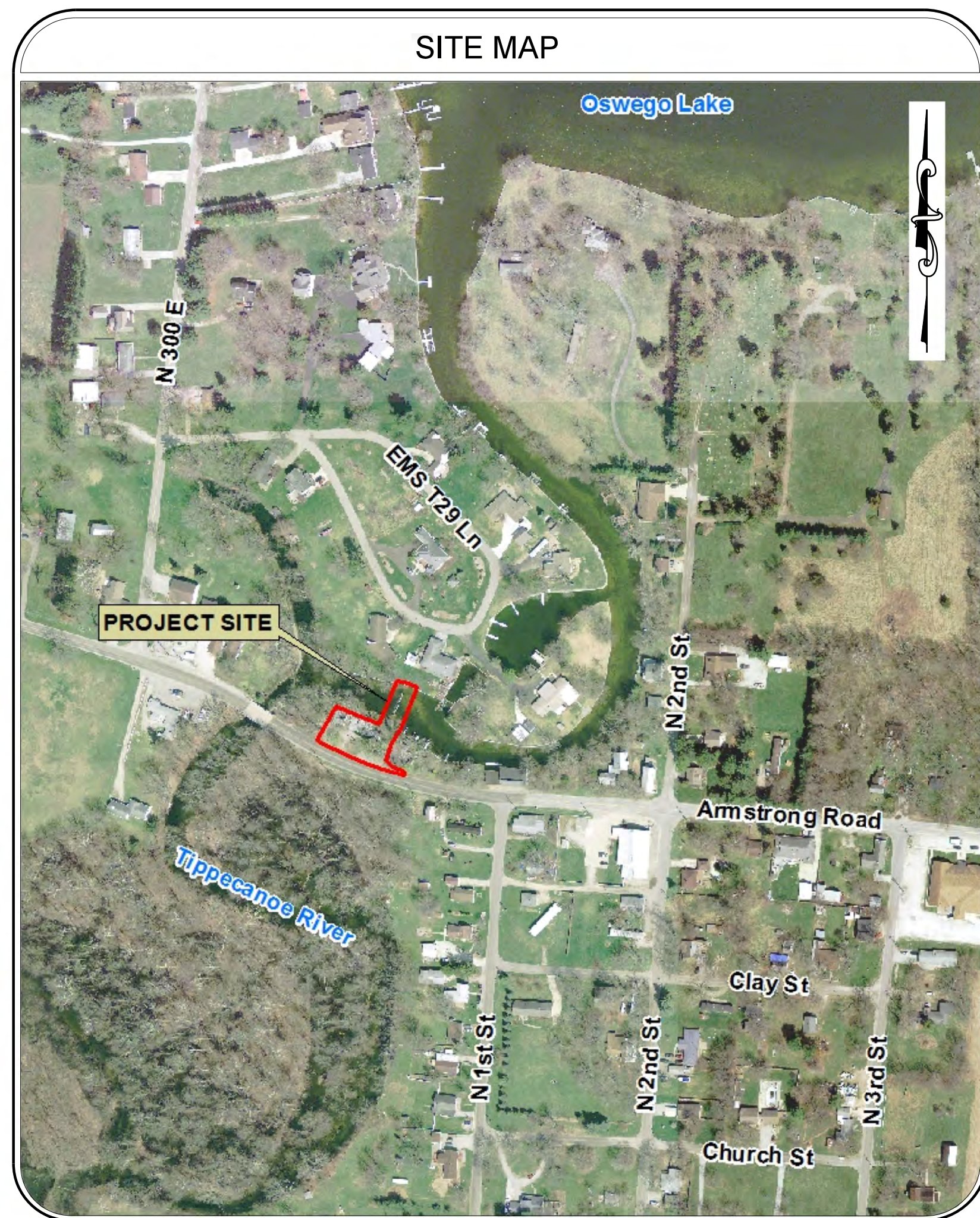


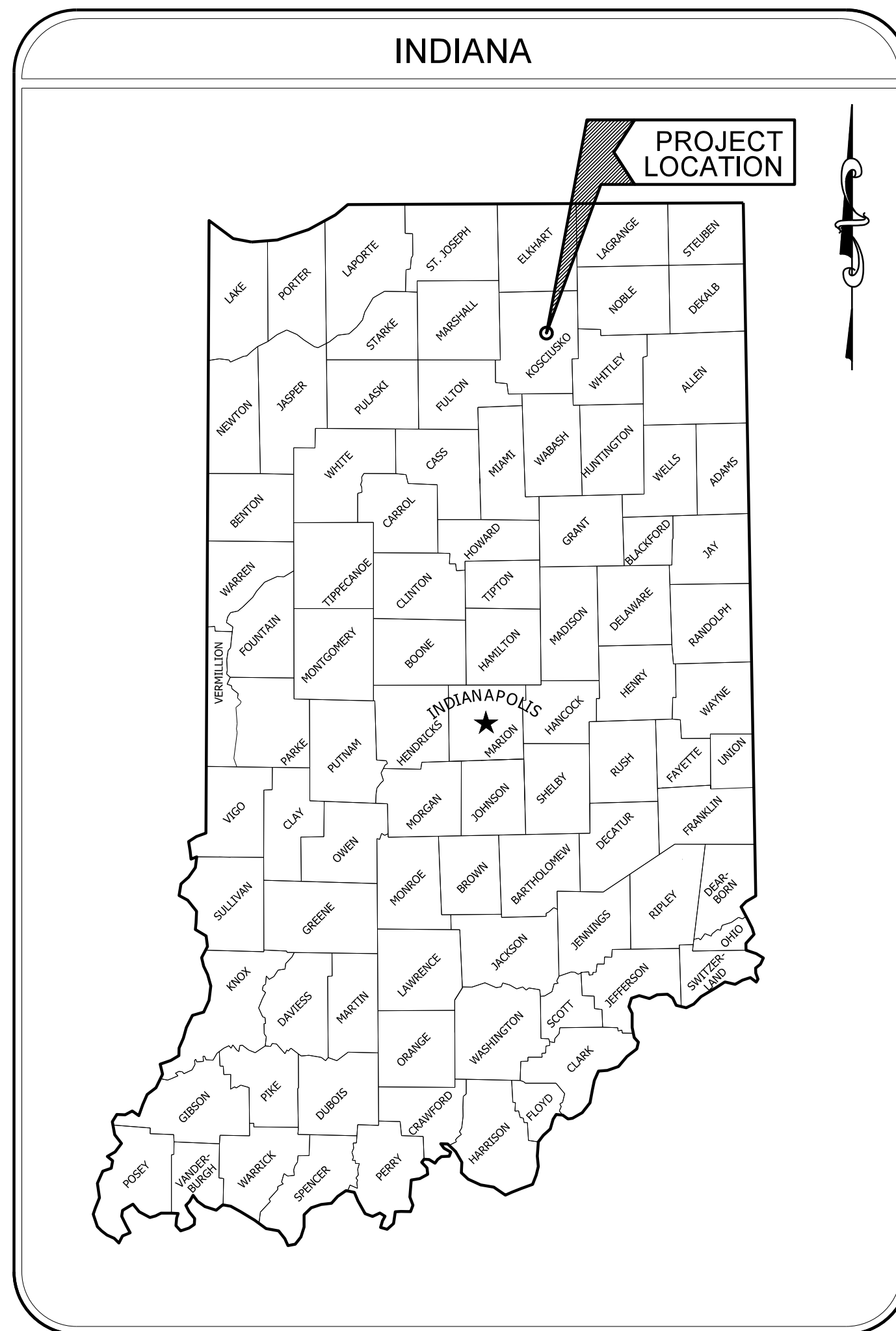
TIPPECANOE LAKE OUTLET STRUCTURE REPLACEMENT



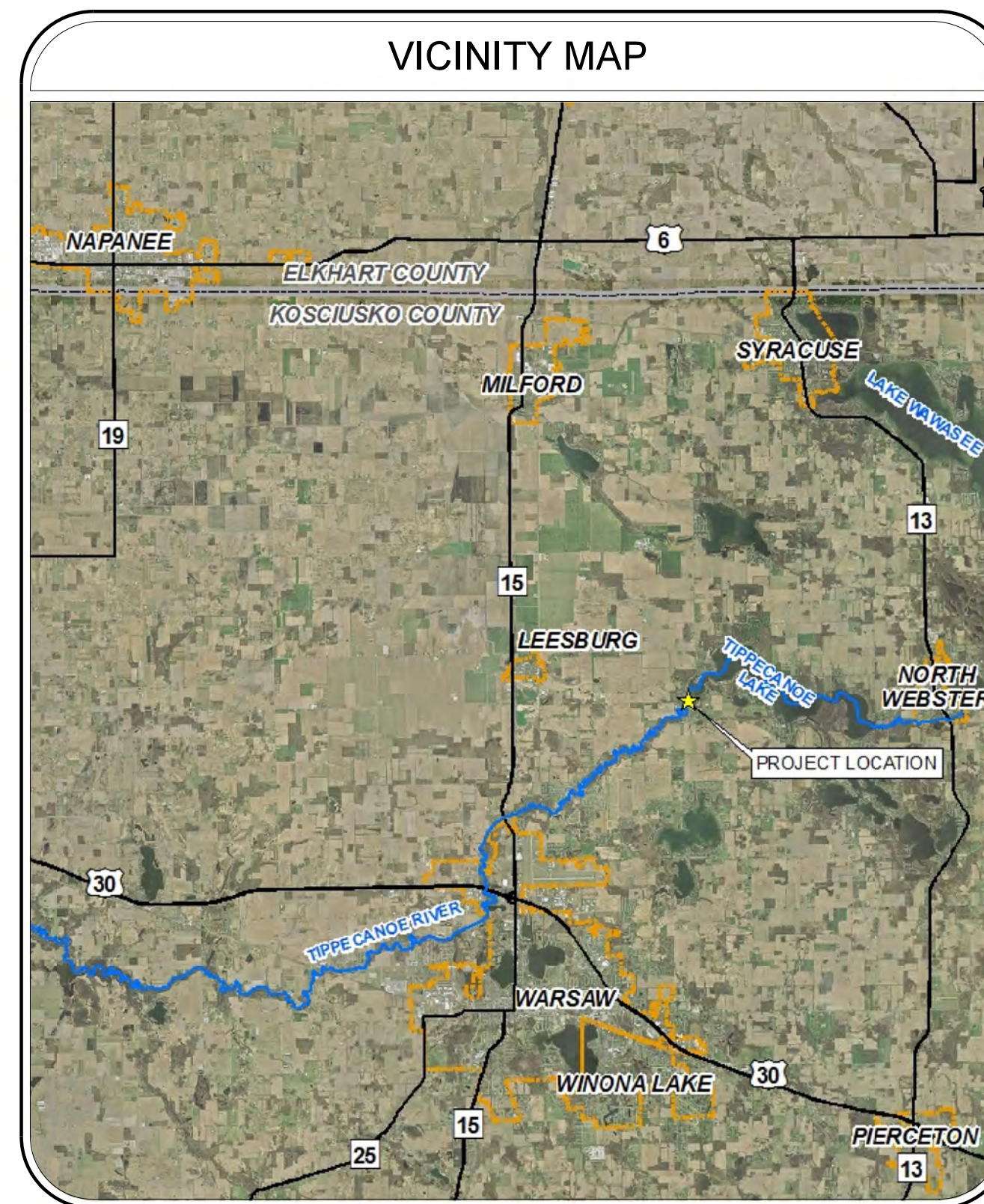
KOSCIUSKO COUNTY, INDIANA



SITE MAP



INDIANA



VICINITY MAP

SHEET INDEX		
SHEET NO.	DRAWING NO.	TITLE
1	TS1	TITLE SHEET
2	GN1	PROJECT INFORMATION SHEET
3	DP1	DEMOLITION PLAN
4	SP1	SITE IMPROVEMENT PLAN
5	DW1	CONSTRUCTION SEQUENCING AND DEWATERING PLAN
6	EC1	EROSION CONTROL PLAN
7	EC2	EROSION CONTROL DETAILS
8	MD1	MISCELLANEOUS DETAILS
9	STR1	STRUCTURAL GENERAL NOTES AND MISCELLANEOUS DETAILS
10	STR2	PROPOSED SPILLWAY REMOVAL AND PROPOSED PLAN
11	STR3	PROPOSED SPILLWAY SECTIONS
12	STR4	PROPOSED SPILLWAY SECTIONS

PREPARED FOR:



INDIANA DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
402 W. WASHINGTON ST., ROOM 467
INDIANAPOLIS, IN 46204

PREPARED BY:



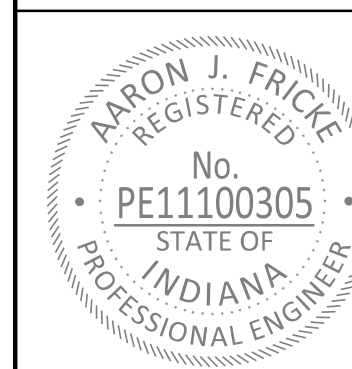
CHRISTOPHER B. BURKE ENGINEERING, LLC
PNC Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
Phone: (317) 266-8000
Fax: (317) 632-3306

INDIANA DEPARTMENT
OF ADMINISTRATION
PUBLIC WORKS DIVISION
PROJECT NUMBER E060069

INDIANA STATE LAW (IC8-1-26) REQUIRES THAT ANYONE ENGAGED IN EXCAVATION USING MECHANIZED EQUIPMENT MUST CALL AT LEAST TWO (2) FULL WORKING DAYS PRIOR TO THE START OF THEIR PROJECT. INDIANA UNDERGROUND PLANT PROTECTION SERVICE (IUPPS) OFFERS A ONE-POINT CONTACT TO REACH MEMBER UTILITIES TO NOTIFY THEM OF YOUR PROPOSED EXCAVATION. VISIT IUPPS.ORG

ISSUED FOR BID

CERTIFYING ENGINEER:



Aaron J. Fricke 06/22/18
ENGINEER DATE

AARON J. FRICKE, P.E.
INDIANA REGISTRATION No. PE11100305
EXPIRATION DATE: JULY 31, 2018

TIPPECANOE LAKE OUTLET
STRUCTURE REPLACEMENT
KOSCIUSKO COUNTY, INDIANA

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO REPLACE THE OUTLET STRUCTURE THAT REGULATES THE LAKE LEVEL OF THREE INTERCONNECTED LAKES: TIPPECANOE LAKE, OSWEGO LAKE, AND JAMES LAKE. THE EXISTING OUTLET STRUCTURE WAS BUILT IN 1964 AND IS COMPRISED OF 10 MANUALLY-OPERATED GATES AND OVERFLOW WEIRS ON A CONCRETE FOUNDATION. THE SCOPE OF WORK INCLUDES THE FOLLOWING:

1. REMOVING THE EXISTING OUTLET STRUCTURE INCLUDING THE GATES AND CATWALK.
2. CONSTRUCTING A NEW CONCRETE OGEE WEIR WITH A FIXED CREST BETWEEN THE EXISTING ABUTMENTS.
3. INSTALLING A PNEUMATICALLY-OPERATED GATE AND ASSOCIATED CONTROLS.
4. INSTALLING A SMALL CRAFT INTRUSION BARRIER UPSTREAM OF THE NEW WEIR.
5. RELOCATING AND RESETTING THE EXISTING LAKE PLACARD.
6. EROSION AND SEDIMENT CONTROL.

NOTES FOR WORK IN AND AROUND THE WATERWAY

1. DO NOT WORK IN THE WATERWAY FROM APRIL 1 THROUGH JUNE 30 WITHOUT PRIOR WRITTEN APPROVAL OF THE INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF FISH AND WILDLIFE.
2. DO NOT CUT ANY TREES SUITABLE FOR INDIANA BAT OR NORTHERN LONG-EARED BAT ROOSTING FROM APRIL 1 TO SEPTEMBER 30. SUCH TREES ARE GREATER THAN 3 INCHES DIAMETER AT BREAST HEIGHT, LIVING OR DEAD, WITH LOOSE HANGING BARK, OR WITH CRACKS, CREVICES, OR CAVITIES.
3. DO NOT EXCAVATE WITHIN THE CHANNEL EXCEPT FOR REMOVAL OF THE EXISTING CONTROL STRUCTURE AND PLACEMENT OF FOUNDATIONS AND RIPRAP.
4. DO NOT DEPOSIT OR ALLOW DEMOLISHED OR CONSTRUCTION MATERIALS OR DEBRIS TO FALL INTO OR OTHERWISE ENTER THE WATERWAY.
5. NO WORK ON THE OUTLET STRUCTURE IS ALLOWED FROM THE NORTH BANK OF THE LAKE/RIVER.
6. COMPLETELY REMOVE ALL EXCAVATED MATERIAL FROM THE PROJECT SITE TO AVOID EROSION AND OFF-SITE SEDIMENTATION OF MATERIAL.
7. STABILIZE ALL BARE AND DISTURBED AREAS LANDWARD OF THE SHORELINE AS SOON AS POSSIBLE.
8. INSPECT EROSION AND SEDIMENT CONTROL MEASURES DAILY AND REPAIR AS WARRANTED UNTIL ALL CONSTRUCTION IS COMPLETE AND DISTURBED AREAS ARE PERMANENTLY STABILIZED.

LEGAL LAKE LEVELS

TIPPECANOE LAKE IS A PUBLIC FRESHWATER LAKE WITH SEASONAL LEGAL LAKE LEVELS AS FOLLOWS:

SUMMER (APRIL 2 THROUGH OCTOBER 31): 835.97 FEET (NAVD 88) = 836.40 FEET (NGVD 29)
WINTER (NOVEMBER 1 THROUGH APRIL 1): 835.47 FEET (NAVD 88) = 835.90 FEET (NGVD 29)

THE EFFECTIVE BASE FLOOD ELEVATION AT THE SITE IS 839.20 FEET (NAVD 88) = 839.63 FEET (NGVD 29).

SURVEYOR

APEX Consulting & Surveying, Inc.

