LEGEND

- GROUND LINE
- EXISTING ROADS
- GRADE LINES
- EXISTING BUILDINGS/ STRUCTURES
- BENCHMARKS
- SOIL BORING

FINAL DRAWINGS BID SET
DATE: FEBRUARY 26, 2026

CONSTRUCTION PLANS FOR

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROJECT NO. TMUA-W-25-08

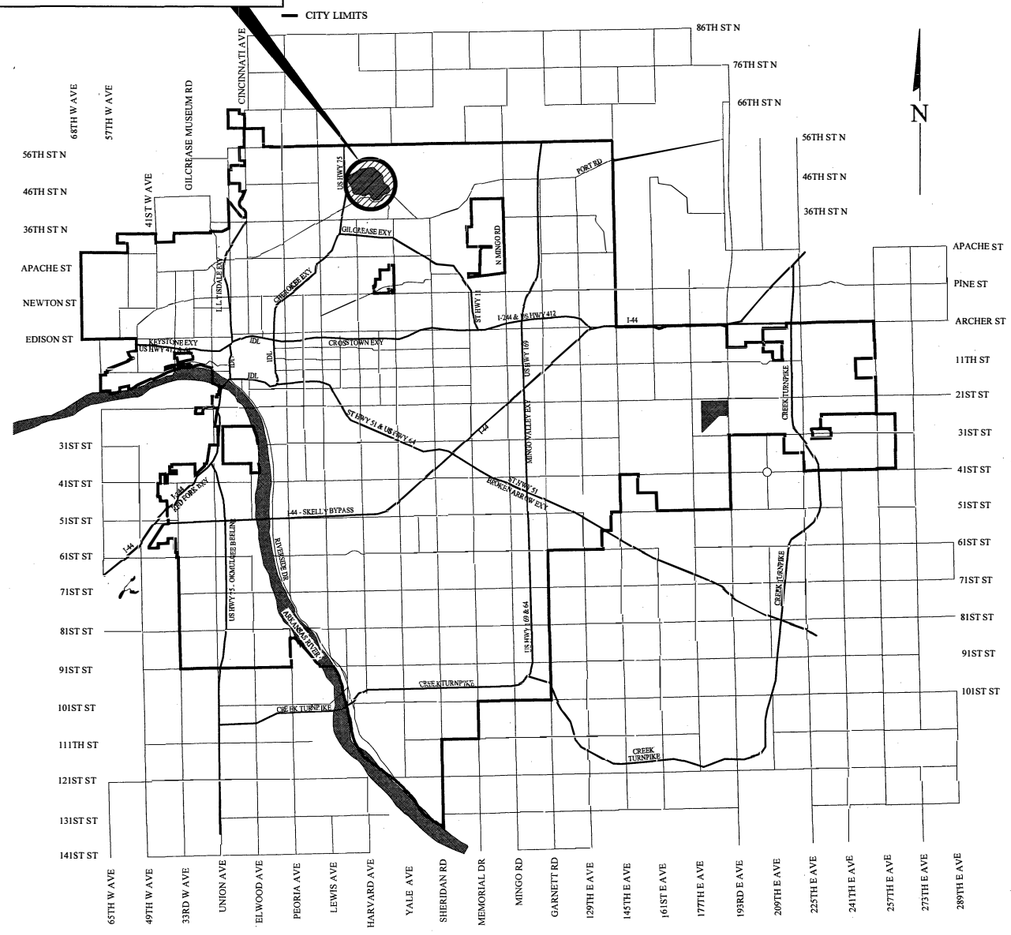
WATER & SEWER DEPARTMENT
CITY OF TULSA, OKLAHOMA

BID ADVERTISE DATE _____

SEE SHEET 2 FOR INDEX OF DRAWINGS

PROJECT LOCATION
YAHOLA TERMINAL STORAGE RESERVOIR
4122 MOHAWK BLVD, TULSA, OK 74115

PROJECT LOCATION



CITY OF TULSA STANDARD DETAILS

102 ..... PROJECT SIGN
126 ..... STANDARD SILT FENCE AND CONSTRUCTION ENTRANCE
325 ..... 16" & 24" BALL VALVE VAULT STANDARD

OKLAHOMA DOT STANDARD DETAILS

BMPR-0 ..... BEST MANAGEMENT PRACTICE REFERENCE MATRIX (R-1)
TESCA-0 .... TYPICAL TEMPORARY EROSION CONTROL APPLICATION (R-4)
RSF-0 ..... REINFORCED SILT FENCE INSTALLATION AND APPLICATIONS (R-6)
TFL-0 ..... TEMPORARY FIBER LOG (R-8)
SSS-2 ..... SOLID SLAB SODDING (R-14)
RWF3-3-2 ...RIGHT OF WAY STYLE CLF (CHAIN LINK FENCE) (R-73)

CITY OF TULSA

APPROVED BY

WATER AND SEWER DIRECTOR — DATE 3.9.2026

DANIEL A. KEITHLINE, P.E., S.E.
KEITHLINE ENGINEERING GROUP, PLLC — DATE 02/26/2026

Daniel A. Keithline
LICENSED PROFESSIONAL ENGINEER
17348
OKLAHOMA

JAMES R. UMDENSTOCK, P.E.
KEITHLINE ENGINEERING GROUP, PLLC — DATE 02/26/2026

JAMES R. UMDENSTOCK
LICENSED PROFESSIONAL ENGINEER
11407
OKLAHOMA

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

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 COMPLIES WITH ALL OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ) REQUIREMENTS.
4) THIS PROJECT COMPLIES WITH ALL OKLAHOMA WATER RESOURCE BOARD (OWRB) REQUIREMENTS.
5) ENTIRE PROJECT IS WITHIN THE CORPORATE LIMITS OF CITY OF TULSA (COT).

UTILITY COORDINATION INFORMATION

TULSA WATER & SEWER 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 GLYNN	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

REFERENCED CONTROL DATA

STATION NAME:	2016-27
HORIZ. CONTROL:	OKLAHOMA NORTH ZONE 3501, NAD83(2011) NORTHING = 446700.650 EASTING = 2576125.084
VERT. CONTROL:	NAVD 1988 (GEOID12A) ELEVATION = 644.119
DESCRIPTION:	3" ALUMINUM CAP , FLUSH, SET IN CONC. POST

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

ABBREVIATION TABLE

AGG.	AGGREGATE
ALLOW	ALLOWANCE
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPROTATION OFFICIALS
A.C.I.	AMERICAN CONCRETE INSTITUTE
A.I.S.C.	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AWWA	AMERICAN WATER WORKS ASSOCIATION
BOTT.	BOTTOM
CD	CALENDAR DAYS
CIP	CAST IRON PIPE
CL	CENTERLINE
COT	CITY OF TULSA
CLR	CLEARANCE
CONC.	CONCRETE
CONST.	CONSTRUCTION
CLSM	CONTROLLED LOW-STRENGTH MATERIAL
CF	CUBIC FEET
CY	CUBIC YARDS
DIP	DUCTILE IRON PIPE
EA	EACH
EL.	ELEVATION
ELE.	ELEVATION
ETC.	ET CETERA
EX.	EXISTING
EXT.	EXTERIOR
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
FT	FEET
HDPE	HIGH DENSITY POLYETHYLENE
IN.	INCH
INT.	INTERIOR
IBC	INTERNATIONAL BUILDING CODE
KSI	KILOPOUNDS PER SQUARE INCH
LF	LINEAR FEET
LS	LUMP SUM
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
MAX.	MAXIMUM
MIN.	MINIMUM
MOD.	MODIFIED
NFV	NOT FIELD VERIFIED
NO.	NUMBER
ODOT	OKLAHOMA DEPARTMENT OF TRANSPORTATION
O.C.	ON CENTER
LB(S)	POUND(S)
QA	QUALITY ASSURANCE
QC	QUALITY CONTROL
RW	RAW WATER PIPE
REIN.	REINFORCEMENT (STEEL)
(RW)	RESILIENT WEDGE
RJ	RESTRAINED JOINTS
SPEC.	SPECIFICAITON
SF	SQUARE FEET
SY	SQUARE YARDS
SS	STAINLESS STEEL
STD	STANDARD
TYP.	TYPICAL
W/	WITH
WSE	WATER SURFACE ELEVATION

INDEX OF DRAWINGS

PROFESSIONAL ENGINEER — Daniel A. Keithline — 17348 — 02/26/2026 — OKLAHOMA

OKIE811

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

SHEET INDEX & ABBREVIATION TABLE

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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: N/A
PROFILE SCALE
HORIZONTAL: N/A
VERTICAL: N/A

DRAWN	ZLM	01-29-2026
DESIGNED	DAK	01-29-2026
SURVEY	NJR	03-20-2020
PROJECT MGR		03/2026
LEAD ENGINEER	DAK	3/2026
FIELD MGR		3/26

APPROVED:

DESIGN MANAGER

FILE: DRAWING:

DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284

SHEET 02 OF 55 SHEETS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Reservr 2023 Improv_W-25-08\03.0_Plans, XS & Shsts\1.2_Plan Sheets\24.33_A2_Pay Items & Notes.dwg, 3/4/2026 2:08:24 PM

WATER PAY ITEM NOTES (COT VERSION 5/15/2025)

W1. NOT USED

W2. BURIED BOLTS, HARNESS LUGS, AND COUPLINGS SHALL BE GIVEN TWO COATS OF KOPPER'S BITUMASTIC 300-M (DRY MIL THICKNESS OF 16 MILS) OR EQUAL. COST TO BE INCLUDED IN UNIT PRICE BID FOR PIPE AND FITTINGS.

W3-4. NOT USED

W5. ALL HYDRANTS, VALVES AND OTHER FITTINGS FROM ABANDONED WATER MAINS SHALL BE SALVAGED AND DELIVERED TO THE SOUTH YARD AT 2317 S JACKSON AVE. PAYMENT TO BE MADE UNDER RIGHT OF WAY CLEARING AND RESTORING. NO ADDITIONAL PAYMENT SHALL BE MADE.

W6-7. NOT USED

W8. ALL COSTS FOR COMPONENTS NECESSARY TO RESTRAIN JOINTS FOR PIPE AND FITTINGS DESIGNATED RESTRAINED JOINT ("RJ") SHALL BE INCLUDED IN UNIT PRICE BID FOR PIPE OR FITTINGS.

A. DUCTILE IRON PIPE RESTRAINED JOINT SYSTEMS: US PIPE TRFLEX, GRIFFIN SNAPLOK, MCWANE THRUSTLOCK, AMERICAN FLEXRING, EBAA MEGALUG, STAR STARGRIP, SMITH-BLAIR CAMLOCK, CLOW TUFGRIP OR EQUAL SHALL BE USED ON THIS PROJECT. SHOULD RJ PIPE BE SPECIFIED THROUGH UNCASED BORES, ONLY USPIPE TRFLEX, GRIFFIN SNAPLOK, MCWANE THRUSTLOCK, OR AMERICAN FLEXRING IS TO BE USED. LOCKING GASKETS NOT PERMITTED.

B. POLYVINYL CHLORIDE (PVC) RESTRAINED JOINT SYSTEMS: EBAA MEGALUG, STAR STARGRIP OR EQUAL SHALL BE USED ON THIS PROJECT. LOCKING GASKETS NOT PERMITTED; SHOULD RJ PIPE BE SPECIFIED ON BORE, CASING IS REQUIRED.

C. HIGH DENSITY POLYETHYLENE (HDPE) RESTRAINED JOINT SYSTEMS: EBAA MEGALUG, STAR STARGRIP OR EQUAL SHALL BE USED ON THIS PROJECT.

NO ADDITIONAL PAYMENT SHALL BE MADE.

W9-17. NOT USED

W18. 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:

1. 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.

W19-23. NOT USED

W24. SPOT ELEVATIONS ON THE MAIN WATER LINE RELATIVE TO FINISHED GRADE SHALL BE PROVIDED AT EACH 100-FT INTERVAL, COMPLETE WITH STATION AND OFFSET. IN ADDITION, ALL VALVES, FITTINGS, FIRE HYDRANTS (TOP OF NUT) AND OTHER MAJOR APPURTENANT ITEMS SHALL BE SHOWN WITH THE PROPER DESCRIPTION, STATION, OFFSET (NORTHING, EASTING) AND ELEVATION PER PLAN SURVEY CONTROL DATUM.

W25. SPOT ELEVATIONS ON WATER METER CANS, VAULTS, SHALL BE SHOWN WITH THE PROPER DESCRIPTION (METER TYPE, METER SIZE, METER NUMBER, SERVICE MATERIAL, SERVICE SIZE), STATION, OFFSET (NORTHING, EASTING) AND ELEVATION PER PLAN SURVEY CONTROL DATUM. UPON DISCOVERY OF A LEAD OR GALVANIZED SERVICE LINE, NOTIFICATION SHALL BE MADE TO WATER DISTRIBUTION AND WORK SHALL CEASE UNTIL RELEASED AT WHICH TIME ANY AND ALL SERVICE LINES LOCATED THAT ARE LEAD OR GALVANIZED ARE TO BE REPLACED WITH APPROVED MATERIALS.

W26-31. NOT USED

W32. 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.

W33. 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.

W34. PRICE BID SHALL INCLUDE MAINTENANCE, SEDIMENT REMOVAL, DISPOSAL, AND REMOVAL OF FILTERS AT PROJECT COMPLETION.

W35-36. NOT USED

EARTHWORK / EROSION CONTROL / SITE PREPARATION PAY ITEM NOTES (COT)

E1-11. NOT USED

SURFACING / STRUCTURES PAY ITEM NOTES (COT)

S1-11. NOT USED

S12. THE USE OF FLY-ASH IN CONCRETE IS PROHIBITED.

S13-21. NOT USED

TRAFFIC PAY ITEM NOTES

T1-6. NOT USED

T7. PRICE BID FOR THIS ITEM INCLUDES INSTALLATION, MAINTENANCE AND SUBSEQUENT REMOVAL OF PROJECT SIGN.

REMOVAL / ADJUSTMENTS PAY ITEM NOTES (COT)

R1. WASTE MATERIAL TO BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE IN A MANNER APPROVED BY THE ENGINEER.

R2. ALL SAW CUTTING AND REMOVAL SHALL BE INCLUDED IN THE COST OF THE ITEM TO BE ADJUSTED, REMOVED, REPAIRED, OR REPLACED.

R3-4. NOT USED

R5. ITEMS TO BE REMOVED MAY OR MAY NOT BE PRESENT IN ANY SPECIFIED CONDITION.

R6. SHALL INCLUDE ALL COSTS ASSOCIATED WITH PLUGGING/ PATCHING HOLES IN EXISTING STRUCTURES TO REMAIN.

GENERAL PAY ITEM NOTES (COT)

G1. NOT USED

G2. MAXIMUM OVERALL DOLLAR AMOUNT AND SCHEDULE OF PAYMENTS SHALL BE IN ACCORDANCE SECTION 641 OF THE OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, CURRENT EDITION.
EXCLUDES MOBILIZATION FOR WATERLINE WORK.

G3. CONSTRUCTION STAKING SHALL INCLUDE SURVEYING AND THE FURNISHING, PLACING, AND MAINTAINING OF THE CONSTRUCTION LAYOUT STAKES NECESSARY FOR THE PROPER COMPLETION AND INSPECTION OF THE ENTIRE PROJECT.

G4. THE COST TO REPLACE REMOVED OR DAMAGED SECTION CORNERS AND ALL OTHER PERMANENT RIGHT OF WAY MARKERS SHALL BE INCLUDED IN THE PRICE BID FOR THIS ITEM. NO ADDITIONAL PAYMENT WILL BE MADE.

G5-10. NOT USED

ADDITIONAL PAY ITEM NOTES

A1. ESTIMATED PAY ITEM VOLUME QUANTITIES FOR UNCLASSIFIED EXCAVATION AND SELECT BACKFILL WAS DETERMINED AS FOLLOWS:

A. SEE SUMMARY TABLE FOR EXCAVATION AND BACKFILL QUANTITIES.

B. THE CONTRACTOR HAS THE OPTION TO USE ENGINEERED SHORING SYSTEM. IF SHORING SYSTEM IS USED, THE CONTRACTOR WILL BE PAID THE ESTIMATED PLAN QUANTITY LISTED ABOVE. ALL COST SHALL BE INCLUDED IN THE BID ITEM UNIT COST. NO OTHER PAYMENTS WILL BE MADE.

A2. DUE TO THE CONSTRUCTION TAKING PLACE IN THE EXISTING RESERVOIRS, DEWATERING OF STORMWATER AND GROUNDWATER WILL BE REQUIRED. CONTRACTOR SHALL DEWATER EXCAVATION PITS 24 HOURS A DAY TO PREVENT STORMWATER AND GROUNDWATER FROM PONDING ON SUBGRADE AND AGGREGRATE BASE.

THE CITY WILL DRAWDOWN MOHAWK CELL TO APPROXIMATE ELEVATION 595.00. THE CITY WILL DRAWDOWN SEQUOYAH CELL AND YAHOLA CELL TO NEAR EMPTY. THE CONTRACTOR WILL PERFORM ALL ADDITIONAL DEWATERING WORK AT EACH PROJECT AREA, AFTER WEATHER OR RAIN EVENTS, OR IF RAW WATER PIPES ARE LEAKING INTO ANY PROJECT AREAS.

PHOTOGRAPHIC DOCUMENTATION OF EXISTING CONDITION IS REQUIRED PRIOR TO DEWATERING. DAMAGES RESULTING FROM DEWATERING OPERATIONS SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.

THE PRICE BID INCLUDES ALL COSTS ASSOCIATED WITH DEWATERING FOR ALL ASPECTS OF THE PROJECT AND TEMPORARY CONTROL OF WATER NECESSARY TO KEEP ALL PROJECT AREAS DRY. DEWATERING PLAN/PROCEDURE SHALL BE SUBMITTED, REVIEWED, AND APPROVED BY ENGINEER OR RECORD.

A3. INCLUDES THE COST TO RELOCATE THE EXISTING RIPRAP TO NEAREST UNDISTURBED BERM TOE TO DISTRIBUTE EVENLY.

A4. INCLUDES STOCKPILING THE EXISTING BERM CREST AGGREGATE AT THE WEST GATE STRUCTURE PROJECT AREA ONLY. INSTALLATION OF THE STOCKPILED AGGREGATE TO BE PAID UNDER SELECT BACKFILL.

A5. GEOTEXTILE REINFORCEMENT SHALL BE NON-WOVEN FABRIC FOR SUBGRADE SEPERATION IN ACCORDANCE WITH AASHTO M 288 WITH A CLASS 1 DEGREE OF SURVIVABILITY, APPARENT OPENING SIZE MAXIMUM TO BE #80 U.S. SIEVE, AND MINIMUM WEIGHT OF 8 OUNCES PER SQUARE YARD. THE CONTRACTOR WILL BE PAID ESTIMATED PLAN QUANTITY WITH NO OVERLAPS. ESTIMATED PLAN QUANTITY INCLUDES BOTTOM SURFACE AREA, VERTICAL SIDES, AND FABRIC LAID OVER ON TOP, IF SHOWN IN PLANS. ALL COST SHALL BE INCLUDED IN THE BID ITEM UNIT COST. NO PAYMENTS WILL BE MADE FOR 2' MINIMUM LAPS, ONLY TOTAL SURFACE AREA. LAYOUT SHOWING JOINTS SHALL BE SUBMITTED FOR APPROVAL.

A6. INCLUDES COMPACTION OF NATIVE SOILS TO 95% MODIFIED PROCTOR DENSITY.

A7. INCLUDES PLACING THE STOCKPILED RIPRAP ON THE WEST RECONSTRUCTED BERM WITH EXPOSED SOIL SURFACE EVENLY.

A8. INCLUDES BUT NOT BE LIMITED TO, FORM WORKS, LABOR, EQUIPMENT, TRANSPORTING, DELIVERING, PLACING, AND FINISHING OF THE CONCRETE AS INDICATED ON THE CONSTRUCTION PLANS. ALL COST SHALL BE INCLUDED IN THE UNIT BID PRICE PER CUBIC YARD OF CONCRETE.

A9. THE CONTRACTOR SHALL FURNISH AND INSTALL REINFORCING STEEL (DEFORMED 60 KSI EPOXY COATED STEEL BARS) FOR TWO (2) NEW SLUICE GATE STRUCTURES, SLOPE WALLS AND BOAT RAMPS PER PLAN QUANTITIES. ALL COST ASSOCIATED WITH THIS WORK SHALL BE INCLUDED IN THE UNIT COST BID FOR THIS WORK SYSTEM. MANUFACTURED CHAIRS ARE REQUIRED. CONCRETE BLOCKS ARE NOT PERMITTED.

A10. INCLUDES COSTS OF LABOR, MATERIALS, PLANT, AND EQUIPMENT TO PLACE 378 TON OF 12-INCH RIPRAP FOR SHORELINE PROTECTION BY HAND OR MACHINE TO ACHIEVE THE LINES AND THICKNESS SHOWN ON THE PLANS. RIPRAP WAS CALCULATED AT 150LBS/CF. PAYMENT SHALL BE CALCULATED FROM DELIVERY TICKETS WEIGHT/VOLUME TOTALS AFTER INSTALLATION IS COMPLETE PER PLANS.

INCLUDES COSTS OF LABOR, MATERIALS, PLANT, AND EQUIPMENT TO PLACE 129 TON OF 2-INCH TO 8-INCH SHOT ROCK TO BE USED FOR SUBGRADE STABILIZATION AS DIRECTED BY THE ENGINEER AT THE TOWER AND CHANNEL SUBGRADE AT THE EAST AND WEST BERM GATE STRUCTURE. SHOT ROCK WAS CALCULATED AT 75 LBS/CF. SHOT ROCK AT THE EAST BERM GATE STRUCTURE IS ESTIMATED TO BE 1173 SF X 1-FT DEEP X 75 LBS/CF = 67 TON. SHOT ROCK AT THE WEST BERM GATE STRUCTURE IS ESTIMATED TO BE 1647 SF X 1-FT DEEP X 75 LBS/CF = 62 TON. PAYMENT SHALL BE CALCULATED FROM DELIVERY TICKETS WEIGHT/VOLUME TOTALS AFTER INSTALLATION IS COMPLETE AS DIRECTED BY ENGINEER.

A11. SHALL BE ARMORFLEX 55S CLOSED BLOCK, OR APPROVED EQUAL, AND INSTALLED PER MANUFACTURE RECOMMENDATIONS. INCLUDES THE COST OF FILTER FABRIC.

A12. INCLUDES COST TO COMPACT AGGREGATE STONE TO ACHIEVE AGGREGATE ROCK COMPACTION INTERLOCK. THIS REFERS TO MECHANICAL STABILITY AND RESISTANCE TO MOVEMENT THAT DEVELOPS OPTIMUM SEATING AND CONSOLIDATION OF INDIVIDUAL IRREGULAR AGGREGATE PARTICLES TO RESIST DISPLACEMENT UNDER LOADING. THE INTERLOCK IS CRITICAL INSTALLATION METHOD WHEN ROCK FINE PARTICLES ARE NOT PRESENT TO FILL VOIDS AS APPROVED BY FIELD ENGINEERING & ENGINEER.

A13. PRICE BID IS PAID FOR EACH PROJECT SITE. INCLUDES INSTALLING TEMPORARY ACCESS FOR EQUIPMENT THE CONTRACTOR NEEDS TO COMPLETE WORK SHOWN IN THE PLANS. INCLUDES UTILIZING THE EXISTING PERIMETER BERM GRAVEL ROAD. INCLUDES COST TO REMOVE TEMPORARY ACCESS MATERIALS AND REPAIR THE RESERVOIR AND EXISTING PERIMETER GRAVEL BERM ROAD TO EXISTING CONDITION PRIOR TO TARGET DATES & DEMOBILIZATION. CONTRACTOR TEMPORARY ACCESS PLAN SHALL BE APPROVED BY FIELD ENGINEERING PRIOR TO WORK.

A14. A TRAFFIC & PEDESTRAIN CONTROL PLAN SHALL BE DEVELOPED AND SUBMITTED FOR APPROVAL. THE PLAN SHALL COVER MATERIAL/EQUIPMENT DELIVERIES IN PARKING LOTS AND CONSTRUCTION TRAFFIC ALONG THE RESERVOIR EXISTING GRAVEL PERIMETER ROAD BERMS.

A15. TRAFFIC CONTROL SHALL BE 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.

A16. INCLUDES THE COST TO REMOVE THE EXISTING CONCRETE BOX LID, EXISTING PIPE INSIDE THE BOX, AND EXISTING VALVES INSIDE BOX.

A17. PAY ESTIMATED PLAN QUANTITY ONLY. PAYMENT IS IN ACCORDANCE WITH CITY OF TULSA SPECIFICAITON 302.7

A18. INCLUDES THE COST OF THE CASTING THE NEW ROOF LID OFFSITE WITH VALVE BOX & EYE HOOKS.

A19. INCLUDES THE COST OF THE SHAFT EXTENSION STEM FOR A COMPLETE AND WORKING VALVE AS SHOWN ON PLANS.

A20. INCLUDES COMPACTION OF AGGREGATE TO 95% MODIFIED PROCTOR DENSITY.

BASE BID PAY QUANTITIES (GATE STRUCTURES & BOAT RAMP, COMPLETE)

BID ITEM NO.	COT SPEC. NO.	ODOT SPEC. NO.	TECHNICAL SPEC. NO.	DESCRIPTION	PAY NOTES	UNIT	QTY
1	---	202(A)2200	---	UNCLASSIFIED EXCAVATION (ESTIMATED)	A1,A3,A4,A17,A22,A25,R1	CY	3,434.
2	SPECIAL	220	---	SWPPP DOCUMENTATION AND MANAGEMENT	W32,W33,W34	LS	1.
3	---	303(A)1200	---	AGGREGATE BASE TYPE A (BASE)	A20	CY	213.
4	---	310(B)5300	---	SUBGRADE, METHOD B	A27	SY	4,117.
5	---	326(A)1200	---	GEOTEXTILE REINFORCEMENT	A5	SY	2,461.
6	---	326(B)1300	---	GEOGRID REINFORCEMENT	A30	SY	380.
7	---	501(A)1200	---	STRUCTURAL EXCAVATION UNCLASSIFIED (ESTIMATED)	A17	CY	2,116.
8	---	501(E)1600	31 23 00	SELECT BACKFILL (ESTIMATED)	A6,A7,A17	CY	4,443.
9	---	501(G)1810	---	CONTROLLED LOW-STRENGTH MATERIAL (CLSM) BACKFILL	-	CY	78.
10	---	509(A)0200	---	CLASS AA CONCRETE	A8,S12	CY	563.
11	---	509(B)0300	---	CLASS A CONCRETE (SLOPE WALLS)	A8,S12	CY	131.
12	---	511(B)2300	---	EPOXY COATED REINFORCING STEEL	A9	LB	121,127.
13	---	601(A)1100	---	TYPE I PLAIN RIPRAP	A10	TON	378.
14	---	602(B)2300	35 31 19	ARTICULATING CONCRETE BLOCK SYSTEM, COMPLETE IN PLACE	A11	SF	2,300.
15	---	619(B)6360	---	REMOVAL OF CONCRETE PAVEMENT	R1,R2,R5	SY	73.
16	---	619(B)6408	---	REMOVAL OF CONCRETE SLOPE PROTECTION	R1,R2,R5	SY	516.
17	---	640(A)1210	---	FIELD OFFICE	-	EA	1.
18	---	641	---	MOBILIZATION	A29,G2	EA	1.
19	304	642	---	CONSTRUCTION STAKING LEVEL II	G3,G4	EA	1.
20	---	---	---	TEMPORARY SITE ACCESS	A13,A21,A26	EA	2.
21	---	---	---	2" TO 8" SHOT ROCK FOR SUBGRADE STABILIZATION	A10	TON	129.
22	---	---	05 51 33	16" WIDE STEEL REINFORCED PLASTIC MANHOLE STEPS	-	EA	59.
23	---	---	05 53 00	TOWER SS304 GRATING W/ CAST-IN-PLACE SS304 FRAME, COMPLETE	-	EA	2.
24	---	---	05 53 00	CHANNEL SS304 GRATING W/ CAST-IN-PLACE SS304 FRAME, COMPLETE	-	EA	2.
25	---	---	31 23 19	DEWATERING, COMPLETE	A2	CD	112.
26	---	---	41 22 13	DAVIT CRANE W/ BASE, OPERATING SYSTEM, COMPLETE IN PLACE	-	EA	2.
27	---	---	05 52 00	HANDRAILS, POSTS, WALL BRACKETS, AND CHAINS, COMPLETE SYSTEM IN PLACE	-	EA	2.
28	---	---	40 05 59.23	STAINLESS STEEL SLIDE GATES, COMPLETE OPERATION SYSTEM IN PLACE	-	EA	2.
29	102	---	---	PROJECT SIGN (CITY OF TULSA)	T7	EA	1.
30	213	---	---	SIZE #1 CRUSHED STONE AGGREGATE (BERM CREST), COMPLETE IN PLACE	A12	CY	103.
31	334	---	---	CONSTRUCTION AS-BUILT	W24,W25,A28	EA	1.
32	335	---	---	CONTRACTOR QUALITY CONTROL	-	LSUM	1.
33	SPECIAL	---	---	CONSTRUCTION TRAFFIC CONTROL	A14,A15,A23	CD	285.
34	SPECIAL	---	---	OWNER ALLOWANCE	W18	ALLOW	100,000.

ADDITIVE ALTERNATE 1 PAY QUANTITIES (SPLITTER BOX)

BID ITEM NO.	COT SPEC. NO.	ODOT SPEC. NO.	TECHNICAL SPEC. NO.	DESCRIPTION	PAY NOTES	UNIT	QTY
35	---	326(A)1200	---	GEOTEXTILE REINFORCEMENT	A5	SY	130.
36	---	509(A)0200	---	CLASS AA (SPLITTER BOX ROOF SLAB)	A8,A18,S12	CY	2.
37	---	509(B)0300	---	CLASS A CONCRETE (SLOPE WALLS)	A8,S12	CY	21.
38	---	511(B)2300	---	EPOXY COATED REINFORCING STEEL	A9	LB	1,598.
39	---	619(B)6392	---	REMOVAL OF EXISTING STRUCTURES	R1,R2,R5,A16	EA	1.
40	---	619(B)6408	---	REMOVAL OF CONCRETE SLOPE PROTECTION	R1,R2,R5	SY	81.
41	---	619(B)6440	---	REMOVAL OF EXISTING PIPE	R1,R2,R5,R6	LF	26.
42	---	---	---	TEMPORARY SITE ACCESS	A13,A24	EA	1.
43	312	---	---	24 INCH X 16 INCH DUCTILE IRON REDUCER (RJ)	W2,W8	EA	2.
44	312	---	---	24 INCH DUCTILE IRON TO 24" CAST IRON PIPE ADAPTOR (RJ)	W2,W8	EA	1.
45	317	---	---	24 INCH DUCTILE IRON PIPE (RJ)	W2,W8	LF	15.
46	317	---	---	16" GATE VALVE (RJ) (RESILIIENT WEDGE), COMPLETE IN PLACE	W2,A19	EA	1.
47	318	---	---	VALVE BOX	-	EA	1.

A21. INCLUDES THE PLACEMENT OF STEEL PLATES ON THE EAST BERM TO PROTECT THE EXISTING BURIED 6'X6' CONCRETE BOX OUTLET WHILE HEAVY EQUIPMENT TRAVELS ALONG THE GRAVEL CREST TO THE PROJECT AREA.

A22. INCLUDES COST TO CONSTRUCT A RECOMMENDED TEMPORARY EARTHEN COFFERDAM USING STOCKPILED SUITABLE STRUCTURAL NATIVE SOIL. THE COFFERDAM IS USED TO PREVENT WATER FROM ENTERING THE PROJECT AREA. THE COFFERDAM ACTS AS A STOCKPILE SUITABLE STRUCTURAL MATERIAL TO BE USED DURING BACKFILL OPERATIONS. NO ADDITIONAL PAYMENTS WILL BE MADE FOR DOUBLE HANDLING MATERIAL.

A23. INCLUDES COST FOR TWO(2) CONSTRUCTION AREA RESERVOIR CLOSED TO PUBLIC SIGNS MOUNTED TO TYPE 3 BARRIER WITH FLASHING LIGHTS. INCLUDED TWO(2) ONE-WAY TRAFFIC SIGNS AT EACH SITE. INCLUDES FLAGMAN IF REQUIRED TO DIRECT CONSTRUCTION TRAFFIC.

A24. PRICE BID SHALL INCLUDE INSTALLATION AND REMOVAL OF THE CONTRACTORS ACCESS ROAD(S) TO THE ADDITIVE ALTERNATE 1 SITE AREA. ACCESS ROAD(S) TO BE APPROVED BY FIELD ENGINEERING PRIOR TO WORK. RESERVOIR SHALL BE BROUGHT BACK TO EXISTING CONDITION PRIOR TO DEMOBILIZATION.

A25. UNCLASSIFIED EXCAVATION INCLUDES SILT, NON-STRUCTURAL SEDIMENT AND STRUCTURAL SOILS. ALL SILT & NON-STRUCTURAL SEDIMENT SHALL BE REMOVED FROM THE SITE AND BECOME THE PROPERTY OF THE CONTRACTOR.

A26. INCLUDES COST TO MAINTAIN THE EXISTING GRAVEL PERIMETER BERM ROAD TO EXISTING CONDITION. EXISTING CONDITION SHALL BE PHOTOGRAPHED AND DOCUMENTED PRIOR TO MOBILIZATION. NO ADDITIONAL PAYMENT WILL BE MADE.

A27. PRIOR TO BACKFILL OF NATIVE SOIL OR AGG. BASE, PERFORM SUBGRADE METHOD 'B' COMPACTED TO 95% MODIFIED PROCTOR DENSITY. IF 95% COMPACTION IS UNOBTAINABLE, CONTRACTOR SHALL USE OTHER APPROVED MEANS. IF UNDERCUT IS REQUIRED, IT SHALL BE PAID BY UNCLASSIFIED EXCAVATION AND AGGREGATE BASE TYPE A.

A28. TO BE PERFORMED BY LICENSED SURVEYOR. INCLUCES PROVIDING COORDINATES AND ELEVATION OF THE EXISTING WEIR & OUTLET VALVE OF THE YAHOLA OVERFLOW TOWER.

A29. IF ADDITIVE ALTERNATE #1 IS NOT ACCEPTED THEN THIS PAY ITEM INCLUDES THE COST TO INSTALL & REMOVE A TEMPORARY PLUG FOR THE EXISTING 24" PIPE ON THE SPLITTER BOX IN MOHAWK CELL.

A30. GEOGRID SHALL MEET OR EXCEED PERFORMANCE OF TENSAR INTERAX NX850 A MULTI AXIAL GEOGRID. COEXTRUDED COMPOSITE POLYMER SHEET WHICH IS THEN PUNCHED AND ORIENTED FORMING THREE GEOMETRICS 100% RESISTANCE TO CHEMICAL DEGRADATION. MANUFACTURED IN ACCORDANCE WITH ISO 14025:2011-10. MATERIAL LIST AND LAYOUT SHALL BE SUBMITTED SHOWING LAPS OF 3'-0" FOR APPROVAL BY ENGINEER.

OKIE811 Know what's below Call before you dig.

PAY QUANTITIES & PAY NOTES

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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: N/A
PROFILE SCALE
HORIZONTAL: N/A
VERTICAL: N/A

DRAWN	ZLM	01-29-2026
DESIGNED	DAK	01-29-2026
SURVEY	NJR	03-20-2020
PROJECT MGR		3/3/2026
LEAD ENGINEER		3/26
FIELD MGR		3/26

APPROVED:
DESIGN MANAGER

FILE:
DRAWING:
DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284
SHEET 03 OF 55 SHEETS

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resrv\2023 Improv_W-25-08\03.0_Plans, XS & Shts\1.2_Plan Sheets\24.33_A2_Pay Items & Notes.dwg, 3/4/2026 2:08:24 PM

PROJECT SCOPE OF WORK

1. THE BASE BID INCLUDES THE CONSTRUCTION OF TWO (2) SLUICE GATE STRUCTURES (SGS) THAT WILL CONNECT THE THREE (3) SUBMERGED RESERVOIR CELLS DURING NORMAL POOL OPERATIONS. CONSTRUCTION OF THE SGS ON THE EAST SUBMERGED BERM SHALL OCCUR FIRST, ALONG WITH THE SEQUOYAH BOAT RAMP AND ADDITIVE ALTERNATE 1. CONSTRUCTION OF THE SGS ON THE WEST SUBMERGED BERM SHALL OCCUR SECOND.
2. THE WORK INCLUDES REMOVAL OF CONCRETE SLOPE PROTECTION, REMOVAL OF AGGREGATE, UNCLASSIFIED EXCAVATION, DEWATERING, SUBGRADE PREPARATION, PLACEMENT OF SUBBASE AGGREGATE, REINFORCED CONCRETE FOOTINGS, TOWER, CONVEYANCE CHANNEL AND APRONS. ALSO INCLUDES TWO (2) SLUICE GATES, GRATING, HANDRAILS, DURABLE MANHOLE STEPS, SELECT BACKFILL AND EROSION CONTROL AS SHOWN ON PLANS.
3. THE ADDITIVE ALTERNATE 1 INCLUDES THE RECONSTRUCTION OF A 24-INCH CONVEYANCE PIPE AND VALVE TO CONNECT THE SEQUOYAH CELL TO THE MOHAWK CELL.
4. THE BASE BID AND ADDITIVE ALTERNATE WORK AREAS ARE SHOWN ON PROJECT OVERVIEW SHEET. CONSTRUCTION SEQUENCE WITH STARTUP PROCEDURE IS LISTED ON THIS SHEET AS WELL.
5. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL IMPLEMENT A TRAFFIC CONTROL PLAN AROUND THE ENTIRE EXISTING RESERVOIR GRAVEL PERIMETER ROAD THAT WAS DEVELOPED IN ACCORDANCE WITH THE LATEST ADDITION OF THE MUTCD. PLAN SHALL SHOW MATERIAL AND EQUIPMENT STAGING AREAS, SAFETY AND LOGISTICAL SIGNS FOR ALL TYPES OF TRAFFIC.

CONSTRUCTION CONSTRAINTS

1. DO NOT PERFORM WORK BETWEEN THE HOURS OF 6:00 PM AND 7:00 AM NOR ON SATURDAY, SUNDAY, OR LEGAL HOLIDAYS WITHOUT THE WRITTEN APPROVAL OR PERMISSION OF THE CITY.
2. BEFORE WORK IN ANY AREA MAY COMMENCE, THE CONTRACTOR MUST COORDINATE HIS ACTION IN WRITING THROUGH THE OWNER AT LEAST 10 DAYS PRIOR TO STARTING THE PLANNED WORK.
3. THE CONTRACTOR IS RESPONSIBLE AND SHALL MANAGE STORMWATER AND GROUNDWATER FLOW BY DEWATERING AT EACH PROJECT AREA DURING THE PROJECT DURATION. PROJECT AREAS ARE IDENTIFIED IN CONSTRUCTION PLANS.
4. ANTCIPATED TARGET DATES IS AS FOLLOWS: (THESE DATES ARE SUBJECT TO CHANGE, F.E. APPROVAL REQUIRED.)
   AUG. 6, 2026 - CITY RECEIVES EXCUTED CONTRACT.
   AUG. 17, 2026 - PRE-CONSTRUCTION MEETING AND CITY ISSUES TAX CERTIFICATE.
   AUG. 18, 2026 - CONTRACTOR STARTS THE SLIDE GATE SHOP DRAWING/PURCHASE PROCESS.
   - CONTRACTOR ALLOWED TO BEGIN MOBILIZATION AS LONG AS IT DOES NOT IMPACT THE CITY'S DAILY OPERATIONS.
   SEP. 21, 2026 - PENDING WEATHER & DEMAND RATES, CITY WILL BEGIN RESERVOIR DRAWDOWN.
   OCT. 7, 2026 - SECOND PRE-CONSTRUCTION MEETING AND CITY ISSUES NTP.
   OCT. 12, 2026 - COMPLETION OF RESERVOIR DRAWDOWN.
   - CONTRACTOR CAN BEGIN CONSTRUCTION OF PROPOSED WORK.
   MAR. 30, 2027 - ALL RESERVOIR CELLS TO BEGIN FILLING.
   - PROPOSERD WORK AND PUNCH LIST TO BE COMPLETE IN TULSA REGULATORY FLOODPLAIN.
   MAY 28, 2027 - COMPLETE CLEANUP, PUNCH LIST, DEMOBILIZATION OUTSIDE OF TULSA REGULATORY FLOODPLAIN COMPLETE.
   - THE CONTRACTOR SHALL NOT IMPACT THE CITY'S DAILY OPERATIONS
5. THE EAST BERM GATE STRUCTURE IS THE PRIORITY AND SHOULD BEGIN 2-3 WEEKS MINIMUM PRIOR TO STARTING THE WEST BERM GATE.
6. THE CITY RESERVES THE RIGHT TO ISSUE THE CONTRACTOR A STOP WORK ORDER IF AN EMERGENCY ARSISES AND FILL THE RESERVOIRS PENDING WEATHER AND ANTICIPATED WATER DEMAND. EVERY EFFORT WILL BE MADE TO PROVIDE A MINIMUM OF A WEEKS NOTICE, BUT THE OWNER RESERVES THE RIGHT IN AN EXTREME EMERGENCY TO FORCE CONTRACTOR TO VACATE WITHIN 24 HOURS. IF CONTRACTOR IS FORCED TO VACATE THE RESERVIOR PER THIS NOTE, AN ADDITIONAL MOBILIZATION SHALL BE GRANTED AS WELL AS ADDITIONAL CALENDAR DAYS.
7. CONTRACTOR TO PERMIT CITY STAFF ACCESS TO THE RESERVOIR FACILITIES TO PERFORM NORMAL OPERATION OR MAINTENANCE DUTIES AT ALL TIMES. THIS INCLUDES UNOBSTRUCTED ACCESS TO PARKING LOT GATES, EXISTING GRAVEL PERIMETER ROAD, AND EXISTING BOAT RAMPS.

