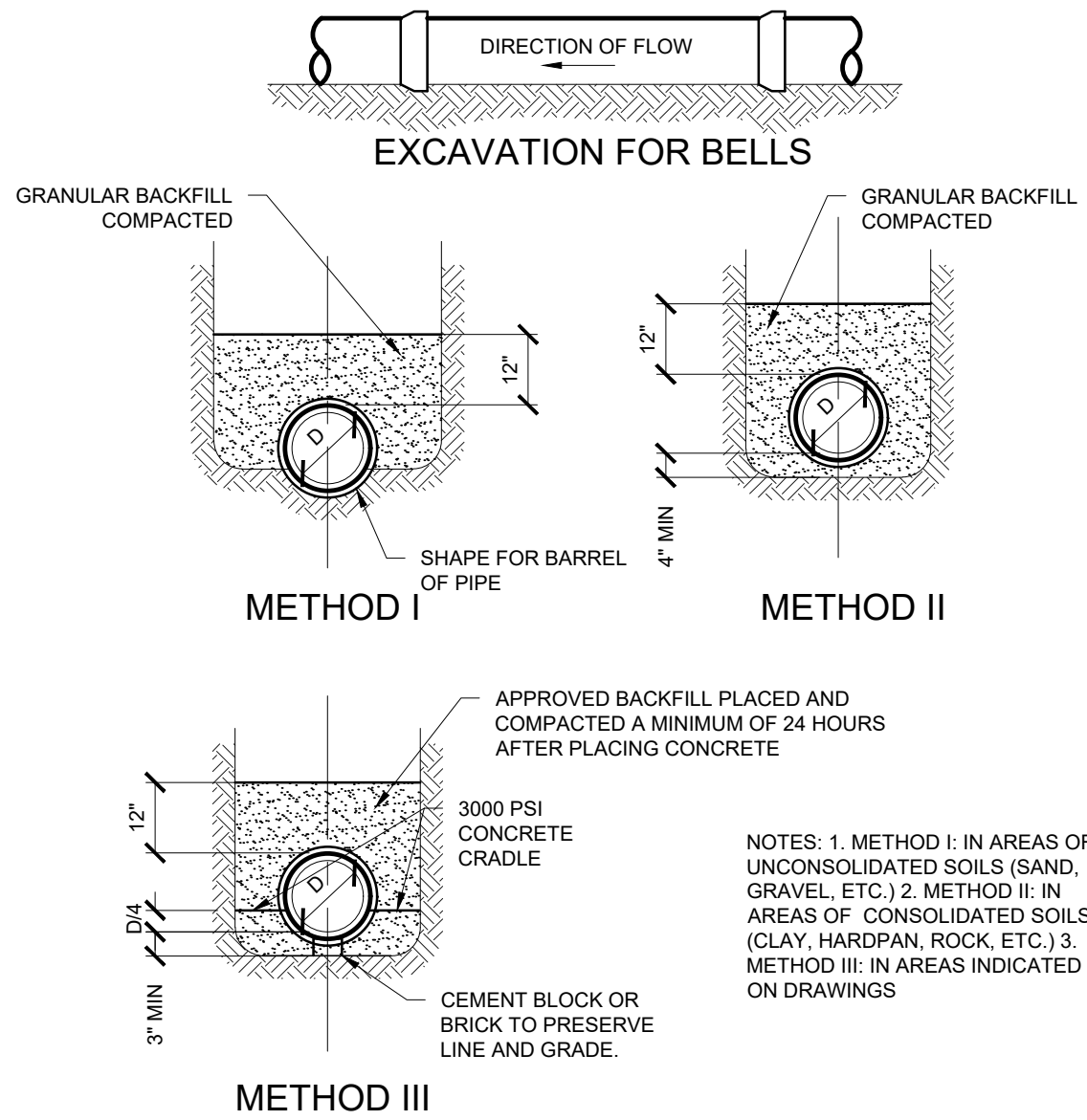
FLEISCHMANN & VANDENBRINK
DESIGN. BUILD. OPERATE.
2960 Lucerne Drive SE
Grand Rapids, MI 49546
P: 616.977.1000
F: 616.977.1005



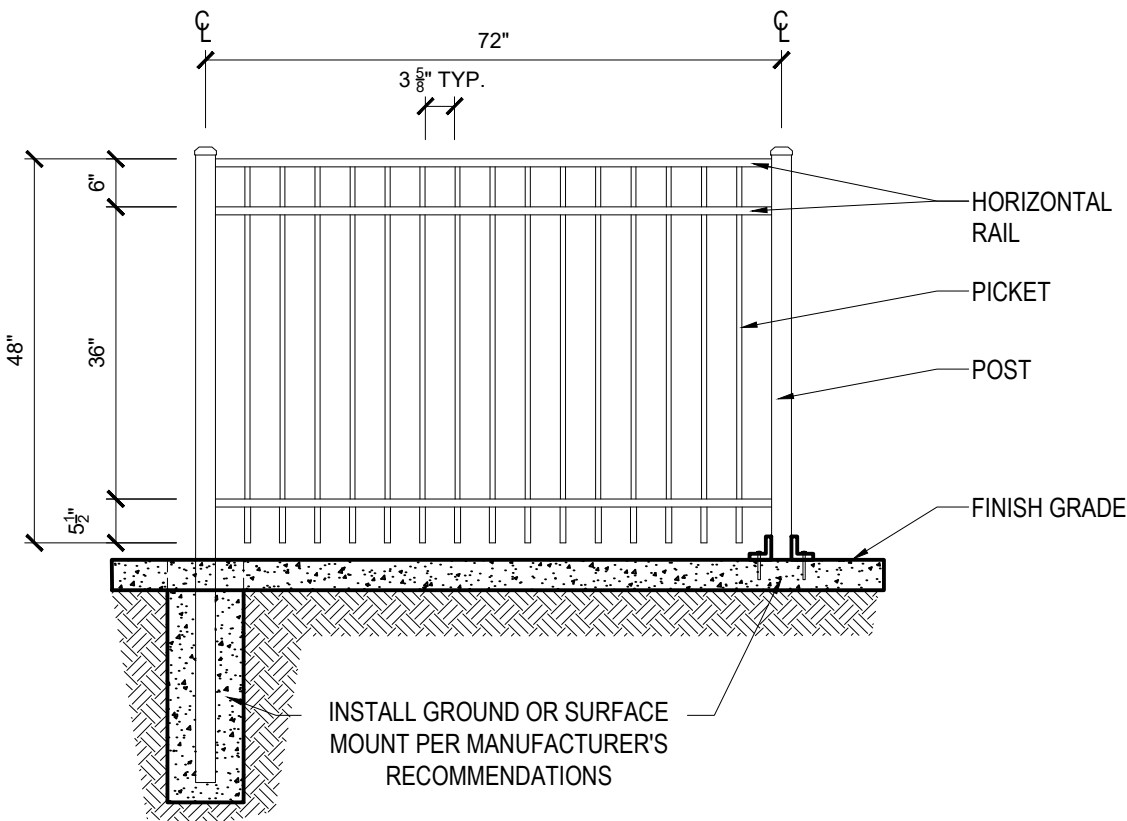
4' DIA. CATCH BASIN



UTILITY TRENCHING, EXCAVATING
AND BACKFILLING TERMINOLOGY



METHODS OF BEDDING GRAVITY PIPE



ULTRA ALUMINUM MFG., INC.
2124 GRAND COMMERCE DRIVE
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TOLL FREE: (800) 656-4420
TOLL FREE FAX: (800) 643-7429
PHONE: (517) 548-6755
FAX: (517) 548-6756
www.ultrafence.com

