

# CITY OF KALAMAZOO

## ANGLING ROAD IMPROVEMENTS

**W+**  
**WIGHTMAN**

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269.927.0100

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248.791.1371

[www.gowightman.com](http://www.gowightman.com)

PROJECT NAME:  
**ANGLING ROAD IMPROVEMENTS**  
MERRYVIEW DRIVE TO OAKLAND DRIVE  
KALAMAZOO, MI 49008

**CITY OF KALAMAZOO**  
415 E. STOCKBRIDGE AVENUE  
KALAMAZOO, MI 49001

04/12/2021	PAD	ISSUED FOR FINAL
03/11/24/2021	PAD	SUBMITTED TO EGLE FOR JPA
02/11/24/2021	PAD	SUBMITTED FOR COK REVIEW
01/11/12/2021	PAD	SUBMITTED FOR FINAL REVIEW

**REVISIONS**

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DATE: DECEMBER, 2021  
SCALE: VARIES

**CITY OF KALAMAZOO**  
415 E. STOCKBRIDGE AVENUE  
KALAMAZOO, MI 49001

**APPROVAL**

ANTHONY LADD ASSISTANT CITY ENGINEER DATE \_\_\_\_\_  
DATE \_\_\_\_\_

JOB No. 214053  
**C001**

### INDEX OF PLANS

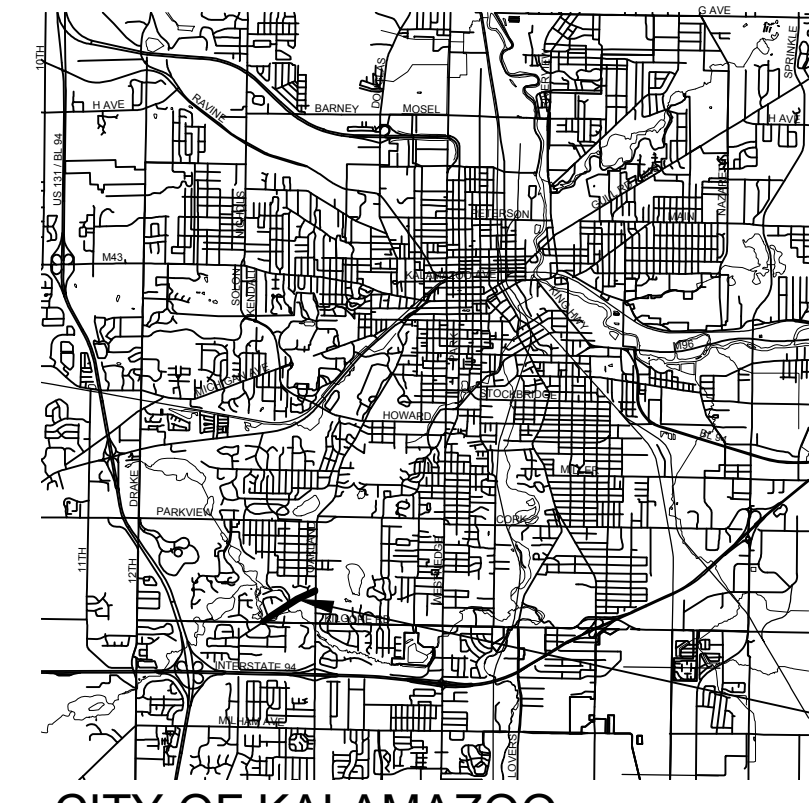
C001	COVER SHEET
C002	TRAFFIC CONTROL AND SIGNAGE PLAN
C003	TYPICAL SECTIONS
C004	SOIL BORINGS AND SOIL EROSION & SEDIMENTATION CONTROL PLAN
C005	PROJECT NOTES AND DETAILS
C006	PLAN AND PROFILE - ANGLING ROAD - STA. 11+50 TO STA. 16+75
C007	PLAN AND PROFILE - ANGLING ROAD - STA. 16+75 TO STA. 22+25
C008	PLAN AND PROFILE - ANGLING ROAD - STA. 22+25 TO STA. 27+75
C009	WATER MAIN RELOCATION DETAILS & PLAN AND PROFILE - ANGLING ROAD - STA. 27+75 TO STA. 29+00
C010	BOX CULVERT DETAILS
C011	WATER MAIN DETAILS
C012	PAVEMENT MARKINGS

### UTILITIES

<b>CABLE:</b>	CHARTER COMMUNICATIONS 4176 COMMERCIAL AVENUE PORTAGE, MI 49002 BRYAN LONGCORE (269) 459-8746 BRYAN.LONGCORE2@CHARTER.COM
<b>ELECTRIC:</b>	CONSUMERS ENERGY 2500 E. CORK STREET KALAMAZOO, MI 49001 ANDRE TAYLOR (269) 337-2245 ANDRE.TAYLOR@CMSENERGY.COM
<b>GAS:</b>	CONSUMERS ENERGY 2500 E. CORK STREET KALAMAZOO, MI 49001 KYLE OAK (269) 337-2366 KYLE.OAK@CMSENERGY.COM
<b>TELEPHONE:</b>	AT&T 2919 MILLCORK STREET KALAMAZOO, MI 49001 TODD BERGHUIS (269) 384-4475 TB1973@ATT.COM
<b>FIBER OPTIC:</b>	CITY OF KALAMAZOO 415 E. STOCKBRIDGE AVENUE KALAMAZOO, MI 49001 RON RIDENOUR (269) 337-8601 RIDENOURR@KALAMAZOOCITY.ORG
<b>TRAFFIC SIGNALS:</b>	CITY OF KALAMAZOO 415 E. STOCKBRIDGE AVENUE KALAMAZOO, MI 49001 RON RIDENOUR (269) 337-8601 RIDENOURR@KALAMAZOOCITY.ORG
<b>WATER:</b>	CITY OF KALAMAZOO 415 E. STOCKBRIDGE AVENUE KALAMAZOO, MI 49001 ANNA GRANDALL (269) 337-8601 GRANDALLA@KALAMAZOOCITY.ORG
<b>SEWER:</b>	CITY OF KALAMAZOO 1415 NORTH HARRISON STREET KALAMAZOO, MI 49007 SOHIL MANJIYANI (269) 337-8551 MANJIYANIS@KALAMAZOOCITY.ORG
<b>PUBLIC WORKS:</b>	CITY OF KALAMAZOO 415 E. STOCKBRIDGE AVENUE KALAMAZOO, MI 49001 ANTHONY LADD (269) 337-8601 LADDA@KALAMAZOOCITY.ORG
<b>"MISS DIG"</b>	811

### TRAFFIC DATA ANGLING ROAD

DESIGN SPEED	=	35 MPH
POSTED SPEED	=	35 MPH
ADT (2022)	=	1,920
ADT (2042)	=	2,122
% TRUCKS (2022 & 2042)	=	1%



**CITY OF KALAMAZOO**  
VICINITY MAP  
SCALE: 1" = 10,000'

### NOTES

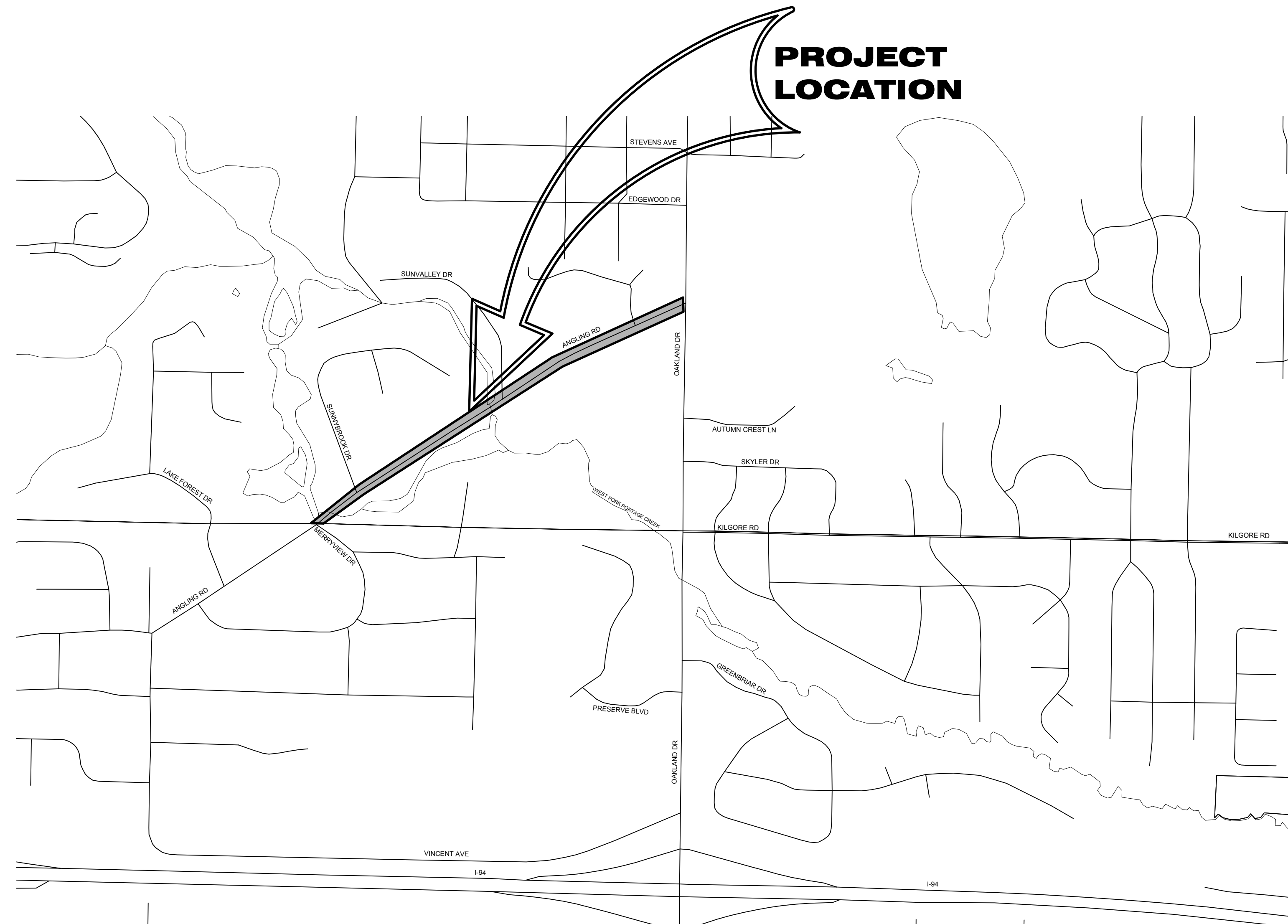
EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED THEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2020 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION.

THE PLACING OF PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SHALL BE DONE IN ACCORDANCE WITH THE 2011 MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AS AMENDED.

THE IMPROVEMENTS COVERED BY THESE PLANS ARE IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2011 EDITION, A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS AND WITH SECTION C OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION LOCAL AGENCY PROGRAMS GUIDELINES FOR GEOMETRICS DATED JULY 24, 2017.

IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, ALL CONTRACTORS SHALL CALL MISS DIG @ 811 OR 800-482-7171 FOR PROTECTION OF UNDERGROUND UTILITIES A MINIMUM OF THREE FULL WORKING DAYS (EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS) PRIOR TO BEGINNING EACH EXCAVATION IN ANY AREA. MEMBERS WILL 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.

### PROJECT LOCATION



**PROJECT LOCATION MAP**  
SCALE: 1" = 600'







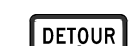





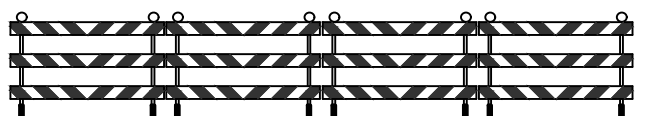


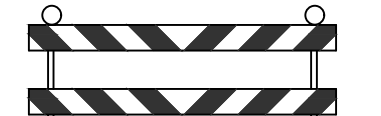
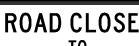

### LEGEND

EXISTING	PROPOSED	
C	C	CABLE
E	E	ELECTRIC LINE
OH	OH	ELECTRIC LINE (OVERHEAD)
FO	FO	FIBER OPTIC LINE
G	G	GAS LINE
T	T	TELEPHONE LINE
X	X	FENCE
		FORCEMAIN
		GUARDRAIL
		SANITARY SEWER
		STORM SEWER
		WATER MAIN
		CENTER LINE
		EXISTING TREE LINE
		EXISTING DITCH LINE
		EASEMENT LINE/GRADING PERMIT
		GRADING LIMITS/LIMITS OF DISTURBANCE
		PROPERTY LINE
		RIGHT-OF-WAY LINE
		SECTION LINE
		TO BE ABANDONED
↑	⊛	= ANTENNA
⊠	⊠	= CATCH BASIN
⊞	⊞	= CABLE RISER BOX
⊞	⊞	= CLEAN OUT
⊞	⊞	= CURB INLET
⊞	⊞	= ELECTRIC MANHOLE
⊞	⊞	= FIRE HYDRANT
⊞	⊞	= FOUND IRON PIPE
⊞	⊞	= GAS VALVE
⊞	⊞	= GUY ANCHOR
⊞	⊞	= LIGHT POLE
⊞	⊞	= MAILBOX
⊞	⊞	= MONITORING WELL
⊞	⊞	= POST
⊞	⊞	= SATELLITE DISH
⊞	⊞	= SANITARY MANHOLE
⊞	⊞	= SECTION CORNER
⊞	⊞	= SIGN
⊞	⊞	= PAVEMENT/SOIL BORING
⊞	⊞	= PROPOSED HYDRANT
⊞	⊞	= PROPOSED GATE VALVE & BOX
⊞	⊞	= PROPOSED GATE VALVE & VAULT
⊞	⊞	= PROPOSED REDUCER
⊞	⊞	= PROPOSED SANITARY MANHOLE
⊞	⊞	= PROPOSED STORM MANHOLE
⊞	⊞	= STORM MANHOLE
⊞	⊞	= TELEPHONE MANHOLE
⊞	⊞	= TELEPHONE RISER BOX
⊞	⊞	= TURNING POINT/TRVERSE
⊞	⊞	= UTILITY POLE
⊞	⊞	= VAULT
⊞	⊞	= WATER ELEVATION
⊞	⊞	= WATER MANHOLE
⊞	⊞	= WATER METER
⊞	⊞	= WATER VALVE
⊞	⊞	= WATER SPIGOT
⊞	⊞	= WELL

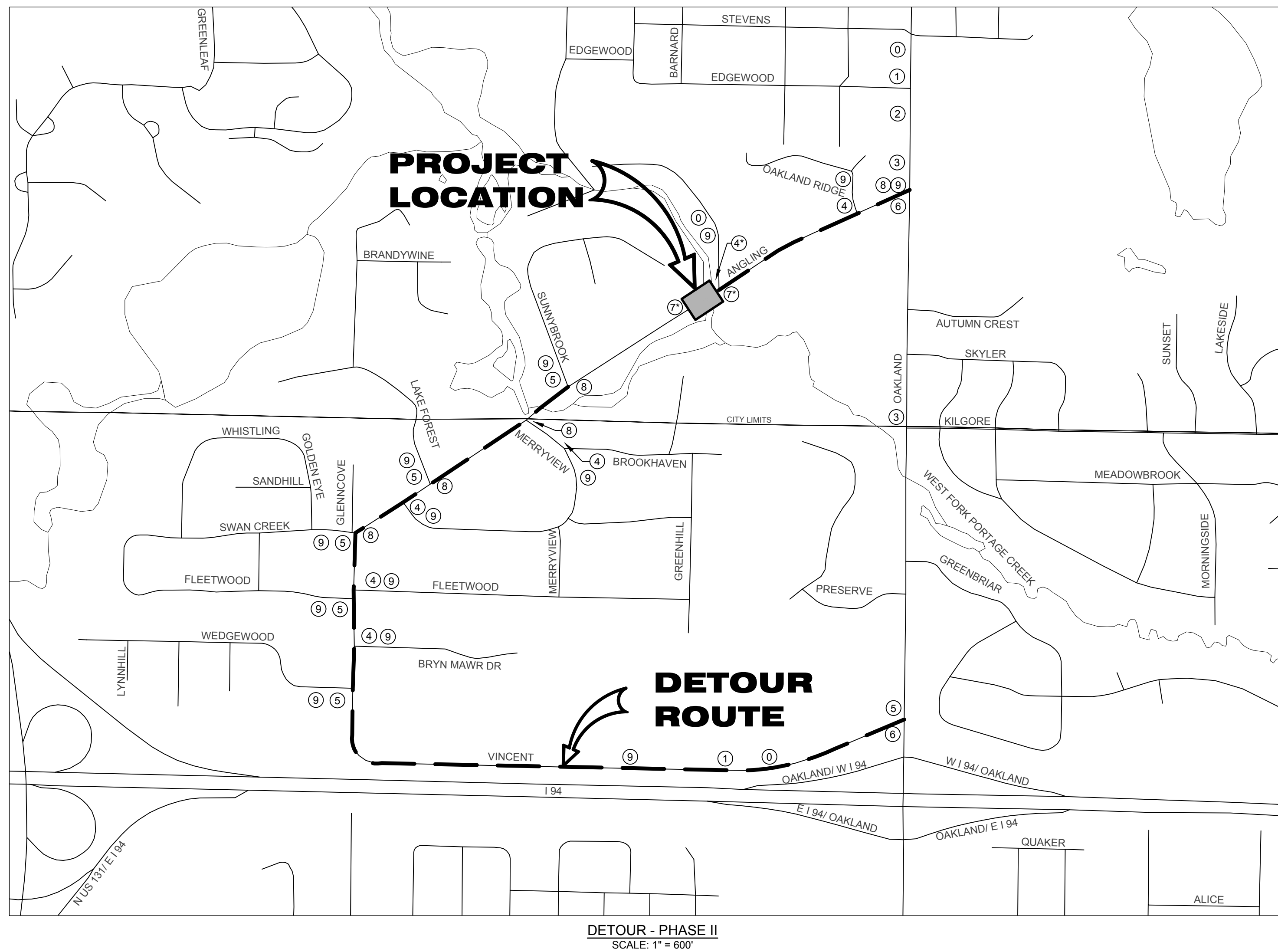
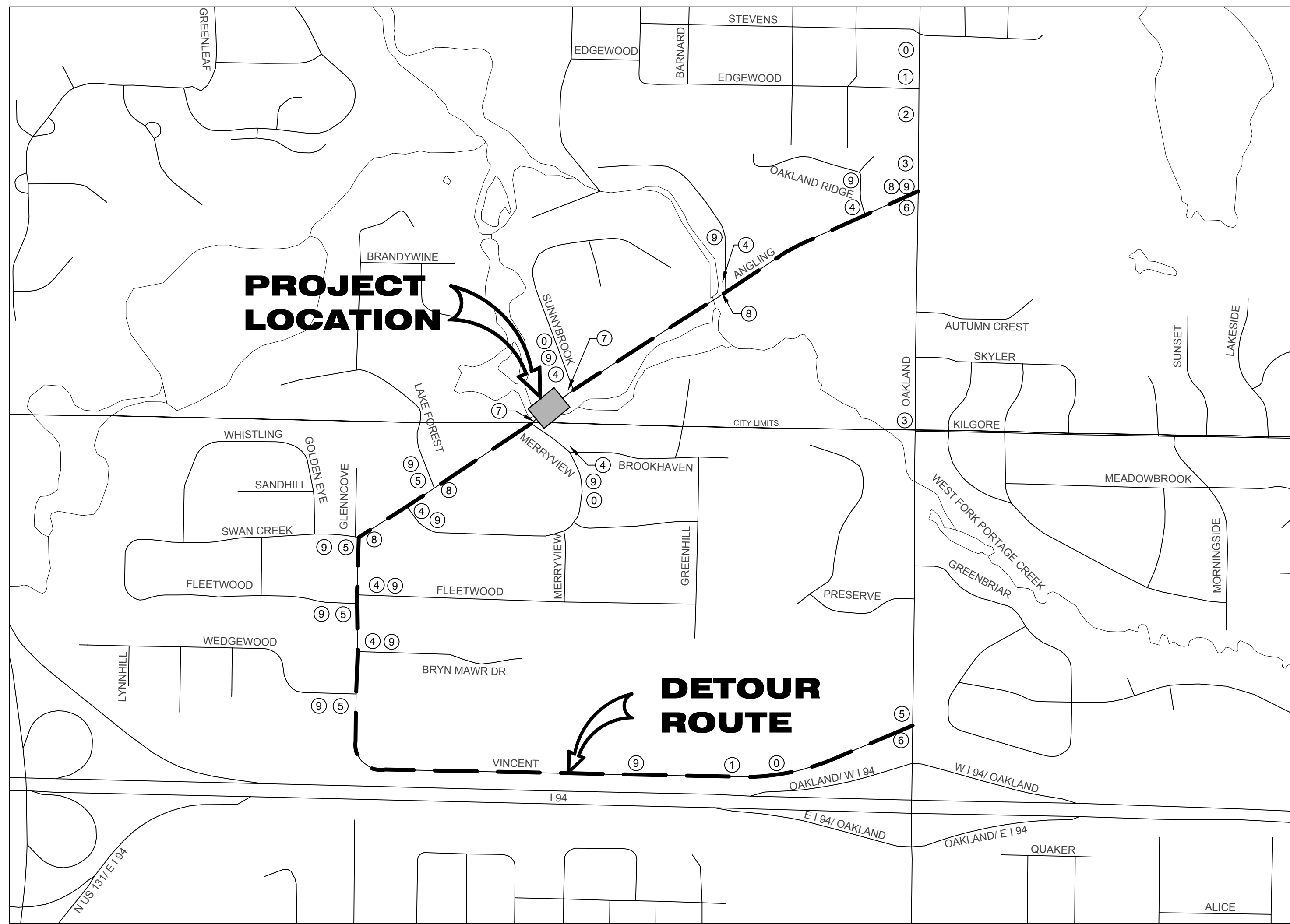
### TREE DESIGNATORS

⊞	⊞	BUSH	⊞	⊞	STUMP
⊞	⊞	CONIFEROUS TREE	⊞	⊞	DECIDUOUS TREE
⊞	⊞	CONIFEROUS TREE TO BE REMOVED	⊞	⊞	DECIDUOUS TREE TO BE REMOVED



LEGEND					
SIGN NO.	QTY.	SIGN DESIGNATION	DESCRIPTION	SIZE	AREA
0	5 EA	W20-1		48 INCH x 48 INCH	80 SFT
1	2 EA	W20-3		48 INCH x 48 INCH	32 SFT
		W16-8P		36 INCH x 12 INCH	6 SFT
2	1 EA	W20-2		48 INCH x 48 INCH	16 SFT
3	2 EA	M4-9T		30 INCH x 24 INCH	10 SFT
		W16-8P		36 INCH x 12 INCH	6 SFT
4	7 EA	M4-9L		30 INCH x 24 INCH	35 SFT
		W16-8P		36 INCH x 12 INCH	21 SFT
5	6 EA	M4-9R		30 INCH x 24 INCH	30 SFT
		W16-8P		36 INCH x 12 INCH	18 SFT
6	2 EA	M4-8a		36 INCH x 12 INCH	6 SFT
		W16-8P		24 INCH x 18 INCH	6 SFT
7	4 EA	BARRICADE, TYPE III, HIGH INTENSITY, LIGHTED, 4 REQUIRED EACH LOCATION		4 REQUIRED EACH LOCATION	8 EA
		R11-2		48 INCH x 30 INCH	40 SFT
		R11-2a		48 INCH x 30 INCH	40 SFT
8	5 EA	BARRICADE, TYPE III, HIGH INTENSITY, LIGHTED, 1 REQUIRED EACH LOCATION		1 REQUIRED EACH LOCATION	5 EA
		R11-4		60 INCH x 30 INCH	62.5 SFT
9	13 EA	TYPE IIB BLACK LETTERING ORANGE BACKGROUND		48 INCH x 30 INCH	130 SFT