WATER CONSTRUCTION NOTES (COT VERSION 5/15/2025)

1. THE CITY OF TULSA FIELD ENGINEERING DEPARTMENT SHALL INSPECT ALL TRENCHING, BEDDING, PIPE INSTALLATION, BACKFILL AND COMPACTION.
2. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARD SPECIFICATIONS AND STANDARD DETAILS OF THE CITY OF TULSA WATER & SEWER DEPARTMENT.
3. NOT USED.
4. MINIMUM COVER OVER WATER LINES SHALL BE AS NOTED ON THE PLANS.
5. CONTRACTOR SHALL REPLACE EXISTING GRASS WITH SEED/SOD OF THE SAME TYPE AND VARIETY OR AS NOTED ON PLANS.
6. NOT USED.
7. NOT USED.
8. WATER OPERATIONS SHALL OPERATE ALL VALVES ON TRANSMISSION MAINS (16" AND LARGER). CONTRACTOR SHALL OPERATE ALL VALVES ON DISTRIBUTION MAINS (SMALLER THAN 16") WITH THE COORDINATION OF FIELD ENGINEERING AND WATER OPERATIONS AND IN THE PRESENCE OF A FIELD ENGINEERING INSPECTOR.
   A. ATTEMPTS WILL BE MADE WITH ASSISTANCE FROM THE CONTRACTOR TO NOTIFY ALL AFFECTED CUSTOMERS 48 HOURS IN ADVANCE, PARTICULARLY IF COMMERCIAL OR INDUSTRIAL CUSTOMERS ARE INVOLVED. PRIOR TO SHUTDOWN, FIELD ENGINEERING WILL NOTIFY WATER OPERATIONS AT 918-596-9488, GIVING AN ESTIMATED DOWNTIME. WATER OPERATIONS WILL NOTIFY THE FIRE DEPARTMENT OF ALL FIRE HYDRANTS OUT OF SERVICE AND WHEN THEY ARE BACK IN SERVICE, BY STREET ADDRESS OR INTERSECTION.
   B. WHERE COMMERCIAL, INDUSTRIAL, OR CRITICAL CUSTOMERS ARE AFFECTED, AND FOR ALL LINES 16-INCH AND LARGER IN SIZE, FIELD ENGINEERING WILL REQUEST WATER OPERATIONS TO SHUT DOWN THE MAIN. THERE WILL BE A MINIMUM OF 48-HOUR NOTICE TO WATER OPERATIONS.
9. NOT USED.
10. 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.
11. 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.
12. ANY DAMAGE CAUSED BY THE CONTRACTOR TO ADJACENT TRAFFIC SIGNAL INFRASTRUCTURE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE TRAFFIC ENGINEER.
13. NOT USED.
14. 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).
15. 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.
16. ANY CHANGES FROM THE APPROVED PLANS SHALL BE SUBMITTED TO THE CITY OF TULSA FOR WRITTEN APPROVAL PRIOR TO INSTALLATION.

GENERAL STRUCTURAL NOTES

CONCRETE

1. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE LATEST BUILDING AND CODE REQUIREMENTS FOR REINFORCED CONCRETE OF THE AMERICAN CONCRETE INSTITUTE (A.C.I. 318 & 350R).
2. ALL REINFORCING BARS SHALL CONFORM TO A.S.T.M. A-615 GRADE 60, EPOXY COATED. ARRANGEMENT AND DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS & SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST A.C.I. DETAILING MANUAL, UNLESS OTHERWISE NOTED.
3. ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH LATEST A.C.I. CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.
4. HORIZONTAL WALL AND SLAB REINFORCEMENT SHALL LAP A MINIMUM OF 1.7LD AT SPLICES, WALL DOWELS AND WALL BAR EXTENSIONS AND ALL SPLICES SHALL LAP A MINIMUM OF 1.7LD UNLESS OTHERWISE NOTED. BAR TENSION SPLICES ARE SHOWN ON CHART ON PLANS PER ACI 318-19 OR ACI 318-14
5. UNLESS OTHERWISE NOTED ON THE DRAWINGS, REINFORCEMENT SUPPORTS SHALL CONFORM TO CRSI, PROVIDE PROPER COVER AND BE THE FOLLOWING:
   WHERE WET CONCRETE IS PLACED ON GROUND: PRECAST CONCRETE BLOCKS (NOT PERMITTED)
   WHERE CONCRETE IS EXPOSED TO VIEW, WEATHER, WATER OR EARTH: PLASTIC PROTECTED CRSI TYPE 3
6. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:
   STRUCTURAL MEMBERS, FOUNDATIONS, WALLS AND SUSPENDED SLABS . . . . 4,000 PSI
   SLABS ON GRADE AND PADS . . . . . 4,000 PSI
   CLSM . . . . . 400 PSI
7. UNLESS OTHERWISE NOTED ON THE DRAWINGS, REINFORCED CLEARANCE FROM SURFACE IS AS FOLLOWS:
   SLABS
   FOOTINGS AND BASE SLABS AT FORMED SURFACES AND . . . . . 3 INCH
   TOP OR BOTTOM UNFORMED SURFACES AND BOTTOMS . . . . . 3 INCH
   WALLS
   EXPOSED TO EARTH,
   WATER, OR WEATHER . . . . . 3 INCH
   BEAMS & COLUMNS
   STIRRUPS AND TIES . . . . . 1-1/2 INCH
   PRINCIPLE REINFORCEMENT . . . . . 2 INCH
8. ALL VERTICAL CONCRETE FORMED SURFACES SHALL BE FINISHED WITH CLASS 2 RUBBED FINISH PER ODOT SPECIFICATIONS.
   ALL SLABS, APRONS, AND CONCRETE SLOPE PROTECTION SURFACES SHALL BE FINISHED WITH MEDIUM HEAVY BROOM PRIOR TO SET OR AS DIRECTED BY FIELD ENGINEERING.
9. HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF FIELD ENGINEERING.

   PRIOR TO PLACING CONCRETE AGAINST COLD JOINTS, THE CONCRETE SURFACE SHALL BE CLEANED AND WETTED PER ODOT REQUIREMENTS. APPROVED CONCRETE ADDESIVE IS ACCEPTABLE.
10. ANY STOP IN FRAMED CONCRETE WORK MUST BE MADE IN THE CENTER OF THE SPAN AND INCORPORATE THE CONSTRUCTION JOINT SHOWN IN THE PLANS. REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS IF REQUIRED FOR CONTINUITY.
11. USE CONCRETE KEYWAY FOR ALL CONSTRUCTION JOINTS IN WALLS AND SLABS BELOW GRADE UNLESS OTHERWISE NOTED ON DRAWINGS.
12. CONCRETE WALLS AND PARTITIONS SHALL BE POURED IN MAXIMUM LENGTHS OF 40 FEET BETWEEN VERTICAL CONSTRUCTION JOINTS OR AS SHOWN ON PLANS.
13. UNLESS OTHERWISE NOTED ON THE DRAWINGS, ALL CONCRETE SLABS OVER 8-INCHES THICKNESS, REINFORCED WITH BARS, AND POURED AGAINST SOIL SHALL BE POURED IN A STRIP PATTERN OF 40 FEET OR LESS IN EACH DIRECTION.
14. ALL EXPOSED EDGES OR BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED 3/4-INCH UNLESS MASONRY OR OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.
15. REFER TO ANY ADDITIONAL FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO SHALL BE INCORPORATED IN THE CONSTRUCTION WHILE CONCRETE IS BEING PLACED.

FOUNDATIONS

1. ALL EXCAVATION SHALL BE CARRIED OUT IN THE DRY, AND PROVISIONS SHALL BE MADE TO PREVENT THE BOTTOM OF ALL EXCAVATIONS FROM FREEZING OR FLOODING AT ALL TIMES. NATIVE SUBGRADE SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY AS REQUIRED.
2. ALL FOUNDATIONS SHALL BE CONSTRUCTED IN EXCAVATIONS FREE OF STANDING WATER, DEWATERING MAY BE REQUIRED TO CONTROL GROUND WATER ELEVATION.
3. DUE TO THE HIGH WATER TABLE, DEWATERING WILL BE REQUIRED, ESPECIALLY DURING SIGNIFICANT RAIN EVENTS.
4. EXISTING BEARING SOILS OR STRUCTURAL FILL UNDER THE FOUNDATION SHALL BE SCARIFIED, DRIED BETWEEN +/- 2% OPTIMUM MOISTURE AND RECOMPACTED TO A MINIMUM OF 95% MODIFIED PROCTOR DENSITY PER ASTM D1557 AND HAVE A MINIMUM SOIL BEARING CAPABILITY OF 2,000 PSF. MODIFIED PROCTOR ACHIEVES SIGNIFICANT STIFFNESS AND LOWER COMPRESSIBILITY TO IMPROVE MAT FOUNDATION PERFORMANCE UNDER SUSTAINED LOADS.

DESIGN LOADS

1. TOWER TOP SLAB LOADING: (PER A.C.I. 318-19 USING FINITE ELEMENT METHOD)
   DEAD LOAD & SELF WEIGHT = 100 PSF
   LIVE LOAD = 100 PSF
2. TOWER & CHANNEL GRATE LOADING: (PER ANSI/NAAMM MBG 531 & MBG 534-24)
   DEAD LOAD & SELF WEIGHT = SEE TECHNICAL SPECIFICATION 05 53 00
   LIVE LOAD = SEE TECHNICAL SPECIFICATION 05 53 00

SLIDE GATE CONSTRUCTION NOTES

1. THE SLIDE GATE, STEM GUIDE, AND PEDESTAL MOUNT ANCHOR SPACING TO BE INSTALLED PER APPROVED SHOP DRAWINGS SUBMITTED BY THE CONTRACTOR TO FIELD ENGINEERING.
2. DURING THE ERECTION OF FORM WORK FOR TOWER WALLS & CEILING, ANCHOR LOCATIONS SHALL BE MARKED ON THE FORMS TO ENSURE REINFORCEMENT WILL NOT OBSTRUCT DRILLED HOLES DURING ANCHOR INSTALLATION.
3. SEE TECHNICAL SPECIFICATION 40 05 59.23 FOR ADDITIONAL INFORMATION.

GENERAL CONSTRUCTION NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE 2019 OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND THE CURRENT CITY OF TULSA ENGINEERING SERVICES DEPARTMENT'S STANDARD SPECIFICATIONS AND STANDARD DETAILS. ALSO INCLUDES ALL REFERENCED STANDARDS, SPECIFICATIONS, CODES AND DIRECTIVES.
2. 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.
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 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 AFFECTED BY THE EXCESS MOISTURE, THE CONTRACTOR SHALL REPLACE THE ADJOINING PAVEMENT AND SUBBASE AT HIS SOLE EXPENSE.
5. THE CONTRACTOR SHALL PRESERVE THE INTEGRITY OF THE RESERVOIR STRUCTURES AND ALL OTHER UTILITY STRUCTURES WITHIN THE PROJECT EXTENTS.
6. 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.
7. 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.
8. 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.
9. 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.
10. PHYSICAL TESTING FOR QUALITY ASSURANCE SHALL BE FURNISHED BY THE CITY.
11. CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY QUALITY CONTROL TESTING TO ENSURE THAT PROJECT REQUIREMENTS ARE MET. ALL INSPECTIONS SHALL OCCUR WITHIN 48 HOUR NOTICE FROM CONTRACTOR.
12. 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 RETRO-REFLECTIVE 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 RETRO-REFLECTIVE SHEETING.
13. 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.
14. STRAW OR HAY BALES AS STORMWATER BEST MANAGEMENT PRACTICES ARE NO LONGER ALLOWED ON CONSTRUCTION PROJECTS. OTHER METHODS SHALL BE USED AS SHOWN BY THE STANDARDS OR APPROVED.
15. THE CONTRACTOR MUST CALL 1-800-458-4251 IMMEDIATELY IF A NATURAL GAS PIPELINE IS CUT, DAMAGED, OR OTHERWISE DISTURBED.
16. CONTRACTOR SHALL NOT STORE EQUIPMENT OR MATERIALS IN THE FLOODPLAIN WITHOUT PERMISSION FROM THE CITY OF TULSA. IF PERMISSION IS GRANTED, IT SHALL BE STORED AT THE RISK OF THE CONTRACTOR AND SHALL BE REMOVED PRIOR TO ANY RAIN EVENT.
17. SOIL BORING LOGS FOR THIS PROJECT ARE AVAILABLE AND ABLE TO BE REQUESTED FOR REVIEW FROM THE ENGINEER OF RECORD. NEITHER CITY OR THE ENGINEER MAKES OR ACCEPTS, EXPRESS, OR IMPLIES ANY WARRANTIES ABOUT THE INFORMATION SHOWN ON THE BORING LOGS.

LD = TENSILE DEVELOPMENT LENGTH FOR REINFORCING BARS WITH: GRADE 60 REINFORCING AND 4000 PSI CONCRETE		
BAR SIZE	TENSION DEVELOPMENT LENGTH (INCHES)	
	OTHER BARS	TOP BARS
3	12 x 1.7	12 x 1.7
4	12 x 1.7	17 x 1.7
5	15 x 1.7	21 x 1.7
6	18 x 1.7	25 x 1.7
7	23 x 1.7	32 x 1.7
8	30 x 1.7	42 x 1.7
9	38 x 1.7	53 x 1.7
10	48 x 1.7	67 x 1.7
11	59 x 1.7	83 x 1.7

LICENSED PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
02/26/2026
OKLAHOMA

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CONSTRUCTION & STRUCTURAL NOTES

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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 N/A
PROFILE SCALE
HORIZONTAL: N/A
VERTICAL: N/A

DRAWN	ZLM	01-29-2026
DESIGNED	DAK	01-29-2026
SURVEY	NJR	03-20-2020
PROJECT MGR		03/26/26
LEAD ENGINEER		3/26
FIELD MGR		3/26

APPROVED:
DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284

SHEET 04 OF 55 SHEETS

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resvr.2023 Improv_W-25-08\03.0_Plans_XS & Shds\1.2_Plan Sheets\24.33_A2_Pay Items & Notes.dwg, 3/4/2026 2:06:25 PM

REQUIRED SPECIAL INSPECTION TABLE PER IBC CHAPTER 17 & COT PART 335

ITEM	WORK REQUIRING SPECIAL INSPECTION	ADDITIONAL REFERENCE STANDARD / IBC SECTION	TYPE OF INSPECTION / TASKS	INSPECTION FREQUENCY	INSPECTOR QUALIFICATIONS	WHO SCHEDULES & PAYS FOR QC TEST	QA TEST (AS NEEDED)
1	SUBGRADE EVALUATION FOR CONCRETE FOUNDATIONS & SLABS	IBC 1705.6; GEOTECHNICAL REPORT; ASTM D2487	VERIFY BEARING CAPACITY, SOIL CLASSIFICATION, MOISTURE CONDITIONING, REMOVAL OF UNSUITABLE SOILS, AS REQUIRED	PERIODIC PRIOR TO PLACEMENT; AS REQUIRED	GEOTECHNICAL ENGINEER OR SOILS INSPECTOR	QUALITY CONTROL BY CONTRACTOR	QUALITY ASSURANCE BY CITY INSPECTOR OR REPRESENTATIVE
2	FILL PLACEMENT & BACKFILL COMPACTION	IBC 1705.6; ASTM D698/D1557; ASTM D6938; ODOT	OBSERVE FILL MATERIAL, LIFT THICKNESS, MOISTURE CONDITIONING, FIELD DENSITY TESTS AS REQUIRED	CONTINUOUS + PERIODIC DENSITY TESTS	GEOTECHNICAL ENGINEER OR SOILS INSPECTOR	QUALITY CONTROL BY CONTRACTOR	QUALITY ASSURANCE BY CITY INSPECTOR OR REPRESENTATIVE
3	FOOTING/SUB-FOUNDATION INSPECTION	IBC 1705.6; ODOT	VERIFY EXCAVATION SIZE, DEPTH, BEARING SURFACE CONDITION, REINFORCEMENT DOWELS	PERIODIC	SOILS OR CONCRETE SPECIAL INSPECTOR	QUALITY CONTROL BY CONTRACTOR	QUALITY ASSURANCE BY CITY INSPECTOR OR REPRESENTATIVE
4	CONCRETE MIX DESIGN REVIEW	IBC 1705.3; ACI 318; ODOT	VERIFY APPROVED MIX DESIGN, ADMIXTURES, W/CM RATIO	PERIODIC	REINFORCED CONCRETE SPECIAL INSPECTOR	QUALITY CONTROL BY CONTRACTOR	QUALITY ASSURANCE BY CITY INSPECTOR OR REPRESENTATIVE
5	REINFORCING STEEL PLACEMENT	IBC 1705.3; ACI 318; ODOT	INSPECT SIZE, SPACING, COVER, LAPS, CLEANLINESS	PERIODIC, PRIOR TO CONC. PLACEMENT	REINFORCED CONCRETE SPECIAL INSPECTOR	QUALITY CONTROL BY CONTRACTOR	QUALITY ASSURANCE BY CITY INSPECTOR OR REPRESENTATIVE
6	PRE-PLACEMENT CONCRETE INSPECTION	IBC 1705.3; ODOT	CHECK FORMWORK, EMBEDS, JOINTS, CLEANLINESS	PRIOR TO POUR	REINFORCED CONCRETE SPECIAL INSPECTOR	QUALITY CONTROL BY CONTRACTOR	QUALITY ASSURANCE BY CITY INSPECTOR OR REPRESENTATIVE
7	CONCRETE PLACEMENT POUR SEQUENCE APPROVED PRIOR TO WORK	IBC 1705.3; ACI 318; ODOT	OBSERVE PLACEMENT, CONSOLIDATION, SLUMP/AIR CHECKS	CONTINUOUS	REINFORCED CONCRETE SPECIAL INSPECTOR	QUALITY CONTROL BY CONTRACTOR	QUALITY ASSURANCE BY CITY INSPECTOR OR REPRESENTATIVE
8	FIELD SAMPLING & TESTING	IBC 1705.3.1; ASTM C31, C39, ETC.; ODOT	CONCRETE CYLINDERS, SLUMP, AIR, TEMPERATURE TESTS	CYLINDER PER 50 CY OR PER DAY	ACI GRADE I TECHNICIAN	QUALITY CONTROL BY CONTRACTOR	QUALITY ASSURANCE BY CITY INSPECTOR OR REPRESENTATIVE
9	CONCRETE CURING MONITORING	ACI 318; ODOT	VERIFY CURING METHODS, TEMPERATURE, PROTECTION	PERIODIC	REINFORCED CONCRETE SPECIAL INSPECTOR	QUALITY CONTROL BY CONTRACTOR	QUALITY ASSURANCE BY CITY INSPECTOR OR REPRESENTATIVE
10	POST-INSTALLED ANCHORS	IBC 1705.3; ACI 355; ODOT	VERIFY DRILLING, CLEANING, ADHESIVE CURING, TORQUE	CONTINUOUS (ADHESIVE), PERIODIC (MECHANICAL)	ANCHOR INSTALLATION INSPECTOR	QUALITY CONTROL BY CONTRACTOR	QUALITY ASSURANCE BY CITY INSPECTOR OR REPRESENTATIVE
11	FINAL CONCRETE ELEMENT INSPECTION	IBC 1705.3; ODOT	CHECK FOR DEFECTS, CRACKS, HONEYCOMBING PER ODOT FINISHING FORMED CONC., CLASS 2 RUBBED FINISH	PERIODIC; AS REQUIRED	REINFORCED CONCRETE SPECIAL INSPECTOR	QUALITY CONTROL BY CONTRACTOR	QUALITY ASSURANCE BY CITY INSPECTOR OR REPRESENTATIVE
12	FINAL INSPECTION BY STRUCTURAL ENGINEER		PER ABOVE COMMENTS	TO ACCEPT STRUCTURE & BEGIN WARRANT PERIOD			
13	FINAL INSPECTION BY OPERATIONS						

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

S:\11_Projects\1 - TMUA-Water\24.33_Yahola Resvr.2023 Improv_W-25-08\03.0_Plans, XS & Shrds\1.2_Plan Sheets\24.33_A2_Pay Items & Notes.dwg, 3/4/2026 2:08:26 PM

LICENSED PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
02/26/2026
OKLAHOMA

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REQUIRED SPECIAL INSPECTIONS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

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: N/A
PROFILE SCALE
HORIZONTAL: N/A
VERTICAL: N/A

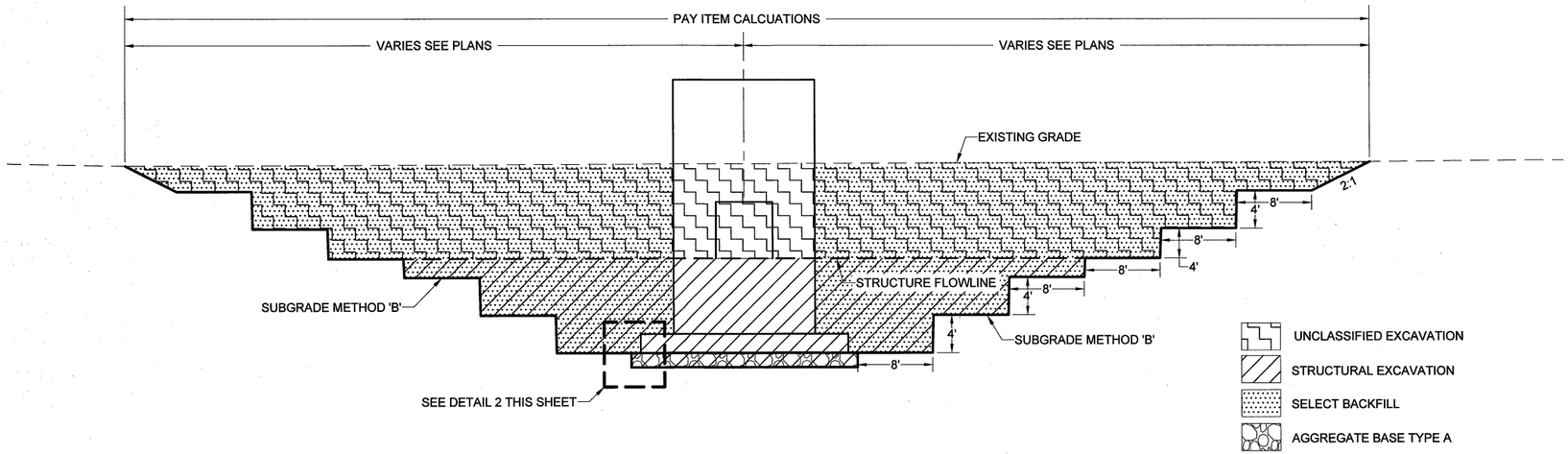
DRAWN	ZLM	01-29-2026
DESIGNED	DAK	01-29-2026
SURVEY	NJR	03-20-2020
PROJECT MGR		03/2026
LEAD ENGINEER		2/26
FIELD MGR		3/26

APPROVED:
DESIGN MANAGER

FILE:
DRAWING:
DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284
SHEET 05 OF 55 SHEETS

SUMMARY OF QUANTITIES (BASE BID)

I.D.	REMOVALS		EARTHWORK				STRUCTURES						SLOPE PROTECTION						
	REMOVAL OF CONC. PAV'T	REMOVAL OF CONC. SLOPE	UNCLASSIFIED EXCAVATION	STRUCTURAL EXCAVATION	SUBGRADE METHOD 'B'	SELECT BACKFILL	GEOTEXTILE REIN.	GEOGRID REIN.	AGG. BASE TYPE A (BASE)	EPOXY COATED REIN.	CLSM BACKFILL	CLASS AA CONCRETE	EPOXY COATED REIN. (SLOPE WALL)	CLASS A CONCRETE (SLOPE WALL)	GEOTEXTILE REIN.	SIZE #1 CRUSHED STONE AGG. (BERM CREST)	TYPE I PLAIN RIPRAP	ARTICULATING CONCRETE BLOCK	CLASS AA CONCRETE (TERMINATIONS)
	SY	SY	CY	CY	SY	CY	SY	SY	CY	LBS	CY	CY	LBS	CY	SY	CY	TON	SF	CY
EAST BERM GATE STRUCTURE	--	516.	2,539.	1,091.	1,827.	2,857.	273.	197.	98.	57,482.	39.	266.	8,663.	112.	1,092.	93.	314.	--	--
WEST BERM GATE STRUCTURE	--	--	871.	1,025.	1,898.	1,427.	254.	183.	92.	50,771.	39.	239.	1,496.	19.	182.	10.	64.	--	--
SEQUOYAH BOAT RAMP	73.	--	24.	--	392.	159.	202.	--	23.	2,715.	--	34.	--	--	458.	--	--	2,300.	24.
TOTALS	73.	516.	3,434.	2,116.	4,117.	4,443.	729.	380.	213.	110,968.	78.	539.	10,159.	131.	1,732.	103.	378.	2,300.	24.



1 EARTHWORK DIAGRAM TO DETERMINE ESTIMATED QUANTITIES
SCALE: NTS

WEST BERM GATE STRUCTURE CONCRETE SUMMARIES

DESCRIPTION	CLASS AA
	CY
TOWER BOTTOM SLAB	46.4
TOWER WALLS	76.5
TOWER TOP SLAB	10.4
TOWER INTERIER SLAB	3.6
TOWER WINGWALL	5.9
TOWER WINGWALL	5.9
TOWER APRON	3.3
CHANNEL CURTAIN WALL	3.2
CHANNEL BOTTOM SLAB	48.5
CHANNEL WALL	16.7
CHANNEL WALL	16.7
CHANNEL BERM WALL	0.7
CHANNEL BERM WALL	0.7
TOTAL	239

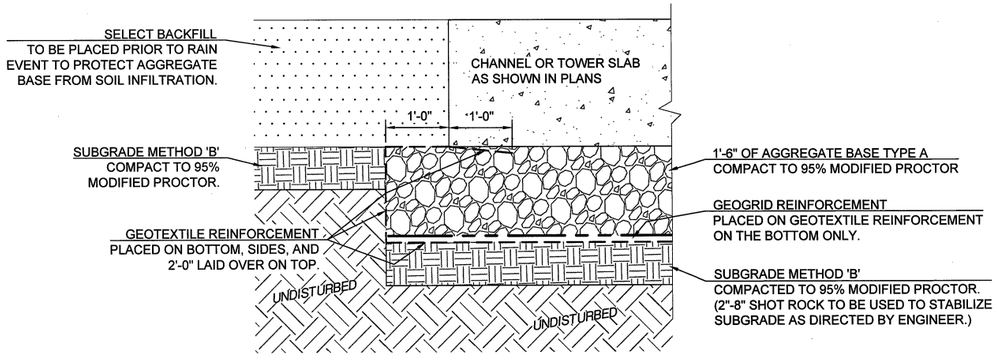
EAST BERM GATE STRUCTURE CONCRETE SUMMARIES

DESCRIPTION	CLASS AA
	CY
TOWER BOTTOM SLAB	46.4
TOWER WALLS	76.5
TOWER TOP SLAB	10.4
TOWER INTERIOR SLAB	3.6
TOWER WINGWALL	5.9
TOWER WINGWALL	5.9
TOWER APRON	3.3
CHANNEL CURTAIN WALL	3.2
CHANNEL BOTTOM SLAB	54.4
CHANNEL WALL	26.9
CHANNEL WALL	26.9
CHANNEL BERM WALL	1.1
CHANNEL BERM WALL	1.1
TOTAL	266

MATERIALS INSTALLED ABOVE THE RESERVOIR NORMAL POOL (EL. 610.00)

DESCRIPTION	CY
EAST BERM GATE STRUCTURE	23.5
WEST BERM GATE STRUCTURE	23.5
SEQUOYAH BOAT RAMP	5.7
ADDITIVE ALTERNATE 1 - SPLITTER BOX	0.
TOTAL	52.7

NOTE: MATERIAL INCLUDES ITEMS BEING INSTALLED SUCH AS CONCRETE, AGG BASE, NATIVE SOIL, ARTICULATING BLOCKS, ETC.



2 DETAIL 2
TYPICAL CHANNEL & TOWER FOUNDATION
SCALE: NTS

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SUMMARY TABLES & DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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 N/A	DRAWN	ZLM	01-29-2026
	DESIGNED	DAK	01-29-2026
PROFILE SCALE	SURVEY	NJR	03-20-2020
HORIZONTAL: N/A	PROJECT MGR		03/26/26
VERTICAL: N/A	LEAD ENGINEER		3/26
	FIELD MGR		3/26

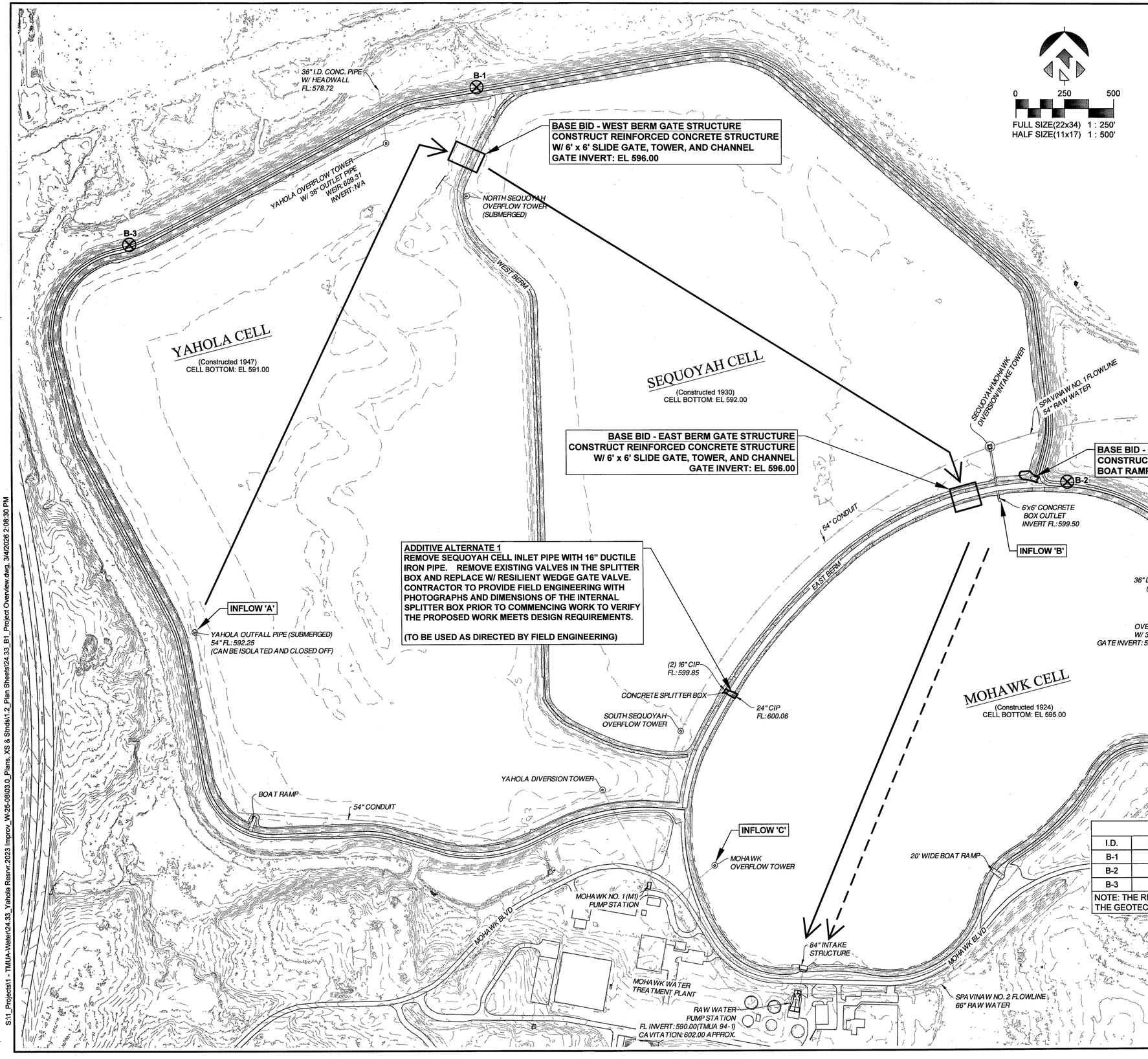
APPROVED: DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 06 OF 55 SHEETS

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resvr.2023 Improv_W-25-08\03.0_Plans, XS & Strds\1.2_Plan Sheets\24.33_A2_Pay Items & Notes.dwg, 3/4/2026 2:08:26 PM



CONSTRUCTION SEQUENCE:

PHASE 1 - BEGIN AND COMPLETE CONSTRUCTION OF THE EAST BERM GATE STRUCTURE & ADDITIVE ALTERNATE NO. 1(SPLITTER BOX). THIS PHASE IS A PRIORITY TO ALLOW THE CITY TO UTILIZE THE MOHAWK CELL AS AN OVERFLOW TO EL. 605.00, IF REQUIRED DURING THE MARCH OR APRIL TRANSITIONING INTO THE PUMPING SEASON DEPENDING ON WATER DEMAND. THE CONTRACTOR MAY PERFORM PHASE 2 WORK WITH A SLIGHT 2-3 WEEK DELAY AFTER THIS PHASE STARTS.

PHASE 1.1 - UPON COMPLETION OF PHASE 1, PERFORM FINAL INSPECTIONS WITHIN MOHAWK CELL. THIS INCLUDES FULL-CYCLE OPERATIONAL TEST OF THE SLIDE GATE AND SPLITTER BOX VALVE. MOHAWK CELL SHALL BE RESTORED TO ITS EXISTING CONDITION TO THE SATISFACTION OF THE CITY OF TULSA.

PHASE 1.2 - AFTER COMPLETION OF PHASE 1 AND PHASE 1.1, FULLY CLOSE THE SLIDE GATE ON THE EAST BERM GATE STRUCTURE AND THE SPLITTER BOX VALVE ASSOCIATED WITH ADDITIVE ALTERNATE NO. 1. IF REQUIRED, AND BASED ON PRIOR CITY OPERATIONAL EXPERIENCE, THE CITY OF TULSA MAY AUTHORIZE FILLING OF THE MOHAWK CELL TO EL. 605.00 WHILE SEQUOYAH CELL & YAHOLA CELL REMAIN EMPTY. THE CITY WILL FILL MOHAWK CELL AT INFLOW 'B' & INFLOW 'C'.

PHASE 2 - BEGIN/CONTINUE WITH A SLIGHT 2-3 WEEK DELAY, AFTER PHASE 1, AND COMPLETE WORK ON THE WEST BERM GATE STRUCTURE AND THE SEQUOYAH BOAT RAMP. THIS WORK MAY BE PERFORMED CONCURRENTLY WITH PHASE 1 BUT A SLIGHT DELAY OF 2-3 WEEKS AFTER PHASE 1 STARTS.

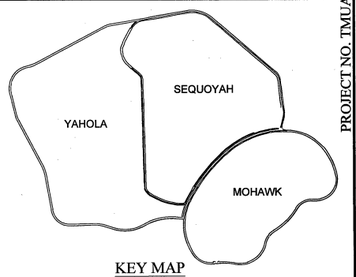
PHASE 2.1 - UPON COMPLETION OF PHASE 2, PERFORM FINAL INSPECTIONS WITHIN SEQUOYAH CELL AND YAHOLA CELL. THIS INCLUDES A FULL-CYCLE TEST OF THE SLIDE GATE. SEQUOYAH CELL & YAHOLA CELL SHALL BE RESTORED TO ITS EXISTING CONDITION TO THE SATISFACTION OF THE CITY OF TULSA.

PHASE 3 - FULLY OPEN THE WEST BERM GATE STRUCTURE TO ALLOW THE CITY OF TULSA TO BEGIN FILLING SEQUOYAH CELL AND YAHOLA CELL AT INFLOW 'A'. ONCE THE WATER SURFACE LEVEL MATCHES THE PREVIOUSLY FILLED MOHAWK CELL, FULLY OPEN THE EAST BERM GATE STRUCTURE SLIDE GATE & SPLITTER BOX VALVE TO ESTABLISH EQUAL HYDROSTATIC PRESSURE ON THE BERM. THE CITY WILL THEN CONTINUE FILLING ALL CELL'S TO NORMAL POOL ELEVATION.

PHASE 4 - PERFORM FINAL INSPECTION OUTSIDE OF THE TULSA REGULATORY FLOODPLAIN. RESTORE THE EXISTING GRAVEL PERIMETER BERM ROADS & STAGING AREAS TO EXISTING CONDITIONS TO THE SATISFACTION OF THE CITY OF TULSA. COMPLETE ALL FINAL INSPECTIONS.

LEGEND

- FLOW AT START-UP ONLY (YAHOLA RESERVOIR UNIFORMLY WSE > 605.00)
- FLOW DURING NORMAL OPERATIONS
- GEOTECHNICAL BORE LOCATIONS



KEY MAP

GEOTECHNICAL INFO

I.D.	NORTHING	EASTING	WATER TABLE EL.
B-1	452778.92	2577063.68	594.00
B-2	450764.48	2580080.38	584.00
B-3	451976.76	2575288.49	584.00

NOTE: THE RESERVOIR WAS FULL, WSE: 610.00, AT THE TIME OF THE GEOTECHNICAL BORES.