LAND SURVEYING LAND PLANNING & DESIGN

613 W. BRACKENRIDGE STREET
FORT WAYNE, IN. 46802
PH: (260) 755-5993
FAX: (888) 808-4177
E-MAIL: info@apexsurveying.net



SURVEY CONTROL POINTS AND BENCHMARKS

CONTROL POINTS

CP #1	CP #4
Mag Nail with "Apex Control Point" Disk Set along the South edge of Pavement. (See Survey Drawing) (Drawing location not to scale.) N:2211729.1520 E:294356.2830	3/8" Steel Rebar with Orange Plastic Cap Set (See Survey Drawing) N:2211952.3380 E:294303.1120
CP #2	CP #5
5/8" Steel Rebar with "Apex Control Point" Cap Set (See Survey Drawing) (Drawing location not to scale.) N:2212083.2650 E:294263.9660	3/8" Steel Rebar with Orange Plastic Cap Set (See Survey Drawing) N:2211875.3420 E:294281.9390
CP #3	
5/8" Steel Rebar with "Apex Control Point" Cap Set (See Survey Drawing) N:2211941.4480 E:294457.0890	

BENCHMARK INFO

USGS: Station Des.: F 158
PID - MD1219
ELEVATION 876.04 (NAVD 1988)

TBM #1
Chiseled Box at West End of Concrete Seawall Along North Bank of River(See Survey Drawing)
ELEVATION 836.47 (NAVD 88)

TBM #2
Chiseled Box at East End of Concrete Seawall Along North Bank of River(See Survey Drawing)
ELEVATION 837.88 (NAVD 88)

UNLESS OTHERWISE NOTED, ALL ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). TO CONVERT TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 99), ADD 0.43 FEET TO THE NAVD 88 ELEVATION.

UTILITY CONTACT INFO

UTILITY CONTACTS

GAS/ELECTRIC	ELECTRIC
NIPSCO(Goshen) Contact: Dave Schaafsma dschaafsma@nisource.com	Kosciusko R.E.M.C. Daytime: Vicky Patterson
CABLE TV	PHONE/CABLE TV/FIBER OPTIC
MediaCom, LLC (North Webster) 215 W. Walnut Street Watska, IL 61523 Contact: Gary Gudeman	CenturyLink 213 W. Laporte St. Plymouth, IN 46563 Contact: Bruce Emerick 574-926-1247 joseph.megyesi@sprint.com

UTILITY NOTES

1. UTILITY INFORMATION SHOWN ON THE DRAWINGS IS BASED ON A TOPOGRAPHIC SURVEY PERFORMED BY APEX SURVEYING AND CONSULTING, INC. IN 2017 AND INFORMATION PROVIDED BY THE INDIANA DEPARTMENT OF NATURAL RESOURCES.
2. THE LOCATIONS OF UNDERGROUND UTILITIES SHOULD BE CONSIDERED APPROXIMATE AND FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATIONS OF UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
3. CALL INDIANA 811 AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF LAND DISTURBING ACTIVITIES TO SCHEDULE A UTILITY LOCATE. VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES AND REPORT ANY DISCREPANCIES OR OMISSIONS IMMEDIATELY TO OWNER AND ENGINEER.
4. ANY AND ALL DAMAGE TO UTILITIES MUST BE REPAIRED IN KIND AT CONTRACTOR'S EXPENSE.

PHOTO 1 - EXISTING CONDITIONS UPSTREAM



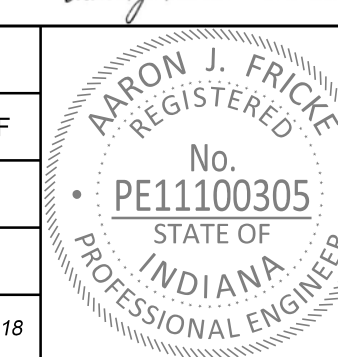
Photo taken upstream looking southwest (downstream) with Armstrong Road behind existing cabins.

PHOTO 2 - EXISTING CONDITIONS DOWNSTREAM



Photo taken from downstream looking northeast (upstream).

Arnon J. Fricke 06/22/18





SURVEY LEGEND

- 835--- EXISTING CONTOUR
- FDC--- FIBER OPTIC LINE
- OH--- OVERHEAD ELECTRIC
- W--- WATER LINE
- x-x-x-x-x- CHAIN LINK FENCE
- [Symbol] ELECTRIC PANEL
- [Symbol] ELECTRIC METER
- [Symbol] ELECTRIC DROP
- [Symbol] POWER POLE
- [Symbol] WELL
- [Symbol] POST
- [Symbol] TELECOMMUNICATIONS PEDESTAL
- [Symbol] DECIDUOUS TREE
- [Symbol] CONIFEROUS TREE
- [Symbol] SHRUB
- [Symbol] SOIL BORING

DEMOLITION LEGEND

- [Symbol] CABIN REMOVAL (ALTERNATE 1)
- CONSTRUCTION LIMITS
- ////// REMOVAL ITEM
- REG FP--- REGULATORY FLOODPLAIN
- A Remove Gates and Controls
- B Remove Walk and Handrails
- C Remove Concrete Headwall
- D Remove Weir
- E Concrete Foundation to Remain
- F Concrete Abutment To Remain and Fence (As Required)
- G Protect Private Concrete Seawall
- H Existing Headwall to Remain
- I Remove Chain Link Fence
- J Protect and Salvage Plaques and Refurbish for Reuse
- K Remove Tree or Shrub
- L Relocate Utility Pole As Required (Including any Panels or Meters)
- M Existing Cabin to Remain (Alternate 1 - Demolish Cabin)
- N Existing Tree To Remain
- O Remove Cabin Weatherhead and Relocate Overhead Electric (Alternate 1 - Demolish Cabin)
- P Remove and Replace Deck As Required
- Q Remove Existing Bouy Line
- R Cabin 2888 Will NOT be Removed Under any Circumstances
- S Remove Concrete Pavers (Alternate 1 - Demolish Cabin)
- T Protect Existing Utility to Remain As Required
- U Trim Tree As Required for New Structure Installation

GENERAL NOTES

1. TOPOGRAPHIC AND PLANIMETRIC INFORMATION SHOWN IS FROM A SURVEY PERFORMED BY APEX SURVEYING AND CONSULTING, INC. IN JUNE 2017 AND NOVEMBER 2017. SOME UTILITIES SHOWN ARE BASED ON INFORMATION PROVIDED BY THE INDIANA DEPARTMENT OF NATURAL RESOURCES.
2. REGULATORY FLOODPLAIN SHOWN IN FROM THE FEMA FLOOD INSURANCE STUDY FOR KOSCIUSKO COUNTY, INDIANA AND INCORPORATED AREAS DATED SEPTEMBER 30, 2015.

PREVIOUS EMERGENCY REPAIR

THE EXISTING CONTROL STRUCTURE INCURRED DAMAGE IN THE EARLY 1990S DUE TO UNDERMINING OF THE FOUNDATION. RIPRAP WAS PLACED IN THE SCOUR HOLE DOWNSTREAM OF THE STRUCTURE AS A TEMPORARY REPAIR. RIPRAP MAY BE ENCOUNTERED IN THE CHANNEL IMMEDIATELY DOWNSTREAM OF THE CONTROL STRUCTURE.

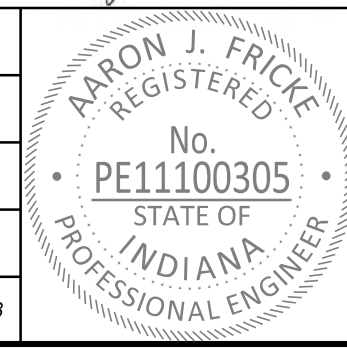


PHOTO OF 1994 REPAIR, LOOKING DOWNSTREAM FROM THE NORTH ABUTMENT (PROVIDED BY IDNR)

CHRISTOPHER B. BURKE ENGINEERING, LLC.
 PNC Center, Suite 1368 South
 115 West Washington Street
 Indianapolis, Indiana 46204
 (317) 266-8000 FAX: (317) 632-3306

PROJECT:
TIPPECANOE LAKE OUTLET STRUCTURE REPLACEMENT
 KOSCIUSKO COUNTY, INDIANA

NO.	DATE	ISSUED FOR	BY
A	06/22/18	Issued for Bid	AJF
CHKD.		NATURE OF REVISION	AJF
			CHKD.
			SCALE:
			AS NOTED
			DATE:
			6/22/2018



TITLE:
DEMOLITION PLAN
 PROJECT NO. 19.R160444.00000
 SHEET 3 OF 12
 DRAWING NO. DP1



SURVEY LEGEND

835	EXISTING CONTOUR		DECIDUOUS TREE
FOL	FIBER OPTIC LINE		CONIFEROUS TREE
OH	OVERHEAD ELECTRIC		SHRUB
WL	WATER LINE		SOIL BORING
X-X-X-X	CHAIN LINK FENCE		
	ELECTRIC PANEL		
	ELECTRIC METER		
	ELECTRIC DROP		
	POWER POLE		
	WELL		
	POST		
	TELECOMMUNICATIONS PEDESTAL		

IMPROVEMENT LEGEND

REG FP	REGULATORY FLOODPLAIN
	NEW SMALL CRAFT INTRUSION BARRIER
	CONSTRUCTION LIMITS
	EXISTING CONCRETE ABUTMENT
	NEW CONCRETE
	RIPRAP
	DROWNING ZONE WARNING SIGN (APPROXIMATE LOCATIONS SHOWN; COORDINATE WITH OWNER TO DETERMINE EXACT LOCATIONS)
	"DAM DANGER" REGULATORY BUOY (INSTALL AT THIRD POINTS ALONG SMALL CRAFT INTRUSION BARRIER)

- ### GENERAL NOTES
1. TOPOGRAPHIC AND PLANIMETRIC INFORMATION SHOWN IS FROM A SURVEY PERFORMED BY APEX SURVEYING AND CONSULTING, INC. IN JUNE 2017 AND NOVEMBER 2017. SOME UTILITIES SHOWN ARE BASED ON INFORMATION PROVIDED BY THE INDIANA DEPARTMENT OF NATURAL RESOURCES.
 2. REGULATORY FLOODPLAIN SHOWN IS FROM THE FEMA FLOOD INSURANCE STUDY FOR KOSCIUSKO COUNTY, INDIANA AND INCORPORATED AREAS DATED SEPTEMBER 30, 2015.
 3. ACCESS ALONG THE NORTH BANK IS FOR SIGNAGE AND BARRIER INSTALLATION ONLY. NO WORK ON THE OUTLET STRUCTURE MAY BE PERFORMED FROM THE NORTH BANK.

- ### SMALL CRAFT INTRUSION BARRIER NOTES
1. SMALL CRAFT INTRUSION BARRIER SHALL BE WORTHINGTON T1830 OR APPROVED EQUAL.
 2. INSTALL SMALL CRAFT INTRUSION BARRIER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 3. SUBMIT INSTALLATION PLAN SHOWING DETAILS OF PROPOSED ANCHORING WITH SUPPORTING CALCULATIONS SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER IN INDIANA. ANCHORING SHALL BE DESIGNED SUCH THAT THE CABLE AND/OR ASSOCIATED APPURTENANCES WOULD FAIL BEFORE THE ANCHORING.

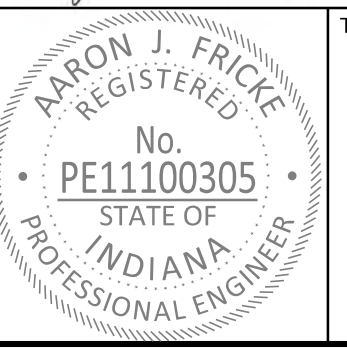
- ### PNEUMATICALLY-OPERATED GATE NOTES
1. REFER TO SPECIFICATIONS FOR REFERENCE DRAWINGS.
 2. CONTRACTOR SHALL COORDINATE WITH THE GATE MANUFACTURER AND SUBMIT FINAL DRAWINGS TO ENGINEER FOR APPROVAL.

- ### STAFF GAGE NOTES
1. STAFF GAGE SHALL BE WATERMARK STYLE "C" BY FORESTRY SUPPLIERS, INC. OR APPROVED EQUIVALENT.
 2. COORDINATE WITH OWNER AND ENGINEER TO DETERMINE EXACT LOCATION.
 3. GRADATIONS SHALL BE DETERMINED BY OWNER AND ENGINEER BASED ON LOCATION.

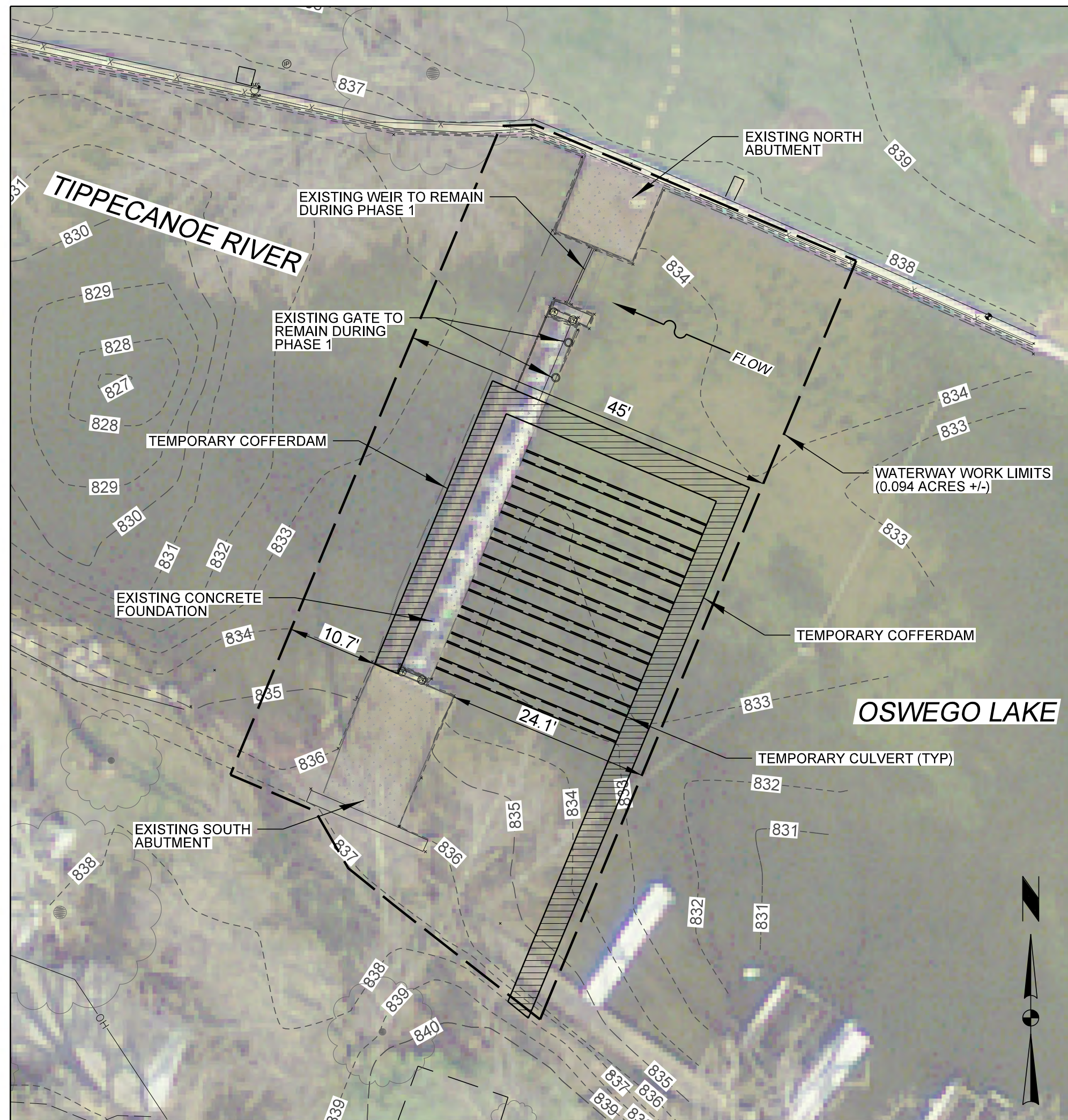
CHRISTOPHER B. BURKE ENGINEERING, LLC.
 PNC Center, Suite 1368 South
 115 West Washington Street
 Indianapolis, Indiana 46204
 (317) 266-8000 FAX: (317) 632-3306