SPECIFICATIONS:
POSTS: 3" X 3" X .125" WALL
HORIZONTAL RAILS: SIDE WALLS - 1 1/2" X .88"
TOP WALLS - 1 1/2" X .065"
PICKETS: 3/4" X 3/4" X .035"
PICKET SPACING - 3 5/8"

ALUMINUM PICKET FENCE, UAF-200 FLAT TOP, 48-INCH HEIGHT

PAID AS: ORNAMENTAL FENCE
SCALE: 1/2" = 1'-0"

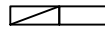
OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)
DETAILS

DESIGN TEAM: PROJ MGR: LBH
DESIGNED BY: RWT
DRAWN BY: PAD
CHECK BY:

DRAWING INFORMATION:
868960_C-501_DET
112525 peted

DECEMBER 2025
F&V PROJECT NO.
868960

ELECTRICAL SYMBOL LEGEND

LIGHTING	POWER	CONDUIT/RACEWAY	ABBREVIATIONS
 2x4 RECESSED FIXTURE	POWER SUBSCRIPTS WP - WEATHER PROOF IG - ISOLATED GROUND C - CEILING MOUNTED F - FURNITURE MOUNTED AC - MOUNTED ABOVE COUNTER D - DROP DOWN T - TAMPER RESISTANT ** - FIXTURE HEIGHT	 MULTI-OUTLET/PLUGMOLD	A OR AMP AC AFF ATS BMS CKT C CB COMM CONC DIA DISC DWG EC EM EPO EQUIP EWC EXT F FA FAAP FACP FIXT FLA G GFI GND GC HID HP IG JB KA KV KVA KW LCP LTS MAX MCA MCC MIN MOCP MC MTD N NC NIC NL NO OCP PA PC PDU PEND PH PNL PRI RCPT/RECEPT RLA RM SEC SHT SURF SW SWBD TSTAT TEL TFA TFB TYP UL UNO UPS V VFD W/ W/O W WP XFMR
 2x4 SURFACE/PENDANT FIXTURE		 DIVIDED SURFACE RACEWAY	AMPERE ABOVE COUNTER ABOVE FINISHED FLOOR AUTOMATIC TRANSFER SWITCH BUILDING MANAGEMENT SYSTEM CIRCUIT CONDUIT CIRCUIT BREAKER COMMUNICATIONS CONCRETE DIAMETER DISCONNECT DRAWING ELECTRICAL CONTRACTOR EMERGENCY EMERGENCY POWER OFF EQUIPMENT ELECTRIC WATER COOLER EXTERIOR FURNITURE FIRE ALARM FIRE ALARM ANNUNCIATION PANEL FIRE ALARM CONTROL PANEL FIXTURE FULL LOAD AMPACITY GROUND (WHEN USED ON CIRCUIT HOMERUN SYMBOL) GROUND FAULT INTERRUPTER GROUND GENERAL CONTRACTOR HIGH INTENSITY DISCHARGE HORSE POWER ISOLATED GROUND JUNCTION BOX KILOAMPERE KILOVOLT KILOVOLT-AMPERE KILOWATT LIGHTING CONTROL PANEL LIGHTS MAXIMUM MINIMUM CIRCUIT AMPACITY MOTOR CONTROL CENTER MINIMUM MAXIMUM OVERCURRENT PROTECTION MECHANICAL CONTRACTOR MOUNTED NEUTRAL NORMALLY CLOSED NOT IN CONTRACT NIGHT LIGHT NORMALLY OPEN OVERCURRENT PROTECTION PUBLIC ADDRESS PHOTOCELL POWER DISTRIBUTION UNIT PENDANT PHASE PANEL PRIMARY RECEPTACLE RUNNING LOAD AMPACITY ROOM SECONDARY SHEET SURFACE SWITCH SWITCHBOARD THERMOSTAT TELEPHONE TO FLOOR ABOVE TO FLOOR BELOW TYPICAL UNDERWRITER'S LABORATORIES UNLESS NOTED OTHERWISE UNINTERRUPTIBLE POWER SUPPLY VOLT VARIABLE FREQUENCY DRIVE WITH WITHOUT WATT WEATHERPROOF TRANSFORMER
 1x4 RECESSED FIXTURE		 DIVIDED POWER POLE	
 1x4 SURFACE/PENDANT FIXTURE		 HOMERUN (SHORT HASH = UNGROUNDED CONDUCTOR AND LONG HASH = GND)	
 2x2 RECESSED FIXTURE		 2-WIRE + GND HOMERUN	
 2x2 SURFACE/PENDANT FIXTURE		 2-WIRE + GND + ISOLATED GND HOMERUN	
 LINEAR STRIP FIXTURE	 SINGLE RECEPTACLE	 3-WIRE + GND HOMERUN	
 LINEAR WALL MTD FIXTURE	 DOUBLE DUPLEX RECEPTACLE	 3-WIRE + GND + ISOLATED GND HOMERUN	
 WALL MTD FIXTURE	 RECEPTACLE ON EMERGENCY POWER	 CONDUIT STUB	
 PENDANT FIXTURE	 GROUND FAULT CIRCUIT INTERRUPTER	 CONDUIT RISE	
 CEILING FAN	 SPECIAL OUTLET, SEE DWG FOR NEMA TYPE	 CONDUIT DROP	
 RECESSED CAN/SURFACE MTD FIXTURE	 SPLIT RECEPTACLE	 CONDUIT	
 SINGLE FACE WALL MTD EXIT SIGN	 FLOOR MTD RECEPTACLE	 CIRCUIT-UNSWITCHED	
 DOUBLE FACE WALL MTD EXIT SIGN	 COMBINATION RCPT/COMMUNICATION/DATA FLOOR MTD OUTLET	 CONDUIT BELOW GRADE/BELOW SLAB	
 EXIT SIGN W/ EGRESS LTS	 PEDESTAL RECEPTACLE		
 SINGLE FACE CEILING MTD EXIT SIGN	 DIRECT ELECTRICAL CONNECTION		
 DOUBLE FACE CEILING MTD EXIT SIGN	 JUNCTION BOX		
 EXIT SIGN EGRESS DIRECTION ARROWS	 ELECTRIC MOTOR - HP INDICATED		
 WALL MTD EGRESS FIXTURE	 CABINET HEATER		
 REMOTE EGRESS HEAD	 CONDENSING UNIT		
 SITE POLE MTD FIXTURE	 FUSESTAT		
 SITE GROUND MTD FIXTURE	 SWITCH AND PILOT		
 WALL SWITCH	 MANUAL MOTOR STARTER		
 3-WAY SWITCH	 NON-FUSIBLE SAFETY SWITCH		
 4-WAY SWITCH	 FUSIBLE SAFETY SWITCH		
 LOW VOLTAGE SWITCH	 STARTER		
 KEYED SWITCH	 COMBINATION STARTER/SAFETY SWITCH		
 TIMER SWITCH	 CIRCUIT BREAKER W/ ENCLOSURE		
 OCCUPANCY SENSOR WALL SWITCH	 CONTACTOR		
 OCCUPANCY SENSOR			
 WALL MNTD. OCCUPANCY SENSOR			
 POWER PACK			
 CONTROL STATION			
 PHOTOCELL			
 TIME CLOCK			
		PANELBOARDS/POWER DISTRIBUTION	
		 EXISTING ELECTRICAL PANELBOARD	
		 ELECTRICAL PANELBOARD	
		 CONTROL/RELAY PANEL	
		 ELECTRICAL DISTRIBUTION PANELBOARD	
		 TRANSFORMER	
		 AUTOMATIC TRANSFER SWITCH	
		 ELECTRIC METER	
		MISCELLANEOUS	
		 TIE INTO EXITING	
		 GROUND BAR	
		 EPO MUSHROOM BUTTON	
		 PUSHBUTTON	
		 SOLENOID VALVE	
		 MOTORIZED DAMPER	
		 WALL MOUNT THERMOSTAT / SENSOR	
		 CONTINUATION	