TOTAL AREA = 538.5 SFT



QUANTITIES THIS SHEET	
ITEM	QTY.
Barricade, Type III, High Intensity, Double Sided, Lighted, Furn	13 Ea
Barricade, Type III, High Intensity, Double Sided, Lighted, Oper	13 Ea
Channelizing Device, 42 inch, Fluorescent, Furn	150 Ea
Channelizing Device, 42 inch, Fluorescent, Oper	150 Ea
Minor Traf Devices	1 LSUM
Sign, Type B, Temp, Prismatic, Furn	375 Sft
Sign, Type B, Temp, Prismatic, Oper	375 Sft
Sign, Type B, Temp, Prismatic, Spec. Furn	200 Sft
Sign, Type B, Temp, Prismatic, Spec. Oper	200 Sft

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PHILIP A. DOORLAG  
ENGINEER NO. 67363  
PROJECT NAME:  
**ANGLING ROAD IMPROVEMENTS**  
MERRYVIEW DRIVE TO OAKLAND DRIVE  
KALAMAZOO, MI 49008

**CITY OF KALAMAZOO**  
415 E. STOCKBRIDGE AVENUE  
KALAMAZOO, MI 49001

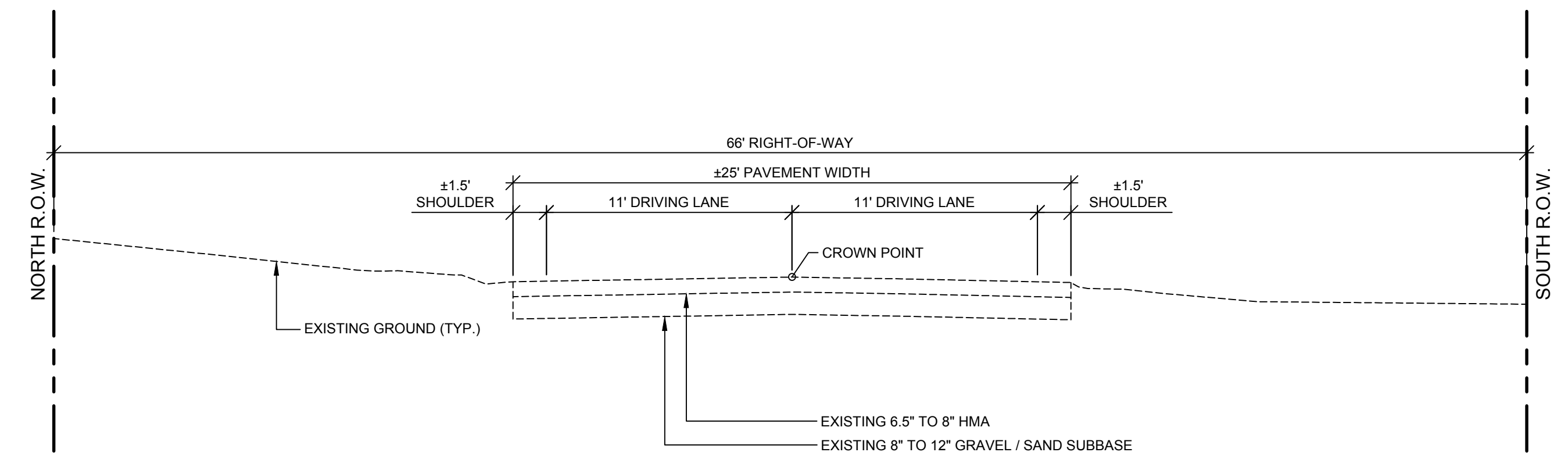
**NOTES:**  
THE PHASE I DETOUR SHALL BE IMPLEMENTED TO FACILITATE THE CONSTRUCTION OF CULVERT 1 BETWEEN MERRYVIEW DRIVE AND SUNNYBROOK DRIVE.  
THE PHASE II DETOUR SHALL BE IMPLEMENTED TO FACILITATE THE CONSTRUCTION OF CULVERT 2 ADJACENT TO SUNVALLEY DRIVE. IN ADDITION, THE STORM SEWER CROSSINGS AT APPROXIMATELY STA. 21+65 AND STA. 28+50 IN THE PLANS SHALL BE COMPLETED IN PHASE II.  
\*MOVE SIGNS #7 SHOWN AT THE PROJECT LOCATION TO THE STORM SEWER CROSSINGS LOCATION DURING THE TIME OF SAID WORK.  
\*SIGN #4 SHOWN AT THE SUNVALLEY DRIVE AND ANGLING ROAD INTERSECTION SHALL BE CHANGED TO #5 DURING THE STORM SEWER CROSSING AT STA. 28+50.  
THE CONSTRUCTION OF CULVERT 2 AND THE STORM SEWER CROSSINGS SHALL NOT BE SIMULTANEOUS.  
ACCESS TO DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.

04/12/2021 PAD ISSUED FOR FINAL  
02/11/24/2021 PAD SUBMITTED FOR COK REVIEW  
01/11/12/2021 PAD SUBMITTED FOR FINAL REVIEW  
**REVISIONS**  
DATE: DECEMBER, 2021  
SCALE: 1" = 600'

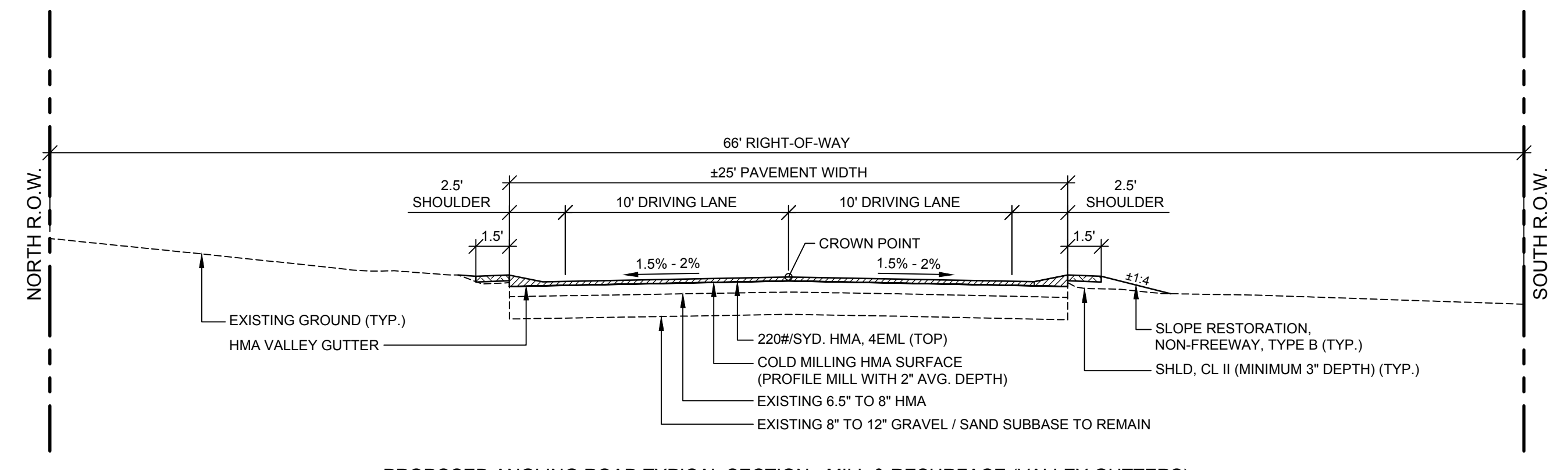
TRAFFIC CONTROL AND SIGNAGE PLAN

JOB No. 214053  
**C002**

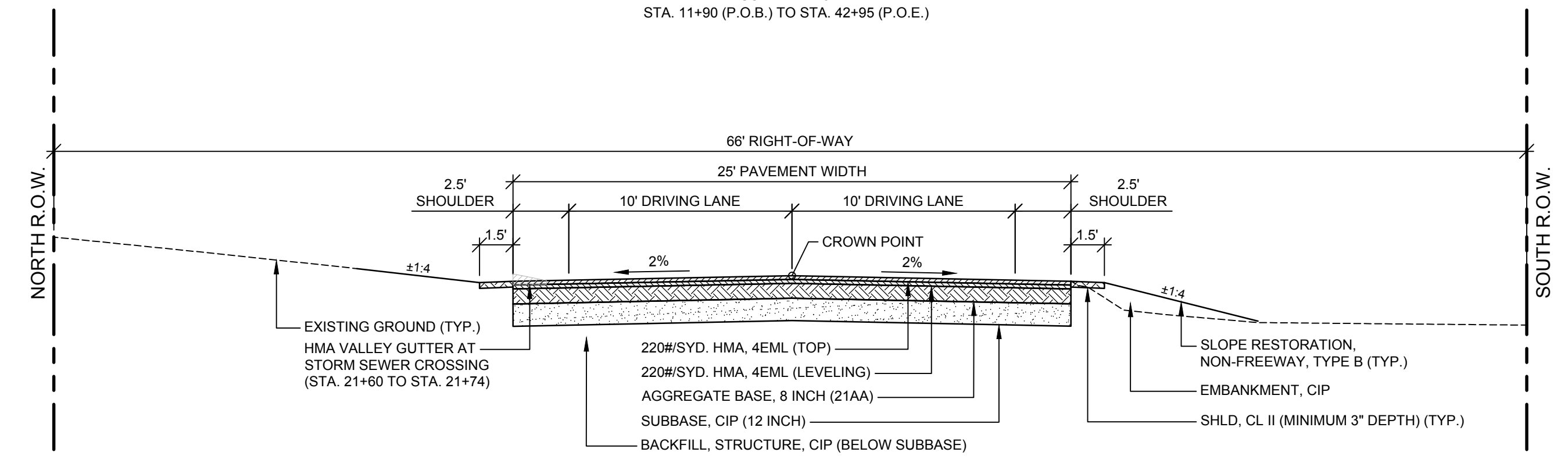




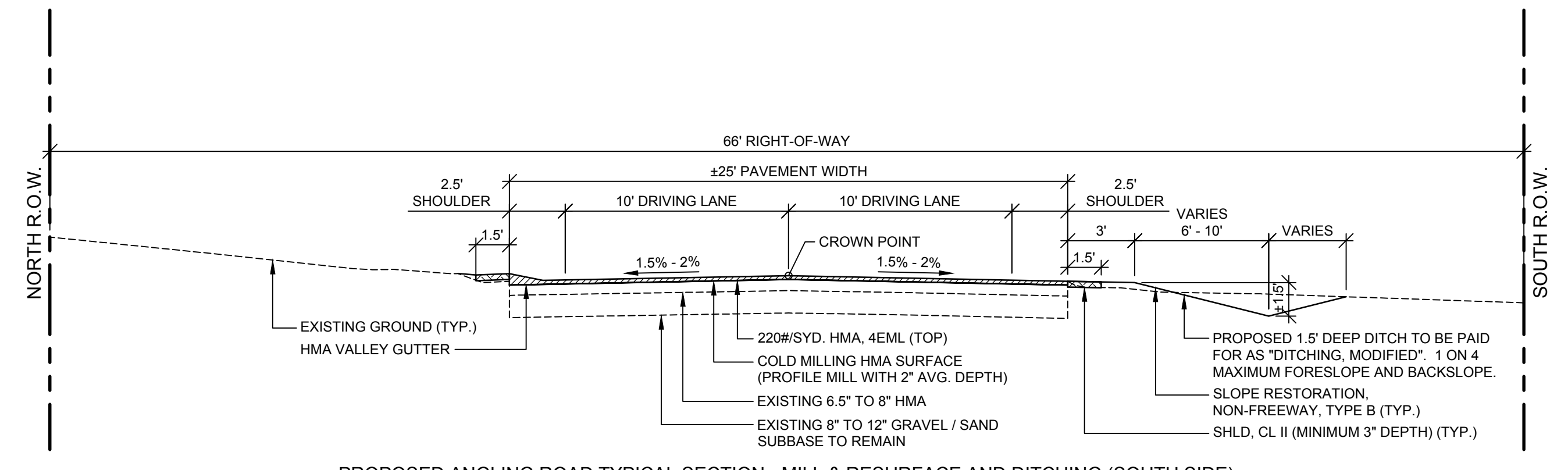
**EXISTING ANGLING ROAD TYPICAL SECTION**  
SCALE: 1" = 5'  
STA. 11+90 (P.O.B.) TO STA. 42+95 (P.O.E.)



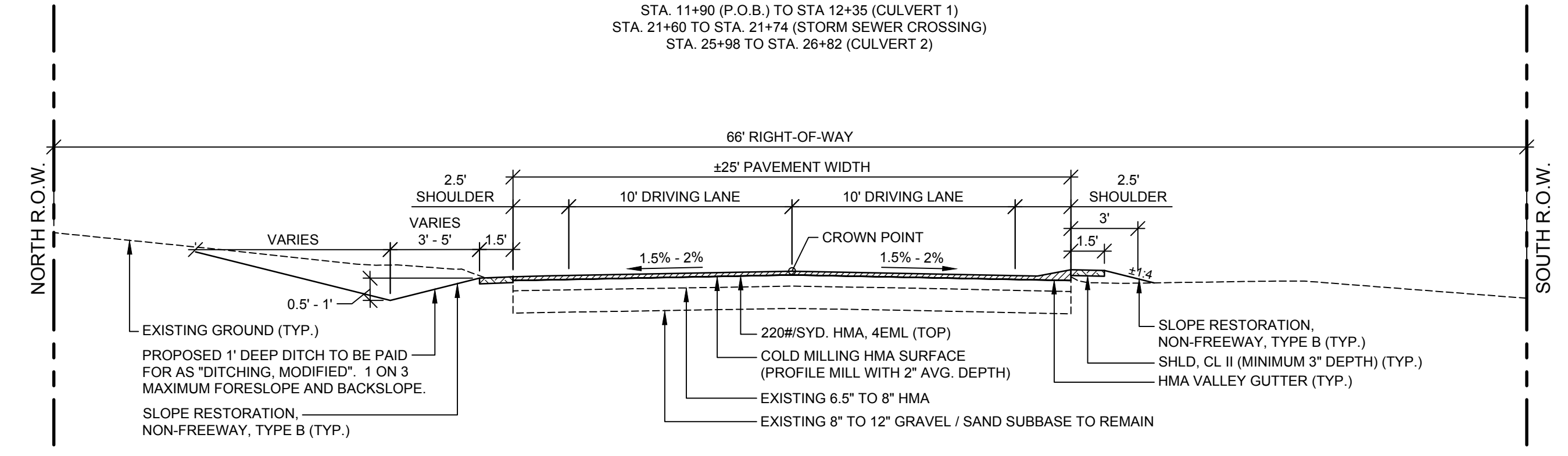
**PROPOSED ANGLING ROAD TYPICAL SECTION - MILL & RESURFACE (VALLEY GUTTERS)**  
SCALE: 1" = 5'  
STA. 13+95 TO STA. 18+80



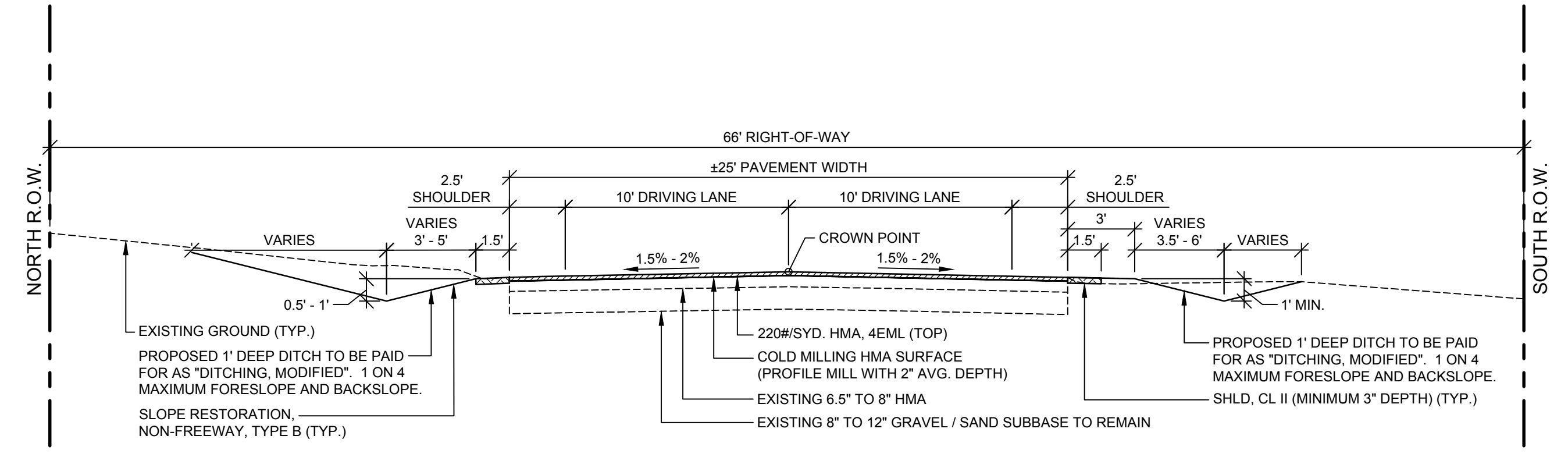
**PROPOSED ANGLING ROAD TYPICAL SECTION - FULL DEPTH REPLACEMENT**  
SCALE: 1" = 5'  
STA. 11+90 (P.O.B.) TO STA. 12+35 (CULVERT 1)  
STA. 21+60 TO STA. 21+74 (STORM SEWER CROSSING)  
STA. 25+98 TO STA. 26+82 (CULVERT 2)



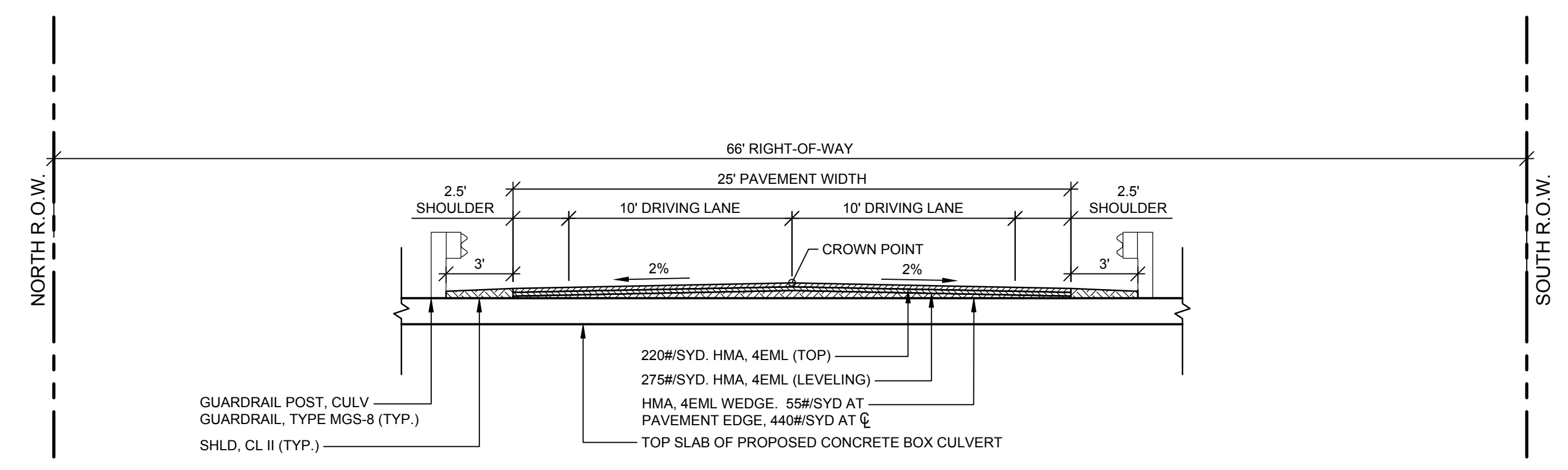
**PROPOSED ANGLING ROAD TYPICAL SECTION - MILL & RESURFACE AND DITCHING (SOUTH SIDE)**  
SCALE: 1" = 5'  
STA. 18+80 TO STA. 21+60  
STA. 21+74 TO STA. 24+90



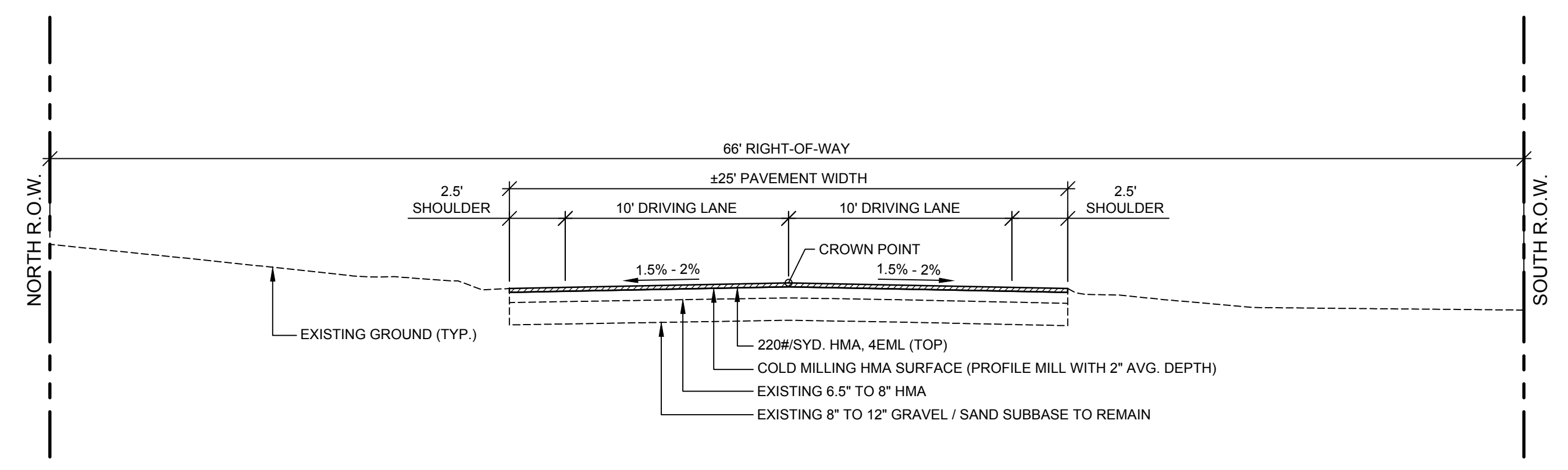
**PROPOSED ANGLING ROAD TYPICAL SECTION - MILL & RESURFACE AND DITCHING (NORTH SIDE)**  
SCALE: 1" = 5'  
STA. 12+35 TO STA. 13+95



**PROPOSED ANGLING ROAD TYPICAL SECTION - MILL & RESURFACE AND DITCHING (BOTH SIDES)**  
SCALE: 1" = 5'  
STA. 24+90 TO STA. 25+98



**PROPOSED ANGLING ROAD TYPICAL SECTION @ OVER BOX CULVERT**  
SCALE: 1" = 5'



**PROPOSED ANGLING ROAD TYPICAL SECTION - MILL & RESURFACE**  
SCALE: 1" = 5'  
STA. 26+82 TO STA. 42+95 (P.O.E. @ OAKLAND DRIVE)