REVISION	BY	DATE

PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 — 02/26/2026 — OKLAHOMA

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PROJECT OVERVIEW & GEOTECHNICAL BORE LOCATIONS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

Plans and Estimates Prepared by:
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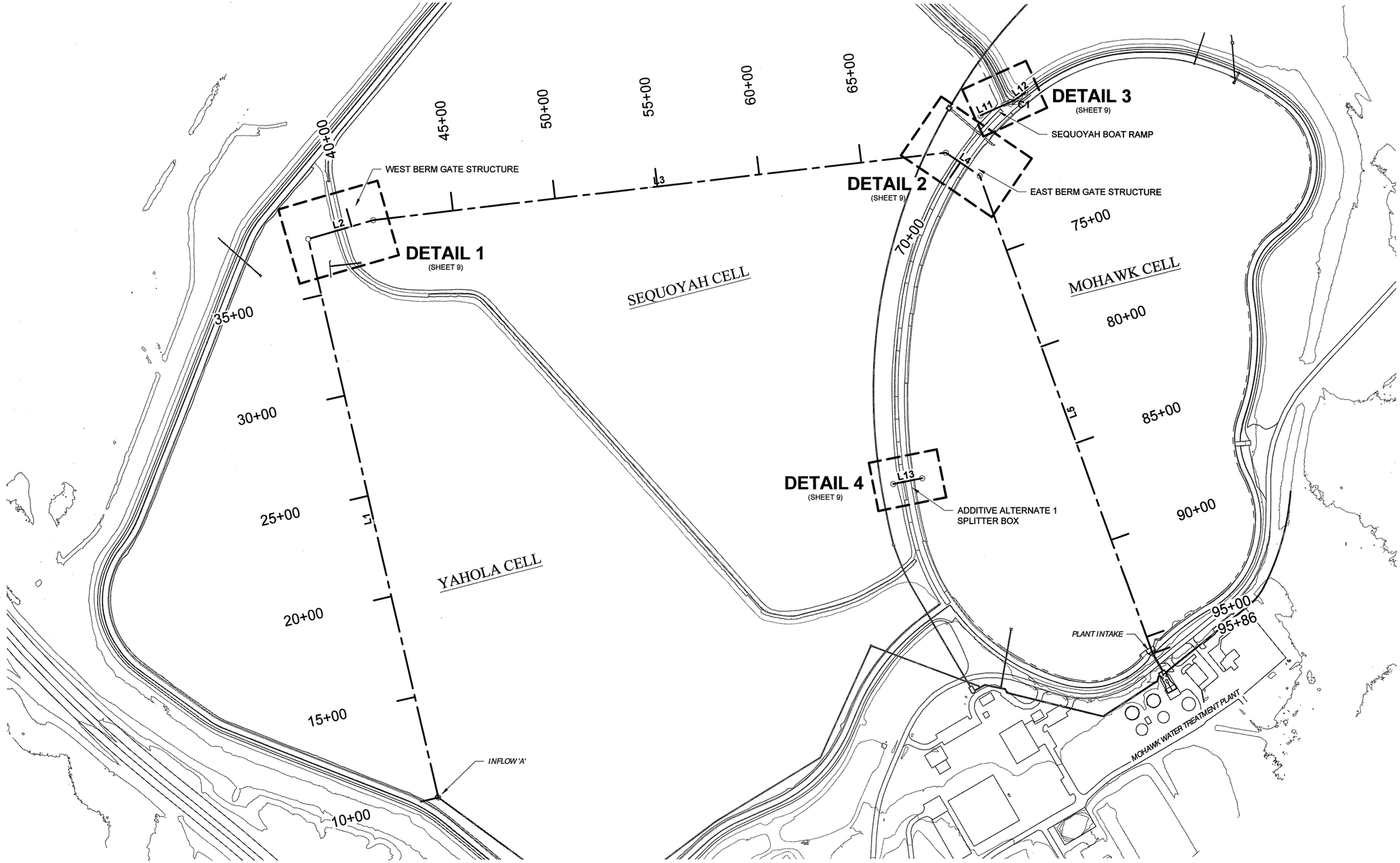
PLAN SCALE 1"=250'	DRAWN	ZLM	01-29-2026	APPROVED:
	DESIGNED	DAK	01-29-2026	
PROFILE SCALE	SURVEY	NJR	03-20-2020	
HORIZONTAL: N/A	PROJECT MGR		03/2026	
VERTICAL: N/A	LEAD ENGINEER	DAK	3/26	
	FIELD MGR		3/26	DESIGN MANAGER
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 07 OF 55 SHEETS

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resrvr 2023 Improv_W-25-08\03.0_Plans, XS & Shtds\1.2_Plan Sheets\24.33_B1_Project Overview.dwg, 3/4/2026 2:08:30 PM



1 GEOMETRIC OVERVIEW
SCALE: 1" : 250'

Alignment Table						
Number	Length	Bearing	Start Station	Start Northing Easting	End Station	End Northing Easting
L1	2780.92	N27° 24' 37.48"E	10+00.00	450008.70, 2575615.85	37+80.92	452477.41, 2576896.08
L2	328.48	S65° 40' 35.48"E	37+80.92	452477.41, 2576896.08	41+09.40	452342.11, 2577195.40
L3	2805.03	S56° 22' 55.48"E	41+09.40	452342.11, 2577195.40	69+14.43	450789.10, 2579531.29
L4	200.00	S15° 20' 11.12"E	69+14.43	450789.10, 2579531.29	71+14.43	450596.22, 2579584.18
L5	2471.55	S20° 38' 05.38"W	71+14.43	450596.22, 2579584.18	95+85.98	448283.24, 2578713.18

Daniel A. Keithline 17348 01/29/2026 PROFESSIONAL ENGINEER OKLAHOMA

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GEOMETRIC DATA RESERVOIR CIRCULATION

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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

REVISION	BY	DATE

PLAN SCALE 1"=250'
PROFILE SCALE
HORIZONTAL: N/A
VERTICAL: N/A

DRAWN	ZLM	01-29-2026
DESIGNED	DAK	01-29-2026
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PROJECT MGR		01/29/2026
LEAD ENGINEER		1/29/26
FIELD MGR		1/29/26

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DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 08 OF 55 SHEETS

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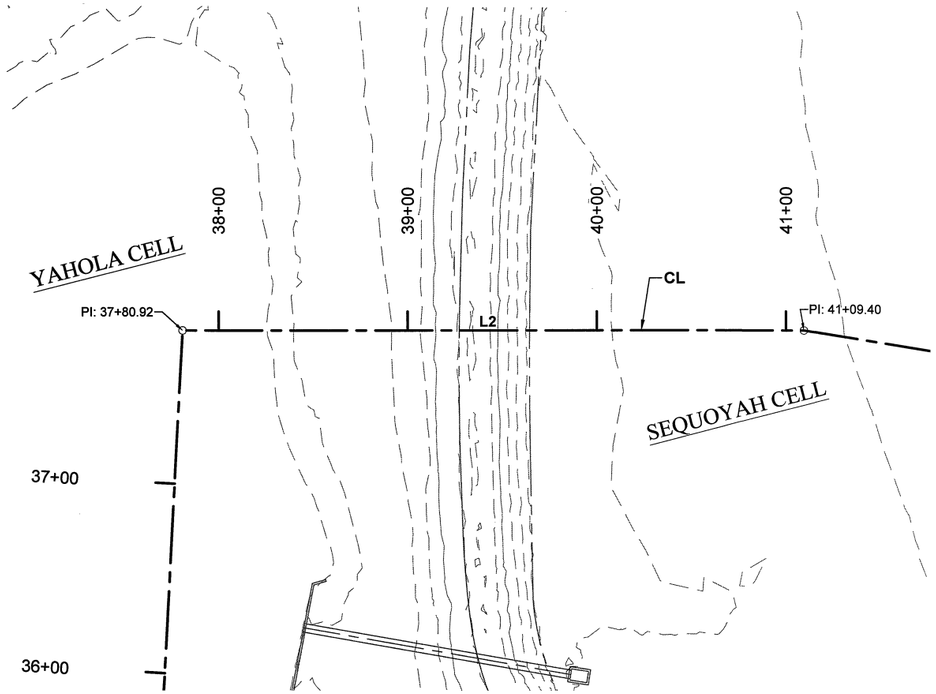
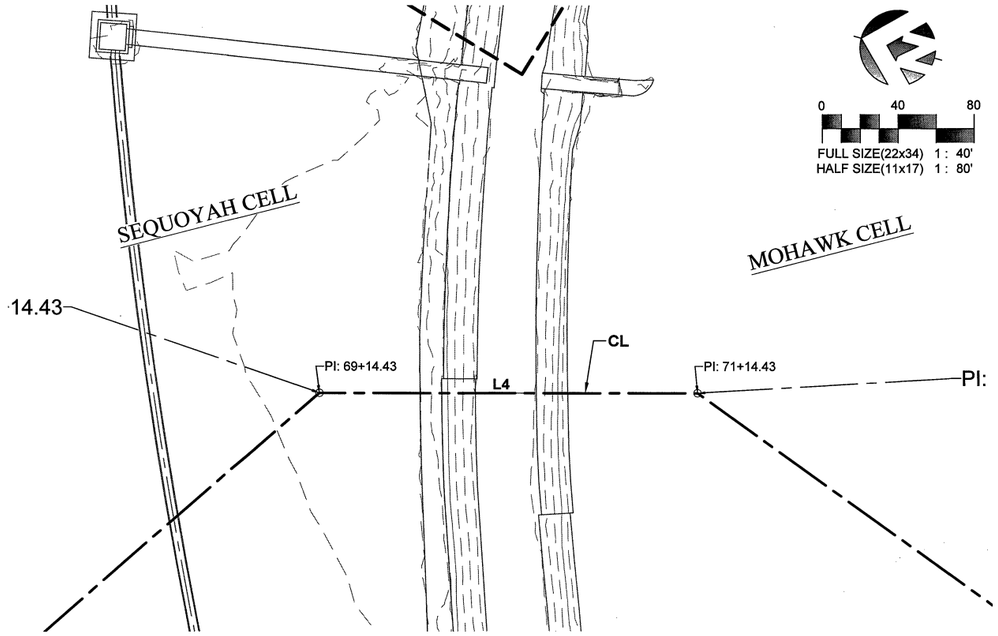


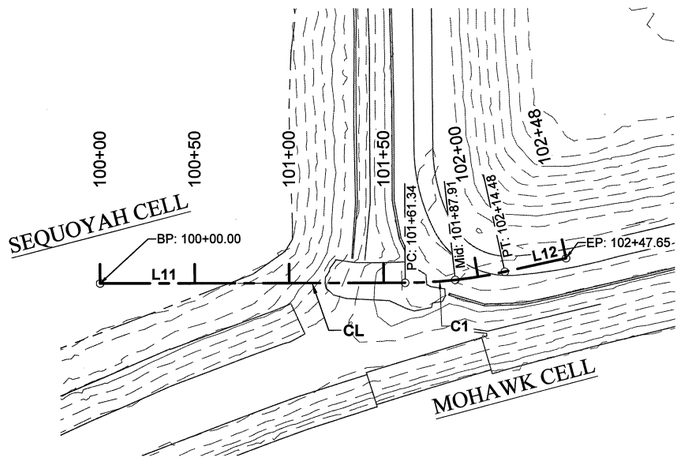
0 40 80
FULL SIZE(22x34) 1 : 40'
HALF SIZE(11x17) 1 : 80'

1 GEOMETRIC DATA
WEST BERM GATE STRUCTURE
SCALE: 1" = 40'
SEE SHEET 08 FOR ALIGNMENT TABLE



0 40 80
FULL SIZE(22x34) 1 : 40'
HALF SIZE(11x17) 1 : 80'

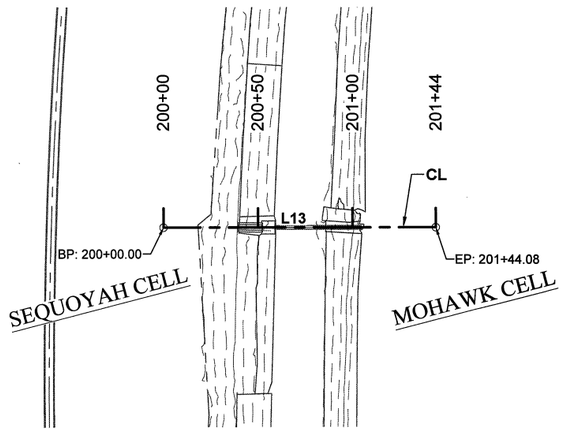
2 GEOMETRIC DATA
EAST BERM GATE STRUCTURE
SCALE: 1" = 40'
SEE SHEET 08 FOR ALIGNMENT TABLE



0 40 80
FULL SIZE(22x34) 1 : 40'
HALF SIZE(11x17) 1 : 80'

Alignment Table						
Number	Length	Bearing	Start Station	Start Northing Easting	End Station	End Northing Easting
L11	161.34	S73° 58' 35.72"E	100+00.00	450817.33, 2579778.28	101+61.34	450772.79, 2579933.35
C1		S80° 03' 59.16"E				
L12	33.17	S86° 09' 22.60"E	102+14.48	450763.64, 2579985.60	102+47.65	450761.42, 2580018.69

3 GEOMETRIC DATA
SEQUOYAH BOAT RAMP
SCALE: 1" = 40'



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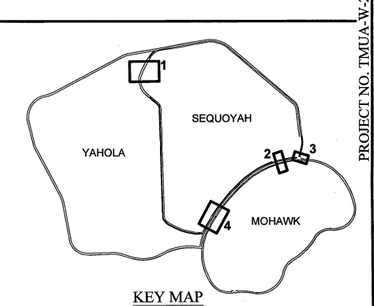
FULL SIZE(22x34) 1 : 40'
HALF SIZE(11x17) 1 : 80'

Alignment Table						
Number	Length	Bearing	Start Station	Start Northing Easting	End Station	End Northing Easting
L13	144.08	S60° 52' 20.02"E	200+00.00	449726.08, 2578287.41	201+44.08	449655.94, 2578413.28

4 GEOMETRIC DATA
ADDITIVE ALTERNATE 1 - SPLITTER BOX
SCALE: 1" = 40'



KEY MAP

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
LICENSED OKLAHOMA

OKIE 811 Know what's below Call before you dig.

GEOMETRIC DATA
EACH PROJECT AREA

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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

REVISION	BY	DATE

PLAN SCALE 1"=20'
PROFILE SCALE
HORIZONTAL: N/A
VERTICAL: N/A

DRAWN	ZLM	01-29-2026
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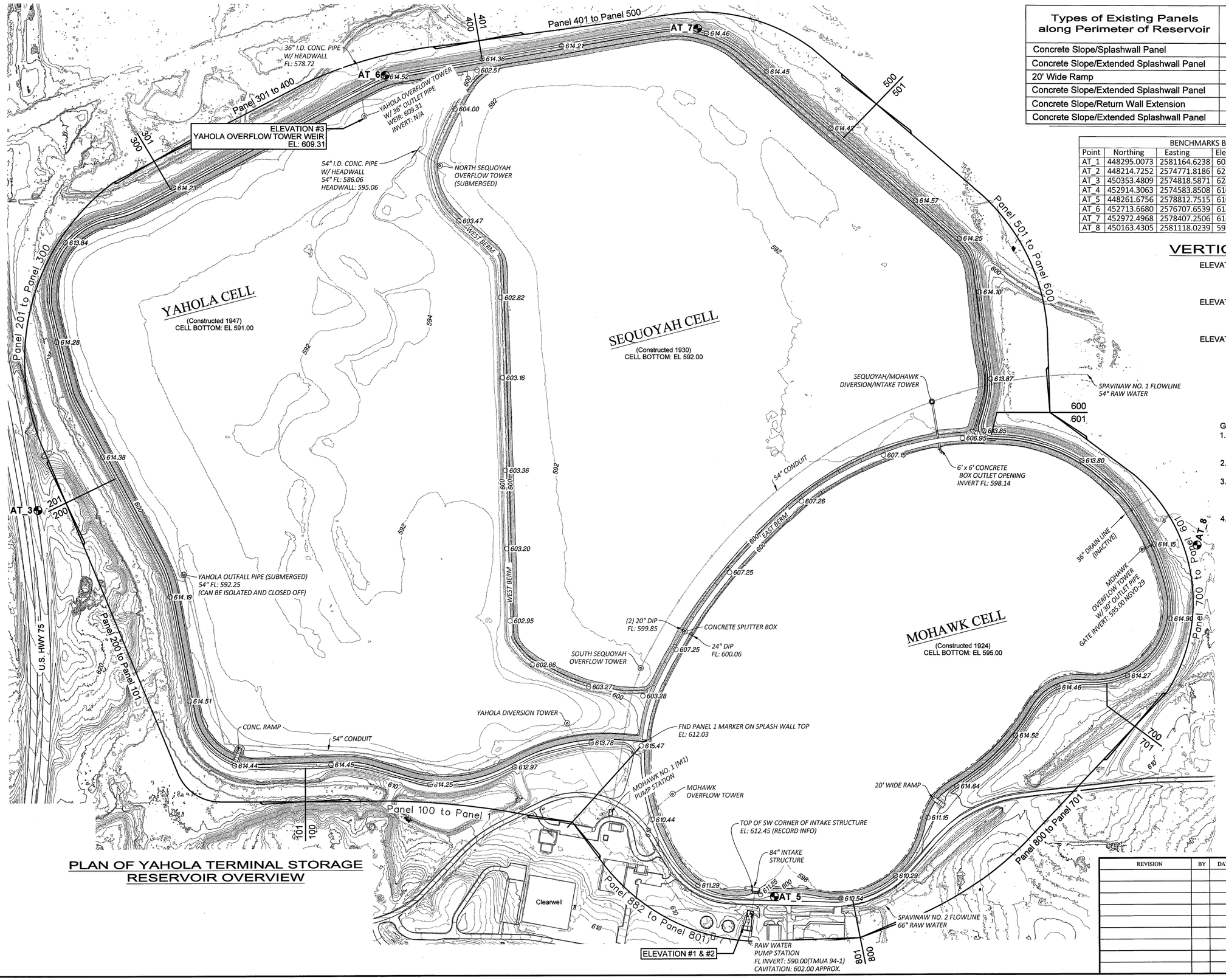
DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284
SHEET 09 OF 55 SHEETS

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resrvr.2023 Improv_W-25-08\03.0_Plans, XS & Strds\1.2_Plan Sheets\24.33_D3_Geometrics.dwg, 1/29/2026 9:19:50 AM



PLAN OF YAHOLA TERMINAL STORAGE RESERVOIR OVERVIEW

Types of Existing Panels along Perimeter of Reservoir	Location
Concrete Slope/Splashwall Panel	1 to 758
Concrete Slope/Extended Splashwall Panel	759 to 760
20' Wide Ramp	between 760 & 761
Concrete Slope/Extended Splashwall Panel	761 to 790
Concrete Slope/Return Wall Extension	791 to 850
Concrete Slope/Extended Splashwall Panel	851 to 882

0 250 500

FULL SIZE(22x34) 1 : 250'
HALF SIZE(11x17) 1 : 500'

BENCHMARKS BY NATHANIEL J. REED, PLS #1744

Point	Northing	Easting	Elevation	Description
AT_1	448295.0073	2581164.6238	602.5463	Aerial Target (3/8" Iron Pin Set w/Cap (Native Plains)
AT_2	448214.7252	2574771.8186	621.4036	Aerial Target (3/8" Iron Pin Set w/Cap (Native Plains)
AT_3	450353.4809	2574818.5871	628.0573	Aerial Target (3/8" Iron Pin Set w/Cap (Native Plains)
AT_4	452914.3063	2574583.8508	610.4841	Aerial Target (3/8" Iron Pin Set w/Cap (Native Plains)
AT_5	448261.6756	2578812.7515	610.1252	Aerial Target (3/8" Iron Pin Set w/Cap (Native Plains)
AT_6	452713.6680	2576707.6539	614.6871	Aerial Target (3/8" Iron Pin Set w/Cap (Native Plains)
AT_7	452972.4968	2578407.2506	614.6616	Aerial Target (3/8" Iron Pin Set w/Cap (Native Plains)
AT_8	450163.4305	2581118.0239	595.8979	Aerial Target (3/8" Iron Pin Set w/Cap (Native Plains)

VERTICAL DATA (RECORD INFO)

ELEVATION #1 - RAW WATER PUMP STATION TO PLANT
FINISH FLOOR ELEVATION OF VAULT
ELEV. 588.37 FT. (NAVD-88)(PER TMUA-W 05-36)

ELEVATION #2 - RAW WATER PUMP STATION
FINISH FLOOR ELEVATION INSIDE BUILDING
ELEV. 615.37 FT. (NAVD-88)(PER TMUA-W 05-36)

ELEVATION #3 - OVERFLOW STRUCTURE LOCATED ON THE NORTH SIDE OF LAKE
CREST ELEVATION OF WEIR
ELEV. 609.31 FT. (NAVD-88)(PER TMUA-W 05-36)

GENERAL NOTE:

1. THE COORDINATES SHOWN HEREON ARE BASED UPON THE OKLAHOMA STATE PLANE COORDINATE SYSTEM, NORTH ZONE 3501, NAD 1983 (1993).
2. THE ELEVATIONS SHOWN HERE ON ARE BASED ON NAVD 1988 DATUM.
3. LIDAR DATA FLOWN ON MARCH 27TH, 2020 BY NATHANIEL J. REED, WITH NATIVE PLAINS SURVEYING AND MAPPING. REGISTERED PROFESSIONAL LAND SURVEYOR #1744, USING NAVD-88 VERTICAL DATUM.
4. THE RELATIVE DIFFERENCE BETWEEN THE NAVD-88 AND NGVD-29 WAS COMPUTED USING THE ARMY CORPS OF ENGINEERS SOFTWARE VERSION 6.0. THE CONVERSION FROM NAVD-88 TO NGVD-29 IS -0.38 FT..

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROFESSIONAL ENGINEER
Daniel A. Keithline
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01/29/2026
OKLAHOMA

OKIE811

SURVEY DATA SHEET

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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"=250'	DRAWN	ZLM	01-29-2026	APPROVED:
	DESIGNED	DAK	01-29-2026	
PROFILE SCALE	SURVEY	NJR	03-20-2020	
HORIZONTAL: N/A	PROJECT MGR			
VERTICAL: N/A	LEAD ENGINEER		3/3/2026	DESIGN MANAGER
	FIELD MGR		2/24	
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 10 OF 55 SHEETS

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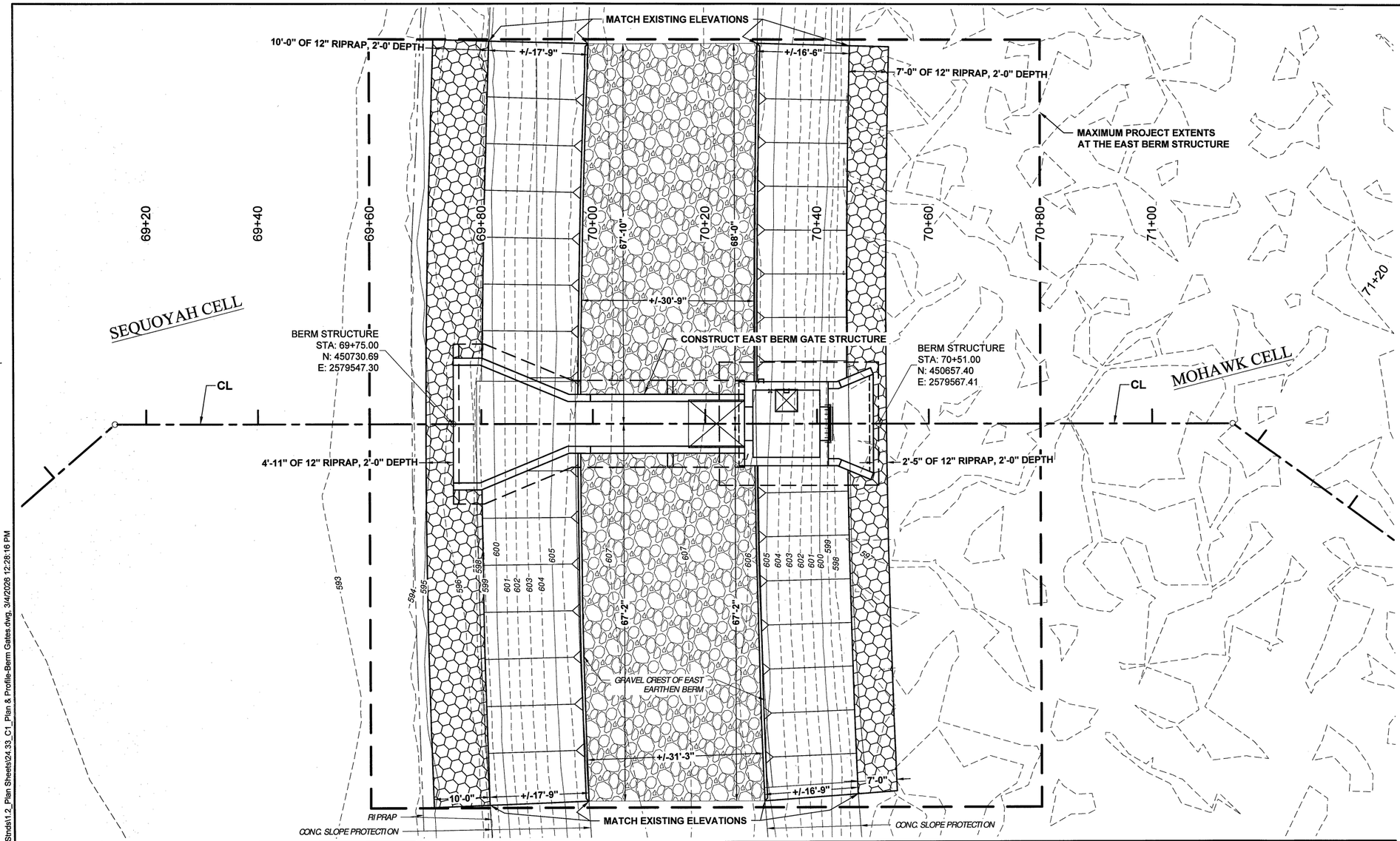
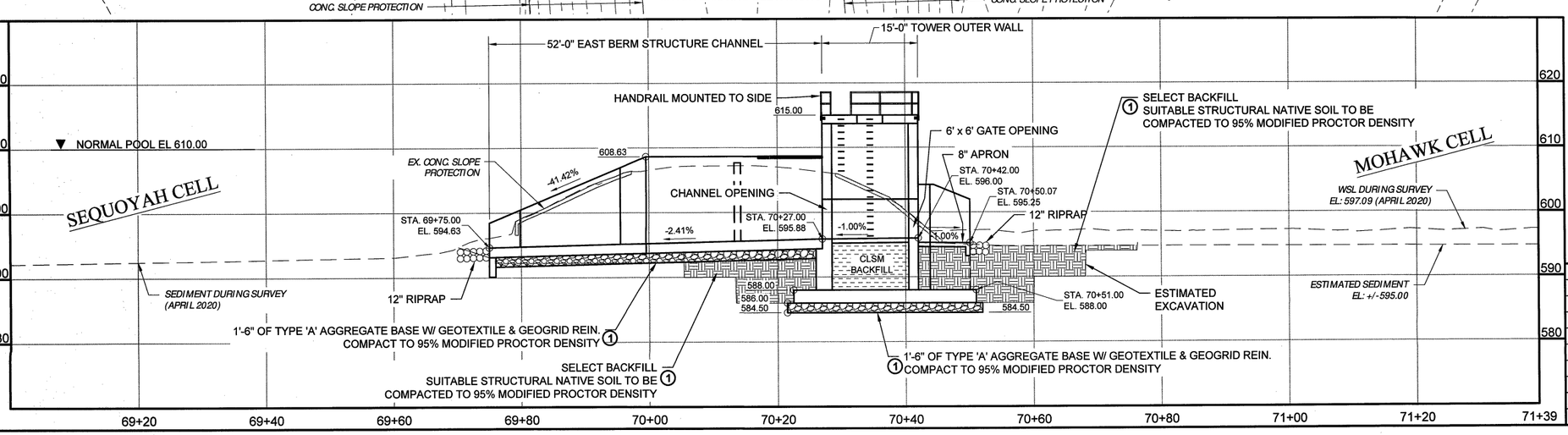




0 10 20

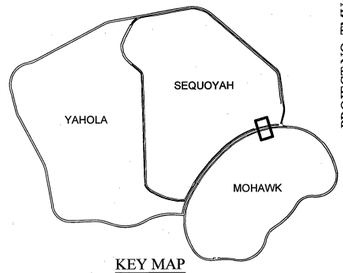
FULL SIZE(22x34) 1 : 10'
HALF SIZE(11x17) 1 : 20'

LEGEND

- INSTALL 6" CONCRETE SLOPE PROTECTION, CLASS A
- INSTALL 12" PLAIN RIPRAP, 2'-0" DEPTH
- SIZE #1 CRUSHED STONE AGGREGATE ALONG BERM CREST, 8" DEPTH

KEY NOTES

1. PRIOR TO BACKFILL OF NATIVE SOIL OR AGG. BASE, PERFORM SUBGRADE METHOD 'B' COMPACTED TO 95% MODIFIED PROCTOR DENSITY. IF 95% COMPACTION IS UNOBTAINABLE, CONTRACTOR SHALL USE OTHER APPROVED MEANS. IF UNDERCUT IS REQUIRED, IT SHALL BE PAID BY UNCLASSIFIED EXCAVATION AND AGGREGATE BASE TYPE A.



KEY MAP

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
02/26/2026
OKLAHOMA

OKIE 811

EAST BERM GATE STRUCTURE PLAN & PROFILE

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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

REVISION	BY	DATE

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	DESIGNED	DAK	01-29-2026
PROFILE SCALE	SURVEY	NJR	03-20-2020
HORIZONTAL: 1"=10'	PROJECT MGR		03/2026
VERTICAL: 1"=10'	LEAD ENGINEER		3/26
	FIELD MGR		3/26

APPROVED:
DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

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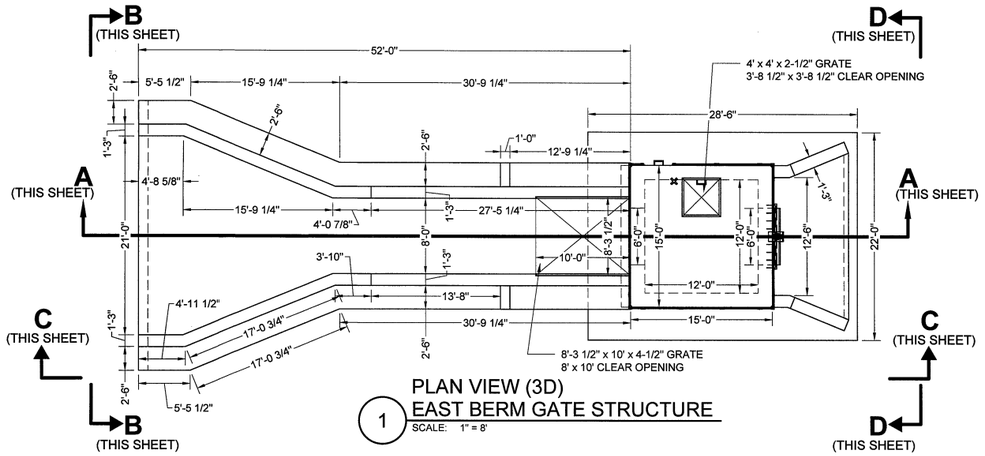
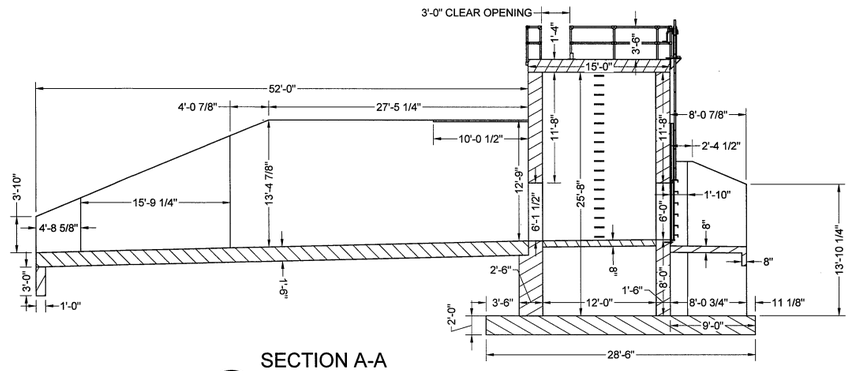
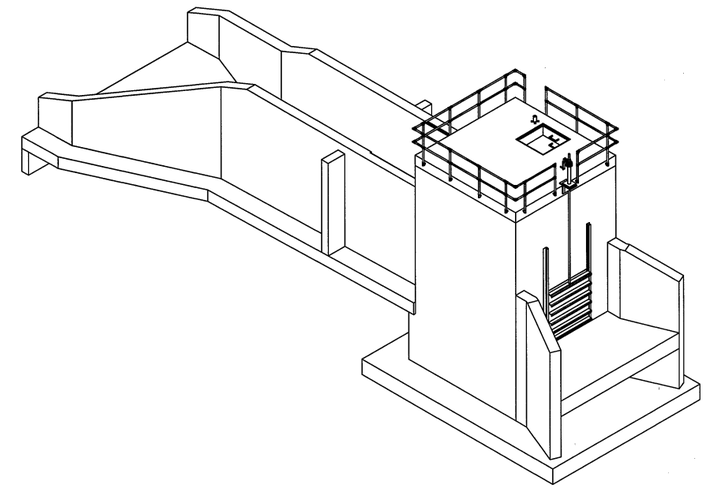


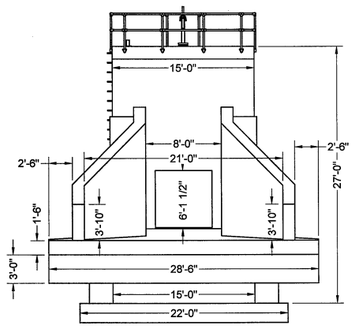
PLAN VIEW (3D)
EAST BERM GATE STRUCTURE
1 SCALE: 1" = 8'



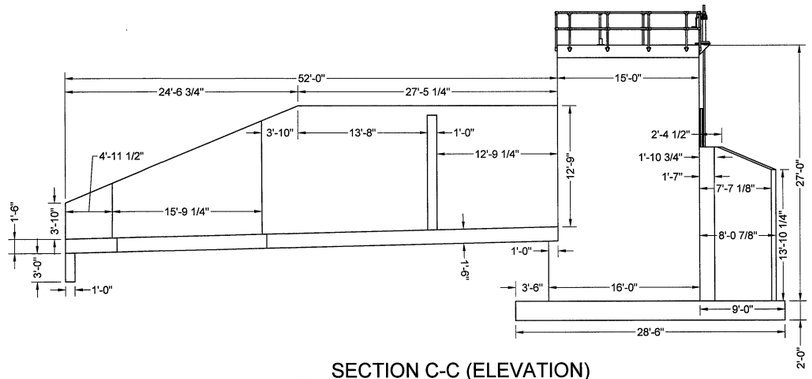
SECTION A-A
EAST BERM GATE STRUCTURE
2 SCALE: 1" = 8'
(SEE THIS SHEET FOR SECTION LOCATION)



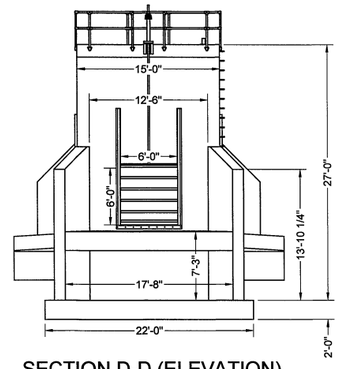
ISOMETRIC
EAST BERM GATE STRUCTURE
3 SCALE: 1" = 8'



SECTION B-B (ELEVATION)
EAST BERM GATE STRUCTURE
4 SCALE: 1" = 8'
(SEE THIS SHEET FOR SECTION LOCATION)



SECTION C-C (ELEVATION)
EAST BERM GATE STRUCTURE
5 SCALE: 1" = 8'
(SEE THIS SHEET FOR SECTION LOCATION)



SECTION D-D (ELEVATION)
EAST BERM GATE STRUCTURE
6 SCALE: 1" = 8'
(SEE THIS SHEET FOR SECTION LOCATION)

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Know what's below. Call before you dig.

EAST BERM GATE STRUCTURE
3D MODELING
(FOR REFERENCE ONLY)

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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

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	DESIGNED	DAK	01-29-2026
PROFILE SCALE	SURVEY	NJR	03-20-2020
HORIZONTAL:	PROJECT MGR		
VERTICAL:	LEAD ENGINEER		
	FIELD MGR		

APPROVED:
DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 12 OF 55 SHEETS

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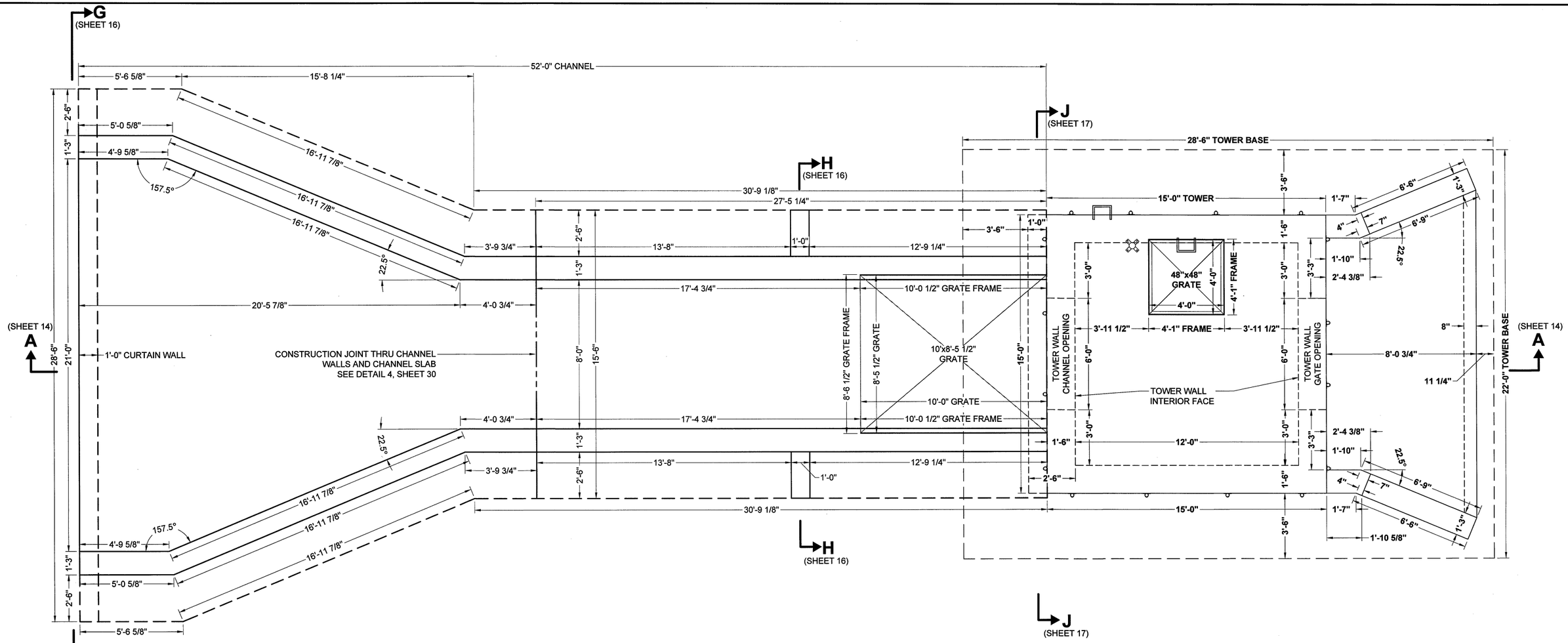

1 PLAN VIEW
EAST BERM GATE STRUCTURE DIMENSIONS
SCALE: 3/8" = 1'-0"

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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Daniel A. Keithline 17348 01/29/2026 OKLAHOMA PROFESSIONAL ENGINEER LICENSED

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EAST BERM GATE STRUCTURE
PLAN VIEW DIMENSIONS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
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PLAN SCALE –
PROFILE SCALE
HORIZONTAL: –
VERTICAL: –

DRAWN	ZLM	01-29-2026
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SURVEY	NJR	03-20-2020
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LEAD ENGINEER		1/29/26
FIELD MGR		1/29/26

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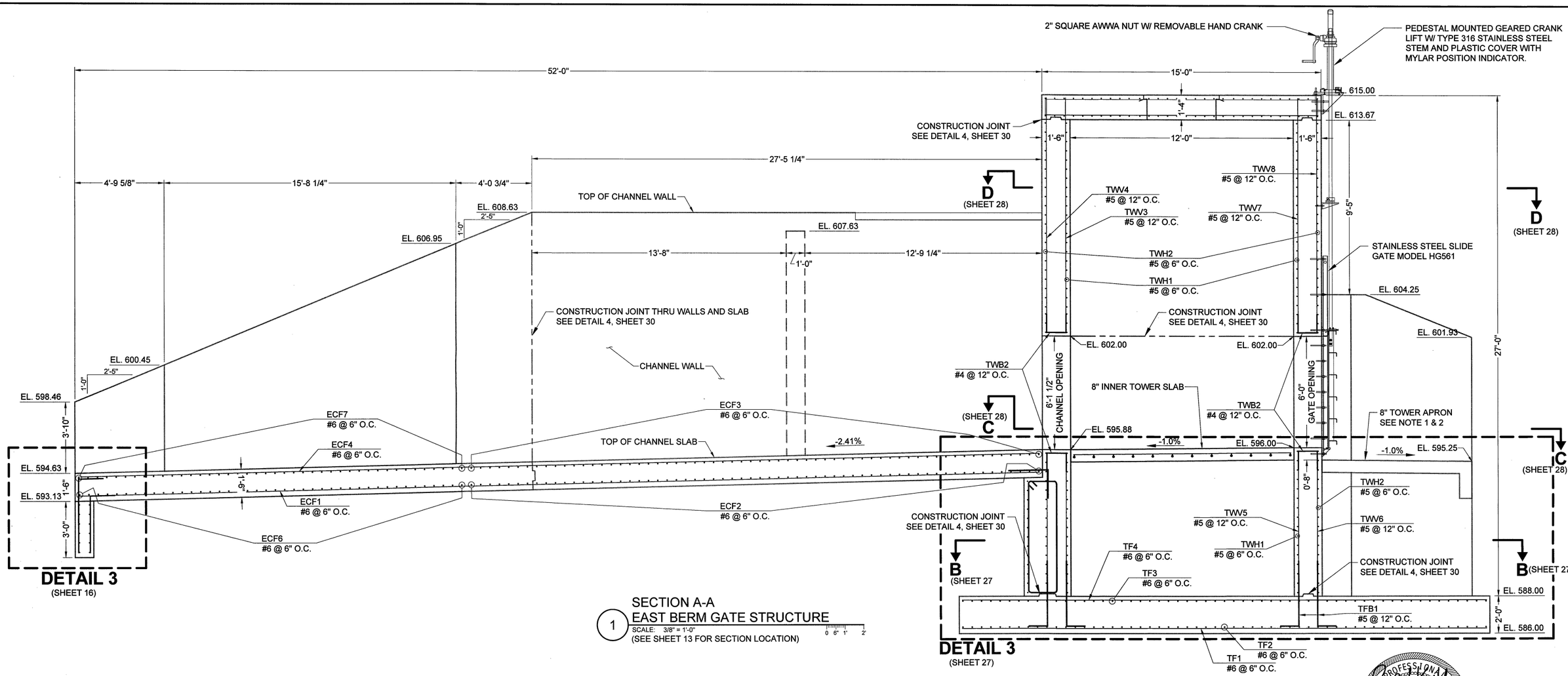

1 SECTION A-A
EAST BERM GATE STRUCTURE
SCALE: 3/8" = 1'-0" 0 6" 1' 2'
(SEE SHEET 13 FOR SECTION LOCATION)

NOTES

1. THE 8" TOWER APRON ON THE EAST BERM GATE STRUCTURE AND WEST BERM GATE STRUCTURE HAVE THE SAME DIMENSIONS & REINFORCEMENT. HOWEVER, THE VERTICAL PLACEMENT (ELEVATION) IS DIFFERENT DUE TO THE EXISTING GRADE LOCATION.
2. SEE SHEET 14 FOR THE VERTICAL PLACEMENT OF THE 8" TOWER APRON OF THE EAST BERM GATE STRUCTURE AND SHEET 22 FOR WEST BERM GATE STRUCTURE. REINFORCEMENT DETAILS FOR BOTH STRUCTURES IS SHOWN ON SHEET 27, DETAIL 3.

