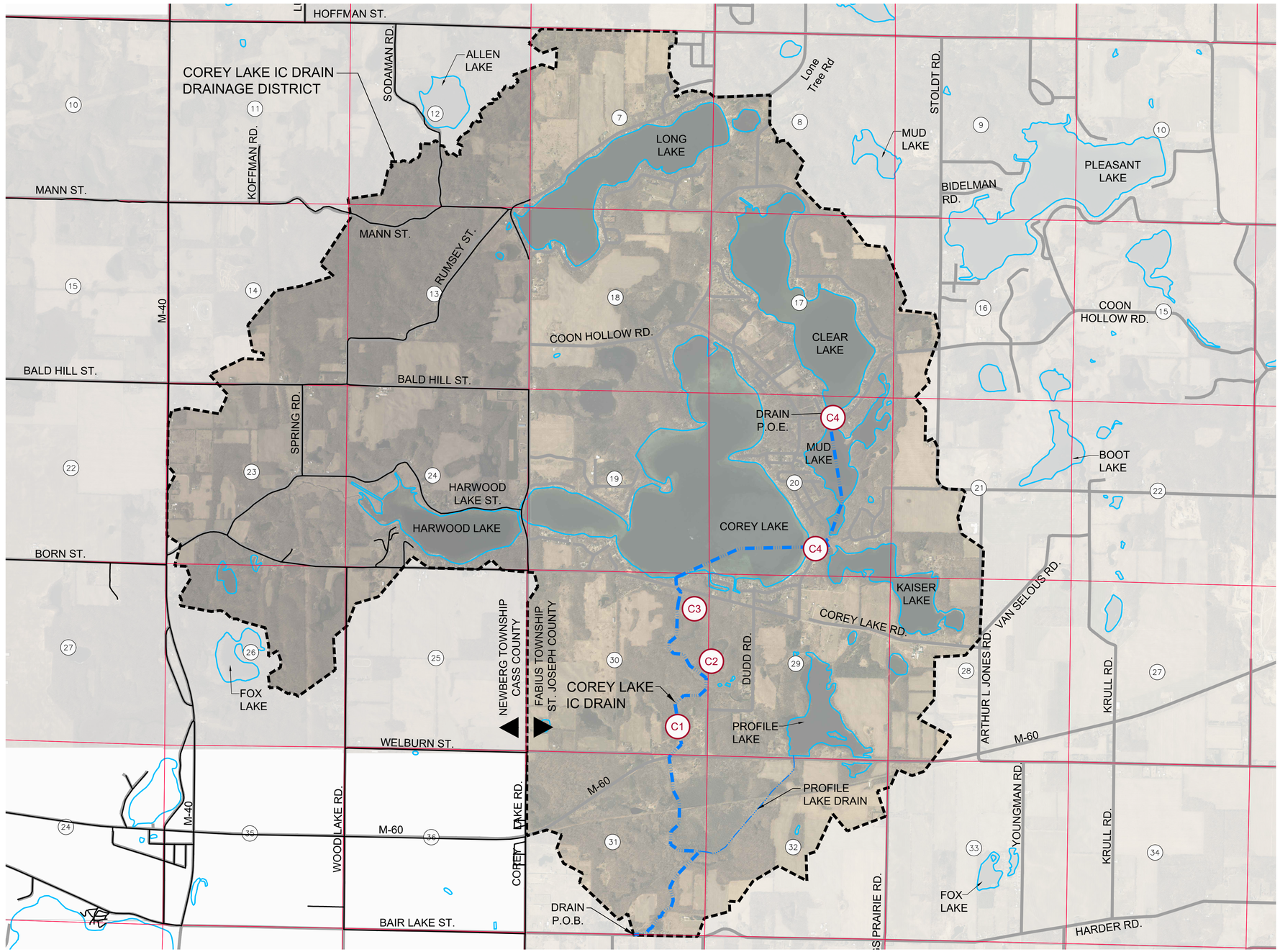
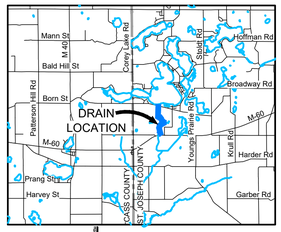
COREY LAKE INTERCOUNTY DRAIN

SECTIONS 11-14 & 23-26
T6S R13W
NEWBERG TOWNSHIP, CASS COUNTY

SECTIONS 7-8, 16-21 & 28-33
T6S R12W
FABIUS TOWNSHIP, ST. JOSEPH COUNTY





VICINITY MAP
NOT TO SCALE

INDEX OF SHEETS

DISTRICT INFORMATION:

DRAIN DISTRICT AREA:

CASS COUNTY:	2,590.9 ACRES (30%)
ST. JOSEPH COUNTY:	5,973.0 ACRES (70%)
TOTALS	8,563.9 ACRES

LEGEND

- ENCLOSED CHANNEL DRAIN
- OPEN CHANNEL DRAIN
- DRAINAGE DISTRICT BOUNDARY
- SECTION LINE
- TOWNSHIP LINE
- COUNTY LINE
- ROADS
- PROPERTY LINES
- (#) SECTION NUMBERS
- (C1) SHEET NUMBERS

MISCELLANEOUS QUANTITIES:

MOBILIZATION (10% MAX.)	1 LS
SESC MEASURES	1 LS
UTILITY COORDINATION	1 LS
SITE RESTORATION	1 LS

NORTH

0 1500 3000
Horizontal Scale in Feet

3 WORKING DAYS
BEFORE YOU DIG CALL MISS DIG
1-800-482-7171

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LRE ENGINEERS & SURVEYORS
2121 3 Mile Rd. NW
Walker, MI 49544
Ph: 616.301.7888
www.LREmi.com

REVISIONS:		
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2.	BIDS & CONSTRUCTION	04/23/2025
3.	FOR CONSTRUCTION	08/19/2025
4.	BULLETIN NO. 1	09/26/2025

CLIENT: COREY LAKE INTERCOUNTY DRAIN DRAINAGE BOARD
MDARD 525 W. ALLEGAN STREET, LANSING, MICHIGAN 48933

PROJECT: COREY LAKE INTERCOUNTY DRAIN
CASS AND ST. JOSEPH COUNTIES, MICHIGAN

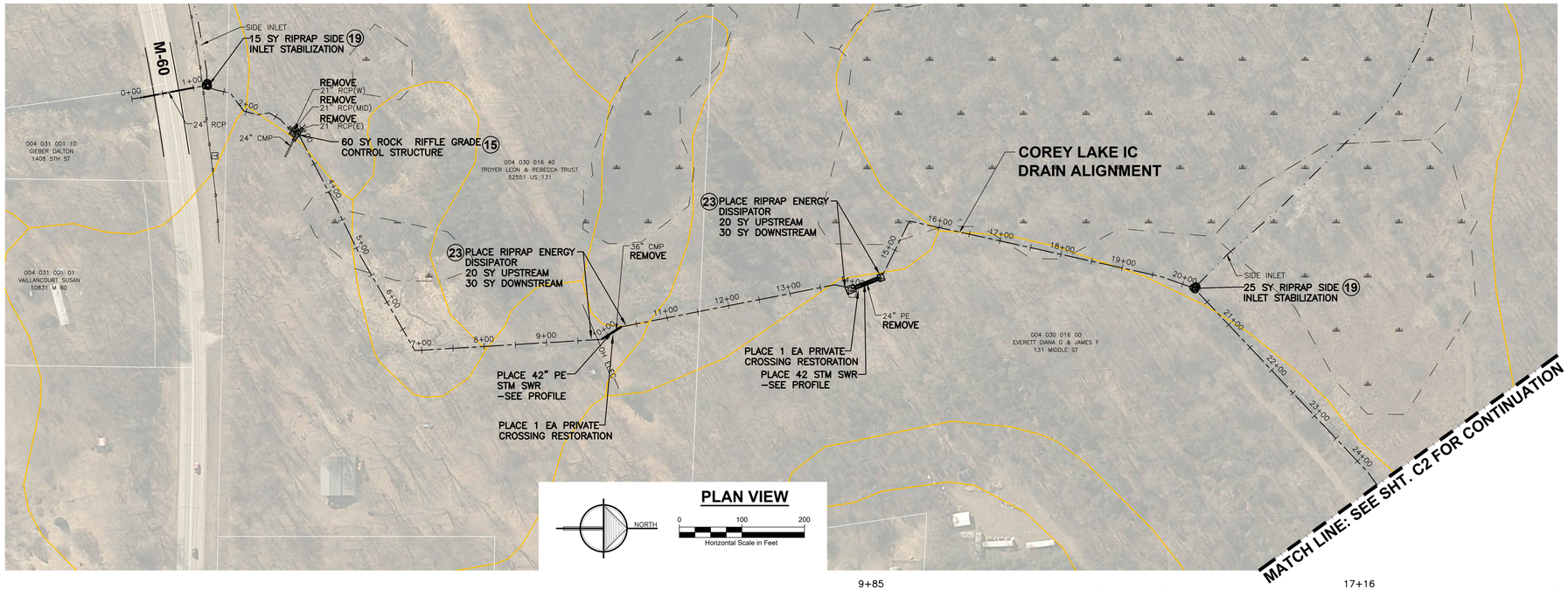
PROJECT NUMBER: 19-078	
SURVEYED BY: CP/-ADK	
DESIGNED BY: AWS	
DRAFTED BY: RAG	
QA/QC: DJF	

DATE
11/2019
06/2022
11/2019
03/2025

SHEET NAME: COVER SHEET

SHEET NUMBER: CS

Dec 16, 2025 - 3:56pm H:\Projects\19-078 Corey Lake IC\Cad\19-078 - Cover Sheet.dwg, 8501x



PLAN VIEW

NORTH

0 100 200
Horizontal Scale in Feet

NOTES:

1. CONTRACTOR TO FIELD VERIFY HORIZONTAL & VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND MUST NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. PROPOSED EARTH CHANGE SHALL BE LIMITED TO EASEMENT AREA
3. CONTRACTOR SHALL USE CRANE MATS WHILE WORKING IN WETLANDS IDENTIFIED IN THE USFWS NWI TO REDUCE DISTURBANCE.
4. MULCH BLANKET BANKS AS DIRECTED BY ENGINEER.
5. IF DRAIN IS ACCESSED ACROSS PROPERTY OUTSIDE OF DRAIN EASEMENT, A LANDOWNER'S AGREEMENT FORM MUST BE EXECUTED.
6. QUANTITIES WILL NOT BE PAID ABOVE CONTRACT AMOUNT UNLESS APPROVED BY ENGINEER.
7. CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE AND FEDERAL LAWS INCLUDING CONDITIONS OF EGLE PERMIT #: WRP040908V1.0
8. REMOVE, SALVAGE AND REPAIR FENCES, STRUCTURES AND OTHER ITEMS THAT INTERFERE WITH CONSTRUCTION, PAID FOR AS 1 LS SITE RESTORATION.
9. CONTRACTOR TO DISPOSE OF REMOVED CULVERTS.
10. DRAINAGE EASEMENT: 66', 33' EACH SIDE OF DRAIN CENTERLINE UNLESS SHOWN OTHERWISE.

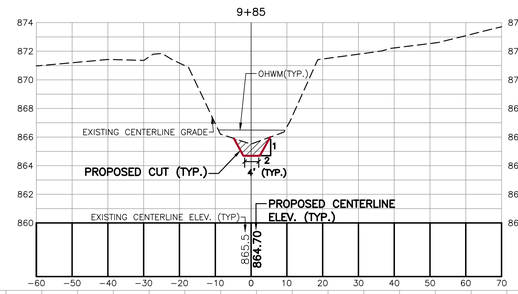
LEGEND

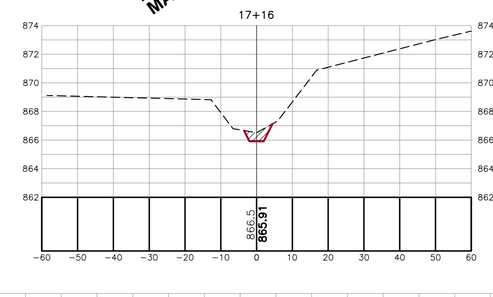
WETLAND (USFWS NATIONAL WETLAND INVENTORY)

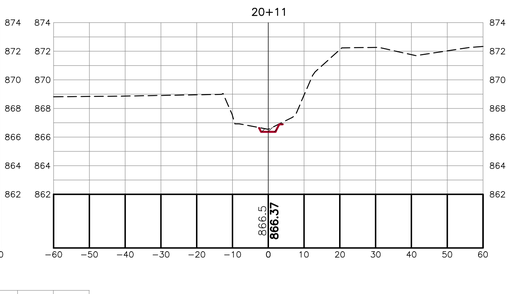
WoA — SOIL TYPE (USDA NRCS WEBSOIL SURVEY)

CROSS SECTIONS

SCALE: HORIZONTAL: 1" = 20'
VERTICAL: 1" = 5'