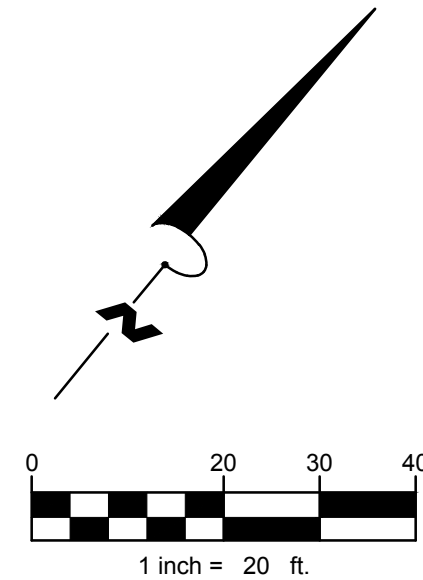


**SOIL EROSION & SEDIMENTATION CONTROL NOTES**

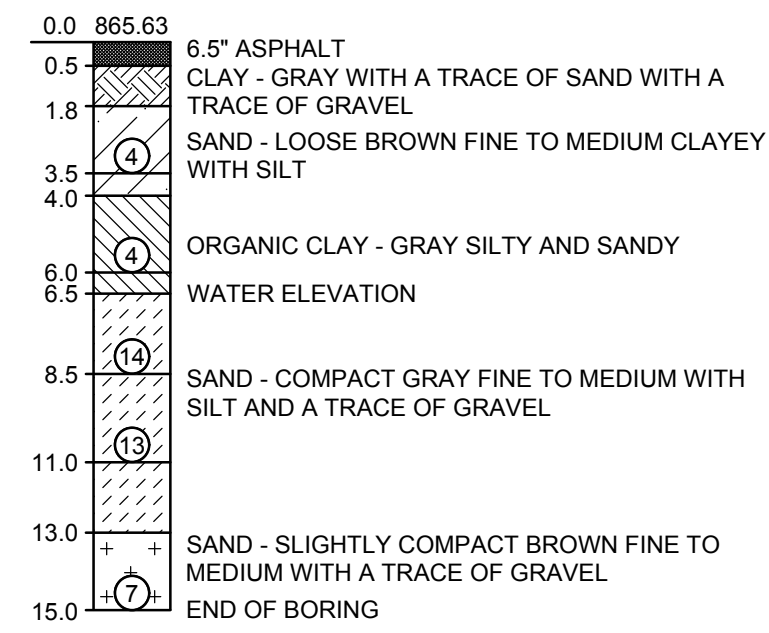
- ALL CONSTRUCTION METHODS SHALL BE DONE IN COMPLIANCE WITH THE MICHIGAN SOIL EROSION AND SEDIMENTATION CONTROL ACT. EROSION CONTROL MEASURES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS AND SHALL NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITY FOR PROVIDING ALL REQUIRED EROSION CONTROL MEASURES.
- AVOID UNNECESSARY DISTURBING OR REMOVING OF EXISTING VEGETATED TOPSOIL OR EARTH COVER, THESE COVER AREAS ACT AS SEDIMENT FILTERS.
- ALL TEMPORARY SOIL EROSION PROTECTION SHALL REMAIN IN PLACE UNTIL REMOVAL IS REQUIRED FOR FINAL CLEAN UP AND APPROVAL.
- GEOTEXTILE SILT FENCE SHALL BE INSTALLED AS REQUIRED WHEN ADJACENT TO WETLANDS OR SURFACE WATER BODIES TO PREVENT SILTATION AND ELSEWHERE AS DIRECTED BY THE ENGINEER. SEEDING SHALL BE INSTALLED ON CREEK BANKS IMMEDIATELY AFTER CONSTRUCTION TO PREVENT EROSION.
- MAINTENANCE, CLEANING, AND REMOVAL OF THE VARIOUS SEDIMENT CONTROL MEASURES SHALL BE INCLUDED IN THE VARIOUS EROSION CONTROL ITEMS.
- UPON COMPLETION OF RESTORATION, STRAW WATTLES SHALL BE INSTALLED TO PREVENT FUTURE EROSION AS DIRECTED BY ENGINEER IN THE FIELD.

NUMBER IN CIRCLE REFERS TO NUMBERED DETAILS ON MDOT STANDARD PLAN R-96 SERIES. SOIL EROSION & SEDIMENTATION CONTROL MEASURES. "P" DENOTES PERMANENT MEASURE AND "T" DENOTES TEMPORARY MEASURE. SOIL EROSION CONTROL PLANS DENOTE MINIMUM EROSION MEASURES REQUIRED AS DESCRIBED BELOW.

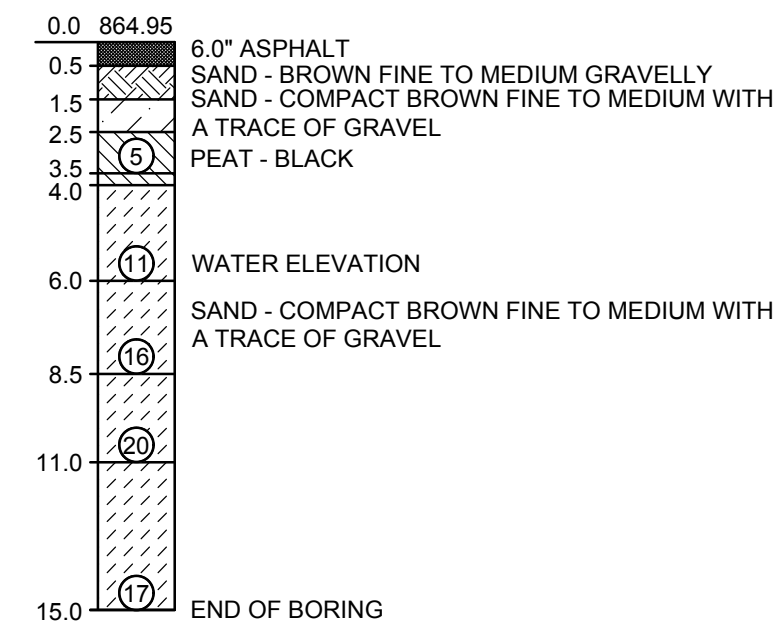
- (3P) DENOTES PERMANENT SEEDING. ALL DISTURBED AREAS NOT PAVED OR GRAVELED SHALL BE RESTORED AND PAID FOR AS SLOPE RESTORATION, NON-FREEWAY, TYPE B (APPLIES TO ENTIRE PROJECT).
- (7P) DENOTES PERMANENT RIPRAP, PLAIN. INSTALL RIPRAP, PLAIN AS DIRECTED BY THE ENGINEER IN THE FIELD. THE RIPRAP, PLAIN PAY ITEM SHALL INCLUDE A GEOTEXTILE UNDERLAYMENT. SALVAGE EXISTING RIPRAP AND PLACE IN PROPOSED RIPRAP LOCATIONS. SALVAGED RIPRAP SHALL BE PAID FOR AS RIPRAP, PLAIN.
- (8P) DENOTES AGGREGATE COVER/PERMANENT PAVEMENT RESTORATION
- (26T) DENOTES TEMPORARY SILT FENCE. SILT FENCE SHALL BE INSTALLED AT CREEK CROSSINGS, ADJACENT TO ALL WETLANDS AND SURFACE WATERS, AND OTHER LOCATIONS AS DIRECTED BY THE ENGINEER. SILT FENCE SHALL BE INSTALLED GENERALLY ALONG THE SAME CONTOUR ELEVATION.
- (29T) DENOTES INLET PROTECTION FABRIC DROP. SHALL BE INSTALLED AT EXISTING AND PROPOSED STORM SEWER INLETS TO PROVIDE SETTLING AND FILTERING OF SILT LADEN WATER PRIOR TO ENTRY INTO THE DRAINAGE SYSTEM.
- (33MP) DENOTES MULCH BLANKETS. MULCH BLANKET SHALL BE PROVIDED AT LOCATIONS SHOWN ON THE PLANS, AT SLOPES GREATER THAN 1:3, AREAS WITH CONCENTRATED FLOWS, AND AS DIRECTED BY THE ENGINEER IN THE FIELD, TO PREVENT RUNOFF AND EROSION.



SOIL BORING SB-01



SOIL BORING SB-02



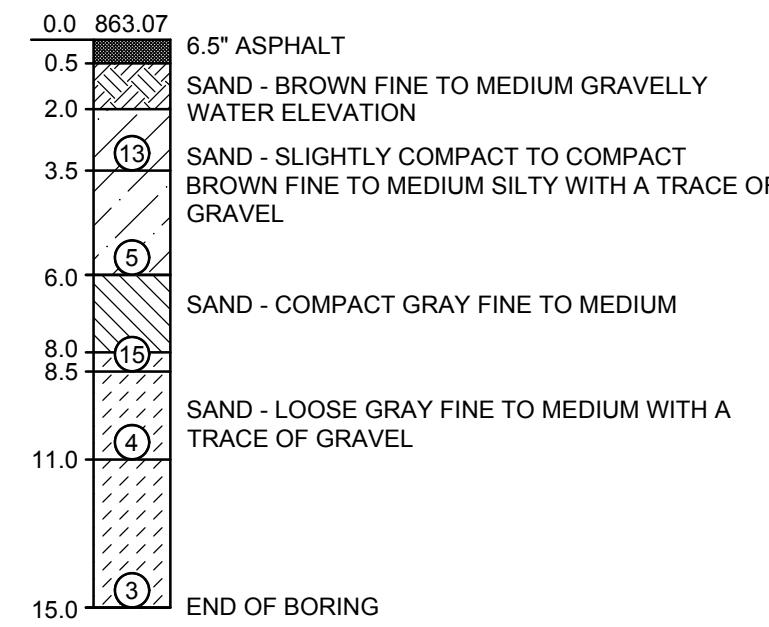
NUMBER IN CIRCLE (N) DENOTES NUMBER OF BLOWS REQUIRED TO DRIVE A 3-1/4" HOLLOW STEM AUGER 12" USING A 140# HAMMER FALLING 30"

BORINGS FOR SUBSURFACE SOIL CLASSIFICATION WERE PERFORMED BY:

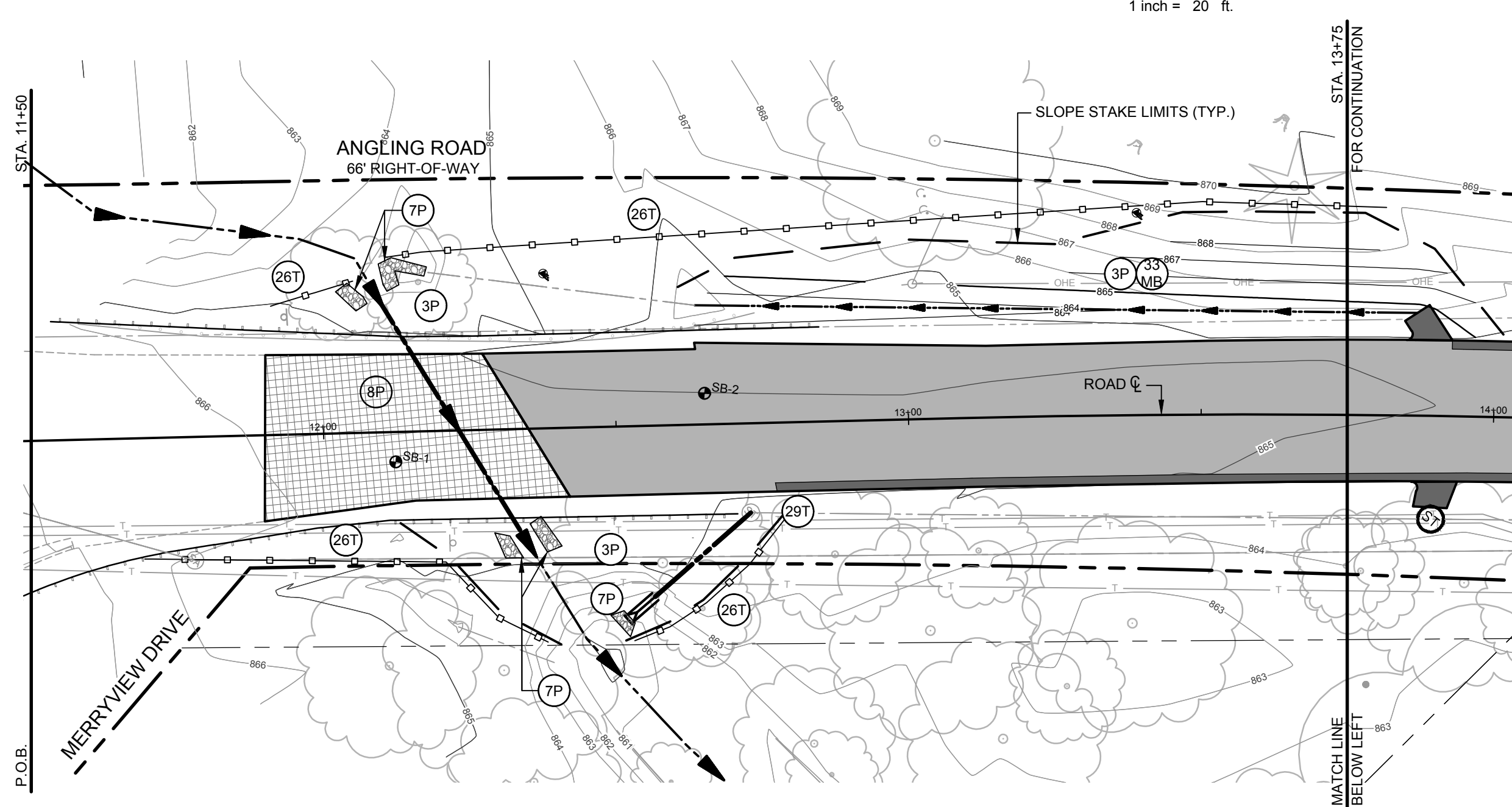
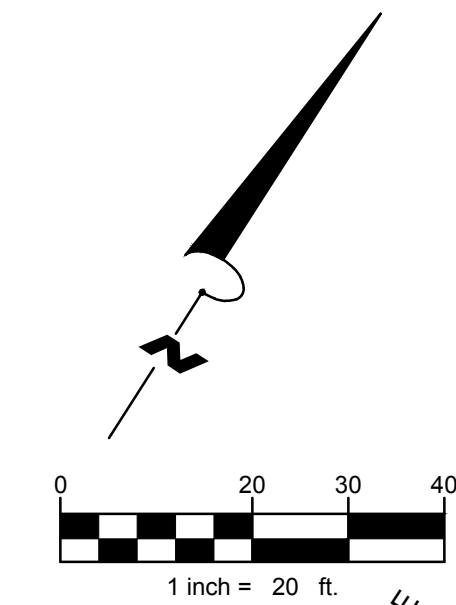
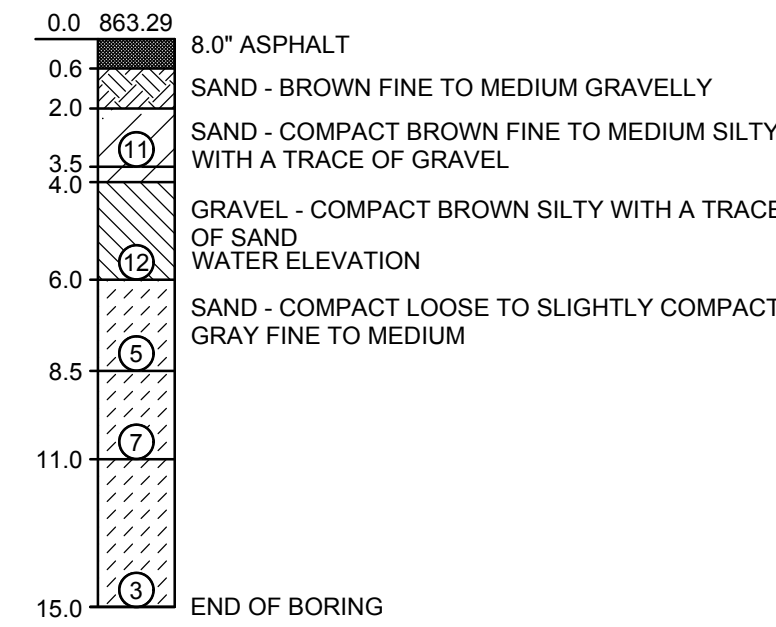
SOILS & STRUCTURES, INC.  
6480 GRAND HAVEN ROAD  
MUSKEGON, MI 49441  
DAVID W. HOHMEYER, P.E.  
(231) 798-4127

THE SOIL BORING LOG REPRESENTS POINT INFORMATION. PRESENTATION OF THE INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORINGS.

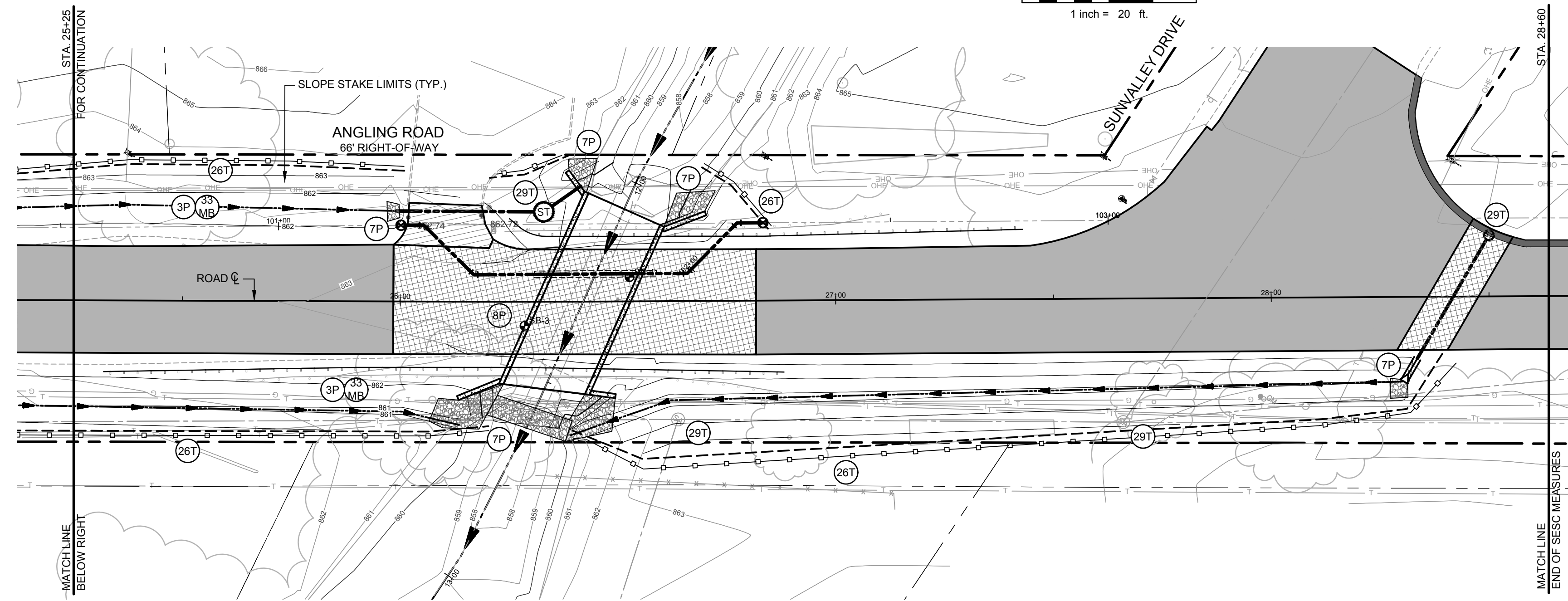
SOIL BORING SB-03



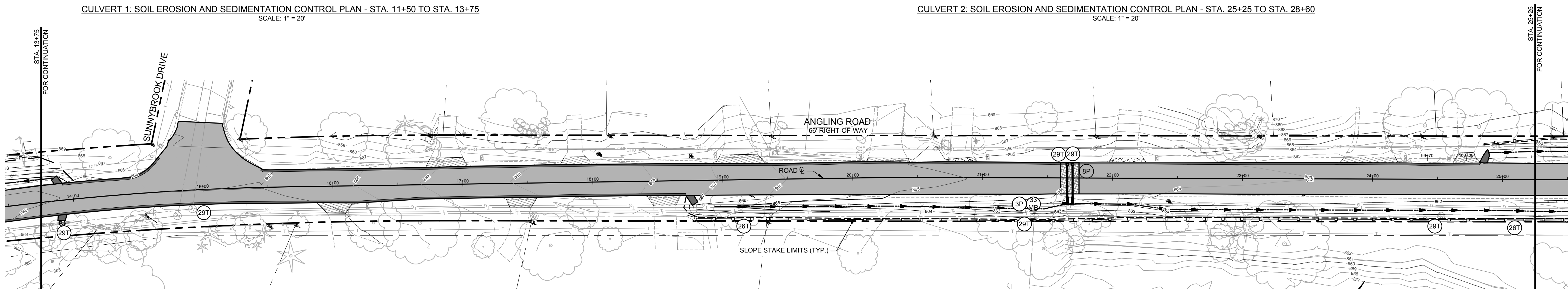
SOIL BORING SB-04



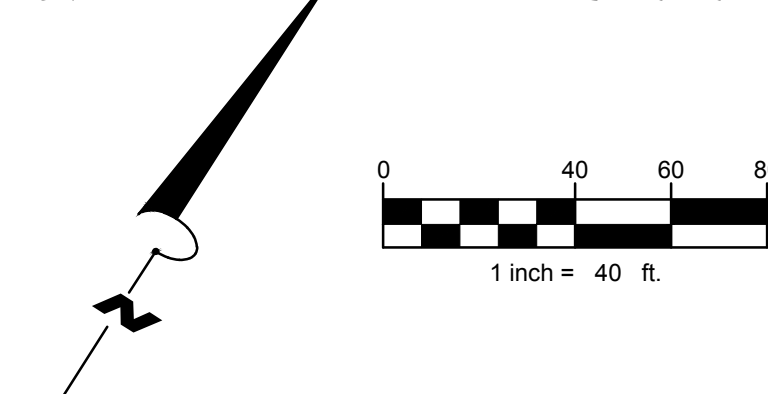
CULVERT 1: SOIL EROSION AND SEDIMENTATION CONTROL PLAN - STA. 11+50 TO STA. 13+75



CULVERT 2: SOIL EROSION AND SEDIMENTATION CONTROL PLAN - STA. 25+25 TO STA. 28+60



SOIL EROSION AND SEDIMENTATION CONTROL PLAN - STA. 13+75 TO STA. 25+25



**QUANTITIES THIS SHEET**

ITEM	QTY.
Erosion Control, Inlet Protection, Fabric Drop	11 Ea
Erosion Control, Silt Fence	1,600 Ft



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- KALAMAZOO**  
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- ALLEGAN**  
269.673.8465
- ROYAL OAK**  
248.791.1371

www.gowightman.com

PHILIP A. DOORLAG  
ENGINEER NO. 67363

PROJECT NAME:

**ANGLING ROAD IMPROVEMENTS**  
MERRYVIEW DRIVE TO OAKLAND DRIVE  
KALAMAZOO, MI 49008

**CITY OF KALAMAZOO**  
415 E. STOCKBRIDGE AVENUE  
KALAMAZOO, MI 49001

- 04/12/2021 PAD ISSUED FOR FINAL
- 03/11/24/2021 PAD SUBMITTED TO EGLE FOR JPA
- 02/11/24/2021 PAD SUBMITTED FOR COK REVIEW
- 01/11/12/2021 PAD SUBMITTED FOR FINAL REVIEW