PROJECT:
**TIPPECANOE LAKE OUTLET
 STRUCTURE REPLACEMENT**
 KOSCIUSKO COUNTY, INDIANA

NO.	DATE	ISSUED FOR	BY	SCALE	DATE
A	06/22/18	Issued for Bid	AJF	AS NOTED	6/22/2018
CHKD.		NATURE OF REVISION			



TITLE:
SITE IMPROVEMENT PLAN
 PROJECT NO. 19.R160444.00000
 SHEET 4 OF 12
 DRAWING NO. SP1



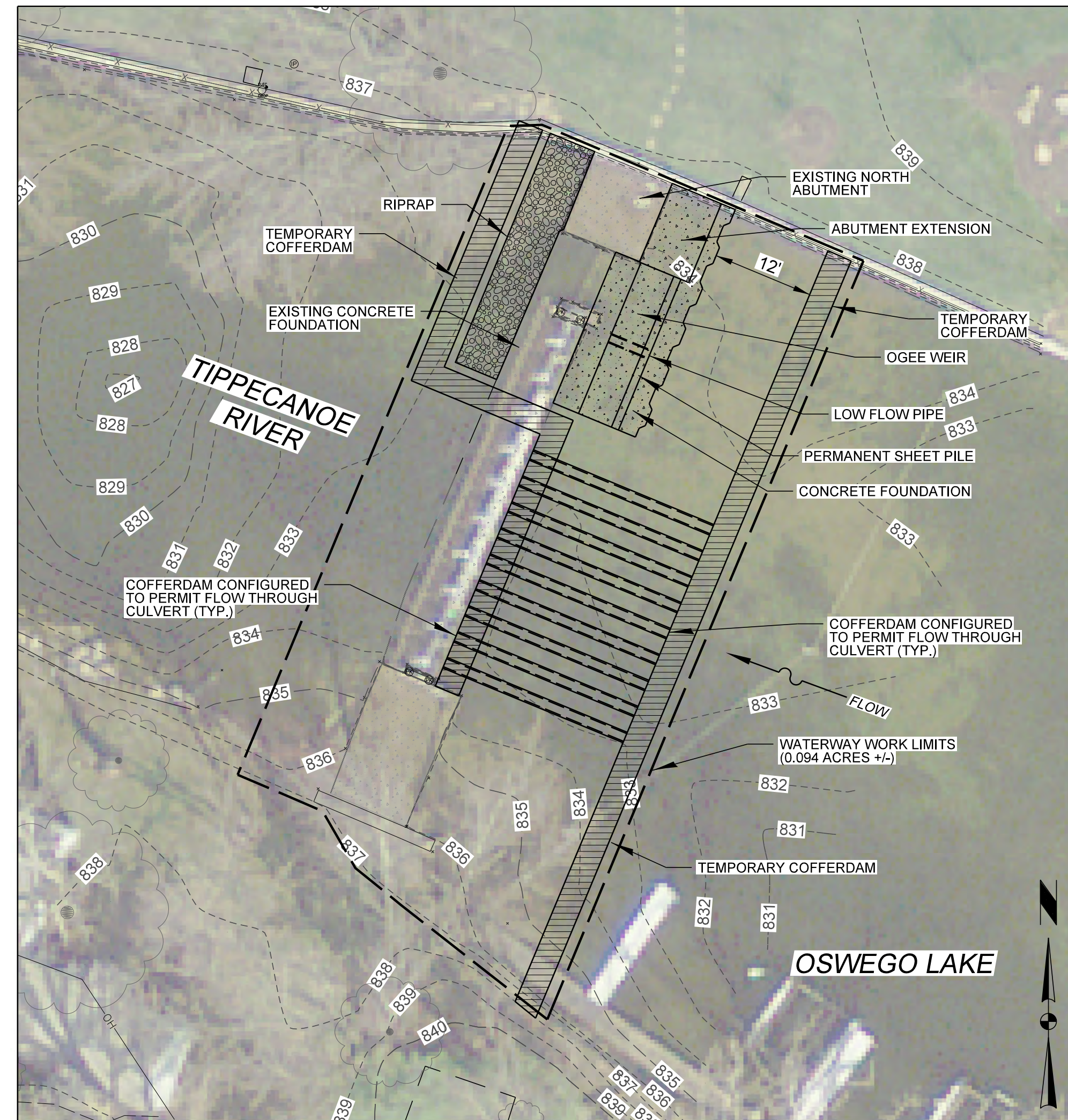
1 PHASE 1 SCHEMATIC LAYOUT
NOT TO SCALE

CONSTRUCTION SEQUENCE FOR PHASE 1 SCHEMATIC LAYOUT

1. INSTALL A COFFERDAM UPSTREAM OF THE EXISTING OUTLET CONTROL STRUCTURE FROM HIGH GROUND NEAR THE SOUTH ABUTMENT TO THE LOCATION OF THE PROPOSED NORTH WIPER WALL LEAVING TWO BAYS OF THE EXISTING STRUCTURE OPEN.
2. CONSTRUCT A COFFERDAM ON THE NORTH SIDE AND DOWNSTREAM SIDE OF THE PHASE 1 WORK AREA.
3. THE PORTION OF THE EXISTING OUTLET STRUCTURE NORTH OF THE PROPOSED NORTH WIPER WALL IS TO BE USED TO PASS FLOW DURING PHASE 1 WORK. THIS INCLUDES THE WEIR, 2 BAYS, AND THE NORTH ABUTMENT.
4. UTILIZE PUMPS TO MAINTAIN A DRY WORKING AREA FOR PHASE 1 WORK. INCORPORATE DEWATERING BAGS OR OTHER APPROVED MEASURES TO CONTROL SEDIMENT.
5. REMOVE THE EXISTING OUTLET STRUCTURE GATES, POSTS, HANDRAILS, AND OTHER COMPONENTS BETWEEN THE SOUTH ABUTMENT AND THE PROPOSED NORTH WIPER WALL IN ACCORDANCE WITH THE DEMOLITION PLAN.
6. INSTALL TEMPORARY CULVERTS BETWEEN THE SOUTH ABUTMENT AND PROPOSED NORTH WIPER WALL TO MAINTAIN FLOW DOWNSTREAM DURING PHASE 2 WORK. DETERMINE NUMBER AND SIZE OF CULVERTS TO MAINTAIN FLOW IN ACCORDANCE WITH DEWATERING REQUIREMENTS. POSITION CULVERTS TO DISCHARGE ON THE EXISTING CONCRETE FOUNDATION. PROVIDE ADDITIONAL TEMPORARY EROSION PROTECTION AS REQUIRED AND AS APPROVED BY OWNER AND ENGINEER. INSTALL TEMPORARY STONE, STEEL PLATES, OR OTHER APPROVED PROTECTIVE MEASURES TO FACILITATE EQUIPMENT CROSSING THE CULVERTS.

DEWATERING REQUIREMENTS

1. DEWATERING DIRECTLY INTO THE STREAM IS PROHIBITED. UTILIZE DEWATERING BAGS OR OTHER APPROVED MEASURES.
2. INCORPORATE FILTERS OR BYPASSES INTO DEWATERING PUMPS TO AVOID IMPACTS TO FISH AND AQUATIC ORGANISMS.
3. TAKE APPROPRIATE MEASURES TO MINIMIZE THE MOVEMENT OF RESUSPENDED BOTTOM SEDIMENT FROM THE IMMEDIATE PROJECT AREA.
4. COFFERDAM MATERIALS MUST BE SELF-CONTAINED OR ENCAPSULATED. ACCEPTABLE MATERIALS INCLUDE SHEET PILE, WATER OR AIR-FILLED BLADDERS, SANDBAGS, AND PORTADAMS. AVOID DRIVING SHEET PILE ADJACENT TO THE EXISTING FOUNDATION AND ABUTMENTS DUE TO RISK OF SETTLEMENT.
5. DO NOT CONSTRUCT ANY TEMPORARY RUNAROUNDS, ACCESS BRIDGES, CAUSEWAYS, DIVERSIONS, OR PUMPAROUNDS BEYOND THOSE PROPOSED WITHIN THE DEWATERED PROJECT SITE.
6. DEWATERING SHALL BE DESIGNED TO MAINTAIN SEASONAL BASE FLOW DOWNSTREAM AND LEGAL LAKE LEVEL UPSTREAM AS WELL AS TO MANAGE FLOW VELOCITY TO AVOID EROSION DOWNSTREAM. THE LAKE LEVEL SHALL NOT BE LOWERED BELOW THE SEASONAL LEGAL LAKE LEVEL. TAKE PRECAUTIONS TO AVOID SURCHARGES IN LAKE LEVEL DURING WET WEATHER.
7. CONTRACTOR SHALL SUBMIT A WATER MANAGEMENT PLAN AT LEAST 30 DAYS PRIOR TO WORK IN THE WATERWAY FOR APPROVAL BY OWNER AND ENGINEER. WORK IN THE WATERWAY SHALL NOT COMMENCE UNTIL THE WATER MANAGEMENT PLAN IS APPROVED. THE WATER MANAGEMENT PLAN SHALL INCLUDE THE FOLLOWING:
 - METHODS FOR MANAGING AND MONITORING GROUNDWATER AND SURFACE WATER
 - NUMBER AND LOCATION OF ALL DEWATERING COMPONENTS AND FEATURES
 - LOCATIONS(S) FOR THE DISCHARGE OF WATER AND MEASURES TO BE TAKEN TO PREVENT EROSION/SEDIMENTATION
 - METHODS AND DETAILS FOR IMPLEMENTING AND MAINTAINING IN-CHANNEL EROSION CONTROL PRACTICES
 - DESCRIPTION OF EMERGENCY PROCEDURES, INCLUDING NOTIFICATIONS, IN THE EVENT OF A FAILURE OF DEWATERING EQUIPMENT OR HIGH LAKE LEVEL
 - ANTICIPATED DURATION OF DEWATERING ACTIVITIES



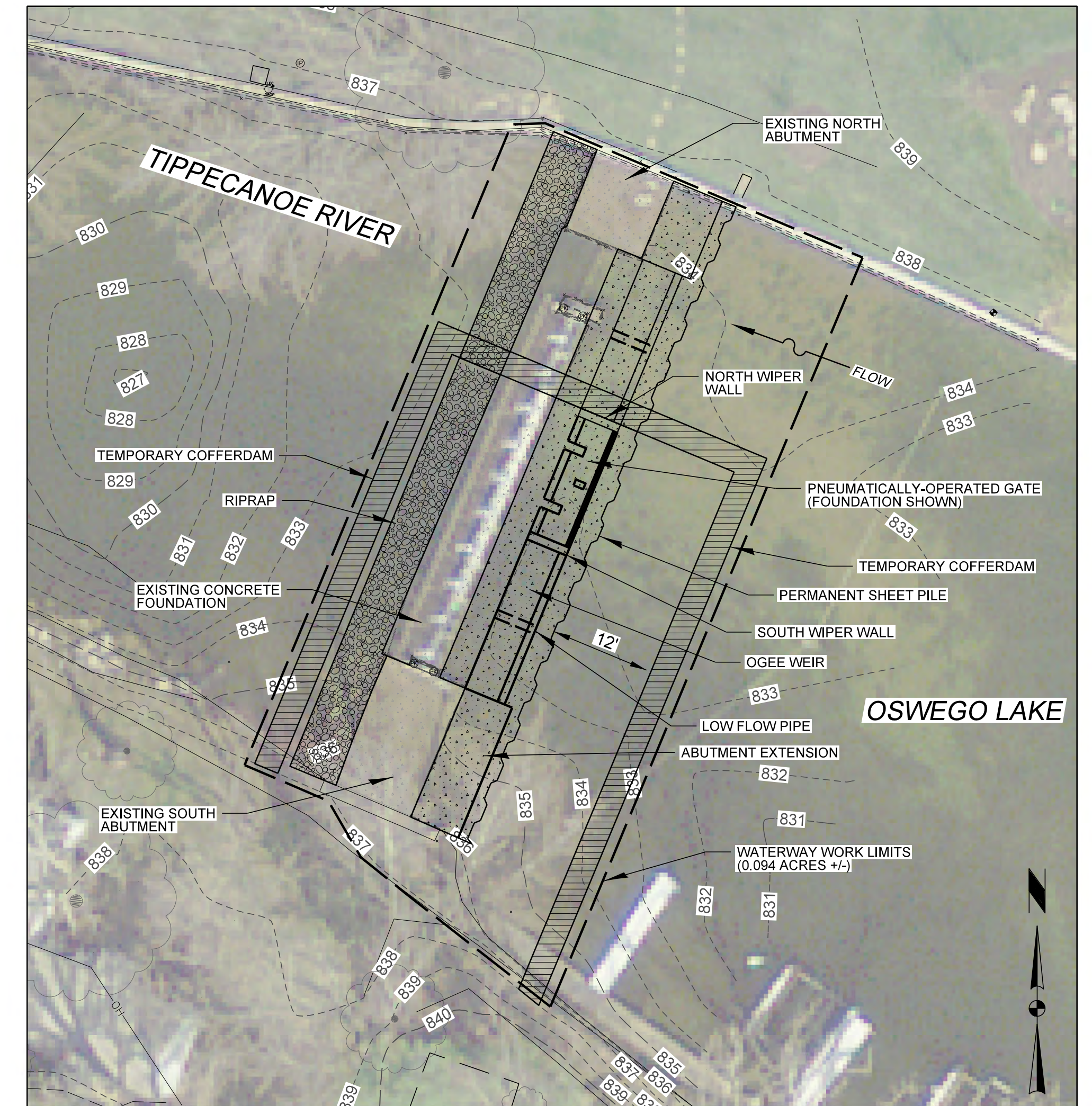
2 PHASE 2 SCHEMATIC LAYOUT
NOT TO SCALE

CONSTRUCTION SEQUENCE FOR PHASE 2 SCHEMATIC LAYOUT

1. MOVE THE COFFERDAM ON THE DOWNSTREAM SIDE OF THE PHASE 1 WORK AREA AND ADJUST THE UPSTREAM COFFERDAM AS REQUIRED TO ALLOW FLOW THROUGH THE CULVERTS TO MAINTAIN A DRY AREA TO ACCESS THE NORTH ABUTMENT.
2. EXTEND THE UPSTREAM COFFERDAM FROM THE LOCATION OF THE PROPOSED NORTH WIPER WALL TO THE SEAWALL.
3. CONSTRUCT A COFFERDAM ON THE DOWNSTREAM SIDE OF THE PHASE 2 WORK AREA.
4. REMOVE THE COFFERDAM ON THE NORTH SIDE OF THE PHASE 1 WORK AREA (SOUTH SIDE OF PHASE 2 WORK AREA).
5. UTILIZE PUMPS AS REQUIRED TO MAINTAIN A DRY WORKING AREA FOR PHASE 2 WORK. INCORPORATE DEWATERING BAGS OR OTHER APPROVED MEASURES TO CONTROL SEDIMENT.
6. INSTALL PERMANENT SHEET PILE BETWEEN THE PROPOSED NORTH WIPER WALL AND SEAWALL.
7. INSTALL THE NEW STRUCTURE FOUNDATION BETWEEN THE PROPOSED NORTH WIPER WALL AND SEAWALL INCLUDING THE OGEE WEIR AND LOW-FLOW PIPE.
8. LEVEL EXISTING NORTH ABUTMENT TO PRE-CONSTRUCTION ELEVATION IF SETTLEMENT OCCURS.
9. INSTALL RIPRAP DOWNSTREAM OF EXISTING CONTROL STRUCTURE FOUNDATION.

GENERAL NOTES

1. THIS PLAN IS SHOWN AS A SCHEMATIC CONSTRUCTION AND DEWATERING SEQUENCE FOR THE PURPOSE OF ILLUSTRATING A POTENTIAL PLAN AND TO DEFINE THE MAXIMUM EXTENTS OF IMPACTS TO THE WATERWAY. OTHER PLANS MEETING THE SAME DEWATERING REQUIREMENTS MAY BE ACCEPTABLE. CONTRACTOR IS RESPONSIBLE FOR SUBMITTING DETAILED SEQUENCING AND DEWATERING INFORMATION TO ENGINEER AND OWNER FOR APPROVAL.
2. WORK IN THE WATERWAY MAY NOT EXTEND BEYOND THE LIMITS SHOWN ON THIS DRAWING.
3. NO WORK ON THE OUTLET STRUCTURE IS ALLOWED FROM THE NORTH BANK OF THE LAKE/RIVER.
4. THE FOLLOWING DISCHARGES ARE PROVIDED FOR REFERENCE:
 - BASE FLOW = 14.7 CFS (APRIL-OCTOBER BASED ON ANALYSIS OF 30 YEARS OF HOURLY FLOW DATA FROM DOWNSTREAM GAGE)
 - 2-YEAR FLOW = 370 CFS (EXTRAPOLATED FROM FEMA FLOOD INSURANCE STUDY)
 - 10-YEAR FLOW = 610 CFS (FROM FEMA FLOOD INSURANCE STUDY)
 - 50-YEAR FLOW = 840 CFS (FROM FEMA FLOOD INSURANCE STUDY)
 - 100-YEAR FLOW = 920 CFS (FROM FEMA FLOOD INSURANCE STUDY)
 - 500-YEAR FLOW = 1,210 CFS (FROM FEMA FLOOD INSURANCE STUDY)
5. REFER TO SHEET GN1 FOR LEGAL LAKE LEVELS.



3 PHASE 3 SCHEMATIC LAYOUT
NOT TO SCALE

CONSTRUCTION SEQUENCE FOR PHASE 3 SCHEMATIC LAYOUT

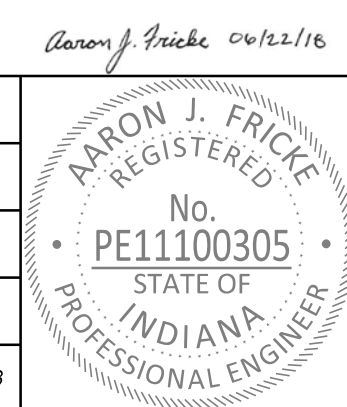
1. CONSTRUCT A COFFERDAM ON THE NORTH SIDE OF THE PHASE 3 WORK AREA (SOUTH SIDE OF PHASE 2 WORK AREA).
2. REMOVE TEMPORARY COFFERDAMS FROM THE UPSTREAM AND DOWNSTREAM SIDES OF THE PHASE 2 WORK AREA TO ALLOW FLOW TO PASS OVER THE NEWLY-CONSTRUCTED WEIR.
3. REMOVE TEMPORARY CULVERTS AS WELL AS STONE, STEEL PLATES, AND OTHER PROTECTIVE MEASURES AND ADJUST COFFERDAMS AS REQUIRED TO MAINTAIN A DRY WORK AREA.
4. MOVE COFFERDAM ON THE DOWNSTREAM SIDE OF THE PHASE 3 WORK AREA FURTHER DOWNSTREAM FOR RIPRAP INSTALLATION.
5. UTILIZE PUMPS AS REQUIRED TO MAINTAIN A DRY WORKING AREA FOR PHASE 3 WORK. INCORPORATE DEWATERING BAGS OR OTHER APPROVED MEASURES TO CONTROL SEDIMENT.
6. INSTALL PNEUMATICALLY-OPERATED GATE AND APPURTENANCES.
7. CONSTRUCT OGEE WEIR FROM THE GATE TO THE SOUTH ABUTMENT.
8. INSTALL RIPRAP DOWNSTREAM OF EXISTING CONTROL STRUCTURE FOUNDATION.
9. MOVE THE NORTH COFFERDAM SOUTH AS SECTIONS OF THE GATE AND OGEE WEIR ARE COMPLETED TO OPEN A LARGER AREA OF FLOW.
10. LEVEL EXISTING SOUTH ABUTMENT TO PRE-CONSTRUCTION ELEVATION IF SETTLEMENT OCCURS.
11. REMOVE ALL COFFERDAMS.

LEGEND

- TEMPORARY COFFERDAM
- TEMPORARY CULVERT
- SHEET PILE
- EXISTING CONCRETE
- PROPOSED CONCRETE
- RIPRAP
- EXISTING CONTOUR

NO.	DATE	ISSUED FOR	BY	CHKD.	DATE
A	06/22/18	Issued for Bid	AJF		
NATURE OF REVISION					
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DSGN.	AJF	DWN.	DJW/AJF	CHKD.	JML	SCALE:	AS NOTED	DATE:	6/22/2018
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SURVEY LEGEND

	EXISTING CONTOUR		DECIDUOUS TREE
	FIBER OPTIC LINE		CONIFEROUS TREE
	OVERHEAD ELECTRIC		SHRUB
	WATER LINE		SOIL BORING
	CHAIN LINK FENCE		
	ELECTRIC PANEL		
	ELECTRIC METER		
	ELECTRIC DROP		
	POWER POLE		
	WELL		
	POST		
	TELECOMMUNICATIONS PEDESTAL		

IMPROVEMENT LEGEND

	SEED AND MULCH	(5 EC2)
	SEED AND EROSION CONTROL BLANKET (CURLEX NET FREE OR APPROVED EQUAL)	(2 EC2)
	CONSTRUCTION ENTRANCE	(1 EC2)
	STAGING AREA	
	SILT FENCE	(4 EC2)
	CONCRETE WASHOUT	(3 EC2)
	CONSTRUCTION LIMITS	
	SMALL CRAFT INTRUSION BARRIER	

- ### EROSION CONTROL NOTES
1. TEMPORARY EROSION CONTROL FEATURES TO HELP PREVENT SEDIMENT FROM LEAVING THE SITE ARE SHOWN AT APPROXIMATE LOCATIONS.
 2. INSPECT EROSION CONTROL FEATURES AT LEAST WEEKLY AND AGAIN WITHIN 24 HOURS FOLLOWING EACH RAINFALL EVENT OF 0.5 INCH OR MORE. REMOVE ACCUMULATED SEDIMENT IMMEDIATELY. REPAIR OR REPLACE DAMAGED EROSION CONTROL FEATURES IMMEDIATELY.
 3. ROUTINELY REMOVE CONSTRUCTION DEBRIS AND WASTE FROM THE SITE.
 4. THE DURATION OF TIME WHICH AN AREA REMAINS EXPOSED SHALL BE KEPT TO A PRACTICAL MINIMUM. TEMPORARY OR PERMANENT SURFACE STABILIZATION IS REQUIRED ON ANY BARE OR THINLY VEGETATED AREA THAT IS SCHEDULED TO OR LIKELY TO REMAIN INACTIVE FOR 15 OR MORE DAYS.
 5. MAINTAIN EROSION CONTROL MEASURES THROUGHOUT CONSTRUCTION AS DESCRIBED ON THE DRAWINGS.
 6. REMOVE ACCUMULATED SEDIMENT FROM THE SITE AFTER PERMANENT VEGETATION IS ESTABLISHED AND DISPOSE OFF-SITE.