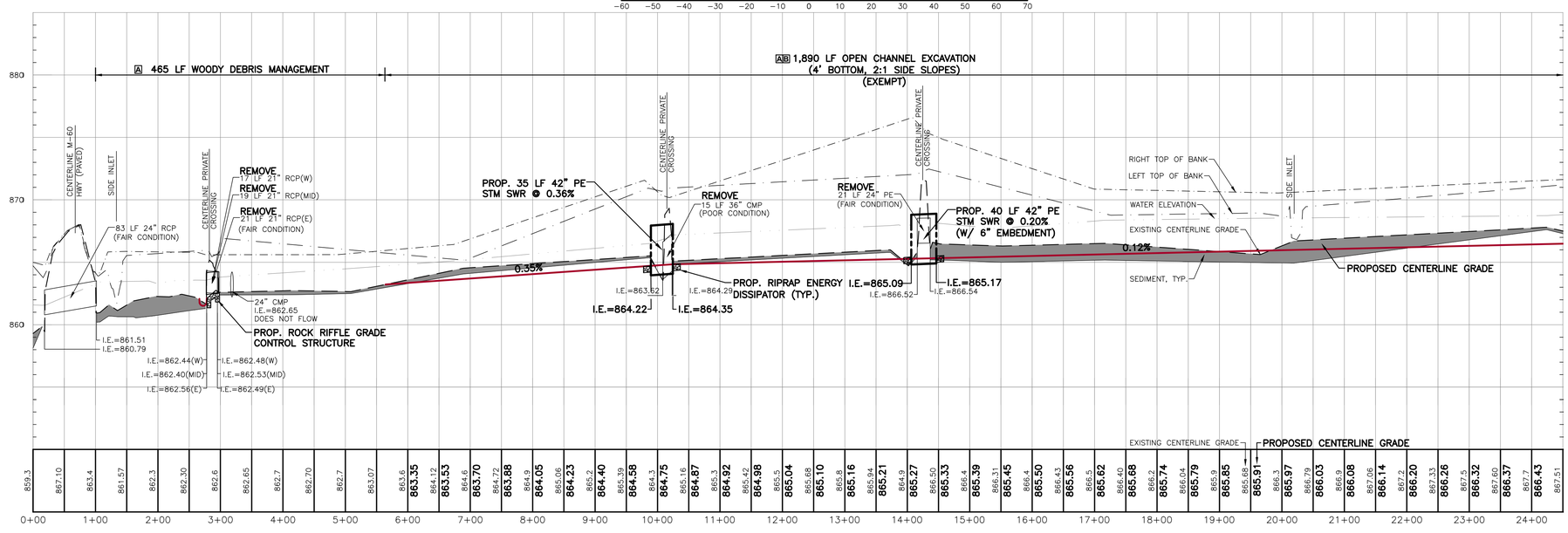






MISCELLANEOUS QUANTITIES:

	M-60 CULVERT CLEANOUT	1 LS
(1)	OPEN CHANNEL SEEDING	1,890 LF
(2)	MULCH BLANKET	750 SY



CENTERLINE PROFILE

SCALE: HORIZONTAL: 1" = 100'
VERTICAL: 1" = 5'

LEGEND

- BENCHMARK
- WELL
- MONUMENT
- FOUND IRON STAKE
- SET IRON STAKE
- SET WOOD STAKE
- SIGN
- RR SIGN
- GUY POLE
- GUY ANCHOR
- UTILITY POLE
- LIGHT POLE
- POST
- SB# SOIL BORING
- MB MAILBOX
- AC AC UNIT
- FP FLAGPOLE
- FIRE HYDRANT
- WATER VALVE
- TR ELECTRIC TRANSFORMER
- G GAS METER
- W WATER METER
- T TELEPHONE RISER
- E ELECTRIC METER
- CATCH BASIN
- ROUND CATCH BASIN
- U UTILITY MANHOLE
- STORM MANHOLE
- FLARED END SECTION
- SANITARY MANHOLE
- E ELECTRIC MANHOLE
- T TELEPHONE MANHOLE
- DECIDUOUS TREE
- CONIFEROUS TREE
- W W — WATER UTILITY LINE
- T T — TELEPHONE UTILITY LINE
- E E — ELECTRIC UTILITY LINE
- G G — GAS UTILITY LINE
- STEAM UTILITY LINE
- STORM UTILITY LINE
- S S — SANITARY UTILITY LINE
- FO FO — FIBER OPTIC UTILITY LINE
- OH OH — OVERHEAD UTILITY LINE
- LAKE LINE
- EXISTING CONTOUR

3 WORKING DAYS
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NOTE:
ELEVATIONS ARE BASED ON NGVD 29

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LRE
ENGINEERS & SURVEYORS

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CLIENT: COREY LAKE INTERCOUNTY DRAIN DRAINAGE BOARD
MDARD 525 W. ALLEGAN STREET, LANSING, MICHIGAN 48933

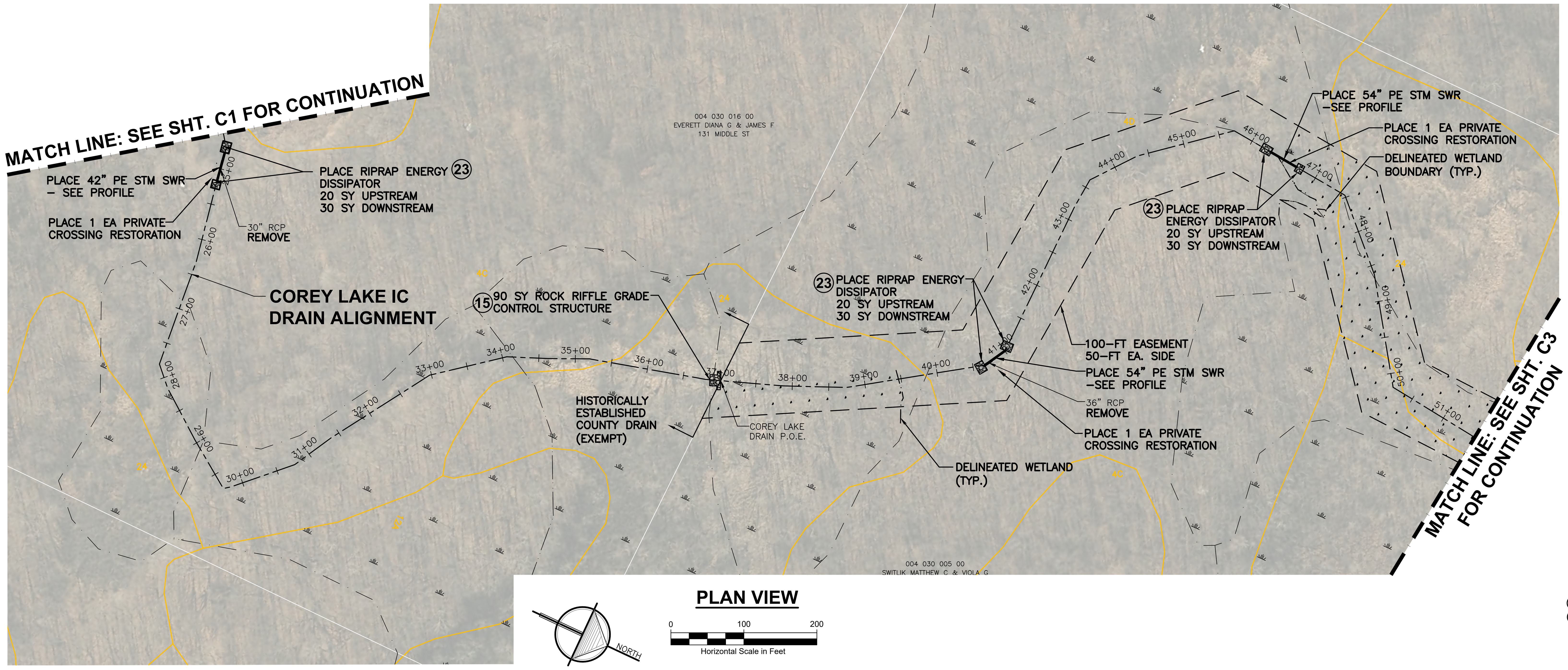
PROJECT: COREY LAKE INTERCOUNTY DRAIN
CASS AND ST. JOSEPH COUNTIES, MICHIGAN

	DATE
SURVEYED BY: CPI-ADK	11/2019
DESIGNED BY: AWS	06/2022
DRAFTED BY: RAG	11/2019
QA/QC: DJF	03/2025

PROJECT NUMBER: 19-078

SHEET NAME: PLAN & PROFILE STA: 0+00 - 24+50

SHEET NUMBER: C1



PLAN VIEW

0 100 200
Horizontal Scale in Feet

NOTES:

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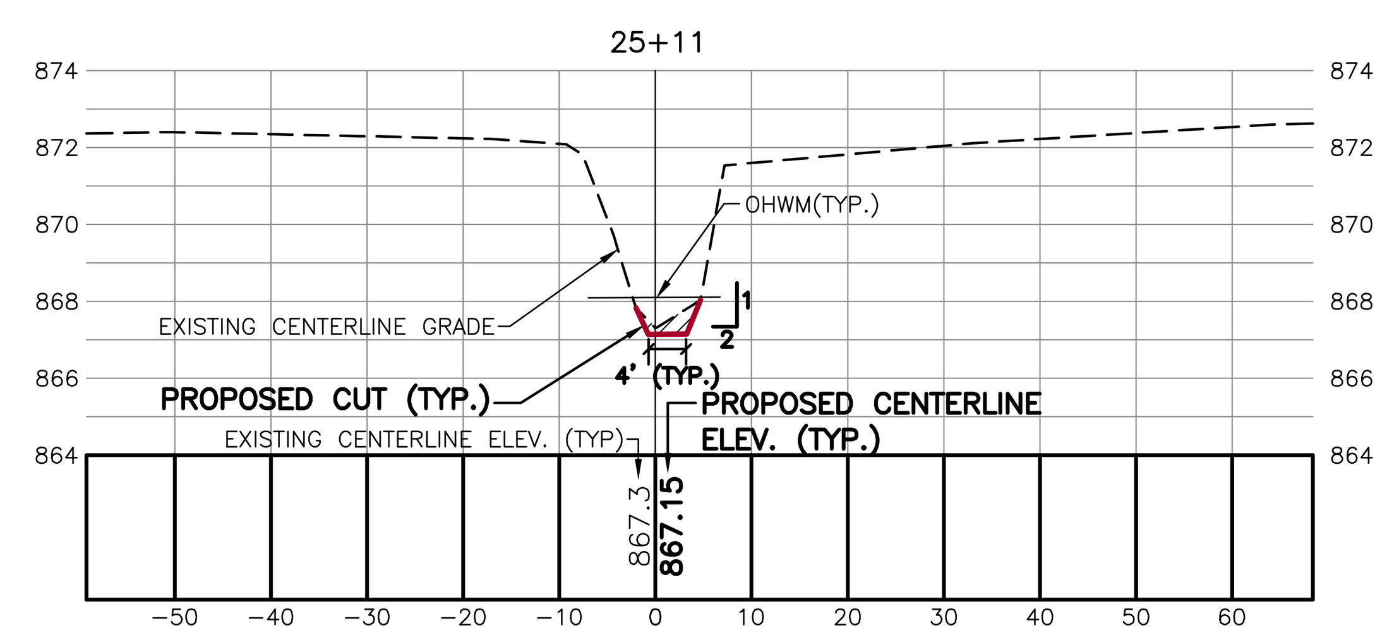
LEGEND

WETLAND (USFWS NATIONAL WETLAND INVENTORY)

SOIL TYPE (USDA NRCS WEBSOIL SURVEY)

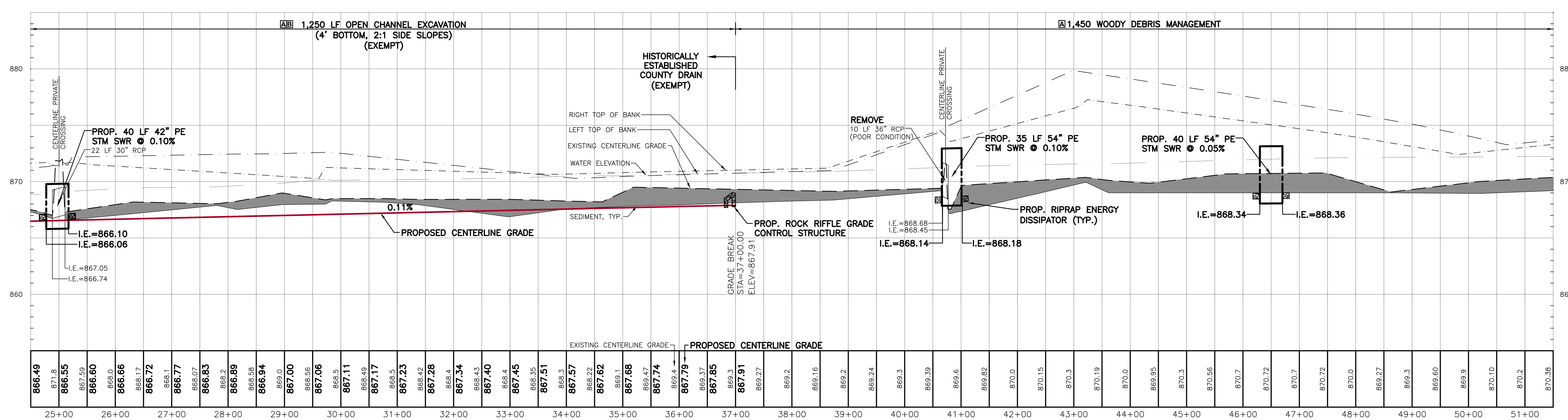
MISCELLANEOUS QUANTITIES:

(1)	OPEN CHANNEL SEEDING	1,250 LF
(2)	MULCH BLANKET	500 SY



CROSS SECTIONS

SCALE: HORIZONTAL: 1" = 20'
VERTICAL: 1" = 5'