**REVISIONS**

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DATE: DECEMBER, 2021  
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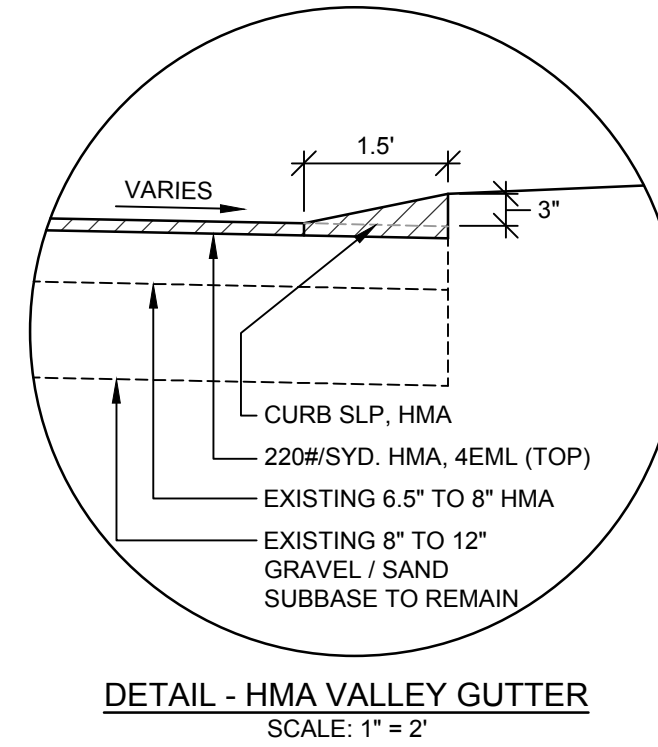
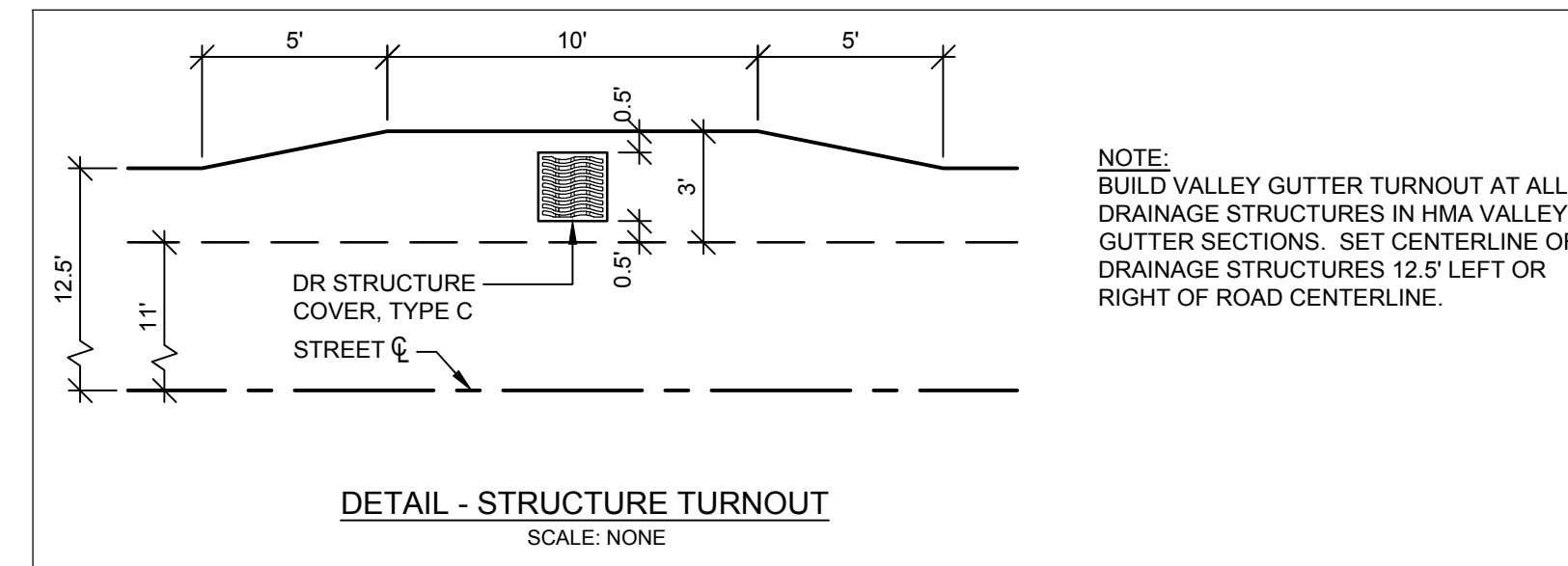
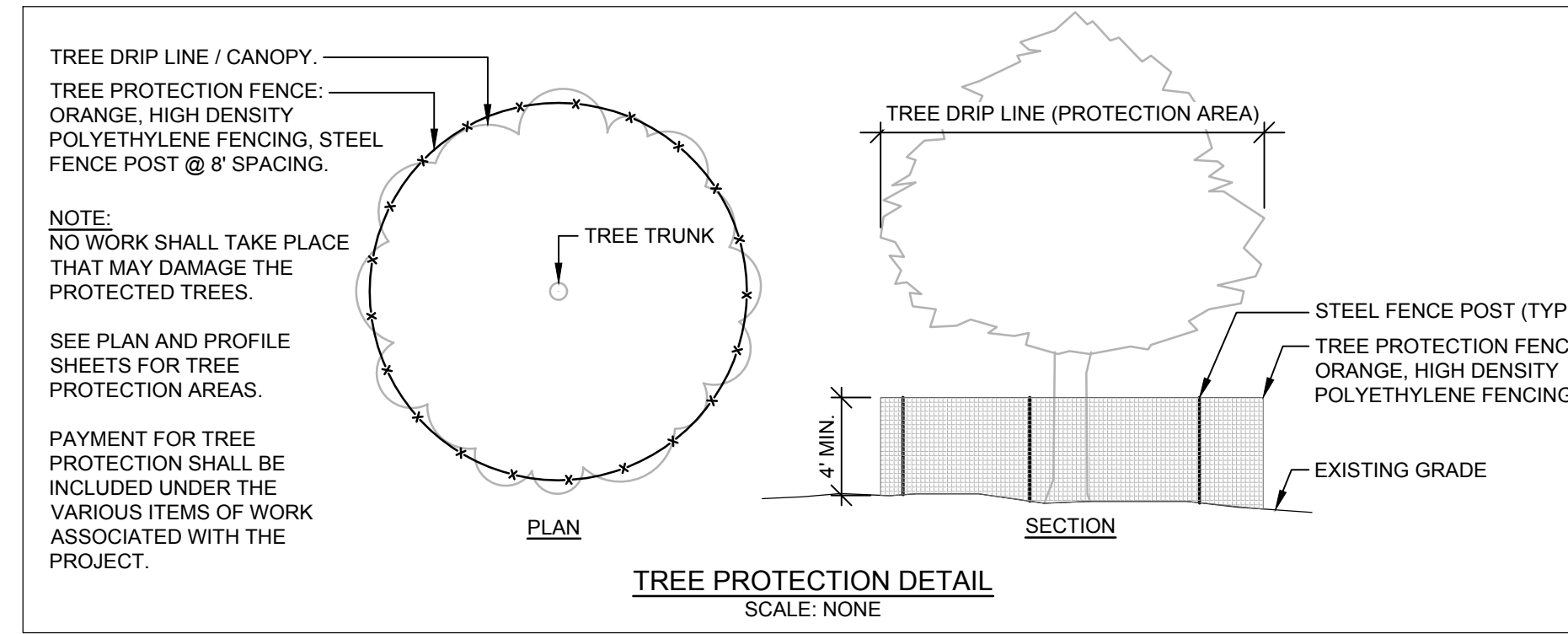
**SOIL BORINGS AND SOIL EROSION & SEDIMENTATION CONTROL PLAN**

JOB No. 214053  
**C004**



**PROJECT NOTES:**

- THE "2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND "STANDARD PLANS" BY THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) ARE HEREBY INCORPORATED INTO THESE CONTRACT DOCUMENTS. COPIES OF THESE STANDARDS ARE AVAILABLE FOR INSPECTION AT THE OFFICE OF THE ENGINEER.
- THE PLACING OF TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL BE DONE IN ACCORDANCE WITH THE 2011 MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD), AS AMENDED.
- ALL WORK SHALL CONFORM TO ALL LOCAL, STATE AND FEDERAL LAWS, RULES AND REGULATIONS IN FORCE AT THE TIME OF CONSTRUCTION.
- IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, ALL CONTRACTORS SHALL CALL MISS DIG @ 811 OR 800-482-7171 FOR PROTECTION OF UNDERGROUND UTILITIES. A MINIMUM OF THREE FULL WORKING DAYS (EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS) PRIOR TO BEGINNING EACH EXCAVATION IN ANY AREA, MEMBERS WILL 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.
- THE CONTRACTOR SHALL LOCATE ALL ACTIVE UNDERGROUND UTILITIES PRIOR TO STARTING WORK AND SHALL CONDUCT HIS OPERATIONS IN A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE CITY OF KALAMAZOO TO NOTIFY THEM THAT WORK IS COMMENCING A MINIMUM OF 72 HOURS BEFORE WORK COMMENCES.
- THE CONTRACTOR SHALL NOTE THAT BACKFILL, STRUCTURES, CIP INCLUDES THE PLACEMENT AND COMPACTION OF BACKFILL IN ACCORDANCE WITH SECTION 206 OF THE "2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION" WITHIN THE PAVEMENT REMOVAL LIMITS. GRADING AND COMPACTION OF THE BACKFILL TO THE BOTTOM OF THE PROPOSED ROAD SUBBASE IS INCLUDED IN THIS ITEM.
- HMA MATERIALS FOR THIS PROJECT SHALL BE PERFORMANCE GRADE 58-28.
- FILL SHALL BE PLACED AND ADEQUATELY KEYED INTO STRIPPED AND SCARIFIED SOILS PER THE MDOT 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION. ALL FILL MATERIAL SHOULD BE AT APPROXIMATELY THE OPTIMUM MOISTURE CONTENT DURING COMPACTION. FURTHERMORE, FILL MATERIAL SHOULD NOT BE FROZEN NOR BE PLACED ON A FROZEN BASE. IT IS RECOMMENDED THAT ALL EARTHWORK AND SITE PREPARATION ACTIVITIES BE CONDUCTED UNDER ADEQUATE SUPERVISION AND PROPERLY CONTROLLED IN THE FIELD BY A GEOTECHNICAL ENGINEERING TESTING FIRM.
- COMPACTION OF ANY FILL BY FLOODING IS NOT ACCEPTABLE. THIS METHOD WILL GENERALLY NOT ACHIEVE THE DESIRED COMPACTION, AND THE LARGE QUANTITIES OF WATER WILL TEND TO SOFTEN THE FOUNDATION SOILS.
- ALL FILL FOR THIS PROJECT MUST BE OBTAINED AND FURNISHED BY THE CONTRACTOR. ALL REQUIRED FILL SHALL BE SELECTED EXCAVATED MATERIAL FROM THE SITE APPROVED BY THE ENGINEER, OR MDOT CLASS II GRANULAR MATERIAL FROM BORROW. EXCESS FILL SHALL BE REMOVED FROM SITE BY THE CONTRACTOR. NOTE: NO BORROW OR SOIL REMOVAL ARRANGEMENTS HAVE BEEN PREARRANGED FOR THIS PROJECT, AND SHALL BE THE TOTAL RESPONSIBILITY OF THE CONTRACTOR.
- REFER TO SUBSURFACE SOIL INVESTIGATION PREPARED BY SOILS & STRUCTURES, INC. FOR FURTHER INFORMATION AND SITE DEVELOPMENT REQUIREMENTS. THE SOIL BORINGS WERE TAKEN BY SOILS & STRUCTURES, 6480 GRAND HAVEN ROAD, MUSKEGON, MI 49441. THE SOIL BORINGS WERE TAKEN ON 06/30/2021
- THE TEST BORINGS REPRESENT POINT INFORMATION AND MAY NOT HAVE ENCOUNTERED ALL THE TYPES AND MATERIALS WHICH ARE PRESENT AT THE SITE. THESE BORING LOGS DO NOT CONSTITUTE A GUARANTEE OF THE SOIL OR GROUNDWATER CONDITIONS, OR THAT THE TEST BORINGS ARE AN EXACT REPRESENTATION OF THE SOIL OR GROUNDWATER CONDITIONS AT ALL POINTS ON THE SITE.
- THE CONTRACTOR SHALL INSTALL A PEDESTRIAN FENCE AROUND ALL EXCAVATIONS TO BE LEFT OPEN OVERNIGHT, AS REQUIRED.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING EXISTING DRAINAGE PATTERNS, AND SHALL RESOLVE ANY DRAINAGE PROBLEMS ON ADJACENT PROPERTIES WHICH MAY RESULT FROM THE CONTRACTOR'S ACTIVITIES.
- ADEQUATE DUST CONTROL MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER IN THE FIELD, TO BE INCLUDED IN THE VARIOUS ITEMS OF WORK.
- DATUM REFERS TO NAVD88 DATUM.
- HMA INTERSECTION APPROACHES WILL NOT BE A SEPARATE PAY ITEM FOR THIS PROJECT. ALL HMA ON INTERSECTING STREETS WILL BE PAID FOR UNDER THE MAINLINE HMA BID ITEMS. THE PAY ITEM HMA APPROACH IS INTENDED FOR THE HMA DRIVEWAY APPROACHES.
- ALL SCALES FOR DRAWINGS AND DETAILS ARE BASED ON 24"x36" PRINTED PLANS. DIMENSIONS TAKE PRECEDENCE OVER SCALE. CONTRACTOR TO VERIFY ALL DIMENSIONS IN FIELD.
- PROPERTY OWNER'S NAMES, WHERE SHOWN, ARE FOR INFORMATION ONLY, AND THEIR ACCURACY IS NOT GUARANTEED.
- ANY EXISTING PROPERTY CORNERS SHALL BE PRESERVED. CORNERS THAT ARE DISTURBED SHALL BE REPLACED BY A SURVEYOR LICENSED IN THE STATE OF MICHIGAN AT THE CONTRACTOR'S EXPENSE.
- EMBANKMENT SLOPES SHALL BE NO STEEPER THAN 1:4 OVER THE CULVERT TO MATCH THE ELEVATION OF THE WINGWALLS.
- CONNECTING NEW PIPE TO EXISTING PIPE OR STRUCTURES AND CONNECTING EXISTING PIPE TO NEW STRUCTURES IS INCLUDED IN THE ITEM FOR THE RESPECTIVE NEW PIPE OR DRAINAGE STRUCTURE.
- ANY TREE REMOVAL (LESS THAN 6" DIAMETER) AND BRUSH REMOVAL NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED DITCHES AND CULVERT PLACEMENT SHALL BE INCLUDED IN "DITCHING, MODIFIED" AND "CULV, PRECAST CONC BOX, 18 FOOT BY 5 FOOT, MODIFIED", RESPECTIVELY. TREE AND BRUSH REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 201 AND 202 OF MDOT'S "2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION".
- THE PROPOSED STRUCTURES AT WEST FORK PORTAGE CREEK SHALL BE:  
 CULVERT 1 (WESTERN CULVERT): 48 INCH DIAMETER REINFORCED CONCRETE PIPE (RCP) CULVERT.  
 CULVERT 2 (EASTERN CULVERT): 18 FOOT BY 5 FOOT PRECAST CONCRETE BOX CULVERT. SEE SHEET C008 FOR DETAILS.



ITEM	AWI	YIELD	PERFORMANCE GRADE
HAND PATCHING		330#/SYD (2 LIFTS)	P.G. 58 - 28
HMA APPROACH		330#/SYD (2 LIFTS)	P.G. 58 - 28
HMA, 4EML (LEVELING)		220#/SYD	P.G. 58 - 28
HMA, 4EML (TOP)	220	220#/SYD	P.G. 58 - 28
HMA BOND COAT (NOT A PAY ITEM)		0.05 TO 0.15 GAL/SYD	SS - 1h

HMA APPLICATION TABLE

**MISCELLANEOUS QUANTITIES**

ITEM	QTY.
Mobilization, Max	1 LSUM
Embankment, CIP	20 Cyd
Subbase, CIP	20 Cyd
Aggregate Base, 8 inch	20 Syd
Shld, C1 II	20 Ton
Cold Milling HMA Surface	4,400 Syd
HMA Surface, Rem	50 Syd
Hand Patching	5 Ton
HMA Approach	10 Ton
HMA, 4EML	520 Ton
Curb Slp, HMA	50 Ft
Riprap, Plain	10 Syd

NOTE: THE QUANTITIES SHOWN ABOVE INCLUDE MISCELLANEOUS PROJECT QUANTITIES AND THE COLD MILLING / RESURFACING FROM STA. 29+00 TO THE P.O.E. AT THE OAKLAND DRIVE AND ANGLING ROAD INTERSECTION.

**WIGHTMAN**  
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**REVISIONS**

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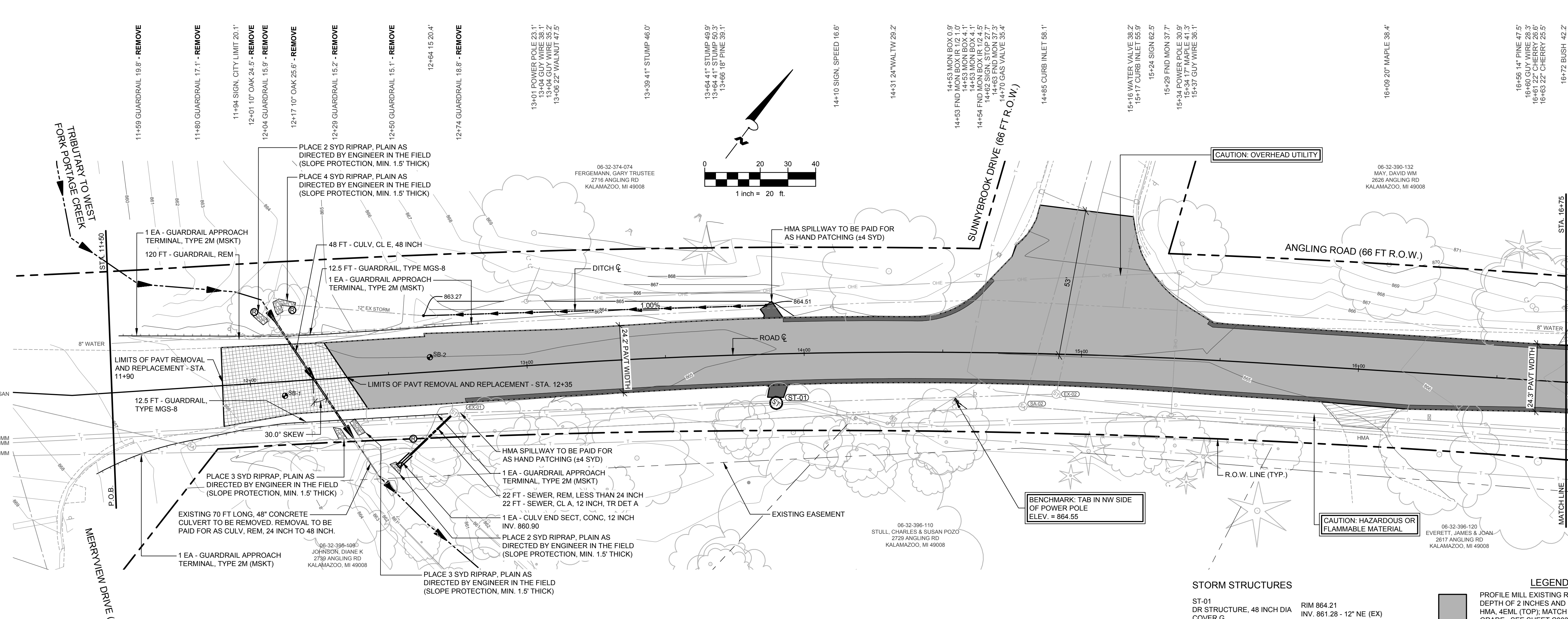
PROJECT NOTES AND DETAILS

JOB No. 214053  
**C005**



QUANTITIES THIS SHEET		
ITEM		QTY.
Tree, Rem. 19 inch to 36 inch		1 Ea
Tree, Rem. 6 inch to 18 inch		2 Ea
Culv, Rem. 24 inch to 48 inch		1 Ea
Guardrail, Rem		120 Ft
Embankment, CIP		35 Cyd
Ditching, Modified		130 Ft
Backfill, Structure, CIP		70 Cyd
Subbase, CIP		45 Cyd
Aggregate Base, 8 inch		130 Syd
Shield, CI II		20 Ton
Culv End Sect, Conc, 12 inch		1 Ea
Culv, CI E, 48 inch		48 Ft
Dr Structure Cover, Adj, Case 2		1 Ea
Dr Structure Cover, Type B		1 Ea
Dr Structure Cover, Type G		1 Ea
Dr Structure, 48 inch dia		1 Ea
Cold Milling HMA Surface		1,460 Syd
HMA Surface, Rem		150 Syd
Hand Patching		2 Ton
HMA Approach		4 Ton
HMA, 4EML		200 Ton
Curb Slip, HMA		640 Ft
Guardrail, Type MGS-8		25 Ft
Guardrail Approach Terminal, Type 2M		4 Ea
Riprap, Plain		15 Syd
Slope Restoration, Non-Freeway, Type B		640 Syd

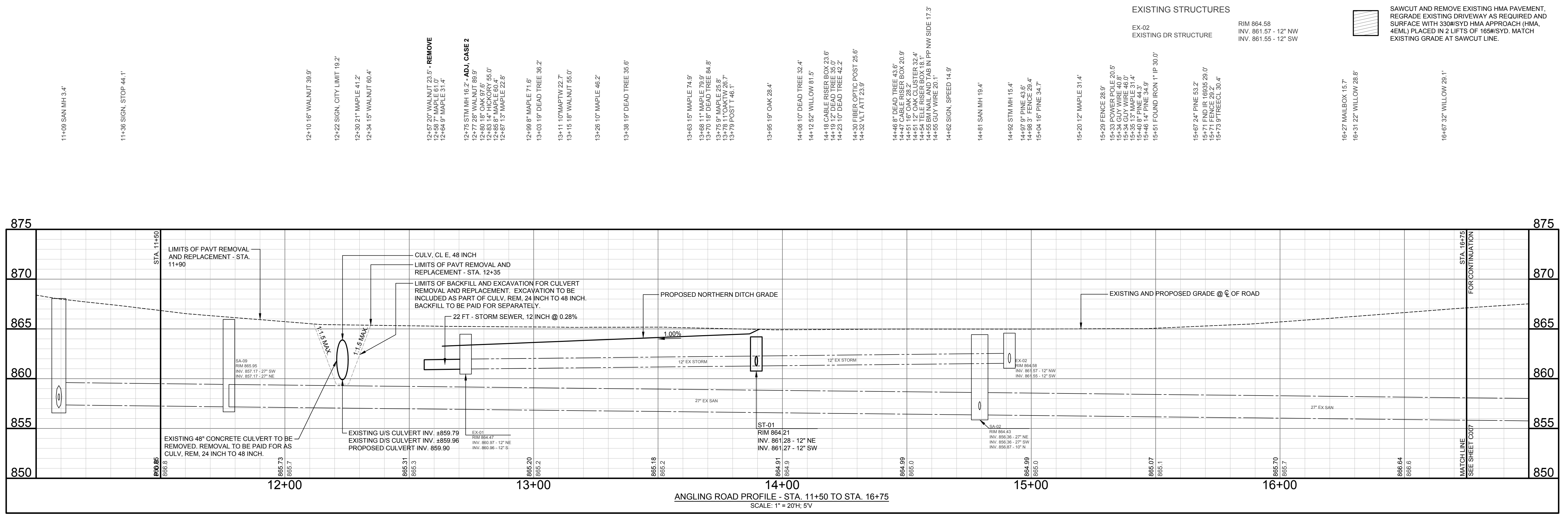
PHILIP A. DOORLAG  
 ENGINEER NO. 67363  
 PROJECT NAME:  
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 MERRYVIEW DRIVE TO  
 OAKLAND DRIVE  
 KALAMAZOO, MI 49008  
 CITY OF  
**KALAMAZOO**  
 415 E. STOCKBRIDGE AVENUE  
 KALAMAZOO, MI 49001



**ANGLING ROAD PLAN - STA. 11+50 TO STA. 16+75**  
 SCALE: 1" = 20'

- STORM STRUCTURES**
- ST-01 DR STRUCTURE, 48 INCH DIA COVER G 0.0 FT SUMP RIM 864.21 INV. 861.28 - 12" NE (EX) INV. 861.27 - 12" SW (EX)
- STRUCTURE, ADJ**
- EX-01 EXISTING DR STRUCTURE (REPLACE WITH COVER B) RIM 864.47 (EX) RIM 865.97± (PROP) INV. 860.97 - 12" NE INV. 860.96 - 12" S (PROP)
- EXISTING STRUCTURES**
- EX-02 EXISTING DR STRUCTURE RIM 864.58 INV. 861.57 - 12" NW INV. 861.55 - 12" SW

- LEGEND**
- PROFILE MILL EXISTING ROADWAY AN AVERAGE DEPTH OF 2 INCHES AND REPLACE WITH 220 #SYD HMA, 4EML (TOP); MATCH PROPOSED HMA TO EXISTING GRADE. SEE SHEET C003 FOR FURTHER DETAIL.
  - HMA VALLEY GUTTER. SEE DETAIL ON SHEET C004.
  - SAWCUT AND REMOVE EXISTING HMA PAVEMENT FOR CULVERT REPLACEMENT. MATCH EXISTING GRADE AT SAWCUT LINE. RECONSTRUCT PER SECTIONS ON SHEET C003.
  - SAWCUT AND REMOVE EXISTING HMA PAVEMENT. REGRADE EXISTING DRIVEWAY AS REQUIRED AND SURFACE WITH 330M#SYD HMA APPROACH (HMA, 4EML) PLACED IN 2 LIFTS OF 165#SYD. MATCH EXISTING GRADE AT SAWCUT LINE.