IN-CHANNEL EROSION CONTROL

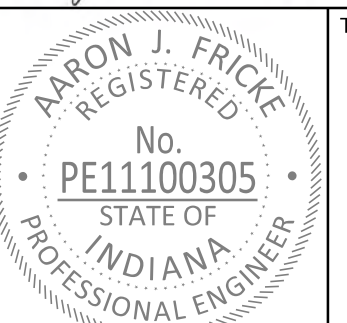
CONTRACTOR SHALL SUBMIT AS PART OF THE WATER MANAGEMENT PLAN METHODS AND DETAILS FOR IMPLEMENTING AND MAINTAINING IN-CHANNEL EROSION CONTROL PRACTICES TO MINIMIZE THE POTENTIAL FOR SEDIMENT TO BE RELEASED DOWNSTREAM.

- ### EROSION CONTROL SEQUENCE
1. UTILIZE EXISTING PARKING LOT TO ACCESS THE SITE. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE. REFER TO DETAIL 1/EC2.
 2. STAKE THE LIMITS OF CONSTRUCTION.
 3. INSTALL EROSION CONTROL MEASURES PRIOR TO LAND DISTURBING ACTIVITIES.
 4. STABILIZE DISTURBED AREAS WITH TEMPORARY OR PERMANENT SEEDING AS SOON AS POSSIBLE WHEN WORK IS COMPLETE.
 5. THROUGHOUT CONSTRUCTION CONTROL DUST ON THE PROJECT SITE. SWEEP STREETS AS NECESSARY TO KEEP CLEAN OF DIRT, DUST, AND CONSTRUCTION DEBRIS. PROPERLY DISPOSE OF ALL CLEARED MATERIAL.
 6. REMOVE ALL TEMPORARY CONTROL MEASURES UPON APPROVAL OF OWNER AND/OR ENGINEER AND SUCCESSFUL ESTABLISHMENT OF VEGETATION.

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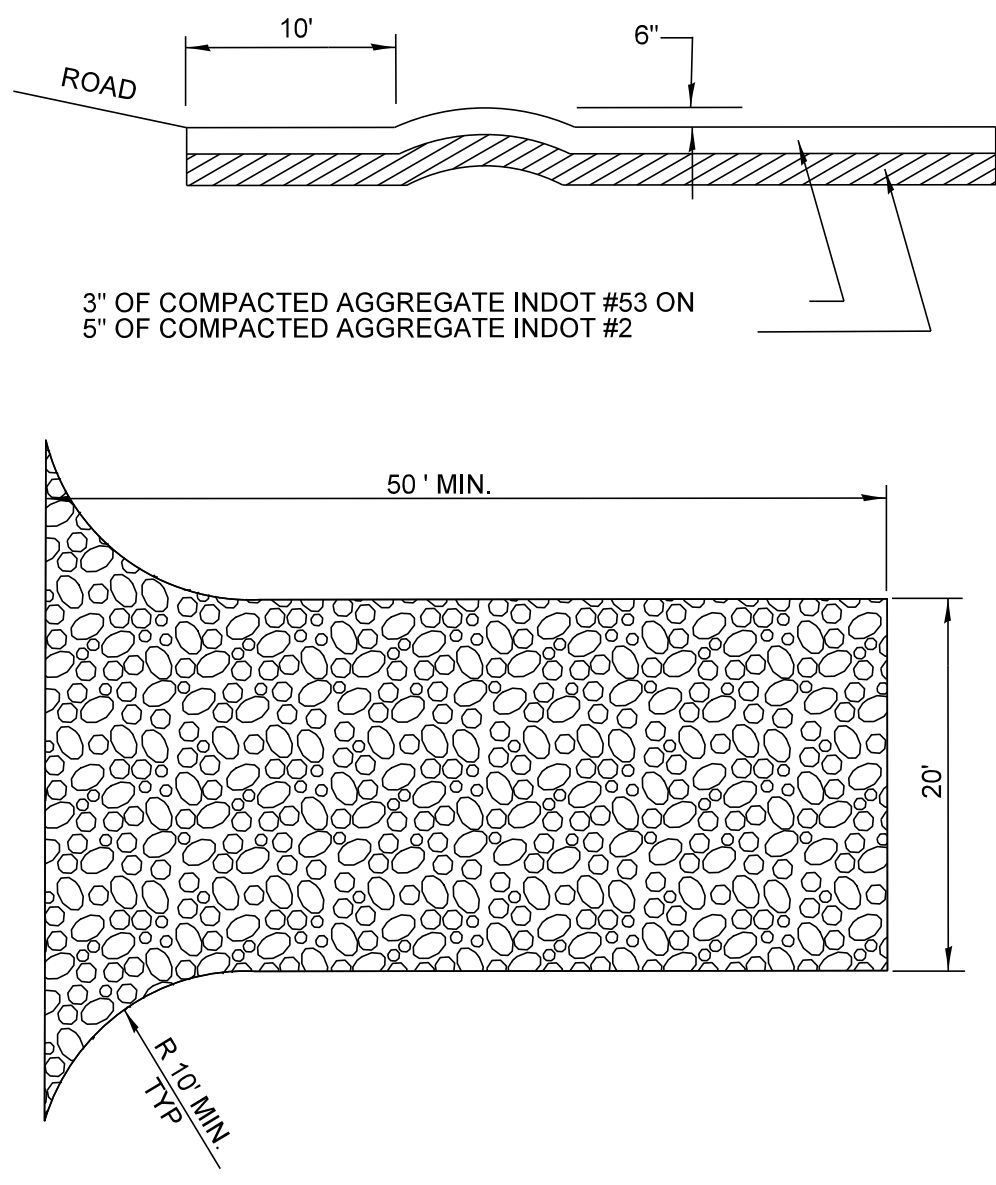
PROJECT:
**TIPPECANOE LAKE OUTLET
 STRUCTURE REPLACEMENT**
 KOSCIUSKO COUNTY, INDIANA

NO.	DATE	ISSUED FOR	BY
A	06/22/18	Issued for Bid	AJF
CHKD.		NATURE OF REVISION	AJF
			CHKD.
SCALE:		AS NOTED	
DATE:		6/22/2018	



TITLE:
EROSION CONTROL PLAN
 PROJECT NO.
 19.R160444.00000
 SHEET 6 OF 12
 DRAWING NO.
EC1

NOTE:
THIS DETAIL APPLIES TO AREAS WHERE THERE IS CURRENTLY NO GRAVEL. WITHIN EXISTING GRAVEL AREAS, TOP-DRESS WITH A MINIMUM ADDITIONAL 3-INCHES OF INDOT #53 COARSE AGGREGATE.



1 CONSTRUCTION ENTRANCE
NOT TO SCALE

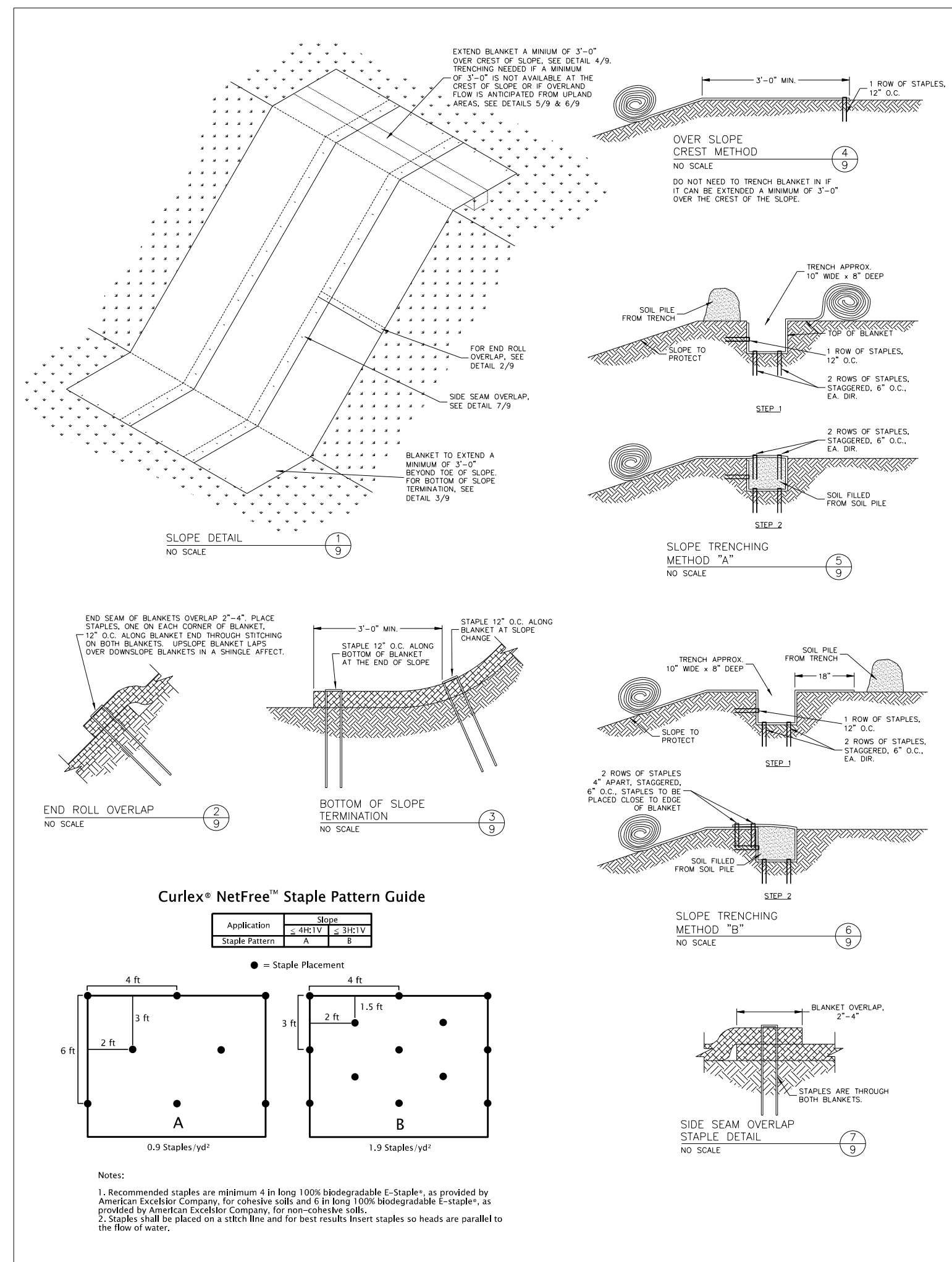
STABILIZED CONSTRUCTION ENTRANCE

- Requirements:**
- Construction entrance material shall be INDOT #2 and INDOT #53 compacted aggregate.
 - Construction entrance shall have a minimum thickness of 8 inches.
 - Construction entrance width shall be 20 feet minimum or full width of entrance/exit, whichever is greater.
 - Construction entrance shall have a minimum length of 50 feet.
 - Geotextile underliner fabric shall be used under wet conditions or for soil with a high seasonal water table to provide greater bearing strength.
 - Avoid constructing on steep slopes or at curves in roads.

- Installation:**
- Remove all vegetation and unsuitable material from the foundation area.
 - Grade the foundation and crown to provide positive drainage. If the longitudinal slope towards the road exceeds 2%, construct an 8-inch high water bar (ridge) with 3:1 side slopes across the foundation area approximately 15-feet from the entrance to direct runoff away from the road.
 - Install pipe under the entrance if needed to perpetuate existing drainage patterns.
 - Install geotextile fabric on the graded foundation to improve stability if wet conditions are anticipated.
 - Place stone to dimensions and grade shown on plans, leaving surface smooth and sloped for drainage.
 - Divert all surface runoff and drainage from the stone pad to a sediment trap or basin where possible.

Maintenance:
Inspect construction entrance daily and after each storm event or heavy use. Reshape the entrance as required for drainage and runoff control. Topdress with clean stone as needed. Mud and sediment tracked or washed into public roads should be removed immediately by brushing or sweeping. Flush only if the water is conveyed into a sediment trap or basin. Repair any broken road pavement immediately.

Reference:
Indiana Department of Environmental Management. Indiana Stormwater Quality Manual. October 2007.



2 EROSION CONTROL BLANKET SLOPE INSTALLATION
NOT TO SCALE
DETAIL SOURCE: AMERICAN EXCELSIOR, INC.

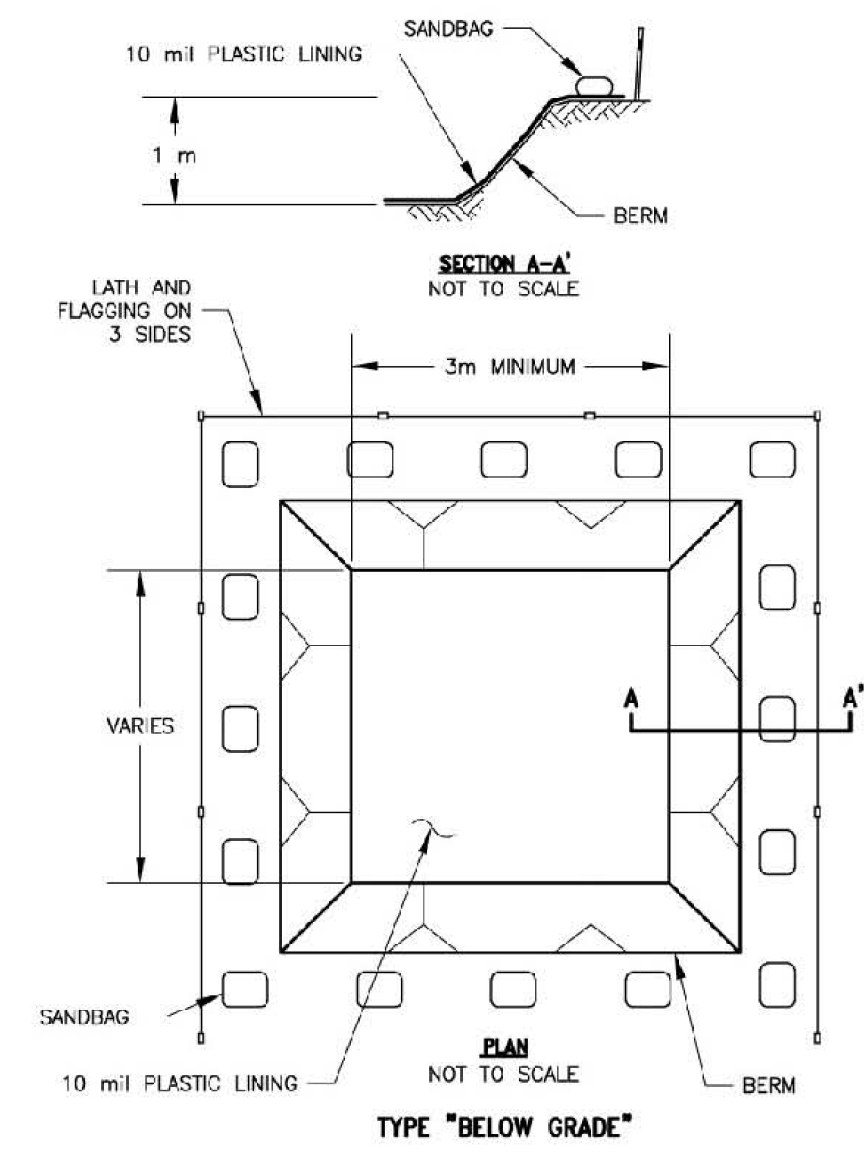
EROSION CONTROL BLANKET – SLOPE INSTALLATION

- Requirements:**
- Product shall be Curlex NetFree by American Excelsior, Inc. or approved equivalent.
 - Install in locations shown on the Drawings and on any slopes 4:1 (H:V) or greater.

- Installation:**
- Remove the Curlex NetFree protective cover.
 - Identify the start of the roll. The roll shall face the area to be covered. Install vertically on the slope.
 - Embed the blankets in a trench at the top of slope.
 - Roll out of the product flat, even, and smooth without stretching the material.
 - Overlap adjoining blankets a minimum of two inches.
 - Anchor the product with staples on a stitch line.

Maintenance:
During vegetative establishment, inspect after storm events for erosion below the blanket. If any area shows erosion, pull back the portion of the blanket covering it, add soil, reseed the area, and re-lay and staple the blanket. After vegetative establishment, check the treated area periodically. Add additional staples as necessary to securely anchor the erosion control blanket.

NOTES:
1. SCHEMATIC IS INTENDED TO PROVIDE GENERAL CONCEPT OF CONCRETE WASHOUT. ADHERE TO REQUIREMENTS DESCRIBED IN THIS DETAIL.
2. PREFABRICATED CONCRETE WASHOUT DISPOSAL UNITS ARE ACCEPTABLE IF IN ACCORDANCE WITH ALL STATE AND LOCAL ORDINANCES AND WITH PRIOR APPROVAL FROM OWNER AND/OR ENGINEER. INSTALL, LOCATE, AND MAINTAIN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.



