CONSTRUCTION PLANS FOR

SPAVINAW STEM WALL MAINTENANCE

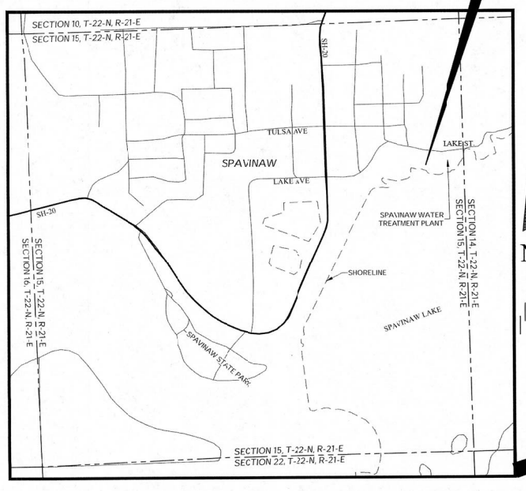
PROJECT NO. TMUA-W-25-07

WATER & SEWER DEPARTMENT
CITY OF TULSA, OKLAHOMA

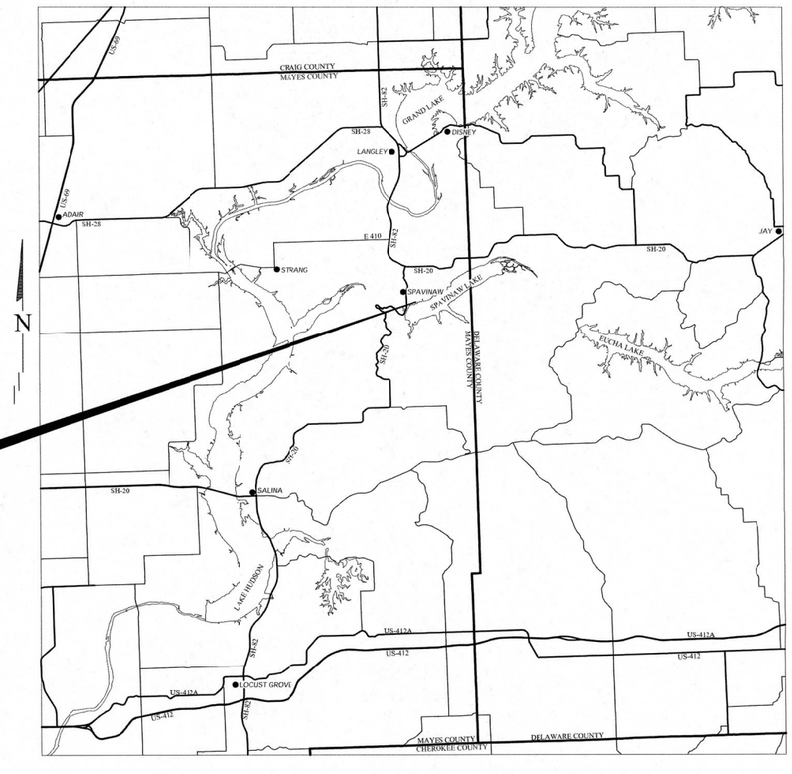
LEGEND

BENCHMARK	UNDERGROUND PETROLEUM LINE
WATER VALVE	UNDERGROUND TELEPHONE
WATER CONTROL VALVE	UNDERGROUND SANITARY SEWER
WATER METER	UNDERGROUND GAS
FIRE HYDRANT	UNDERGROUND CABLE
WATER VENT	UNDERGROUND WATER
POWER POLE	UNDERGROUND STORM SEWER
GUY WIRE	OVERHEAD ELECTRIC
LIGHT POLE	FENCE
FLOOD LIGHT	CENTER LINE OF ROAD or CRL
ELECTRIC METER	PROPERTY LINE
TRAFFIC SIGNAL POLE	SECTION LINE
TRAFFIC JUNCTION BOX	1/4 SECTION LINE
ELECTRIC OUTLET	PROPOSED RIGHT OF WAY
TELEPHONE UNDERGROUND MARKER	EX. RIGHT OF WAY
TELEPHONE PEDESTAL	UTILITY EASEMENT
TELEPHONE MANHOLE	*NOT FIELD CONFIRMED
FIBER OPTICS	
FIBER OPTIC PEDESTAL	
CABLE TV UNDERGROUND MARKER	
CABLE TV PEDESTAL	
GAS METER	
GAS VALVE	
SANITARY SEWER MANHOLE	
SANITARY SEWER CLEAN OUT	
SANITARY SEWER VENT	
STORM SEWER MANHOLE	
FOUND MONUMENTS	
UTILITY MARKER	
BOLLARDS	
SIGN	
60D SPIKE	
MAIL BOX	
SHRUB	
DECIDUOUS TREE	

PROJECT LOCATION
SPAVINAW WTP
401 E. LAKE AVE, SPAVINAW, OK 74366
(36.389472, -95.043291)



PROJECT LOCATION



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CITY OF TULSA

APPROVED BY

WATER AND SEWER DIRECTOR — DATE 9·4·2025

DANIEL A. KEITHLINE, P.E., S.E.
KEITHLINE ENGINEERING GROUP, PLLC — DATE 8/19/2025

PLANS PREPARED BY

KEITHLINE ENGINEERING GROUP, PLLC
8556 EAST 101ST STREET
SUITE C
TULSA, OK 74133
OFFICE: (918) 369-7911
CA NO: 5736, EXP: JUNE 30, 2027

LICENSED PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 — OKLAHOMA

UTILITY COORDINATION INFORMATION

TULSA ENGINEERING SERVES DEPARTMENT		
WATER DESIGN		918-596-9580
WASTE WATER DESIGN		918-596-9564
TRANSPORTATION DESIGN		918-596-9636
TRAFFIC ENGINEERING DESIGN		918-596-9741
STORMWATER DESIGN		918-596-9498
INSIDE OF RIGHT OF WAY		
CITY OF TULSA	TONY GLENN	918-596-9245
AEP/PSO	EMERGENCY	888-216-3523
OKLAHOMA NATURAL GAS CO.	EMERGENCY	800-664-5463
AT&T	EMERGENCY	800-288-2020
COX COMMUNICATION	CUSTOMER SERVICE	918-806-6000
VERIZON	CUSTOMER SERVICE	888-294-6804
WINDSTREAM	CUSTOMER SERVICE	800-347-1991
MTTA	CUSTOMER SERVICE	918-830-0024

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REFERENCED CONTROL DATA

STATION NAME: SPAV DAM 2017	STATION NAME: SPAVINAW 2017
HORIZ. CONTROL: OKLAHOMA NORTH ZONE 3501, NAD83(2011) NORTHING = 516986.568 EASTING = 2837179.867	HORIZ. CONTROL: OKLAHOMA NORTH ZONE 3501, NAD83(2011) NORTHING = 519090.294 EASTING = 2839053.229
VERT. CONTROL: NAVD 1988 (GEOID18) ELEVATION = 697.531	VERT. CONTROL: NAVD 1988 (GEOID18) ELEVATION = 692.899
DESC: 2" ALUMINUM CAP SET IN CONC. AT SPAVINAW LAKE DAM.	DESC: 2" ALUMINUM CAP SET IN SPAVINAW LAKE BUSINESS YARD.

ENGINEER'S STATEMENT:
1) CURRENT CITY OF TULSA STANDARD SPECIFICATIONS AND STANDARD DETAILS GOVERN.
2) ALL OTHER CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE OKLAHOMA DEPARTMENT OF TRANSPORTATION 2019 OKLAHOMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
3) THIS PROJECT COMPLES WITH ALL OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ) REQUIREMENTS.
4) ENTIRE PROJECT IS WITHIN THE CORPORATE LIMITS OF CITY OF TULSA (COT).

PROJECT NO. TMUA-W-25-07 SPAVINAW STEM WALL MAINTENANCE

S:\1_Projects\1 - TMUA-Water\24.32_Design_Spav WTP Backwash Lagoon_W 25-0703.0_Plans, XS & Studs\1-2_Plan Sheets\24.32_A1_Cover Sheet.dwg, 8/19/2025 2:33:58 PM

PAY ITEM NOTES:

1. CONTRACTOR SHALL VERIFY EXISTING BURIED PIPING LOCATIONS.

2. CONTRACTOR SHALL INSURE ALL POLES WHICH ARE AFFECTED BY TRENCHING CONDITIONS ARE BRACED BY OWNERS. PAYMENT SHALL BE INCLUDED IN "RIGHT-OF-WAY CLEARING AND RESTORING". NO ADDITIONAL PAYMENT SHALL BE MADE.

3. CONTRACTOR SHALL REPAIR ANY IRRIGATION SYSTEMS, ROOF DRAINS, AND FENCING DAMAGED IN THE ZONE OF CONSTRUCTION DURING THE COURSE OF CONSTRUCTION TO SATISFACTION OF THE PROPERTY OWNER. PAYMENT SHALL BE INCLUDED IN RIGHT-OF-WAY CLEARING AND RESTORING. NO ADDITIONAL PAYMENT SHALL BE MADE.

5. THE CONTRACTOR SHALL RESTORE ALL DISTURBED GRASS AREAS TO A CONDITION EQUAL TO OR BETTER THAN THE EXISTING CONDITION. THE CONTRACTOR SHALL REPLACE THE SOD TO MATCH IN-KIND AND QUALITY. ANY DISTURBANCE OUTSIDE OF GRADING SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE. THIS PAY ITEM INCLUDES ALL MOWING WITHIN THE RIGHT-OF-WAY AS DIRECTED DURING CONSTRUCTION. NETTING SHALL BE REMOVED FROM SOD PRIOR TO PLACEMENT.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROL AND MAINTENANCE OF THE STORM WATER DRAINAGE FROM THE CONSTRUCTION SITE. STORM WATER PONDING ON THE CONSTRUCTION SITE THAT IS THE RESULT OF CONSTRUCTION WILL NOT BE ALLOWED. ALL COST ASSOCIATED WITH STORM WATER MANAGEMENT, AS WELL AS REMOVAL OF ALL SILT AND DEBRIS FROM ALL DRAINAGE STRUCTURES, STORM SEWER PIPES AND APPURTENANCES WITHIN THE PROJECT LIMITS AT END OF PROJECT, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THIS ITEM.

7. EROSION PROTECTION SHALL BE PLACED AS FOLLOWS:
   A) AROUND INLETS TO PREVENT INFLOW OF ERODED MATERIAL INTO STORM SEWER SYSTEM.
   B) IN LOCATIONS THROUGHOUT PROJECT SITE, AS DETERMINED BY THE ENGINEER, TO PREVENT WASH OF ERODED MATERIAL ONTO ADJACENT PROPERTY.
   C) FOR ENTIRE DURATION OF PROJECT, WITH MAINTENANCE AND REPLACEMENTS, AS DIRECTED BY THE ENGINEER.
   D) WITH PERIODIC REMOVAL OF SEDIMENT IN ACCORDANCE WITH STORMWATER MANAGEMENT PLAN.

   ALL COST FOR ITEMS A-D ABOVE SHALL BE INCLUDED IN UNIT PRICE BID FOR THIS ITEM.

8. ALL COSTS FOR REMOVING TREES, SHRUBS, STUMPS, POSTS, AND ALL OTHER DEBRIS AND/OR OBSTRUCTIONS NOT COVERED BY A SEPARATE PAY ITEM ARE INCLUDED IN THE PRICE BID.