ELECTRICAL GENERAL NOTES:

- ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE AND ALL AUTHORITIES HAVING JURISDICTION.
- SECURE AND PAY FOR ALL PERMITS AND FEES.
- SWITCHBOARDS, PANELBOARDS, AND MOTOR CONTROL CENTERS SHALL BE FIELD MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ARC FLASH HAZARDS. PROVIDE APPROPRIATE WARNING SIGNS PER NEC 110.16.
- LISTED OR LABELED EQUIPMENT SHALL BE INSTALLED AND USED IN ACCORDANCE WITH ANY INSTRUCTIONS INCLUDED IN THE LISTING OR LABELING PER NEC 110.3(B). ELECTRICAL CONTRACTOR SHALL VERIFY ALL INSTALLATION REQUIREMENTS.
- ELECTRICAL CONTRACTOR SHALL COORDINATE AND VERIFY THAT ALL OVERCURRENT PROTECTIVE DEVICES INTERRUPT RATINGS EXCEED AVAILABLE FAULT CURRENTS.
- ELECTRICAL CONTRACTOR SHALL COORDINATE AND VERIFY THAT ALL ELECTRICAL EQUIPMENT SHORT CIRCUIT RATINGS EXCEED AVAILABLE SHORT CIRCUIT CURRENT.
- ELECTRICAL CONTRACTOR SHALL COORDINATE AND VERIFY THAT WORKING AND DEDICATED EQUIPMENT SPACE REQUIREMENTS FOR ALL ELECTRICAL EQUIPMENT ARE MET PER NEC 110.26.
- ELECTRICAL CONTRACTOR SHALL COORDINATE WITH ALL OTHER TRADES FOR INSTALLATION OF ALL EQUIPMENT. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS.
- ALL WIRING SHALL BE COPPER No. 12 AWG MINIMUM SIZE. TYPE THHN/THWN/THWN-2 INSULATION OR AS INDICATED ON DRAWINGS. FOR ALL BRANCH CIRCUITS OVER 75 FEET LONG, CONDUCTOR SIZE SHALL BE No. 10 AWG MINIMUM SIZE.
- ALL WIRING SHALL BE INSTALLED IN A CONDUIT SYSTEM UNLESS NOTED OTHERWISE ON THE DRAWING. ALL CONDUIT USED IN WET OR DAMP AREAS SHALL BE WATER TIGHT. PROVIDE FLEXIBLE METAL CONDUIT FOR CONNECTION TO ALL MOTORS. PROVIDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR WITH ALL FLEXIBLE METAL CONDUIT. MAXIMUM LENGTH OF FLEXIBLE METAL CONDUIT ALLOWED IS 2 FT. RUN ALL NEW CONDUIT CONCEALED WHERE POSSIBLE. WHERE EXISTING DOES NOT PERMIT CONCEALED, RUN EXPOSED. ALL CONDUIT RUNS EXPOSED SHALL BE RUN SQUARE TO THE BUILDING AND PAINTED TO MATCH SURFACE MOUNTED ON.
- ALL CONDUITS SHALL CONTAIN A GREEN COLORED EQUIPMENT GROUNDING CONDUCTOR TO PROVIDE ELECTRICAL CONTINUITY TO ALL BOXES, DEVICES, FIXTURES, AND NON-CURRENT-CARRYING METAL PARTS OF EQUIPMENT.
- ALL BRANCH CIRCUITS SHALL BE 20A, 1P, C.B., (2)#12, #12GND, 3/4"C UNLESS NOTED OTHERWISE.
- MAXIMUM LOAD FOR A 20 AMP BRANCH CIRCUIT SHALL BE 15 AMPS OR 1800 VOLT-AMPS AT 120 VAC.
- ALL BRANCH CIRCUITS ARE ASSUMED TO HAVE THREE OR LESS CURRENT CARRYING CONDUCTORS IN A RACEWAY OR CABLE. WHERE THE NUMBER OF CURRENT CARRYING CONDUCTORS IN A RACEWAY OR CABLE EXCEEDS THREE, THE ELECTRICAL CONTRACTOR SHALL APPLY ADJUSTMENT FACTORS PER NEC TABLE 310.15 (B)(2)(a).
- THE MAXIMUM VOLTAGE DROP ALLOWED FOR BRANCH CIRCUITS SHALL BE 3%, THE MAXIMUM VOLTAGE DROP FOR FEEDERS AND BRANCH CIRCUITS COMBINED SHALL BE 5%.
- ALL RECEPTACLES SHALL BE 20AMP, 125V., SPECIFICATION GRADE, GROUNDING TYPE. COORDINATE WITH ARCHITECT FOR RECEPTACLE AND COVER PLATE FINISHES. ORIENT RECEPTACLE SO GROUNDING PIN IS ON TOP. PROVIDE WEATHERPROOF AND GFI RECEPTACLES WHERE SHOWN.
- PROVIDE TEFLON BUSHINGS ON ALL CONDUIT STUBS THROUGH WALLS AND ABOVE CEILINGS.
- SEAL AROUND CONDUIT/SLEEVE PENETRATIONS THRU FIRE RATED WALLS, FLOORS, AND CEILINGS WITH U.L. LISTED FIRE RESISTANT SEALANT.
- PROVIDE WHITE ON BLACK LAMINATED PLASTIC LABEL PLATES FOR ALL ELECTRICAL PANELS WITH THE FOLLOWING INFORMATION: PANEL DESIGNATION, VOLTAGE, PHASE, WIRE, AMPERAGE, FEEDER SIZE (BREAKER AND WIRE), FEEDER LOCATION. FOR ALL SURFACE MOUNTED PANELS, LOCATE LABEL ON OUTSIDE OF COVER. FOR ALL FLUSH/RECESSED PANELS, LOCATE LABEL ON INSIDE OF COVER.
- PROVIDE WHITE ON BLACK LAMINATED PLASTIC LABEL PLATES FOR ALL FEEDERS WITH THE FOLLOWING INFORMATION: FEEDER DESCRIPTION, BREAKER SIZE, TRIP SIZE, WIRE SIZE.
- PROVIDE TYPED PANEL INDEXES ON ALL ELECTRICAL PANELS.
- PROVIDE SHOP DRAWINGS TO ENGINEER FOR APPROVAL.

LEGEND NOTES:

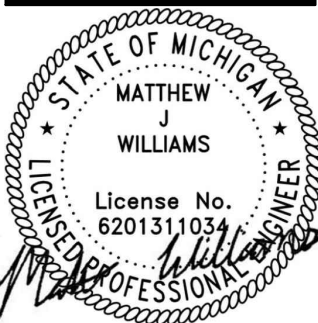
- NOT ALL SYMBOLS SHOWN ARE NECESSARILY USED IN THIS PROJECT.
- SYMBOLS THAT HAVE A DARK LINE WEIGHT REPRESENT NEW. SYMBOLS THAT HAVE A LIGHT LINE WEIGHT REPRESENT EXISTING. SYMBOLS THAT ARE DASHED REPRESENT ITEMS FOR DEMOLITION.

OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)
ELECTRICAL LEGENDS & SPECIFICATIONS

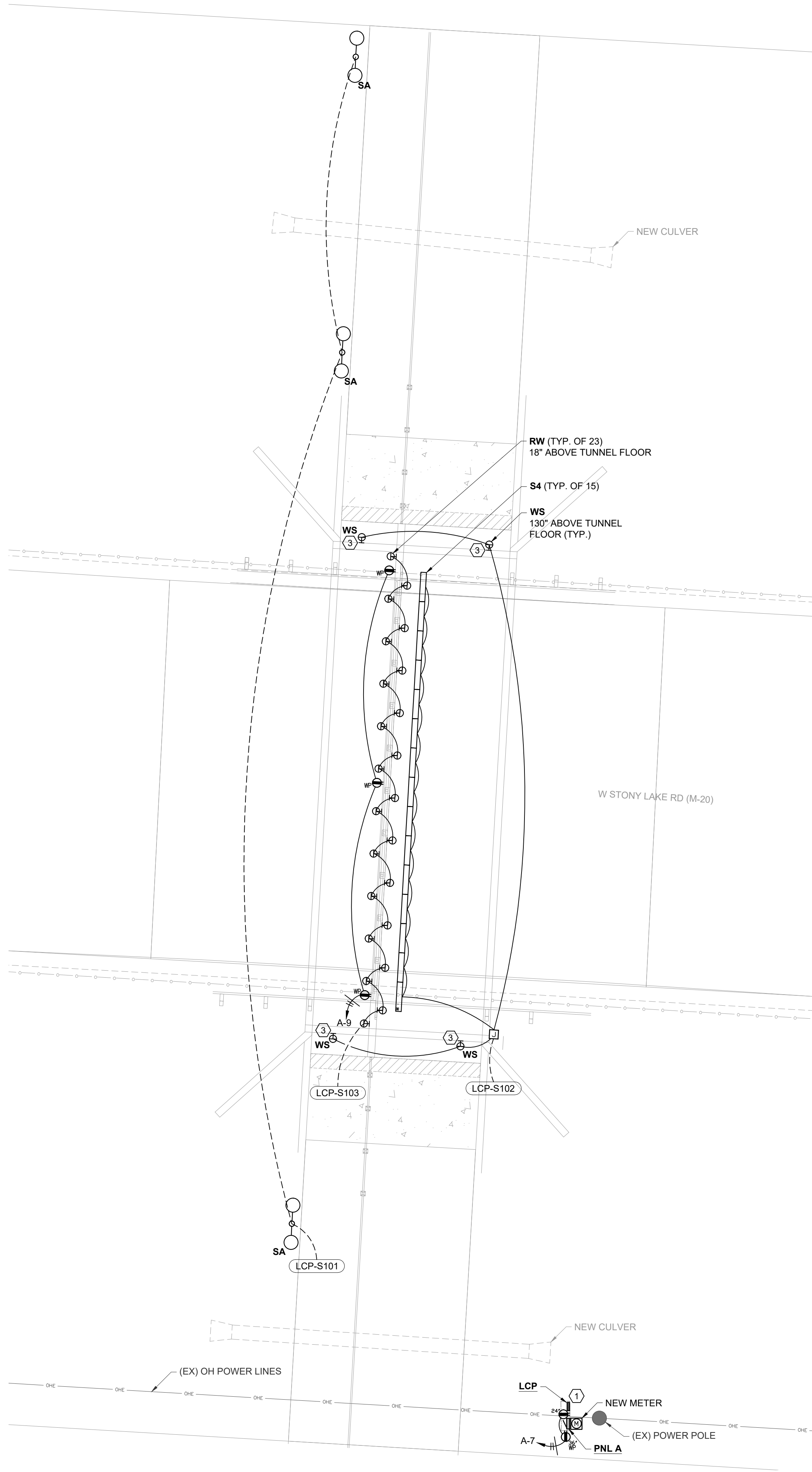
DESIGN TEAM: PROJ MGR: LBT
DESIGNED BY: MJW
DRAWN BY: MJW

CHECK BY:

DRAWING INFORMATION:
25138_ELEC
120225 matw


DECEMBER 2025
F&V PROJECT NO.
868960

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GENERAL ELECTRICAL NOTES:

- SEE CIVIL PLANS FOR EXISTING SITE CONDITIONS.
- PROVIDE SCH 40 PVC CONDUIT FOR ALL UNDERGROUND CIRCUITS.
- UNDERGROUND CIRCUITS SHALL BE MINIMUM OF 24" BELOW GRADE.
- PROVIDE NEMA 3R ENCLOSURE FOR GFCI RECEPTACLE ON EXTERIOR OF ELECTRICAL ENCLOSURE.
- CIRCUITING SHOWN ON PLANS IS FOR DIAGRAMMATIC PURPOSES ONLY. EC SHALL CIRCUIT EQUIPMENT TO PANEL AS SHOWN, BUT SHALL DETERMINE BEST CIRCUIT AND CONDUIT ROUTING PER FIELD CONDITIONS.
- COORDINATE WITH MDOT FOR SPECIFIC LIGHTING INSTALLATION REQUIREMENTS.
- OWNER SHALL COORDINATE NEW ELECTRICAL SERVICE WITH UTILITY.
- PROVIDE 0-10V DIMMING LEADS TO **S4** AND **WS** FIXTURES FROM LIGHTING CONTROL PANEL.

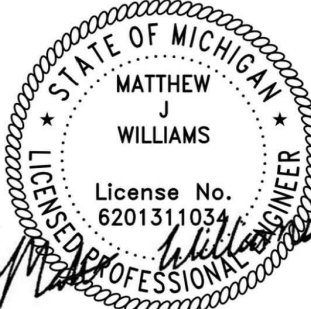
ELECTRICAL KEYED NOTES:

- PROVIDE WEATHERPROOF ELECTRICAL ENCLOSURE FOR NEW LIGHTING CONTROL PANEL **LCP** AND **PNL A**. APX DD604415 (OR SIMILAR). SEE ENCLOSURE DETAILS ON SHEET E201.
- PROVIDE CONDUIT THROUGH BACK OF HEAD WALL INTO "WS" FIXTURES. SEE LOCATION DETAILS ON SHEET E-202.
- PROVIDE 1/2" CONDUIT THROUGH CEILING OF TUNNEL STRUCTURE INTO LOCATION SHOWN FOR ELECTRICAL HOOKUP OF FIRST "S4" FIXTURE. CONNECT ALL DOWNSTREAM FIXTURES END-TO-END.

OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)
ELECTRICAL PLAN

DESIGN TEAM: PROJ MGR: LBN
DESIGNED BY: MJW
DRAWN BY: MJW

CHECK BY:
DRAWING INFORMATION:
25138_ELEC
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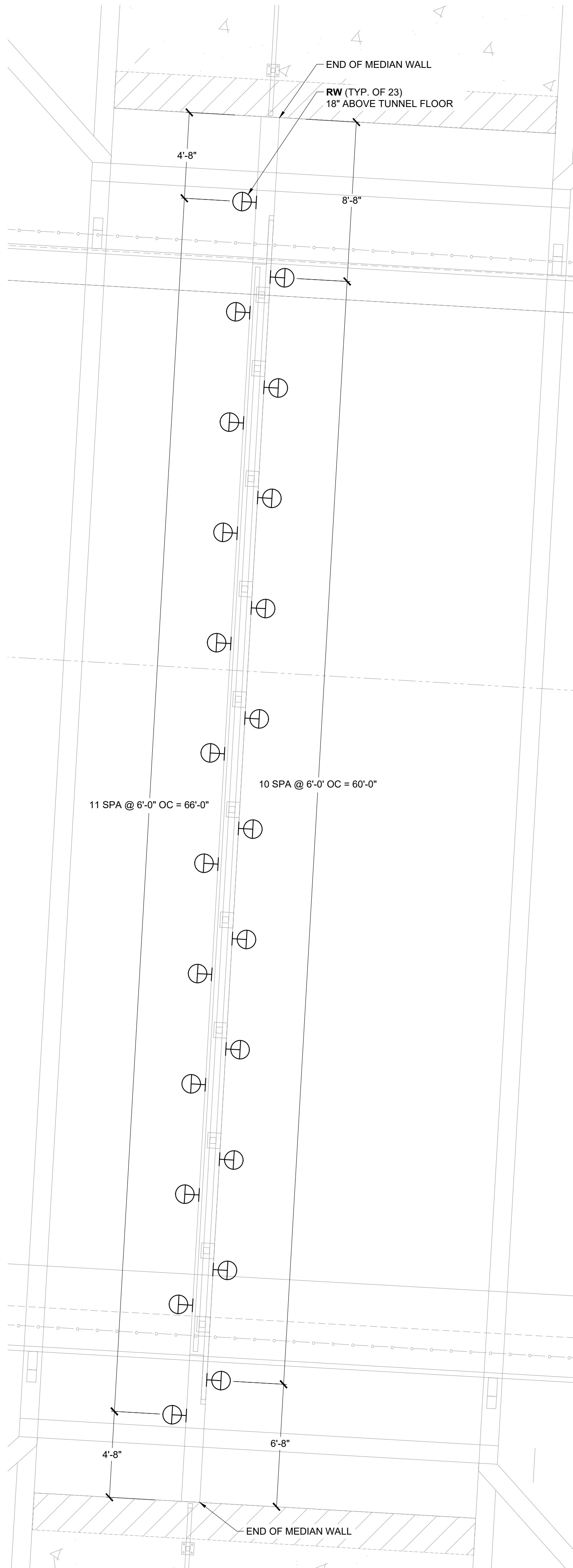


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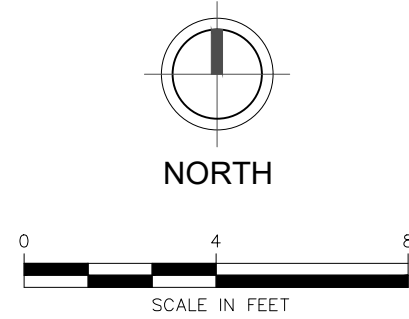
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2 TUNNEL CEILING FIXTURE SPACING
SCALE: 1/4" = 1'-0"



1 MEDIAN WALL FIXTURE SPACING
SCALE: 1/4" = 1'-0"



GENERAL ELECTRICAL NOTES:

- A. SEE CIVIL PLANS FOR EXISTING SITE CONDITIONS.
- B. PROVIDE SCH 40 PVC CONDUIT FOR ALL UNDERGROUND CIRCUITS.
- C. UNDERGROUND CIRCUITS SHALL BE MINIMUM OF 24" BELOW GRADE.
- D. PROVIDE NEMA 3R ENCLOSURE FOR GFCI RECEPTACLE ON EXTERIOR OF ELECTRICAL ENCLOSURE.
- E. CIRCUITING SHOWN ON PLANS IS FOR DIAGRAMMATIC PURPOSES ONLY. EC SHALL CIRCUIT EQUIPMENT TO PANEL AS SHOWN, BUT SHALL DETERMINE BEST CIRCUIT AND CONDUIT ROUTING PER FIELD CONDITIONS.
- F. COORDINATE WITH MDOT FOR SPECIFIC LIGHTING INSTALLATION REQUIREMENTS.
- G. OWNER SHALL COORDINATE NEW ELECTRICAL SERVICE WITH UTILITY.
- H. PROVIDE 0-10V DIMMING LEADS TO **S4** AND **WS** FIXTURES FROM LIGHTING CONTROL PANEL.

ELECTRICAL KEYED NOTES: (#)

- 1. PROVIDE WEATHERPROOF ELECTRICAL ENCLOSURE FOR NEW LIGHTING CONTROL PANEL **LCP** AND **PNL A**. APX DD604415 (OR SIMILAR). SEE ENCLOSURE DETAILS ON SHEET E201.
- 2. PROVIDE CONDUIT THROUGH BACK OF HEAD WALL INTO "WS" FIXTURES. SEE LOCATION DETAILS ON SHEE E-202.
- 3. PROVIDE 1/2" CONDUIT THROUGH CEILING OF TUNNEL STRUCTURE INTO LOCATION SHOWN FOR ELECTRICAL HOOKUP OF FIRST "S4" FIXTURE. CONNECT ALL DOWNSTREAM FIXTURES END-TO-END.

OCEANA COUNTY ROAD COMMISSION
SHELBY TOWNSHIP, OCEANA COUNTY, MICHIGAN
STRUCTURE 14792 STONY LAKE ROAD (M-20)
ELECTRICAL DETAILS