**ANGLING ROAD PROFILE - STA. 11+50 TO STA. 16+75**  
 SCALE: 1" = 20H, 5V

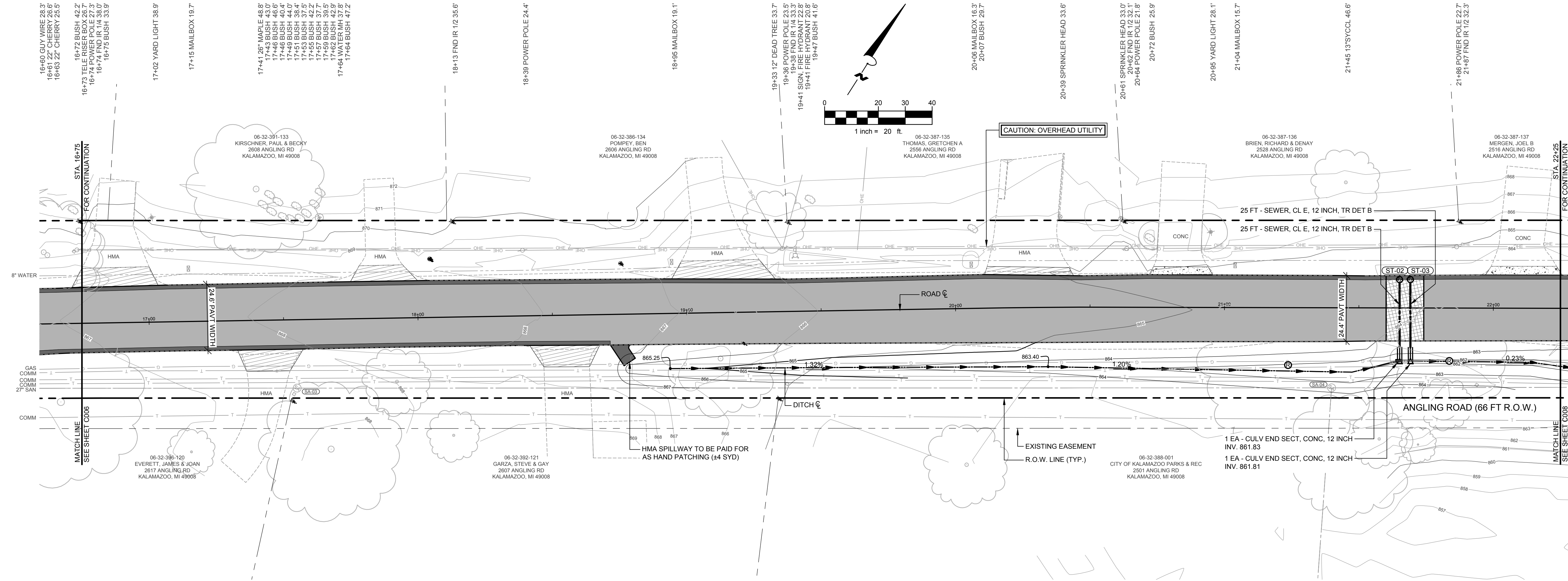
DATE	DESCRIPTION	BY
04/12/2021	ISSUED FOR FINAL	PAD
03/11/24/2021	SUBMITTED TO EGLE FOR JPA	PAD
02/11/24/2021	SUBMITTED FOR COK REVIEW	PAD
01/11/12/2021	SUBMITTED FOR FINAL REVIEW	PAD

**REVISIONS**

DATE: DECEMBER, 2021  
 SCALE: 1" = 20H, 5V

PLAN AND PROFILE -  
**ANGLING ROAD**  
 STA. 11+50 TO STA. 16+75  
 JOB No. 214053  
**C006**





ANGLING ROAD PLAN - STA. 16+75 TO STA. 22+25  
SCALE: 1" = 20'

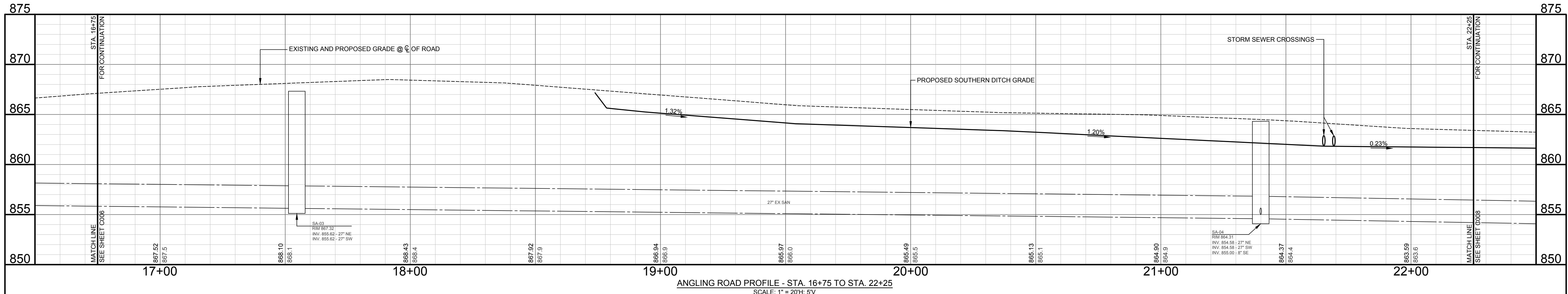
- LEGEND**
- PROFILE MILL EXISTING ROADWAY AN AVERAGE DEPTH OF 2 INCHES AND REPLACE WITH 220 #/SYD HMA, 4EML (TOP); MATCH PROPOSED HMA TO EXISTING GRADE. SEE SHEET C003 FOR FURTHER DETAIL.
  - HMA VALLEY GUTTER. SEE DETAIL ON SHEET C004.
  - SAWCUT AND REMOVE EXISTING HMA PAVEMENT FOR CULVERT REPLACEMENT. MATCH EXISTING GRADE AT SAWCUT LINE. RECONSTRUCT PER SECTIONS ON SHEET C003.
  - SAWCUT AND REMOVE EXISTING HMA PAVEMENT, REGRADE EXISTING DRIVEWAY AS REQUIRED AND SURFACE WITH 330#/SYD HMA APPROACH (HMA, 4EML) PLACED IN 2 LIFTS OF 165#/SYD. MATCH EXISTING GRADE AT SAWCUT LINE.
  - SAWCUT AND REMOVE EXISTING CONCRETE PAVEMENT, REGRADE EXISTING DRIVEWAY AS REQUIRED AND SURFACE WITH DRIVEWAY, NONREINF CONC, 6 INCH. MATCH EXISTING GRADE AT SAWCUT LINE.
- STORM STRUCTURES**
- ST-02  
DR STRUCTURE, 24 INCH DIA  
COVER C  
0.0 FT SUMP  
RIM 863.92  
INV. 861.92 - 12" SE
  - ST-03  
DR STRUCTURE, 24 INCH DIA  
COVER C  
0.0 FT SUMP  
RIM 863.86  
INV. 861.90 - 12" SE
- REMOVE**
- 21+24 34" OAK 21.3'
  - 21+40 SAN MH 29.8'
  - 21+47 24" DEAD TREE 54.5'
  - 21+58 11" TWIN ASH 48.7'
  - 21+72 7" ASH 50.8'
  - 21+82 10" TWIN MAPLE 38.7'
  - 21+84 22" OAK 19.6'
  - 21+94 TELE RISER BOX 28.6'

QUANTITIES THIS SHEET	
ITEM	QTY.
Tree, Rem, 19 inch to 36 inch	2 Ea
Pavt, Rem	20 Syd
Ditching, Modified	350 Ft
Subbase, CIP	15 Syd
Aggregate Base, 8 inch	40 Syd
Shld, CI II	20 Ton
Culv End Sect, Conc, 12 inch	2 Ea
Sewer, CI E, 12 inch, Tr Det B	60 Ft
Dr Structure Cover, Type C	2 Ea
Dr Structure, 24 inch dia	2 Ea
Cold Milling HMA Surface	1,470 Syd
HMA Surface, Rem	155 Syd
Hand Patching	1 Ton
HMA Approach	20 Ton
HMA, 4EML	185 Ton
Driveway, Nonreinf Conc, 6 inch	20 Syd
Curb Slip, HMA	750 Ft
Slope Restoration, Non-Freeway, Type B	700 Syd

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KALAMAZOO, MI 49001



ANGLING ROAD PROFILE - STA. 16+75 TO STA. 22+25  
SCALE: 1" = 20'H, 5'V

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**REVISIONS**

DATE: DECEMBER, 2021  
SCALE: 1" = 20'H, 5'V

PLAN AND PROFILE - ANGLING ROAD  
STA. 16+75 TO STA. 22+25

Job No. 214053  
**C007**



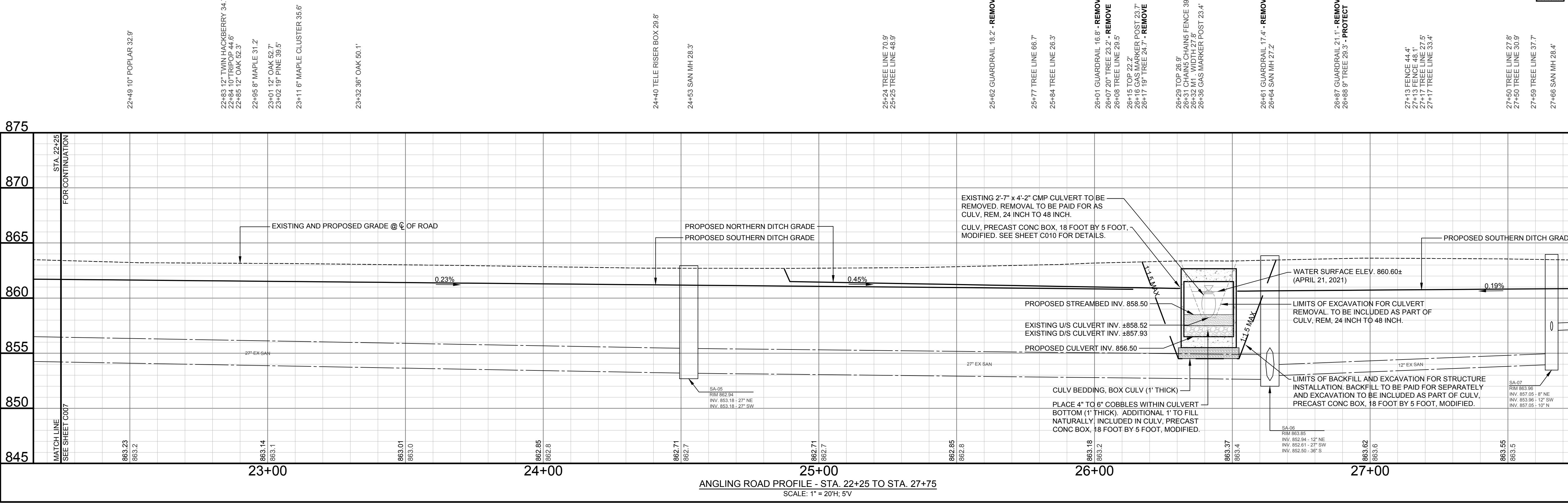
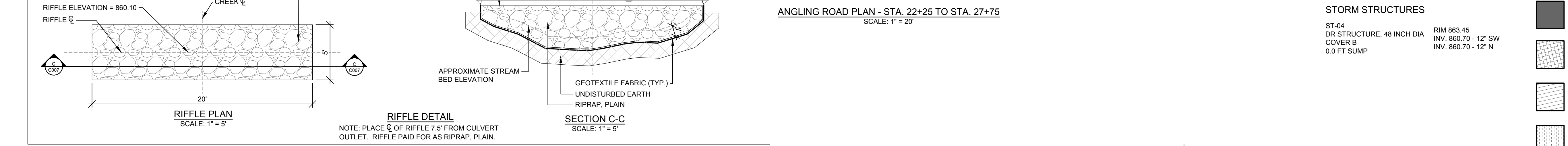
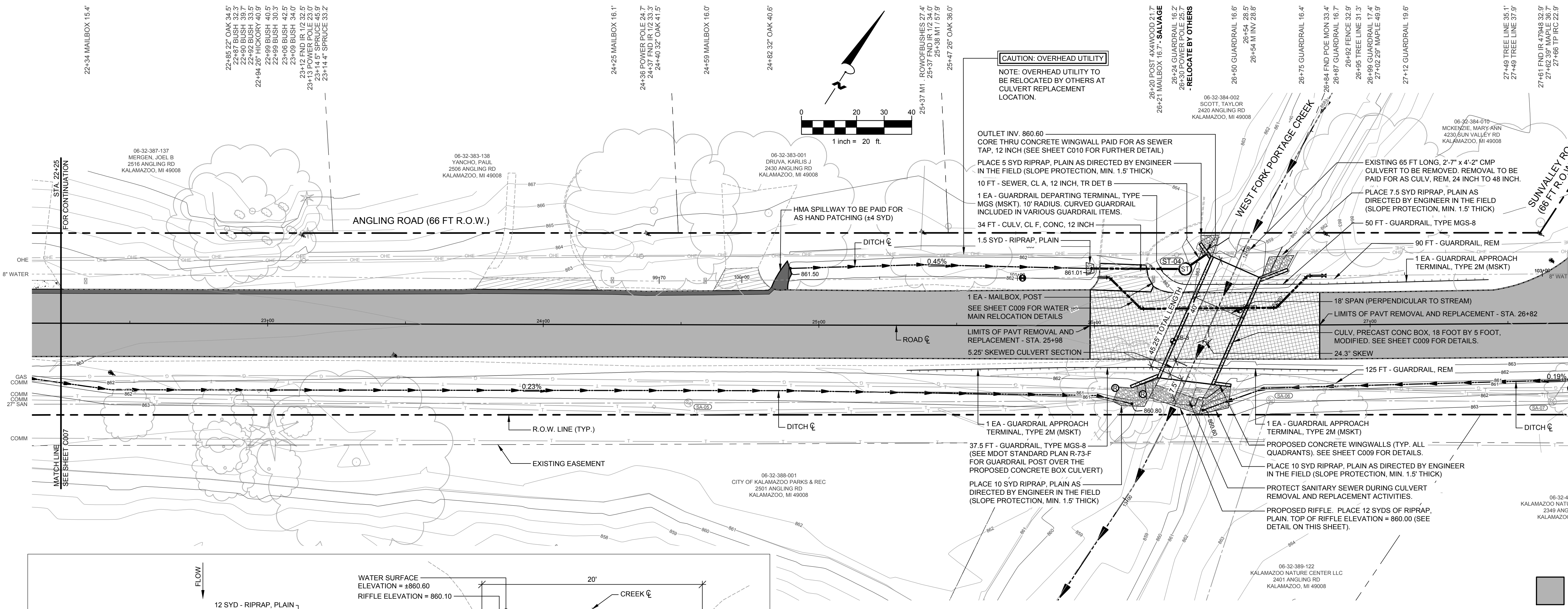
**QUANTITIES THIS SHEET**

ITEM	QTY.
Tree, Rem, 19 inch to 36 inch	2 Ea
Tree, Rem, 6 inch to 18 inch	1 Ea
Culv, Rem, 24 inch to 48 inch	1 Ea
Guardrail, Rem	215 Ft
Embankment, CIP	40 Cyd
Ditching, Modified	620 Ft
Backfill, Structure, CIP	140 Cyd
Subbase, CIP	60 Cyd
Aggregate Base, 8 inch	170 Syd
Shd, Cl II	20 Ton
Culv, Cl F, Conc, 12 inch	35 Ft
Sewer, Cl A, 12 inch, Tr Det A	10 Ft
Sewer Tap, 12 inch	1 Ea
Dr Structure Cover, Type B	1 Ea
Dr Structure, 48 inch dia	1 Ea
Culv Bedding, Box Culv	40 Cyd
Culv, Precast Conc Box, 18 foot by 5 foot, Modified	46 Ft
Cold Milling HMA Surface	1,300 Syd
HMA Surface, Rem	290 Syd
Hand Patching	1 Ton
HMA Approach	10 Ton
HMA, 4EML	185 Ton
Curb Slip, HMA	375 Ft
Guardrail, Type MGS-8	87.5 Ft
Guardrail Approach Terminal, Type 2M	3 Ea
Guardrail Departing Terminal, Type MGS	1 Ea
Guardrail Post, Culv	6 Ea
Post, Mailbox	1 Ea
Riprap, Plain	50 Syd
Slope Restoration, Non-Freeway, Type B	1,160 Syd

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ENGINEER NO. 67363

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**LEGEND**

- PROFILE MILL EXISTING ROADWAY AN AVERAGE DEPTH OF 2 INCHES AND REPLACE WITH 220 #SYD HMA, 4EML (TOP). MATCH PROPOSED HMA TO EXISTING GRADE. SEE SHEET C003 FOR FURTHER DETAIL.
- HMA VALLEY GUTTER. SEE DETAIL ON SHEET C004.
- SAWCUT AND REMOVE EXISTING HMA PAVEMENT FOR CULVERT REPLACEMENT. MATCH EXISTING GRADE AT SAWCUT LINE. RECONSTRUCT PER SECTIONS ON SHEET C003.
- SAWCUT AND REMOVE EXISTING HMA PAVEMENT. REGRADE EXISTING DRIVEWAY AS REQUIRED AND SURFACE WITH 330#SYD HMA APPROACH (HMA, 4EML) PLACED IN 2 LIFTS OF 165#SYD. MATCH EXISTING GRADE AT SAWCUT LINE.
- HMA PAVED SHOULDER AT CONCRETE BOX CULVERT LOCATION. SEE SHEET C003 FOR FURTHER DETAIL.

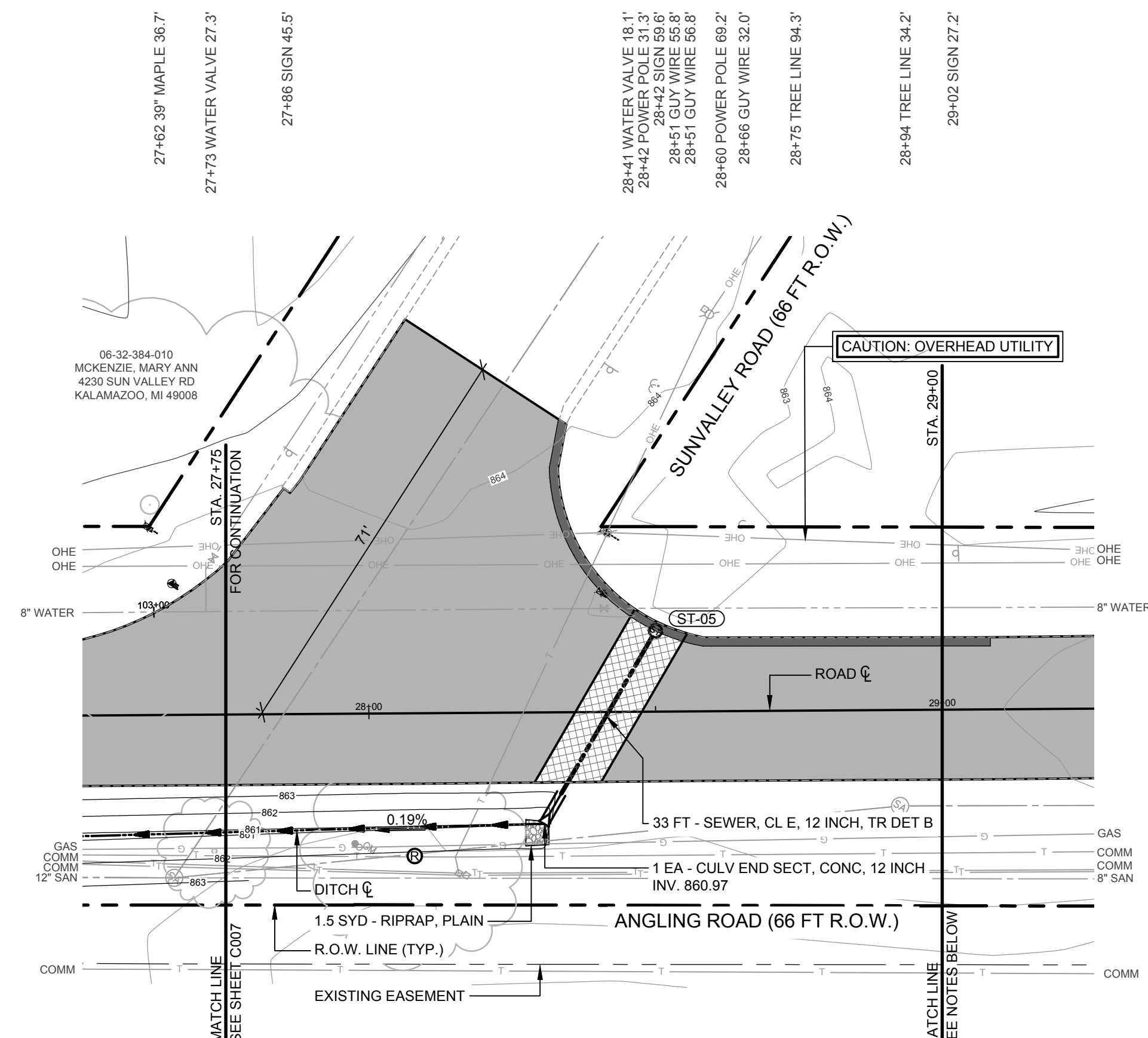
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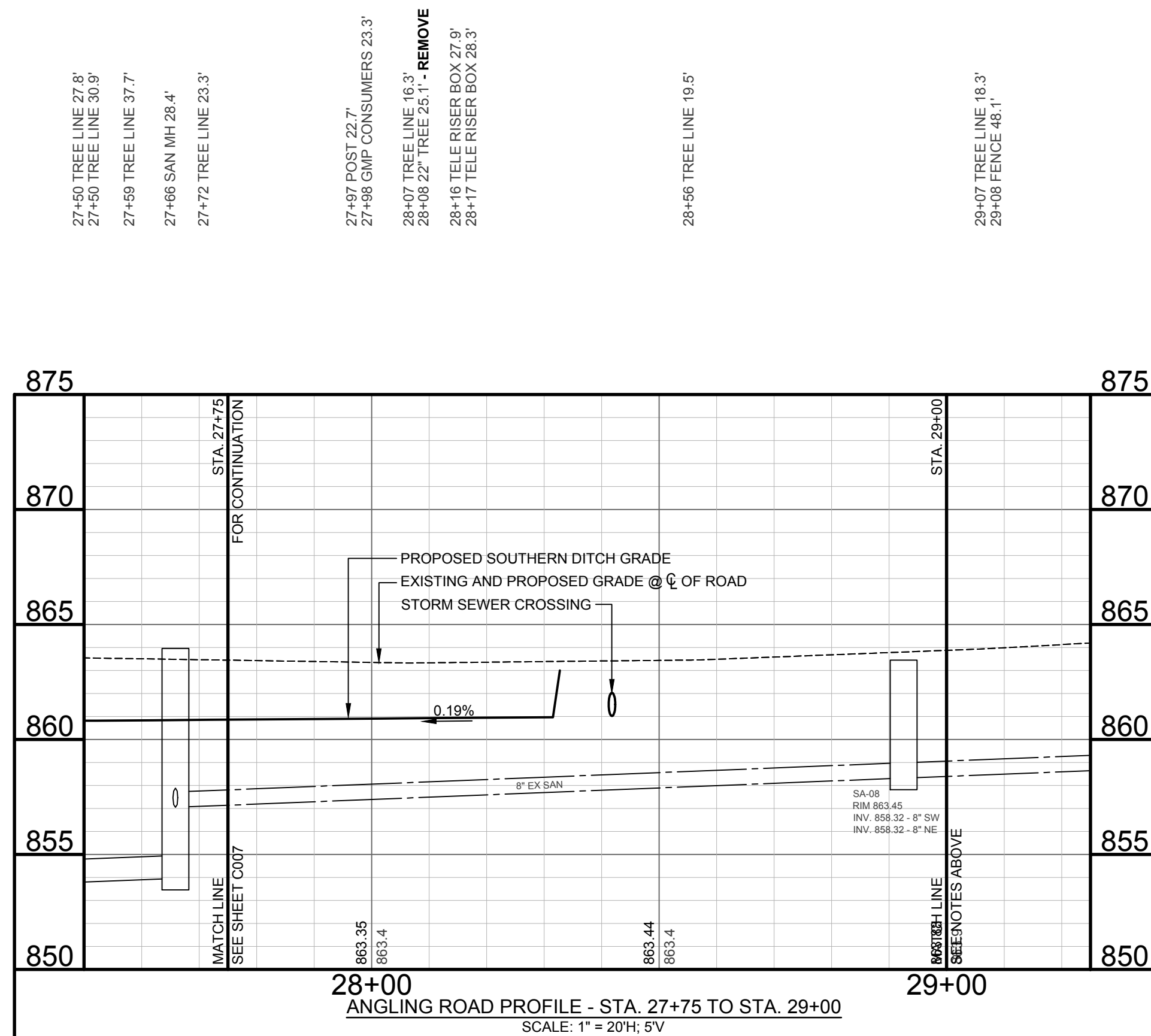
DATE: DECEMBER, 2021  
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PLAN AND PROFILE -  
ANGLING ROAD  
STA. 22+25 TO STA. 27+75