CENTERLINE PROFILE

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LRE ENGINEERS & SURVEYORS

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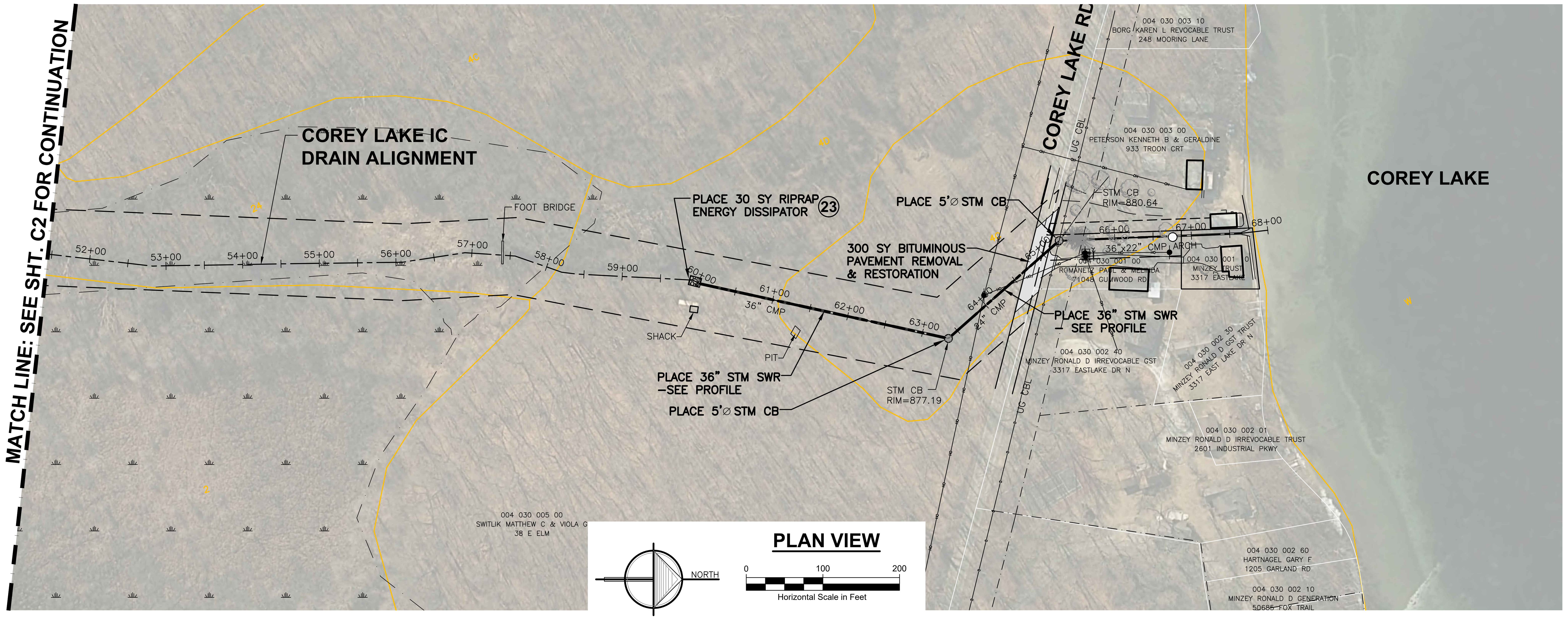
PROJECT: COREY LAKE INTERCOUNTY DRAIN
CASS AND ST. JOSEPH COUNTIES, MICHIGAN

PROJECT NUMBER: 19-078	DATE
SURVEYED BY: CFV-ADK	11/2019
DESIGNED BY: AWS	06/2022
DRAFTED BY: RAG	11/2019
QA/QC: DJF	03/2025

SHEET NAME: PLAN & PROFILE STA: 24+50 - 51+50

SHEET NUMBER: C2



NOTES:

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2. CONTRACTOR SHALL SUBMIT DE-WATERING PLAN FOR APPROVAL PRIOR TO CONSTRUCTION.
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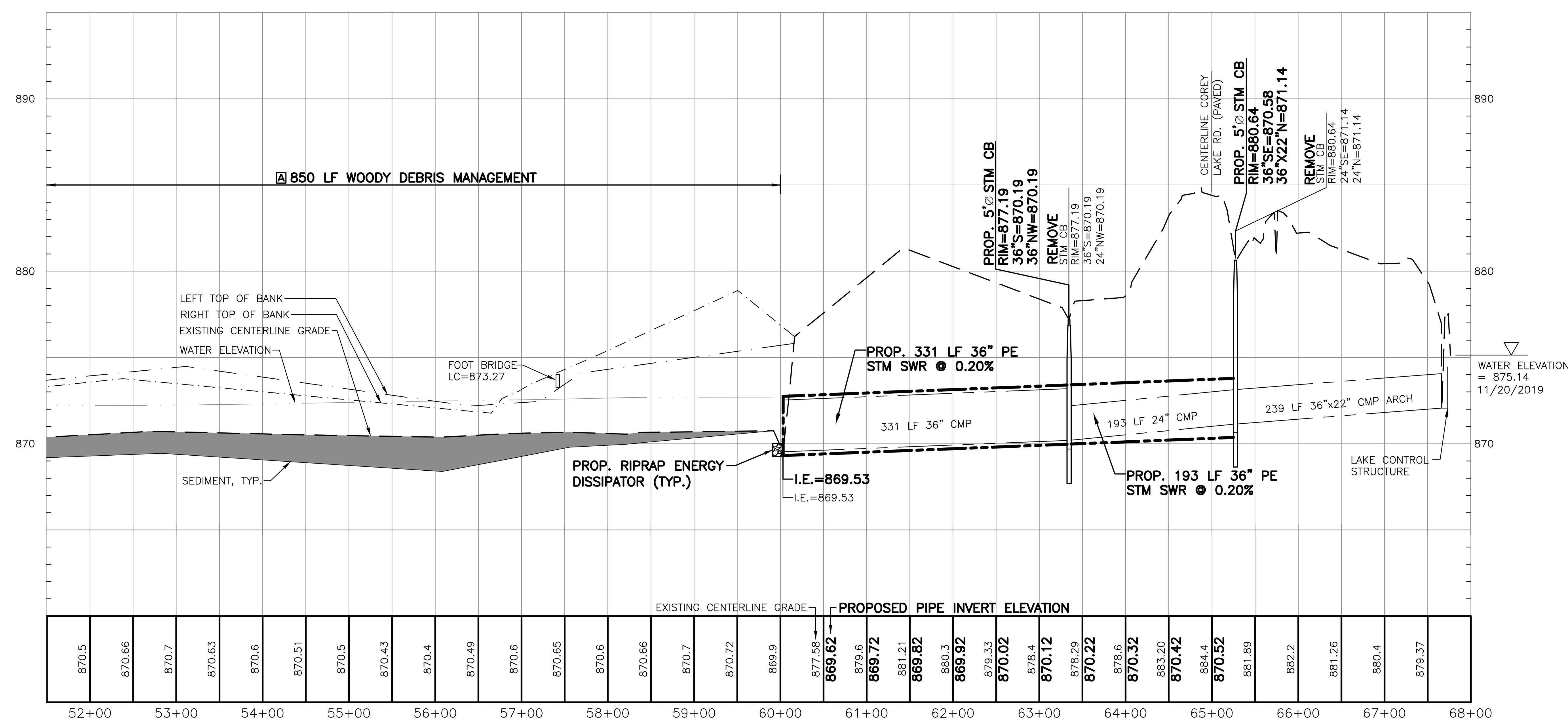
11. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS WITHIN PROJECT LOCATION.
12. REMOVE, SALVAGE AND REPAIR FENCES, STRUCTURES AND OTHER ITEMS THAT INTERFERE WITH CONSTRUCTION, PAID FOR AS 1 LS SITE RESTORATION.

LEGEND

- WETLAND (USFWS NATIONAL WETLAND INVENTORY)
- BITUMINOUS PAVEMENT REMOVAL
- SOIL TYPE (USDA NRCS WEBSOIL SURVEY)

MISCELLANEOUS QUANTITIES

COREY LAKE OUTLET DEWATERING	1 LS
(1) SURFACE RESTORATION	524 LF



CENTERLINE PROFILE

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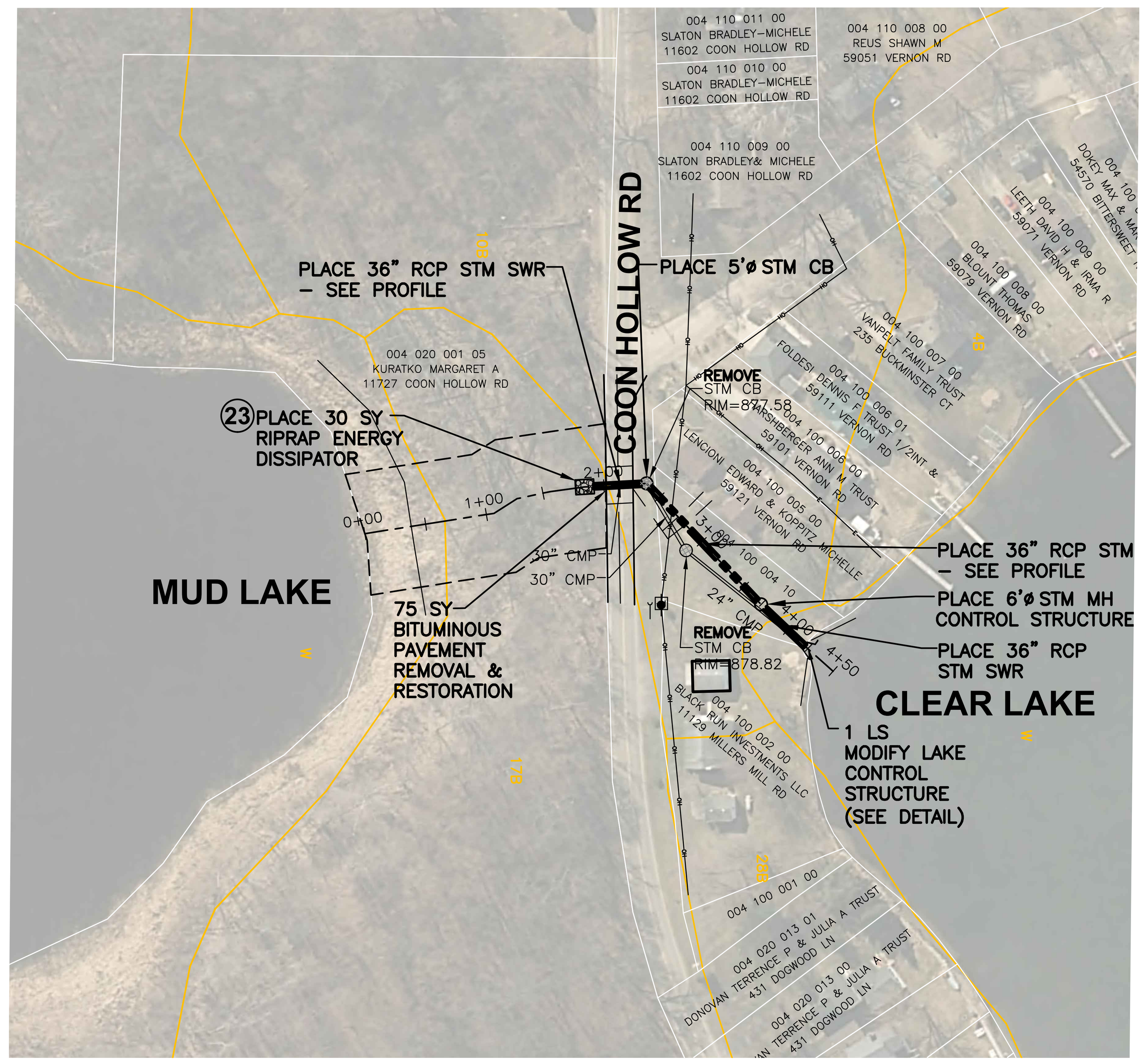
QAQC: DJF	03/2025

SHEET NAME: PLAN & PROFILE
STA: 51+50 - 68+000

SHEET NUMBER
C3

MUD LAKE - CLEAR LAKE



PLAN VIEW

NORTH

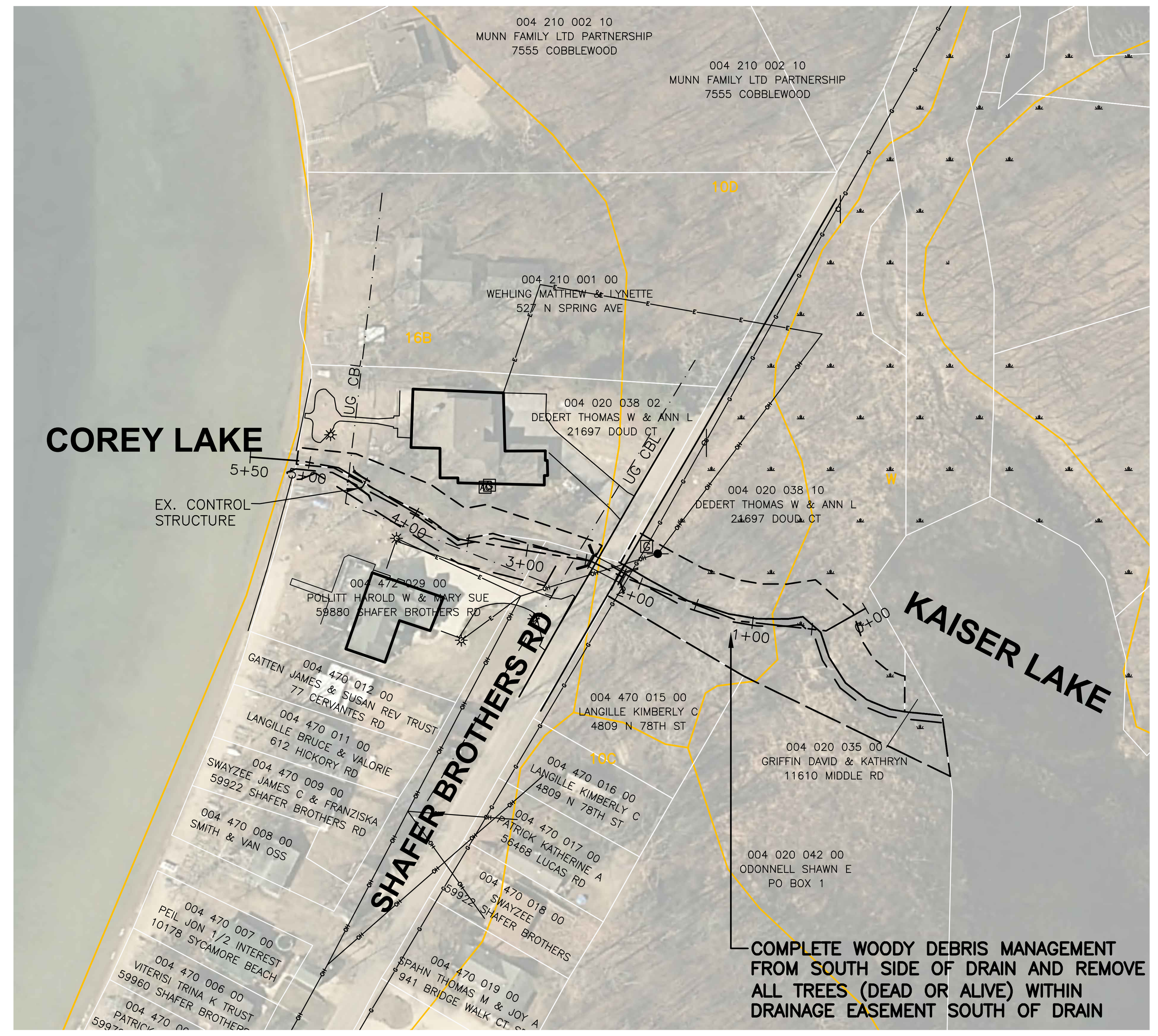
Horizontal Scale in Feet (0, 100, 200)

LEGEND

WETLAND (USFWS NATIONAL WETLAND INVENTORY)

SOIL TYPE (USDA NRCS WEBSOIL SURVEY)

COREY LAKE - KAISER LAKE



PLAN VIEW

NORTH

Horizontal Scale in Feet (0, 100, 200)

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10. CONTRACTOR TO DISPOSE OF CULVERTS AND STORM SEWER.
11. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS WITHIN PROJECT LOCATION.
12. REMOVE, SALVAGE AND REPAIR FENCES, STRUCTURES AND OTHER ITEMS THAT INTERFERE WITH CONSTRUCTION, PAID FOR AS 1 LS SITE RESTORATION.