9. THIS QUANTITY INCLUDES AN ADDITIONAL 15% ABOVE PLAN QUANTITY.

10. ESTIMATED QUANTITY IS BASED ON SODDING OF ALL DISTURBED AREAS WITHIN THE FINAL GRADING LIMITS AS INDICATED BY THE TOP-OF-CUT/TOE-OF-SLOPE LINE ON THE PLANS (EXCLUDING SURFACES OF STRUCTURES, FIXTURES AND APPURTENANCES). SOD SHALL BE OF LIKE-KIND TO EXISTING SOD. PRICE BID INCLUDES PLACEMENT AND COMPACTION OF SUITABLE BACKFILL. ANY EXISTING GRASSED AREAS BEYOND THE ABOVE STATED LIMITS THAT ARE DAMAGED AS A RESULT OF CONSTRUCTION OPERATIONS SHALL BE RE-SODDED TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S SOLE EXPENSE.

11. WASTE MATERIAL TO BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE IN A MANNER APPROVED BY THE ENGINEER.

12. THE "OWNER ALLOWANCE" CAN BE USED FOR VARIOUS WORK AND MISCELLANEOUS ITEMS NOT IDENTIFIED IN THE CONTRACT DOCUMENTS WITH THE FOLLOWING PROVISIONS:

    A. THE ALLOWANCE SHALL BE USED FOR THE COST OF MATERIALS, LABOR, INSTALLATION, OVERHEAD, AND PROFIT FOR ADDITIONAL WORK AND MISCELLANEOUS ITEMS THAT ARE NOT IDENTIFIED IN THE CONSTRUCTION DOCUMENTS AND PLANS, AND NOT INCLUDED IN THE BID ITEMS OF THE CONTRACT. EXAMPLES INCLUDE, BUT ARE NOT LIMITED TO:
       I. WATER SERVICE LINES OF UNKNOWN OR UNEXPECTED SIZE.

    B. THE ALLOWANCE SHALL BE USED ONLY AT THE DISCRETION OF THE CITY. ANY ALLOWANCE BALANCE REMAINING AT THE COMPLETION OF THE PROJECT WILL BE CREDITED BACK TO THE CITY ON THE FINAL APPLICATION FOR PAYMENT SUBMITTED BY THE CONTRACTOR.

    C. THE CONTRACTOR SHALL PROVIDE, TO THE CITY, A WRITTEN REQUEST FOR THE USE OF ANY ALLOWANCE, WITH A SCHEDULE OF VALUES, AND ALL ASSOCIATED BACKUP INFORMATION, INCLUDING ANY TIME EXTENSIONS REQUIRED TO PERFORM THE WORK.

    D. THE CONTRACTOR SHALL PROCEED WITH THE WORK INCLUDED IN THE ALLOWANCE ONLY AFTER RECEIVING A WRITTEN ORDER FROM THE ENGINEER AND CITY AUTHORIZING SUCH WORK. PROCEEDING WITH WORK IN THE ALLOWANCE WITHOUT A WRITTEN ORDER FROM THE CITY WILL BE AT THE CONTRACTOR'S EXPENSE.

13. INCLUDES INSTALLING 6' HIGH CLASS B CHAIN-LINK FABRIC, NEW LINE POSTS, CORNER POSTS, NEW CLIMB BARRIER SYSTEM, BARBWIRE, AND MISCELLANEOUS COMPONENTS PER ODOT RWF3-3-2.

14. FOR MATERIAL/EQUIPMENT DELIVERIES AND WORK, A TRAFFIC & PEDESTRIAN CONTROL PLAN, SHALL BE DEVELOPED AND SUBMITTED FOR APPROVAL, FOR PARKING LOT AND WORK AREA.

15. THIS PAY ITEM INCLUDES REMOVAL OF ALL COMPONENTS OF EXISTING CHAINLINK FENCE, INCLUDING, THAT IS IDENTIFIED ON THE PLANS. ALL EXCESS WASTE MATERIAL TO BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR.

16. SHALL BE "DEWITT PRO-5 WEED BARRIER (5 OZ)", OR APPROVED EQUAL.

17. SHALL BE "PERMALOC CLEANLINE XL, BLACK ANODIZED", OR APPROVED EQUAL.

18. CONTRACTOR SHALL SUBMIT THREE SAMPLES OF CLEAN ROCK FOR CITY APPROVAL. THE SIZE SHALL BE 1/2" TO 3/4".

19. PRICE BID SHALL INCLUDE MAINTENANCE, SEDIMENT REMOVAL, DISPOSAL, AND REMOVAL OF FILTERS AT PROJECT COMPLETION.

20. CONTRACTOR SHALL REDLINE THE PLANS AND SUBMIT TO ENGINEER ON MODIFICATIONS TO PROPOSED WORK.

21. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). THIS ITEM SHALL BE PAID PER CALENDAR DAYS FOR ALL NECESSARY TRAFFIC CONTROL

PAY QUANTITIES

BID ITEM NO.	ODOT SPEC NO.	COT SPEC NO.	DESCRIPTION	PAY NOTES	UNIT	QTY
1	202(E)2600	–	SELECT BORROW	9	CY	53
2	205(A)6200	–	TYPE A-SALVAGED TOPSOIL		CY	6
3	220 1100	SPECIAL	SWPPP DOCUMENTATION AND MANAGEMENT	6,7,19	LSUM	1
4	230(A)7200	–	SOLID SLAB SODDING	10	SY	214
5	601(A)1100	–	TYPE I PLAIN RIPRAP (SIZE=12")	9	TON	304
6	619(B)6352	–	REMOVAL OF FENCE	15	LF	245
7	624(E)3625	–	FENCE-STYLE CLF (6'HIGH, CLASS B)	13	LF	211
8	--	COT 102	PROJECT SIGN (CITY OF TULSA)		EA	1
9	--	COT 301	RIGHT OF WAY CLEARING AND RESTORING	1, 2, 3, 5, 8,11	SY	231
10	--	303	MOBILIZATION		EA	1
11	642	--	CONSTRUCTION STAKING		LSUM	1
12	--	SPECIAL	CONSTRUCTION TRAFFIC CONTROL	14,21	CD	90
13	--	334	CONSTRUCTION AS-BUILT	20	EA	1
14	--	SPEC 31 41 16	VINYL SHEET PILING		LF	182
15	--	SPEC 32 93 13	8" LANDSCAPING EDGING	17	LF	200
16	--	SPEC 32 91 19	HEAVY DUTY WEED BARRIER FABRIC	9, 16	SY	20
17	--	SPEC 32 05 16	LANDSCAPING CLEAN ROCK (1/2" TO 3/4")	9, 18	CY	2
18	--	SPECIAL	OWNERS ALLOWANCE	12	ALLOW	15,000

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PAY ITEMS & NOTES

TMUA-W-25-07

SPAVINAW STEM WALL MAINTENANCE

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

Plans and Estimates Prepared by:
KEITHLINE ENGINEERING GROUP
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REVISION	BY	DATE

PLAN SCALE --	DRAWN	ZLM	8-19-2025	APPROVED:
	DESIGNED	DAK	8-19-2025	
PROFILE SCALE --	SURVEY	KE	4-30-2024	
HORIZONTAL: --	PROJECT MGR	SV	08/20.25	
VERTICAL: --	LEAD ENGINEER	DKK	8/25	DESIGN MANAGER
	FIELD MGR	ZLM	8/25	
FILE:	DRAWING:			DATE: AUGUST 19,2025
ATLAS PAGE NO: 10628				SHEET 02 OF 15 SHEETS

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GENERAL CONSTRUCTION NOTES

1. THE CITY OF TULSA FIELD ENGINEERING DIVISION SHALL INSPECT ALL TRENCHING, BEDDING, PIPE INSTALLATION, BACKFILL AND COMPACTION.
2. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE 2019 OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND THE CURRENT STANDARD SPECIFICATIONS AND STANDARD DETAILS OF THE CITY OF TULSA ENGINEERING SERVICES DEPARTMENT.
3. CONTRACTOR SHALL REPLACE EXISTING GRASS WITH SEED/SOD OF THE SAME TYPE AND VARIETY OR AS NOTED ON PLANS.
4. CONTRACTOR SHALL GIVE THE NOTIFICATION CENTER OF THE OKLAHOMA ONE-CALL SYSTEM, INC, NOTICE OF ANY EXCAVATION NO LATER THAN 48 HOURS OR SOONER THAN 10 DAYS PRIOR TO COMMENCEMENT OF WORK (EXCLUDING SATURDAYS, SUNDAYS, LEGAL HOLIDAYS). PHONE: 1-800-522-6543.
5. LOCAL AND THROUGH TRAFFIC SHALL BE MAINTAINED THROUGH PROJECT AT ALL TIMES. OPEN CUT STREET CROSSINGS REQUIRE AN APPROVED TRAFFIC CONTROL PLAN WITH TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH CURRENT MUTCD REQUIREMENTS.
6. ANY DAMAGE CAUSED BY THE CONTRACTOR TO ADJACENT INFRASTRUCTURE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE TRAFFIC ENGINEER.
7. CONSTRUCTION FOR ALL ENGINEERING SERVICE FACILITIES SHALL BE IN COMPLIANCE WITH THE LATEST EDITION OF TITLE 252, DEPARTMENT OF ENVIRONMENTAL QUALITY, CHAPTER 626, PUBLIC WATER SUPPLY CONSTRUCTION STANDARDS, OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ).
8. ALL EXCAVATED MATERIAL NOT REQUIRED IN OTHER AREAS OF THE PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF BY THE CONTRACTOR IN A MANNER ACCEPTABLE TO THE ENGINEER WITHOUT COST TO THE CITY. THE CONTRACTOR SHALL BE REQUIRED TO OBTAIN AN EARTH CHANGE PERMIT IF ANY EXCESS MATERIAL IS TO BE DISPOSED OF WITHIN THE CITY LIMITS OF TULSA.
9. ANY CHANGES FROM THE APPROVED PLANS SHALL BE SUBMITTED TO THE CITY OF TULSA FOR WRITTEN APPROVAL PRIOR TO INSTALLATION.