ANGLING ROAD PLAN - STA. 27+75 TO STA. 29+00  
SCALE: 1" = 20'



28+00 ANGLING ROAD PROFILE - STA. 27+75 TO STA. 29+00  
SCALE: 1" = 20H; 5V

QUANTITIES THIS SHEET

ITEM	QTY.
Tree, Rem, 19 inch to 36 inch	1 Ea
Ditching, Modified	55 Ft
Subbase, CIP	15 Syd
Aggregate Base, 8 inch	40 Syd
Shld, CI II	5 Ton
Culv End Sect, Conc, 12 inch	1 Ea
Sewer, CI E, 12 inch, Tr Det B	35 Ft
Dr Structure Cover, Type C	1 Ea
Dr Structure, 24 inch dia	1 Ea
Cold Milling HMA Surface	590 Syd
HMA Surface, Rem	40 Syd
HMA, 4EML	80 Ton
Curb Slip, HMA	100 Ft
Riprap, Plain	5 Syd
Slope Restoration, Non-Freeway, Type B	175 Syd

STORM STRUCTURES

ST-05  
DR STRUCTURE, 24 INCH DIA RIM 863.08  
COVER C INV. 861.08 - 12" S  
0.0 FT SUMP

LEGEND

- PROFILE MILL EXISTING ROADWAY AN AVERAGE DEPTH OF 2 INCHES AND REPLACE WITH 220#/SYD HMA, 4EML (TOP); MATCH PROPOSED HMA TO EXISTING GRADE. SEE SHEET C003 FOR FURTHER DETAIL.
- HMA VALLEY GUTTER. SEE DETAIL ON SHEET C004.

NOTE:

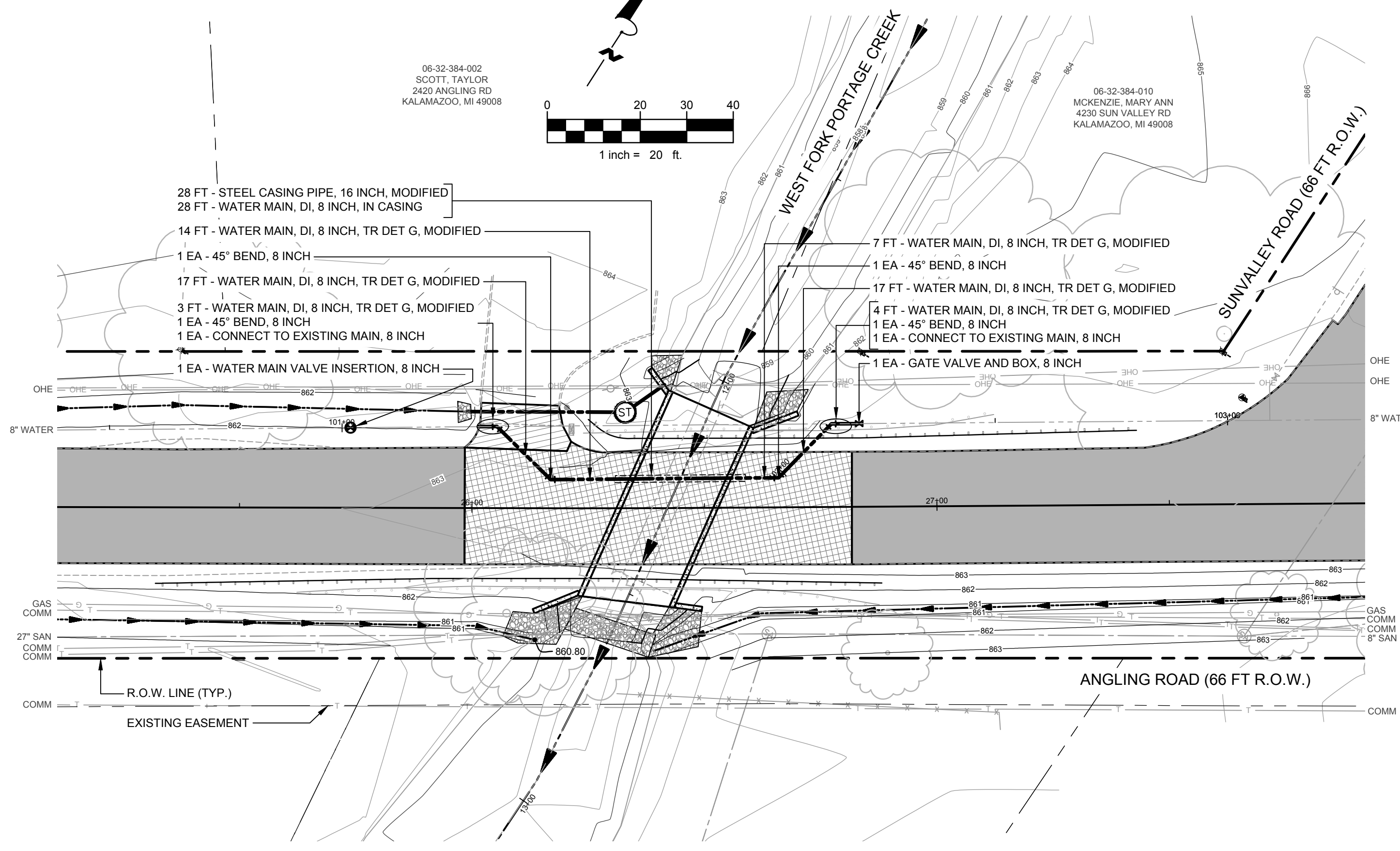
MILL EXISTING ROADWAY A DEPTH OF 2 INCHES AND REPLACE WITH 220#/SYD HMA, 4EML (TOP) FROM MATCH LINE @ STA. 29+00 TO THE OAKLAND DRIVE INTERSECTION. SEE SHEET C003 FOR FURTHER DETAIL.

P.O.E. AT THE OAKLAND DRIVE INTERSECTION SHALL BE AT THE HMA JOINT OR AS DIRECTED BY THE ENGINEER.

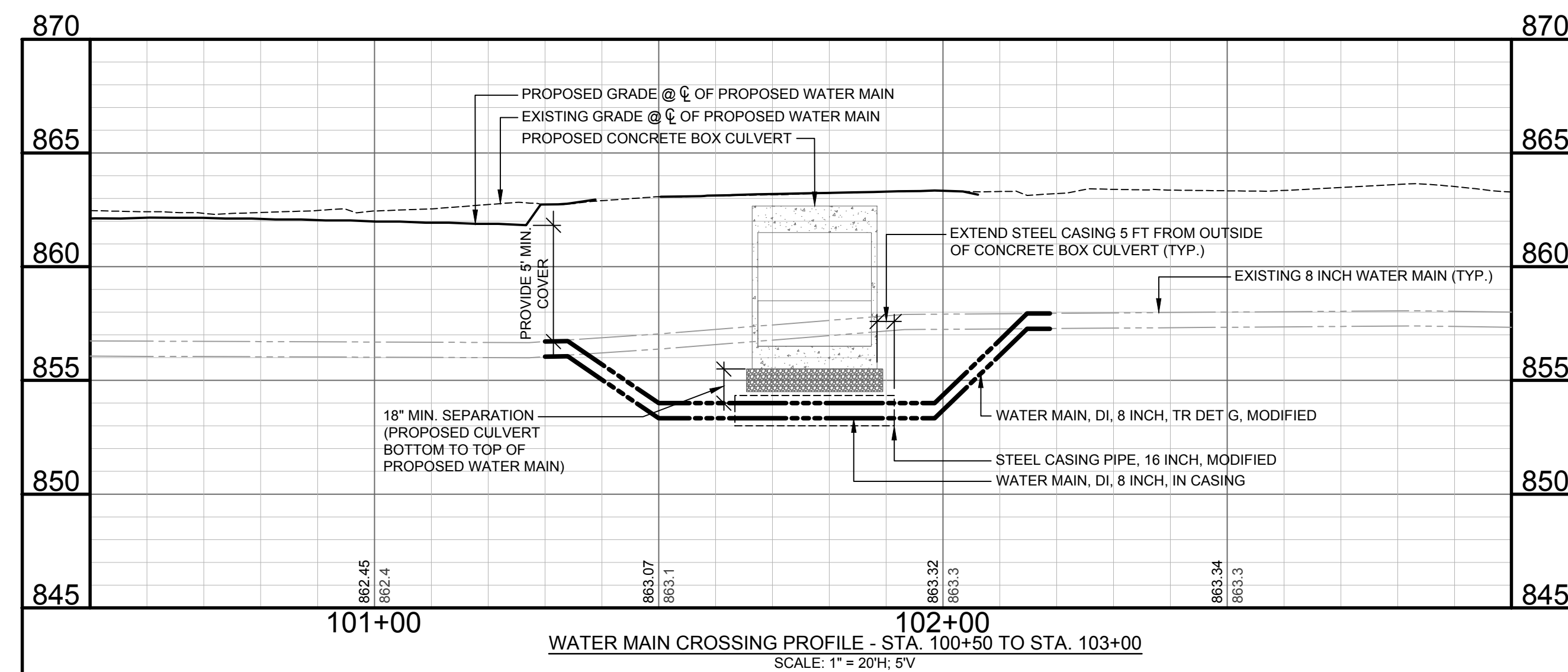
PROTECT AND MAINTAIN ALL HMA VALLEY GUTTER CURB BEYOND STA. 29+00 TOWARD OAKLAND DRIVE DURING MILLING OPERATIONS.

WATER MAIN NOTES:

- REMOVAL OF WATER MAIN SHALL BE INCLUDED IN THE WATER MAIN PAY ITEM.
- INSTALL 1 INCH SAMPLING TAP FOR BACTERIA SAMPLING. REMOVE TAP AFTER SAMPLING IS COMPLETE WITH ACCEPTABLE RESULTS.
- ALL WATER MAIN SHALL BE POLY WRAPPED TO BE PAID FOR AS "POLYETHYLENE ENCASEMENT".
- INSTALL RESTRAIN/THRUST BLOCK AS NECESSARY TO FACILITATE RELOCATION WORK.
- WATER MAIN SHALL BE BURIED AT A MINIMUM DEPTH OF 5 FEET.
- MAINTAIN 10 FOOT MINIMUM HORIZONTAL SEPARATION BETWEEN THE SANITARY OR STORM SEWER AND WATER MAIN UTILITIES. PROVIDE 18" MINIMUM VERTICAL SEPARATION WHERE THE WATER MAIN CROSSES A SANITARY OR STORM SEWER.
- SEE CITY OF KALAMAZOO WATER MAIN SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- THE WATER SERVICE LOCATION OF 2420 ANGLING ROAD SHALL BE FIELD VERIFIED BY THE CITY OF KALAMAZOO PRIOR TO INSERTION VALVE INSTALLATION. INSTALL INSERTION VALVE DIRECTLY EAST OF WATER SERVICE TO MAINTAIN SERVICE THROUGHOUT THE WATER MAIN RELOCATION.



WATER MAIN CROSSING PLAN  
SCALE: 1" = 20'



WATER MAIN CROSSING PROFILE - STA. 100+50 TO STA. 103+00  
SCALE: 1" = 20H; 5V

QUANTITIES THIS SHEET

ITEM	QTY.
Steel Casing Pipe, 16 inch, Modified	30 Ft
Water Main, DI, 8 inch, Tr Det G, Modified	65 Ft
Water Main, DI, 8 inch, In Casing	30 Ft
Polyethylene Encasement	95 Ft
Connect to Existing Main, 8 inch	2 Ea
Water Main Valve Insertion, 8 inch	1 Ea
Gate Valve and Box, 8 inch	1 Ea
Compact Ductile Iron Fittings	220 Lb

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PHILIP A. DOORLAG  
ENGINEER NO. 67363  
PROJECT NAME:  
**ANGLING ROAD IMPROVEMENTS**  
MERRYVIEW DRIVE TO OAKLAND DRIVE  
KALAMAZOO, MI 49008

**CITY OF KALAMAZOO**  
415 E. STOCKBRIDGE AVENUE  
KALAMAZOO, MI 49001

05/01/2022	PAD	REVISED FOR WATER PERMIT SUBMITTAL
04/12/2021	PAD	ISSUED FOR FINAL
02/11/24/2021	PAD	SUBMITTED FOR COK REVIEW
01/11/12/2021	PAD	SUBMITTED FOR FINAL REVIEW

REVISIONS  
DATE: DECEMBER, 2021  
SCALE: 1" = 20H; 5V

PLAN AND PROFILE - ANGLING ROAD - STA. 27+75 TO STA. 29+00 & WATER MAIN RELOCATION DETAILS - STA. 25+50 TO STA. 27+50

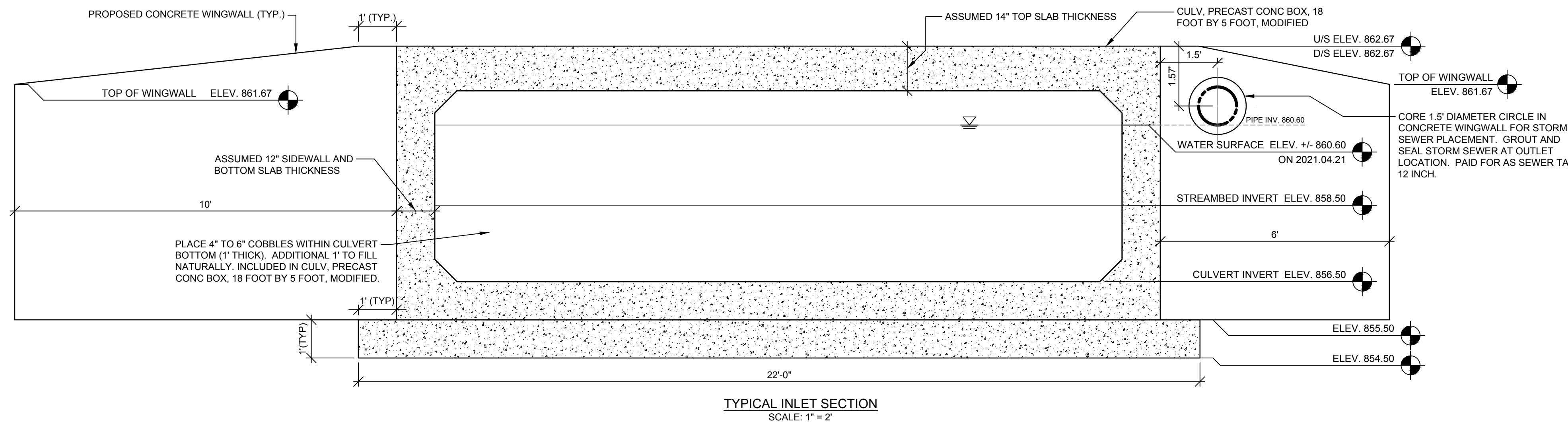
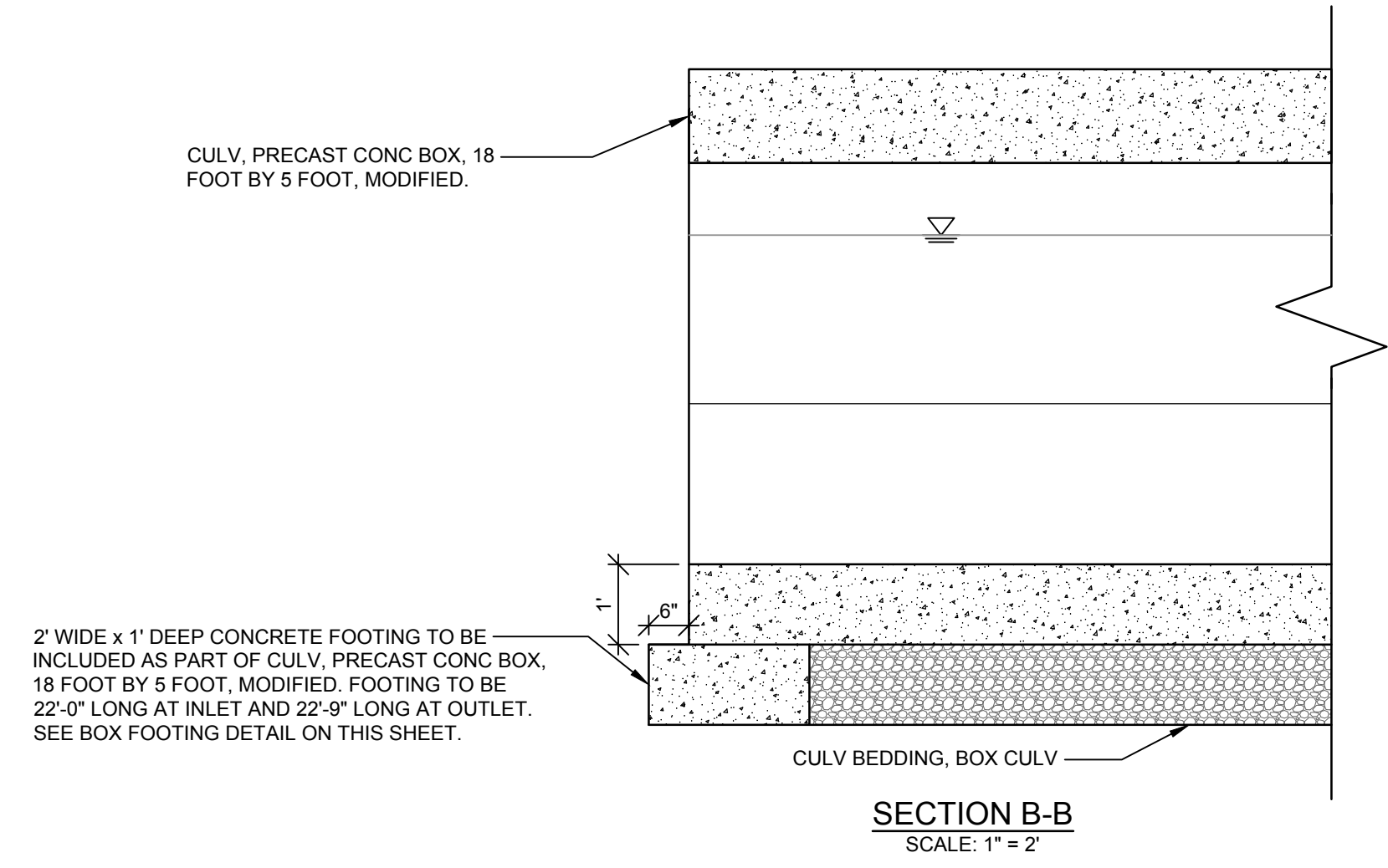
JOB No. 214053  
**C009**



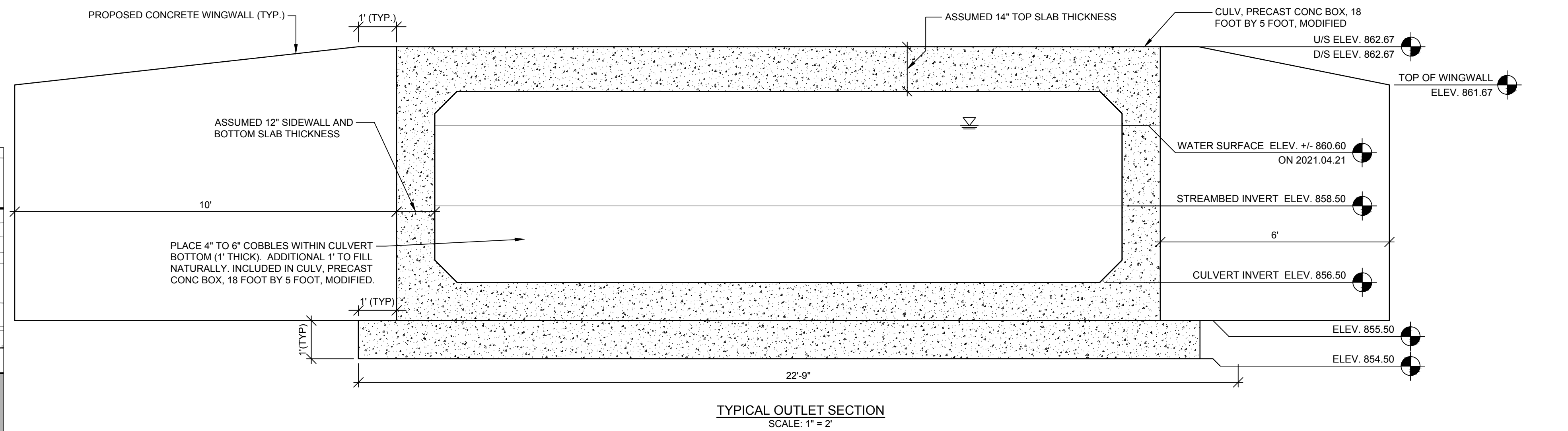
**REVISIONS**

DATE: DECEMBER, 2021  
 SCALE: VARIES

**BOX CULVERT DETAILS**



NOTE:  
 INVERT ELEVATION OF BOX CULVERT SHALL GOVERN. TOP OF FOOTING AND BOTTOM OF FOOTING ELEVATIONS MAY VARY BASED UPON THE MANUFACTURER'S CULVERT DESIGN. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING THE FOOTINGS ACCORDINGLY.