MISCELLANEOUS QUANTITIES:

1	SURFACE RESTORATION	227 LF
1	OPEN CHANNEL SEEDING	363 LF
	CLEAR LAKE OUTLET DEWATERING	1 LS

TIMING AND SEQUENCE OF CONSTRUCTION & SESC MEASURES

ACTIVITY BY MONTH/WEEKS

		FALL 2025			WINTER 2026			SPRING 2026			SUMMER 2026			FALL 2026		
	CONSTRUCTION ACTIVITY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	MOBILIZE CONSTRUCTION EQUIPMENT	■														
2	PLACE TEMPORARY SESC MEASURES		■													
3	CONDUCT CLEARING, GRUBBING, & SNAGGING		■	■	■	■	■									
4	CONDUCT OPEN CHANNEL EXCAVATION							■	■	■						
5	INSTALL CULVERTS								■	■						
6	INSTALL PERMANENT IN-STREAM SESC MEASURES								■	■						
7	INSTALL STORM SEWER FROM LAKE OUTLETS										■	■				
8	INSTALL PERMANENT UPLAND SESC MEASURES											■				
9	CONDUCT FINAL RESTORATION MEASURES												■	■		
10	REMOVE TEMPORARY SESC MEASURES													■		

*NOTE:
TEMPORARY CONTROL MEASURES TO BE REMOVED ONCE VEGETATION IS ESTABLISHED AND SITE IS STABILIZED.

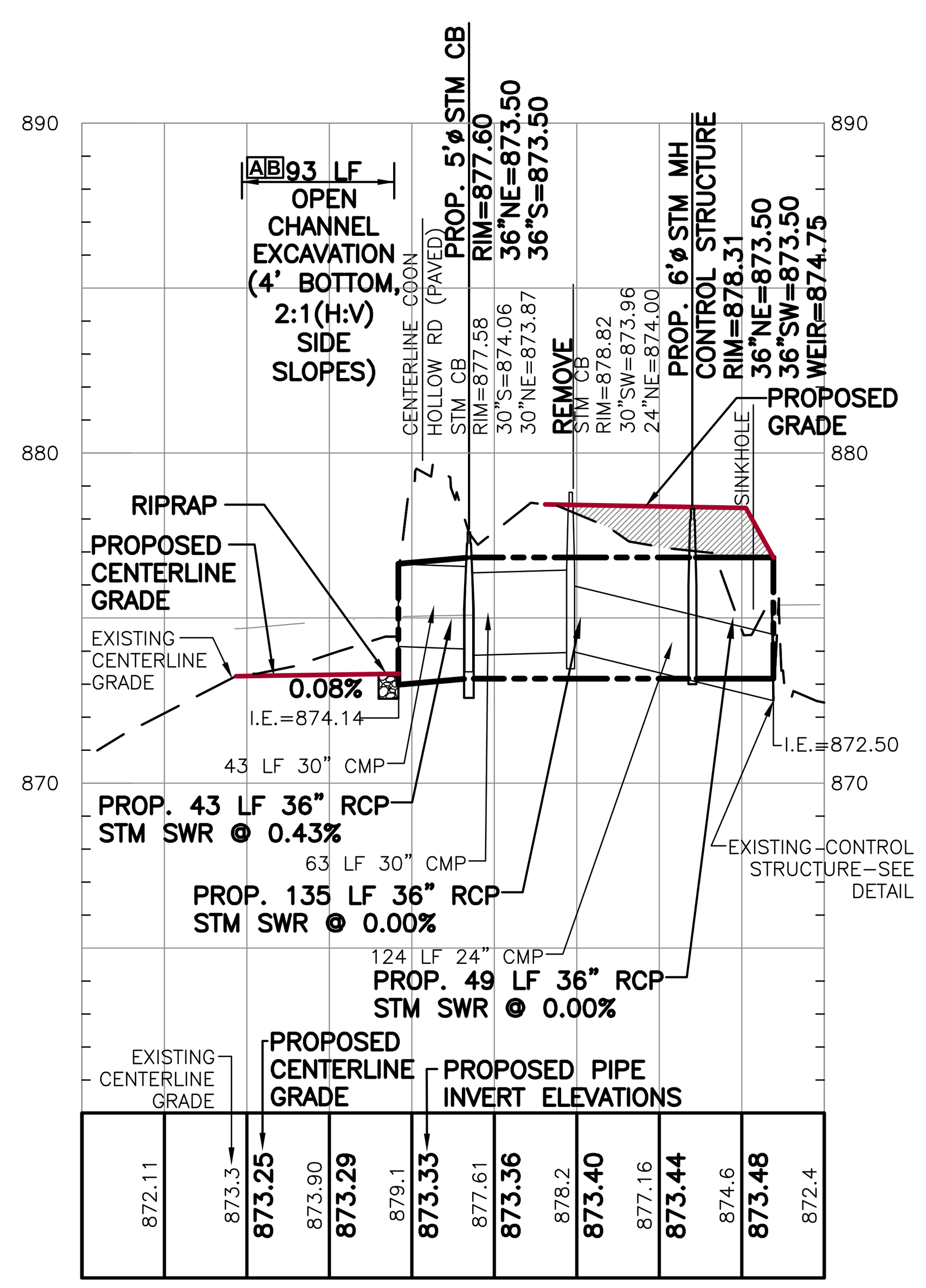
MACDC UNIFIED KEYING SYSTEM EROSION CONTROL MEASURES (SESC)

KEY	SESC MEASURE	SYMBOL	WHERE USED
1	Seeding		When bare soil is exposed, temporarily or permanently, to erosive forces from wind and or water on flat areas, mild slopes, grassed waterways and spillways, diversion ditches and dikes, burrow and stockpile areas, and spoil piles.
2	Mulch		On flat areas, slopes, grassed waterways and spillways, diversion ditches & dikes, borrow & stockpile areas, & spoil piles when areas are subject to raindrop impact, & erosive forces from wind or water.
9	Vegetation Removal without Grubbing	Grubbing Omitted	Retains existing root mat which assists in stabilizing slopes. Assissts in the revegetation process by providing sprout growth. Reduces sheet flow velocities preventing rilling and gullying, Discourages off-road vehicle use.
13	Slope Stablization		Slope stabilizing measures provde an immediate and effective cover over raw erodible slopes affording excellent protection against rain and wind erosion.
15	Riprap		Along drain banks, shorelines, or where concentrated flows occur. slows velocity, reduces erosion and sedimentation.
16	Riprap Toe of Slope		Riprap toe of slope protection is used in areas where velocities are causing drain bank erosion and are too high to stabilize using other methods.
19	Armored Spillway		When concentrated flow must be conveyed down a drain bank or slope of discharge into anther drain. Where slope failure or channel scour is observed or is likely to occur, or when runoff must be redirected around work in the drain.
23	Outfall Stabilization		In the stream or drain bank usually above the ordinary high water mark where an enclosed drain or tile discharges to an open drain.

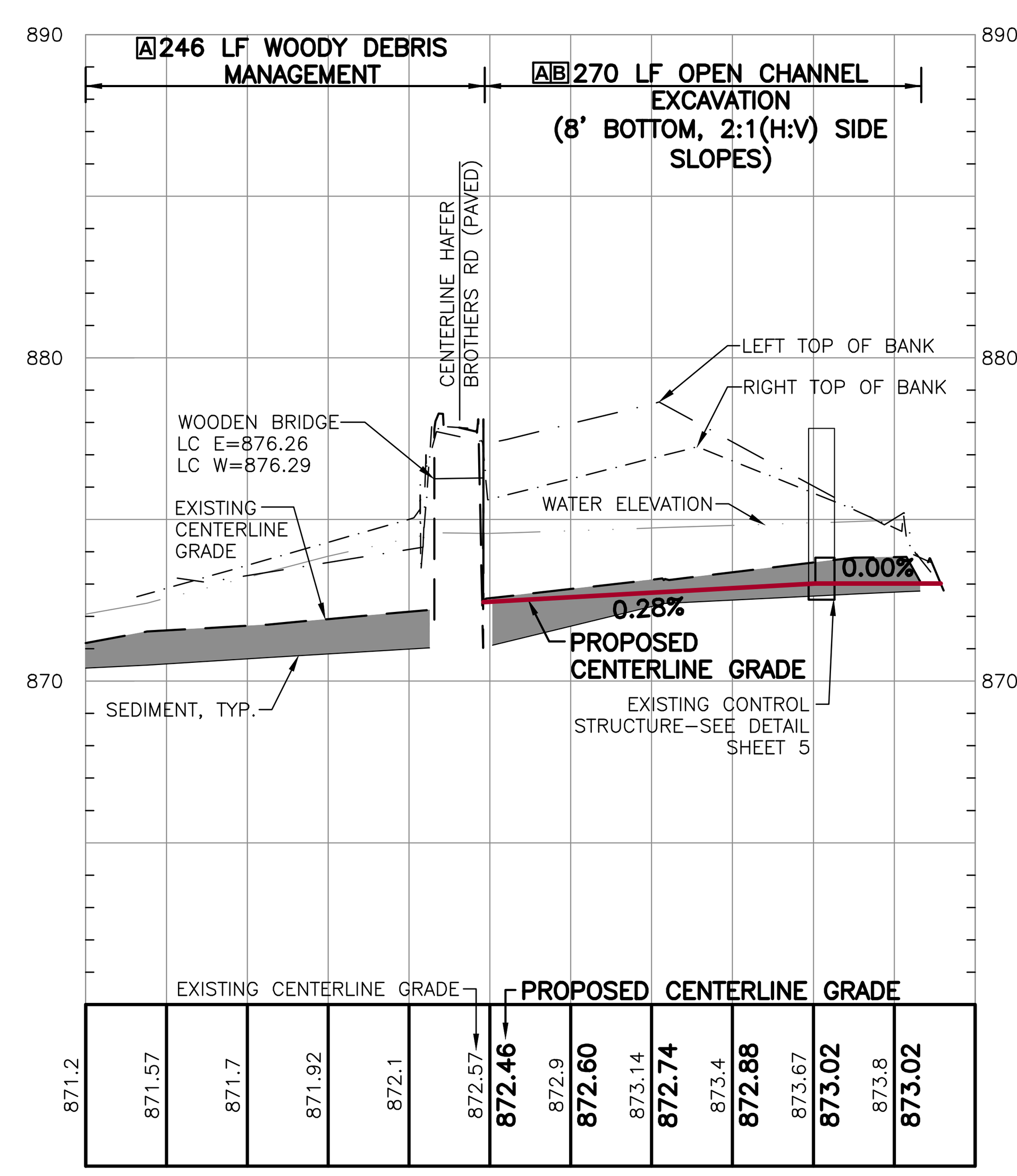
MACDC UNIFIED KEYING SYSTEM – ROUTINE MAINTENANCE ACTIVITIES

KEY	BEST MANAGEMENT PRACTICE	SESC PLAN
A	Debris Removal	NO
B	Sediment Removal	> 100 FEET

*NOTE:
ALL SESC MEASURES TO BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH MACDC SESC MANUAL.