3 CONCRETE WASHOUT DETAIL
NOT TO SCALE
DETAIL SOURCE: CALTRANS CONSTRUCTION SITE BEST MANAGEMENT PRACTICES MANUAL, SECTION 8

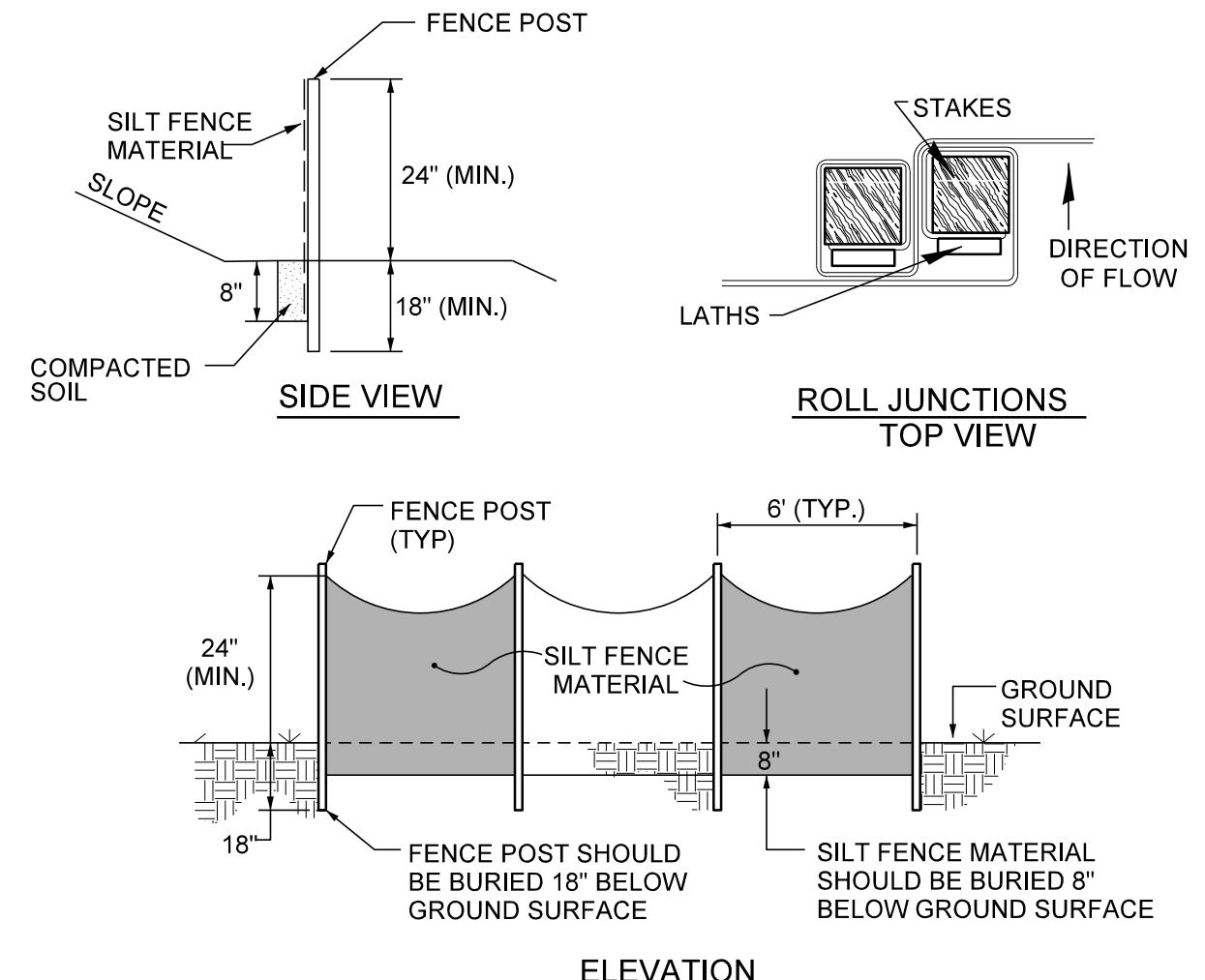
BELOW GRADE CONCRETE WASHOUT

- Requirements:**
- Minimum of ten feet wide by ten feet long, but sized to contain all liquid and waste that is expected to be generated between scheduled cleanup periods.
 - Size the polyethylene lining to extend over the berm or containment system without seams or overlap of the lining.
 - Utilize an earthen berm, sandbags, or other acceptable barriers that will maintain shape and integrity and support the polyethylene lining. Straw bales are not permitted.
 - Incorporate 12 inches of freeboard as part of the design.
 - Polyethylene sheeting shall be a minimum of ten millimeters thick and shall be free of holes, tears, and other defects.

- Installation:**
- Install signage indicating location of concrete washout.
 - Install orange safety fencing or equivalent.
 - Excavate the concrete washout pit. The bottom of the excavation shall be above the seasonal high water table.
 - Construct and prepare a base that is free of rocks and other debris that may cause tears or punctures in the polyethylene lining.
 - Install the polyethylene liner containment system.
 - Place ultraviolet-stabilized geotextile fabric sandbags, soil material, or other appropriate materials to secure the polyethylene lining.
 - Install flags or safety fencing to provide a barrier to construction equipment and other traffic.
 - As an option, place a non-collapsing, non-water holding cover over the concrete washout prior to a predicted rainfall event.
 - Install signage identifying concrete washout areas.
 - Post signs directing contractors and suppliers to the concrete washout.

- Maintenance:**
- Inspect daily and after each storm event.
 - Inspect integrity of the overall structure including, where applicable, the containment system.
 - Inspect the system for leaks, spills, and tracking of soil by equipment.
 - Inspect the polyethylene lining for failure, including tears and punctures.
 - Once system reaches 50% capacity and hardens, properly remove and dispose of the material offsite.
 - Upon removal of the solids, inspect the structure. Repair the structure as needed or construct a new system.

Reference:
Indiana Department of Environmental Management. Indiana Stormwater Quality Manual. October 2007.



4 SILT FENCE DETAIL
NOT TO SCALE

SILT FENCE

- Requirements:**
- Fence posts shall be buried 18 inches minimum below the ground surface.
 - Fence posts shall be spaced at a maximum of 6-feet laterally.
 - The trench depth should be a minimum of 8 inches. The width should be a minimum of four inches.
 - A minimum of 12-inches of silt fence should be buried. 8 inches vertically below the ground surface and 4 inches horizontally on the bottom of the trench.
 - Utilize 2"x2" hardwood posts. Fence posts shall have a minimum height above the ground surface of 24-inches.
 - Install parallel to the slope contour.
 - Where practical, locate fence at least 10 feet beyond the toe of slope to provide a sediment storage area.
 - Refer to specifications to geotextile fabric.

- Installation:**
- For silt fence being constructed on-site, attach the geotextile fabric to the support posts and attach wooden lath to secure the fabric to the posts.
 - Dig an 8-inch deep by 4-inch wide trench along proposed fence line (a trenching machine is needed on long runs).
 - Place support posts at least 18 inches into the ground. Be sure to stretch fabric taut when pounding stakes. (Note: Stakes must be on the down-slope side of the fence and filter fabric on the up-slope side).
 - Drape loose end of geotextile into trench. At least 12 inches of filter fabric should extend into the fence (8 inches vertically and 4 inches on bottom of trench pointing toward the up-slope side of the trench).
 - Turn the ends of the silt fence up-slope so that the point of contact between the ground and the bottom of the fence at the end is at a higher elevation than the lowest top of fence elevation.
 - Backfill and compact soil on both sides.

Maintenance:
Inspect the silt fence weekly and after each storm event. If fence fabric tears, starts to decompose, or in any way becomes ineffective, immediately replace the affected segment. Sediment should be removed when it reaches half the height of the fence at its lowest point or when it causes the fabric to bulge. Take care to avoid undermining the fence during cleanout. After the contributing drainage area has been stabilized, remove the fence and sediment deposits, grade the area, and stabilize.

Reference:
Indiana Department of Environmental Management. Indiana Stormwater Quality Manual. October 2007.

TEMPORARY VEGETATION

Requirements:
Plant species shall be selected on the basis of quick germination, growth, and time of year. Seeding should be done as often as possible following construction activity. Daily seeding of rough graded areas when the soil is loose and moist is usually most effective.

- Installation:**
Temporary Seed Bed Preparation:
- Test soil to determine its nutrient levels.
 - Fertilize as recommended by soil testing. If testing is not done, apply 400-600 lbs/acre of 12-12-12 analysis, or equivalent, fertilizer.
 - Work the fertilizer into the soil 2-4-inches deep with a disc or rake operated across the slope.

- Temporary Seeding:
- Use temporary seed mix as specified on plans.
 - Apply seed uniformly with a drill or cultipacker-seeder or by broadcasting, and cover to the appropriate depth for the seed used.
 - If drilling or broadcasting, firm the seedbed with a roller or cultipacker.
 - Mulch seeded areas and anchor with a tackifier. Mulch shall be in accordance with Indiana Department of Transportation Standard Specification 914.05, latest edition.

Maintenance:
Inspect periodically after planting to ensure that vegetative stands are adequately established; reseed if necessary. Check for erosion damage after storm event and repair; reseed and mulch if necessary.

- SEEDING NOTES:**
- FOR BEST RESULTS: (A) LEGUME SEED SHOULD BE INOCULATED; (B) SEEDING MIXTURES CONTAINING LEGUMES SHOULD PREFERABLY BE SPRING-SEEDED, ALTHOUGH THE GRASS MAY BE FALL-SEEDED AND (C) IF LEGUMES ARE FALL-SEEDED, DO SO IN EARLY FALL.
 - AN OAT COMPANION OR NURSE CROP MAY BE USED WITH ANY OF THE PERMANENT SEEDING MIXTURES, SEE "A" THIS SCHEDULE. IF SO, IT IS BEST TO SEED DURING THE FALL SEEDING PERIOD, ESPECIALLY AFTER SEPT. 15, AND AT THE FOLLOWING RATES:
SPRING OATS ----- 1/4 TO 1/2 BU. /ACRE
A= VIRGINIA WILD RYE 6 LBS./ACRE
CANADA WILD RYE 6 LBS./ACRE
PERENNIAL RYE GRASS 65 LBS./ACRE
JASPER RED FESCUE 10 LBS./ACRE
LADINO CLOVER 1 TO 2 LBS./ACRE
B= ADD 50% MORE SEED TO MIXTURES IN "A" ABOVE.
C= INDOT TYPE "T" TEMPORARY SEED MIX.
D= STRAW MULCH AT 2 1/2 TONS/ACRE W/ LIQUID BINDER.
/I = IRRIGATION NEEDED DURING JUNE, JULY AND/OR SEPTEMBER
** = IRRIGATION NEEDED FOR 2 TO 3 WEEKS AFTER APPLYING SOD.

TEMPORARY/PERMANENT SEEDING SCHEDULE AND NOTES												
STABILIZATION PRACTICE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PERMANENT SEEDING		A										
DORMANT SEEDING											B	
TEMPORARY SEEDING	C			C								
MULCHING	D											

5 SEEDING NOTES AND SCHEDULE
NOT TO SCALE

PERMANENT VEGETATION

Requirements:
Plant species shall be selected on the basis of soil type, soil pH, region of the state, time of year, and planned use of the area to be seeded.

- Installation:**
Permanent Seed Bed Preparation:
- Test soil to determine pH and nutrient levels.
 - If soil pH is unsuitable for the species to be seeded, apply lime according to test recommendations.
 - Till the soil to obtain a uniform seedbed, working the fertilizer and lime into the soil 2-4-inches deep with a disc or rake operated across the slope.

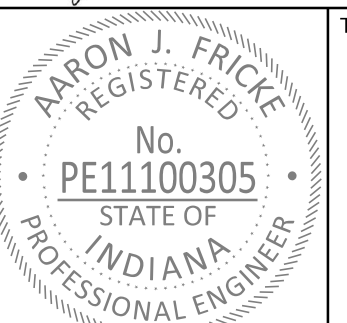
- Permanent Seeding:
Optimum seeding dates are March 1 through May 10 and August 10 through September 30. Permanent seeding done between May 10 and August 10 may need to be irrigated. As an alternative, use temporary seeding until the preferred date for permanent seeding.
- Use Seed Mix A as specified on plans or mix approved by Owner and/or Engineer.
 - Apply seed uniformly with a drill or cultipacker-seeder, by broadcasting, or another method approved by the Owner and/or Engineer. Cover to a depth of 1/4- to 1/2-inches.
 - If drilling or broadcasting, firm the seedbed with a roller or cultipacker.
 - Mulch all seeded areas and anchor with a tackifier. Mulch shall be in accordance with Indiana Department of Transportation Standard Specification 914.05, latest edition.

Maintenance:
Inspect periodically, especially after storm events, until the stand is successfully established (characteristics of a successful stand include: vigorous dark green or blue-ish green seedlings; uniform density with nurse plants, legumes, and grasses well intermixed; and the perennials remaining green throughout the summer, at least at the plant base). Add fertilizer the following growing season according to soil test recommendation. Repair damaged, bare or sparse areas by filling any gullies, refertilizing, over- or re-seeding. If plant cover is sparse or patchy, review the plant material chosen, soil fertility, moisture condition, and mulching; then repair the affected area either by over-seeding or reseeded and mulching after re-preparing the seedbed. If vegetation fails to grow, perform soil testing to determine acidity or nutrient deficiency problems. If additional fertilization is needed to get a satisfactory stand, do so according to soil test recommendations.

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PROJECT:
TIPPECANOE LAKE OUTLET STRUCTURE REPLACEMENT
KOSCIUSKO COUNTY, INDIANA

DSGN.	AJF
DWN.	DJW/AJF
CHKD.	JML
SCALE:	AS NOTED
DATE:	6/22/2018

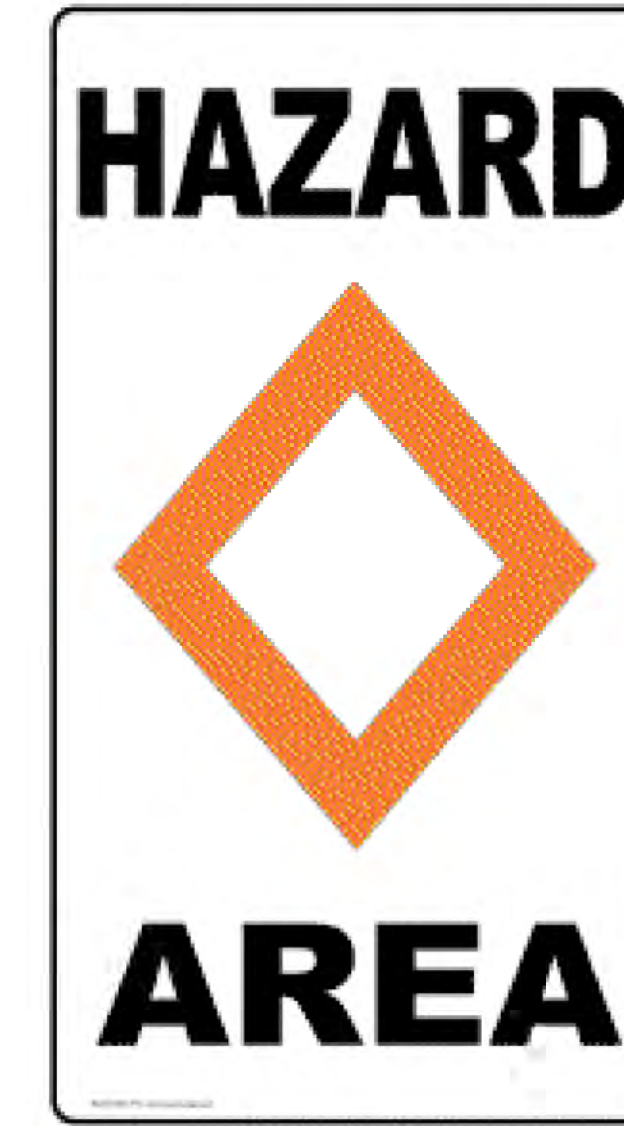


TITLE:
EROSION CONTROL DETAILS
PROJECT NO. 19.R160444.00000
SHEET 7 OF 12
DRAWING NO. EC2



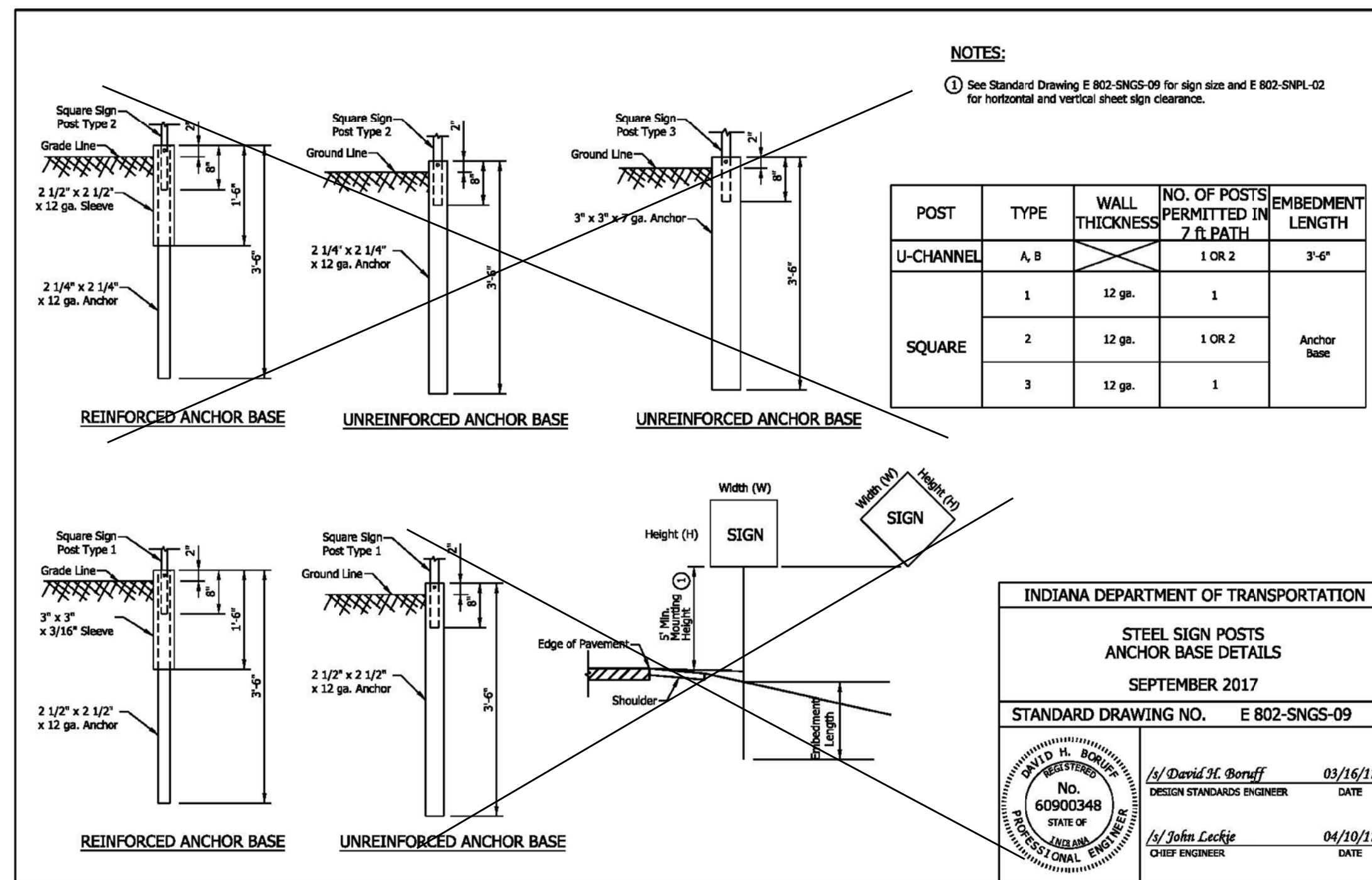
- SIGN SPECIFICATIONS:
1. SIGN TO BE ALUMINUM AND REFLECTIVE
 2. SIGN PANEL DIMENSIONS = 18" x 24"
 3. RADII DETERMINED BY MANUFACTURER
 4. "DANGER" TEXT HEIGHT = 3"
 5. OTHER CAPITAL LETTER TEXT HEIGHT = 1.5"
 6. SPACING BETWEEN TEXT LINES = 0.75"
 7. UTILIZE AERIAL FONT
 8. PROVIDE VANDAL RESISTANT COATING 3M PREMIUM PROTECTIVE OVERLAY FILM SERIES 1160 OR APPROVED EQUAL
 9. INSTALL SO THAT BOTTOM OF SIGN IS ABOVE THE BASE FLOOD ELEVATION.