PROFESSIONAL ENGINEER Daniel A. Keithline 17348 01/29/2026 OKLAHOMA

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EAST BERM GATE STRUCTURE DETAILS & REINFORCEMENT

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
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	FIELD MGR		1/29/26
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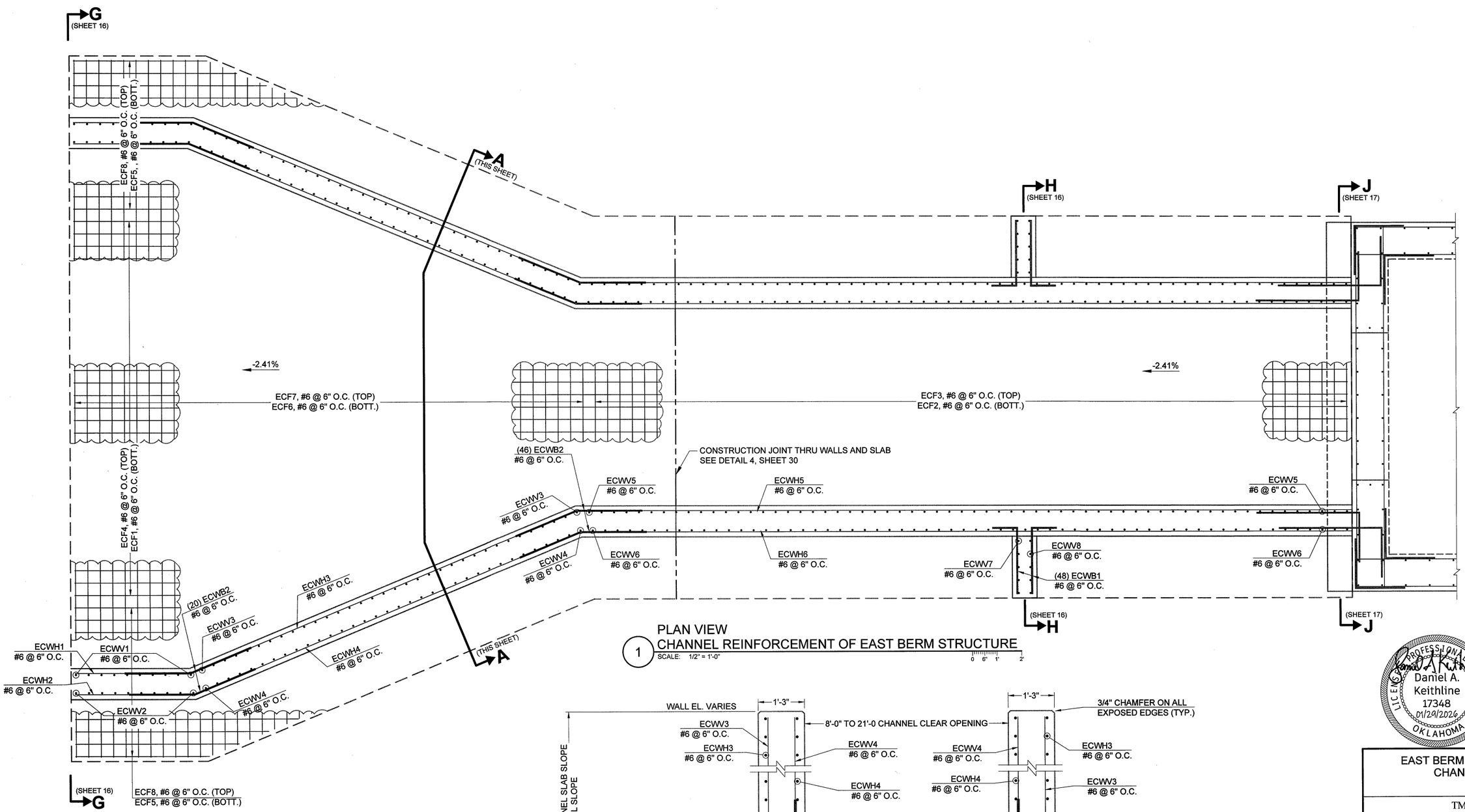
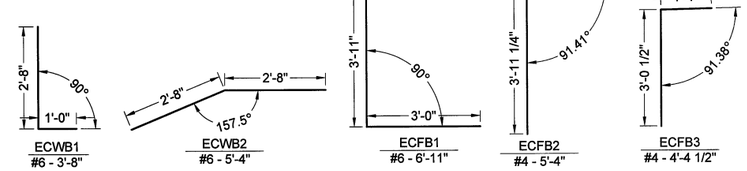
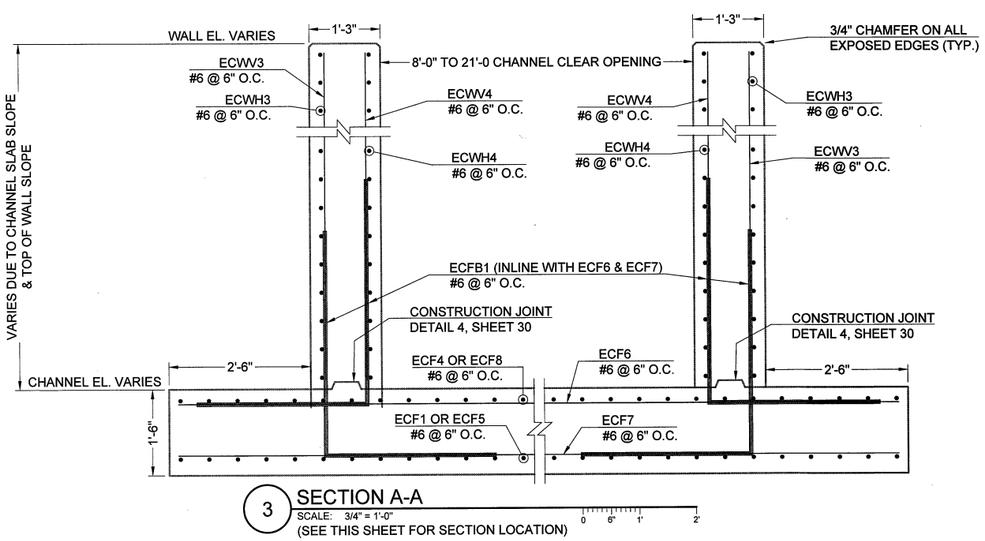


1 PLAN VIEW
CHANNEL REINFORCEMENT OF EAST BERM STRUCTURE
SCALE: 1/2" = 1'-0"



2 CHANNEL BENT BAR OF EAST BERM STRUCTURE
SCALE: 1/2" = 1'-0"



3 SECTION A-A
SCALE: 3/4" = 1'-0"
(SEE THIS SHEET FOR SECTION LOCATION)

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OKLAHOMA

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EAST BERM GATE STRUCTURE CHANNEL DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
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	FIELD MGR		

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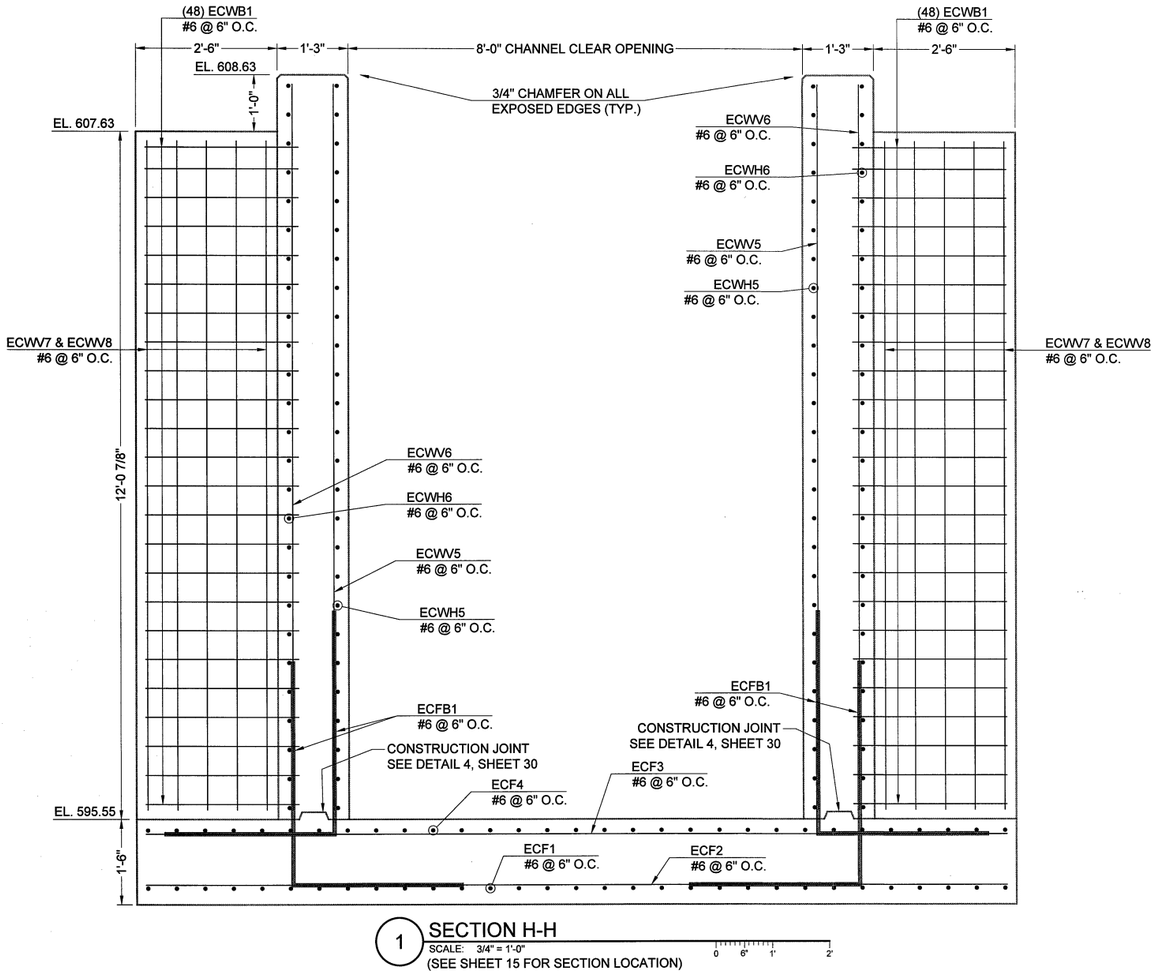
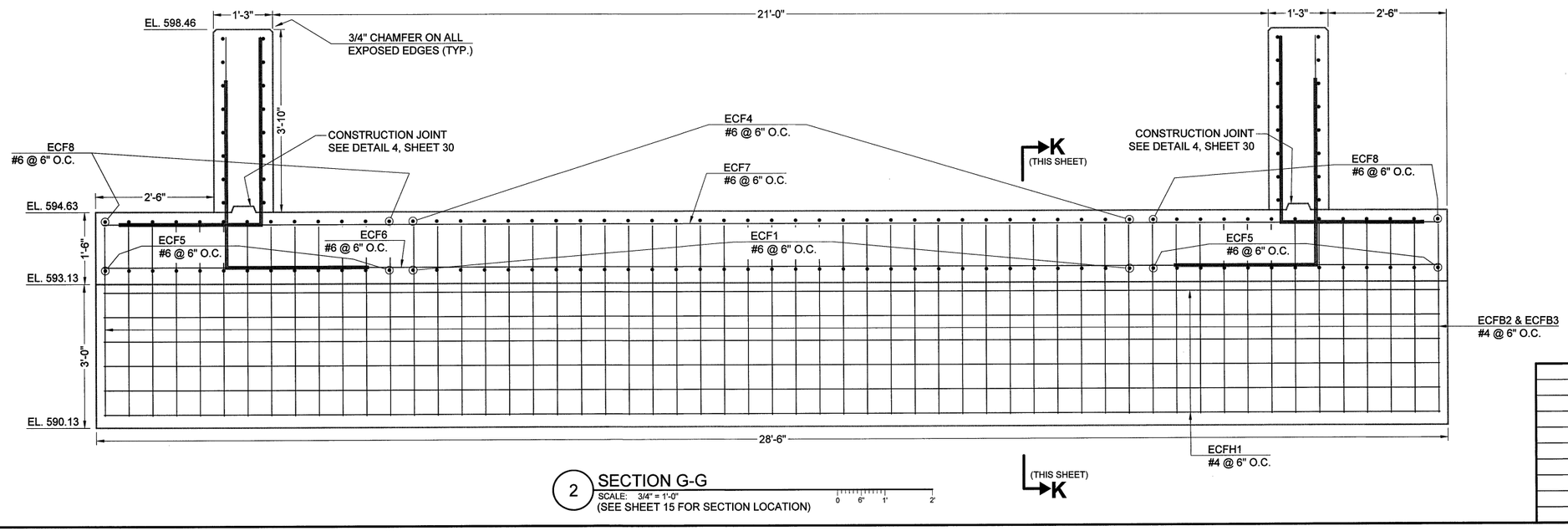
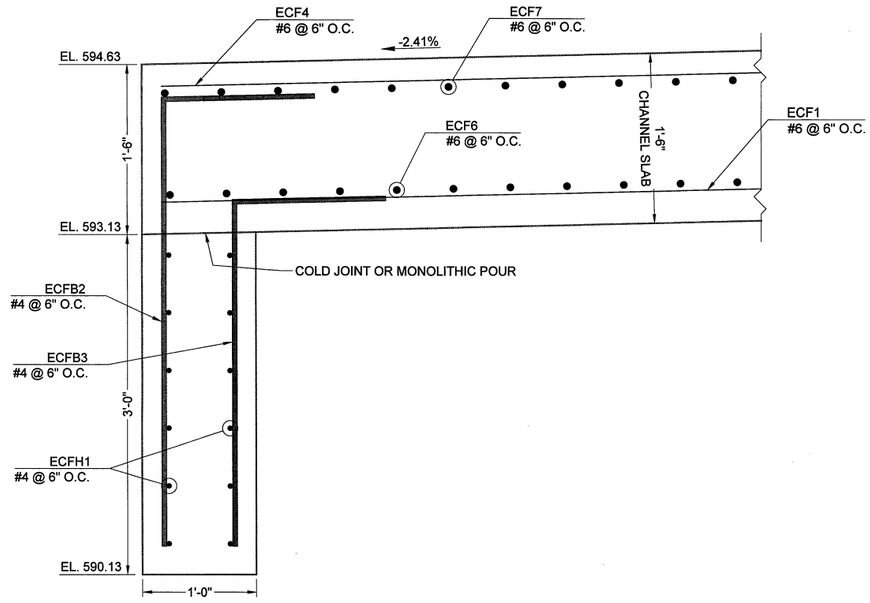


1 SECTION H-H
SCALE: 3/4" = 1'-0"
(SEE SHEET 15 FOR SECTION LOCATION)



2 SECTION G-G
SCALE: 3/4" = 1'-0"
(SEE SHEET 15 FOR SECTION LOCATION)



3 DETAIL 3 - SECTION K-K
CHANNEL CURTAIN WALL TO EAST BERM STRUCTURE
SCALE: 1-1/2" = 1'-0"
(SEE THIS SHEET FOR SECTION LOCATION)

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA

OKIE811 know what's below. 811 before you dig.

EAST BERM GATE STRUCTURE CHANNEL DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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	FIELD MGR		
FILE:	DRAWING:		

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SHEET 16 OF 55 SHEETS

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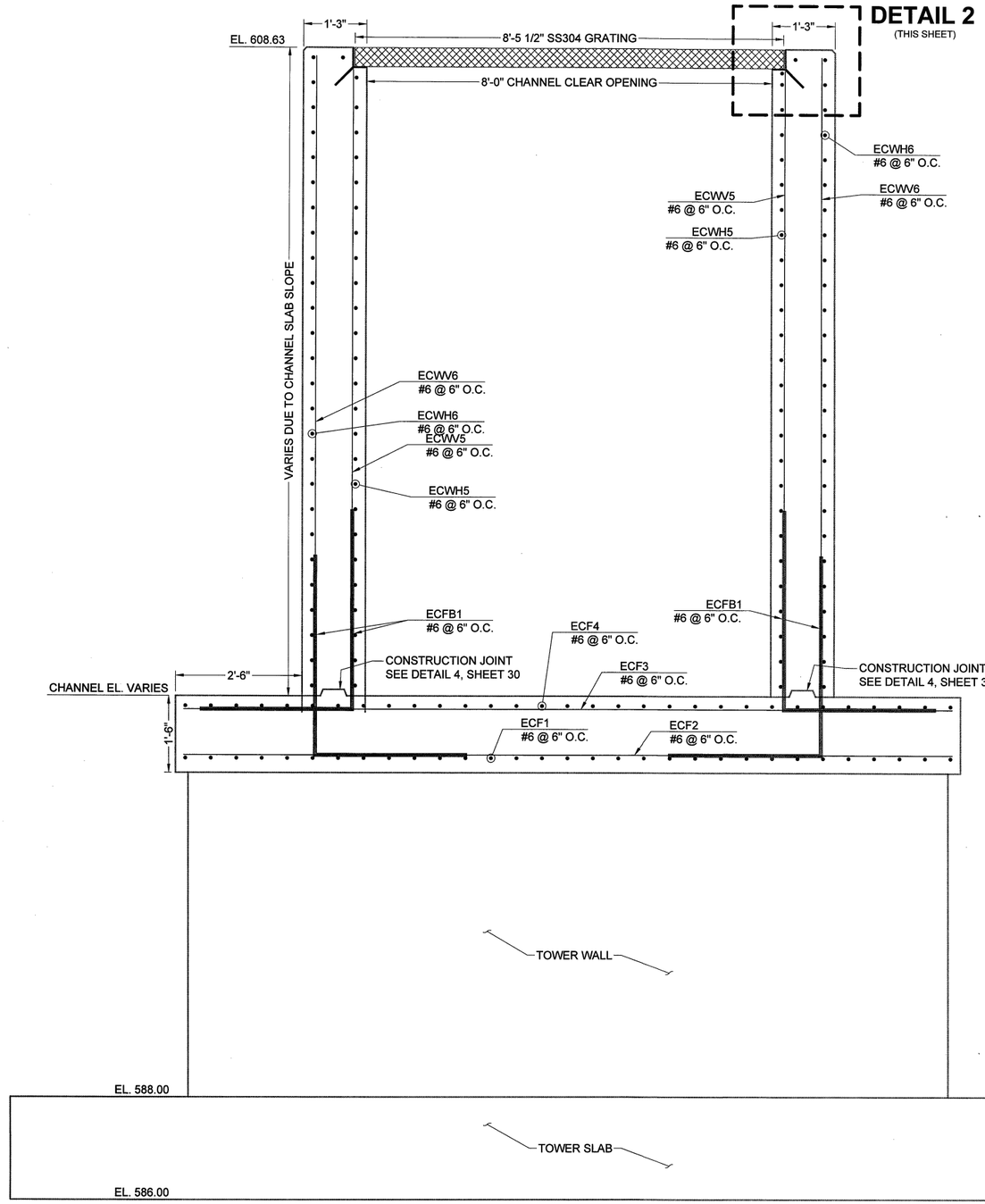
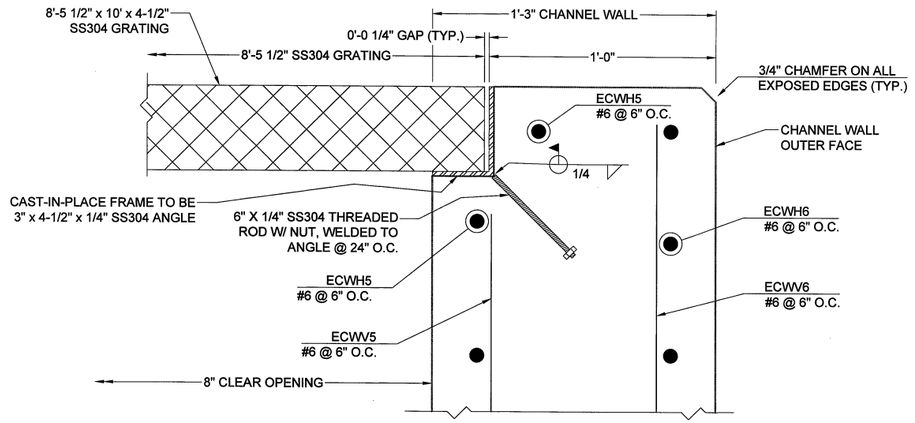
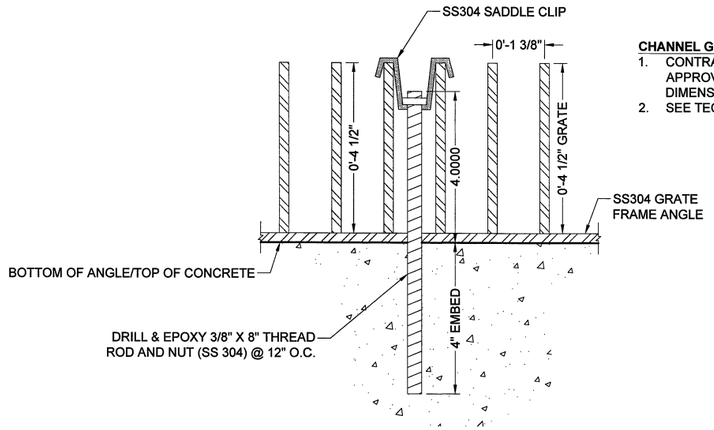


1 SECTION J-J
SCALE: 3/4" = 1'-0"
(SEE SHEET 15 FOR SECTION LOCATION)



2 DETAIL 2
TYPICAL CHANNEL SS304 GRATING W/ CAST-IN-PLACE SS304 FRAME
SCALE: 3" = 1'-0" (SEE THIS SHEET FOR LOCATION)



3 DETAIL 3
TYPICAL CHANNEL GRATING SADDLE CLIP
SCALE: NTS

CHANNEL GRATING NOTES:

1. CONTRACTOR SHALL SUBMIT SS304 SADDLE CLIP FOR APPROVAL. CONTRACTOR TO VERIFY GRATING GAP DIMENSIONS.
2. SEE TECHNICAL SPECIFICATION 05 53 00.

PROFESSIONAL ENGINEER
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01/29/2026
OKLAHOMA

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EAST BERM GATE STRUCTURE CHANNEL DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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	01-29-2026	APPROVED:
	DESIGNED	DAK	01-29-2026	
PROFILE SCALE	SURVEY	NJR	03-20-2020	
HORIZONTAL: --	PROJECT MGR		1/29/2026	
VERTICAL: --	LEAD ENGINEER		1/29/26	DESIGN MANAGER
	FIELD MGR		1/29/26	
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 17 OF 55 SHEETS

EAST BERM STRUCTURE - TOWER BAR LIST

MARK	SIZE	LBS/FT	QTY	FORM	LENGTH	TOTAL WEIGHT LBS	NOTES
TA1	#4	0.668	11	STR	17.15' MAX.	126.02	
TA2	#4	0.668	18	STR	7.73' MAX.	92.95	
TAB1	#4	0.668	18	BNT	2.98	35.83	
TF1	#6	1.502	44	STR	28.16'	1,861.04	
TF2	#6	1.502	57	STR	21.67'	1,855.26	
TF3	#6	1.502	57	STR	21.67'	1,855.26	
TF4	#6	1.502	44	STR	28.16'	1,861.04	
TFB1	#5	1.043	124	BNT	4.50'	581.99	
TS1	#4	0.668	24	STR	1.50'	24.05	DRILL & EPOXY TIE BAR
TT1	#5	1.043	8	BNT	1.87'	15.60	
TT2	#5	1.043	8	STR	1.16'	9.68	
TT3	#5	1.043	23	BNT	16.35'	392.22	
TT4	#5	1.043	47	STR	14.67'	719.14	
TT5	#5	1.043	8	BNT	10.16'	84.78	
TT6	#5	1.043	8	STR	9.45'	78.85	
TT7	#5	1.043	16	BNT	5.95'	99.29	
TT8	#5	1.043	16	STR	5.31'	88.61	
TTD1	#5	1.043	12	STR	3.00'	37.55	
TWB1	#5	1.043	6	BNT	3.67'	22.97	
TWB2	#4	0.668	32	BNT	3.02'	64.56	
TWB3	#4	0.668	48	BNT	3.10'	99.40	
TWB4	#5	1.043	104	BNT	6.16'	668.19	
TWB5	#5	1.043	132	BNT	4.70'	647.08	
TWC1	#5	1.043	416	BNT	4.00'	1,735.55	
TWD1	#5	1.043	16	STR	6.00'	100.13	
TWH1	#5	1.043	185	STR	14.67'	2,830.65	
TWH2	#5	1.043	185	STR	14.67'	2,830.65	
TWH3	#5	1.043	48	STR	4.16'	208.27	
TWH4	#5	1.043	48	STR	4.16'	208.27	
TWS1	#5	1.043	16	STRUP	15.75'	262.84	
TWV1	#5	1.043	6	STR	7.54'	47.19	
TWV2	#5	1.043	6	STR	7.54'	47.19	
TWV3	#5	1.043	6	STR	12.78'	79.98	
TWV4	#5	1.043	6	STR	12.78'	79.98	
TWV5	#5	1.043	6	STR	7.67'	48.00	
TWV6	#5	1.043	6	STR	7.67'	48.00	
TWV7	#5	1.043	6	STR	12.67'	79.29	
TWV8	#5	1.043	6	STR	12.67'	79.29	
TWV9	#5	1.043	40	STR	26.67'	1,112.67	
TWV10	#5	1.043	52	STR	26.67'	1,446.47	
WWH1	#5	1.043	66	STR	6.50' MAX.	447.45	CUT TO FIT
WWH2	#5	1.043	66	STR	6.33' MAX.	435.74	CUT TO FIT
WWV1	#5	1.043	20	STR	15.91' MAX.	331.88	CUT TO FIT
WWV2	#5	1.043	20	STR	15.91' MAX.	331.88	CUT TO FIT
					TOTAL	24,113.	

EAST BERM STRUCTURE - CHANNEL BAR LIST

MARK	BAR SIZE	LBS/FT	QTY	FORM	LENGTH	TOTAL WEIGHT LBS	NOTES
ECF1	#6	1.502	31	STR	51.67'	2,405.86	--
ECF2	#6	1.502	62	STR	15.16'	1,411.76	--
ECF3	#6	1.502	62	STR	51.67'	4,811.72	--
ECF4	#6	1.502	31	STR	15.16'	705.88	--
ECF5	#6	1.502	26	STR	19.91' MAX.	777.53	19.91' MAX., 5.42' MIN.
ECF6	#6	1.502	42	STR	28.16' MAX.	1,776.45	28.16' MAX., 15.50' MIN.
ECF7	#6	1.502	42	STR	28.16' MAX.	1,776.45	28.16' MAX., 15.50' MIN.
ECF8	#6	1.502	26	STR	19.91' MAX.	777.53	19.91' MAX., 5.42' MIN.
ECFH1	#4	0.668	12	STR	28.16'	225.73	--
ECFB1	#6	1.502	416	BNT	6.92'	4,323.84	--
ECFB2	#4	0.668	57	BNT	5.33'	202.95	--
ECFB3	#4	0.668	57	BNT	4.37'	166.39	--
ECWV1	#6	1.502	20	STR	5.37' MAX.	161.31	5.37' MAX., 3.56' MIN.
ECWV2	#6	1.502	20	STR	5.37' MAX.	161.31	5.37' MAX., 3.56' MIN.
ECWV3	#6	1.502	68	STR	11.50' MAX.	1,174.56	11.50' MAX., 5.56' MIN.
ECWV4	#6	1.502	68	STR	11.50' MAX.	1,174.56	11.50' MAX., 5.56' MIN.
ECWV5	#6	1.502	124	STR	13.08' MAX.	2,436.12	13.08' MAX., 11.69' MIN.
ECWV6	#6	1.502	124	STR	13.08' MAX.	2,436.12	13.08' MAX., 11.69' MIN.
ECWV7	#6	1.502	20	STR	11.75'	352.97	--
ECWV8	#6	1.502	20	STR	11.75'	352.97	--
ECWH1	#6	1.502	12	STR	4.67' MAX.	84.17	4.67' MAX., 0.83' MIN.
ECWH2	#6	1.502	12	STR	4.83' MAX.	87.06	4.83' MAX., 1' MIN.
ECWH3	#6	1.502	25	STR	16.92' MAX.	635.35	16.92' MAX., 0.81' MIN.
ECWH4	#6	1.502	25	STR	16.92' MAX.	635.35	16.92' MAX., 0.81' MIN.
ECWH5	#6	1.502	29	STR	31.41' MAX.	1,368.16	31.41' MAX., 5.89' MIN.
ECWH6	#6	1.502	29	STR	31.25' MAX.	1,361.19	31.41' MAX., 5.75' MIN.
ECWB1	#6	1.502	96	BNT	3.67'	529.18	--
ECWB2	#6	1.502	132	BNT	5.33'	1,056.75	--
					TOTAL	33,369.	

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA

OKIE811

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

EAST BERM GATE STRUCTURE
BAR LIST

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

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

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	FIELD MGR		1/29/26	
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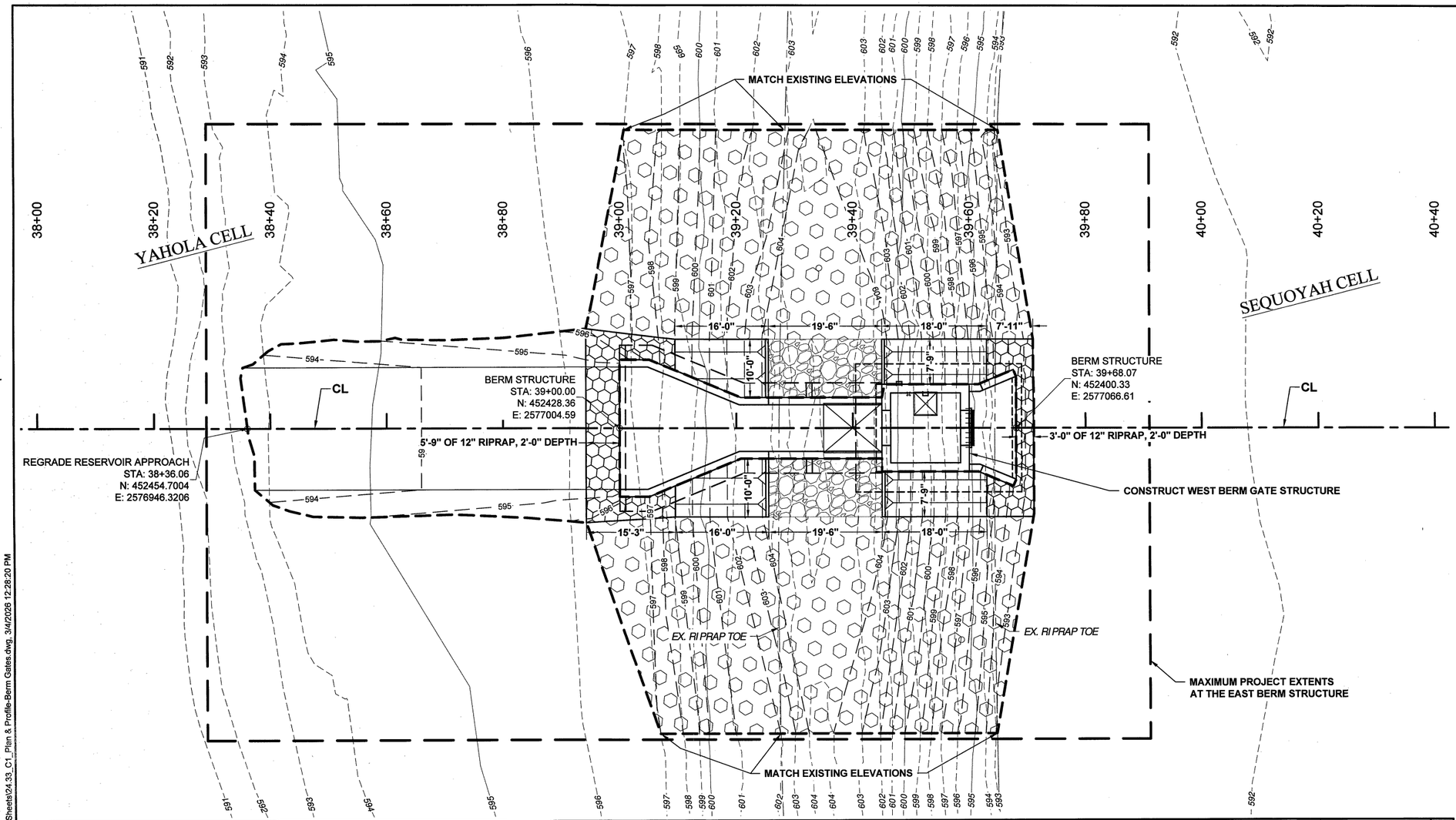
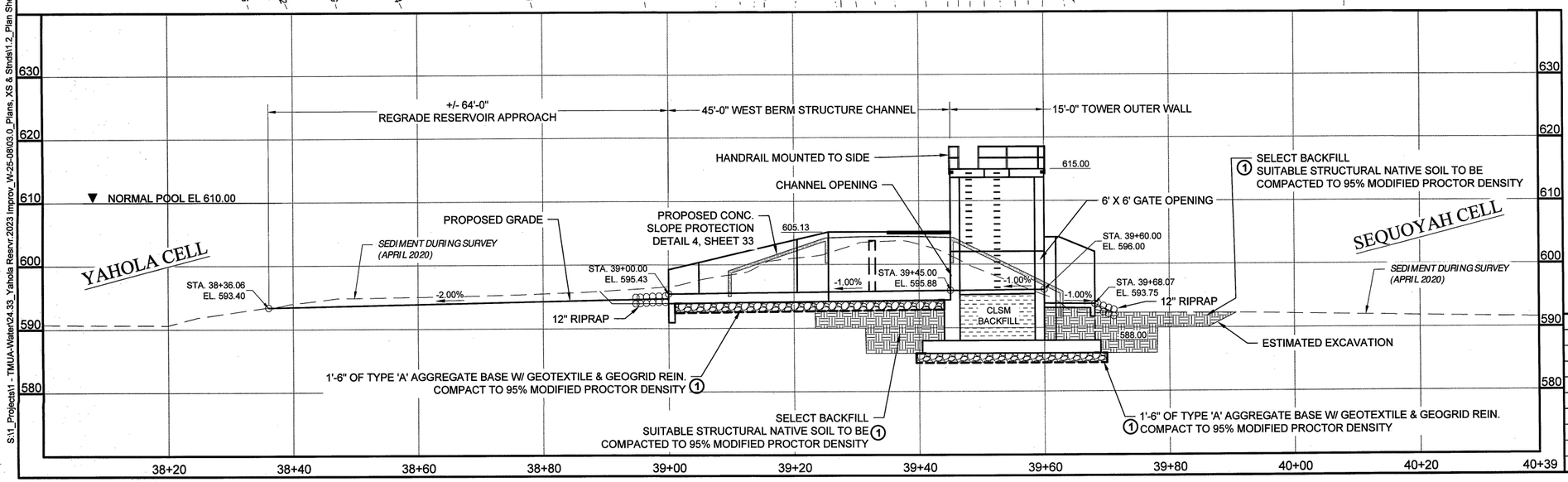
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 18 OF 55 SHEETS

S:\1_Projects\1 - TMUA-Water\24_33_Yahola Resrvr.2023 Improv_W-25-08\03.0_Plans, XS & Stnds\1.2_Plan Sheets\24.33_S2_East Berm Gate Reinforcement.dwg, 1/29/2026 9:20:17 AM





0 10 20

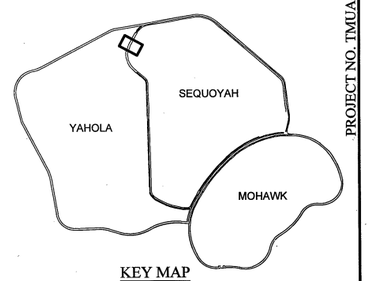
FULL SIZE(22x34) 1 : 10'
HALF SIZE(11x17) 1 : 20'

LEGEND

- INSTALL 6" CONCRETE SLOPE PROTECTION, CLASS A
- INSTALL 12" PLAIN RIPRAP, 2'-0" DEPTH
- SIZE #1 CRUSHED STONE AGGREGATE ALONG BERM CREST, 8" DEPTH
- REUSE EXISTING RIPRAP ALONG BERM

KEY NOTES

① PRIOR TO BACKFILL OF NATIVE SOIL OR AGG. BASE, PERFORM SUBGRADE METHOD 'B' COMPACTED TO 95% MODIFIED PROCTOR DENSITY. IF 95% COMPACTION IS UNOBTAINABLE, CONTRACTOR SHALL USE OTHER APPROVED MEANS. IF UNDERCUT IS REQUIRED, IT SHALL BE PAID BY UNCLASSIFIED EXCAVATION AND AGGREGATE BASE TYPE A.



KEY MAP

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
02/26/2026
OKLAHOMA

OKIE811 Know what's below. Call before you dig.

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

WEST BERM GATE STRUCTURE PLAN & PROFILE

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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

REVISION	BY	DATE

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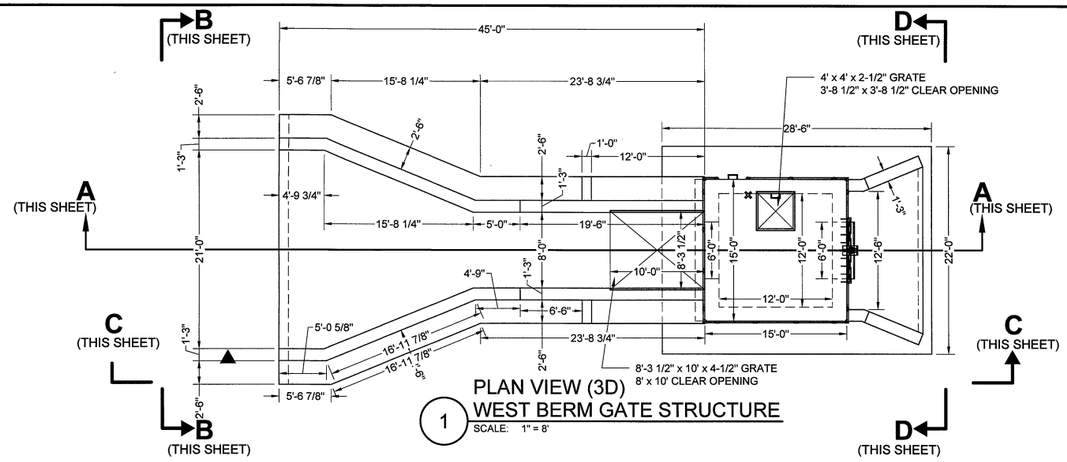
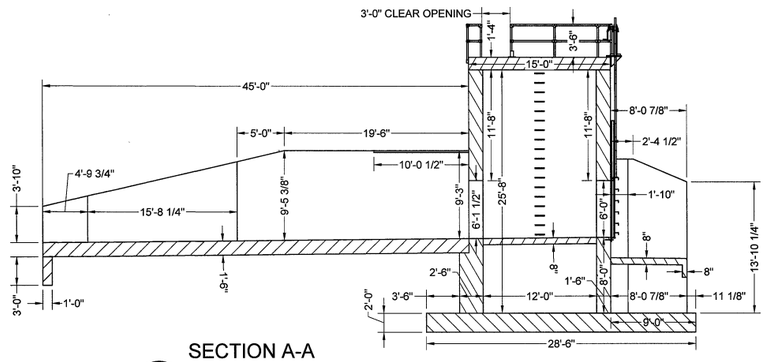
	DESIGNED	DAK	01-29-2026	
PROFILE SCALE	SURVEY	NJR	03-20-2020	
HORIZONTAL: 1"=10'	PROJECT MGR		3/2026	
VERTICAL: 1"=10'	LEAD ENGINEER		3/26	DESIGN MANAGER
	FIELD MGR		3/26	
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 19 OF 55 SHEETS

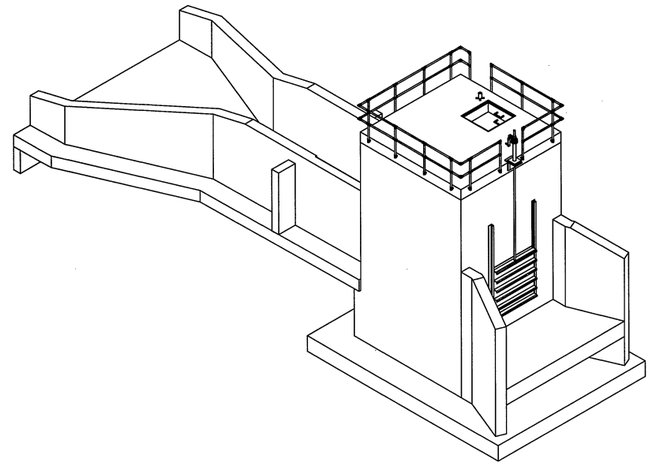
S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resvr.2023 Improv_W-25-08\03.0_Plans, XS & Shtds\1.2_Plan Sheets\24.33_C1_Plan & Profile-Berm Gates.dwg, 3/4/2026 12:28:20 PM



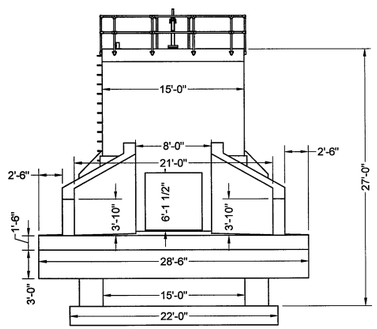
1 PLAN VIEW (3D)
WEST BERM GATE STRUCTURE
SCALE: 1" = 8'



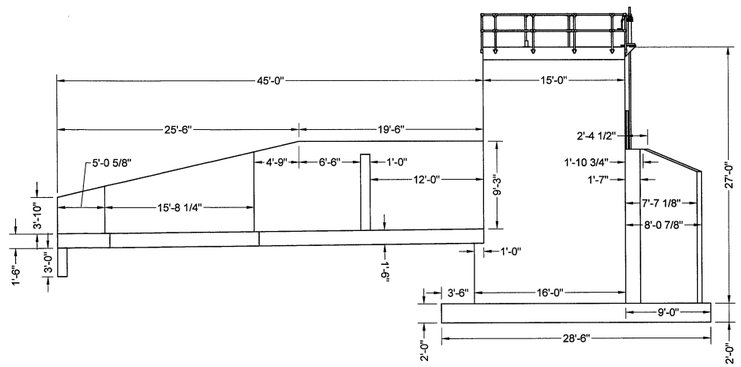
2 SECTION A-A
WEST BERM GATE STRUCTURE
SCALE: 1" = 8'
(SEE THIS SHEET FOR SECTION LOCATION)



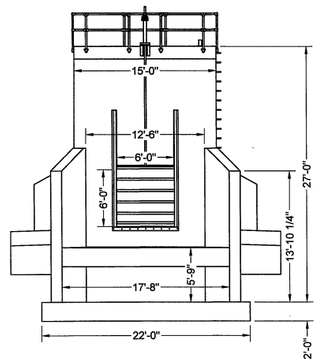
3 ISOMETRIC
WEST BERM GATE STRUCTURE
SCALE: 1" = 8'



4 SECTION B-B (ELEVATION)
WEST BERM GATE STRUCTURE
SCALE: 1" = 8'
(SEE THIS SHEET FOR SECTION LOCATION)



5 SECTION C-C (ELEVATION)
WEST BERM GATE STRUCTURE
SCALE: 1" = 8'
(SEE THIS SHEET FOR SECTION LOCATION)



6 SECTION D-D (ELEVATION)
WEST BERM GATE STRUCTURE
SCALE: 1" = 8'
(SEE THIS SHEET FOR SECTION LOCATION)

WEST BERM GATE STRUCTURE
3D MODELING
(FOR REFERENCE ONLY)

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

Plans and Estimates Prepared by:
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	DESIGNED	DAK	01-29-2026
PROFILE SCALE	SURVEY	NJR	03-20-2020
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VERTICAL:	LEAD ENGINEER	DAK	1/29/26
	FIELD MGR		1/29/26

APPROVED:
DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 20 OF 55 SHEETS

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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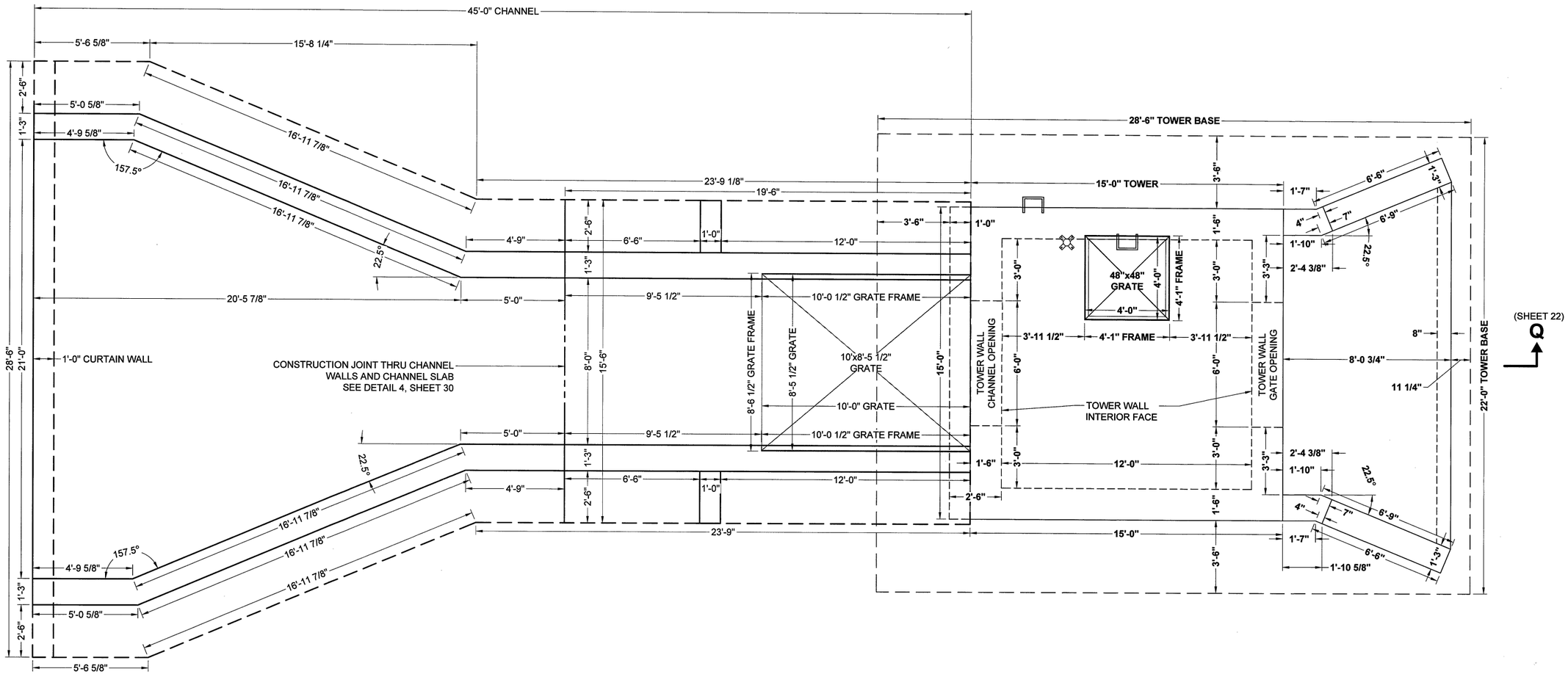

1 PLAN VIEW
WEST BERM GATE STRUCTURE DIMENSIONS
SCALE: 3/8" = 1'-0"

0 6" 1' 2'

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resvr. 2023 Improv_W-25-08\03.0_Plans, XS & Stnds\1.2_Plan Sheets\24.33_S3_West Berm Gate Reinforcement.dwg, 1/29/2026 9:20:28 AM

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA

OKIE811 Know what's below. Call before you dig.