MUD LAKE - CLEAR LAKE



COREY LAKE - KAISER LAKE

CENTERLINE PROFILE

SCALE: HORIZONTAL: 1" = 100'
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NOTE:
ELEVATIONS ARE BASED ON NGVD 29

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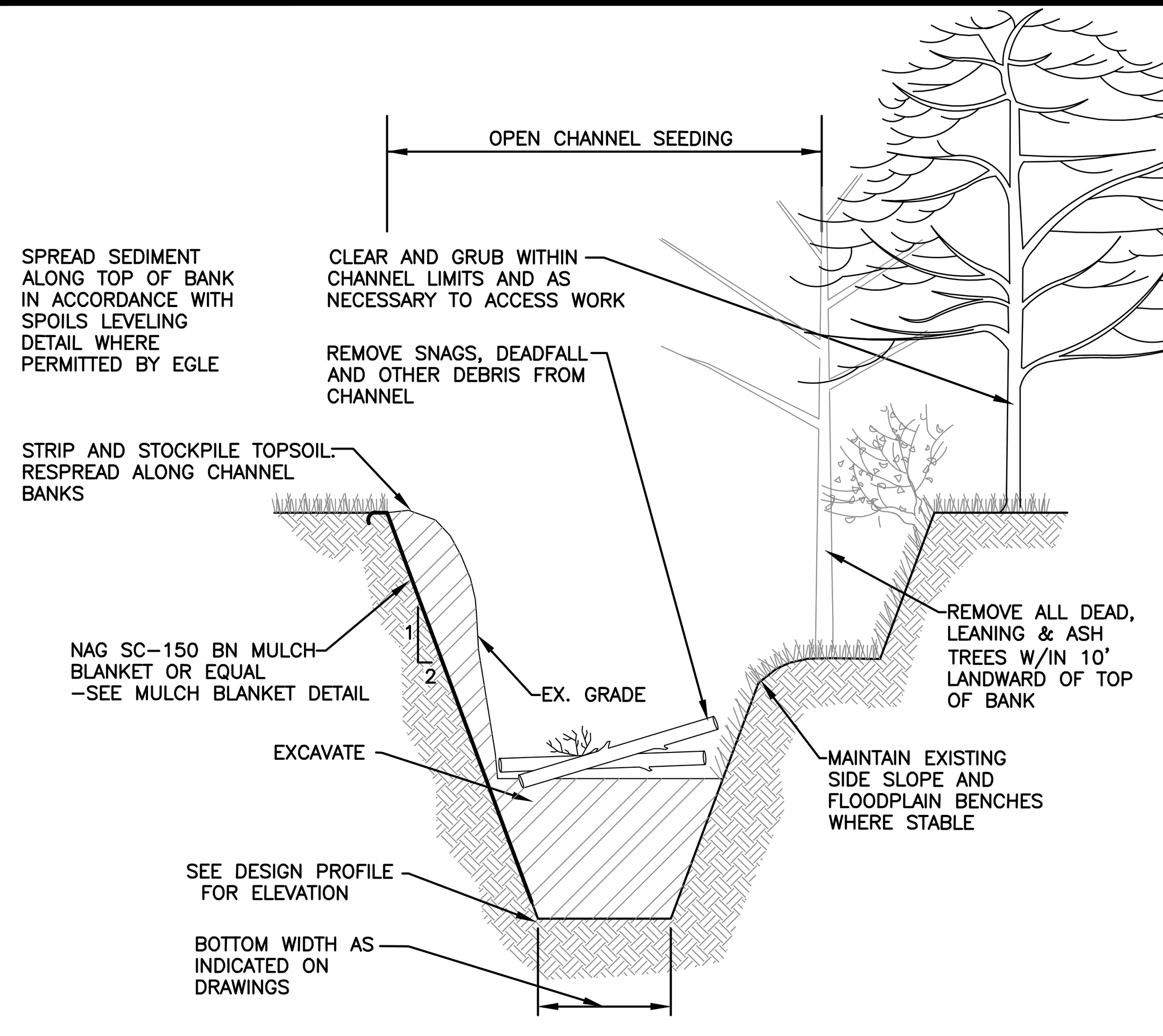
SHEET NAME: PLAN & PROFILE MUD - CLEAR LAKE COREY - KAISER LAKE

SHEET NUMBER C4

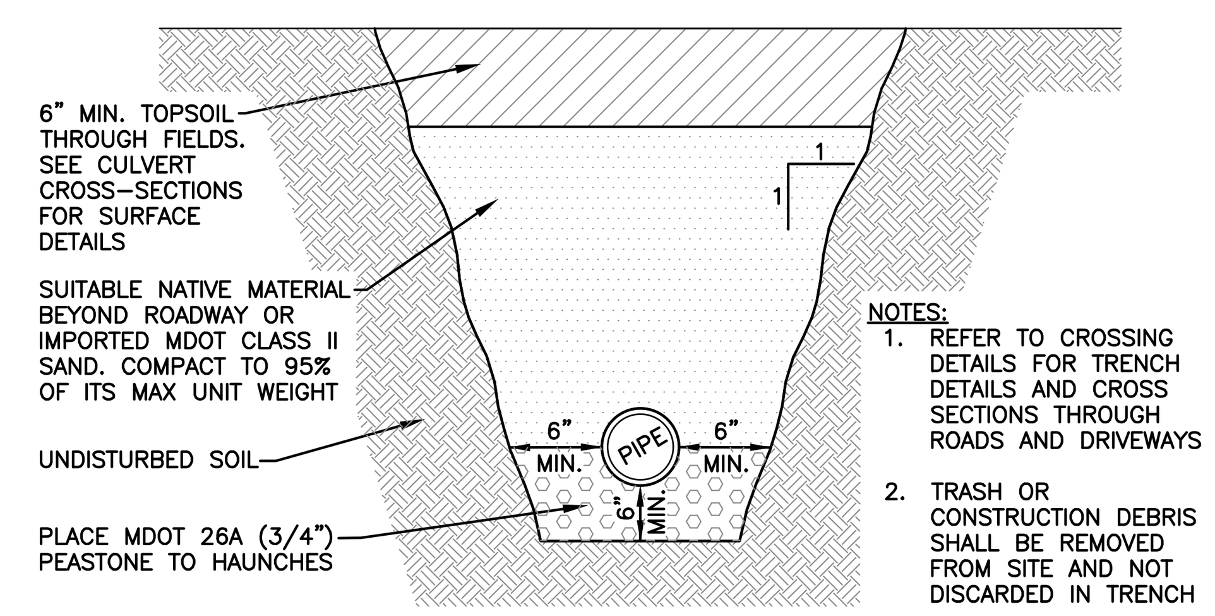


A B OPEN CHANNEL EXCAVATION DETAIL
NOT TO SCALE

TRENCH WIDTH TABLE

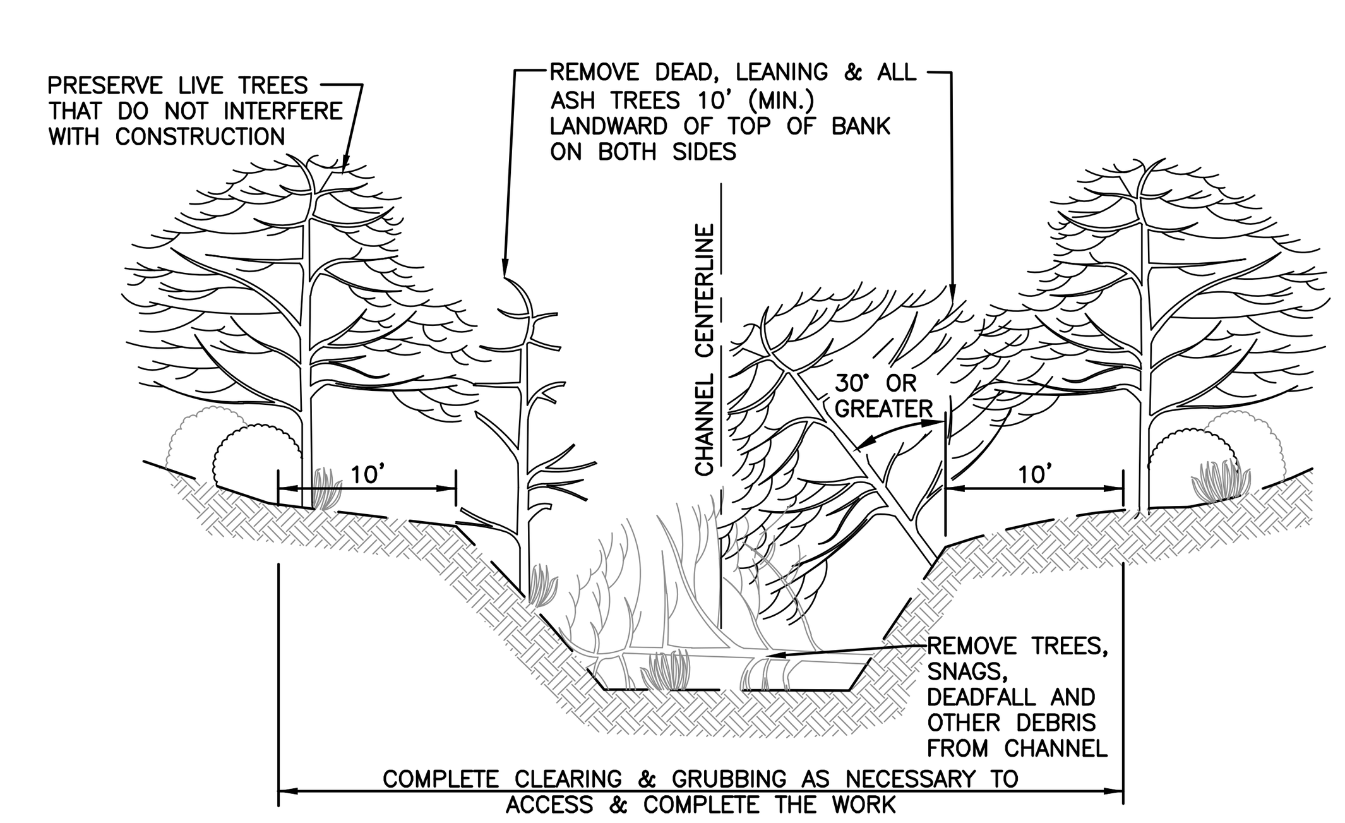
MINIMUM TRENCH WIDTH FOR N-12 PLASTIC PIPE
(PER ADS STANDARD DRAWING STD-101)

PIPE DIAMETER	TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
60"	96"

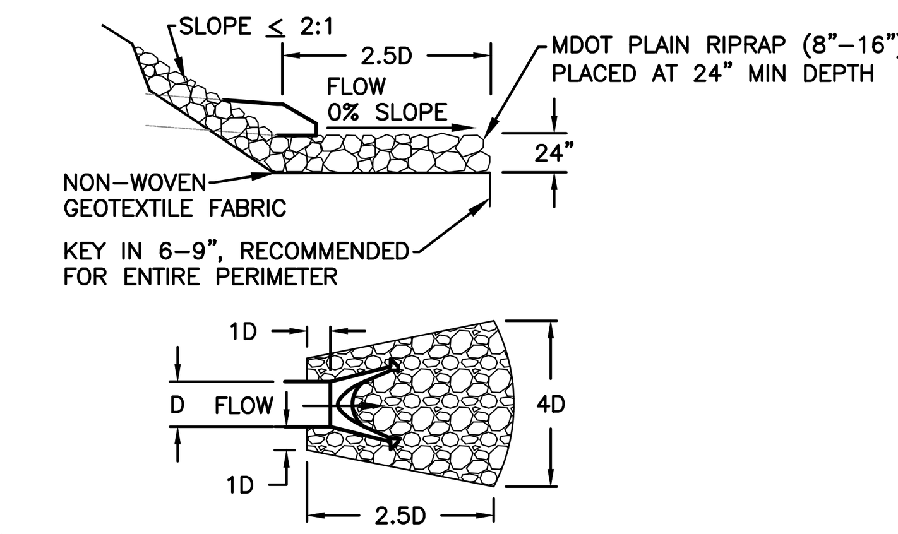


STORM SEWER TRENCH DETAIL
NOT TO SCALE

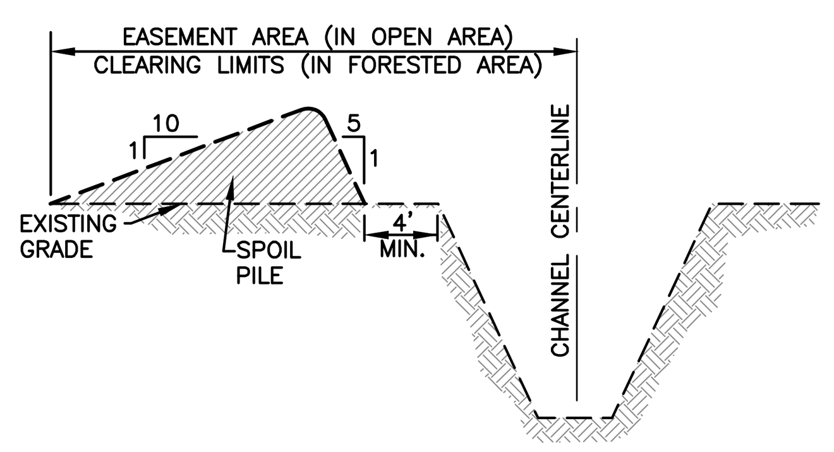
NOTES:
1. CUT STUMPS FLUSH WITH GROUND SURFACE.
2. LEAVE EMBEDDED MATERIAL WITHIN THE CHANNEL BOTTOM.