1 PEDESTRIAN DROWNING ZONE WARNING SIGN
NOT TO SCALE

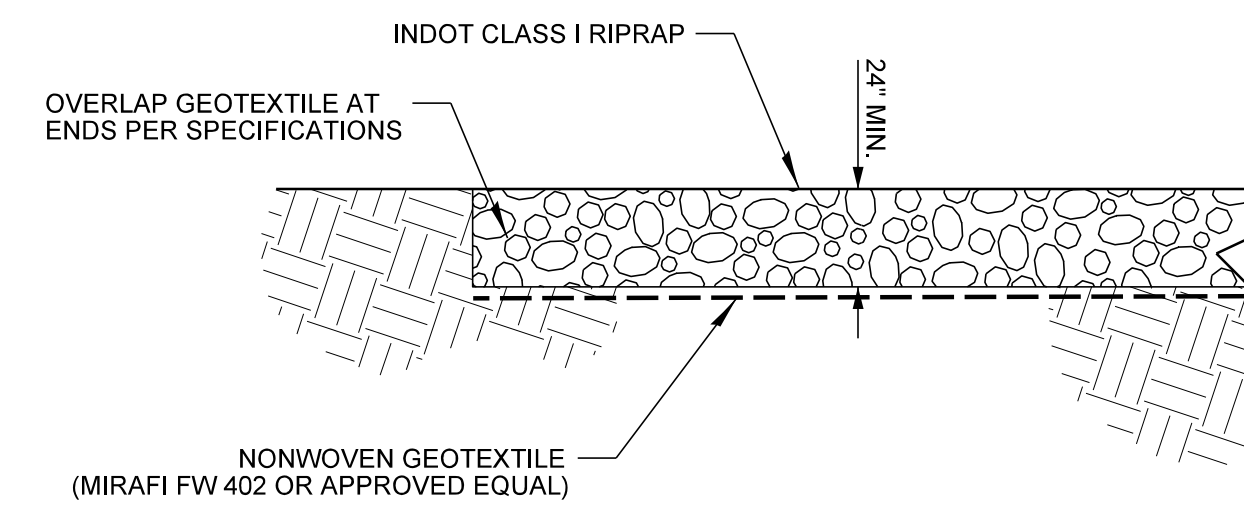


- SIGN SPECIFICATIONS:
1. SIGN TO BE ALUMINUM AND REFLECTIVE
 2. SIGN PANEL DIMENSIONS = 24" x 13"
 3. INSTALL SO THAT BOTTOM OF SIGN IS ABOVE THE BASE FLOOD ELEVATION.
 4. FOR SIGNS DOWNSTREAM OF THE DAM, ALIGN SIGN AT A 45-DEGREE ANGLE FACING DOWNSTREAM.

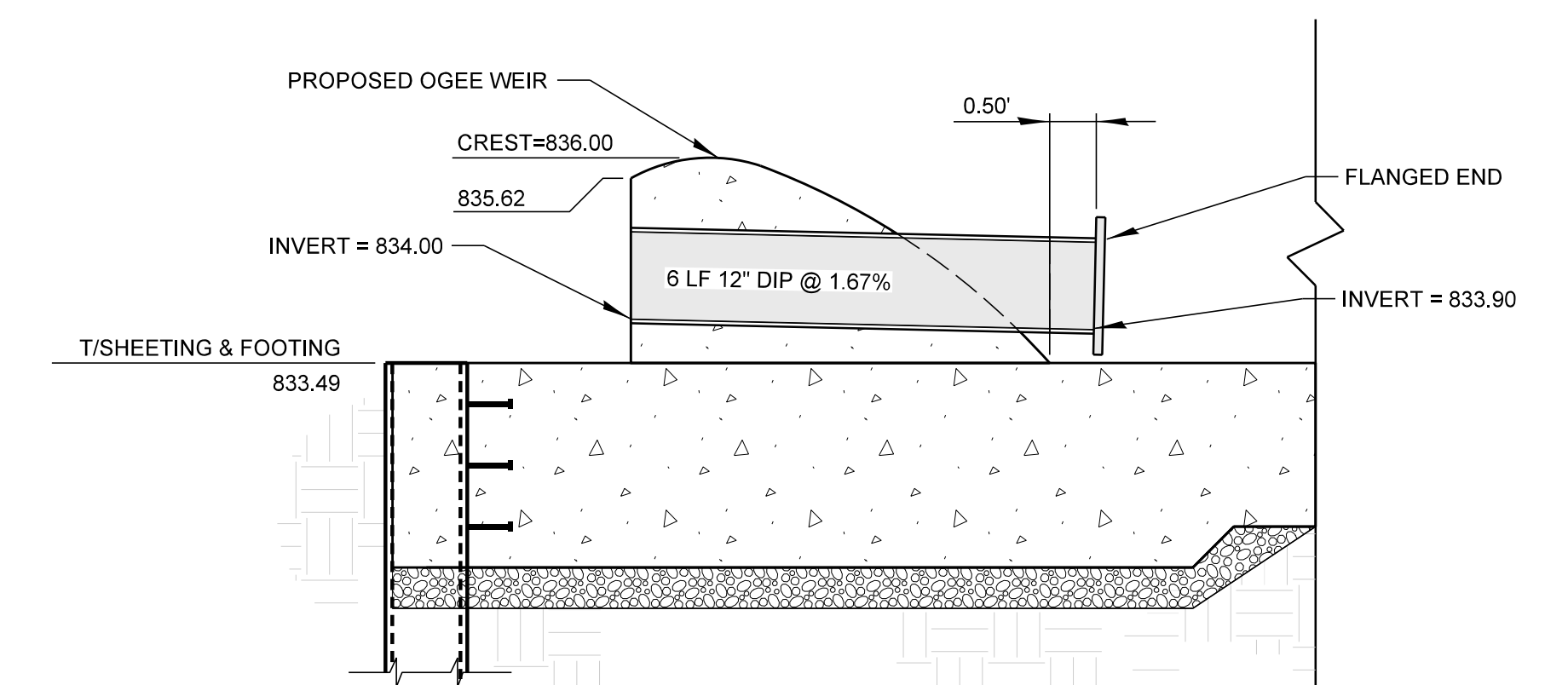
2 HAZARD AREA SIGN
NOT TO SCALE
DETAIL SOURCE: WWW.COMPLIANCE SIGNS.COM



3 SIGNAGE INSTALLATION DETAIL
NOT TO SCALE
SOURCE: INDIANA DEPARTMENT OF TRANSPORTATION



4 RIPRAP INSTALLATION
NOT TO SCALE



- NOTES:
1. CONCRETE REINFORCEMENT NOT SHOWN. REFER TO STRUCTURAL SHEETS.
 2. ABUTMENT EXTENSION AND EXISTING ABUTMENT NOT SHOWN. REFER TO STRUCTURAL SHEETS.
 3. EXTEND PIPE 0.5 FOOT BEYOND DOWNSTREAM EDGE OF OGEE WEIR.

5 LOW FLOW PIPING
NOT TO SCALE

GENERAL

- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO COMMENCING WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES WHICH MAY EXIST, PRIOR TO PROCEEDING WITH THE WORK.
- ANY INFORMATION CONCERNING TYPE OR LOCATION OF UNDERGROUND AND OTHER UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE AND LOCATION OF THE UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTRACTOR SHALL CALL INDIANA 811 PRIOR TO EXCAVATION.
- THE CONTRACTOR IS RESPONSIBLE FOR DESIGN, INSTALLATION AND REMOVAL OF ALL EXCAVATION SUPPORT SYSTEMS.
- THE EXCAVATION AND WORK AREA SHALL BE PROPERLY DRAINED AT ALL TIMES DURING CONSTRUCTION. ALL WET, LOOSE, FROZEN OR OTHER UNSUITABLE MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF CONCRETE OR COMPACTED BACKFILL. THE COST OF ANY PUMPING REQUIRED SHALL BE INCLUDED IN THE COST OF COFFERDAM/DEWATERING.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DIVERT FLOW DURING CONSTRUCTION IN ORDER TO KEEP THE CONSTRUCTION AREAS FREE OF WATER. THE METHOD OF WATER DIVERSION SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER, AND SHALL BE INCLUDED IN THE COST OF COFFERDAM/DEWATERING.
- FOR BORING LOGS AND FOUNDATION REPORT SEE THE GEOTECHNICAL REPORT BY CTL ENGINEERING, INC., PROJECT NO. 17050037IND, DATED NOVEMBER 19, 2017.
- USE OF CCDD FILL OPERATIONS: PER PUBLIC ACT 97-0137, IF THE CONTRACTOR CHOOSES TO DISPOSE OF UNCONTAMINATED SOIL OR UNCONTAMINATED SOIL MIXED WITH CLEAN CONSTRUCTION AND DEMOLITION DEBRIS (CCDD) AT A CCDD FILL OPERATION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM ALL NECESSARY FIELD AND LABORATORY ANALYSIS AND TO OBTAIN THE LICENSED PROFESSIONAL ENGINEER'S CERTIFICATION REQUIRED AS PER PUBLIC ACT 96-1416 TO USE THE SITE. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO EARTH EXCAVATION, STRUCTURE EXCAVATION OR RELATED EXCAVATION OR REMOVAL ITEM, AND NO ADDITIONAL COMPENSATION WILL BE PROVIDED.
- ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE TYPICAL AND SHALL BE USED WHEREVER A SIMILAR CONDITION OCCURS UNLESS NOTED OTHERWISE.
- THE STABILITY AND STRENGTH OF THE COMPLETED STRUCTURE DEPENDS UPON THE INTERACTION OF VARIOUS CONNECTED PARTS. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND/OR SHORING AS NECESSARY TO COMPLETE THE WORK.
- NO PLANS SHALL BE USED FOR CONSTRUCTION UNLESS SPECIFICALLY MARKED "FOR CONSTRUCTION".

EXCAVATION AND BACKFILLING

- THE MINIMUM NET ALLOWABLE BEARING CAPACITY ON SOIL IS 2000 PSF. THE CONTRACTOR SHALL BE RESPONSIBLE TO HAVE A GEOTECHNICAL ENGINEER FIELD VERIFY THE BEARING CAPACITY.
- OVER EXCAVATE UNSUITABLE FOUNDATION SOIL WHERE REQUIRED BY THE GEOTECHNICAL ENGINEER. WHERE FOUNDATION IS OVER EXCAVATED, REMOVE ALL DISTURBED FOUNDATION SOIL AND REPLACE WITH LEAN CONCRETE (f'c = 2,000 psi MIN) OR COMPACTED GRANULAR BACKFILL (GRADATION TO BE APPROVED BY THE GEOTECHNICAL ENGINEER).
- WHERE FOUNDATION IS ACCIDENTALLY OVER EXCAVATED, REMOVE ALL DISTURBED FOUNDATION SOIL AND REPLACE WITH LEAN CONCRETE (f'c = 2,000 psi MIN) OR COMPACTED GRANULAR BACKFILL (GRADATION TO BE APPROVED BY THE GEOTECHNICAL ENGINEER).

CAST-IN-PLACE CONCRETE

- CONCRETE WORK ON THIS PROJECT SHALL CONFORM TO ALL REQUIREMENTS OF ACI 301, STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE, PUBLISHED BY THE AMERICAN CONCRETE INSTITUTE (ACI), DETROIT, MICHIGAN, EXCEPT AS MODIFIED BY THE REQUIREMENTS OF THESE CONTRACT DOCUMENTS.
- ALL CONCRETE SHALL BE PROVIDED WITH A MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS f'c = 4000 PSI.
- ALL EXTERIOR CONCRETE AND CONCRETE SUBJECT TO FREEZE-THAW SHALL HAVE 4% TO 7% AIR CONTENT BY VOLUME MEASURED IN ACCORDANCE WITH ASTM C231. AIR ENTRAINING ADMIXTURES SHALL CONFORM TO ASTM C260. THE SLUMP SHALL NOT EXCEED 4 INCHES MEASURED IN ACCORDANCE WITH ASTM C143.
- REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 706 GR60.
- EXPOSED EDGES OF CAST-IN-PLACE CONCRETE SHALL BE BEVELED 3/4".
- ALL CONSTRUCTION JOINTS SHALL BE BONDED.
- FOR ALL EXPOSED CONCRETE PROVIDE CLASS 1 (PLASTIC PROTECTED) BAR SUPPORTS AND SPACERS IN ACCORDANCE WITH THE ACI 315 DETAILING MANUAL.

- CONCRETE MIX DESIGNS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL A MINIMUM OF 7 DAYS PRIOR TO ORDERING OR PLACING CONCRETE.
 - COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE 3" FOR SURFACES CAST AGAINST EARTH AND 4" FOR ALL OTHER SURFACES UNLESS OTHERWISE NOTED.
 - SUBMIT SHOP DRAWINGS OF THE REINFORCEMENT BARS PREPARED IN ACCORDANCE WITH ACI 315, DETAILS AND DETAILING OF CONCRETE REINFORCEMENT.
 - UNLESS SHOWN OTHERWISE ON THE PLANS, LAP SPICE LENGTHS OF REINFORCEMENT BARS SHALL BE AS FOLLOWS:
- | | |
|----|-------|
| #4 | 2'-1" |
| #5 | 3'-1" |
| #6 | 4'-2" |
- WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED.
 - NO CALCIUM CHLORIDE SHALL BE USED IN CONCRETE.
 - DUSTING WITH ANY MATERIAL TO ABSORB SURFACE WATER IS PROHIBITED.
 - CURING PROCEDURES IN ACCORDANCE WITH ACI 301 SHALL CONTINUE FOR A PERIOD OF AT LEAST 7 DAYS.
 - DO NOT MIX SALT, CHEMICALS OR OTHER FOREIGN MATERIALS WITH THE CONCRETE TO PREVENT FREEZING. MAINTAIN THE TEMPERATURE OF THE CONCRETE ABOVE 50 DEGREES FAHRENHEIT FOR FIVE DAYS AFTER PLACEMENT.
 - WATER STOPS SHALL BE VIRGIN POLYVINYL CHLORIDE (PVC) AND SHALL BE DENSE, HOMOGENEOUS AND UNIFORM. HOLES OR IMPERFECTIONS SHALL BE CAUSE FOR REJECTION. WATER STOPS WILL NOT BE MEASURED FOR PAYMENT SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF CONCRETE STRUCTURES.
 - USE RETROFIT (T-SHAPED) WATERSTOP AT ALL JOINTS BETWEEN EXISTING AND PROPOSED CONCRETE.
 - WATERSTOP RX STRIP MAY BE USED AT HORIZONTAL JOINTS.

SHEET PILING

- SHEET PILING SHALL CONFORM WITH ASTM A 572, GRADE 50.
- SECTION SHOWN IN PLANS IS THE MINIMUM SECTION THAT MUST BE USED. A LARGER SIZE SHEETING MAY BE SUBSTITUTED WITH APPROVAL FROM THE ENGINEER.
- SHEET PILE TIP ELEVATION IS THE MINIMUM ELEVATION THAT THE SHEETING MUST BE DRIVEN TO. THE PAY LIMITS OF THE SHEETING SHALL BE BASED ON THE FINAL CONFIGURATION SHOWN IN THE PLANS (TOP OF FOOTING TO TIP ELEVATION SHOWN IN PLANS). THE CONTRACTOR WILL NOT BE PAID FOR SHEETING INSTALLED BEYOND THE PROPOSED TIP ELEVATION SHOWN IN THE PLANS.
- SHEAR STUD CONNECTORS SHALL BE ACCORDING TO THE REQUIREMENTS OF AASHTO M 169 COLD DRAWN BARS, GRADE 1015, 1018 OR 1020, EITHER SEMI- OR FULLY-KILLED. WELDING AND WORKMANSHIP SHALL BE ACCORDING TO THE REQUIREMENTS OF THE AMERICAN WELDING SOCIETY (AWS) AND THE BRIDGE WELDING CODE (BWC).