DESIGN TEAM: PROJ MGR: LSW
DESIGNED BY: MJW
DRAWN BY: MJW

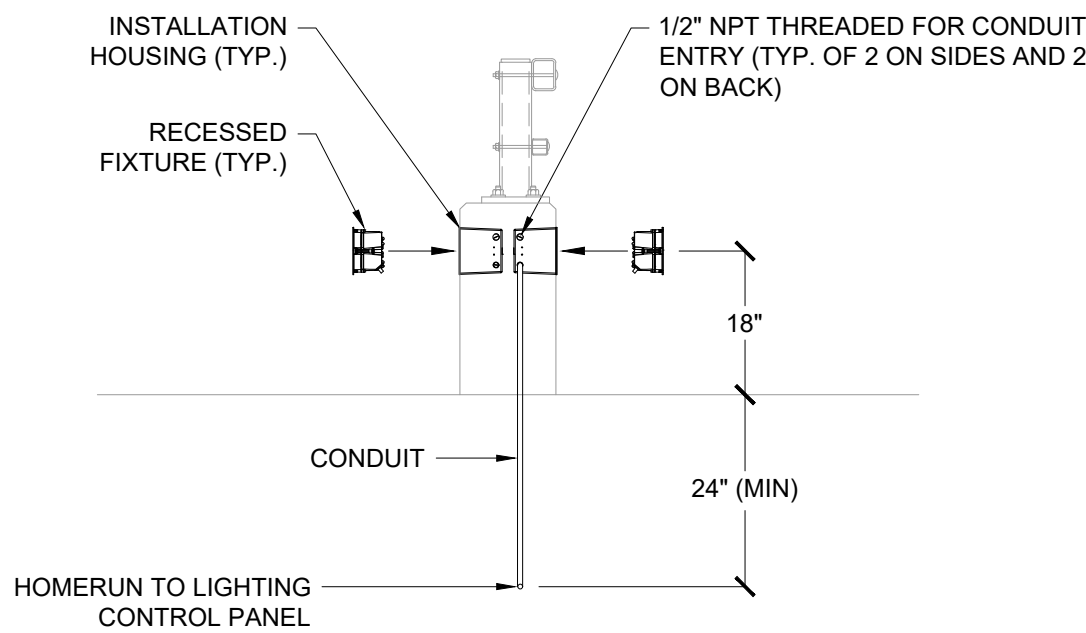
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DRAWING INFORMATION:
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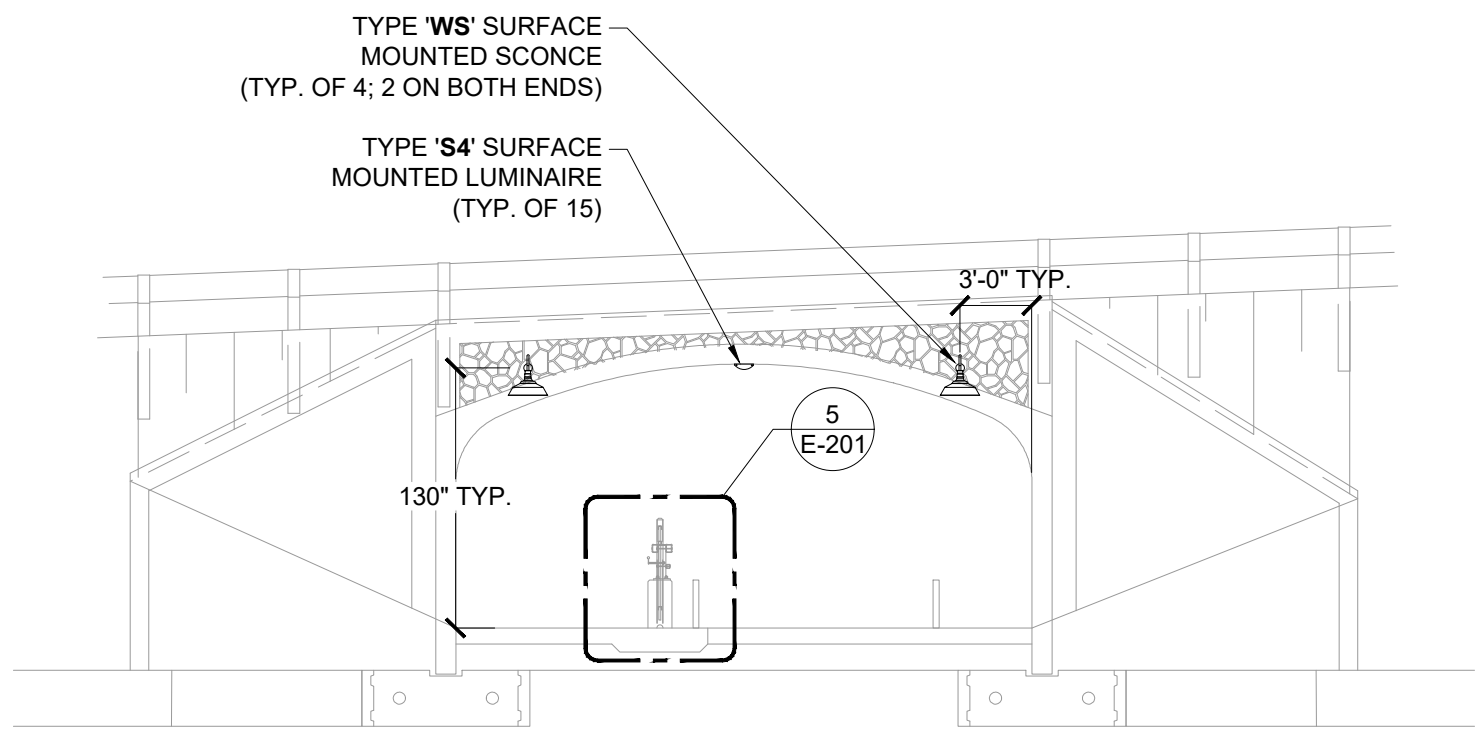
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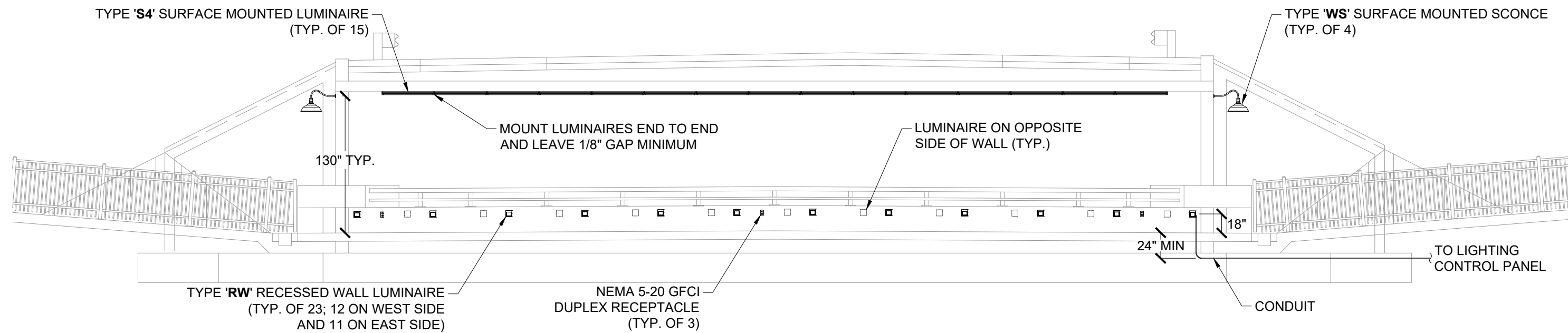
- COORDINATE CONDUIT INSTALLATION AROUND REBAR.
- INSTALLATION HOUSINGS AND RECEPTACLE BOXES SHALL BE CAST IN PLACE WITH MEDIAN WALL.
- REFER TO MFR. INSTALLATION DOCUMENTS.
- EAST FACING AND WEST FACING LUMINAIRES ARE OFFSET BY 2'-0" IN THE NORTH/SOUTH DIRECTION. SEE LOCATION DETAILS ON SHEET E-102.



5 MEDIAN WALL SECTION VIEW
SCALE: 1/2" = 1'-0"



4 TUNNEL SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



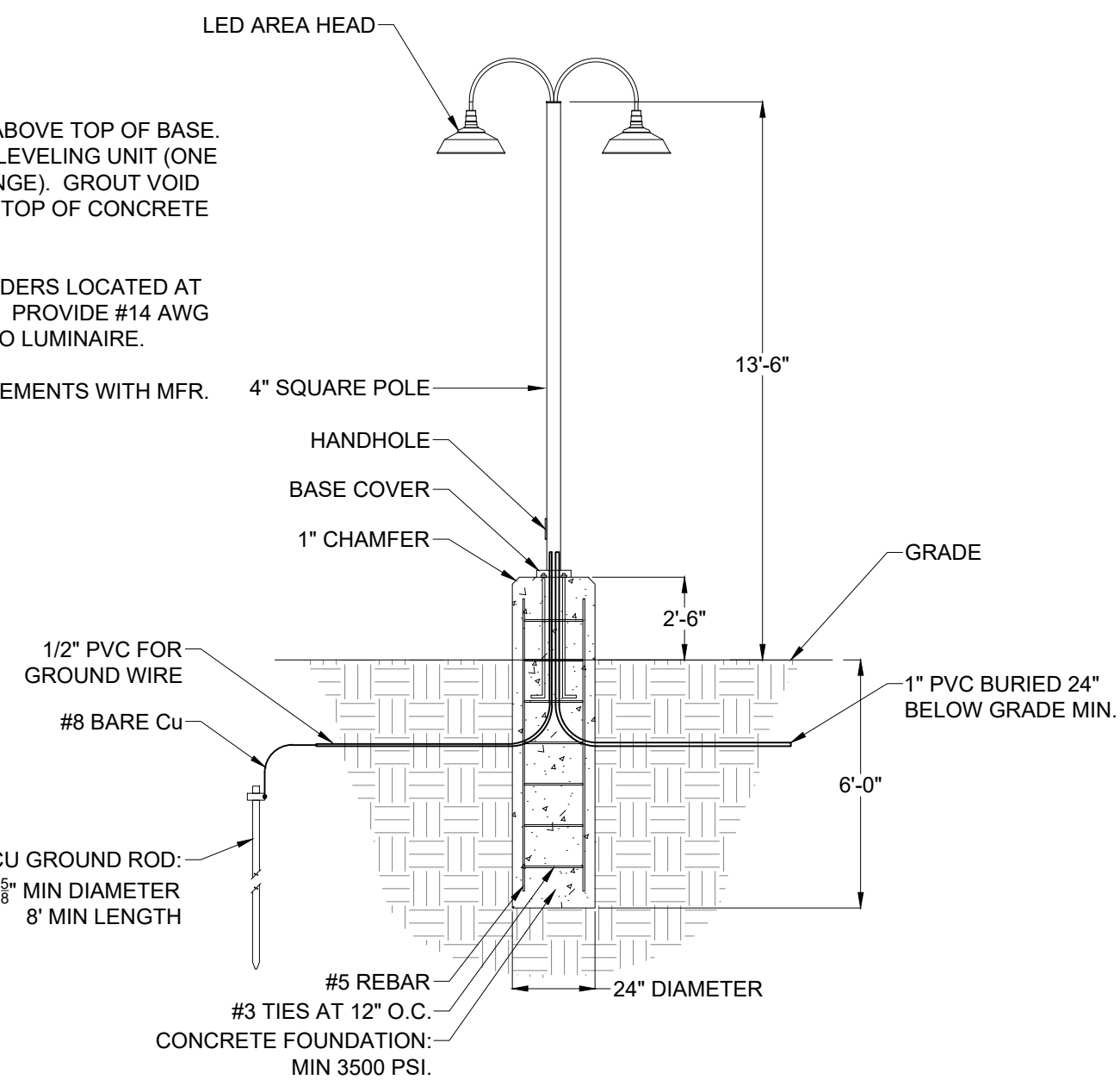
3 TUNNEL WEST ELEVATION
SCALE: 1/8" = 1'-0"