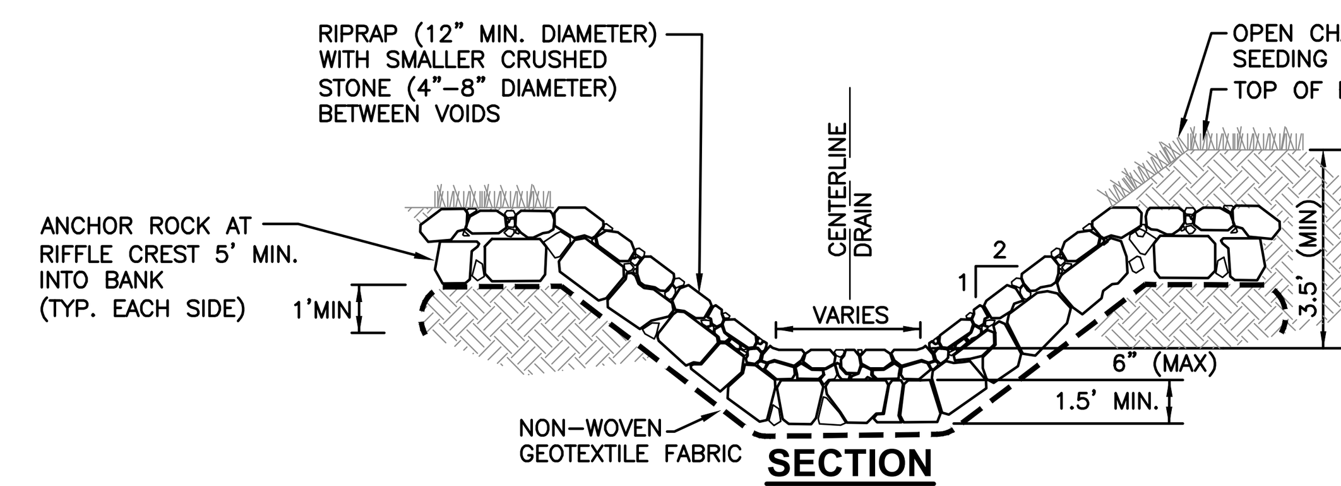
A WOODY DEBRIS MANAGEMENT
NOT TO SCALE

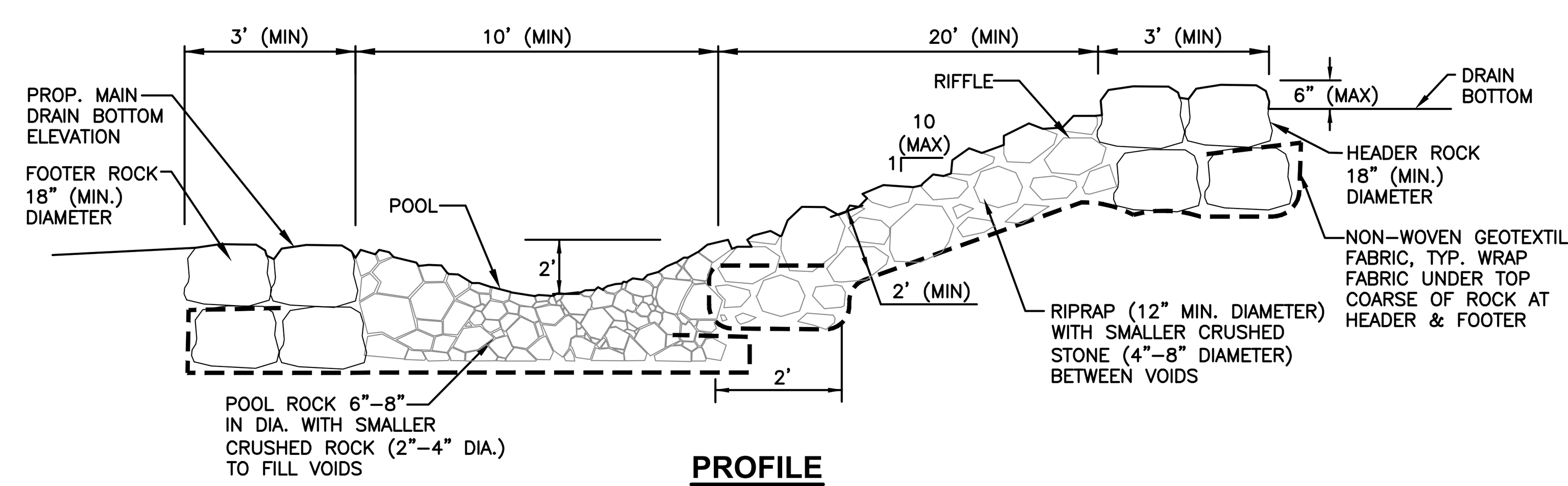


23 RIPRAP ENERGY DISSIPATOR
NOT TO SCALE

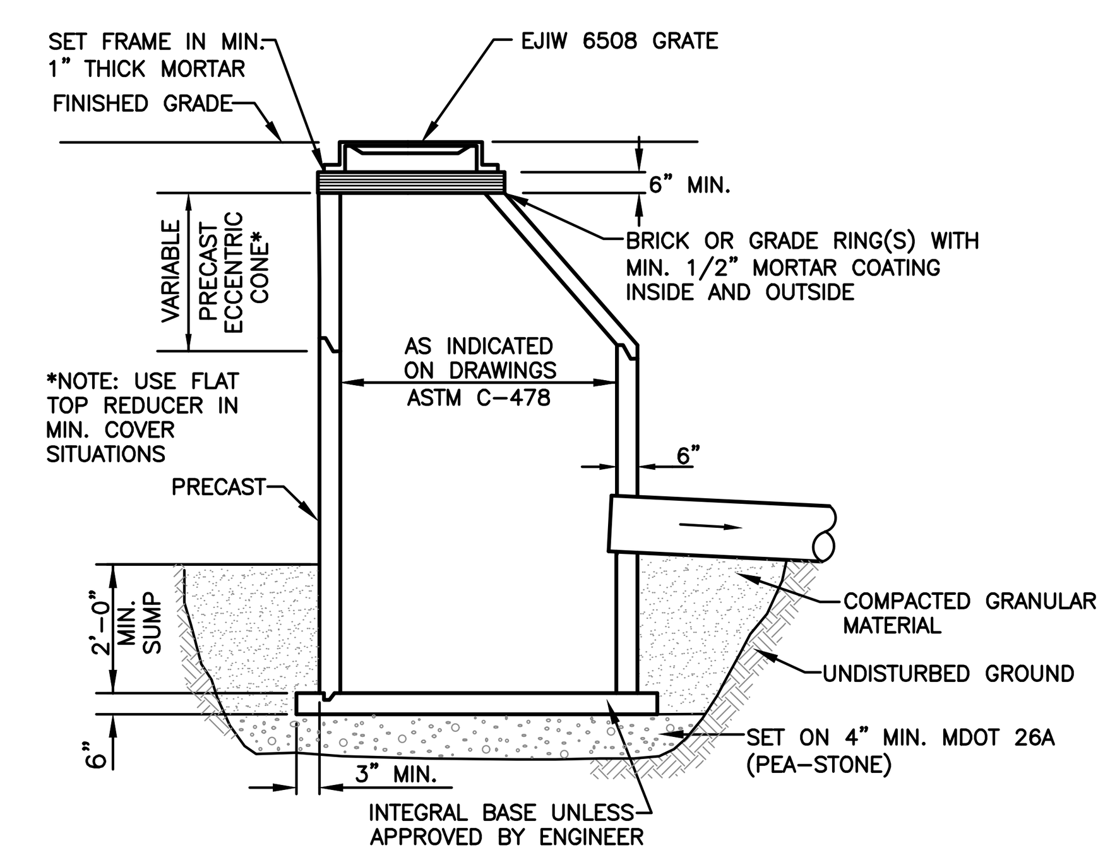


CROSS SECTION-SPOIL LEVELING AREA
NOT TO SCALE

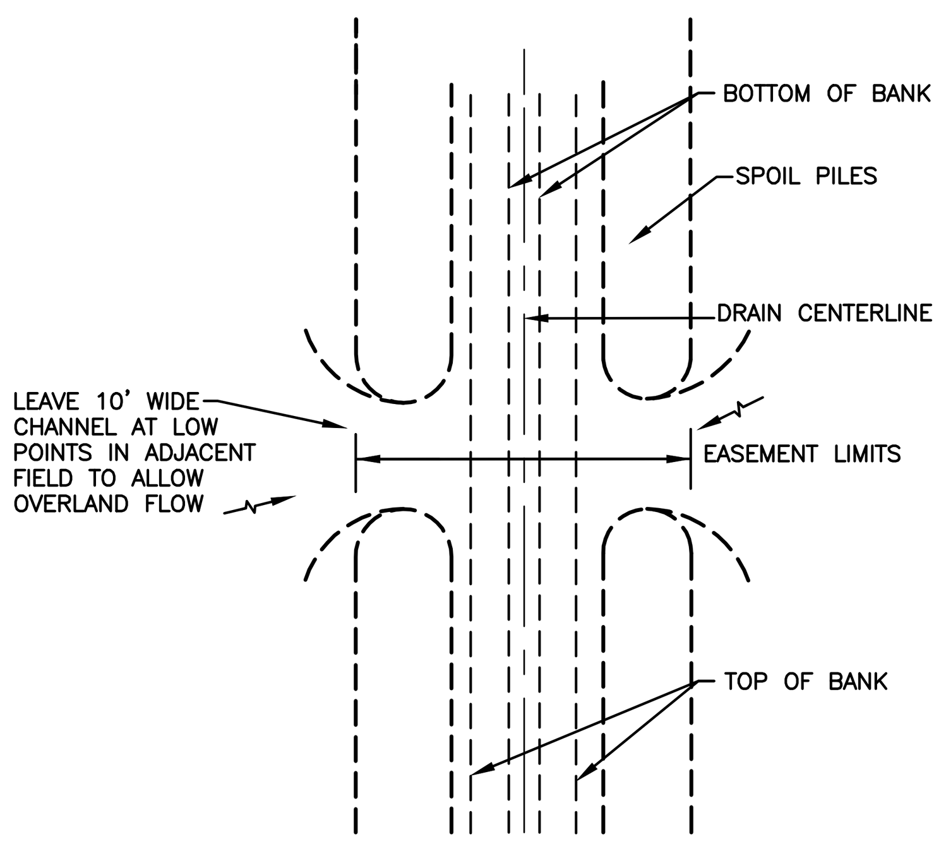




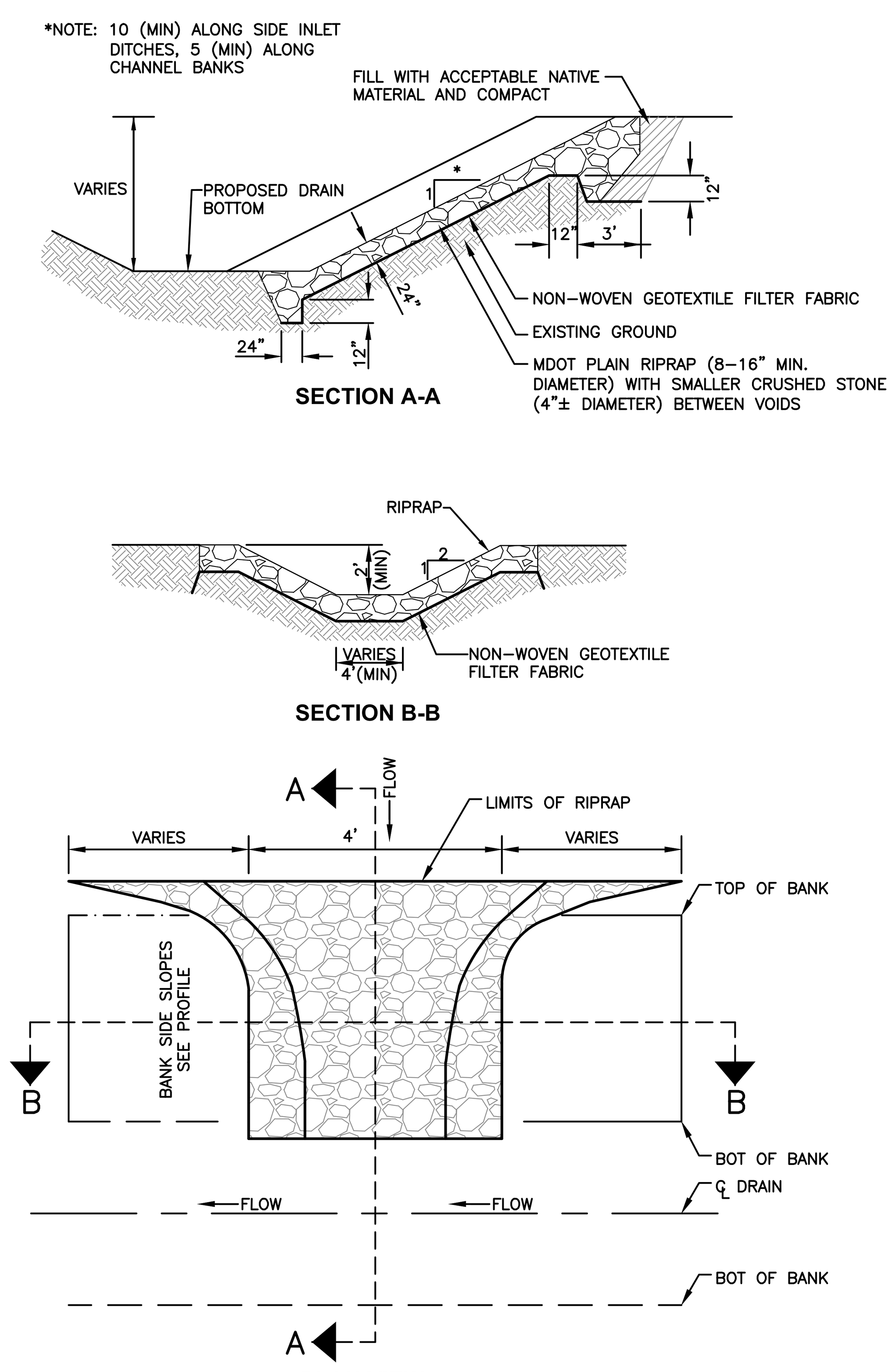
15 ROCK RIFFLE DETAIL
NOT TO SCALE



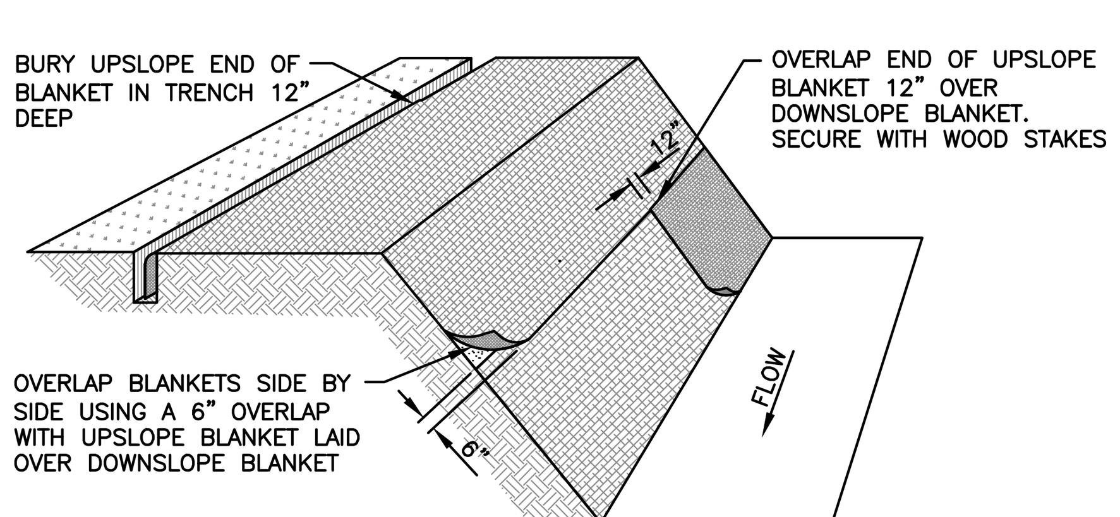
STANDARD CATCH BASIN
NOT TO SCALE



SPOIL LEVELING DETAIL
NOT TO SCALE

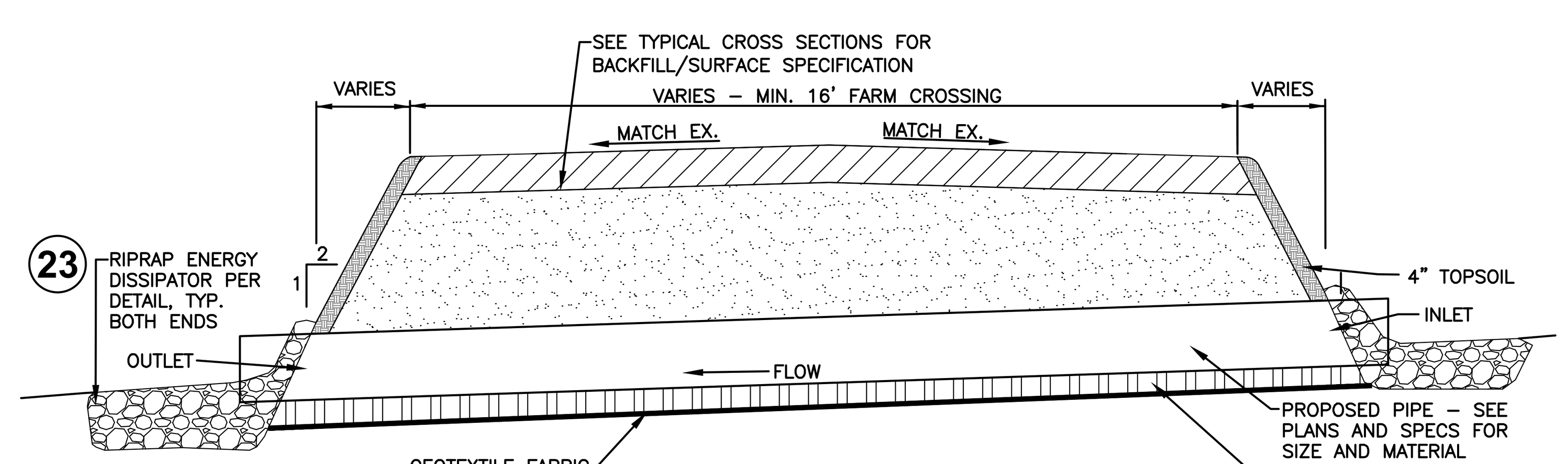


19 RIPRAP SIDE INLET DETAIL
NOT TO SCALE

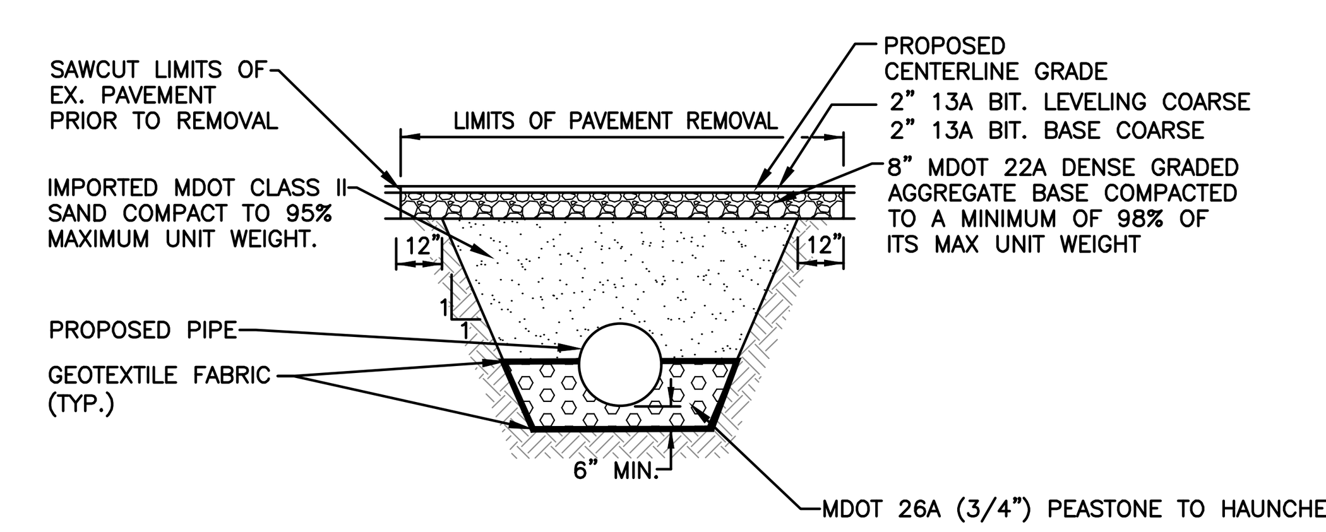


NOTES:
1. PLACE MULCH BLANKET PARALLEL TO FLOW AND ANCHOR SECURELY.
2. STAPLES INSTALLED/SECURED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
3. MULCH BLANKET SHALL BE NA GREEN SC 150 BN OR EQUAL

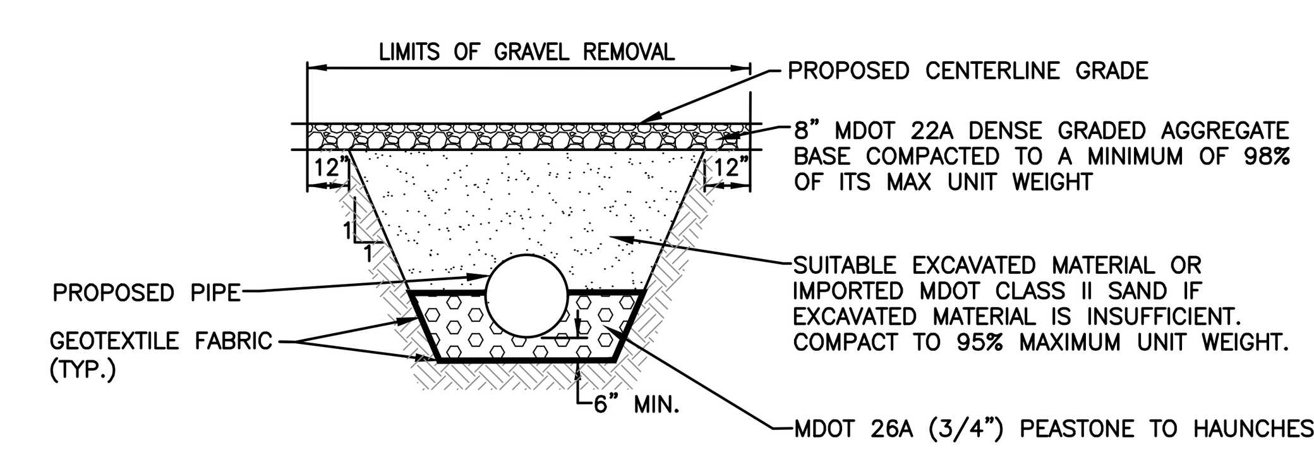
2 MULCH BLANKETS INSTALLATION DETAIL