ADDITIONAL CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS GOVERNING SAFETY, HEALTH AND SANITATION. THE CONTRACTOR SHALL PROVIDE ALL SAFEGUARDS, SAFETY DEVICES AND PROTECTIVE EQUIPMENT, AND TAKE ANY OTHER NEEDED ACTION ON AS HIS OWN RESPONSIBILITY OR AS THE ENGINEER MAY DETERMINE REASONABLY NECESSARY TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACT.
2. PAY ITEMS SHALL BE AS SPECIFIED ON THE CITY OF TULSA OR ON THE ODOT STANDARD DRAWINGS EXCEPT AS MODIFIED BY THE CONTRACT.
3. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK IN EACH AREA. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT RESULT FROM HIS FAILURE TO LOCATE AND PRESERVE ANY AND ALL UTILITIES.
4. THE LOCATIONS OF THE UTILITIES ARE SHOWN ACCORDING TO ALL AVAILABLE INFORMATION. THE CONTRACTOR SHALL NOTIFY EACH UTILITY OWNER PRIOR TO COMMENCEMENT OF WORK TO VERIFY BOTH HORIZONTAL AND VERTICAL LOCATIONS. SEE TITLE SHEET FOR CONTACT INFORMATION.
5. THE CONTRACTOR SHALL TAKE REASONABLE PRECAUTIONS TO PREVENT EXCESS MOISTURE FROM INCLEMENT WEATHER OR OTHER SOURCES FROM ENTERING ANY STREET EXCAVATION. IF EXCESS MOISTURE DOES ENTER THE EXCAVATION THROUGH THE NEGLIGENCE OF THE CONTRACTOR AND THE ADJOINING PAVEMENT IS ADVERSELY EFFECTED BY THE EXCESS MOISTURE, THE CONTRACTOR SHALL REPLACE THE ADJOINING PAVEMENT AND SUBBASE AT HIS SOLE EXPENSE.
6. THE CONTRACTOR SHALL PRESERVE THE INTEGRITY OF THE LAGOON STRUCTURES AND ALL OTHER UTILITY STRUCTURES WITHIN THE PROJECT EXTENTS.
7. THE CONTRACTOR SHALL WORK IN COOPERATION WITH THE CITY OF TULSA TO ESTABLISH, INSTALL, MAINTAIN, AND OPERATE COMPLETE, ADEQUATE, AND SAFE TRAFFIC CONTROLS DURING THE ENTIRE CONSTRUCTION PERIOD. ALL FLAGMEN, BARRICADES, AND TRAFFIC CONTROL DEVICES SHALL BE APPROVED BY THE FIELD ENGINEERING REPRESENTATIVE.
8. CONSTRUCTION SIGNAGE WILL BE INSTALLED IN A MANNER APPROVED BY THE ENGINEER, IN ACCORDANCE WITH CHAPTER VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT ADDITION, AND APPLICABLE ODOT STANDARD DRAWINGS. THE CONTRACTOR SHALL PROVIDE A PROPOSED TRAFFIC CONTROL PLAN FOR APPROVAL BY THE ENGINEER PRIOR TO BEGINNING WORK.
9. THE CONTRACTOR SHALL NOTIFY THE CITY OF TULSA FIELD ENGINEERING, 918-596-9404, A MINIMUM OF 48 HOURS PRIOR TO COMMENCING WORK OR PRIOR TO REMOVING TRAFFIC SIGNS.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ALL EXISTING TRAFFIC SIGNS AND MARKINGS REMOVED OR DAMAGED. ALL SIGNS AND POLES PROVIDED SHALL BE NEW AND UNDAMAGED AND SHALL MEET THE REQUIREMENTS OF COT SPECIFICATION 608 TRAFFIC SIGNS. ALL TRAFFIC MATERIALS REMOVED SHALL BE HANDLED PER COT SPECIFICATION 625 REMOVAL OF TRAFFIC ITEMS.
11. ALL PUBLIC AND PRIVATE STREETS AND DRIVES SHALL BE ACCESSIBLE AT ALL TIMES. COORDINATE FOR ACCESS OF STABILIZATION CONTRACTOR.
12. ALL BROKEN CONCRETE, WASTE MATERIAL, AND OTHER DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE LIMITS OF THE PROJECT AND DISPOSED OF IN A MANNER APPROVED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE DISPOSAL OF THIS MATERIAL.
13. WHERE MATERIALS ARE TRANSPORTED IN THE PROSECUTION OF WORK, VEHICLES SHALL NOT BE LOADED BEYOND THE CAPACITY RECOMMENDED BY THE VEHICLE MANUFACTURER OR AS PRESCRIBED BY ANY FEDERAL, STATE OR LOCAL LAW OR REGULATION.
14. ANY DAMAGE TO THE ROADWAY PAVEMENT, CURB, DRIVEWAYS OR SIDEWALK CAUSED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED TO THE ENGINEER'S SATISFACTION AND SHALL BE ACCOMPLISHED AT THE CONTRACTOR'S SOLE EXPENSE. ALL DISTURBED ITEMS SHALL BE REPAIRED TO MATCH EXISTING MATERIALS AND PATTERNING.
24. PHYSICAL TESTING FOR QUALITY ASSURANCE SHALL BE FURNISHED BY THE CITY.
25. CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY QUALITY CONTROL TESTING TO ENSURE THAT PROJECT REQUIREMENTS ARE MET.
30. REFLECTORIZED SHEETING ON SIGNS AND BARRICADES SHALL BE OF A CUBIC PRISMATIC TYPE AND SHALL MEET THE SPECIFICATIONS ESTABLISHED FOR ASTM D 4956-01 TYPE IX RETROREFLECTIVE SHEETING. REFLECTORIZED SHEETING ON DRUMS AND TUBE CHANNELIZERS SHALL BE OF A HIGH-INTENSITY TYPE AND SHALL MEET THE SPECIFICATIONS ESTABLISHED FOR ASTM D 4956-01 TYPE III RETROREFLECTIVE SHEETING.
36. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL AND MAINTENANCE OF THE STORMWATER DRAINAGE. STORMWATER PONDING ON THE CONSTRUCTION SITE THAT IS THE RESULT OF CONSTRUCTION WILL NOT BE ALLOWED.
37. STRAW OR HAY BALES AS STORMWATER BEST MANAGEMENT PRACTICES ARE NO LONGER ALLOWED ON CONSTRUCTION PROJECTS.

SUGGESTED CONSTRUCTION SEQUENCE

1. INSTALL EROSION CONTROL.
2. REMOVE SPECIFIED EXISTING CHAIN-LINK FENCE POSTS. STORE EXISTING CHAIN-LINK FABRIC ONLY.
3. SALVAGE TOPSOIL AND STOCKPILE.
4. INSTALL RIPRAP. SOME OF THE RIPRAP WILL HAVE TO BE INSTALLED AFTER THE SHEET PILE IS COMPLETE.
5. INSTALL VINYL SHEET PILE TO PROPOSED ELEVATIONS.
6. INSTALL VINYL SHEET PILE CAP.
7. COMPLETE ALL RIPRAP PLACEMENT.
8. PLACE SELECT BORROW AND COMPLETE FINAL GRADE.
9. INSTALL CHAIN-LINK FENCE POSTS AND CLIMB BARRIER SYSTEM AND TOP RAIL.
10. INSTALL LANDSCAPING EDGE AND LANDSCAPING ROCK AND LANDSCAPING FABRIC.
11. INSTALL CHAIN-LINK FENCE FABRIC.
12. FINE GRADE THEN INSTALL SOLID SLAB SOD THEN ROLL.

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GENERAL NOTES

TMUA-W-25-07

SPAVINAW STEM WALL MAINTENANCE

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

Plans and Estimates Prepared by:
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REVISION	BY	DATE

PLAN SCALE	DRAWN	ZLM	8-19-2025	APPROVED:
--	DESIGNED	DAK	8-19-2025	
PROFILE SCALE	SURVEY	KE	4-30-2024	
HORIZONTAL: -- VERTICAL: --	PROJECT MGR		08/2025	
	LEAD ENGINEER		8/25	
	FIELD MGR		8/25	DESIGN MANAGER
FILE:	DRAWING:			DATE: AUGUST 19 2025
ATLAS PAGE NO: 10628				SHEET 03 OF 15 SHEETS

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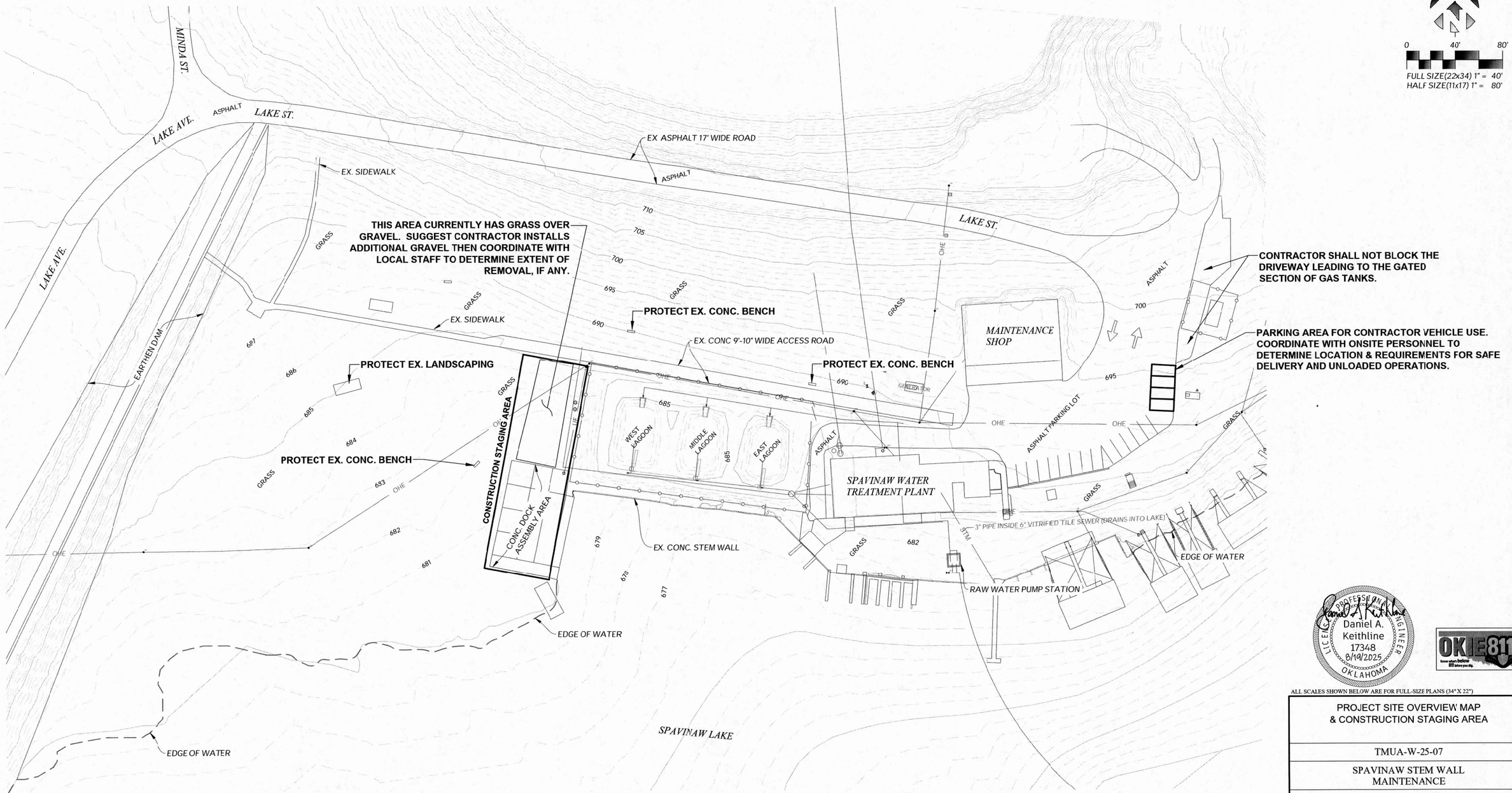

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PROJECT SITE OVERVIEW MAP & CONSTRUCTION STAGING AREA

TMUA-W-25-07

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PLAN SCALE	DRAWN	ZLM	8-19-2025
1:40	DESIGNED	DAK	8-19-2025
PROFILE SCALE	SURVEY	KE	4-30-2024
HORIZONTAL: --	PROJECT MGR		08/2025
VERTICAL: --	LEAD ENGINEER		8/25
	FIELD MGR		8/25
FILE:	DRAWING:		DATE: AUGUST 19,2025
ATLAS PAGE NO: 10628			SHEET 04 OF 15 SHEETS

APPROVED:

DESIGN MANAGER

FULL SIZE(22x34) 1" = 10'
HALF SIZE(11x17) 1" = 20'

INSTALL NEW 6' HIGH CLASS B CHAINLINK FENCE. MATCH EXISTING CHAIN-LINK FENCE (SEE SHEET 7 DETAILS)

EX. CHAIN-LINK FENCE & BARB-WIRE TO REMAIN

BEGIN NEW CHAIN-LINK FENCE APPROX. 27.83' FROM SW CORNER OF EX. FENCE.