ELECTRICAL ENCLOSURE NOTES

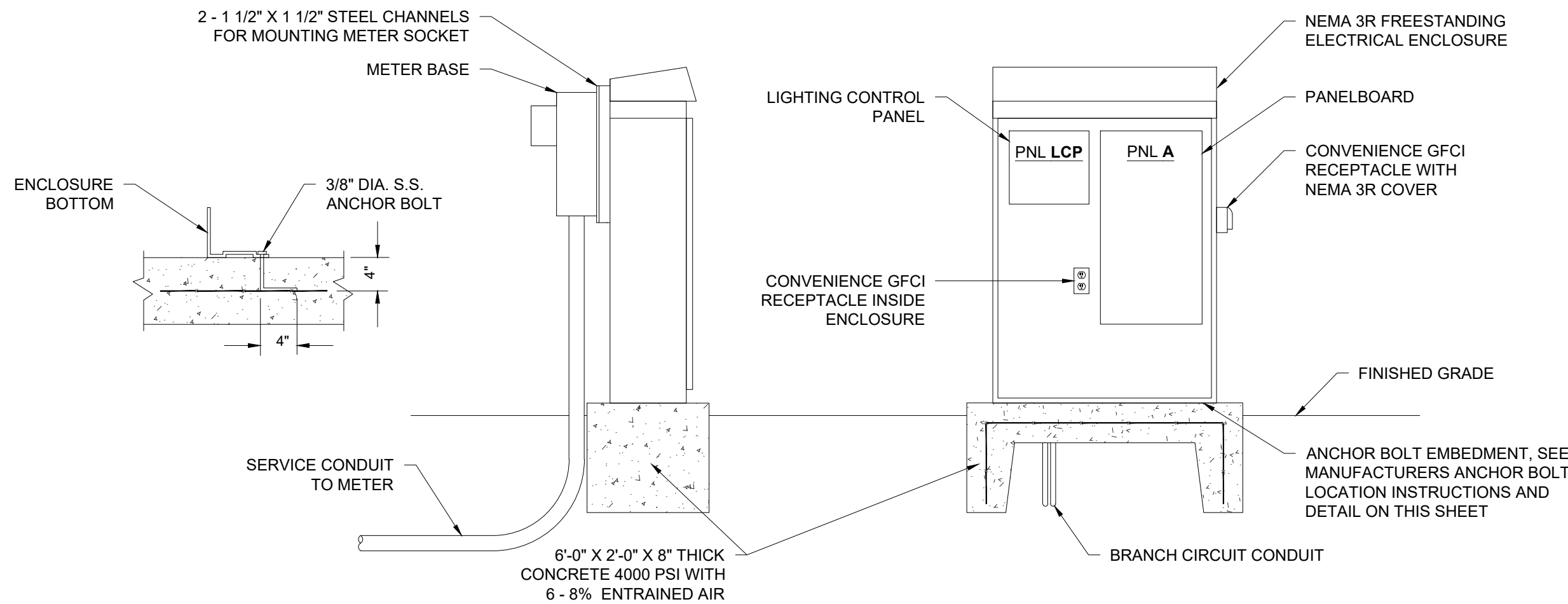
- ELECTRICAL ENCLOSURE SHALL BE STAINLESS STEEL NEMA 3R DOUBLE DOOR, LOCKABLE, OPEN BOTTOM, 60" H X 44" W X 15" D. DESIGN BASED ON **APX DD604415** FREE STANDING. ENGINEER APPROVED EQUAL ACCEPTABLE.
- PNL A LOAD CENTER SHALL BE 18 CKT, 100AMP, 120/240 VAC NEMA 1 ENCLOSED. DESIGN BASED ON SQUARE D **NQ18L1C** INTERIOR WITH **MH38** ENCLOSURE BOX. ENGINEER APPROVED EQUAL ACCEPTABLE.
- LIGHTING RELAY PANEL SHALL BE NEMA 1 ENCLOSED, 120-277 VAC, CONTACT QUANTITIES AND RATINGS TO MATCH THOSE SHOWN ON DESIGN. DESIGN BASED ON LITHONIA **ARP INTENC08 NLT 4FCR MVOLT SC SM**. ENGINEER APPROVED EQUAL ACCEPTABLE.
- PROVIDE MANUAL ON/OFF AND DIMMING OVERRIDE MEANS FOR ALL LIGHTING ZONES
- SURGE PROTECTION DEVICE SHALL BE SINGLE PHASE, 250 VOLT, TOTALLY ENCAPSULATED WITH 3/4" CONDUIT ADAPTOR. DESIGN BASED ON SQUARE D. ENGINEER APPROVED EQUAL ACCEPTABLE.
- BOND ELECTRICAL ENCLOSURE TO SYSTEM GROUND USING #8 Cu AWG.

NOTES:

- PROJECT ANCHOR BOLTS 3" ABOVE TOP OF BASE. PROVIDE DOUBLE NUTS FOR LEVELING UNIT (ONE ABOVE AND ONE BELOW FLANGE). GROUT VOID BETWEEN BASE FLANGE AND TOP OF CONCRETE AND HAND FINISH.
- PROVIDE (2) INLINE FUSE HOLDERS LOCATED AT HANDHOLE AND FUSE AT 15A. PROVIDE #14 AWG FROM LOAD SIDE OF FUSES TO LUMINAIRE.
- CONFIRM POLE BASE REQUIREMENTS WITH MFR.