CONSTRUCTION

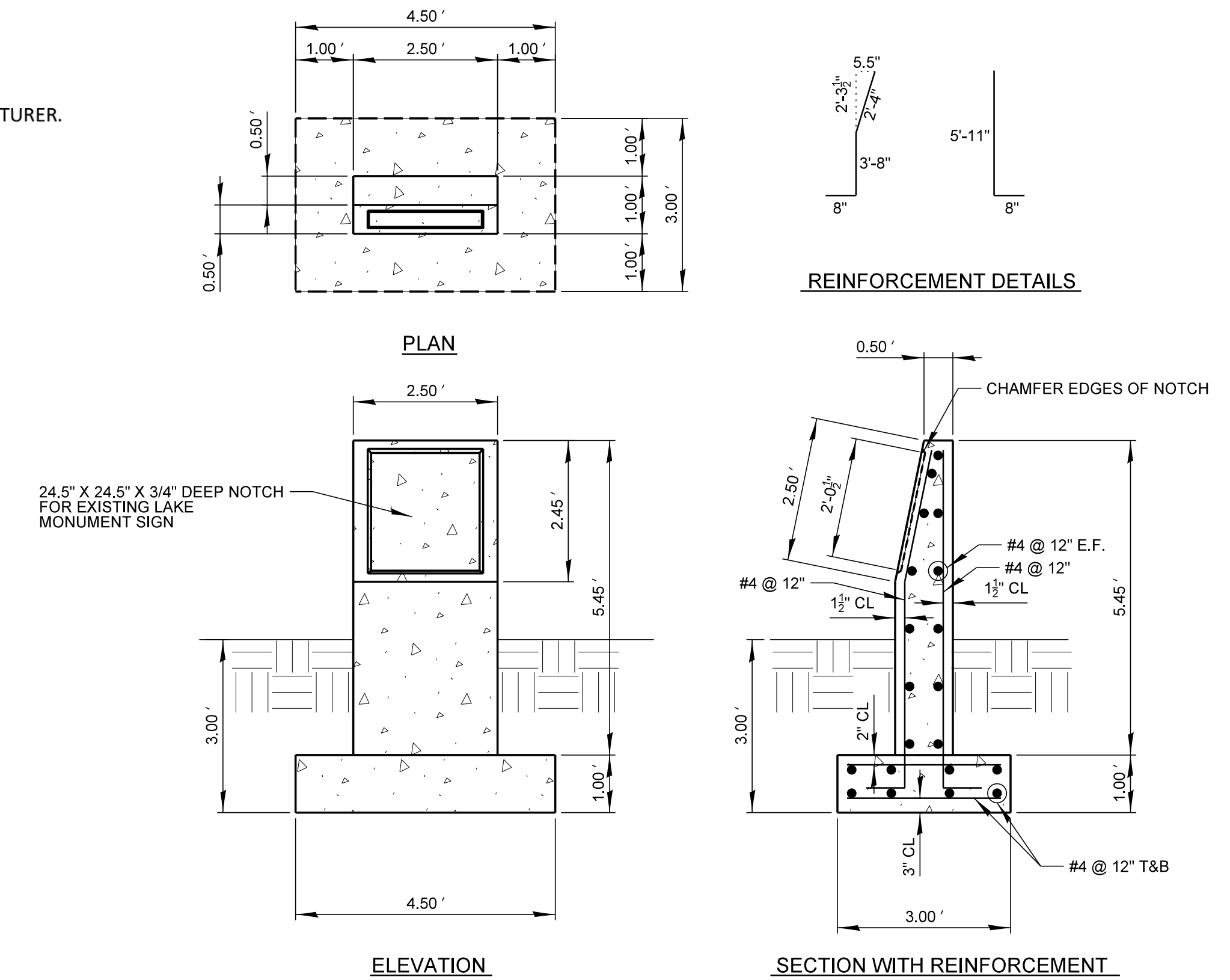
- DO NOT SCALE DIMENSIONS FOR CONSTRUCTION. SCALE, IF SHOWN, APPLIES ONLY TO FULL SIZE DRAWINGS (24" x 36", ARCH D SIZE PAPER).
- SHOP WORKING OR LAYOUT DRAWINGS PERTAINING TO THE CONSTRUCTION OF THE WORK, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO THE START OF CONSTRUCTION.
- UPON COMPLETION, THE CONTRACTOR SHALL COLLECT AND REMOVE ALL CONSTRUCTION DEBRIS AND EXCESS MATERIAL FROM THE SITE. DAMAGED TREES, SHRUBS, AND OTHER LANDSCAPE FEATURES RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REPLACED OR REPAIRED.
- ALL BEARING SURFACES MUST BE TRUE AND LEVEL.

HYDRO GATE

- COORDINATE GATE SECTION OF WEIR WITH GATE MANUFACTURER.

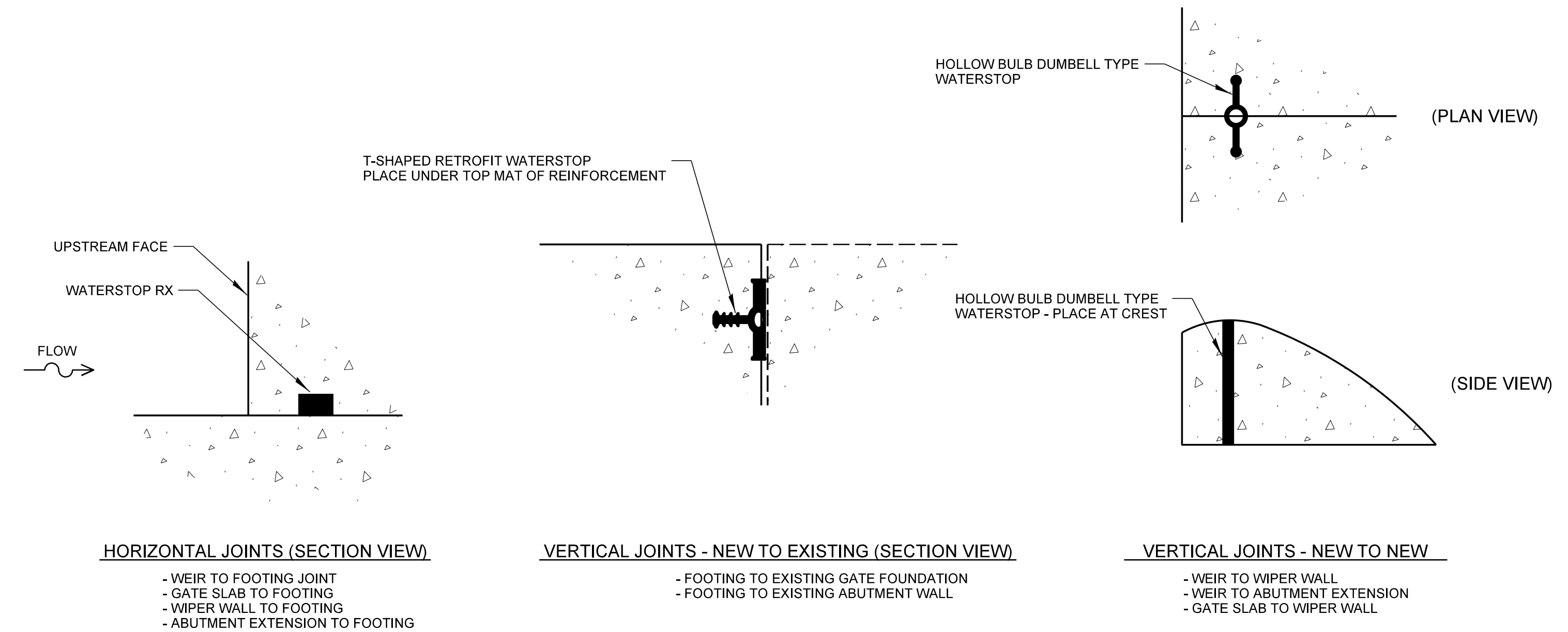
COMMON NOTATIONS

- C.J. – CONSTRUCTION JOINT
 E.J. – EXPANSION JOINT
 T – TOP
 B – BOTTOM
 F.F. – FRONT FACE
 B.F. – BACK FACE
 E.F. – EACH FACE
 E.W. – EACH WAY
 EX. ROW – EXISTING RIGHT OF WAY



1 LAKE MONUMENT DETAIL
 NOT TO SCALE

NOTE: CHAMFER ALL EXPOSED EDGES 3/4"
 CONTRACTOR SHALL VERIFY SIZE OF EXISTING MONUMENT PRIOR TO CONSTRUCTION.



2 WATERSTOP DETAILS
 NOT TO SCALE

NOTES: POTENTIAL LOCATIONS LISTED ABOVE
 REINFORCEMENT OMITTED FOR CLARITY

Handwritten signature and date:
 6/22/18

CHRISTOPHER B. BURKE ENGINEERING, LLC.
 PNC Center, Suite 1368 South
 115 West Washington Street
 Indianapolis, Indiana 46204
 (317) 266-8000 FAX: (317) 632-3306

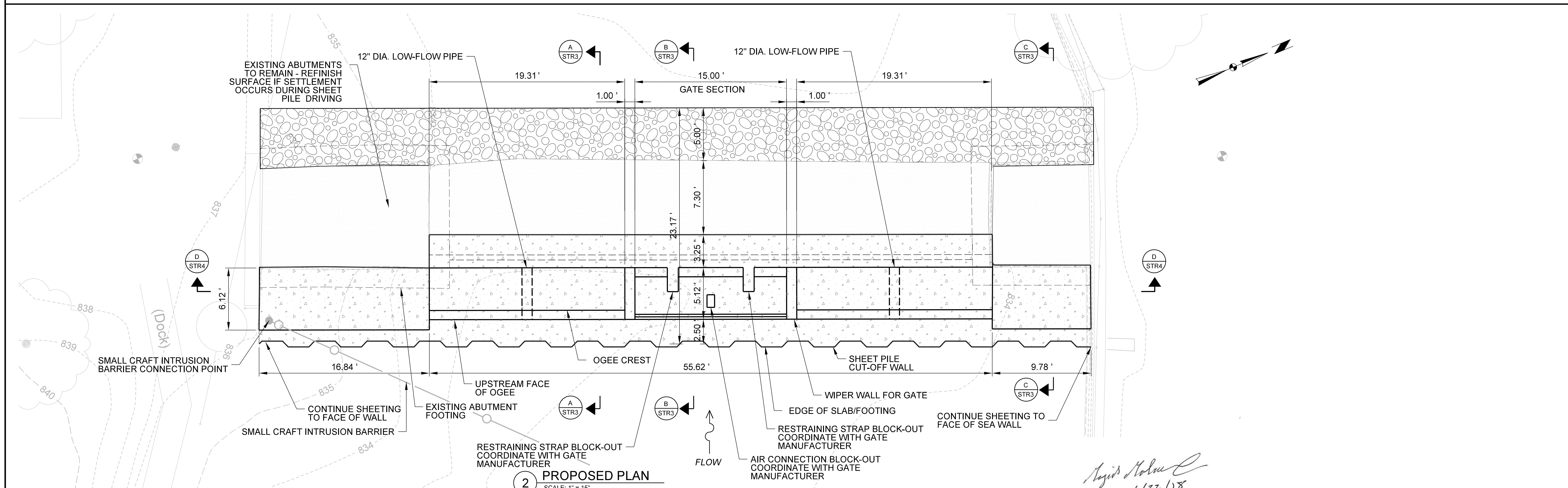
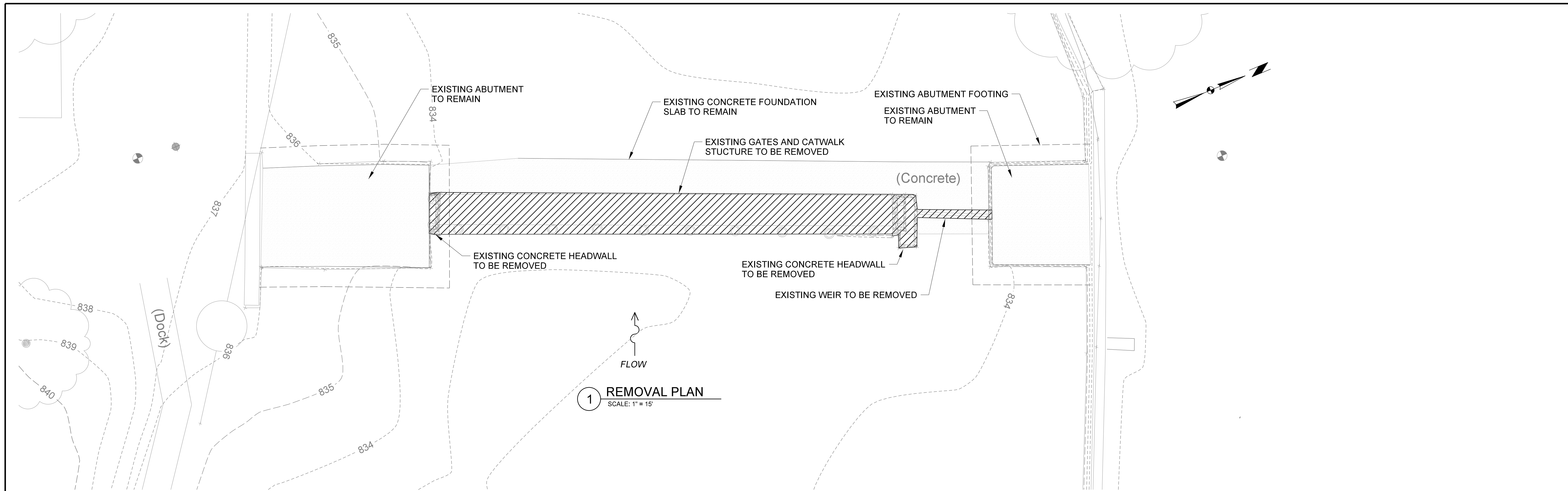
PROJECT:
**TIPPECANOE LAKE OUTLET
 STRUCTURE REPLACEMENT**
 KOSCIUSKO COUNTY, INDIANA

NO.	DATE	ISSUED FOR	BY	SCALE
A	06/22/18	Issued For Bid	AJF	AS NOTED
NATURE OF REVISION		CHKD.	DATE:	6/22/2018
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MAJID MOBASSER
 REG. STER. ENG.
 No. 10101277
 STATE OF INDIANA
 PROFESSIONAL ENGINEER

TITLE:
**STRUCTURAL GENERAL NOTES
 AND MISCELANEOUS DETAILS**
 STR1

PROJECT NO. 19.R160444.00000
 SHEET 9 OF 12
 DRAWING NO.



CHRISTOPHER B. BURKE ENGINEERING, LLC.
 PNC Center, Suite 1368 South
 115 West Washington Street
 Indianapolis, Indiana 46204
 (317) 266-8000 FAX: (317) 632-3306

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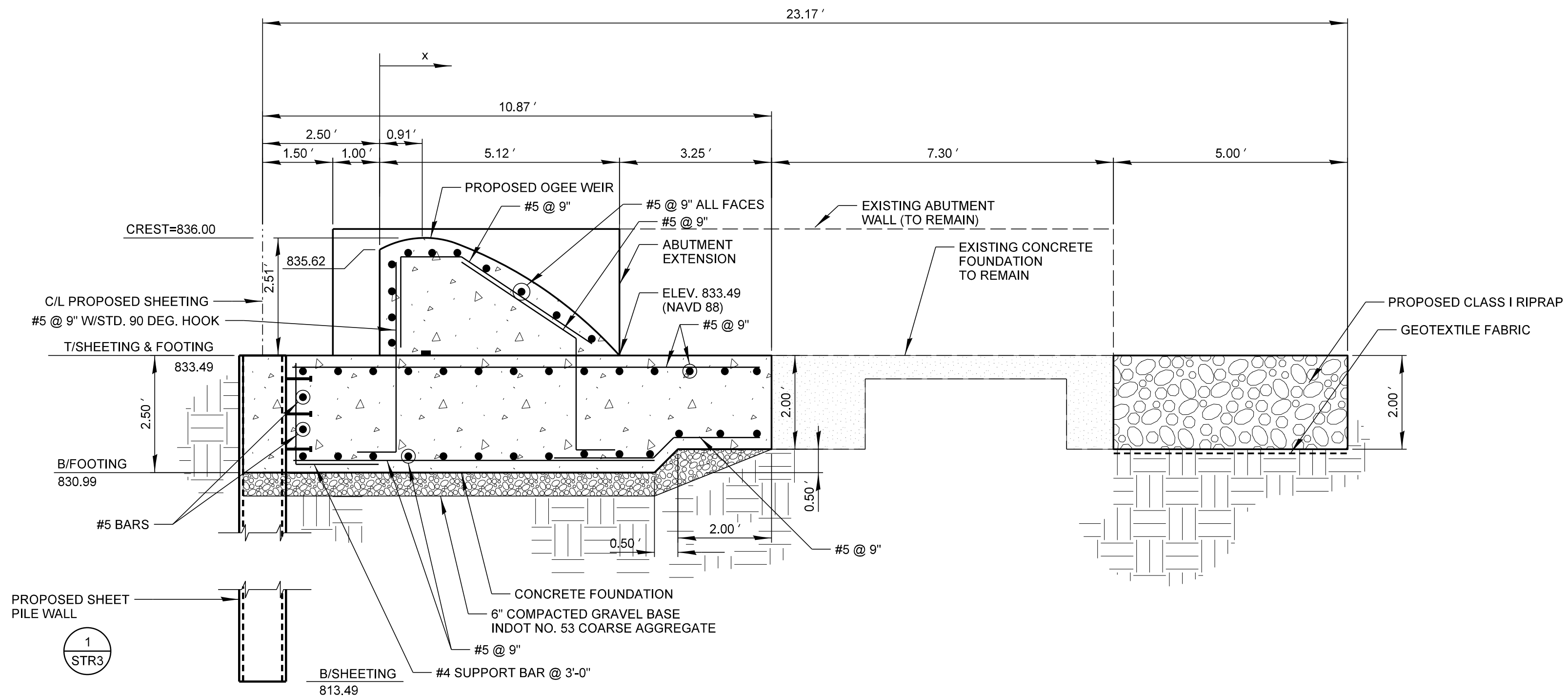
NO.	DATE	ISSUED FOR BID	DATE	NATURE OF REVISION	CHKD.
A	06/22/18	Issued For Bid			AJF
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DSGN.	JMB
DWN.	PDR/JMB
CHKD.	MM
SCALE:	AS NOTED
DATE:	6/22/2018

Maid Mobasser
6/22/18

**PROPOSED SPILLWAY
REMOVAL AND PROPOSED PLAN**

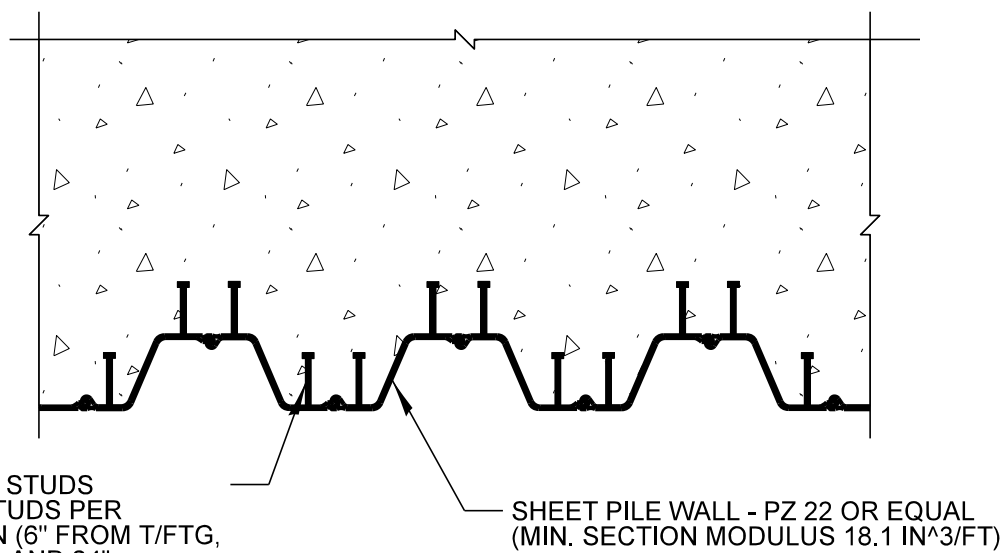
PROJECT NO. 19.R160444.00000
 SHEET 10 OF 12
 DRAWING NO. STR2