BEGIN VINYL SHEET PILE
STA 1+20.61
N: 519022.757
E: 2838548.302

181.22 LF INSTALLATION OF PECS 24-9.0 VINYL SHEET PILING (BOX STYLE) & CAP

END VINYL SHEET PILE
STA 3+01.83
N: 519003.581
E: 2838722.523

EX. CHAIN-LINK FENCE TO REMAIN & BARB WIRE TO REMAIN.

GRADING LIMITS

END NEW CHAIN-LINK FENCE APPROX. 18.75' FROM SE CORNER OF EX. FENCE.

REMOVE AND DISPOSE OF ALL COMPONENTS OF THE EXISTING CHAIN-LINK FENCE.

INNER FACE OF VINYL SHEET PILE

OUTER FACE FACE OF VINYL SHEET PILE

STATIONING IS THE OUTER FACE OF THE SHEET PILE

PER CITY OF TULSA, THIS EXISTING EXPOSED 6" PIPE IS NO LONGER IN USE. THIS PIPE SHALL BE CUT & PLUGGED. ONLY REMOVE 3-FT OF PIPE WHICH IS 1-FT PAST EACH WALL FACE.

INSTALL 2' DEPTH OF 12" PLAIN RIPRAP ON TOP OF THE EXISTING SURFACE. RIPRAP TO EXTEND 3' PAST THE EXISTING STEM WALL AND 1' ABOVE THE EXISTING EXISTING STEM WALL. (SEE SHEET 7 DETAILS)

WEST LAGOON
MIDDLE LAGOON
EAST LAGOON

0+80
1+00
1+25
1+50
1+75
2+00
2+25
2+50
2+75
3+00
3+25
3+36

PI: 1+20.30
PI: 1+26.91
PI: 2+87.52
PI: 3+02.13

-43.22%
+31.87%
-3.10%
-1.41%
-33.82%
-1.05%
-1.03%
-1.47%
-10.57%
-19.81%

EX. 8" BACKWASH PIPING (NFC)
EX. 3" SEWER FORCE MAIN (NFC)
6" DECANT (NFC)
3" SPRINKLER PIPE (NFC)
EX. CONC. STEM WALL
UNKNOWN 6" PIPE
LAKE WATER EDGE
ASPHALT
BATHROOM FF: 685.75
WATER PIT

ALL SCALES SHOWN BELOW ARE FOR FULL-SIZE PLANS (34' X 22")

SITE PLAN

TMUA-W-25-07

SPAVINAW STEM WALL MAINTENANCE

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

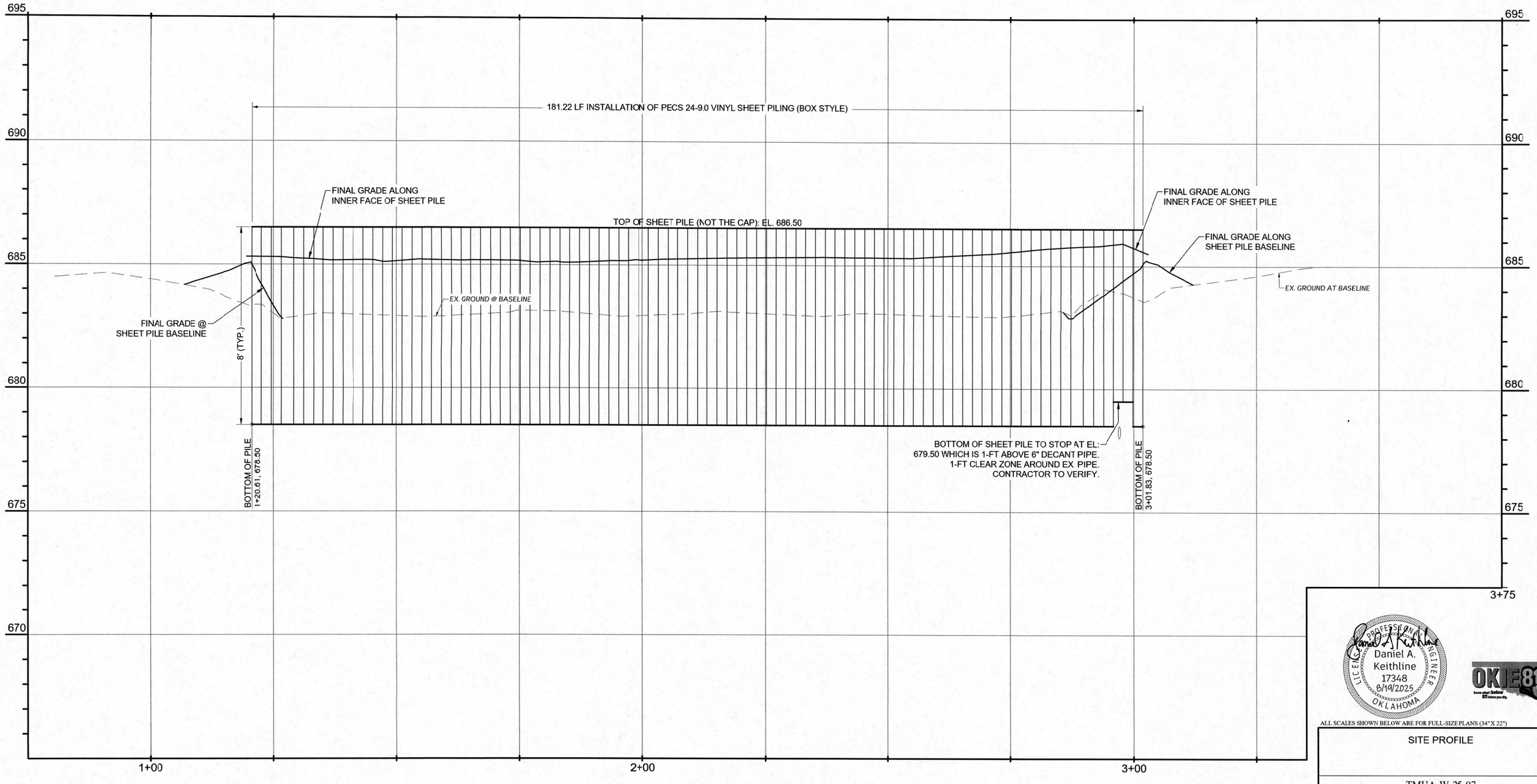
Plans and Estimates Prepared by:
KEITHLINE ENGINEERING GROUP
8556 E. 101ST ST., STE.C Tulsa, Oklahoma 74133 (918) 369-7911

REVISION	BY	DATE

PLAN SCALE 1"=10'	DRAWN	ZLM	8-19-2025
	DESIGNED	DAK	8-19-2025
PROFILE SCALE	SURVEY	KE	4-30-2024
HORIZONTAL: --	PROJECT MGR	SV	08/2025
VERTICAL: --	LEAD ENGINEER	DAK	8/25
	FIELD MGR		8/25
FILE:	DRAWING:		
ATLAS PAGE NO: 10628			

APPROVED:
DESIGN MANAGER
DATE: AUGUST 19 2025
SHEET 05 OF 15 SHEETS

S:\1_Projects\1 - TMUA-Water\24.32_Design_Spav WTP Backwash Lagoon_W 25-07\03.0_Plans_XS & Stnds\1.2_Plan Sheets\24.32_C1_Plan.dwg, 8/19/2025 2:34:05 PM



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LICENSED PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
8/19/2025
OKLAHOMA

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SITE PROFILE

TMUA-W-25-07

SPAVINAW STEM WALL MAINTENANCE

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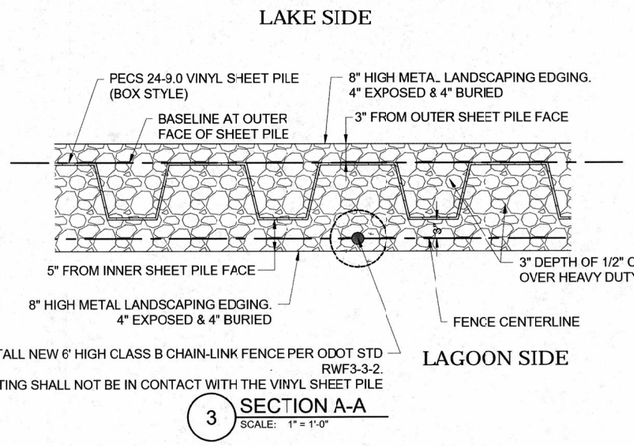
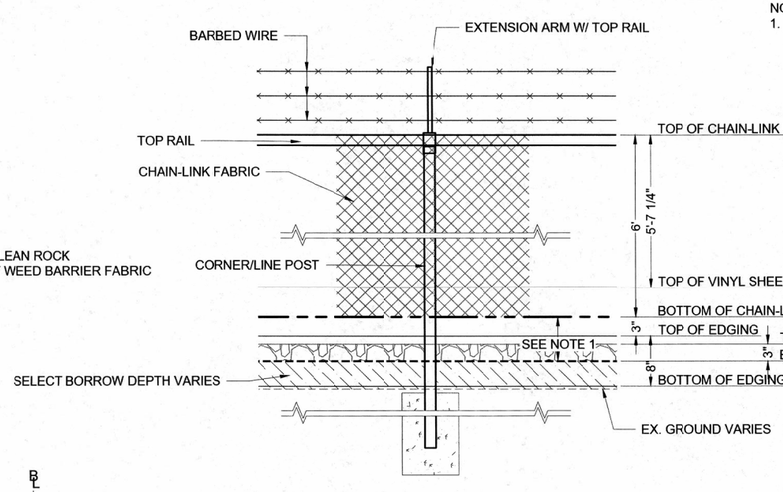
HORIZONTAL: 1" = 10'	PROJECT MGR	SW	08/2025	
VERTICAL:: 1" = 2'	LEAD ENGINEER	KEW	8/25	DESIGN MANAGER
	FIELD MGR	RW	8/25	
FILE:	DRAWING:			DATE: AUGUST 19, 2025
ATLAS PAGE NO: 10628				SHEET 06 OF 15 SHEETS