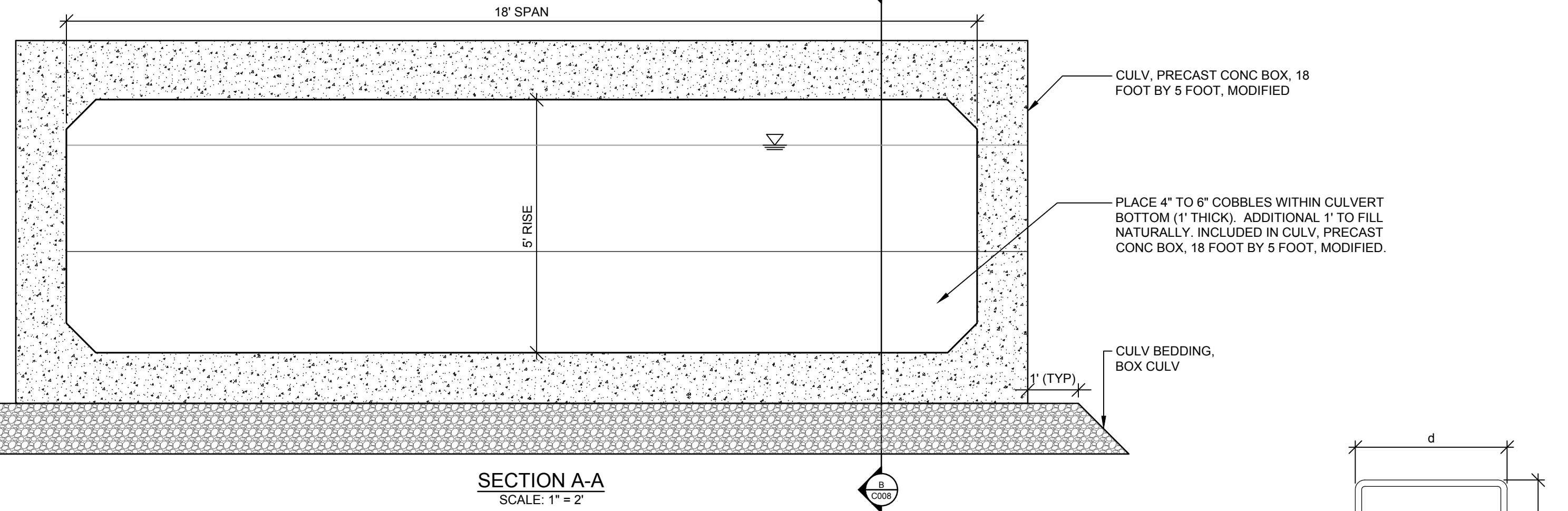
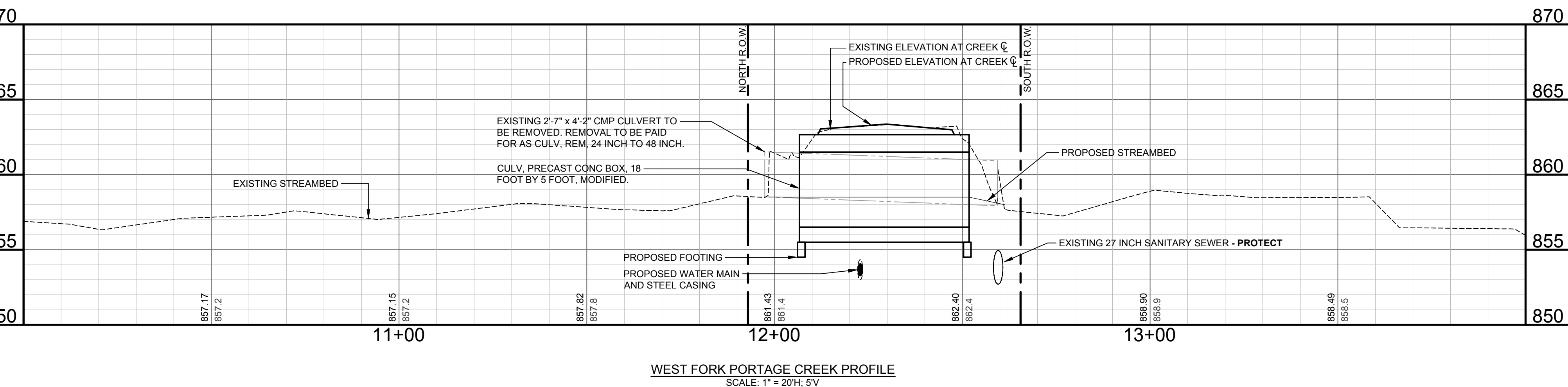
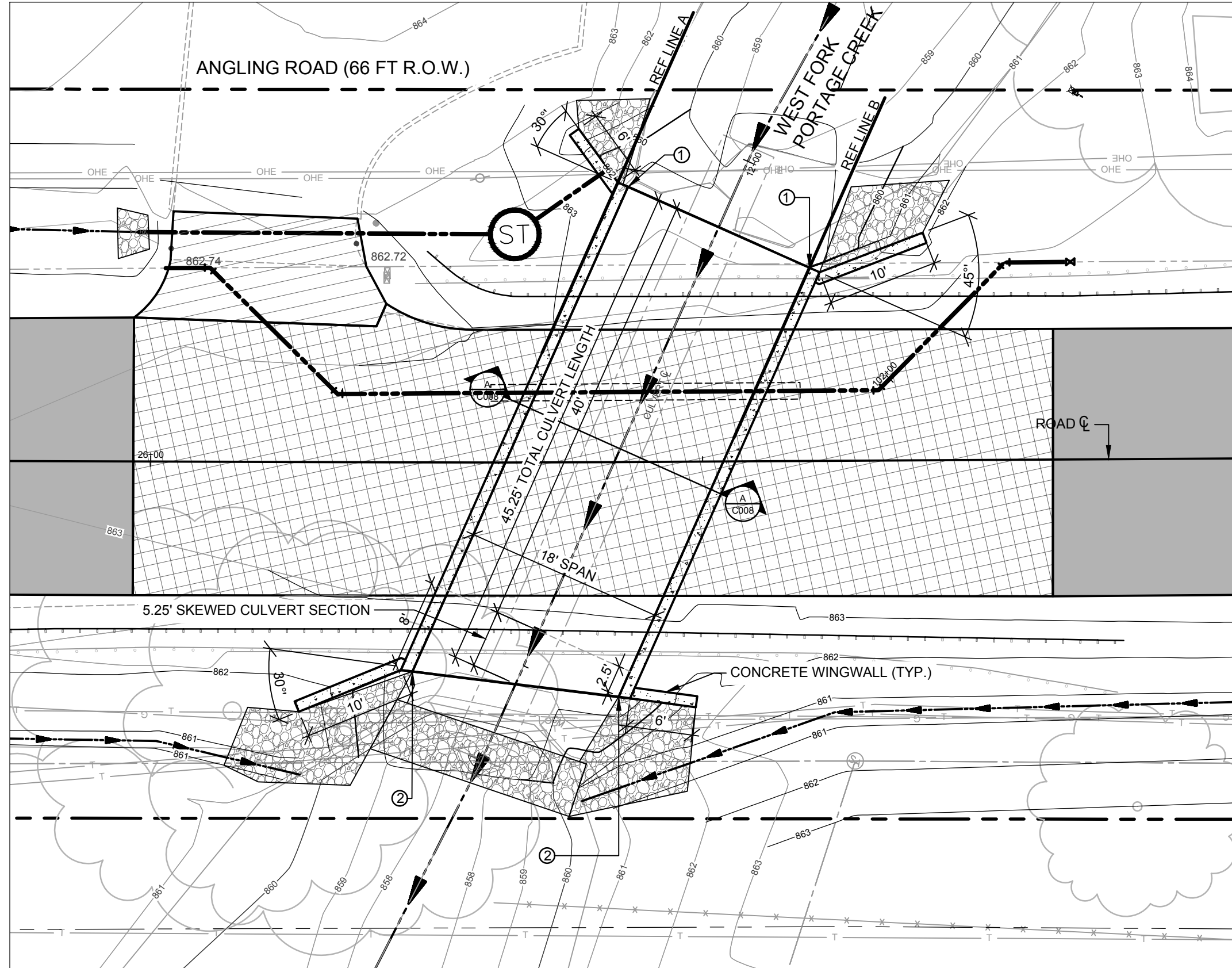


NOTE:  
 INVERT ELEVATION OF BOX CULVERT SHALL GOVERN. TOP OF FOOTING AND BOTTOM OF FOOTING ELEVATIONS MAY VARY BASED UPON THE MANUFACTURER'S CULVERT DESIGN. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING THE FOOTINGS ACCORDINGLY.

**CULVERT CONTROL DATA**

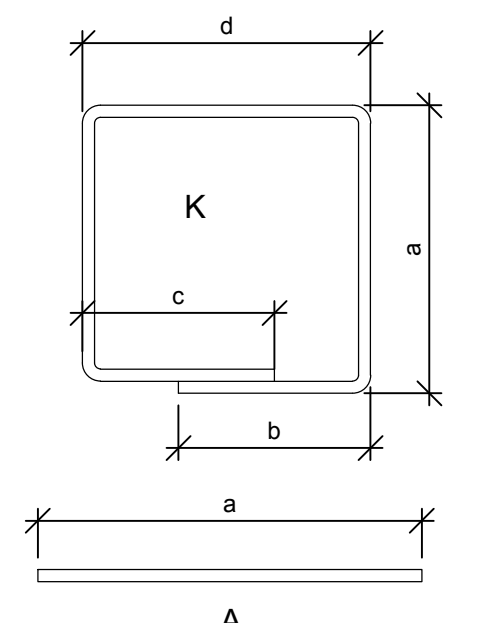
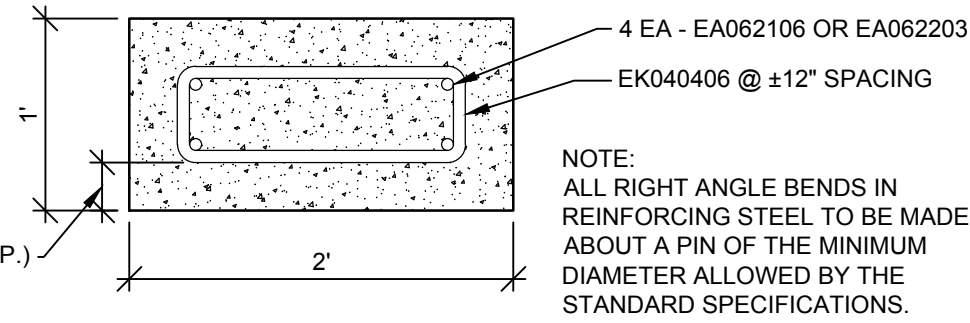
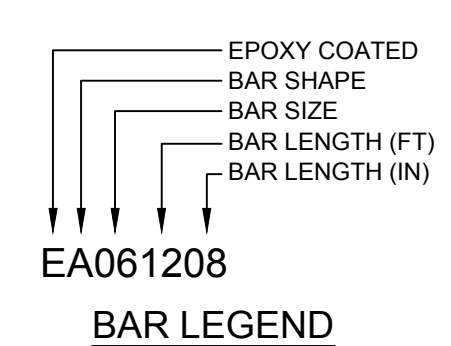
REF. LINE/PT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION*
A-1	INSIDE CORNER @ INLET	275032.1018	12784128.5706	856.50
A-2	INSIDE CORNER @ OUTLET	274984.6454	12784135.7741	856.50
B-1	INSIDE CORNER @ INLET	275034.8031	12784146.3668	856.50
B-2	INSIDE CORNER @ OUTLET	274982.7845	12784152.7449	856.50

\*NOTE: ELEVATION REFERS TO THE CULVERT INVERT ELEVATION AT THE INSIDE CORNER OF THE PROPOSED CULV. PRECAST CONC BOX, 18 FOOT BY 5 FOOT, MODIFIED.



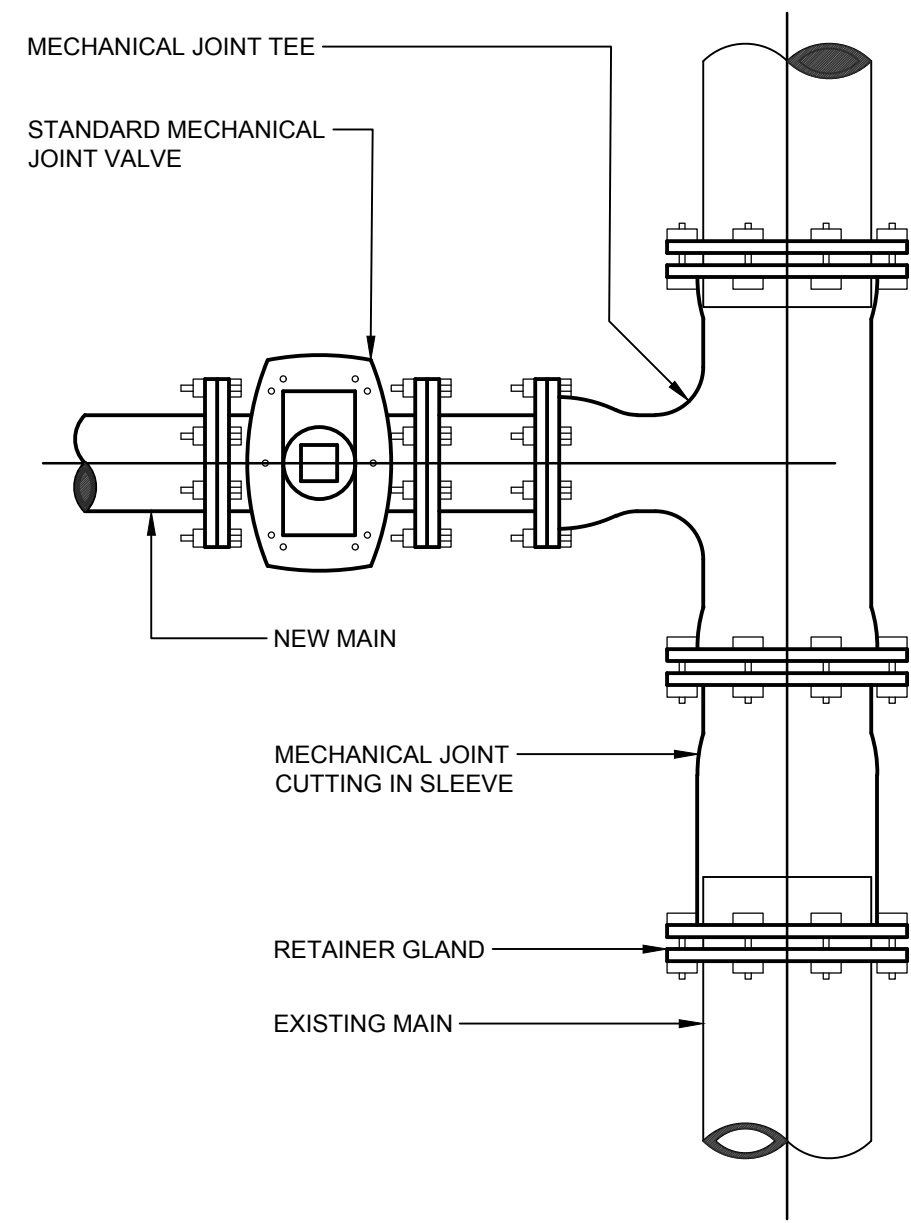
**STEEL REINFORCEMENT SCHEDULE (TOTAL)**

BAR	a	b	c	d	SIZE	LENGTH	NO. REQ'D	TOTAL WEIGHT
EA062106	21'-6"				#6	21'-6"	4	129.0
EA062203	22'-3"				#6	22'-3"	4	133.5
EK040406	6"	1'-0"	1'-0"	1'-6"	#4	4'-6"	48	144.3
							TOTAL	406.8

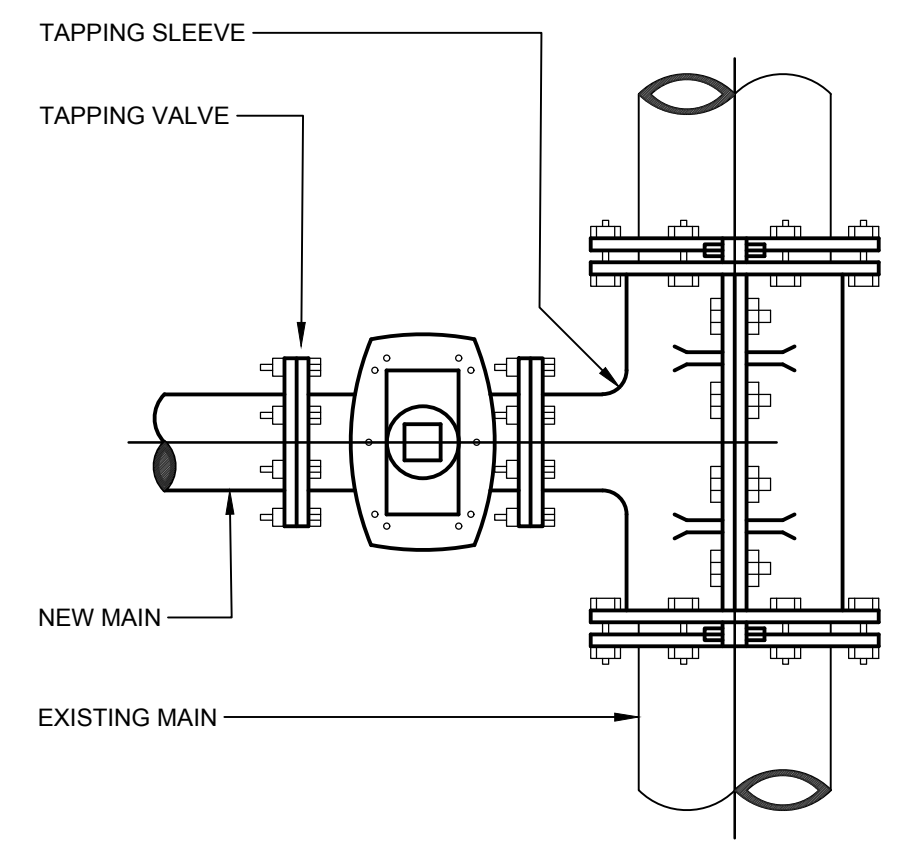


THE CONTRACTOR IS RESPONSIBLE FOR CHECKING THE ABOVE REINFORCING STEEL QUANTITIES AND LENGTHS PRIOR TO ORDERING DELIVERY OF STEEL.

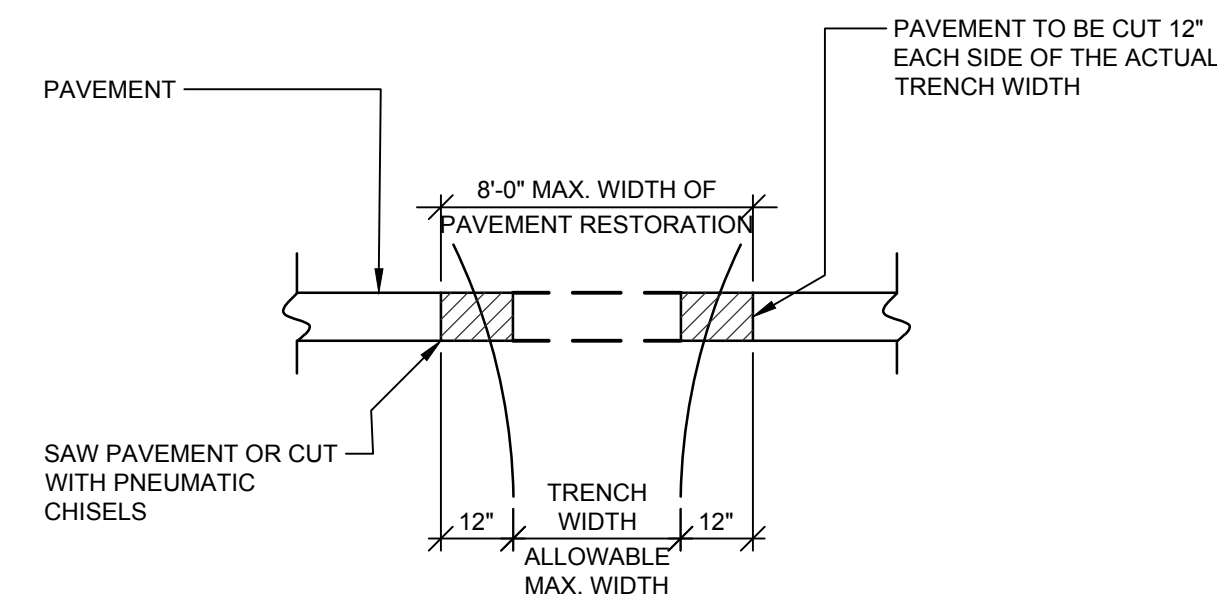




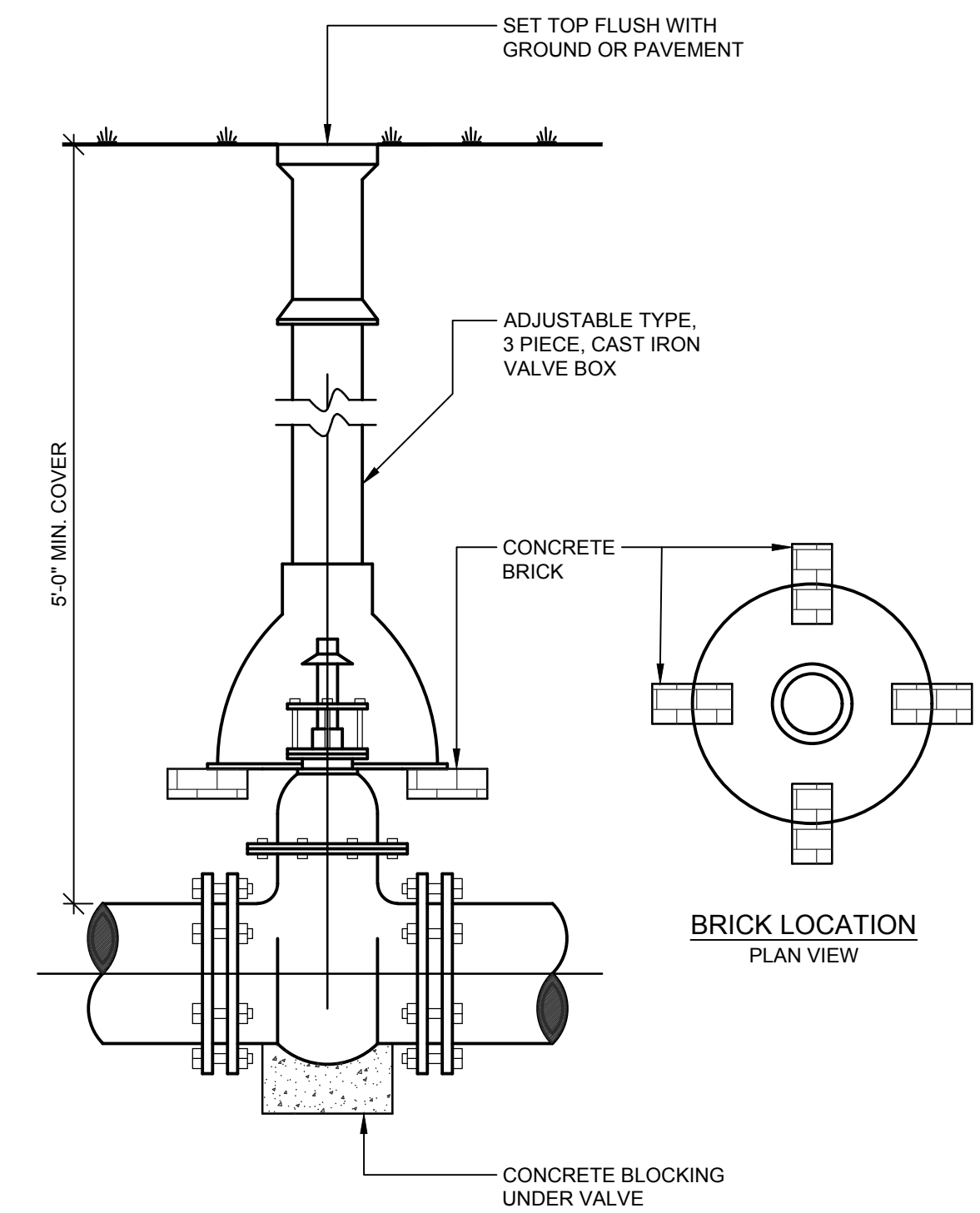
**DRY TAP METHOD**  
CONNECTING NEW MAIN TO EXISTING MAIN