A SECTION A-A: FIXED WEIR
NOT TO SCALE

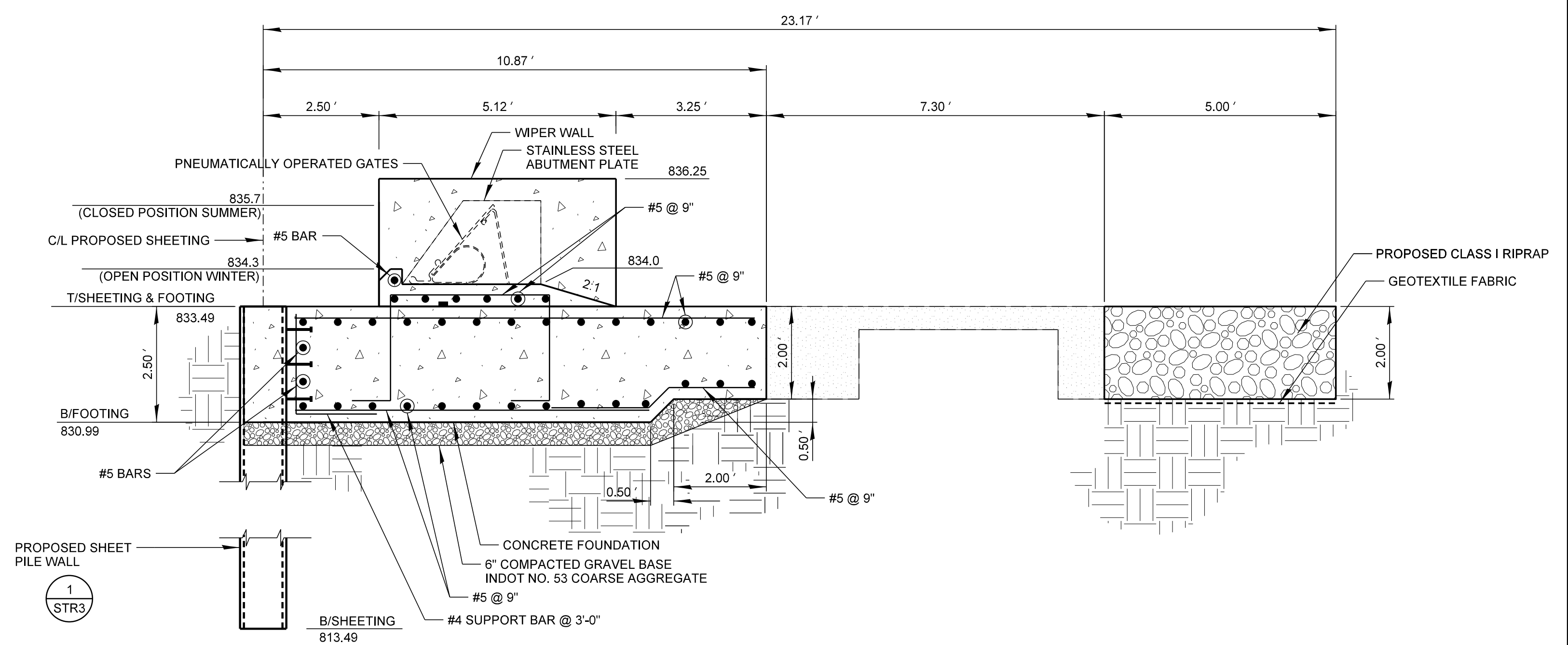
SEE TABLE BELOW FOR OGEE COORDINATES

SECTION A - WEIR COORDINATES	
x (ft) From U/S Face	Elevation (ft)
0.00	835.62
0.41 (0.73'R)	835.93
0.91 (1.77'R)	836.00
1.16	835.99
1.41	835.95
1.66	835.90
1.91	835.82
2.16	835.73
2.41	835.63
2.66	835.50
2.91	835.37
3.16	835.21
3.41	835.04
3.66	834.86
3.91	834.66
4.16	834.44
4.41	834.21
4.66	833.97
4.91	833.71
5.12	833.49



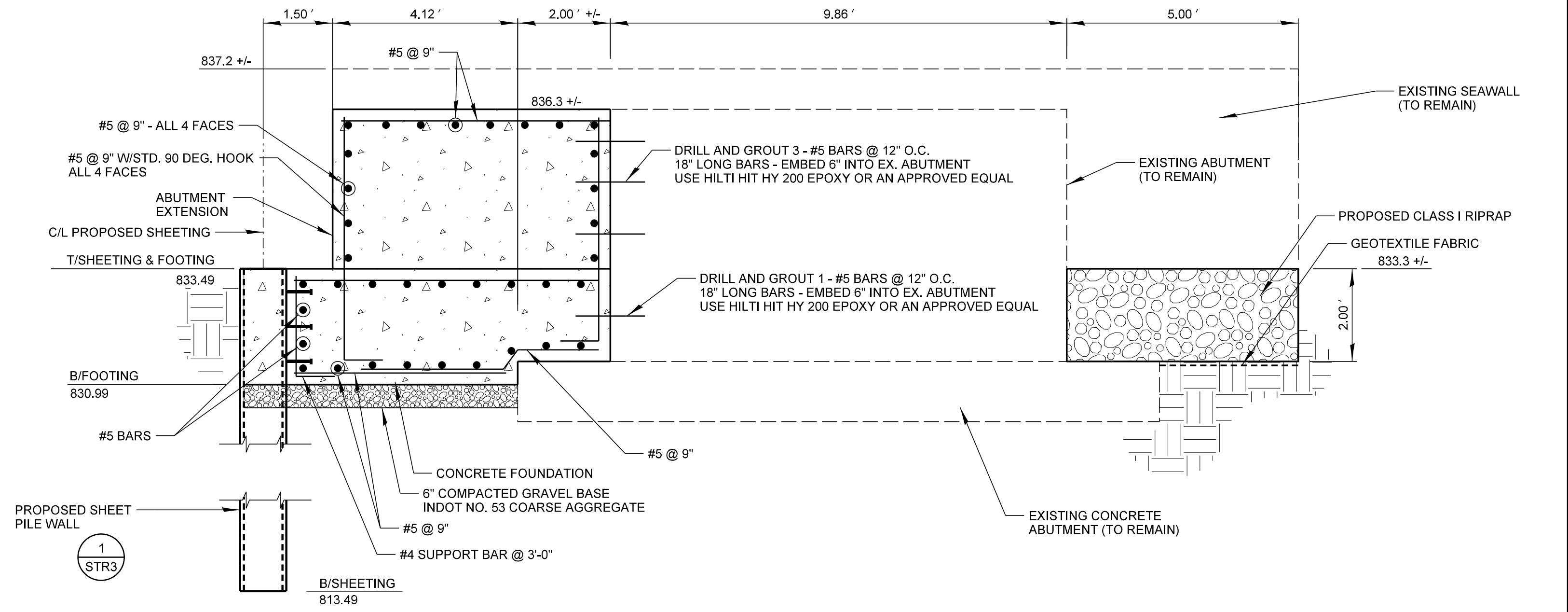
1 SHEET PILING DETAIL
NOT TO SCALE

REINFORCEMENT BARS SHALL NOT BE IN CONTACT WITH SHEAR STUDS.



B SECTION B-B: GATE SECTION
NOT TO SCALE

PROVIDE SMOOTH CONCRETE FINISH IN GATE SECTION.



C SECTION C-C: AT EXISTING ABUTMENT
NOT TO SCALE

HORIZONTAL WEIR WALL REINFORCEMENT FROM SECTION A-A SHOULD EXTEND A MINIMUM OF 3'-1" INTO ABUTMENT EXTENSION. SEE SECTION D-D.
FOOTING IN SECTION A-A, B-B AND C-C SHALL BE ONE POUR. LONGITUDINAL BARS SHOULD BE CONTINUOUS ACROSS ALL SECTIONS AND SHALL HAVE A MINIMUM LAP LENGTH OF 3'-1".

REINFORCEMENT NOTES/DETAILS:

- PROVIDE 4" COVER ON ALL SURFACES IN SECTIONS A-A, B-B & C-C
- WEIR DOWELS (SECTION A-A)
- WEIR BARS (SECTION A-A)
- FOOTING BENT BARS (SECTION A-A & B-B)
- GATE SLAB DOWELS (SECTION B-B)
- ABUTMENT DOWELS (SECTION C-C)
- FOOTING BENT BARS (SECTION C-C)
- WIPER WALL DOWELS (SECTION D-D)
- FOOTING SUPPORT BARS (SECTION A-A, B-B & C-C)

* VERIFY IN FIELD

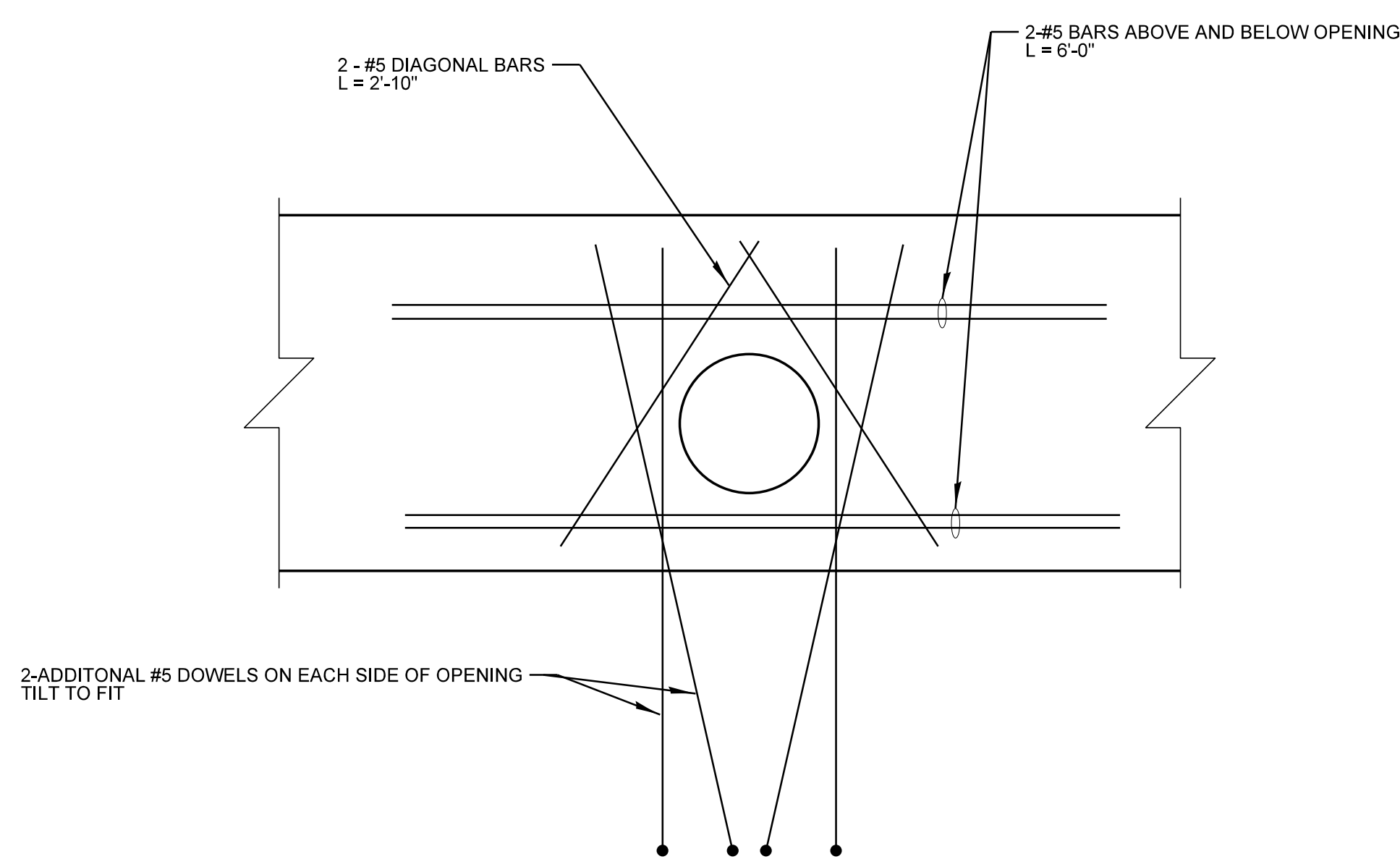
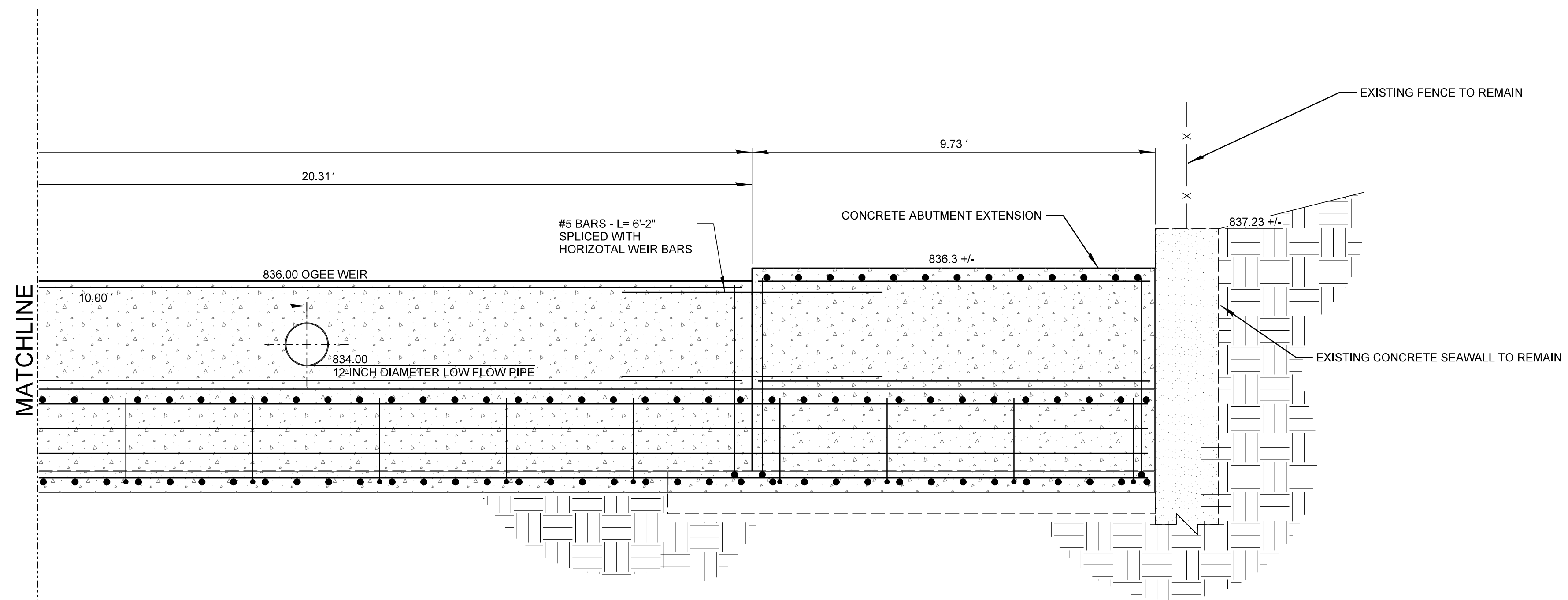
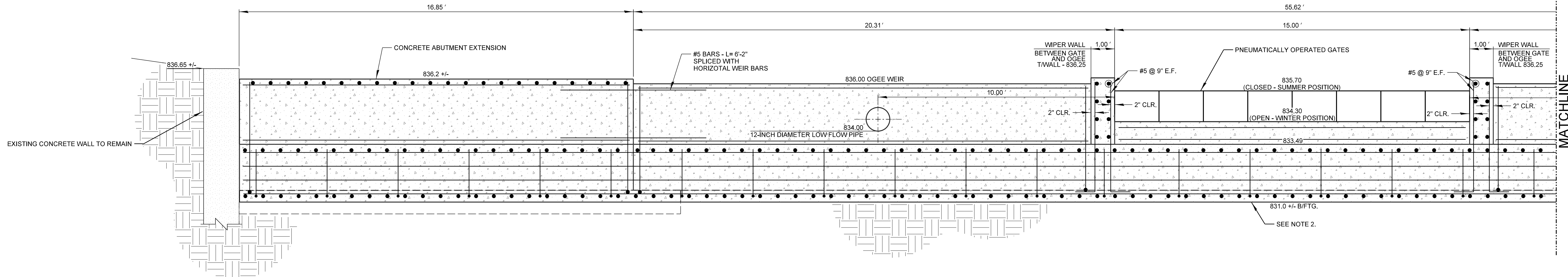
CHRISTOPHER B. BURKE ENGINEERING, LLC.
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PROJECT:
**TIPPECANOE LAKE OUTLET
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KOSCIUSKO COUNTY, INDIANA

DSGN.	JMB	DATE:	6/22/2018
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CHKD.	MM	DATE:	6/22/2018
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TITLE:
**PROPOSED SPILLWAY
SECTIONS**
PROJECT NO.
19.R160444.00000
SHEET 11 OF 12
DRAWING NO.
STR3



NOTES:
 1. DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS SHOULD BE TAKEN FROM THE EXISTING TOPOGRAPHYCAD FILE.
 2. SHEETING AND REINFORCEMENT NOT SHOWN FOR CLARITY.

DATE	WEIR CREST IN FEET, NAVD 88	WEIR CREST IN FEET, NGVD 29
APRIL 2 - OCTOBER 31 (SUMMER)	835.70 (CLOSED)	836.13 (CLOSED)
NOVEMBER 1 - APRIL 1 (WINTER)	834.30 (OPEN)	834.73 (OPEN)

D SECTION D-D: LOOKING DOWNSTREAM
 NOT TO SCALE

NOTE: SEE SECTIONS A-A, B-B AND C-C FOR ADDITIONAL REINFORCEMENT DETAILS. ONLY BARS NOT CALLED OUT IN SECTIONS A-A, B-B AND C-C ARE CALLED OUT IN SECTION D-D.

E ADDITIONAL BARS AROUND 12" DIAMETER LOW-FLOW OPENING
 NOT TO SCALE

NOTE: SEE SHEET STR3 FOR DOWEL DETAILS. PLACE ADDITIONAL BARS ON UPSTREAM AND DOWNSTREAM FACE.

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PROJECT:
**TIPPECANOE LAKE OUTLET
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 KOSCIUSKO COUNTY, INDIANA

NO.	DATE	ISSUED FOR BID	AJF	SCALE:	AS NOTED
CHKD.		NATURE OF REVISION	CHKD.	DATE:	6/22/2018

MAJID MOBASSER
 No. 10101277
 STATE OF INDIANA
 PROFESSIONAL ENGINEER

TITLE:
**PROPOSED SPILLWAY
 SECTIONS**
 PROJECT NO. 19.R160444.00000
 SHEET 12 OF 12
 DRAWING NO. STR4