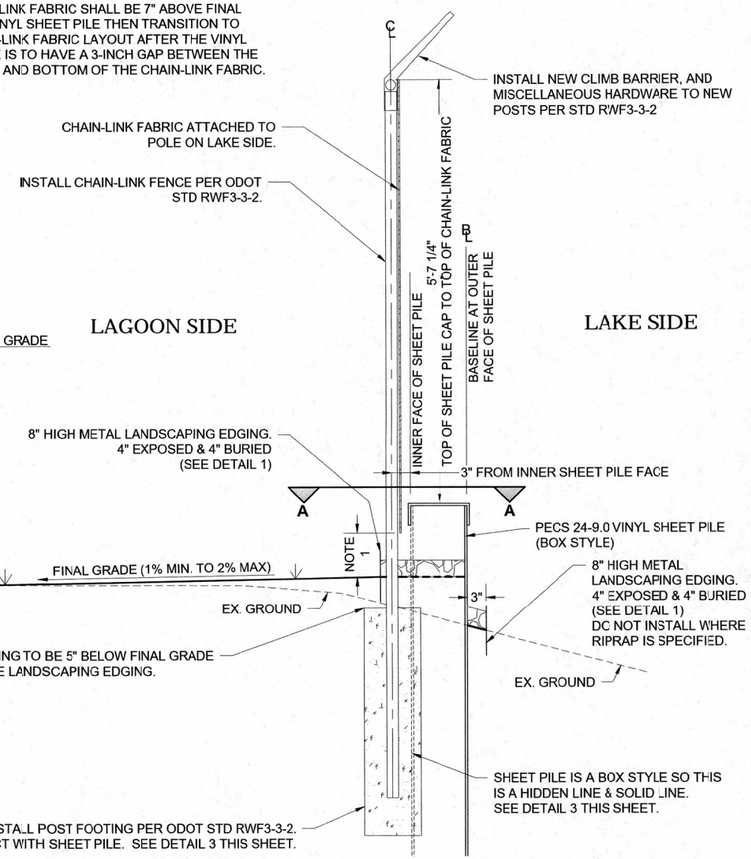


3 SECTION A-A
SCALE: 1" = 1'-0"

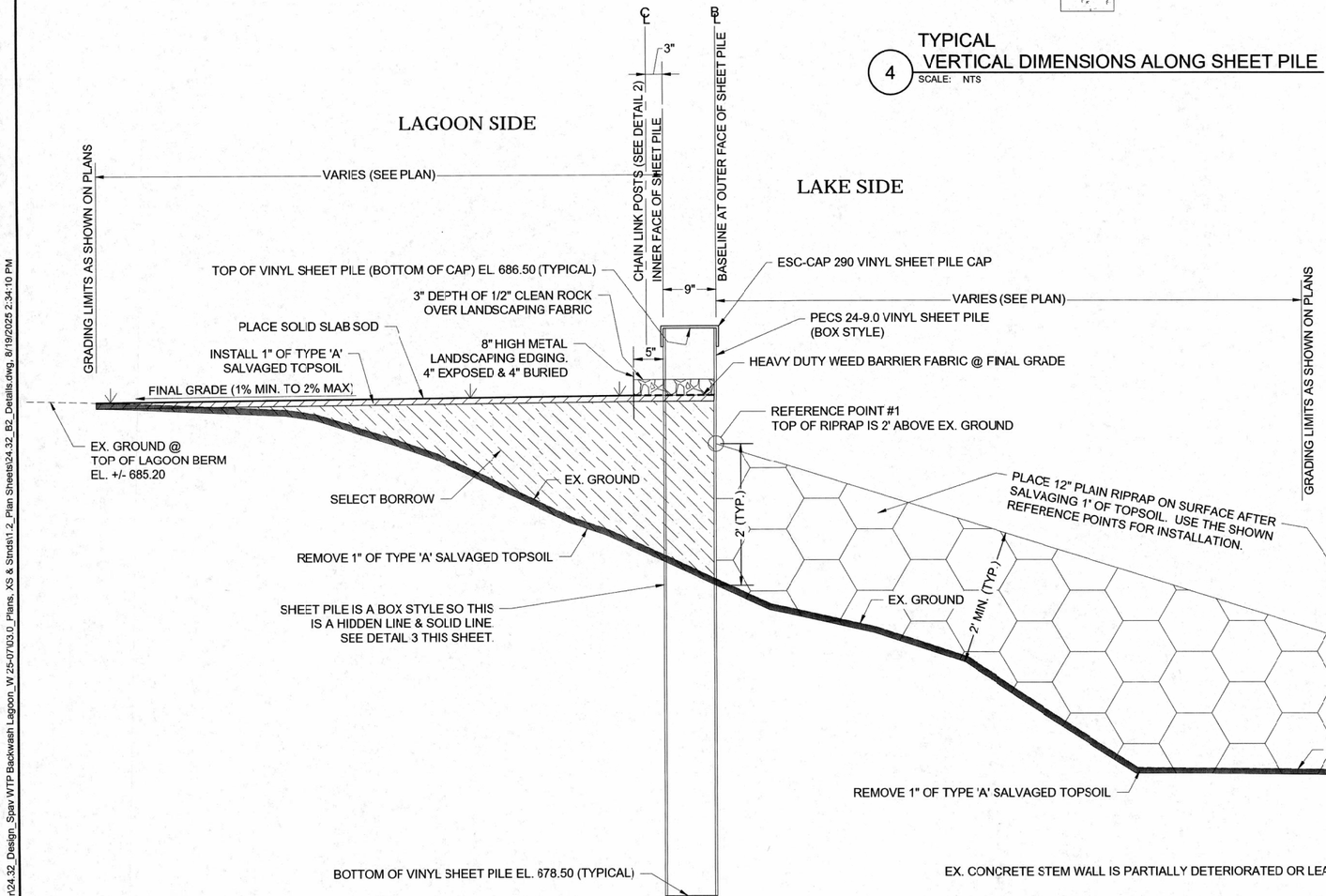


4 TYPICAL VERTICAL DIMENSIONS ALONG SHEET PILE
SCALE: NTS

NOTES:
1. THE BOTTOM OF THE CHAIN-LINK FABRIC SHALL BE 7" ABOVE FINAL GRADE ADJACENT TO THE VINYL SHEET PILE THEN TRANSITION TO MATCH THE EXISTING CHAIN-LINK FABRIC LAYOUT AFTER THE VINYL SHEET PILE. THE OBJECTIVE IS TO HAVE A 3-INCH GAP BETWEEN THE TOP OF LANDSCAPING EDGE AND BOTTOM OF THE CHAIN-LINK FABRIC.



2 TYPICAL NEW CHAIN LINK POST AND NO RIPRAP
SCALE: 1" = 1'-0"



1 TYPICAL ALONG LAGOON WITH RIPRAP
SCALE: 1" = 1'-0"

LEGEND (DETAILS 1,2, & 3)

- 3" DEPTH OF 1/2" CLEAN ROCK OVER HEAVY DUTY WEED BARRIER FABRIC
- FENCE POST FOOTING PER ODOT RWF3-3-2
- SELECT BORROW
- REMOVE 1" OF TYPE 'A' SALVAGED TOPSOIL
- 1" OF TYPE 'A 'SALVAGED TOPSOIL
- 12" PLAIN RIPRAP

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DETAILS

TMUA-W-25-07

SPAVINAW STEM WALL MAINTENANCE

CITY OF TULSA, OKLAHOMA
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	FIELD MGR		8/25	
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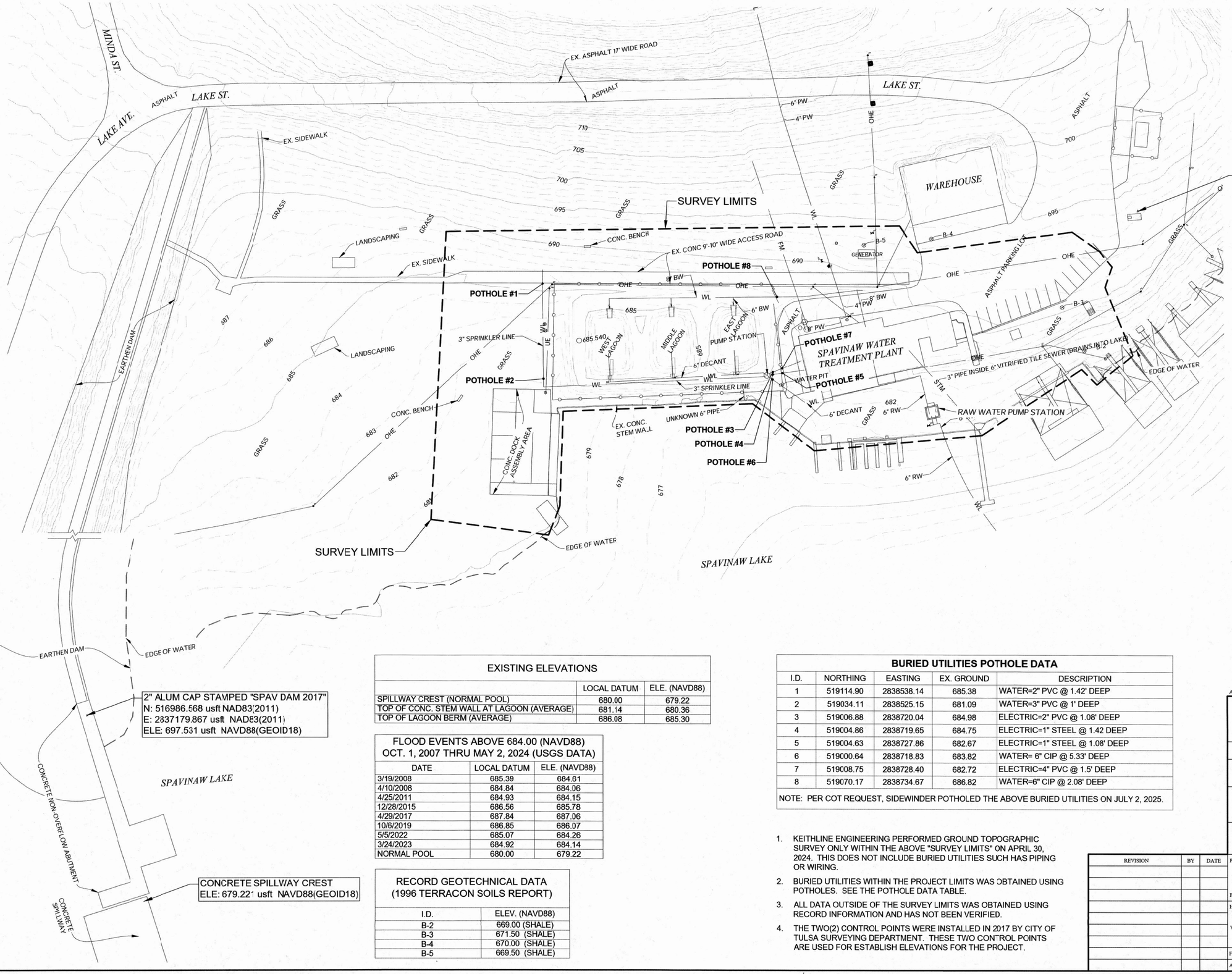

EXISTING ELEVATIONS		
	LOCAL DATUM	ELE. (NAVD88)
SPILLWAY CREST (NORMAL POOL)	680.00	679.22
TOP OF CONC. STEM WALL AT LAGOON (AVERAGE)	681.14	680.36
TOP OF LAGOON BERM (AVERAGE)	686.08	685.30

FLOOD EVENTS ABOVE 684.00 (NAVD88) OCT. 1, 2007 THRU MAY 2, 2024 (USGS DATA)		
DATE	LOCAL DATUM	ELE. (NAVD88)
3/19/2008	685.39	684.61
4/10/2008	684.84	684.06
4/25/2011	684.93	684.15
12/28/2015	686.56	685.78
4/29/2017	687.84	687.06
10/6/2019	686.85	686.07
5/5/2022	685.07	684.26
3/24/2023	684.92	684.14
NORMAL POOL	680.00	679.22

RECORD GEOTECHNICAL DATA (1996 TERRACON SOILS REPORT)	
I.D.	ELEV. (NAVD88)
B-2	669.00 (SHALE)
B-3	671.50 (SHALE)
B-4	670.00 (SHALE)
B-5	669.50 (SHALE)

BURIED UTILITIES POTHOLE DATA				
I.D.	NORTHING	EASTING	EX. GROUND	DESCRIPTION
1	519114.90	2838538.14	685.38	WATER=2" PVC @ 1.42' DEEP
2	519034.11	2838525.15	681.09	WATER=3" PVC @ 1' DEEP
3	519006.88	2838720.04	684.98	ELECTRIC=2" PVC @ 1.08' DEEP
4	519004.86	2838719.65	684.75	ELECTRIC=1" STEEL @ 1.42 DEEP
5	519004.63	2838727.86	682.67	ELECTRIC=1" STEEL @ 1.08' DEEP
6	519000.64	2838718.83	683.82	WATER= 6" CIP @ 5.33' DEEP
7	519008.75	2838728.40	682.72	ELECTRIC=4" PVC @ 1.5' DEEP
8	519070.17	2838734.67	686.82	WATER=6" CIP @ 2.08' DEEP

NOTE: PER COT REQUEST, SIDEWINDER POTHOLED THE ABOVE BURIED UTILITIES ON JULY 2, 2025.