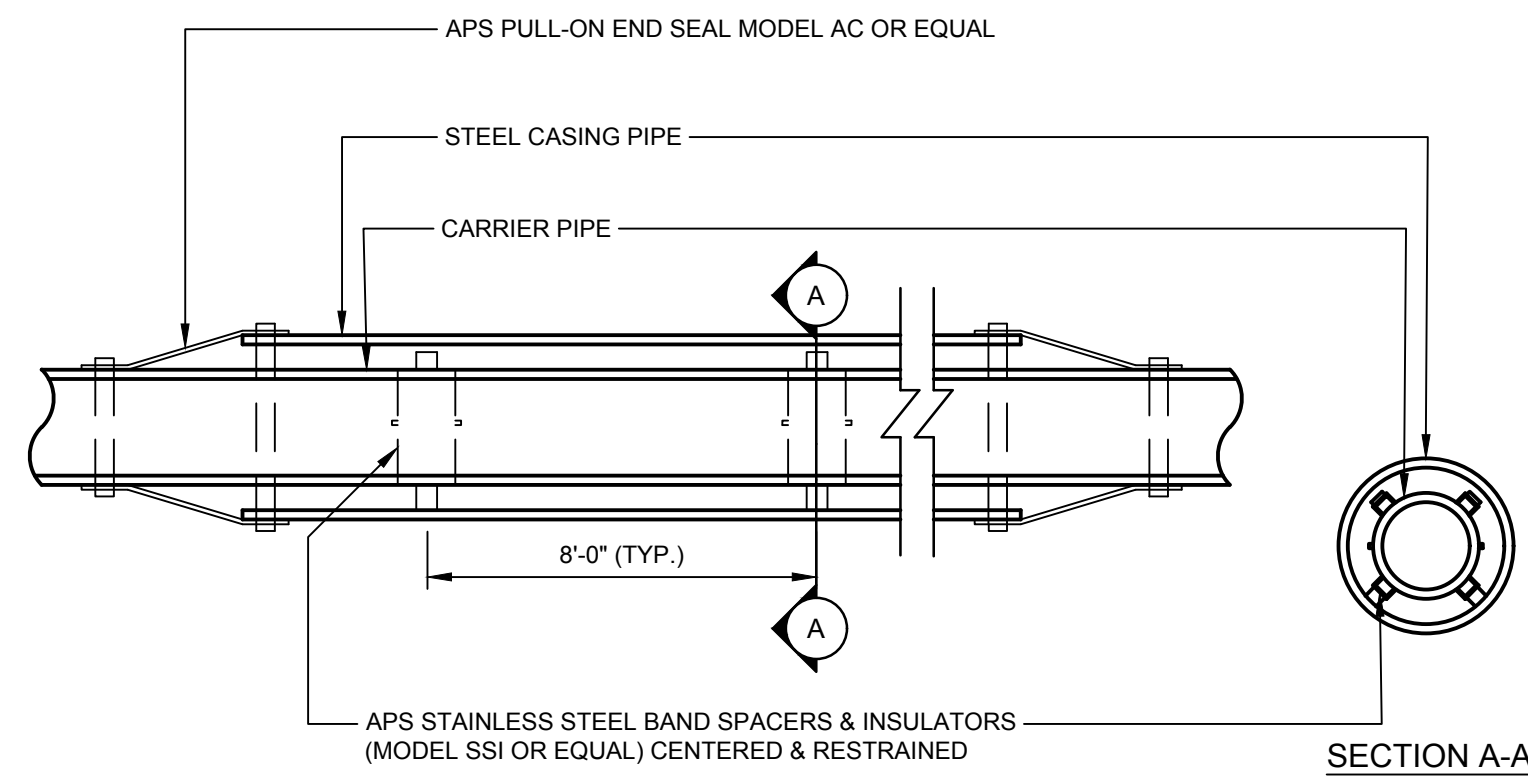
**WET TAP METHOD**  
(UNDER PRESSURE) CONNECTING NEW MAIN TO EXISTING MAIN



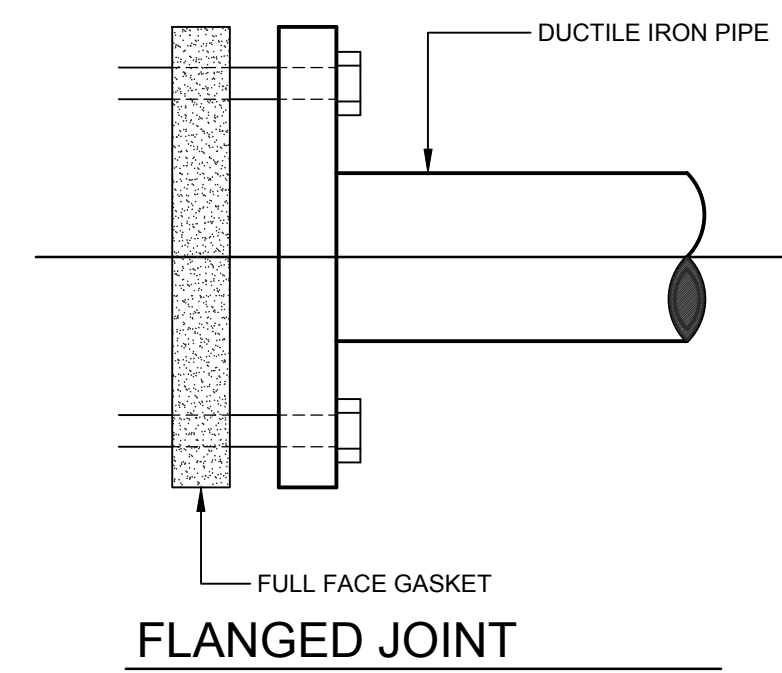
**TYPICAL DETAIL - PAVEMENT CUTTING AND RESTORATION**



**TYPICAL GATE VALVE AND VALVE BOX**



**CASING CARRIER PIPE DETAIL**  
SIZE CASING AND CARRIER PIPES PER PLAN AND SPECIFICATIONS

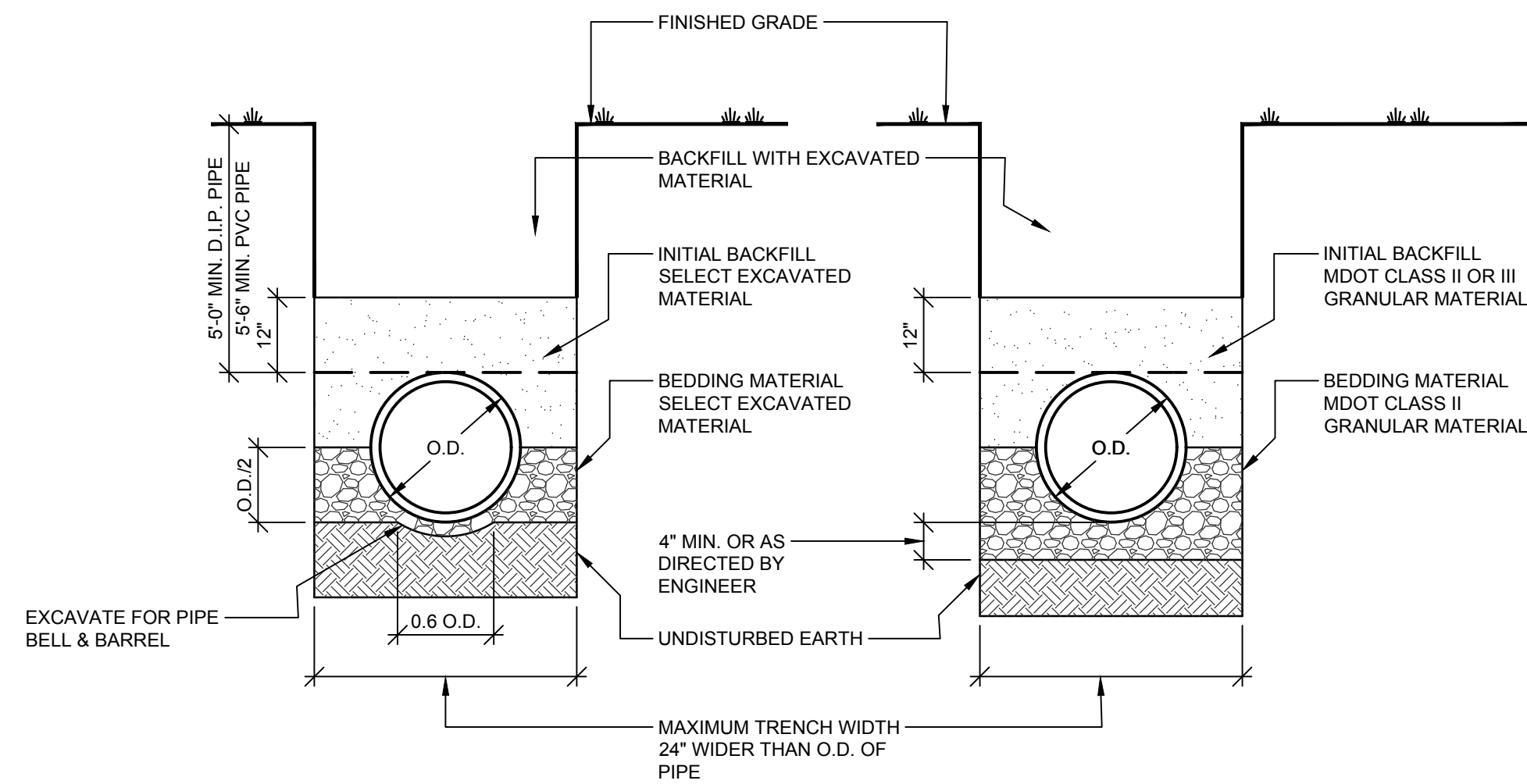


**FLANGED JOINT**

PIPE SIZE	RESTRAINED JOINTS FOR NON-POLYWRAPPED PIPE							
	DISTANCE FROM FITTING (FT)							
	90°	45°	22 1/2°	11 1/4°	TEE	REDUCER (ONE SIZE)	REDUCER (TWO SIZES)	DEAD END
4"	44	18	9	5	42	-	-	42
6"	62	26	13	7	59	31	-	59
8"	82	34	17	9	78	33	56	78
10"	100	42	20	10	94	32	58	94
12"	119	50	24	12	110	33	59	110
16"	157	65	32	16	143	61	85	143
20"	195	81	39	20	173	61	109	173
24"	233	97	47	23	204	61	111	204
30"	288	120	58	29	246	86	134	246

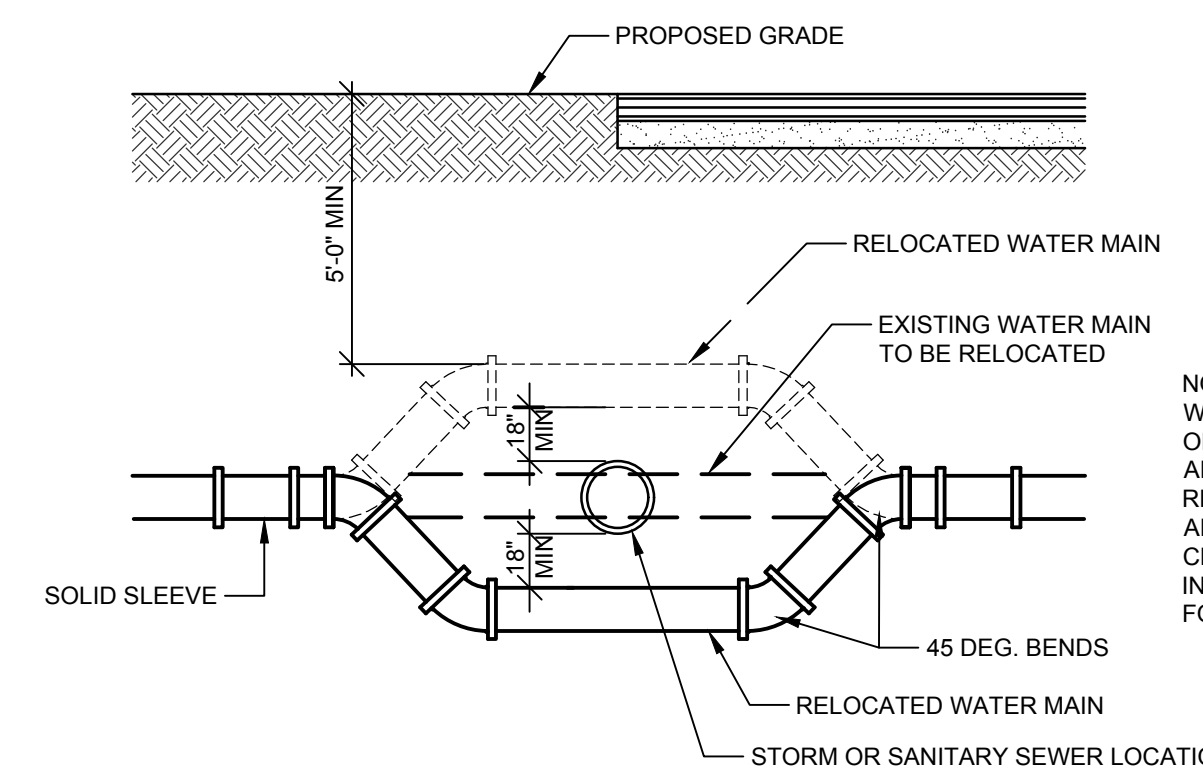
PIPE SIZE	RESTRAINED JOINTS FOR POLYWRAPPED PIPE							
	DISTANCE FROM FITTING (FT)							
	90°	45°	22 1/2°	11 1/4°	TEE	REDUCER (ONE SIZE)	REDUCER (TWO SIZES)	DEAD END
4"	62	26	13	7	60	-	-	60
6"	88	37	18	9	84	44	-	84
8"	117	49	24	12	111	47	80	111
10"	142	59	29	14	133	45	82	133
12"	170	71	34	17	158	47	84	158
16"	224	93	45	23	203	87	121	203
20"	278	116	56	28	247	87	155	247
24"	332	138	66	33	291	87	159	291
30"	411	171	82	41	351	123	191	351

NOTE:  
IF DISTANCE BETWEEN FITTINGS IS LESS THAN OR EQUAL TO THE RESTRAINT LENGTH SHOWN IN TABLE, RESTRAIN ALL JOINTS BETWEEN THOSE FITTINGS  
SEE PLANS FOR RESTRAINT LENGTHS IN SITUATIONS THAT ARE NOT COVERED BY THE ABOVE TABLES



**TRENCH DETAIL IN SUITABLE SOIL**

**TRENCH DETAIL IN UNSUITABLE SOIL**



**INSUFFICIENT CLEARANCE WATER MAIN CROSSING SEWER**

FOR USE WHENEVER THE PROPOSED WATER MAIN ENCOUNTERS A CROSSING STORM OR SEWER PIPE WITHOUT SUFFICIENT VERTICAL CLEARANCE (18 INCHES) TO CROSS AT THE PROPOSED LINE AND GRADE.

**W+**  
**WIGHTMAN**  
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269.673.8465  
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**REVISIONS**  
DATE: DECEMBER, 2021  
SCALE: NONE

WATER MAIN DETAILS

JOB No. 214053  
**C011**

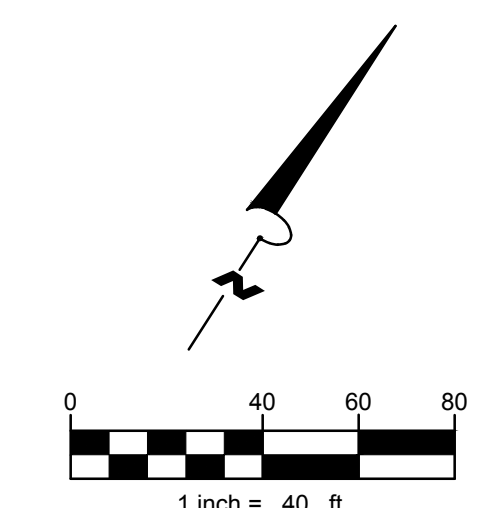
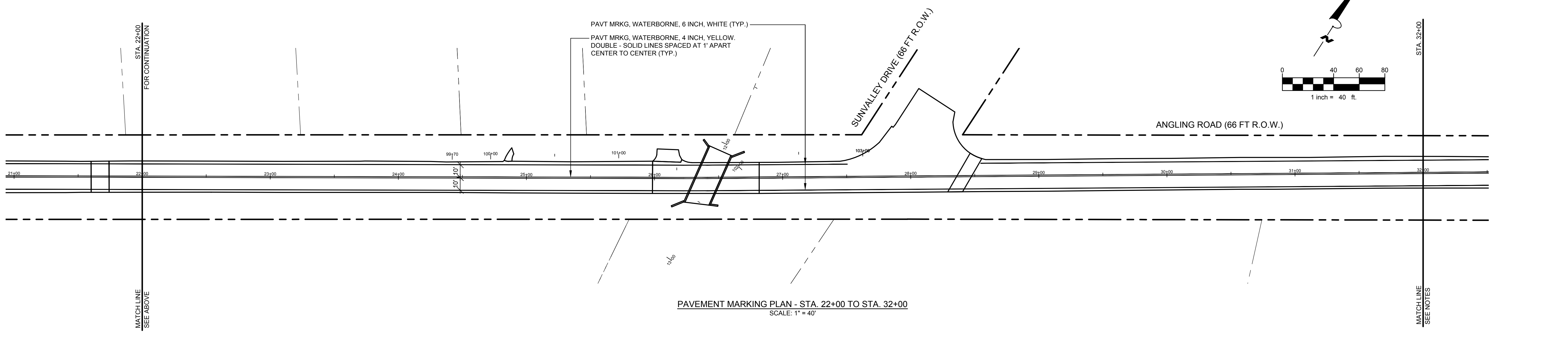
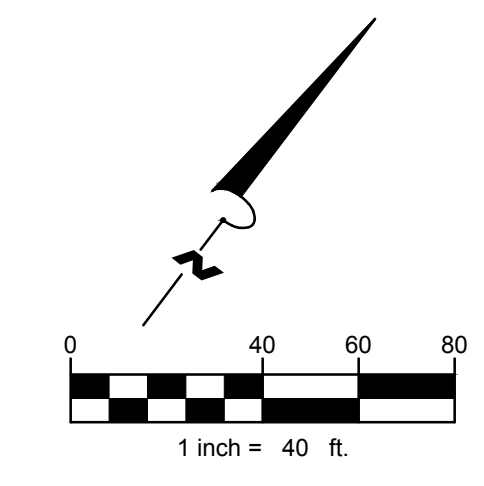
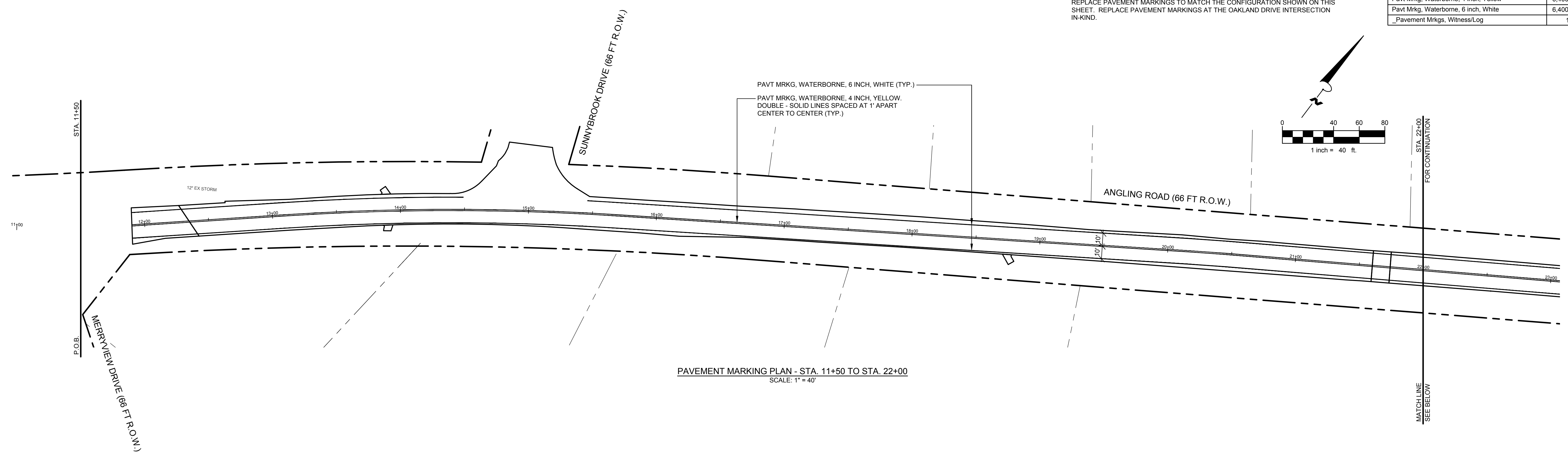


QUANTITIES THIS SHEET

ITEM	QTY.
Pav't Mrkg, Ovly Cold Plastic, 24 inch, Stop Bar	30 Ft
Pav't Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym	1 Ea
Pav't Mrkg, Ovly Cold Plastic, Only	2 Ea
Pav't Mrkg, Ovly Cold Plastic, Rt Turn Arrow Sym	1 Ea
Pav't Mrkg, Waterborne, 4 inch, White	80 Ft
Pav't Mrkg, Waterborne, 4 inch, Yellow	6,400 Ft
Pav't Mrkg, Waterborne, 6 inch, White	6,400 Ft
Pav't Mrkg, Witness/Log	1 Ea

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**NOTE:**  
THE QUANTITIES SHOWN ABOVE INCLUDE ALL PAVEMENT MARKINGS FROM THE P.O.B. TO THE P.O.E. AT THE OAKLAND DRIVE INTERSECTION.  
PAVEMENT MARKINGS EAST OF STA. 32+00 SHALL BE LOGGED BY THE CONTRACTOR PRIOR TO MILLING AND RESURFACING PAID FOR AS PAVEMENT MRKGS, WITNESS/LOG. REPLACE PAVEMENT MARKINGS TO MATCH THE CONFIGURATION SHOWN ON THIS SHEET. REPLACE PAVEMENT MARKINGS AT THE OAKLAND DRIVE INTERSECTION IN-KIND.



PHILIP A. DOORLAG  
ENGINEER NO. 67363  
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DATE: DECEMBER, 2021  
SCALE: 1" = 40'

PAVEMENT MARKINGS