NOT TO SCALE



TYPICAL CULVERT INSTALLATION
NOT TO SCALE



TYPICAL PAVED ROAD CROSS SECTION
NOT TO SCALE



TYPICAL PRIVATE DRIVE CROSS SECTION
NOT TO SCALE

LRE ENGINEERS & SURVEYORS
21213 Mile Rd. NW
Walker, MI 49544
Ph: 616-301-7888
www.LREMI.com

REVISIONS:

NO.	ISSUED FOR	DATE
1.	DRAFT REVIEW	11/27/2019
2.	BIDS & CONSTRUCTION	04/23/2025
3.	FOR CONSTRUCTION	08/19/2025
4.	BULLETIN NO. 1	09/26/2025

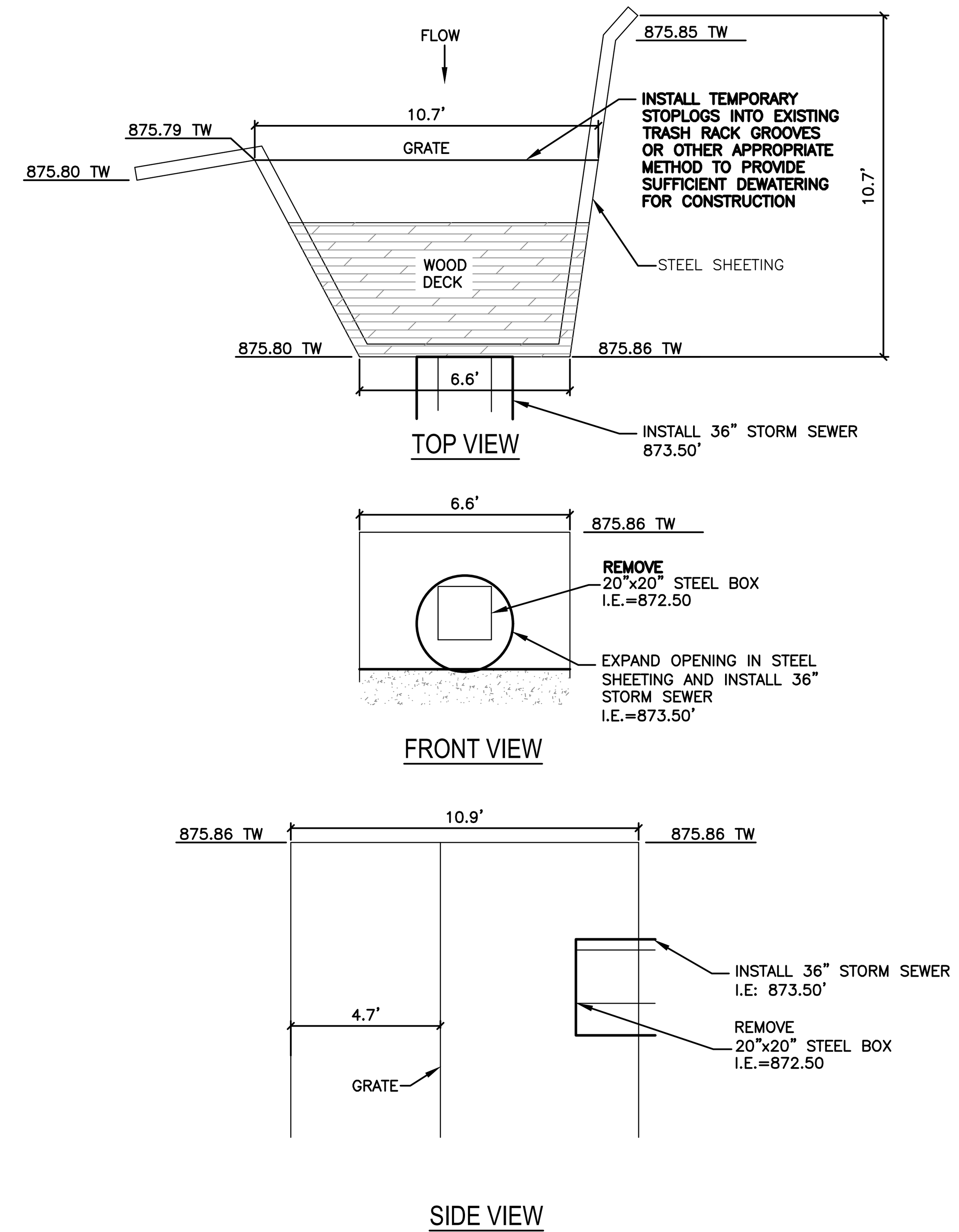
CLIENT: COREY LAKE INTERCOUNTY DRAIN DRAINAGE BOARD
MDARD 525 W. ALLEGAN STREET, LANSING, MICHIGAN 48933

PROJECT: COREY LAKE INTERCOUNTY DRAIN
CASS AND ST. JOSEPH COUNTIES, MICHIGAN

PROJECT NUMBER: 19-078	DATE
SURVEYED BY: CFV-ADK	11/2019
DESIGNED BY: AWS	06/2022
DRAFTED BY: RAG	11/2019
QA/QC: DJF	03/2025

SHEET NAME: DETAIL SHEET

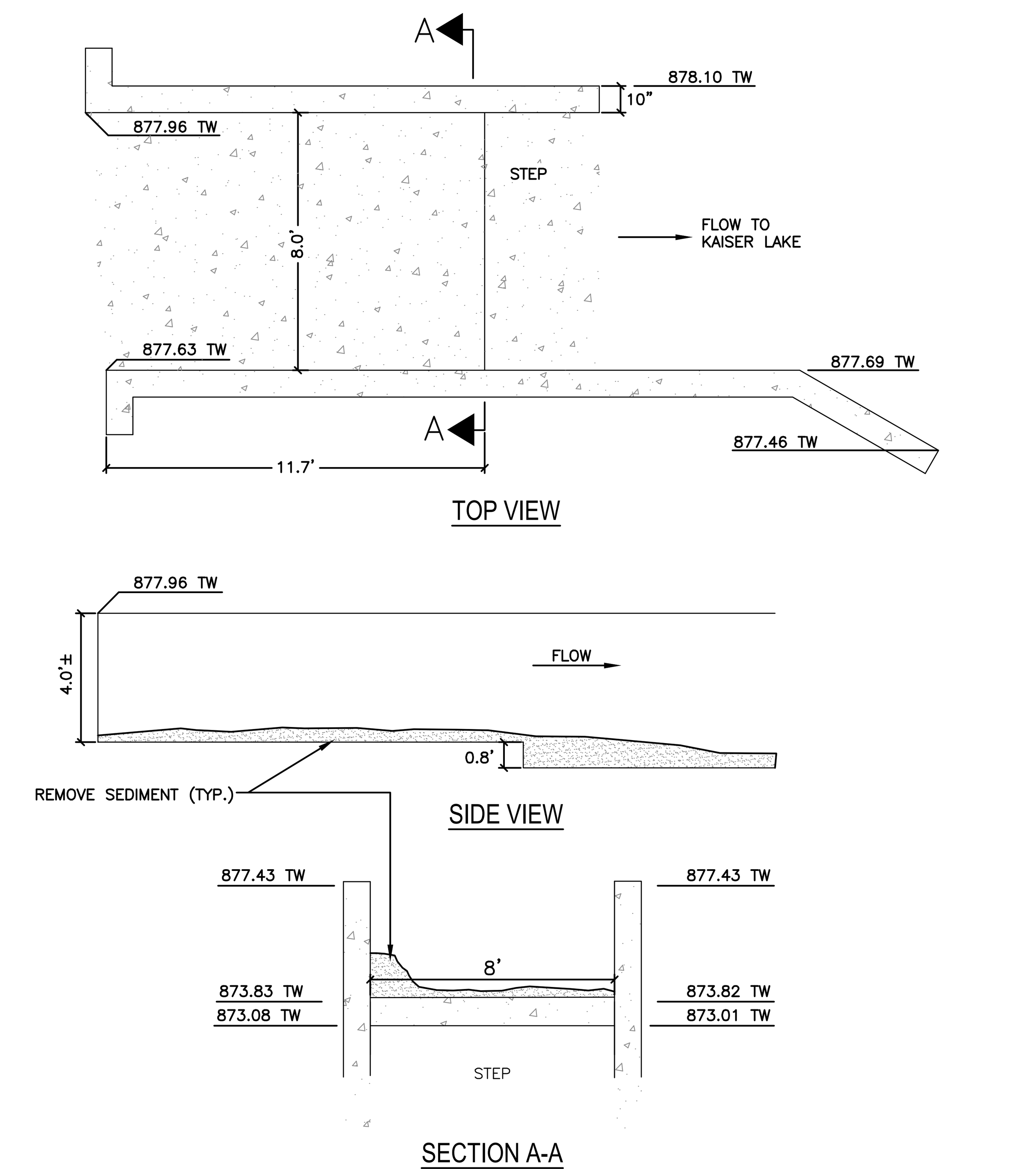
SHEET NUMBER: C5



EXISTING CONTROL STRUCTURE CLEAR LAKE

SCALE: 1"=4'