1. KEITHLINE ENGINEERING PERFORMED GROUND TOPOGRAPHIC SURVEY ONLY WITHIN THE ABOVE "SURVEY LIMITS" ON APRIL 30, 2024. THIS DOES NOT INCLUDE BURIED UTILITIES SUCH HAS PIPING OR WIRING.
2. BURIED UTILITIES WITHIN THE PROJECT LIMITS WAS OBTAINED USING POTHOLES. SEE THE POTHOLE DATA TABLE.
3. ALL DATA OUTSIDE OF THE SURVEY LIMITS WAS OBTAINED USING RECORD INFORMATION AND HAS NOT BEEN VERIFIED.
4. THE TWO(2) CONTROL POINTS WERE INSTALLED IN 2017 BY CITY OF TULSA SURVEYING DEPARTMENT. THESE TWO CONTROL POINTS ARE USED FOR ESTABLISH ELEVATIONS FOR THE PROJECT.

OKLAHOMA PROFESSIONAL ENGINEER
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17348
8/19/2025

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TOPOGRAPHIC SURVEY
SURVEY CONTROL
RECORD INFORMATION

TMUA-W-25-07

SPAVINAW STEM WALL MAINTENANCE

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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APPROVED:
DESIGN MANAGER

FILE: DRAWING: DATE: AUGUST 19, 2025

ATLAS PAGE NO: 10628 SHEET 08 OF 15 SHEETS

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STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS:
1) GRADING LIMITS BOUNDARY AS SPECIFIED IDENTIFIED IN PLANS.

PROJECT DESCRIPTION:
INSTALL VINYL SHEET PILE BETWEEN THE LAGOONS AND LAKE TO REINFORCE THE EMBANKMENT ALONG THE LAKEFRONT AND BACKWASH LAGOONS FROM EROSION.

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES:
INSTALL TEMPORARY EROSION CONTROL DEVICES
PERFORM SHEET PILE WORK AND SELECT BURROW INSTALLATION.
PLACE PERMANENT EROSION CONTROL
REMOVE TEMPORARY EROSION CONTROL

SOIL TYPE: CLARKSVILLE VERY GRAVELLY SILT LOAM

TOTAL AREA OF THE CONSTRUCTION SITE: 0.21 AC.

ESTIMATED AREA TO BE DISTURBED: 0.21 AC.

OFFSITE AREA TO BE DISTURBED (FOR CONTRACTOR USE):

TOTAL IMPERVIOUS AREA PRE-CONSTRUCTION: 0.21 AC.

TOTAL IMPERVIOUS AREA POST-CONSTRUCTION: 0.21 AC. (NO CHANGE)

POST-CONSTRUCTION RUNOFF COEFFICIENT OF THE SITE: NO CHANGE

LATITUDE & LONGITUDE OF CENTER OF PROJECT: 36.389459, -95.043302

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: SPAVINAW LAKE

SENSITIVE WATERS OR WATERSHEDS:	YES [X]	NO [ ]
303(d) IMPAIRED WATERS:	YES [X]	NO [ ]
IF YES, LIST IMPAIRMENT:		
LOCATED IN A TMDL:	YES [X]	NO [ ]
LAKE THUNDERBIRD TMDL:	YES [ ]	NO [X]
MS4 ENTITY	YES [ ]	NO [X]
IF YES, LOCATION:		

NOTE:
THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE PATTERNS/PATHWAYS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- [ ] TEMPORARY SEEDING
- [X] PERMANENT SODDING, SPRIGGING OR SEEDING
- [ ] VEGETATIVE MULCHING
- [ ] SOIL RETENTION BLANKET
- [X] PRESERVATION OF EXISTING VEGETATION
- [ ] HYDROMULCH / HYDROSEED

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

STRUCTURAL PRACTICES:

- [ ] STABILIZED CONSTRUCTION EXIT
- [X] TEMPORARY SILT FENCE
- [ ] TEMPORARY SILT DIKES
- [X] TEMPORARY FIBER LOG
- [ ] DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- [ ] DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- [ ] ROCK FILTER DAMS
- [ ] TEMPORARY SLOPE DRAIN
- [ ] PAVED DITCH W/ DITCH LINER PROTECTION
- [ ] TEMPORARY DIVERSION CHANNELS
- [ ] TEMPORARY SEDIMENT BASINS
- [ ] TEMPORARY SEDIMENT TRAPS
- [ ] TEMPORARY SEDIMENT FILTERS
- [ ] TEMPORARY SEDIMENT REMOVAL
- [X] RIP RAP
- [ ] INLET PROTECTION
- [ ] TEMPORARY BRUSH SEDIMENT BARRIERS
- [ ] SANDBAG BERMS
- [ ] TEMPORARY STREAM CROSSINGS
- [ ] FLEXAMAT / ARTICULATED CONCRETE BLOCK
- [ ] COMPOST FILTER SOCKS
- [ ] EROSION CONTROL MATS AND BLANKETS

OFFSITE VEHICLE TRACKING:

- [ ] HAUL ROADS DAMPENED FOR DUST CONTROL
- [X] LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- [X] EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:
ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGE WAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIALS:
PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:
PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENERAL NOTES:
A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE, CONFIRMED IN THE PRE-WORK MEETINGS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ). THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS, ETC. THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION, CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION.

THE FOLLOWING SECTIONS OF THE 2019 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

103.05	BONDING REQUIREMENTS
104.10	FINAL CLEANING UP
104.12	CONTRACTOR'S RESPONSIBILITY FOR WORK
104.13	ENVIRONMENTAL PROTECTION
106.08	STORAGE AND HANDLING OF MATERIAL
107.01	LAWS, RULES AND REGULATIONS TO BE OBSERVED
107.20	STORM WATER MANAGEMENT
220	MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
221	TEMPORARY SEDIMENT CONTROL

IN ADDITION:
"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, OCTOBER 18, 2022.

ADDITIONAL PERMITS REQUIRED FROM OKLAHOMA WATER RESOURCES BOARD AND/OR MUNICIPALITY FOR USE OF SURFACE, GROUND OR CITY WATER SOURCES FOR ACTIVITIES SUCH AS WATERING.

LICENSED PROFESSIONAL ENGINEER
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17348
8/19/2025
OKLAHOMA

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STORMWATER MANAGEMENT PLAN

TMUA-W-25-07

SPAVINAW STEM WALL MAINTENANCE

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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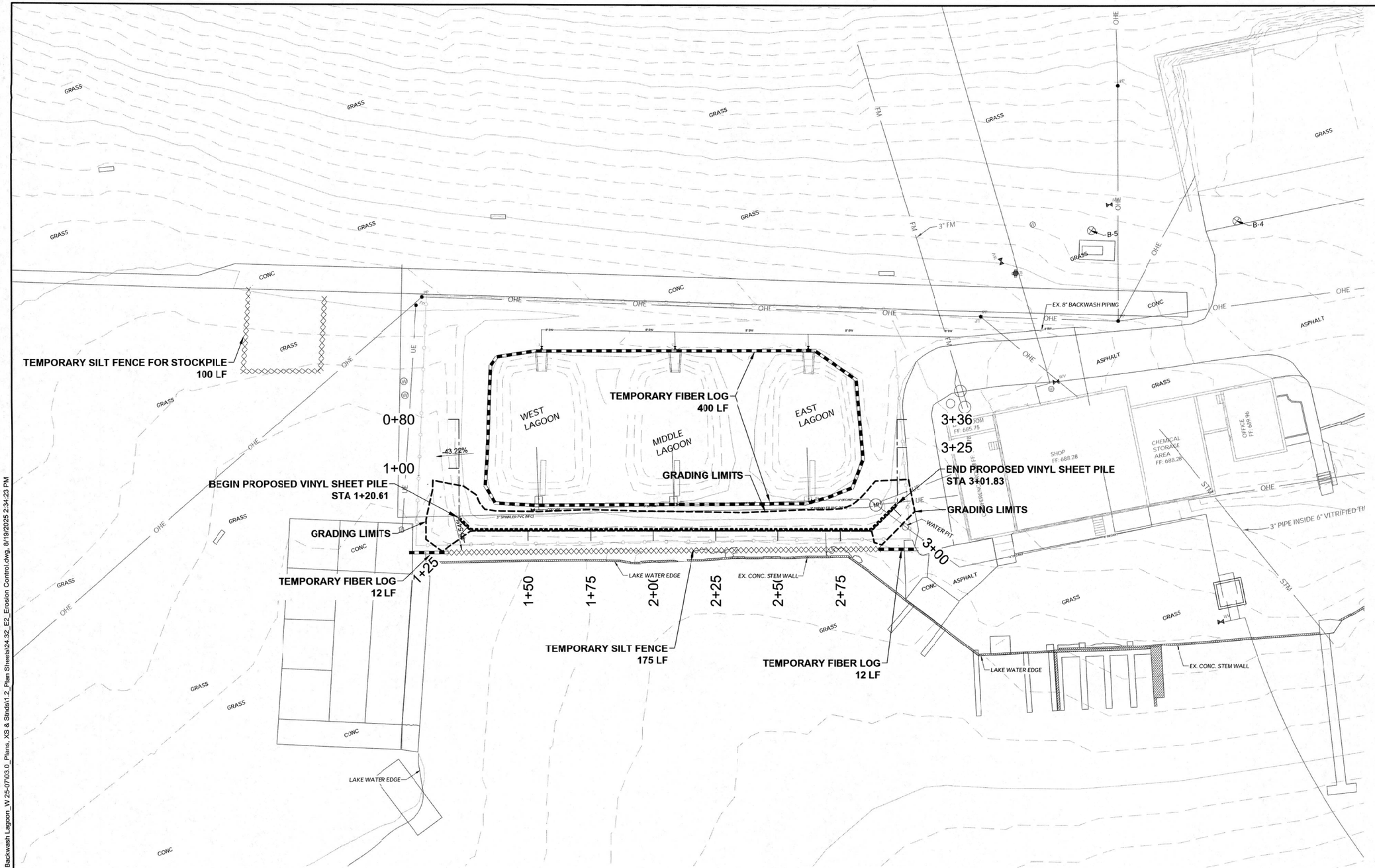

0 20 40

FULL SIZE(22x34) 1" = 20'
HALF SIZE(11x17) 1" = 20'