2 SITE POLE DETAIL
SCALE: 1/4" = 1'-0"



1 ELECTRICAL ENCLOSURE DETAIL
SCALE: 1/2" = 1'-0"

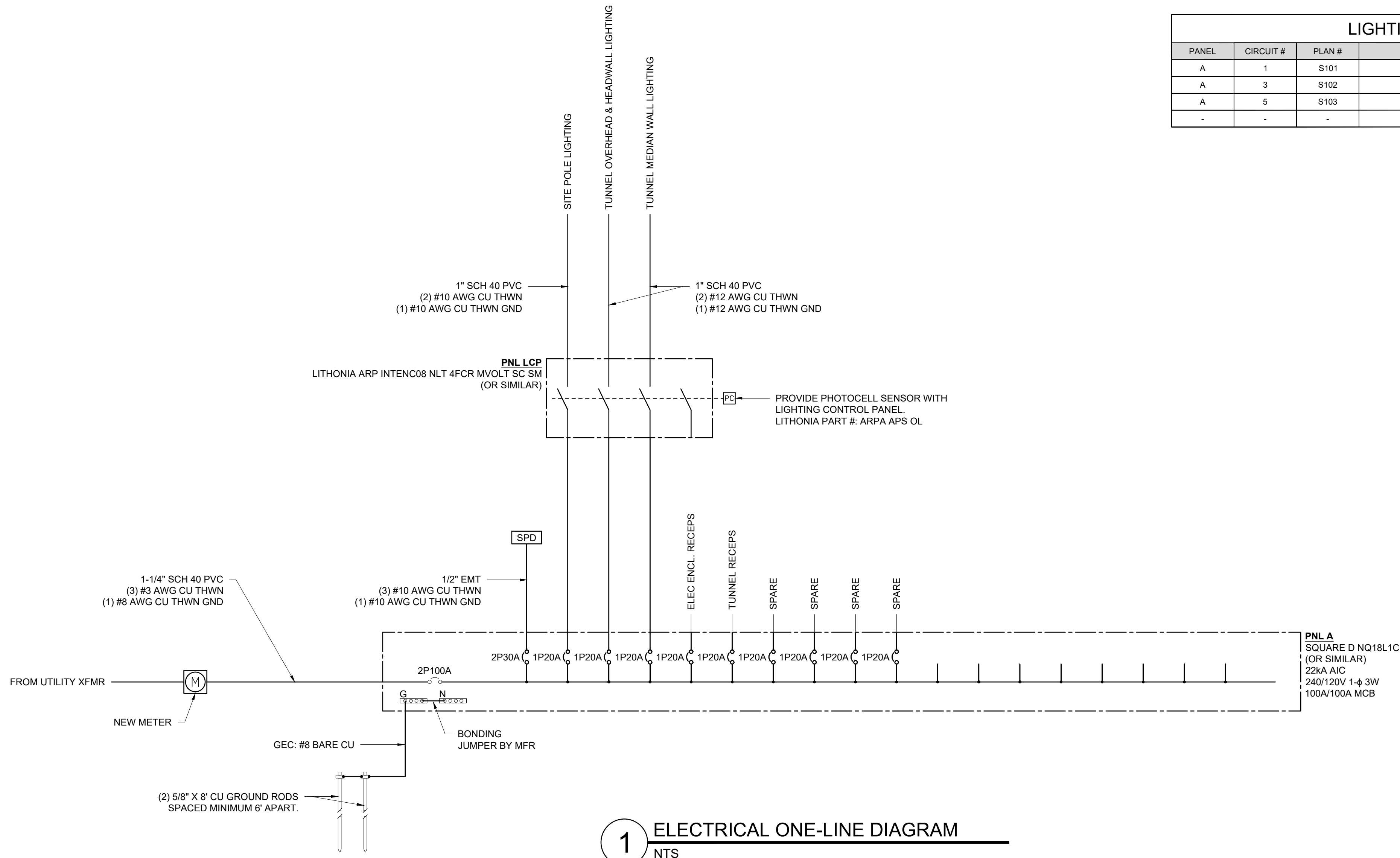
LIGHTING FIXTURE SCHEDULE											
TYPE	MANUFACTURER	PART #	DESCRIPTION	MOUNTING	TEMP	LUMENS	WATTS	VOLTAGE	CONTROL	DIMMING	NOTES
RW	BEGA	24 206	RECESSED WALL LUMINAIRE RAL BLACK FINISH	RECESSED	3500K	410	5	120VAC	LCP	0-10VDC	1
SA	RAYTECH	KINGS CASTING	DOUBLE HANG DOWN SHADE STREET LIGHT 4" FLUTED POLE E26 LAMP SOCKETS BLACK FINISH	13'-6" POLE	3500K	6020	50	120VAC	LCP	-	2
S4	SELUX	SUR9L 1B20 35K PC F ## 60 BK U DIM ##	ARCHITECTURAL LINEAR FIXTURE END TO END MOUNTING TAMPER RESISTANT BLACK FINISH	SURFACE	3500K	1948	20	120VAC	LCP	0-10VDC	3,4,5
WS	STEEL LIGHTING	THE REDONDO	23" GOOSENECK WALL MOUNT FIXTURE MATT BLACK EXTERIOR WHITE INTERIOR	SURFACE	3500K	2000	15	120VAC	LCP	-	6

NOTES:

- 1 PROVIDE WITH INSTALLATION HOUSING. BEGA PART # 8B24215
- 2 PROVIDE (2) 25W, 3500K, A23 STYLE LED BULBS FOR EACH FIXTURE
- 3 SELECT "FEED LOCATION" OPTION FOR END FEEDS AS REQUIRED FOR END TO END INSTALLATION
- 4 PROVIDE CONDUIT CONNECTORS AS REQUIRED TO INSTALL END TO END.
- 5 COORDINATE FEED LOCATION AND FIXTURE OPTIONS WITH MFR FOR END TO END MOUNTING.
- 6 PROVIDE 15W, 3500K, A21 STYLE LED BULB FOR EACH FIXTURE

MAIN PANEL															
CKT. NO.	VOLT AMPS				DESCRIPTION	CKT. BRKR.	PHASE	CKT. BRKR.	DESCRIPTION	VOLT AMPS				CKT. NO.	
	LTG	MTRS	RECEP	OTHER						LTG	MTRS	RECEP	OTHER		
1	400				LCP-101: Site Pole Lighting	1P20	A	2P30	SPD					2	
3	480				LCP-102: Tunnel Overhead & Head Wall Lighting	1P20	B							4	
5	100				LCP-103: Tunnel Median Wall Lighting	1P20	A			-	Space				6
7			360		Receps - Electrical Enclosure	1P20	B			-	Space				8
9			540		Receps - Tunnel	1P20	A	-	Space					10	
11					Spare	1P20	B	-	Space					12	
13					Spare	1P20	A	-	Space					14	
15					Spare	1P20	B	-	Space					16	
17					Spare	1P20	A	-	Space					18	
SUBT	980	0	900	0						0	0	0	0	SUBT	
										PANEL SUMMARY					
										PANEL NAME: PNL A					
										VOLTS: 240/120		VAC			
										PHASE / WIRE: 1 ph / 3 W					
										RATING: 100A		Amps			
										MAIN BREAKER: 100A		Amps			
										MOUNTING: SURFACE					
Notes:															

LIGHTING CONTROL PANEL SCHEDULE						
PANEL	CIRCUIT #	PLAN #	DESCRIPTION	VOLTS	CONTROL	LOAD TYPE
A	1	S101	Site Pole Lighting	120VAC	PC	-
A	3	S102	Tunnel Overhead & Headwall Lighting	120VAC	PC	DIM-0-10V
A	5	S103	Tunnel Median Wall Lighting	120VAC	PC	DIM-0-10V
-	-	-	-	-	-	-



ELECTRICAL ONE-LINE DIAGRAM

NTS