WEST BERM GATE STRUCTURE PLAN VIEW DIMENSIONS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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PROFILE SCALE
HORIZONTAL: –
VERTICAL: –

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LEAD ENGINEER		1/26
FIELD MGR		1/26

APPROVED:
DESIGN MANAGER

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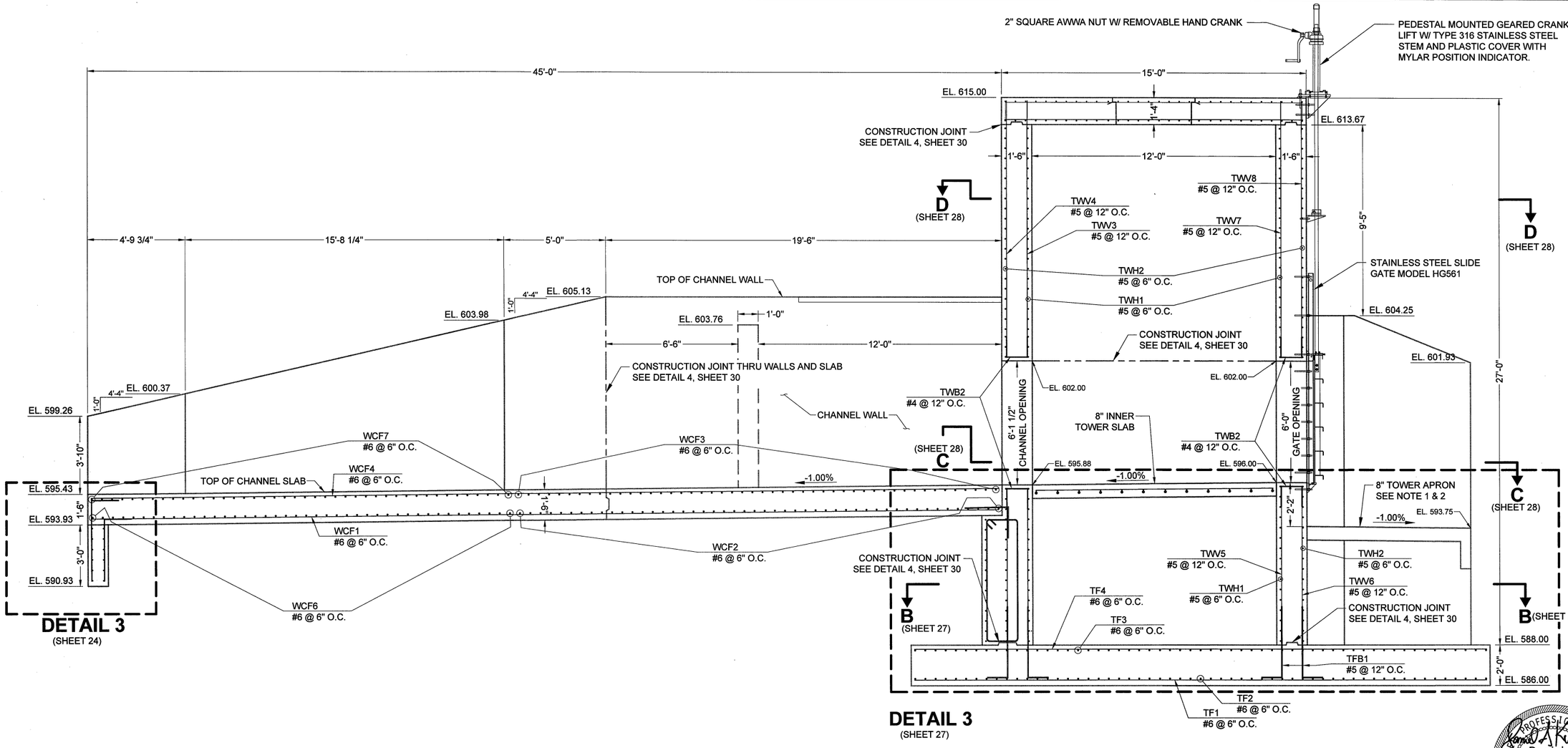
SHEET 21 OF 55 SHEETS



DETAIL 3
(SHEET 24)

DETAIL 3
(SHEET 27)

1 SECTION Q-Q
WEST BERM GATE STRUCTURE
SCALE: 3/8" = 1'-0"
(SEE SHEET 21 FOR SECTION LOCATION)

0 6" 1' 2'

NOTES
1. THE 8" TOWER APRON ON THE EAST BERM GATE STRUCTURE AND WEST BERM GATE STRUCTURE HAVE THE SAME DIMENSIONS & REINFORCEMENT. HOWEVER, THE VERTICAL PLACEMENT (ELEVATION) IS DIFFERENT DUE TO THE EXISTING GRADE LOCATION.
2. SEE SHEET 14 FOR THE VERTICAL PLACEMENT OF THE 8" TOWER APRON OF THE EAST BERM GATE STRUCTURE AND SHEET 22 FOR WEST BERM GATE STRUCTURE. REINFORCEMENT DETAILS FOR BOTH STRUCTURES IS SHOWN ON SHEET 27, DETAIL 3.

PROFESSIONAL ENGINEER Daniel A. Keithline 17348 01/29/2026 OKLAHOMA

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WEST BERM GATE STRUCTURE
SECTION ELEVATION

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
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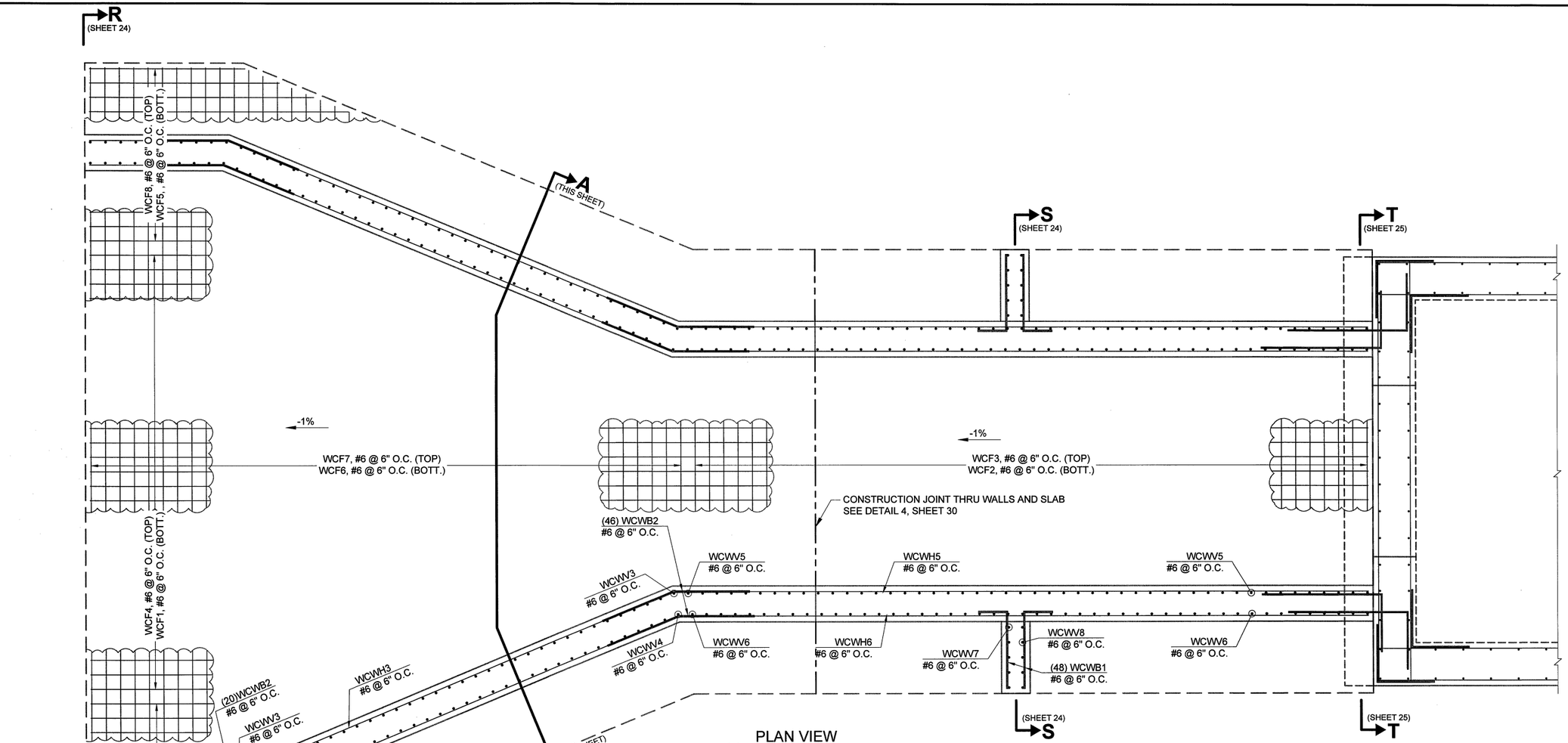
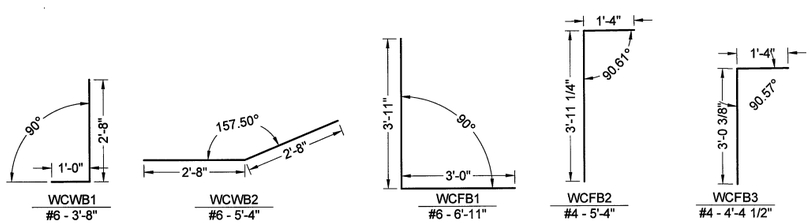
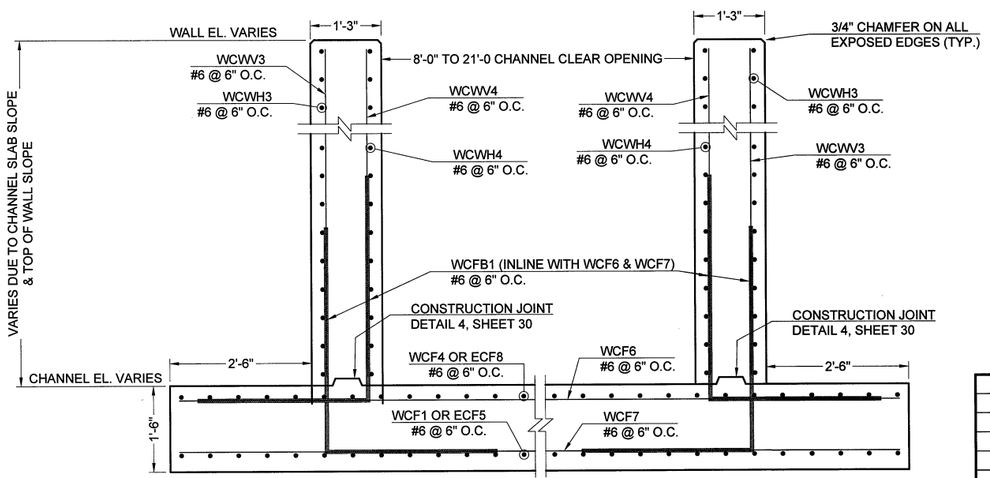


1 PLAN VIEW
CHANNEL REINFORCEMENT OF WEST BERM STRUCTURE
SCALE: 1/2" = 1'-0"



2 CHANNEL BENT BAR OF WEST BERM STRUCTURE
SCALE: 1/2" = 1'-0"



3 SECTION A-A
SCALE: 3/4" = 1'-0"
(SEE THIS SHEET FOR SECTION LOCATION)

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA

OKIE811

WEST BERM GATE STRUCTURE CHANNEL DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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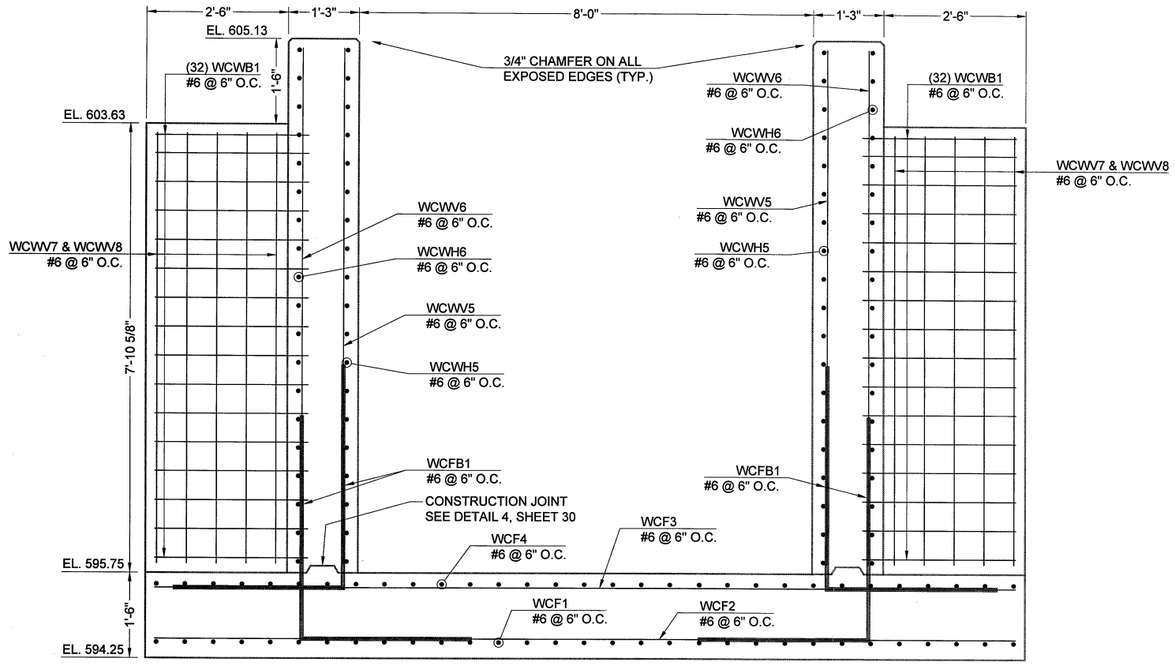
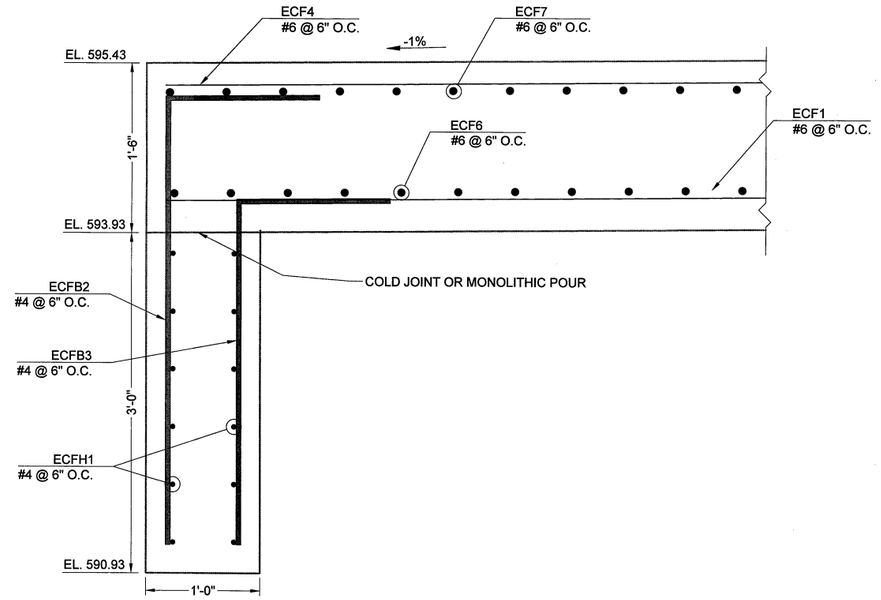
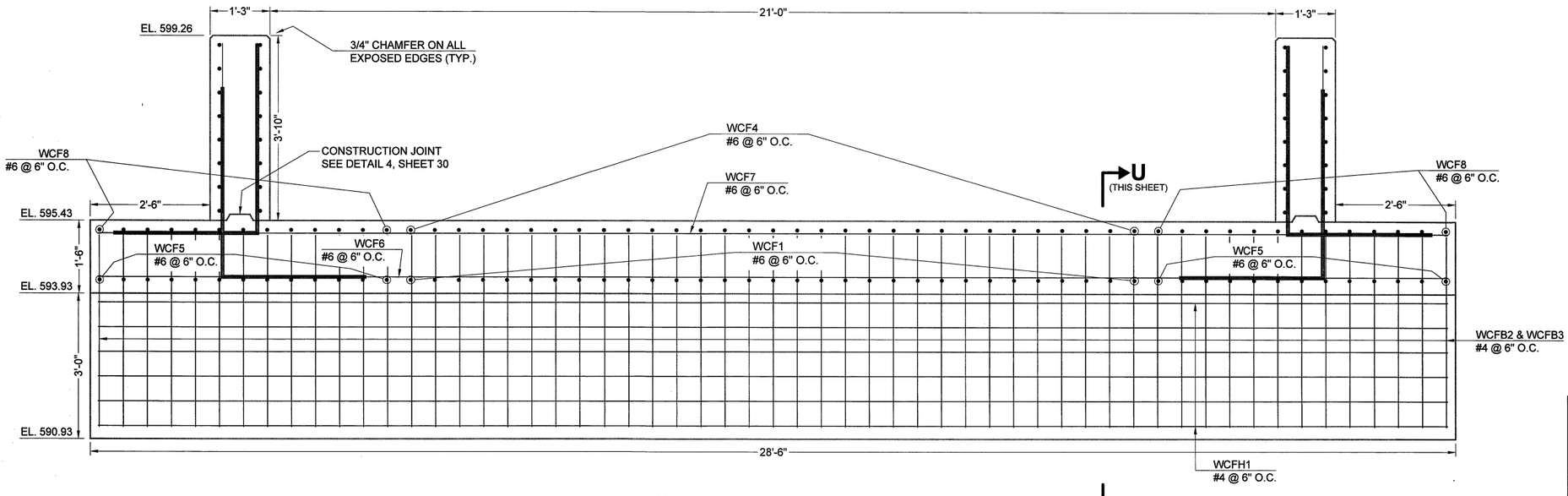


1 SECTION S-S
SCALE: 3/4" = 1'-0"
(SEE SHEET 23 FOR SECTION LOCATION)



3 DETAIL 3 - SECTION U-U
CHANNEL CURTAIN WALL TO WEST BERM STRUCTURE
SCALE: 1-1/2" = 1'-0"
(SEE THIS SHEET FOR SECTION LOCATION)



2 SECTION R-R
SCALE: 3/4" = 1'-0"
(SEE SHEET 23 FOR SECTION LOCATION)

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

OKIE811

WEST BERM GATE STRUCTURE CHANNEL DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

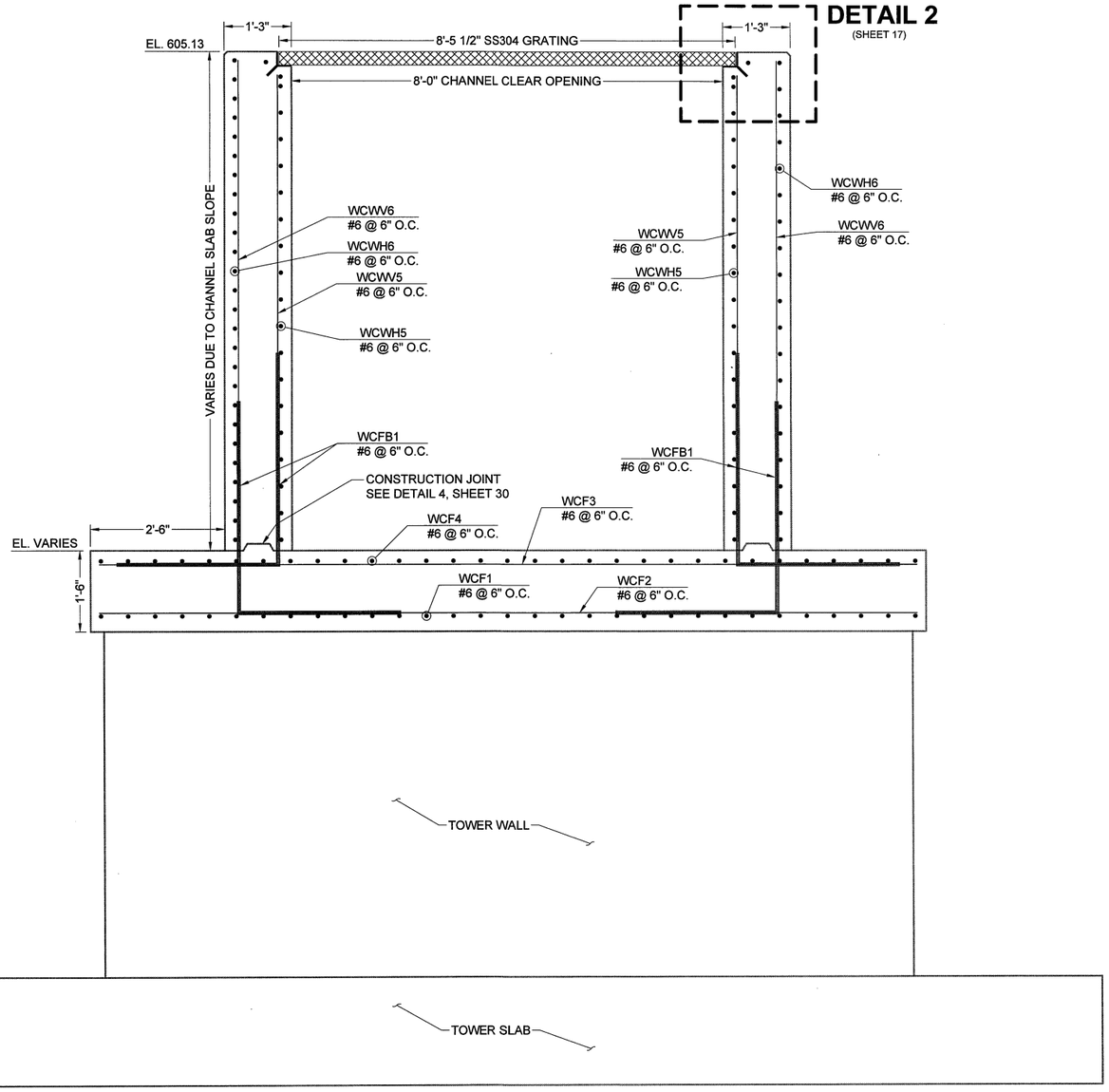
CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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	01-29-2026	APPROVED:
	DESIGNED	DAK	01-29-2026	
PROFILE SCALE	SURVEY	NJR	03-20-2020	
HORIZONTAL: –	PROJECT MGR			
VERTICAL: –	LEAD ENGINEER		2/2/26	
	FIELD MGR		2/26	DESIGN MANAGER
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 24 OF 55 SHEETS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resvr.2023 Improv_W-25-08\03.0_Plans, XS & Stnds\1.2_Plan Sheets\24.33_S3_West Berm Gate Reinforcement.dwg, 1/29/2026 9:20:31 AM



1 SECTION T-T
SCALE: 3/4" = 1'-0"
(SEE SHEET 23 FOR SECTION LOCATION)

0 6" 1' 2'

DETAIL 2
(SHEET 17)

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA

OKIE811

WEST BERM GATE STRUCTURE
CHANNEL DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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

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	FIELD MGR		1/29/26

APPROVED:
DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 25 OF 55 SHEETS

WEST BERM STRUCTURE - TOWER BAR LIST

MARK	SIZE	LBS/FT	QTY	FORM	LENGTH	TOTAL WEIGHT LBS	NOTES
TA1	#4	0.668	11	STR	17.15' MAX.	126.02	
TA2	#4	0.668	18	STR	7.73' MAX.	92.95	
TAB1	#4	0.668	18	BNT	2.98	35.83	
TF1	#6	1.502	44	STR	28.16'	1,861.04	
TF2	#6	1.502	57	STR	21.67'	1,855.26	
TF3	#6	1.502	57	STR	21.67'	1,855.26	
TF4	#6	1.502	44	STR	28.16'	1,861.04	
TFB1	#5	1.043	124	BNT	4.50'	581.99	
TS1	#4	0.668	24	STR	1.50'	24.05	DRILL & EPOXY TIE BAR
TT1	#5	1.043	8	BNT	1.87'	15.60	
TT2	#5	1.043	8	STR	1.16'	9.68	
TT3	#5	1.043	23	BNT	16.35'	392.22	
TT4	#5	1.043	47	STR	14.67'	719.14	
TT5	#5	1.043	8	BNT	10.16'	84.78	
TT6	#5	1.043	8	STR	9.45'	78.85	
TT7	#5	1.043	16	BNT	5.95'	99.29	
TT8	#5	1.043	16	STR	5.31'	88.61	
TTD1	#5	1.043	12	STR	3.00'	37.55	
TWB1	#5	1.043	6	BNT	3.67'	22.97	
TWB2	#4	0.668	32	BNT	3.02'	64.56	
TWB3	#4	0.668	48	BNT	3.10'	99.40	
TWB4	#5	1.043	76	BNT	6.16'	488.29	
TWB5	#5	1.043	132	BNT	4.70'	647.08	
TWC1	#5	1.043	416	BNT	4.00'	1,735.55	
TWD1	#5	1.043	16	STR	6.00'	100.13	
TWH1	#5	1.043	185	STR	14.67'	2,830.65	
TWH2	#5	1.043	185	STR	14.67'	2,830.65	
TWH3	#5	1.043	48	STR	4.16'	208.27	
TWH4	#5	1.043	48	STR	4.16'	208.27	
TWS1	#5	1.043	16	STRUP	15.75'	262.84	
TWV1	#5	1.043	6	STR	7.54'	47.19	
TWV2	#5	1.043	6	STR	7.54'	47.19	
TWV3	#5	1.043	6	STR	12.78'	79.98	
TWV4	#5	1.043	6	STR	12.78'	79.98	
TWV5	#5	1.043	6	STR	7.67'	48.00	
TWV6	#5	1.043	6	STR	7.67'	48.00	
TWV7	#5	1.043	6	STR	12.67'	79.29	
TWV8	#5	1.043	6	STR	12.67'	79.29	
TWV9	#5	1.043	40	STR	26.67'	1,112.67	
TWV10	#5	1.043	52	STR	26.67'	1,446.47	
WWH1	#5	1.043	66	STR	6.50' MAX.	447.45	CUT TO FIT
WWH2	#5	1.043	66	STR	6.33' MAX.	435.74	CUT TO FIT
WWV1	#5	1.043	20	STR	15.91' MAX.	331.88	CUT TO FIT
WWV2	#5	1.043	20	STR	15.91' MAX.	331.88	CUT TO FIT
					TOTAL	23,933.	

WEST BERM STRUCTURE - CHANNEL BAR LIST

MARK	BAR SIZE	LBS/FT	QTY	FORM	LENGTH	TOTAL WEIGHT LBS	NOTES
WCF1	#6	1.502	31	STR	44.67'	2,079.92	--
WCF2	#6	1.502	48	STR	15.16'	1,092.98	--
WCF3	#6	1.502	48	STR	15.16'	1,092.98	--
WCF4	#6	1.502	31	STR	44.67'	2,079.92	--
WCF5	#6	1.502	26	STR	19.91' MAX.	777.53	19.91' MAX., 5.42' MIN.
WCF6	#6	1.502	42	STR	28.16' MAX.	1,776.45	28.16' MAX., 15.50' MIN.
WCF7	#6	1.502	42	STR	28.16' MAX.	1,776.45	28.16' MAX., 15.50' MIN.
WCF8	#6	1.502	26	STR	19.91' MAX.	777.53	19.91' MAX., 5.42' MIN.
WCFH1	#4	0.668	12	STR	28.16'	225.73	--
WCFB1	#6	1.502	368	BNT	6.92'	3,824.93	--
WCFB2	#4	0.668	57	BNT	5.33'	202.95	--
WCFB3	#4	0.668	57	BNT	4.37'	166.39	--
WCWV1	#6	1.502	20	STR	4.54' MAX.	136.38	4.54' MAX., 3.54' MIN.
WCWV2	#6	1.502	20	STR	4.54' MAX.	136.38	4.54' MAX., 3.54' MIN.
WCWV3	#6	1.502	68	STR	8.02' MAX.	819.13	8.02' MAX., 4.65' MIN.
WCWV4	#6	1.502	68	STR	8.02' MAX.	819.13	8.02' MAX., 4.65' MIN.
WCWV5	#6	1.502	96	STR	9.10' MAX.	1,312.15	9.10' MAX., 8.15' MIN.
WCWV6	#6	1.502	96	STR	9.10' MAX.	1,312.15	9.10' MAX., 8.15' MIN.
WCWV7	#6	1.502	20	STR	7.54'	226.50	--
WCWV8	#6	1.502	20	STR	7.54'	226.50	--
WCWH1	#6	1.502	16	STR	4.67'	112.23	--
WCWH2	#6	1.502	16	STR	4.83'	116.07	--
WCWH3	#6	1.502	32	STR	16.92' MAX.	813.24	16.92' MAX., 0.81' MIN.
WCWH4	#6	1.502	32	STR	16.92' MAX.	813.24	16.92' MAX., 0.81' MIN.
WCWH5	#6	1.502	40	STR	24.25' MAX.	1,456.94	24.25' MAX., 5.89' MIN.
WCWH6	#6	1.502	40	STR	24.08' MAX.	1,446.73	24.08' MAX., 5.75' MIN.
WCWB1	#6	1.502	64	BNT	3.67'	352.79	--
WCWB2	#6	1.502	108	BNT	5.33'	864.61	--
					TOTAL	26,838.	

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 01/29/2026 — LICENSED — OKLAHOMA

OKIE811 know what's below. Call before you dig.

WEST BERM GATE STRUCTURE
BAR LIST

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

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

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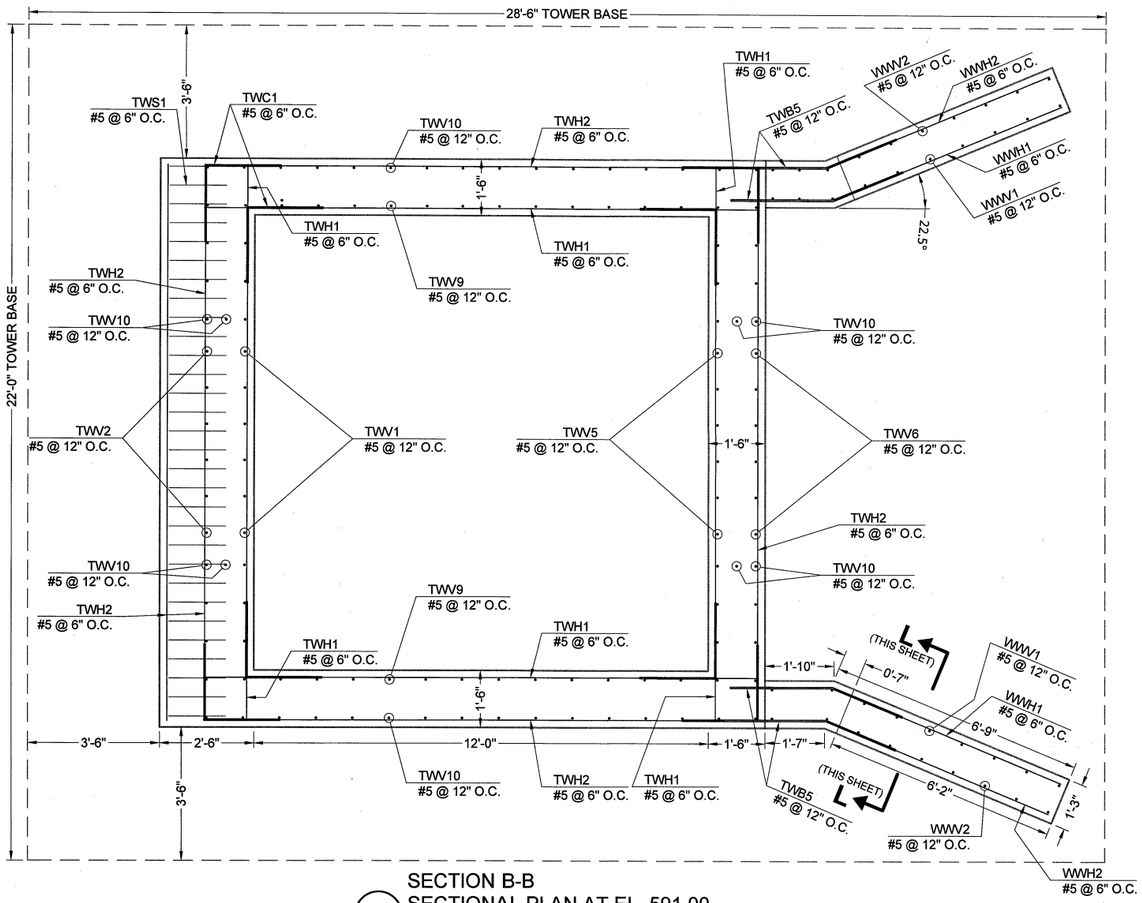
	FIELD MGR		1/29/26

APPROVED: DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

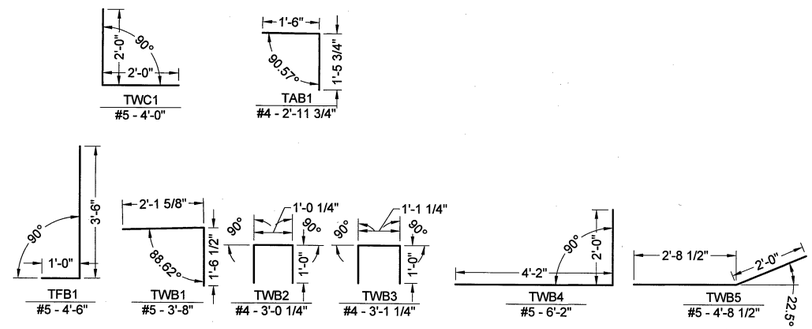
ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 26 OF 55 SHEETS



SECTION B-B
SECTIONAL PLAN AT EL. 591.00

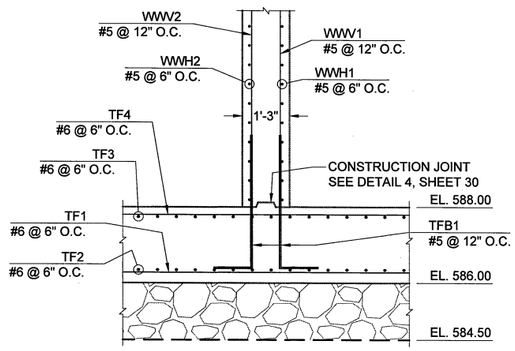
1 SCALE: 1/2" = 1'-0"

(SEE SHEET 14 FOR SECTION LOCATION)



TYPICAL TOWER
BASE & WALL BENT BARS

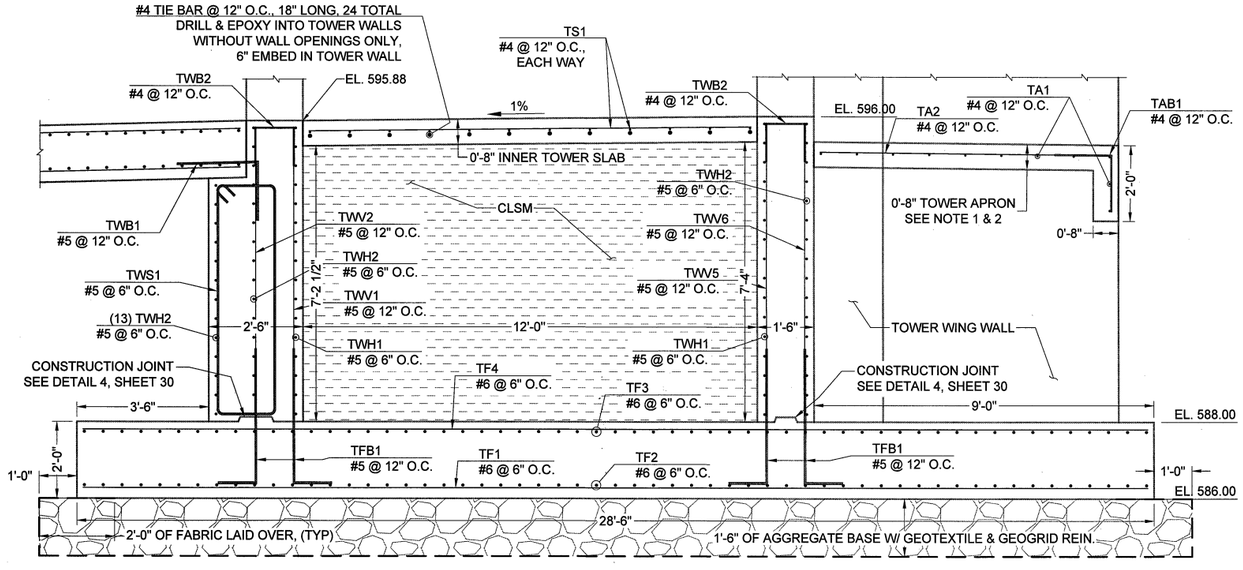
2 SCALE: 1/2" = 1'-0"



SECTION L-L
TYPICAL TOWER WING WALL

4 SCALE: 1/2" = 1'-0"

(SEE THIS SHEET FOR SECTION LOCATION)



DETAIL 3

3 SCALE: 3/4" = 1'-0"

(SEE SHEET 14 FOR DETAIL LOCATION)

NOTES

1. THE 8" TOWER APRON ON THE EAST BERM GATE STRUCTURE AND WEST BERM GATE STRUCTURE HAVE THE SAME DIMENSIONS & REINFORCEMENT. HOWEVER, THE VERTICAL PLACEMENT (ELEVATION) IS DIFFERENT DUE TO THE EXISTING GRADE LOCATION.
2. SEE SHEET 14 FOR THE VERTICAL PLACEMENT OF THE 8" TOWER APRON OF THE EAST BERM GATE STRUCTURE AND SHEET 22 FOR WEST BERM GATE STRUCTURE. REINFORCEMENT DETAILS FOR BOTH STRUCTURES IS SHOWN ON SHEET 27, DETAIL 3.

PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 02/26/2026 — OKLAHOMA

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TYPICAL TOWER BASE & WALLS DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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

REVISION	BY	DATE

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PROFILE SCALE
HORIZONTAL: --
VERTICAL: --

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SURVEY	NJR	03-20-2020	
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LEAD ENGINEER		3/26	DESIGN MANAGER
FIELD MGR		3/26	

FILE: DRAWING: DATE: JANUARY 29, 2026

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PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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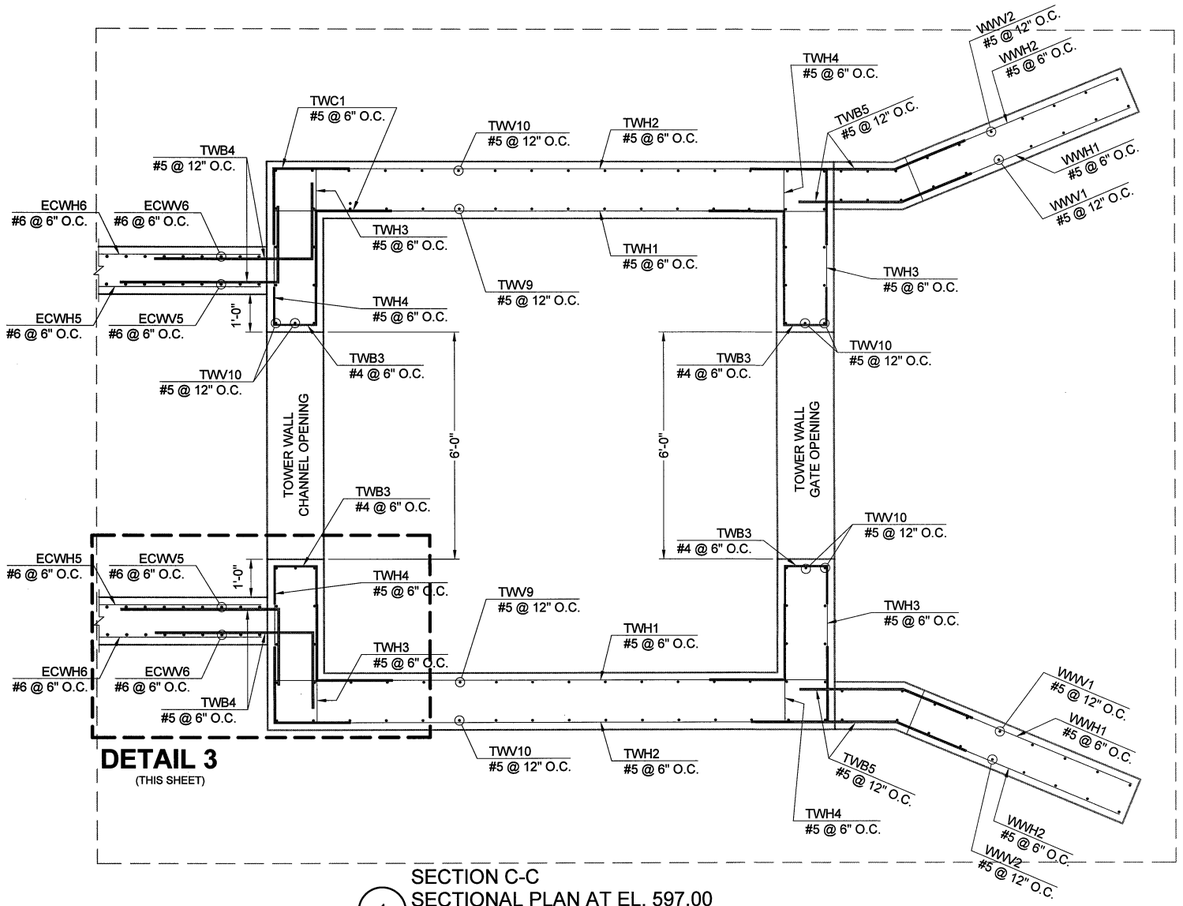
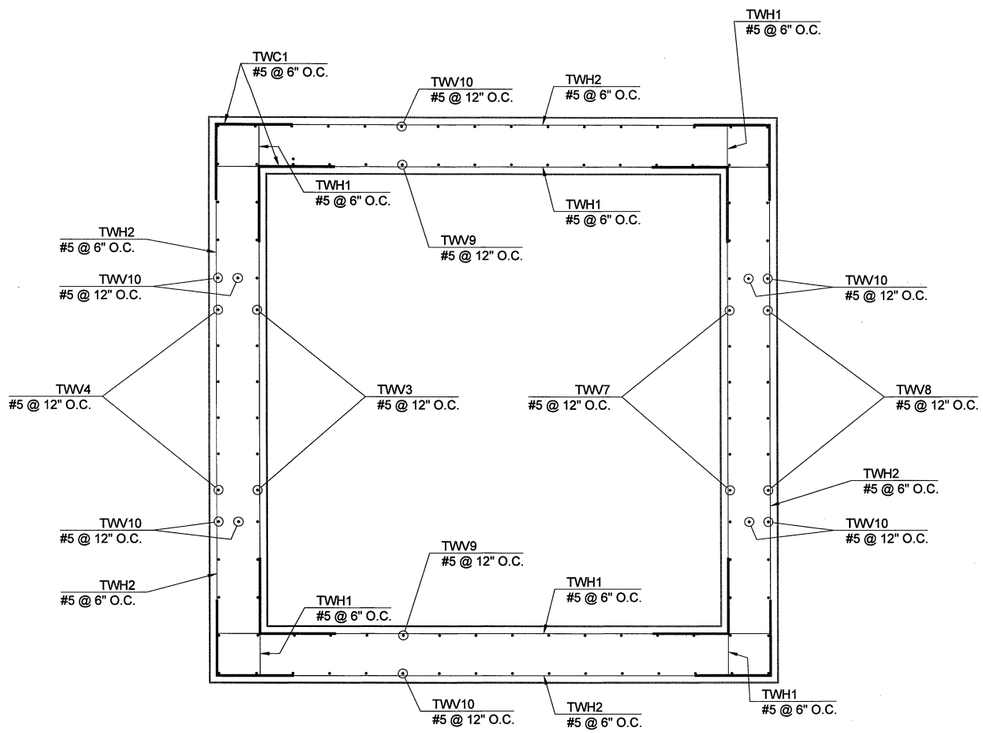
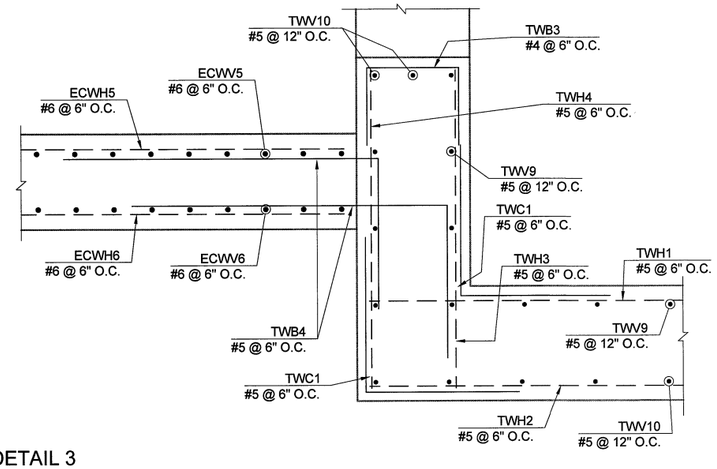


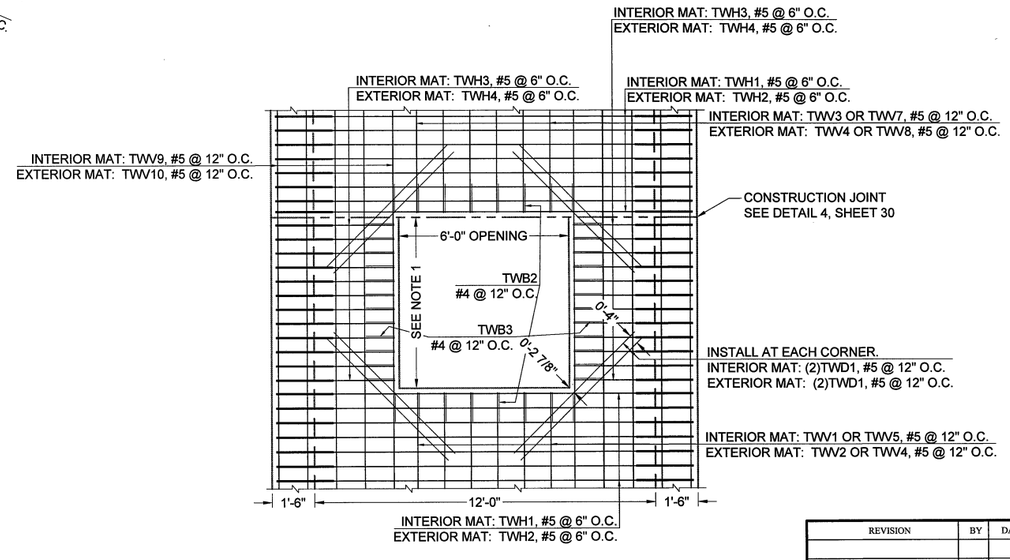
1 SECTION C-C
SECTIONAL PLAN AT EL. 597.00
SCALE: 1/2" = 1'-0"
(SEE SHEET 14 FOR SECTION LOCATION)



2 SECTION D-D
SECTIONAL PLAN AT EL. 610.00
SCALE: 1/2" = 1'-0"
(SEE SHEET 14 FOR SECTION LOCATION)



3 DETAIL 3
TYPICAL CHANNEL WALL TO TOWER CONNECTION & CORNER STEEL
SCALE: 1" = 1'-0"



4 (ELEVATION VIEW) TYPICAL REINFORCEMENT
AT VERTICAL TOWER WALL OPENING
SCALE: 3/8" = 1'-0"

NOTE 1: THIS VERTICAL DIMENSION IS NOT TO SCALE. THIS DIMENSION IS 6'-0" AT THE GATE OPENING OR 6'-1 1/2" AT THE CHANNEL OPENING. SEE OTHER DETAILS FOR SCALED DIMENSIONS.

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA
KEITHLINE ENGINEERING GROUP, LLC

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TYPICAL TOWER WALL DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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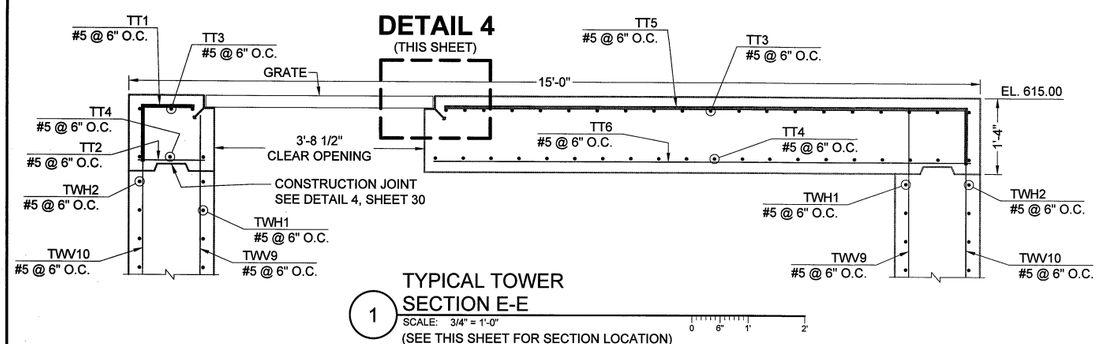
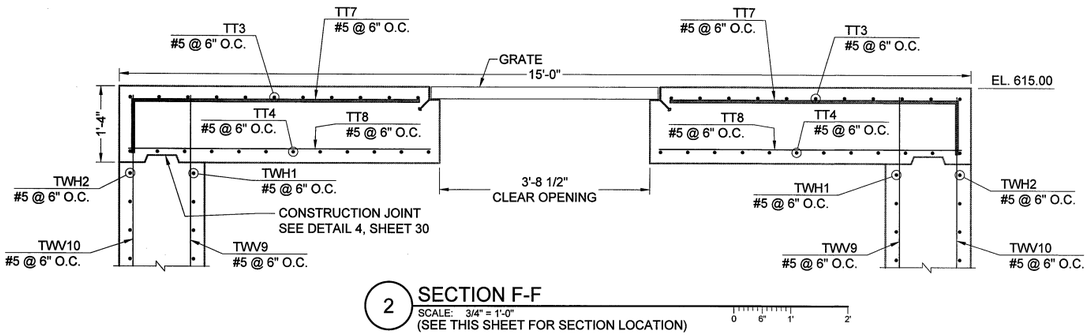
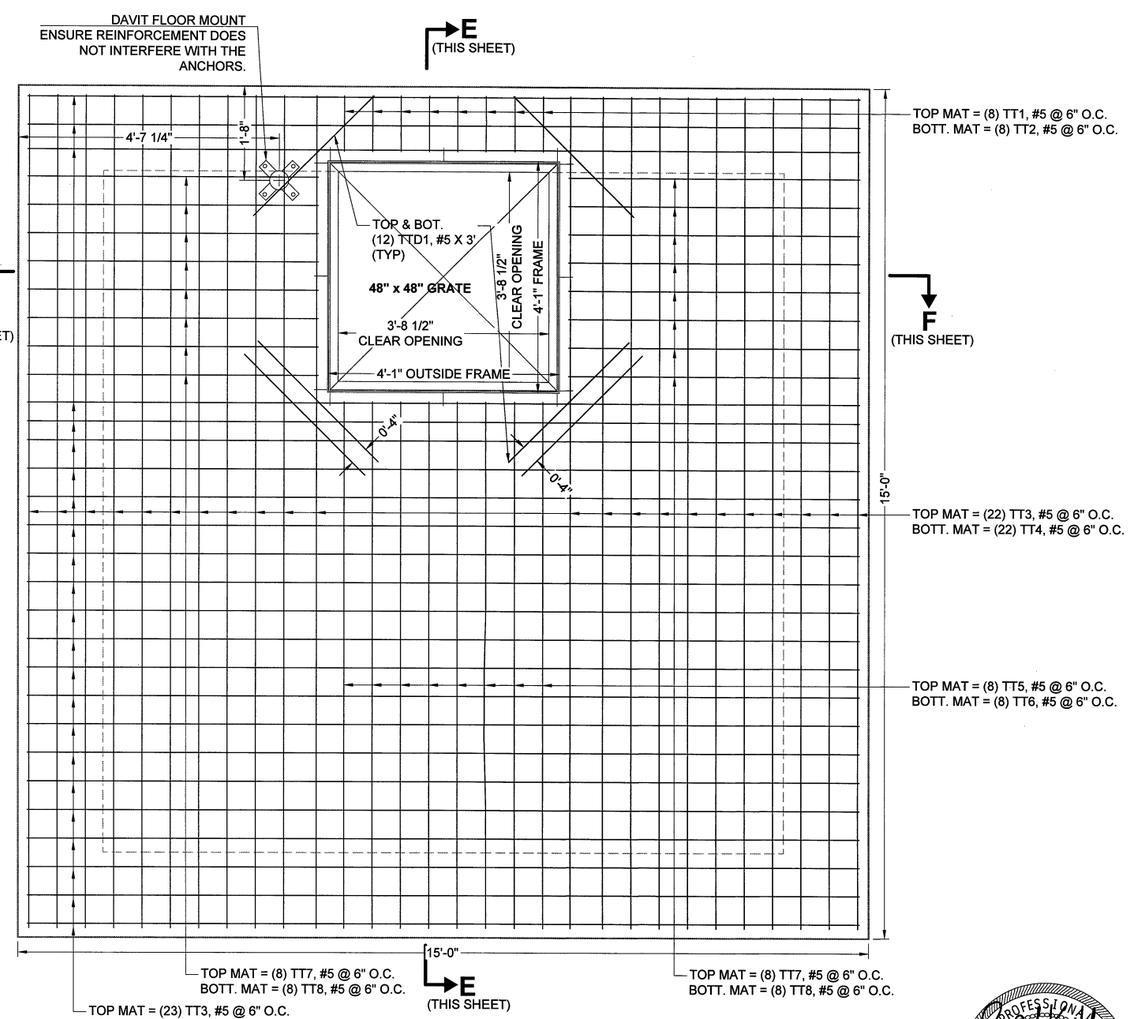


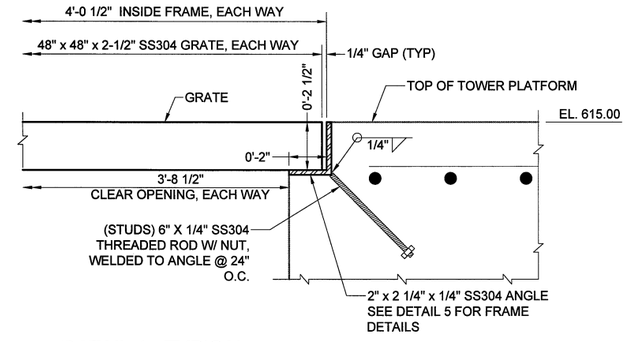
1 TYPICAL TOWER SECTION E-E
SCALE: 3/4" = 1'-0"
(SEE THIS SHEET FOR SECTION LOCATION)



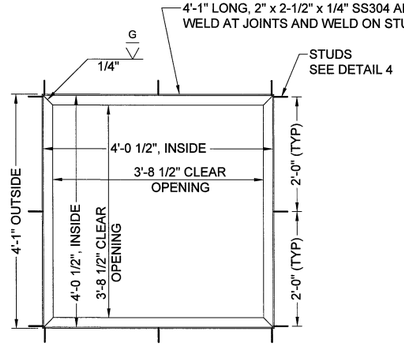
2 SECTION F-F
SCALE: 3/4" = 1'-0"
(SEE THIS SHEET FOR SECTION LOCATION)



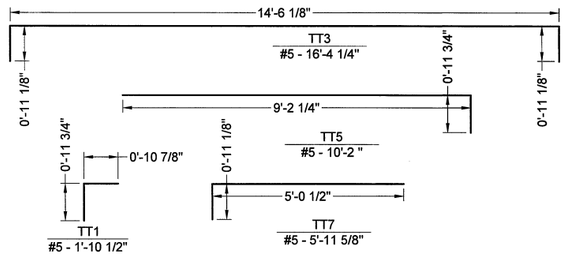
3 TYPICAL TOWER REINFORCING PLAN AT EL. 615.00
SCALE: 3/4" = 1'-0"



4 DETAIL 4 - TYPICAL TOWER SS304 GRATING W/ CAST-IN-PLACE SS304 FRAME
SCALE: 3" = 1'-0"



5 DETAIL 5 - TYPICAL TOWER CAST-IN-PLACE SS304 FRAME
SCALE: 3/4" = 1'-0"



6 TYPICAL TOWER TOP SLAB BENT BARS
SCALE: 1/2" = 1'-0"

Daniel A. Keithline 17348 01/29/2026 OKLAHOMA PROFESSIONAL ENGINEER

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TYPICAL TOWER TOP SLAB DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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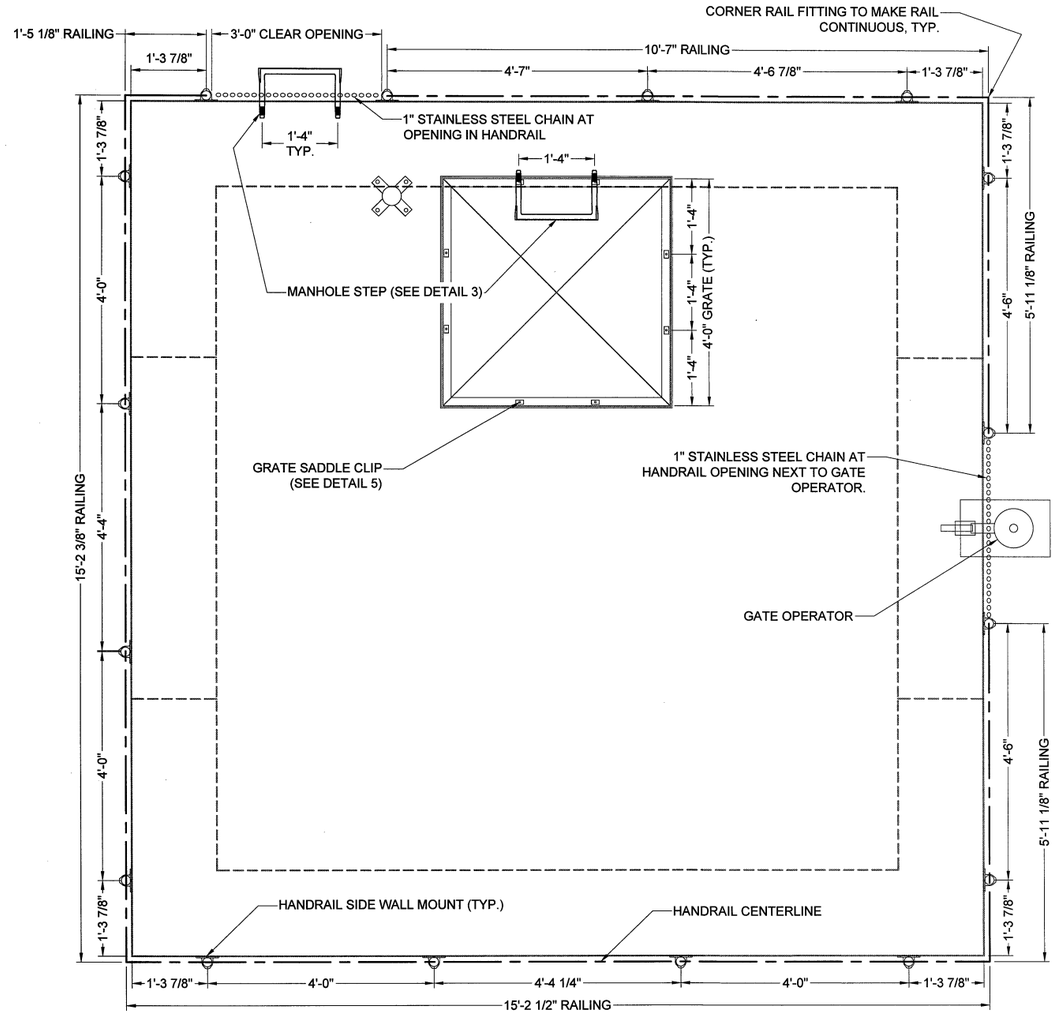
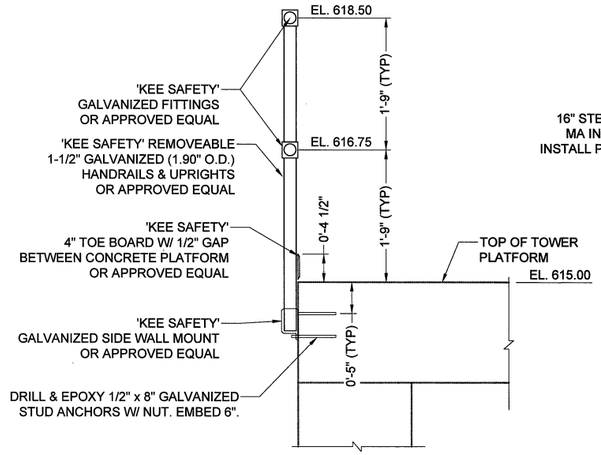
PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

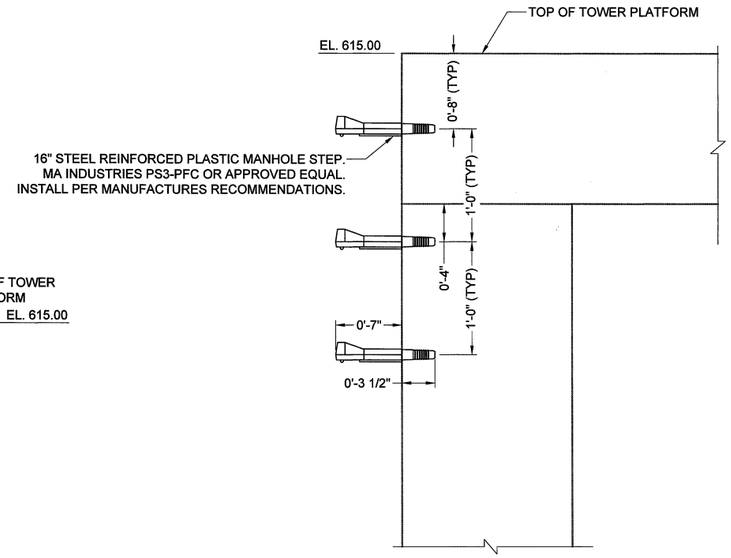
S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resrvr.2023 Improv_W-25-08\03.0_Plans_XS & Stnds\1.2_Plan Sheets\24.33_S2_East Berm Gate Reinforcement.dwg, 1/29/2026 9:20:44 AM



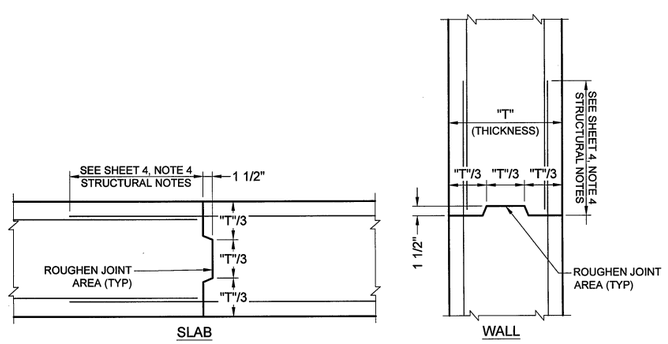
1 TYPICAL TOWER MODULAR HANDRAIL LAYOUT
SCALE: 3/4" = 1'-0"



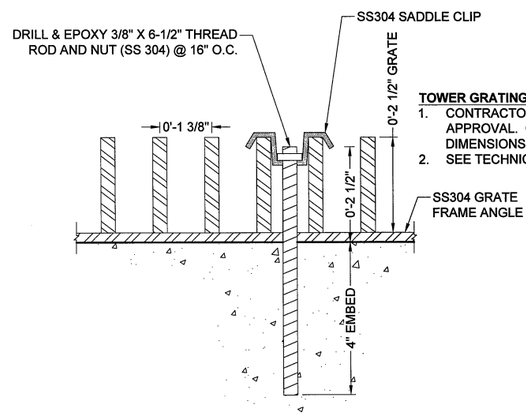
2 TYPICAL TOWER MODULAR HANDRAIL LAYOUT
SCALE: 1" = 1'-0"



3 TYPICAL TOWER STEEL-REINFORCED PLASTIC MANHOLE STEP
SCALE: 1-1/2" = 1'-0"



4 DETAIL 4 - TYPICAL CONSTRUCTION JOINT FOR WALLS AND SLABS
SCALE: 1" = 1'-0"



TOWER GRATING NOTES:
1. CONTRACTOR SHALL SUBMIT SS304 SADDLE CLIP FOR APPROVAL. CONTRACTOR TO VERIFY GRATING GAP DIMENSIONS.
2. SEE TECHNICAL SPECIFICATION 05 53 00.

5 TYPICAL TOWER GRATING SADDLE CLIP
SCALE: NTS (SEE THIS SHEET FOR LOCATION)

PROFESSIONAL ENGINEER LICENSE Daniel A. Keithline 17348 01/29/2026 OKLAHOMA

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HANDRAIL, STEPS, AND JOINT DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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	01-29-2026	APPROVED:
	DESIGNED	DAK	01-29-2026	
PROFILE SCALE	SURVEY	NJR	03-20-2020	
HORIZONTAL: --	PROJECT MGR			
VERTICAL: --	LEAD ENGINEER			DESIGN MANAGER
	FIELD MGR			
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 30 OF 55 SHEETS

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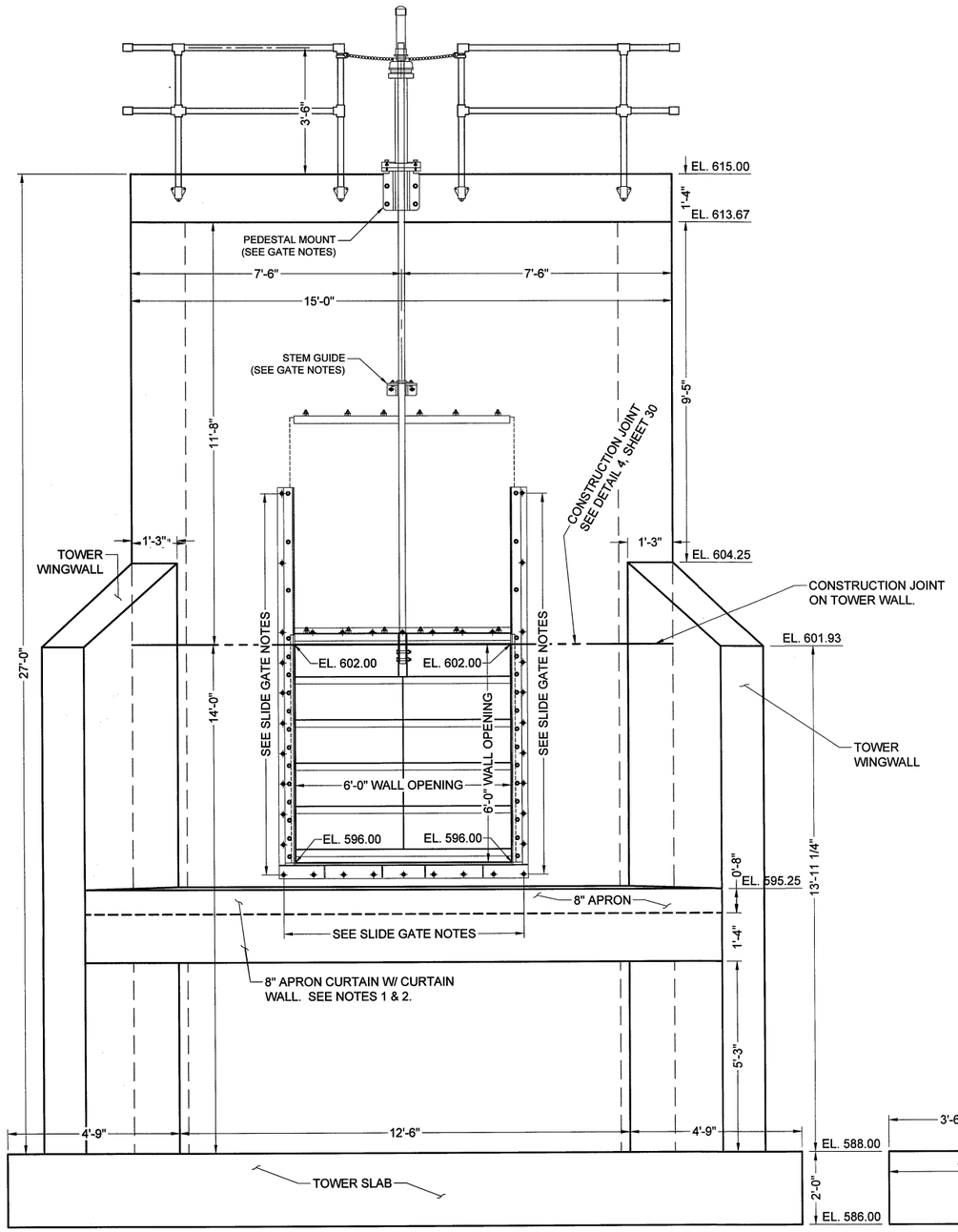
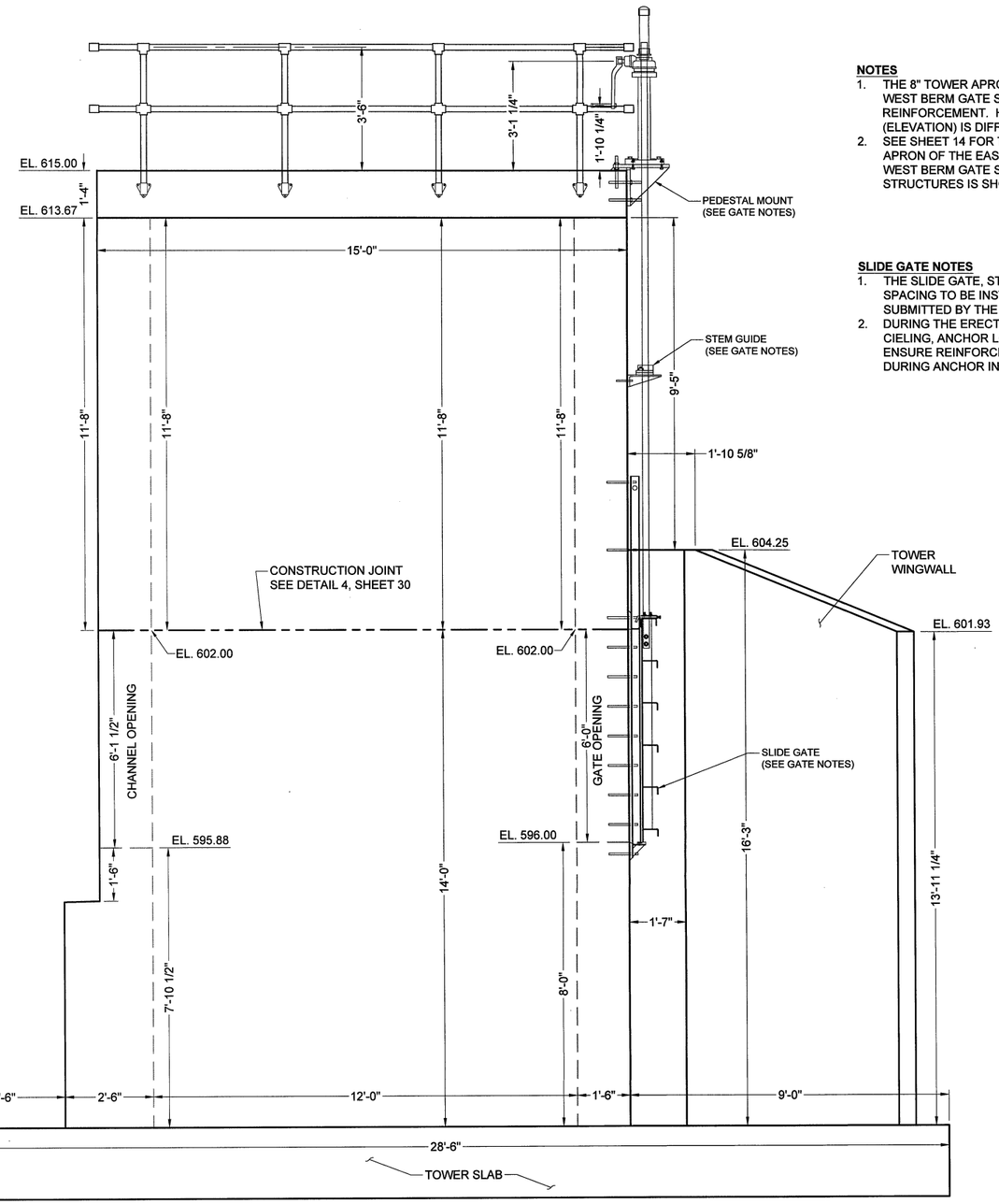


1 TYPICAL TOWER SOUTH ELEVATION OF EAST BERM STRUCTURE
TYPICAL TOWER EAST ELEVATION OF WEST BERM STRUCTURE
SCALE: 1/2" = 1'-0"



2 TYPICAL TOWER WEST ELEVATION OF EAST BERM STRUCTURE
TYPICAL TOWER SOUTH ELEVATION OF WEST BERM STRUCTURE
SCALE: 1/2" = 1'-0"

NOTES
1. THE 8" TOWER APRON ON THE EAST BERM GATE STRUCTURE AND WEST BERM GATE STRUCTURE HAVE THE SAME DIMENSIONS & REINFORCEMENT. HOWEVER, THE VERTICAL PLACEMENT (ELEVATION) IS DIFFERENT DUE TO THE EXISTING GRADE LOCATION.
2. SEE SHEET 14 FOR THE VERTICAL PLACEMENT OF THE 8" TOWER APRON OF THE EAST BERM GATE STRUCTURE AND SHEET 22 FOR WEST BERM GATE STRUCTURE. REINFORCEMENT DETAILS FOR BOTH STRUCTURES IS SHOWN ON SHEET 27, DETAIL 3.

SLIDE GATE NOTES
1. THE SLIDE GATE, STEM GUIDE, AND PEDESTAL MOUNT ANCHOR SPACING TO BE INSTALLED PER APPROVED SHOP DRAWINGS SUBMITTED BY THE CONTRACTOR.
2. DURING THE ERECTION OF FORM WORK FOR TOWER WALLS & CIELING, ANCHOR LOCATIONS SHALL BE MARKED ON THE FORMS TO ENSURE REINFORCEMENT WILL NOT OBSTRUCT DRILLED HOLES DURING ANCHOR INSTALLATION.