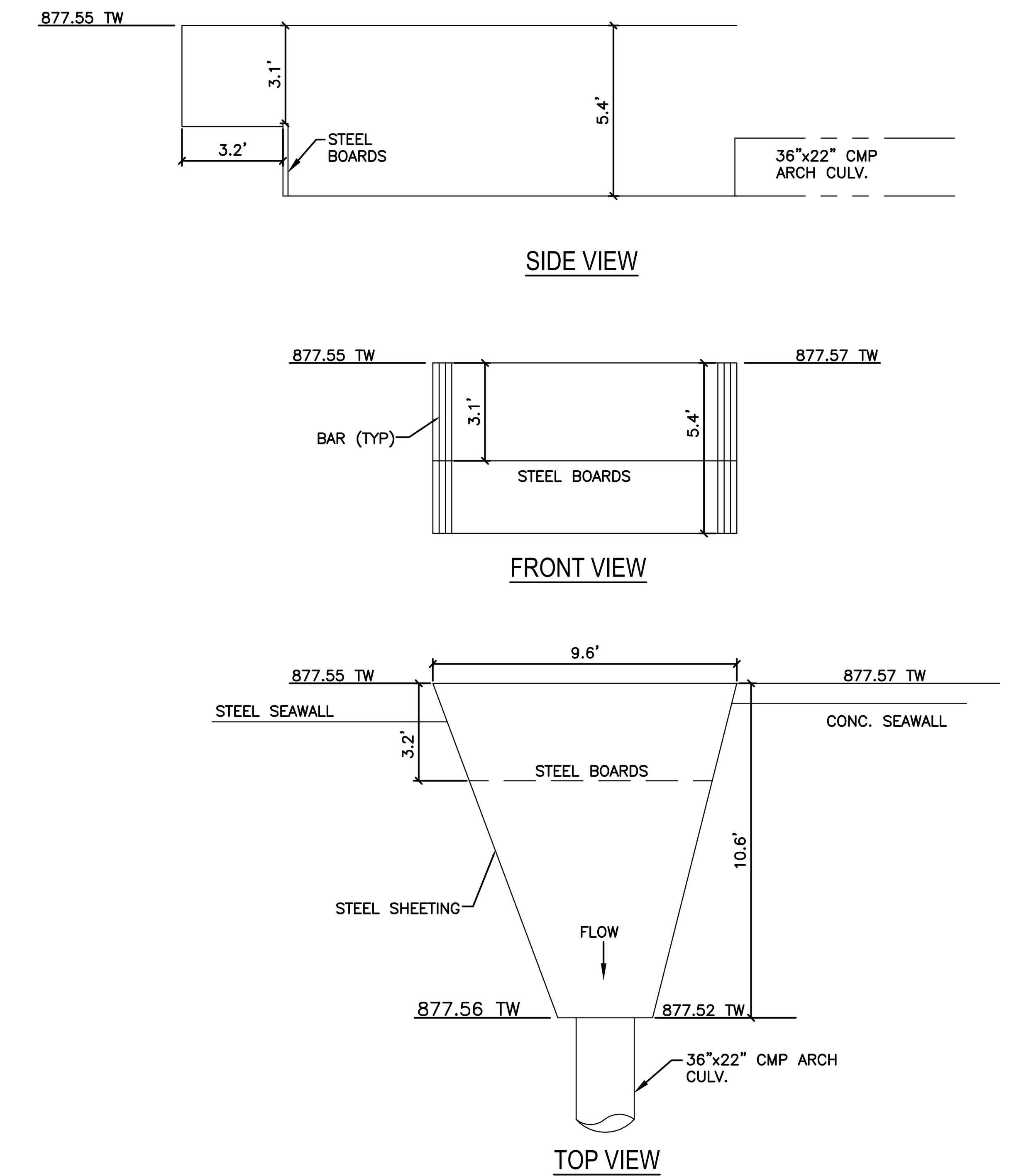
ELEVATIONS ARE BASED ON NGVD 29



EXISTING CONTROL STRUCTURE KAISER LAKE TO COREY LAKE

SCALE: 1"=4'

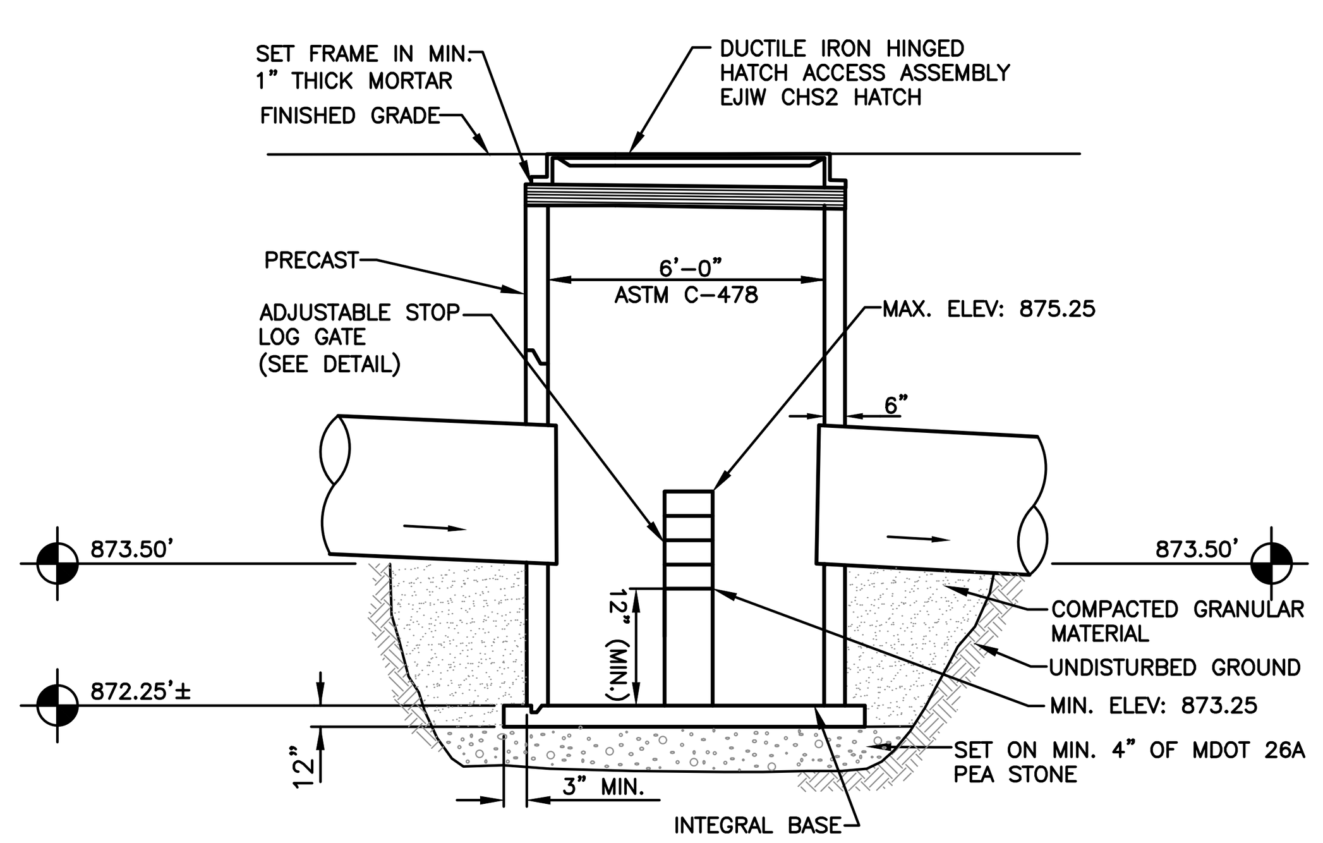
ELEVATIONS ARE BASED ON NGVD 29



EXISTING CONTROL STRUCTURE COREY LAKE

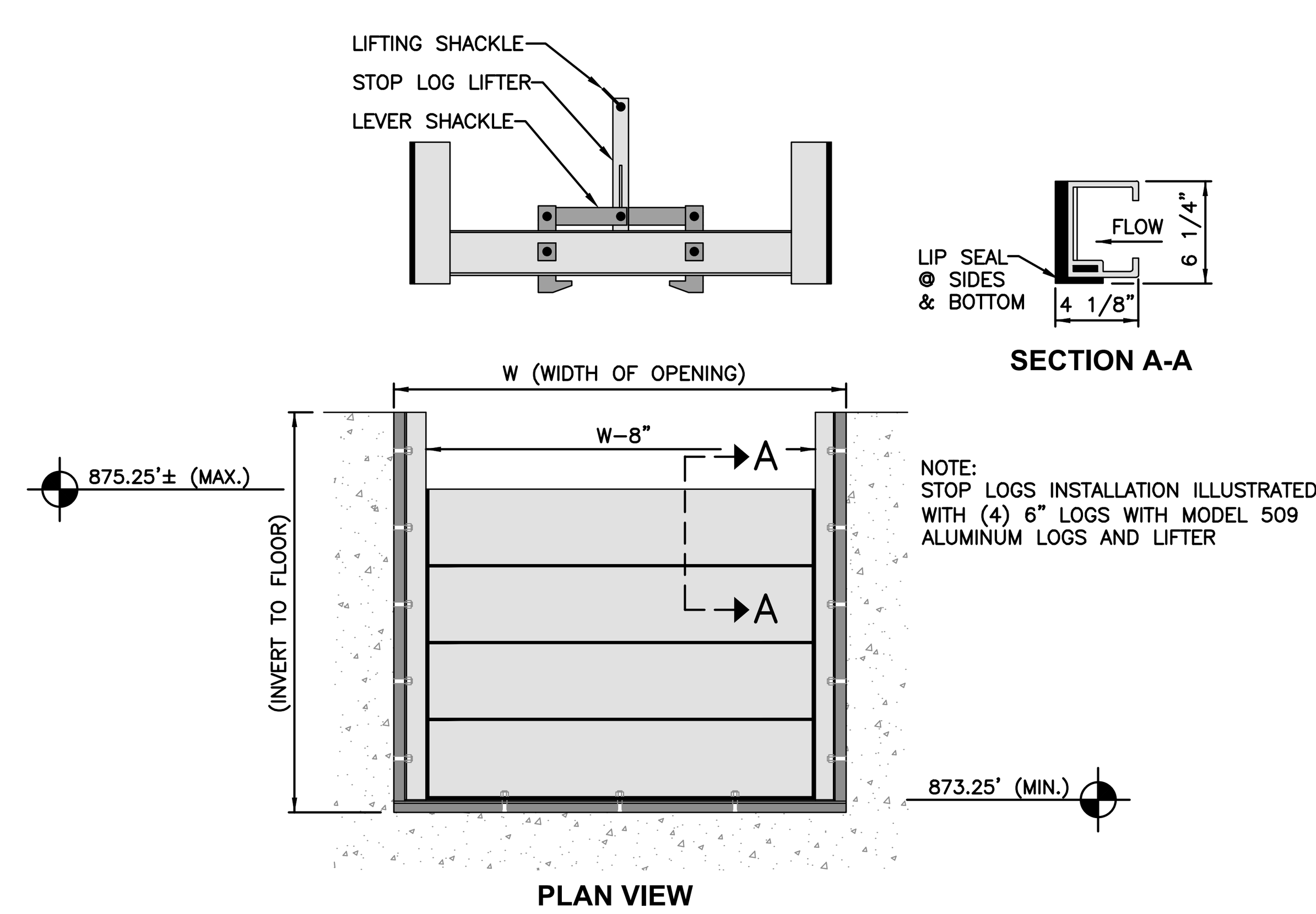
SCALE: 1"=4'

ELEVATIONS ARE BASED ON NGVD 29



PROPOSED CLEAR LAKE CONTROL STRUCTURE

NOT TO SCALE



STOP LOG GATE

NOT TO SCALE

ELEVATIONS ARE BASED ON NGVD 29

3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171

ALL UTILITIES AS SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THE AREA.

2121 3 Mile Rd. NW
Walker, MI 49544
Ph: 616-301-7888
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LRE ENGINEERS & SURVEYORS

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SHEET NAME: LAKE LEVEL STRUCTURE DETAILS

SHEET NUMBER: C6