LEGEND

TEMPORARY FIBER LOG

TEMPORARY SILT FENCE

Daniel A. Keithline 17348 8/19/2025 OKLAHOMA LICENSED PROFESSIONAL ENGINEER

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EROSION CONTROL PLAN

TMUA-W-25-07

SPAVINAW STEM WALL MAINTENANCE

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SHEET 10 OF 15 SHEETS

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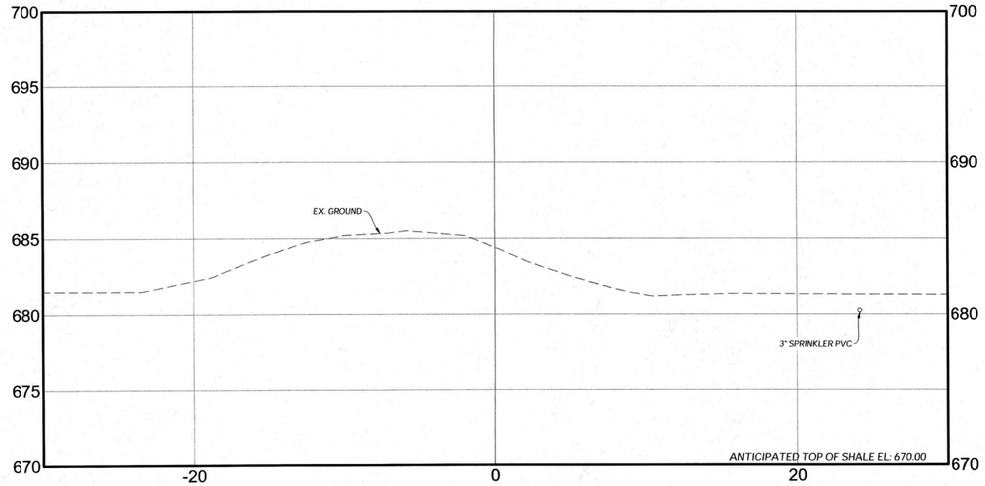

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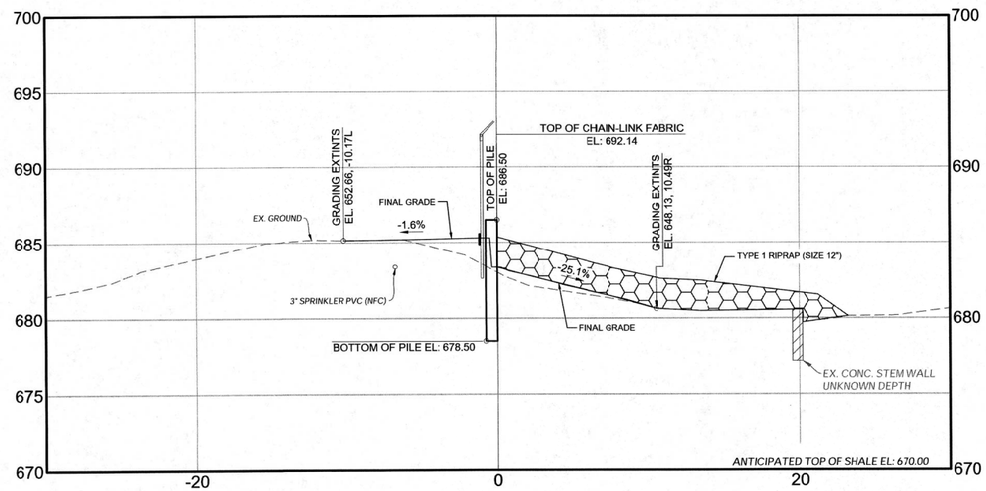

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8/19/2025
OKLAHOMA
PROFESSIONAL ENGINEER

OKIE811 Know what's below Call before you dig.

ALL SCALES SHOWN BELOW ARE FOR FULL-SIZE PLANS (34" X 22")

CROSS SECTIONS
0+90 TO 1+25

TMUA-W-25-07

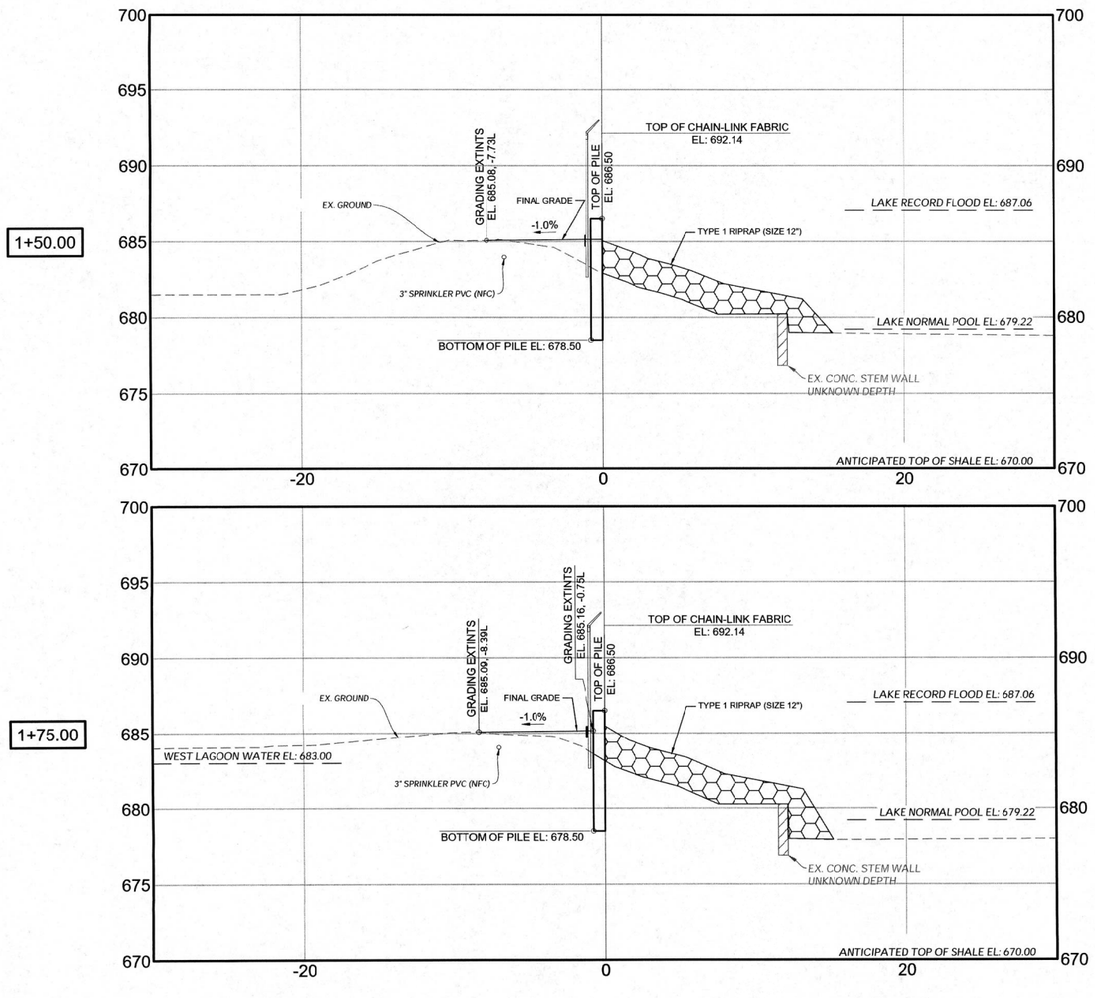
SPAVINAW STEM WALL
MAINTENANCE

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

Plans and Estimates Prepared by:
KEITHLINE ENGINEERING GROUP
8556 E. 101ST ST., STE.C Tulsa, Oklahoma 74133 (918) 369-7911

REVISION	BY	DATE

PLAN SCALE	DRAWN	ZLM	8-19-2025	APPROVED:
1:5	DESIGNED	DAK	8-19-2025	
PROFILE SCALE	SURVEY	KE	4-30-2024	
HORIZONTAL: 1:5	PROJECT MGR	DK	08/2025	
VERTICAL: 1:5	LEAD ENGINEER	CEM	8/25	
	FIELD MGR	RBW	8/25	DESIGN MANAGER
FILE:	DRAWING:			DATE: AUGUST 19 2025
ATLAS PAGE NO: 10628				SHEET 11 OF 15 SHEETS



ALL SCALES SHOWN BELOW ARE FOR FULL-SIZE PLANS (34" X 22")

CROSS SECTIONS
1+50 TO 1+75

TMUA-W-25-07

SPAVINAW STEM WALL MAINTENANCE

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8556 E. 101ST ST., STE.C Tulsa, Oklahoma 74133 (918) 369-7911

Daniel A. Keithline
17348
8/19/2025
OKLAHOMA
PROFESSIONAL ENGINEER

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VERTICAL: 1:5	LEAD ENGINEER	DSW	8/25
	FIELD MGR	BW	8/25

APPROVED:
DESIGN MANAGER

FILE: DRAWING: DATE: AUGUST 19,2025

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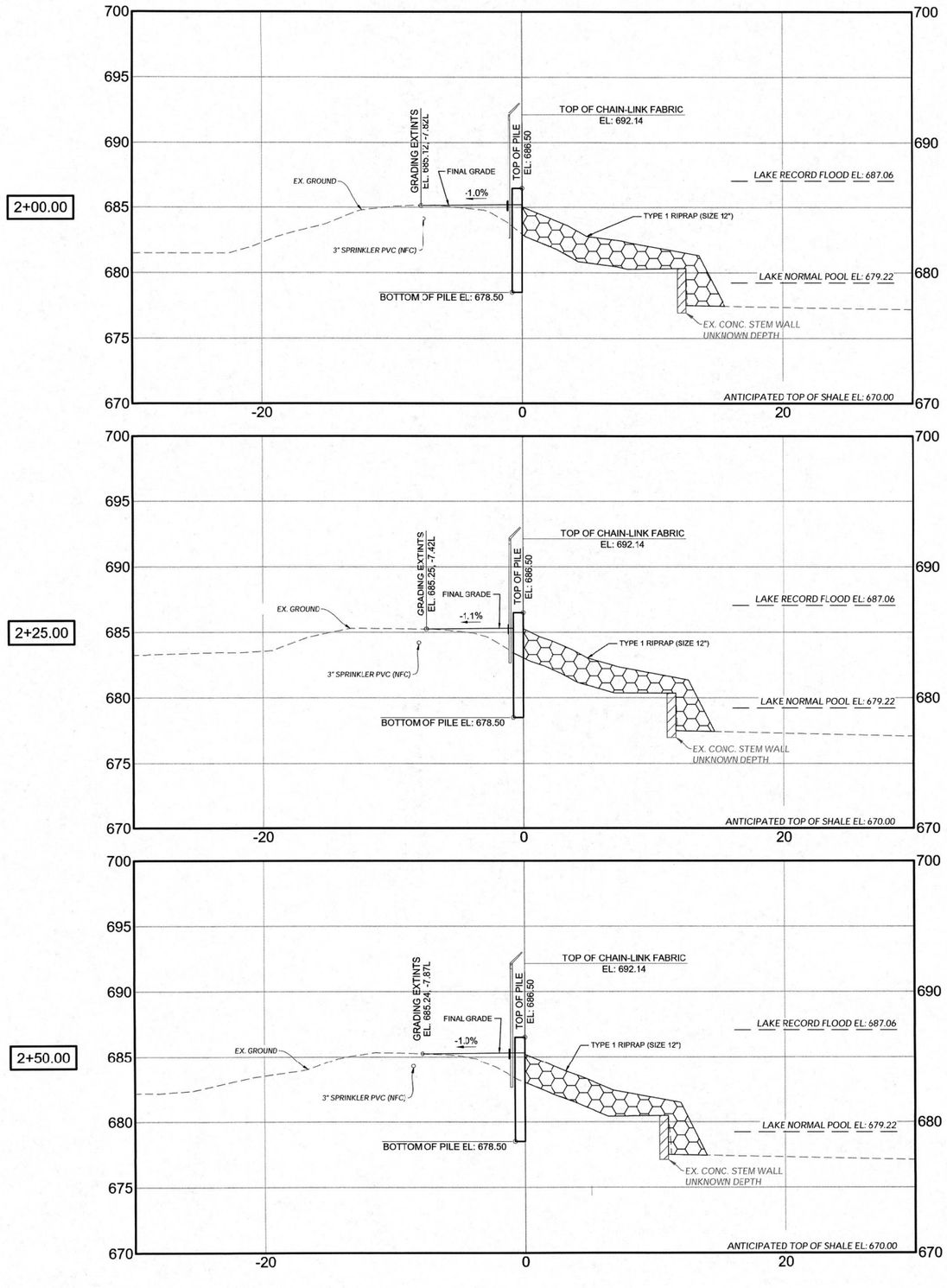
S:\1_Projects\1 - TMUA-Water\24.32_Design_Spav WTP Backwash Lagoon_W 25-07\03.0_Plans, XS & Struds\1.2_Plan Sheets\24.32_XSEC.dwg, 8/19/2025 2:34:27 PM