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA

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TYPICAL TOWER ELEVATIONS (1 OF 2)

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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	FIELD MGR		1/29/26	
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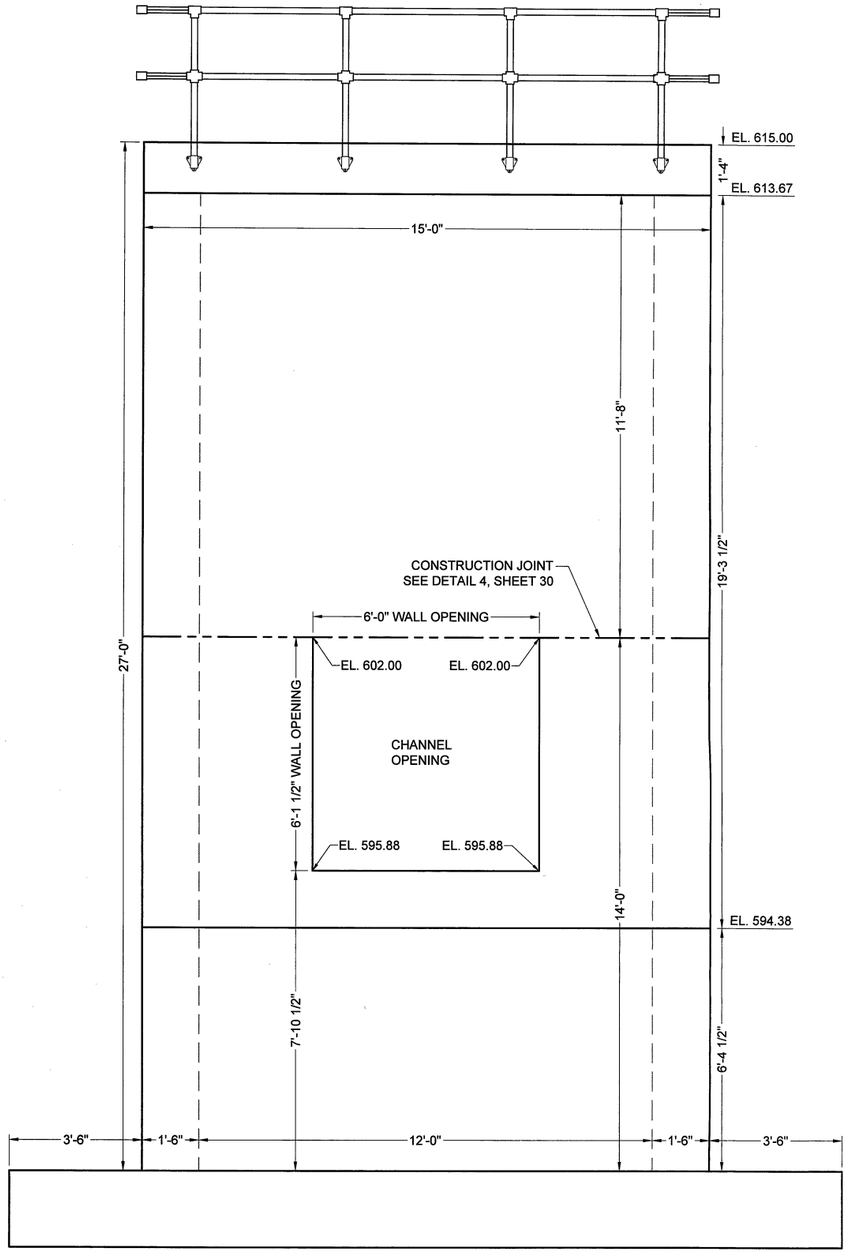
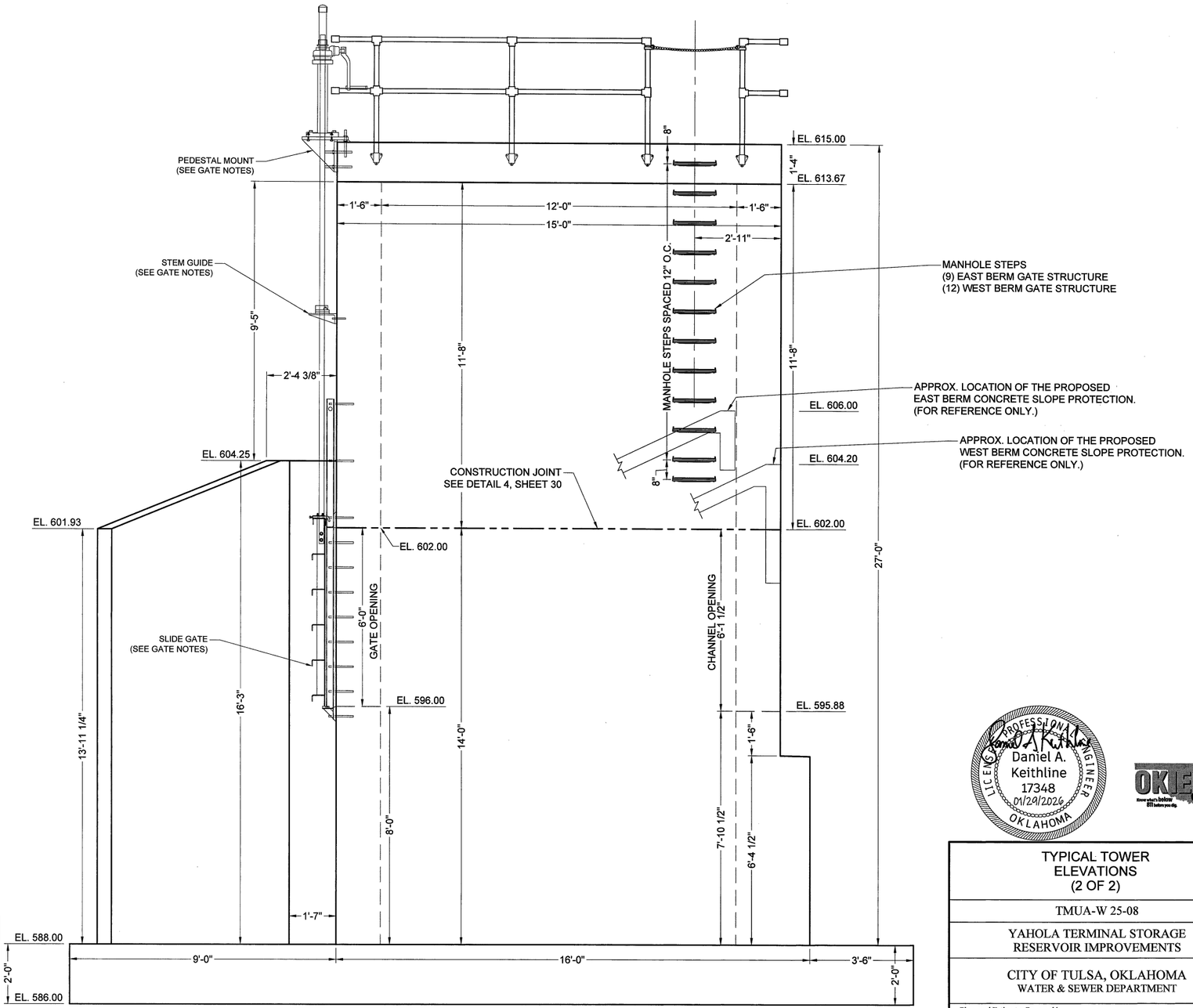
S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resvr.2023 Improv_W-25-08\03.0_Plans, XS & Stnds\1.2_Plan Sheets\24.33_S2_East Berm Gate Reinforcement.dwg, 1/29/2026 9:20:49 AM



TYPICAL TOWER NORTH ELEVATION OF EAST BERM STRUCTURE
TYPICAL TOWER WEST ELEVATION OF WEST BERM STRUCTURE

1 SCALE: 1/2" = 1'-0"

0 6" 1' 2'



TYPICAL TOWER EAST ELEVATION OF EAST BERM STRUCTURE
TYPICAL TOWER NORTH ELEVATION OF WEST BERM STRUCTURE

2 SCALE: 1/2" = 1'-0"

0 6" 1' 2'

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resvr. 2023 Improv_W-25-08\03.0_Plans, XS & Shtds\1.2_Plan Sheets\24.33_S2_East Berm Gate Reinforcement.dwg, 1/29/2026 9:20:51 AM

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA

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TYPICAL TOWER ELEVATIONS (2 OF 2)

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
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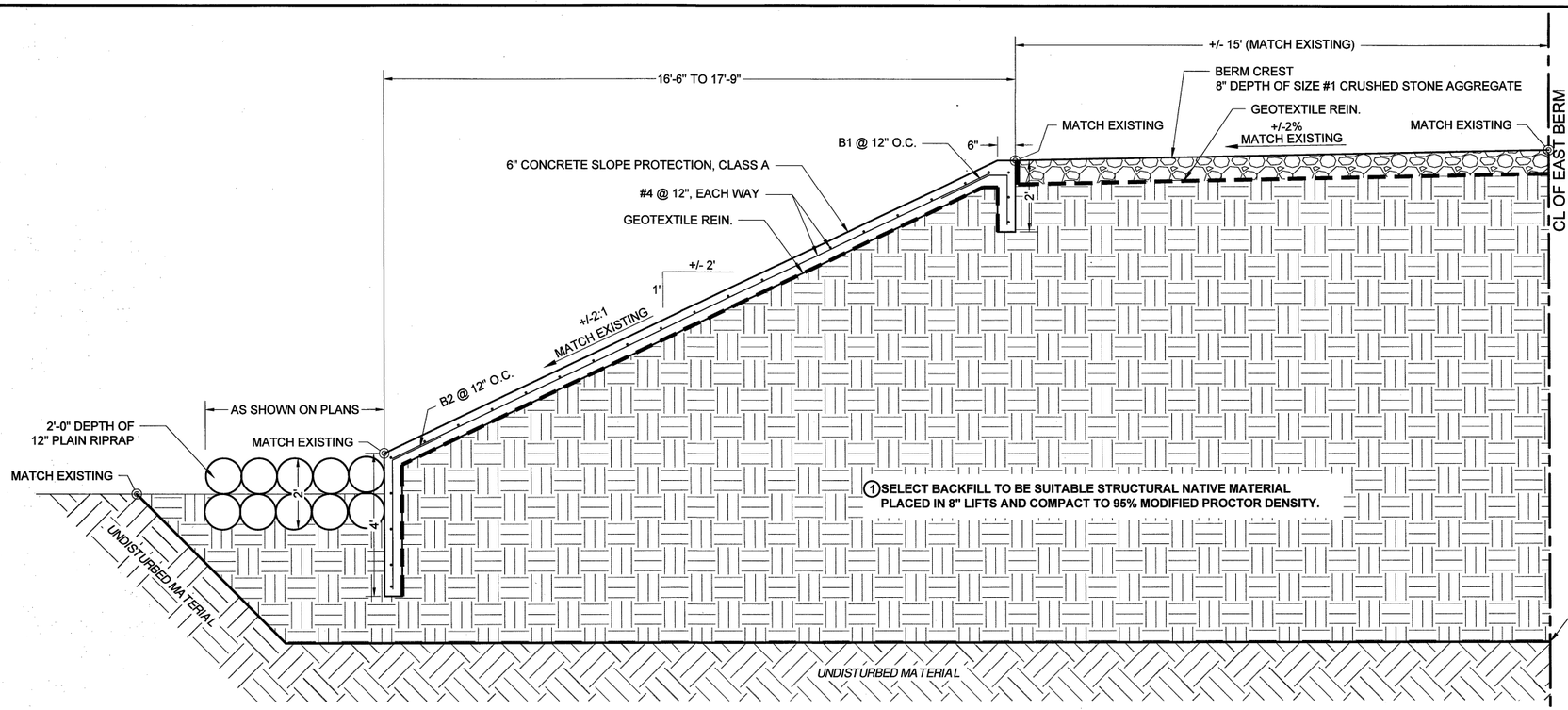
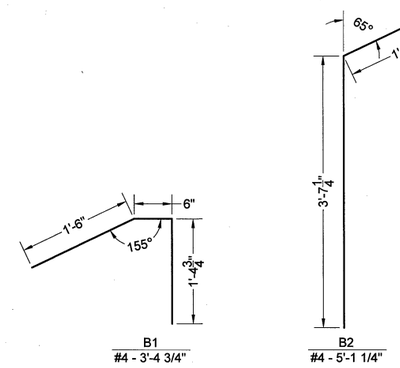


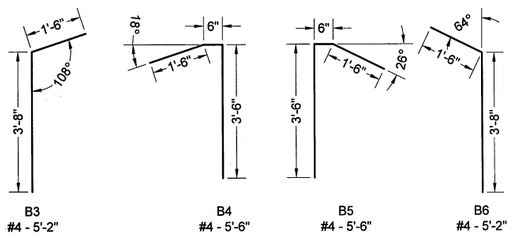
1 TYPICAL EAST BERM RECONSTRUCTION

FULL SIZE SCALE (22x34): 1" = 2'
HALF SIZE SCALE (11x17): 1" = 4'



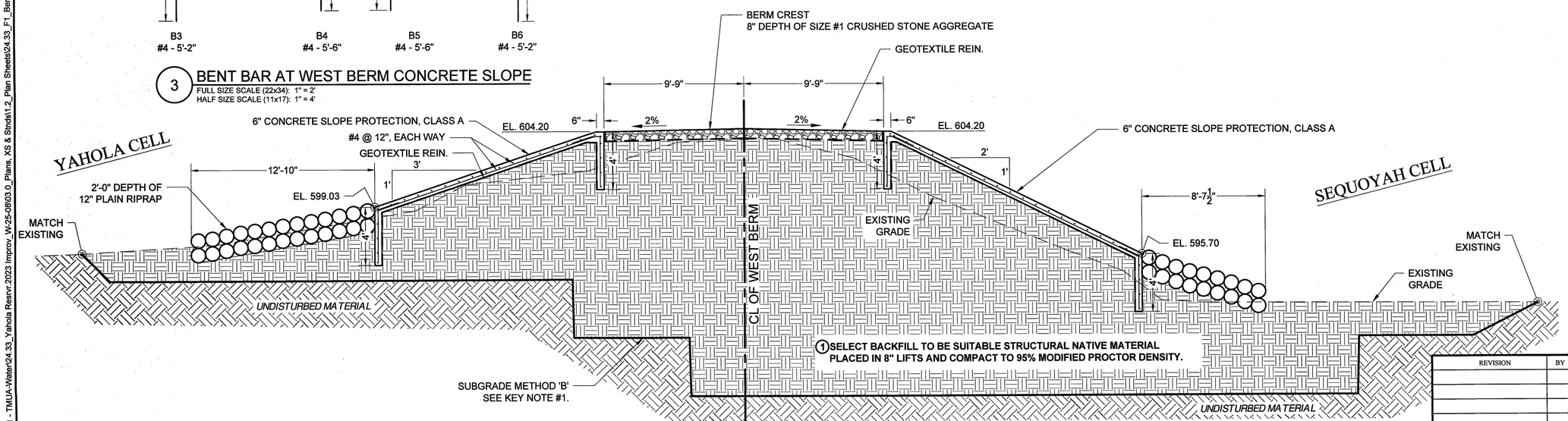
2 BENT BAR AT EAST BERM CONCRETE SLOPE

FULL SIZE SCALE (22x34): 1" = 1'
HALF SIZE SCALE (11x17): 1" = 2'



3 BENT BAR AT WEST BERM CONCRETE SLOPE

FULL SIZE SCALE (22x34): 1" = 2'
HALF SIZE SCALE (11x17): 1" = 4'



4 TYPICAL WEST BERM RECONSTRUCTION

FULL SIZE SCALE (22x34): 1" = 4'
HALF SIZE SCALE (11x17): 1" = 8'

KEY NOTES

1. PRIOR TO BACKFILL OF NATIVE SOIL OR AGG. BASE, PERFORM SUBGRADE METHOD 'B' COMPACTED TO 95% MODIFIED PROCTOR DENSITY. IF 95% COMPACTION IS UNOBTAINABLE, CONTRACTOR SHALL USE OTHER APPROVED MEANS. IF UNDERCUT IS REQUIRED, IT SHALL BE PAID BY UNCLASSIFIED EXCAVATION AND AGGREGATE BASE TYPE A.

Daniel A. Keithline 17348 02/26/2026 OKLAHOMA PROFESSIONAL ENGINEER

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TYPICAL BERM RECONSTRUCTION

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
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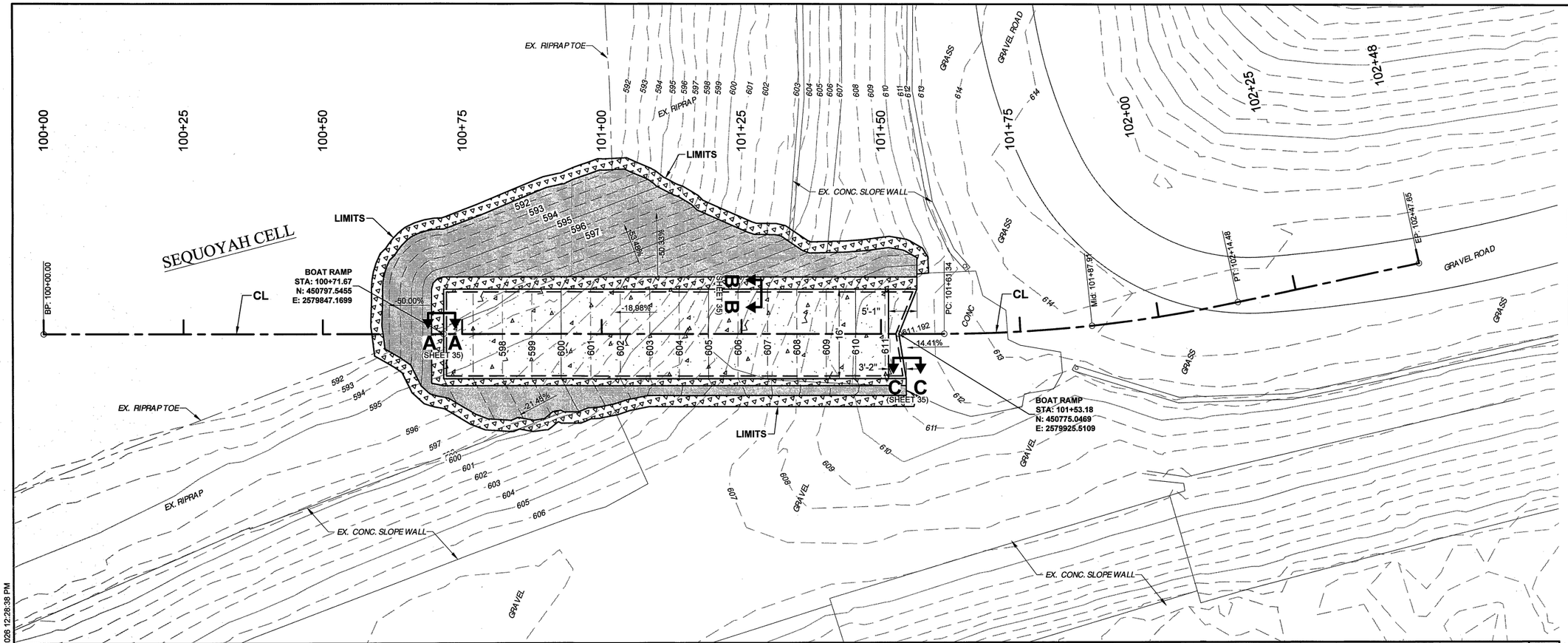
S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resrvr.2023 Improv_W-25-08\03.0_Plans, XS & Shtds\1.2_Plan Sheets\24.33_F1_Berm Restruction Typical.dwg, 3/4/2026 12:28:31 PM

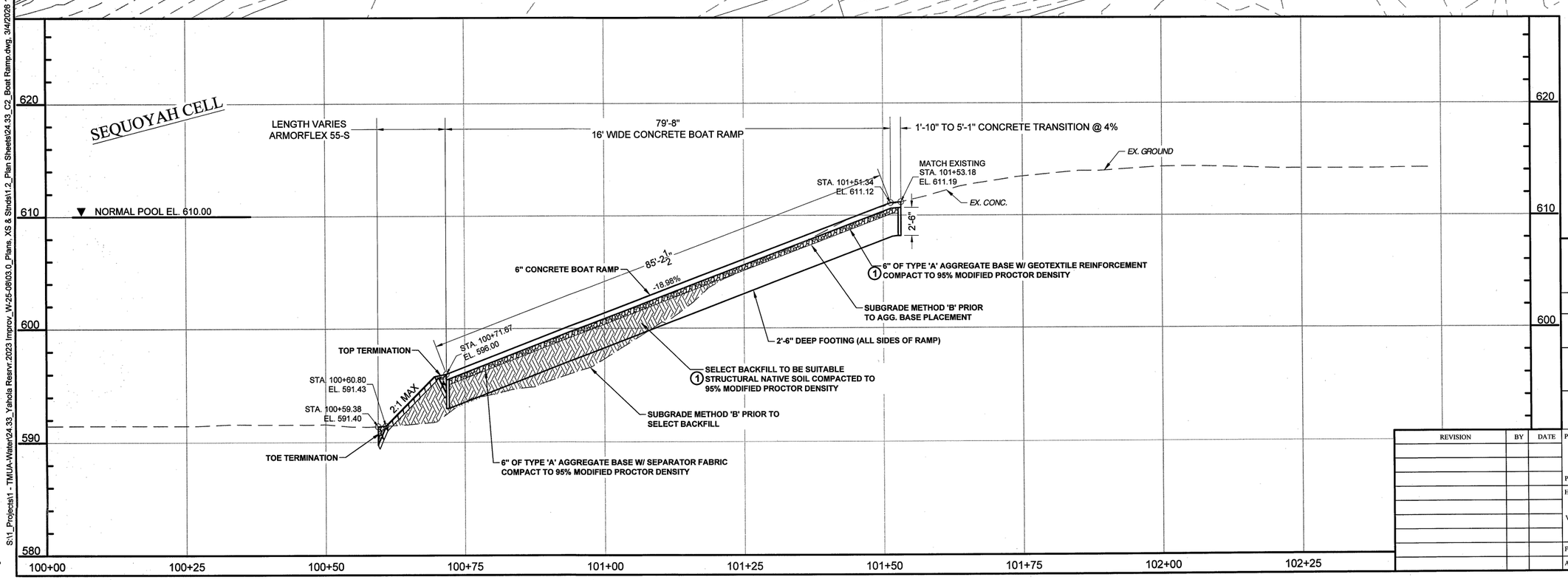


0 10 20

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

LEGEND (PLAN VIEW)

- CONCRETE TOE/TOP TERMINATION
- CONCRETE BOAT RAMP
- CONCRETE ARMORFLEX 55-S W/ FILTER FABRIC OR APPROVED EQUAL



KEY NOTES

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PROFESSIONAL ENGINEER — LICENSED — Daniel A. Keithline 17348 02/26/2026 — OKLAHOMA

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SEQUOYAH CELL BOAT RAMP PLAN & PROFILE

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

Plans and Estimates Prepared by:
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	DESIGNED	DAK	01-29-2026
PROFILE SCALE	SURVEY	NJR	03-20-2020
HORIZONTAL: 1"=10'	PROJECT MGR		03/2026
VERTICAL: 1"=5'	LEAD ENGINEER		3/26
	FIELD MGR		3/26

APPROVED: DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

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PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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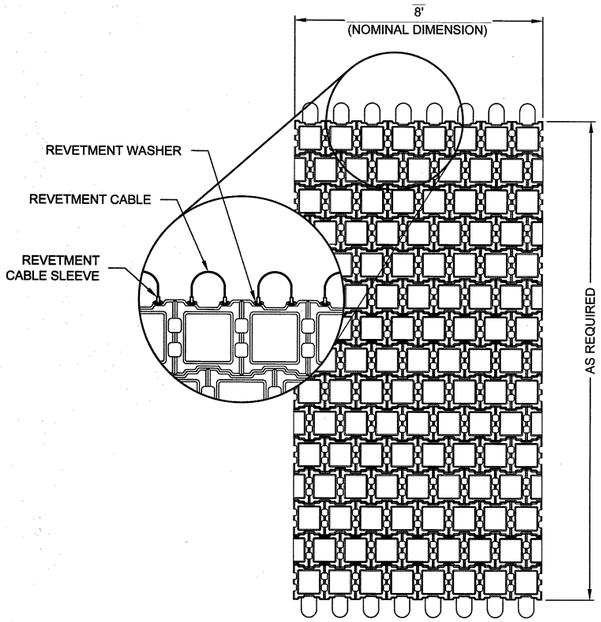
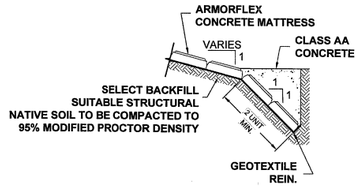
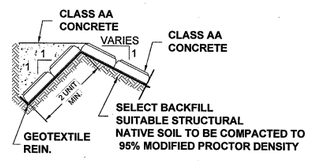


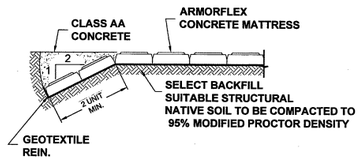
1 TYPICAL ARMORFLEX 55S MAT
SCALE: NTS



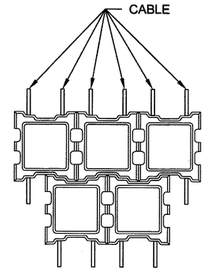
2 ARMORFLEX TOE TERMINATION
SCALE: NTS



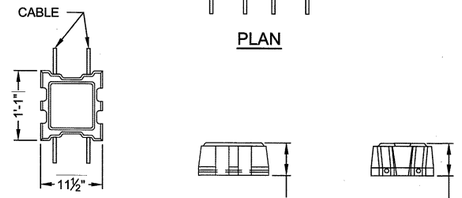
3 ARMORFLEX TOP TERMINATION
SCALE: NTS



4 ARMORFLEX FLANK TERMINATION
SCALE: NTS

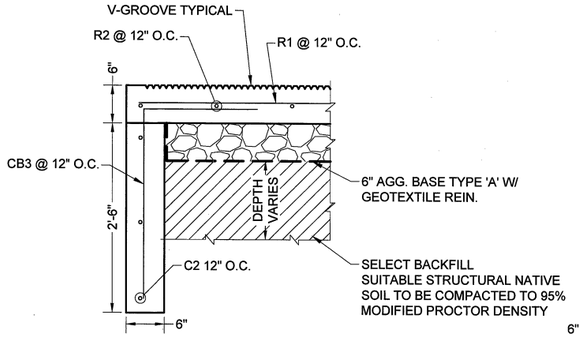


PLAN

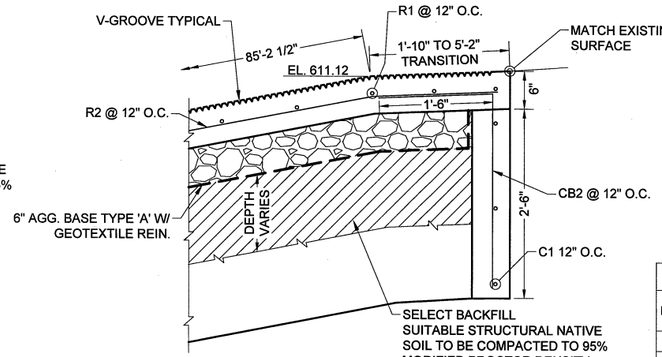


TOP SIDE END

5 TYPICAL ARMORFLEX 55S BLOCK
SCALE: NTS



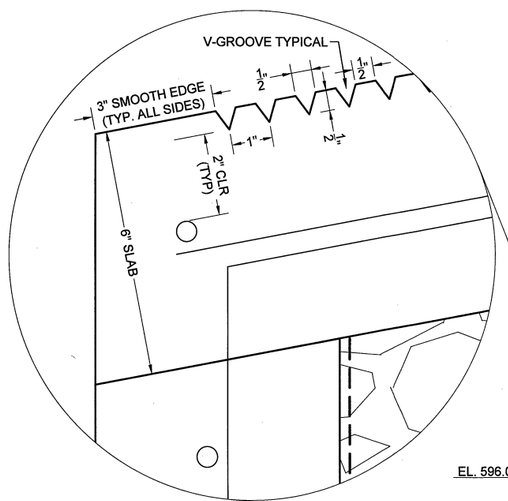
SECTION B-B
6 CONCRETE BOAT RAMP SIDE CURTAIN WALL
SCALE: 1" = 1'
(SEE SHEET 34 FOR SECTION LOCATION)

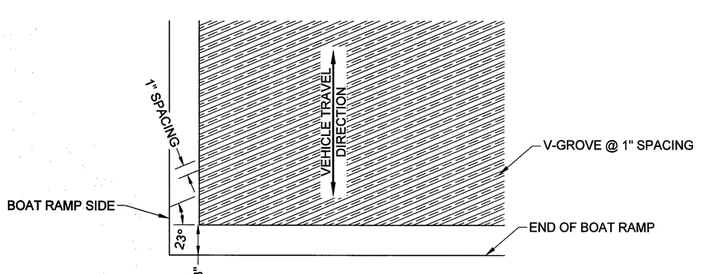


SECTION C-C
7 CONCRETE BOAT RAMP TOP CURTAIN WALL
SCALE: 1" = 1'
(SEE SHEET 34 FOR SECTION LOCATION)

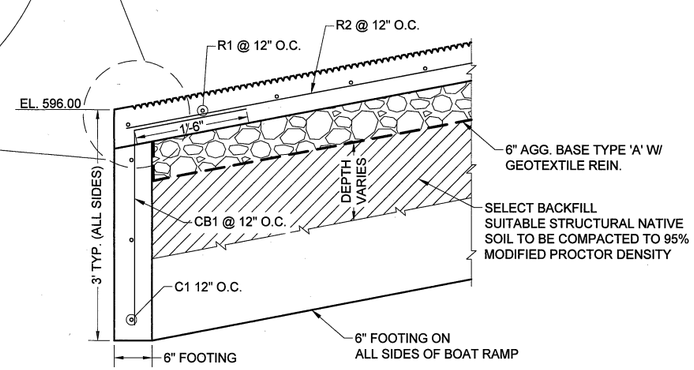
SEQUOYAH BOAT RAMP BAR LIST

MARK	SIZE	LBS/FT	QTY	FORM	LENGTH	TOTAL WEIGHT LBS	NOTES
C1	#4	0.668	6	STR	15.67'	62.81	
C2	#4	0.668	6	STR	85.78' MAX.	343.81	82.60' TO 85.78'
CB1	#4	0.668	16	BNT	4.04'	43.18	
CB2	#4	0.668	162	BNT	4.04'	437.19	
CB3	#4	0.668	16	BNT	4.00'	42.75	
R1	#4	0.668	83	STR	15.67'	868.81	
R2	#4	0.668	16	STR	85.78' MAX.	916.82	82.60' TO 85.78'
					TOTAL	2,715.	

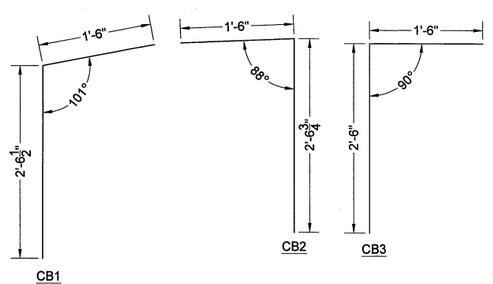




8 TYPICAL V-GROOVE FINISH ANGLE (TRACTION GRID)
SCALE: NTS



SECTION A-A
9 CONCRETE BOAT RAMP BOTTOM CURTAIN WALL
SCALE: 1" = 1'
(SEE SHEET 34 FOR SECTION LOCATION)



10 BENT BAR
CONCRETE BOAT RAMP
SCALE: 1" = 1'

OKIE 811

SEQUOYAH CELL BOAT RAMP DETAILS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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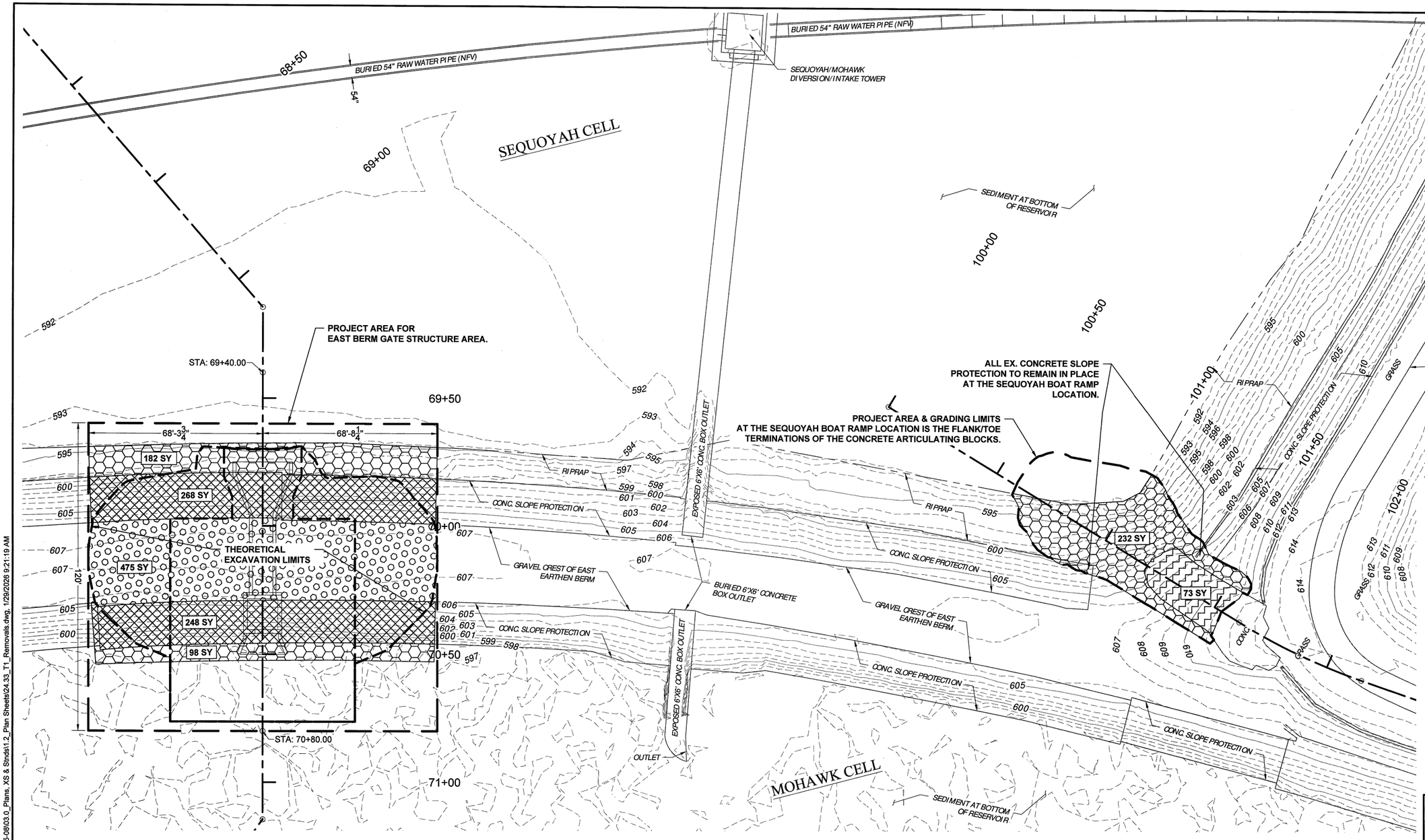

LEGEND

- REMOVAL OF CONCRETE SLOPE PROTECTION
- RELOCATE EXISTING RIPRAP TO NEARBY BERM TOE (UNCLASSIFIED EXCAVATION)
- REMOVAL OF CONCRETE PAVEMENT
- REMOVE EXISTING BERM CREST GRAVEL (UNCLASSIFIED EXCAVATION)

REMOVAL NOTES (THIS SHEET):

1. REMOVAL OF CONCRETE SLOPE PROTECTION CORRESPONDS WITH THE CONTRACTORS PLAN FOR EQUIPMENT ACCESS AND TRENCH WALLS DURING EXCAVATION. ANY DAMAGE TO THE EXISTING CONCRETE SLOPE PROTECTION OUTSIDE THE PROJECT AREA SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
2. REMOVAL PLAN AND ACCESS PLAN SHALL BE SUBMITTED TO FIELD ENGINEERING FOR APPROVAL PRIOR TO WORK. CONTRACTOR SHALL PRESERVE AS MUCH OF THE EXISTING CONCRETE SLOPE PROTECTION, RIPRAP, AND EARTHEN BERM AS POSSIBLE.
3. REMOVAL QUANTITIES ARE CALCULATED TO THE PROJECT AREA LIMITS AT EACH SITE. FIELD MEASUREMENTS ARE REQUIRED FOR REMOVAL PAY ITEMS FOR EACH PAY REQUEST.
4. THE EXISTING RIPRAP REMOVED WITHIN THE PROJECT AREA SHALL BE PLACED ALONG THE TOE OF THE NEAREST EXISTING CONCRETE SLOPE PROTECTION THAT IS OUTSIDE THE PROJECT AREA.

PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 01/29/2026 — LICENSED OKLAHOMA

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REMOVALS EAST BERM GATE & SEQUOYAH BOAT RAMP

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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

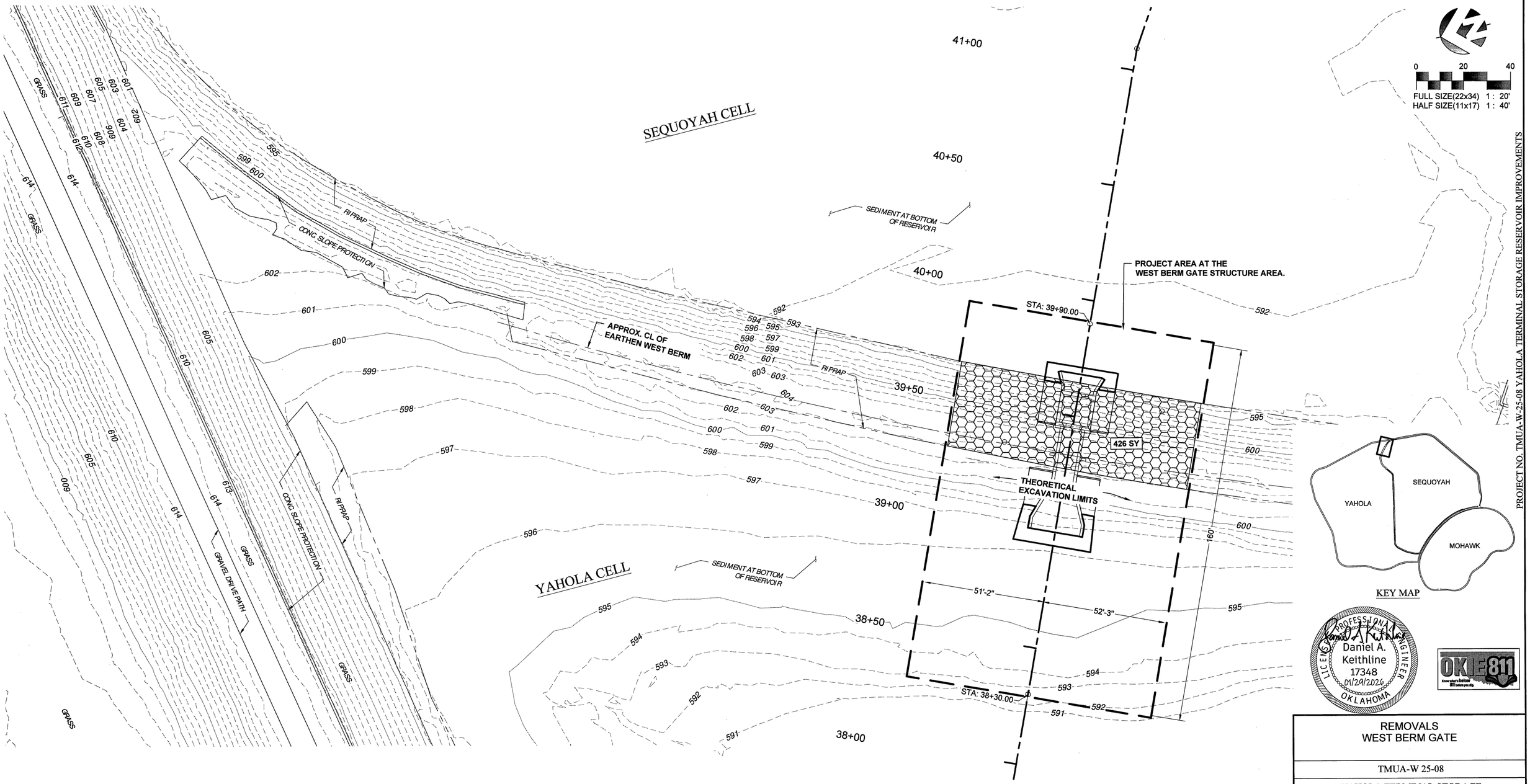
PLAN SCALE 1"=20'
PROFILE SCALE
HORIZONTAL: --
VERTICAL: --

DRAWN	ZLM	01-29-2026
DESIGNED	DAK	01-29-2026
SURVEY	NJR	03-20-2020
PROJECT MGR		1/29/2026
LEAD ENGINEER		1/29/26
FIELD MGR		1/29/26

APPROVED:
DESIGN MANAGER
FILE: DRAWING:
DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284
SHEET 36 OF 55 SHEETS

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resvr. 2023 Improv_W-25-08\03.0_Plans_XS & Stnds\1.2_Plan Sheets\24.33_T1_Removals.dwg, 1/29/2026 9:21:19 AM



REMOVAL NOTES (THIS SHEET):

1. REMOVALS CORRESPOND WITH THE CONTRACTORS PLAN FOR EQUIPMENT ACCESS AND TRENCH WALLS DURING EXCAVATION. ANY DAMAGE TO THE EXISTING CONCRETE SLOPE PROTECTION OUTSIDE THE PROJECT AREA SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
2. REMOVAL PLAN AND ACCESS PLAN SHALL BE SUBMITTED TO FIELD ENGINEERING FOR APPROVAL PRIOR TO WORK. CONTRACTOR SHALL PRESERVE AS MUCH OF THE EXISTING RIPRAP AND EARTHEN BERM AS POSSIBLE.
3. REMOVAL QUANTITIES ARE CALCULATED TO THE PROJECT AREA LIMITS AT EACH SITE. FIELD MEASUREMENTS ARE REQUIRED FOR REMOVAL PAY ITEMS FOR EACH PAY REQUEST.
4. THE EXISTING RIPRAP REMOVED WITHIN THE PROJECT AREA SHALL BE STOCKPILED NEARBY TO BE REUSED.

LEGEND
STOCKPILE EXISTING RIPRAP NEARBY TO REUSE (UNCLASSIFIED EXCAVATION)

Daniel A. Keithline 17348 01/29/2026 OKLAHOMA PROFESSIONAL ENGINEER

OKIE 811 Know what's below. Call before you dig.

REMOVALS
WEST BERM GATE

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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HORIZONTAL: --	PROJECT MGR		01/29/26	
VERTICAL: --	LEAD ENGINEER		1/29/26	DESIGN MANAGER
	FIELD MGR		1/29/26	
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 37 OF 55 SHEETS

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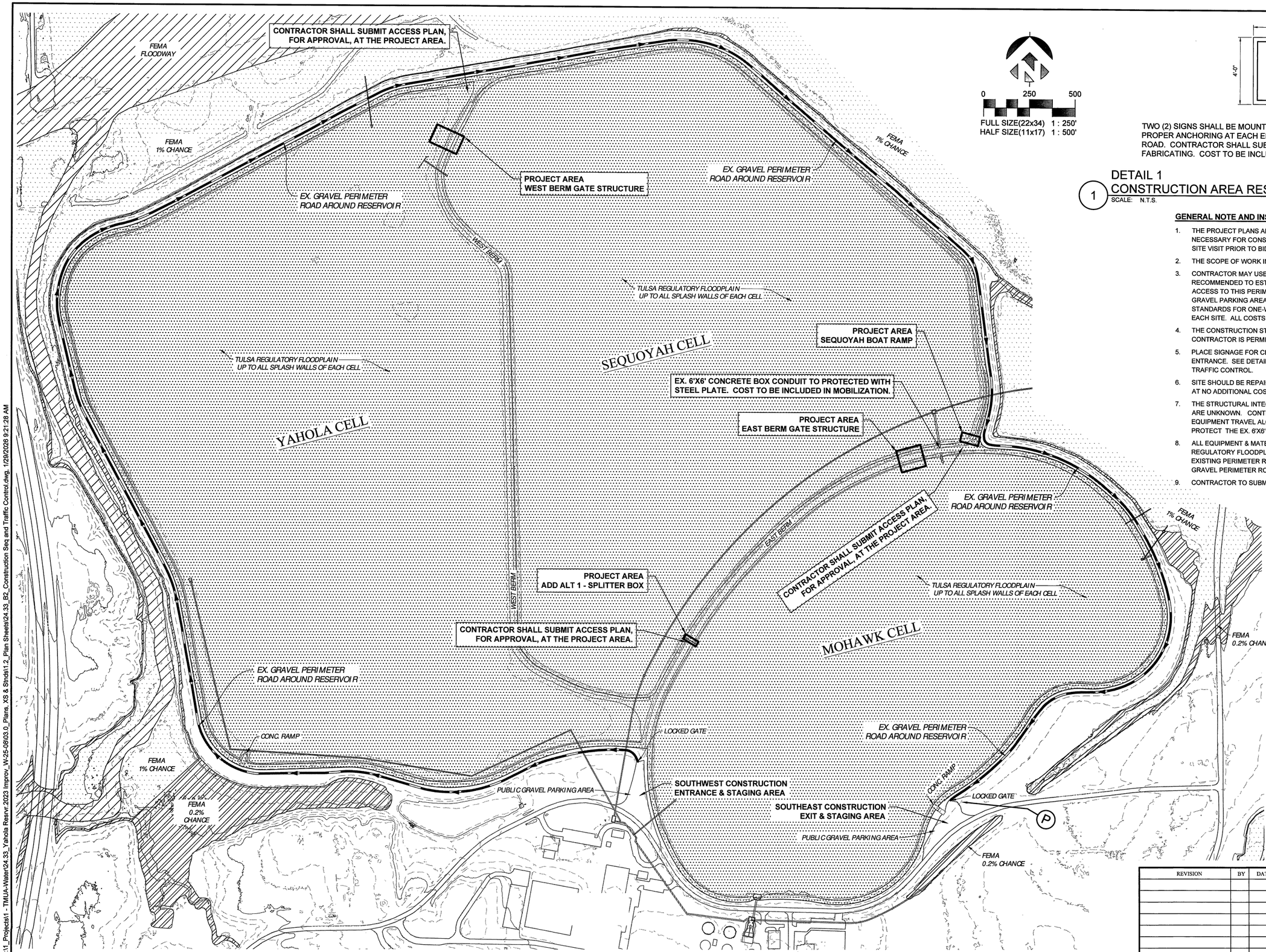
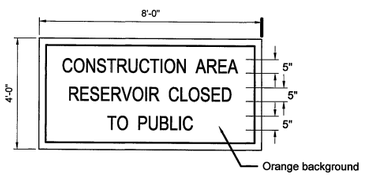


0 250 500

FULL SIZE(22x34) 1 : 250'
HALF SIZE(11x17) 1 : 500'



TWO (2) SIGNS SHALL BE MOUNTED TO A TYPE 3 BARRIER WITH FLASHING LIGHTS AND PROPER ANCHORING AT EACH ENTRANCE/EXIT TO THE EXISTING PERIMETER GRAVEL ROAD. CONTRACTOR SHALL SUBMIT SIGN LAYOUT FOR APPROVAL PRIOR TO FABRICATING. COST TO BE INCLUDED CONSTRUCTION TRAFFIC CONTROL.