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Daniel A. Keithline 17348 8/19/2025 LICENSED PROFESSIONAL ENGINEER OKLAHOMA

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CROSS SECTIONS 2+00 TO 2+50

TMUA-W-25-07

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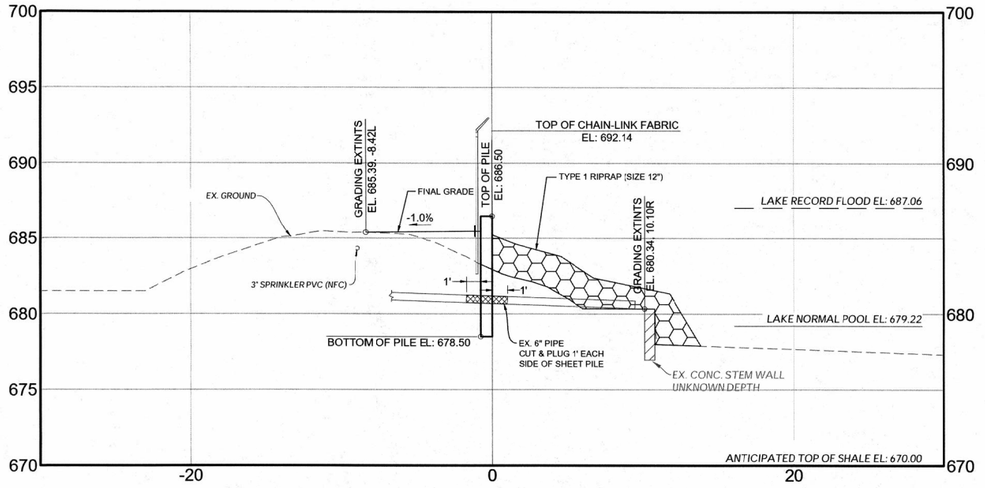
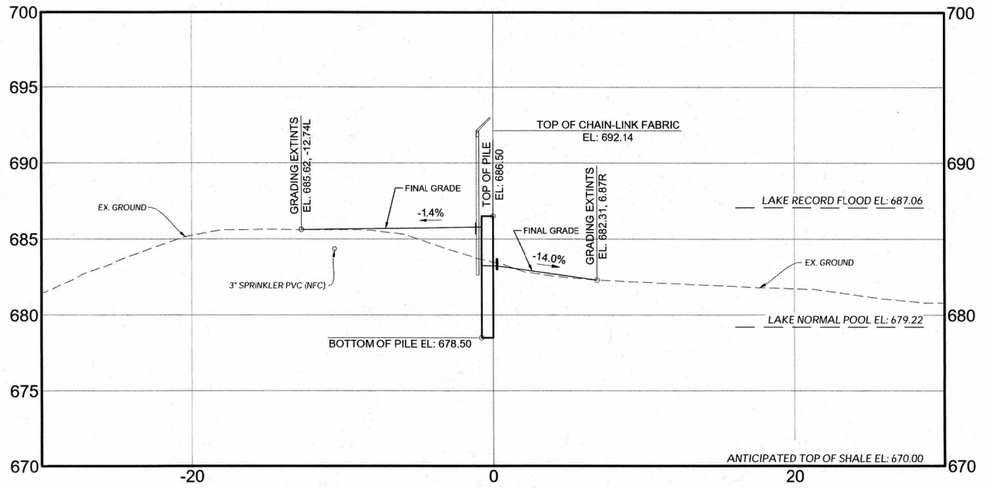
	FIELD MGR		8/25	
FILE:	DRAWING:			DATE: AUGUST 19, 2025
ATLAS PAGE NO: 10628				SHEET 13 OF 15 SHEETS

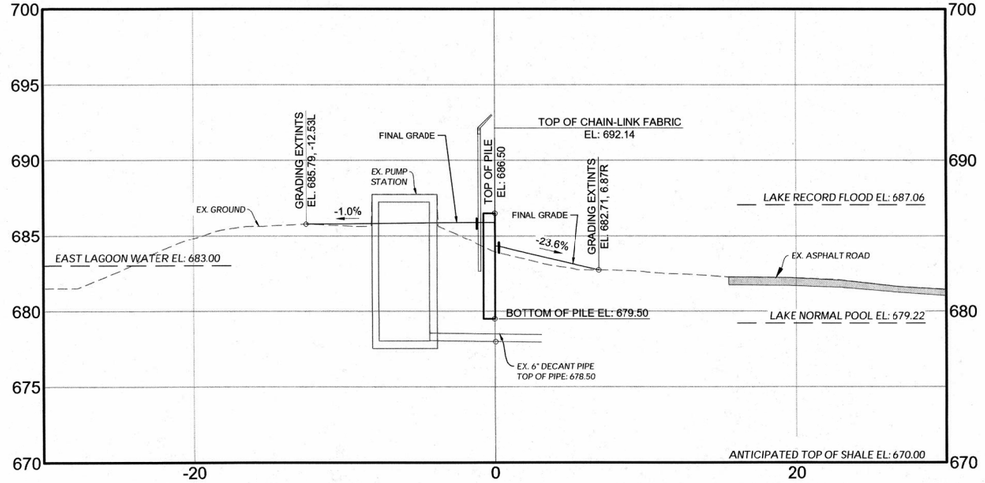
2+69.00



2+90.01



2+97.08



Daniel A. Keithline
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8/19/2025
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CROSS SECTIONS
2+75 TO 2+96.96

TMUA-W-25-07

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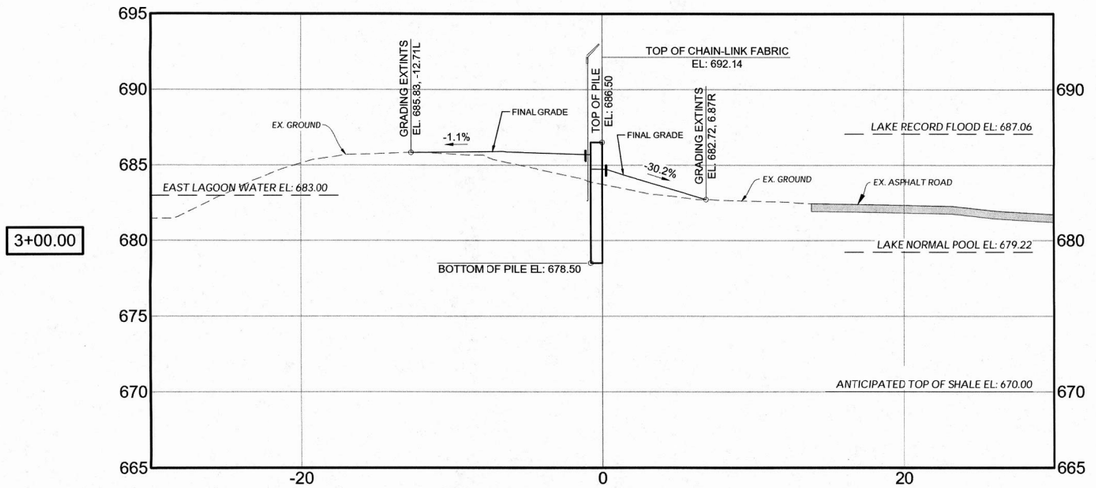
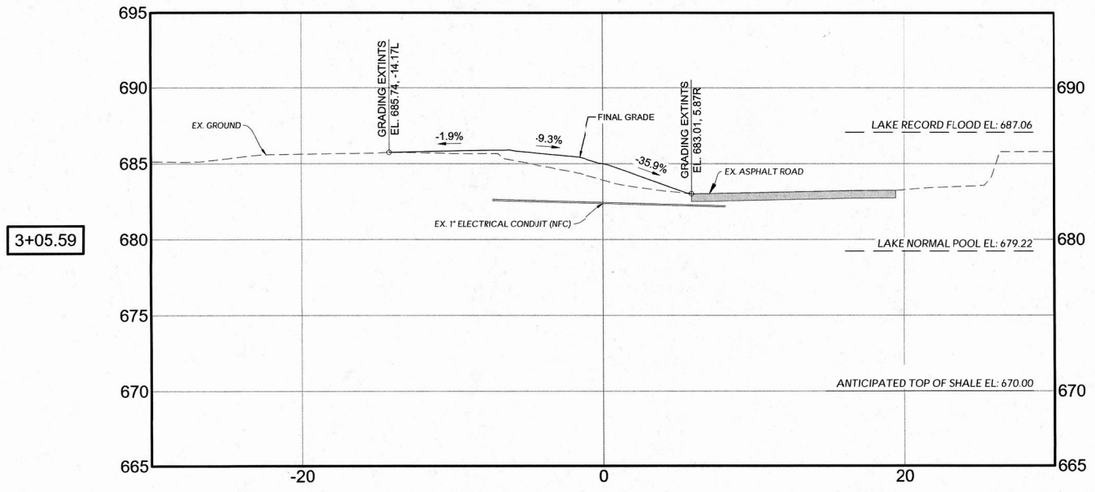
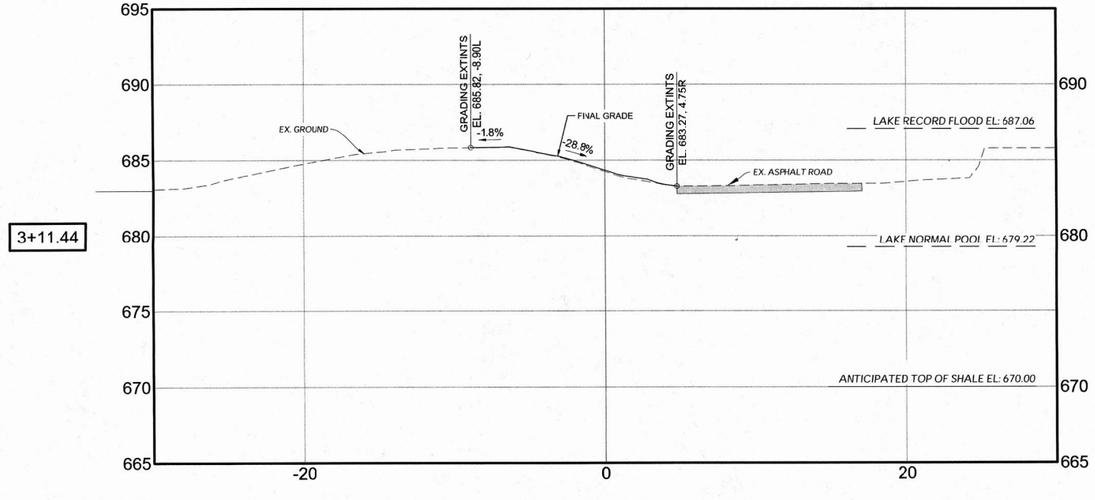
S:\1_Projects\1 - TMUA-Water\24_32_Design_Spav WTP Backwash Lagoon_W 25-07\03.0_Plans_XS & Strds\1.2_Plan Sheets\24.32_XSEC.dwg, 8/19/2025 2:34:29 PM







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3+00 TO 3+25

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