1 DETAIL 1 CONSTRUCTION AREA RESERVOIR CLOSED TO PUBLIC SIGN

SCALE: N.T.S.

GENERAL NOTE AND INSTRUCTIONS:

1. THE PROJECT PLANS AND SPECIFICATIONS DO NOT INCLUDE PROVISIONS WHICH MAY BE NECESSARY FOR CONSTRUCTION SAFETY. THE CONTRACTOR IS REQUIRED TO PERFORM A SITE VISIT PRIOR TO BIDDING THE PROJECT
2. THE SCOPE OF WORK INCLUDES FOUR WORK AREAS.
3. CONTRACTOR MAY USE THE EXISTING GRAVEL RESERVOIR PERIMETER ROAD. IT IS RECOMMENDED TO ESTABLISH ONE-WAY TRAFFIC DUE TO ROAD WIDTH CONSTRAINT. ACCESS TO THIS PERIMETER ROAD SHALL BE GAINED THROUGH THE TWO (2) EXISTING GRAVEL PARKING AREAS. TRAFFIC SHALL TRAVEL CLOCKWISE AND MEET MUTCD STANDARDS FOR ONE-WAY TRAFFIC. FURNISH AND INSTALL TWO ONE-WAY TRAFFIC AT EACH SITE. ALL COSTS TO BE INCLUDED IN CONSTRUCTION TRAFFIC CONTROL.
4. THE CONSTRUCTION STAGING AREAS WILL BE FENCED AND SECURED FROM THE PUBLIC. CONTRACTOR IS PERMITTED TO OCCUPY 50% OF EACH PUBLIC GRAVEL PARKING AREAS.
5. PLACE SIGNAGE FOR CLOSED CONSTRUCTION AREAS AT EACH STAGING AREA OR ENTRANCE. SEE DETAIL 1 THIS SHEET. ALL COSTS TO BE INCLUDED IN CONSTRUCTION TRAFFIC CONTROL.
6. SITE SHOULD BE REPAIRED TO THE EXISTING CONDITION AFTER EACH SIGN IS REMOVED AT NO ADDITIONAL COST.
7. THE STRUCTURAL INTEGRITY OF THE EXISTING SUBMERGED BERMS BETWEEN THE CELLS ARE UNKNOWN. CONTRACTOR SHALL PROCEED WITH CAUTION REGARDING HEAVY EQUIPMENT TRAVEL ALONG THE TOP OF THE BERM. INSTALL STEEL PLATE ON BERM TO PROTECT THE EX. 6'X6' BOX CONDUIT. COST TO BE INCLUDED IN MOBILIZATION.
8. ALL EQUIPMENT & MATERIAL SHALL NOT BE STORED IN THE FLOODPLAIN. TULSA REGULATORY FLOODPLAIN IS BETWEEN THE RESERVOIR SPLASH WALLS ALONG THE EXISTING PERIMETER ROAD. THERE IS NOT A REGULATORY FLOODPLAIN ALONG THE GRAVEL PERIMETER ROAD AND THE GRAVEL PARKING AREA.
9. CONTRACTOR TO SUBMIT ACCESS PLAN FOR EACH PROJECT AREA TO FIELD ENGINEERING.

(P) PROJECT SIGN PER COT STANDARD 102

RECOMMENDED ONE-WAY TRAFFIC ON THE EXISTING GRAVEL PERIMETER ROAD

PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 01/29/2026 — OKLAHOMA

OKIE811

STAGING & TRAFFIC SEQUENCE

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

Plans and Estimates Prepared by:
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VERTICAL: N/A	LEAD ENGINEER		
	FIELD MGR		
FILE:	DRAWING:		

APPROVED: DESIGN MANAGER

DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284

SHEET 38 OF 55 SHEETS

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STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: NORTHERN HALF OF THE WEST BERM BETWEEN THE YAHOLA CELL & SEQUOYAH CELL. EAST BERM BETWEEN THE SEQUOYAH CELL & MOHAWK CELL.

PROJECT DESCRIPTION: INSTALL ONE (1) EAST BERM GATE STRUCTURE BETWEEN THE MOHAWK & SEQUOYAH CELL AND ONE(1) WEST BERM GATE STRUCTURE BETWEEN THE YAHOLA & SEQUOYAH CELL. ALSO, INCLUDES INSTALLING BOAT RAMP FOR ACCESS INTO THE SEQUOYAH CELL. ADD ALTERNATE 1 INCLUDES REPLACING THE VALVES IN THE SPLITTER BOX LOCATED ON THE BERM BETWEEN THE SEQUOYAH & MOHAWK CELL.

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES:

- CONTRACTOR DETERMINES ACCESS PATH AND INSTALLS.
- INSTALL SILT FENCE DURING NON-WORK HOURS.
- BACKFILL WORK AREA
- INSTALL CONCRETE SLOPE PROTECTION ALONG BERMS THAT HAVE BEEN DISTURBED.
- INSTALL RIPRAP AT TOES OF THE NEW CONCRETE SLOPE PROTECTION.
- INSTALL ARTICULATING CONCRETE BLOCKS ALONG SLOPES AT THE SEQUOYAH BOAT RAMP.
- REPAIR EXISTING EROSION CONTROL ALONG RESERVOIR PERIMETER ROAD IF DISTURBED.

SOIL TYPE: LEAN CLAY, LEAN CLAY W/ SAND, (CL); FAT CLAY (CH)

TOTAL AREA OF THE CONSTRUCTION SITE: 0.86 A.C.

ESTIMATED AREA TO BE DISTURBED: 0.86 A.C.

OFFSITE AREA TO BE DISTURBED: (FOR CONTRACTOR USE)

TOTAL IMPERVIOUS AREA PRE-CONSTRUCTION: NOT APPLICABLE (IN TERMINAL STORAGE RESERVOIR)

TOTAL IMPERVIOUS AREA POST-CONSTRUCTION: NOT APPLICABLE (IN TERMINAL STORAGE RESERVOIR)

POST-CONSTRUCTION RUNOFF COEFFICIENT OF THE SITE: NOT APPLICABLE (IN TERMINAL STORAGE RESERVOIR)

LATITUDE & LONGITUDE OF CENTER OF PROJECT: 36.220202, -95.928370

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: BIRD CREEK

SENSITIVE WATERS OR WATERSHEDS:	YES [ ]	NO [X]
303(d) IMPAIRED WATERS:	YES [X]	NO [ ]
IF YES, LIST IMPAIRMENT:	pH, TDS, NH_3	
LOCATED IN A TMDL:	YES [ ]	NO [X]
LAKE THUNDERBIRD TMDL:	[ ]	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
- [ ] 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
- [X] TEMPORARY SEDIMENT REMOVAL
- [X] RIP RAP
- [ ] INLET PROTECTION
- [ ] TEMPORARY BRUSH SEDIMENT BARRIERS
- [ ] SANDBAG BERMS
- [ ] TEMPORARY STREAM CROSSINGS
- [X] 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, NOVEMBER 1, 2023.

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.

PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 01/29/2026 — OKLAHOMA

OKIE811

STORMWATER MANAGEMENT PLAN

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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VERTICAL:	LEAD ENGINEER	DW	8/26
	FIELD MGR		2/26

APPROVED: DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

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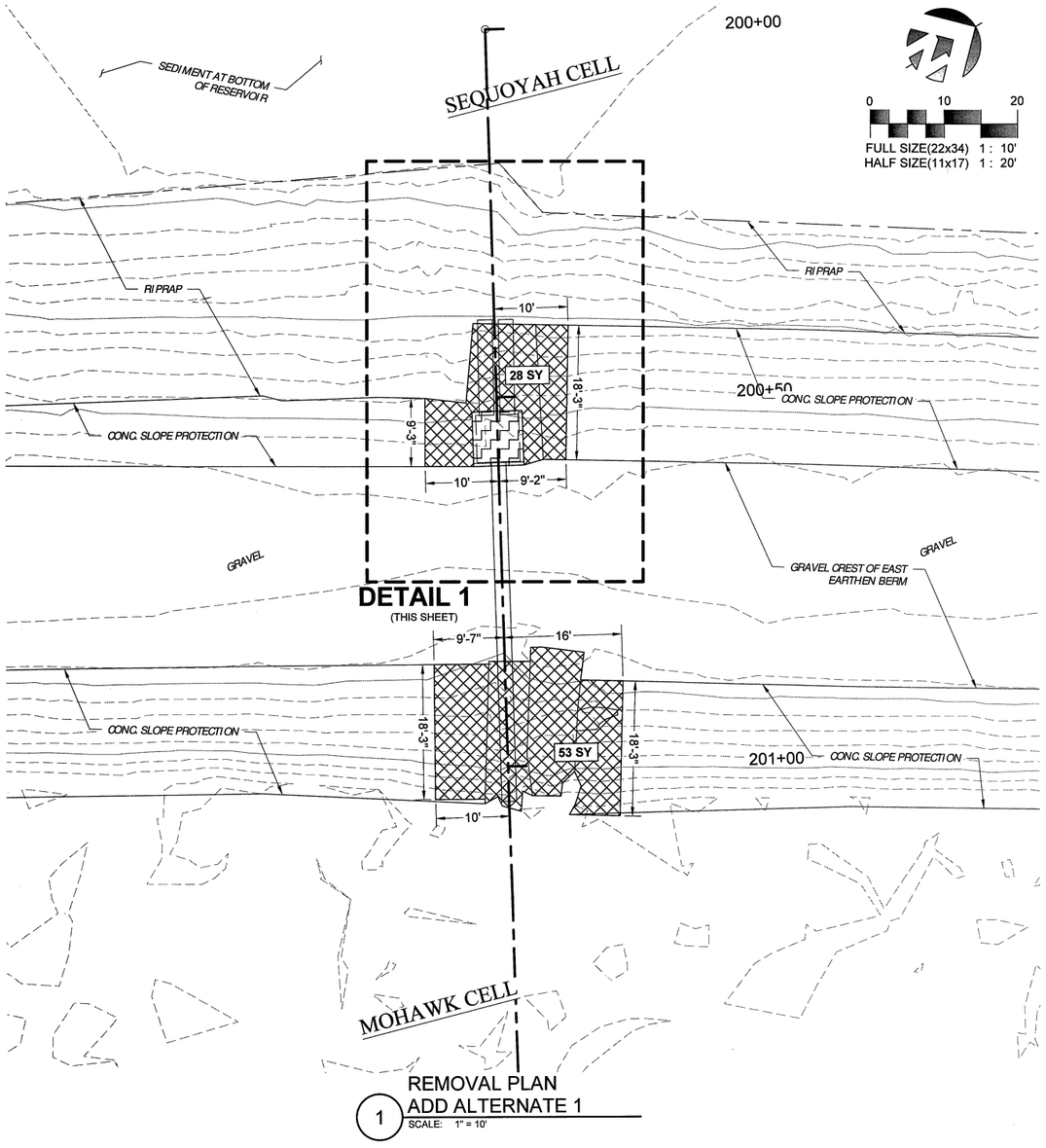
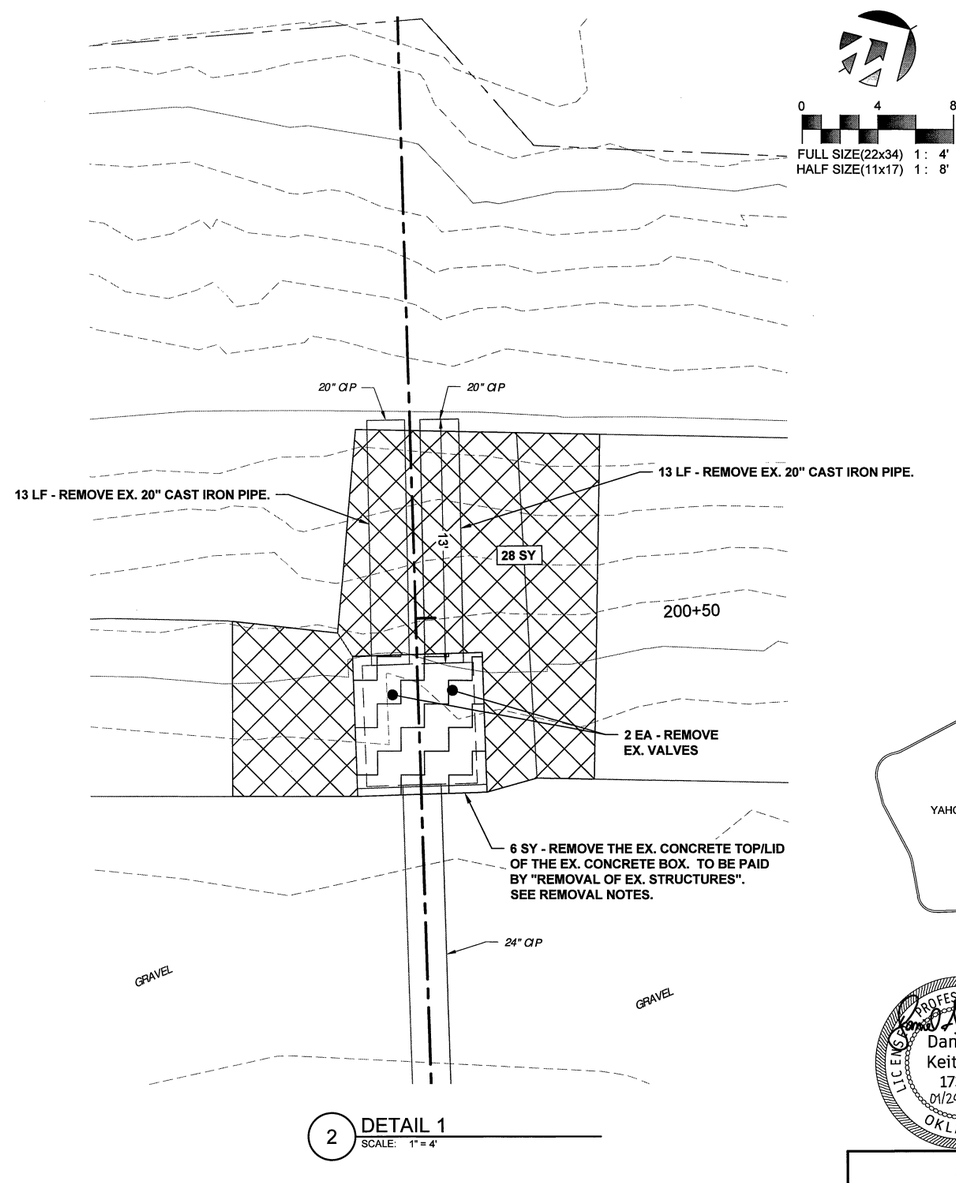


1 REMOVAL PLAN
ADD ALTERNATE 1
SCALE: 1" = 10'



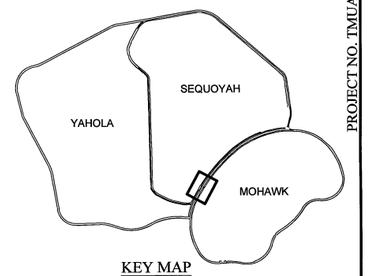
2 DETAIL 1
SCALE: 1" = 4'

REMOVAL NOTES (THIS SHEET):

1. CONTRACTOR TO SUBMIT PHOTOGRAPHS TO FIELD ENGINEERING OF THE INTERIOR SPLITTER BOX PRIOR TO ALL REMOVAL WORK. THIS WILL ALLOW THE FIELD ENGINEERING TO VERIFY THE PROPOSED REMOVAL AND INSTALLATION IS ADEQUATE.
2. REMOVAL OF CONCRETE SLOPE PROTECTION CORRESPONDS WITH THE CONTRACTORS PLAN FOR EQUIPMENT ACCESS AND TRENCH WALLS DURING EXCAVATION. ANY DAMAGE TO THE EXISTING CONCRETE SLOPE PROTECTION OUTSIDE OF THE REMOVAL EXTENTS SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
3. REMOVAL PLAN AND ACCESS PLAN SHALL BE SUBMITTED TO FIELD ENGINEERING FOR APPROVAL PRIOR TO WORK. CONTRACTOR SHALL PRESERVE AS MUCH OF THE EXISTING CONCRETE SLOPE PROTECTION, RIPRAP, AND EARTHEN BERM AS POSSIBLE.
4. REMOVAL QUANTITIES ARE CALCULATED TO THE MAXIMUM REMOVAL EXTENTS. FIELD MEASUREMENTS ARE REQUIRED FOR REMOVAL PAY ITEMS FOR EACH PAY REQUEST.
5. THE EXISTING RIPRAP REMOVED WITHIN THE MAXIMUM EXTENTS SHALL BE PLACED ALONG THE TOE OF THE NEAREST EXISTING CONCRETE SLOPE PROTECTION THAT IS OUTSIDE THE EXTENTS.

LEGEND

- REMOVAL OF CONCRETE SLOPE PROTECTION
- REMOVAL OF EXISTING RIPRAP
- REMOVAL OF EXISTING STRUCTURES (LID ONLY)



KEY MAP

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA

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ADD ALTERNATE 1
REMOVALS

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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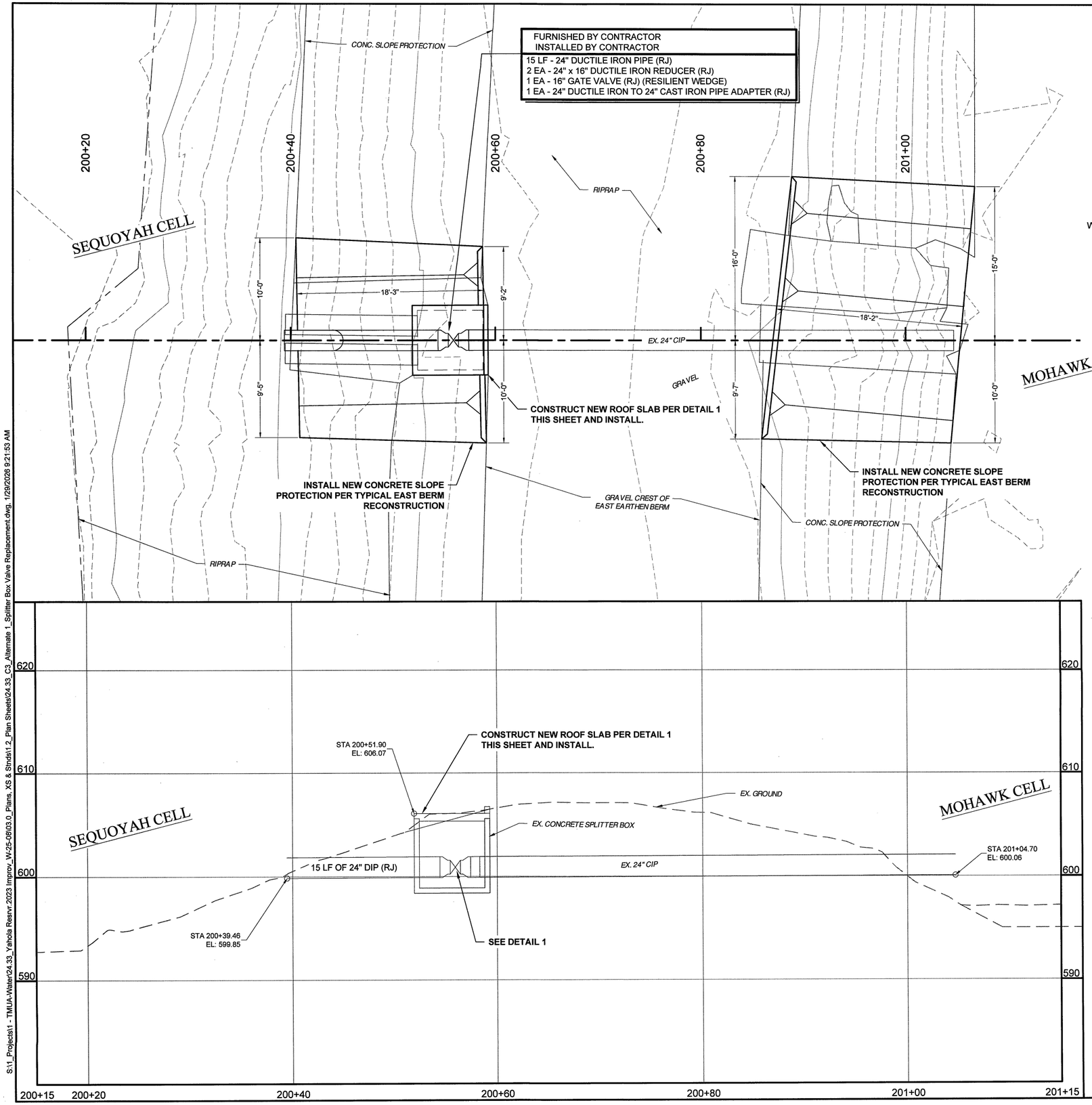
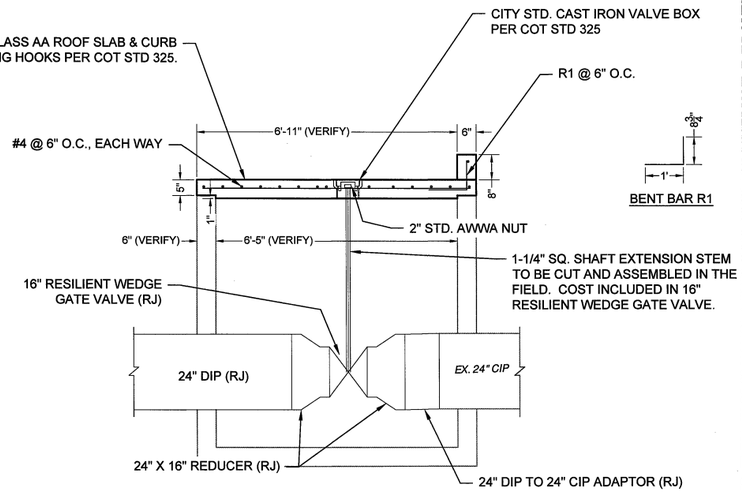


LEGEND

INSTALL 6" CONCRETE SLOPE PROTECTION, CLASS A

0 5 10

FULL SIZE(22x34) 1 : 5'
HALF SIZE(11x17) 1 : 10'



NOTE:

1. EXISTING CONDITION AND DIMENSIONS ARE UNKNOWN. THE PROPOSED WORK SHALL BE APPROVED BY FIELD ENGINEERING AFTER EXISTING CONDITION AND DIMENSIONS ARE SUBMITTED TO FIELD ENGINEERING.
2. IT IS RECOMMENDED TO FIELD MEASURE FOR THE PROPOSED ROOF SLAB. IT IS RECOMMENDED TO CONSTRUCT FORMWORK FOR ROOF SLAB ON THE EXISTING GRAVEL PERIMETER ROAD DUE TO ACCESS CONSTRAINTS. USE THE LIFTING HOOKS TO RELOCATE THE ROOF SLAB TO THE PROJECT AREA AFTER THE CONCRETE IS FULLY CURED.

1 **DETAIL 1**

FULL SIZE SCALE (22x34): 1" = 2'
HALF SIZE SCALE (11x17): 1" = 4'

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

Daniel A. Keithline 17348 01/29/2026 OKLAHOMA LICENSED PROFESSIONAL ENGINEER

OKIE811

ADD ALTERNATE 1
PLAN & PROFILE
SPLITTER BOX VALVE REPLACEMENT

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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" = 5'	DRAWN	ZLM	01-29-2026
	DESIGNED	DAK	01-29-2026
PROFILE SCALE	SURVEY	NJR	03-20-2020
HORIZONTAL: 1" = 5'	PROJECT MGR		01/29/2026
VERTICAL: 1" = 5'	LEAD ENGINEER		2/26
	FIELD MGR		2/26
FILE:	DRAWING:		
ATLAS PAGE NO: 433, 434, 354, 355, 284			

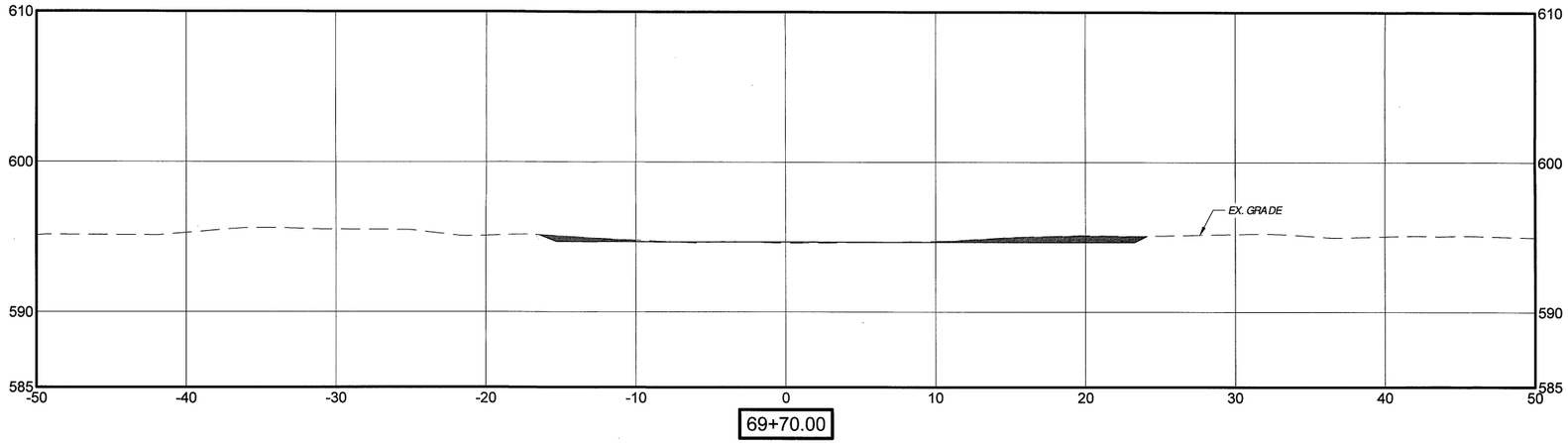
APPROVED:

DESIGN MANAGER

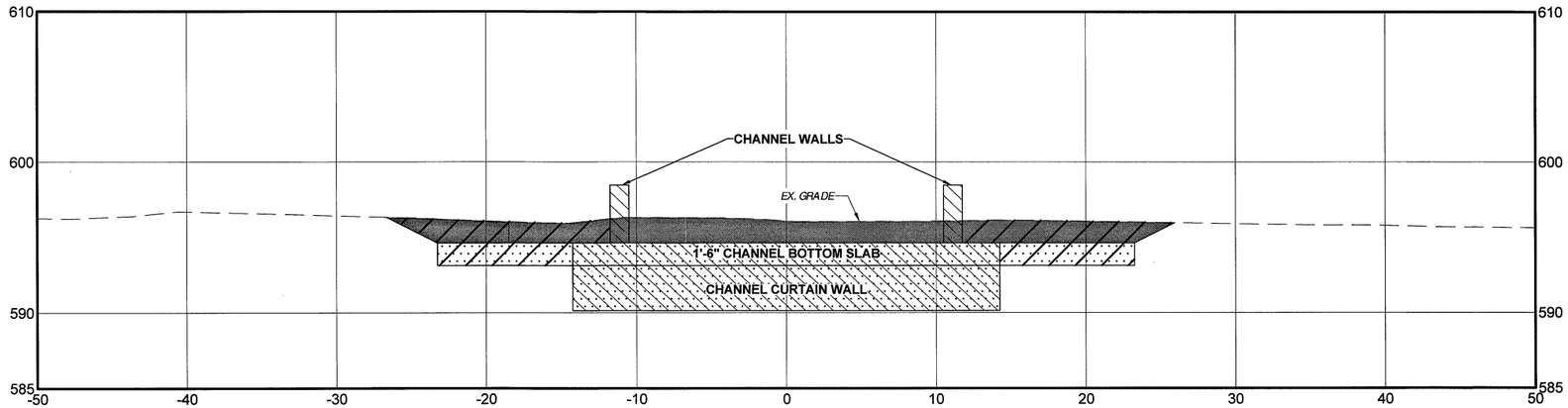
DATE: JANUARY 29, 2026

SHEET 41 OF 55 SHEETS

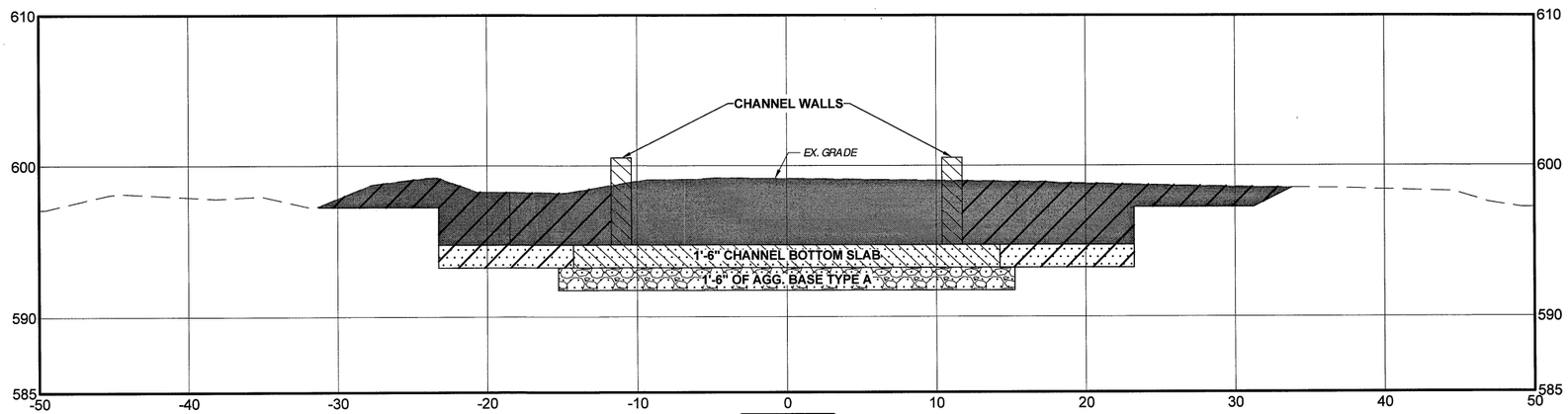
S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resvr. 2023 Improv_W-25-08\03.0_Plans, XS & Shtds\1.2_Plan Sheets\24.33_C3_Alternate 1_Splitter Box Valve Replacement.dwg, 1/29/2026 9:21:53 AM



69+70.00



69+75.00



69+80.00

LEGEND
SIZE #1 CRUSHED STONE AGG.
CONCRETE
SELECT BACKFILL
UNCLASSIFIED EXCAVATION
STRUCTURAL EXCAVATION
AGGREGATE BASE TYPE A

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 01/29/2026 — OKLAHOMA

OKIE811 Know what's below. Call before you dig.

CROSS SECTIONS EAST BERM GATE STRUCTURE STA 69+70 TO 69+80

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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

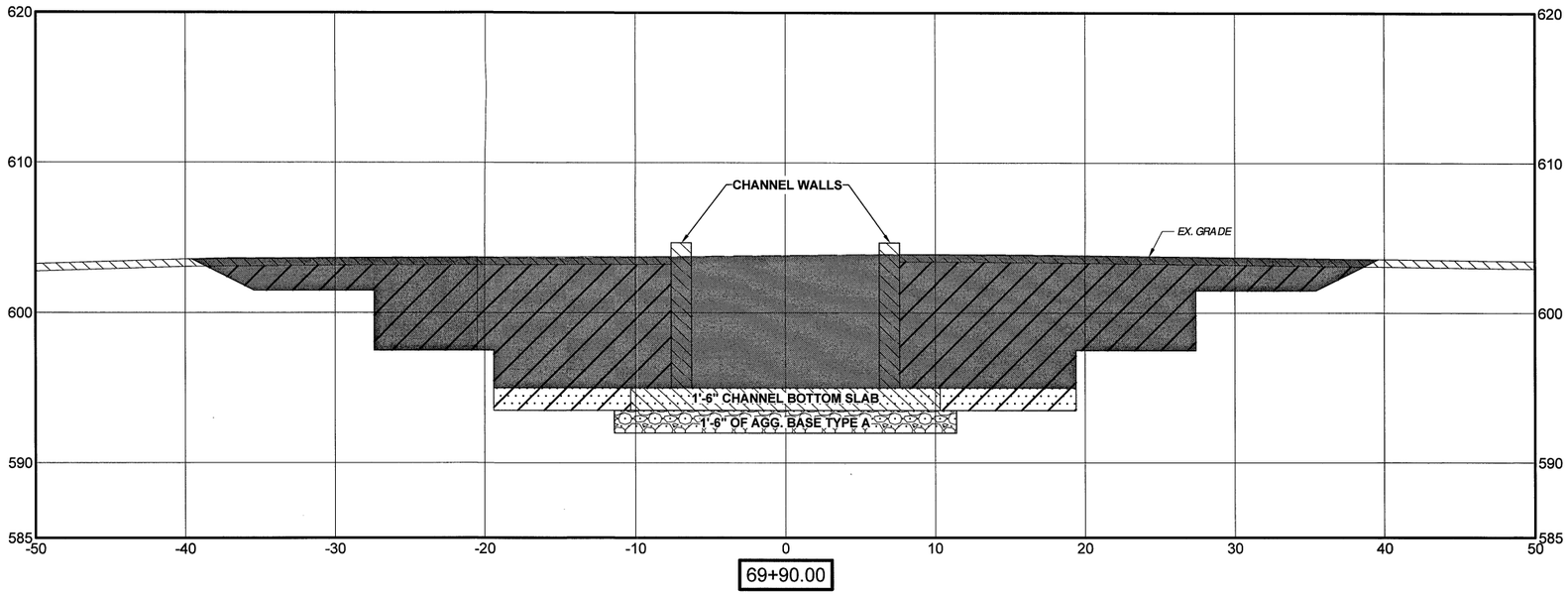
PLAN SCALE	DRAWN	ZLM	01-29-2026
	DESIGNED	DAK	01-29-2026
PROFILE SCALE	SURVEY	NJR	03-20-2020
HORIZONTAL:	PROJECT MGR		01/30/26
VERTICAL:	LEAD ENGINEER		01/30/26
	FIELD MGR		2/26

APPROVED: DESIGN MANAGER

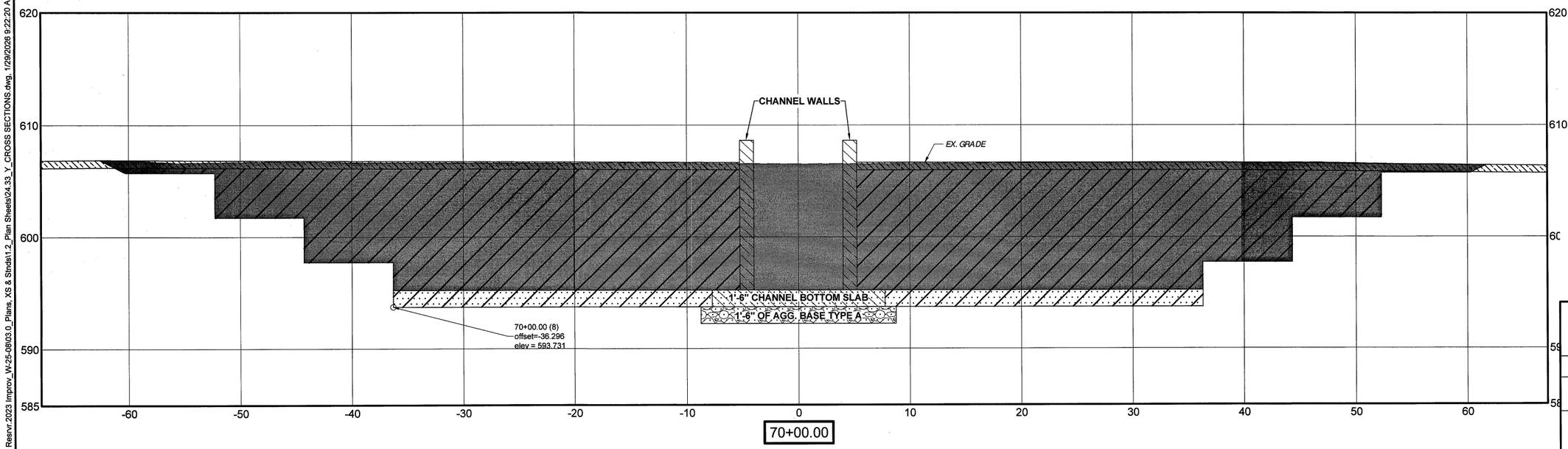
FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 42 OF 55 SHEETS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resrvr 2023 Improv_W-25-08\03.0_Plans, XS & Sttds\1.2_Plan Sheets\24.33_Y_CROSS SECTIONS.dwg, 1/29/2026 9:22:11 AM



69+90.00



70+00.00

LEGEND

- SIZE #1 CRUSHED STONE AGG.
- CONCRETE
- SELECT BACKFILL
- UNCLASSIFIED EXCAVATION
- STRUCTURAL EXCAVATION
- AGGREGATE BASE TYPE A

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

Daniel A. Keithline 17348 01/29/2026 OKLAHOMA PROFESSIONAL ENGINEER

OKIE811

CROSS SECTIONS EAST BERM GATE STRUCTURE STA 69+90 TO 70+00

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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

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	DESIGNED	DAK	01-29-2026	
PROFILE SCALE	SURVEY	NJR	03-20-2020	
HORIZONTAL:	PROJECT MGR		01/2026	
VERTICAL:	LEAD ENGINEER		1/26	
	FIELD MGR		1/26	DESIGN MANAGER
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 43 OF 55 SHEETS

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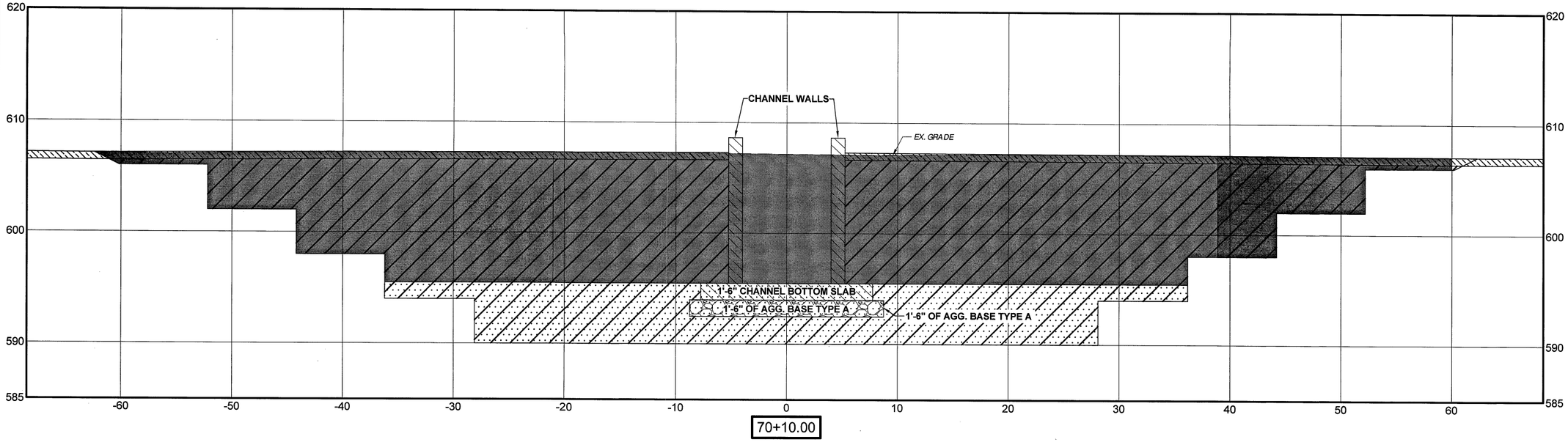
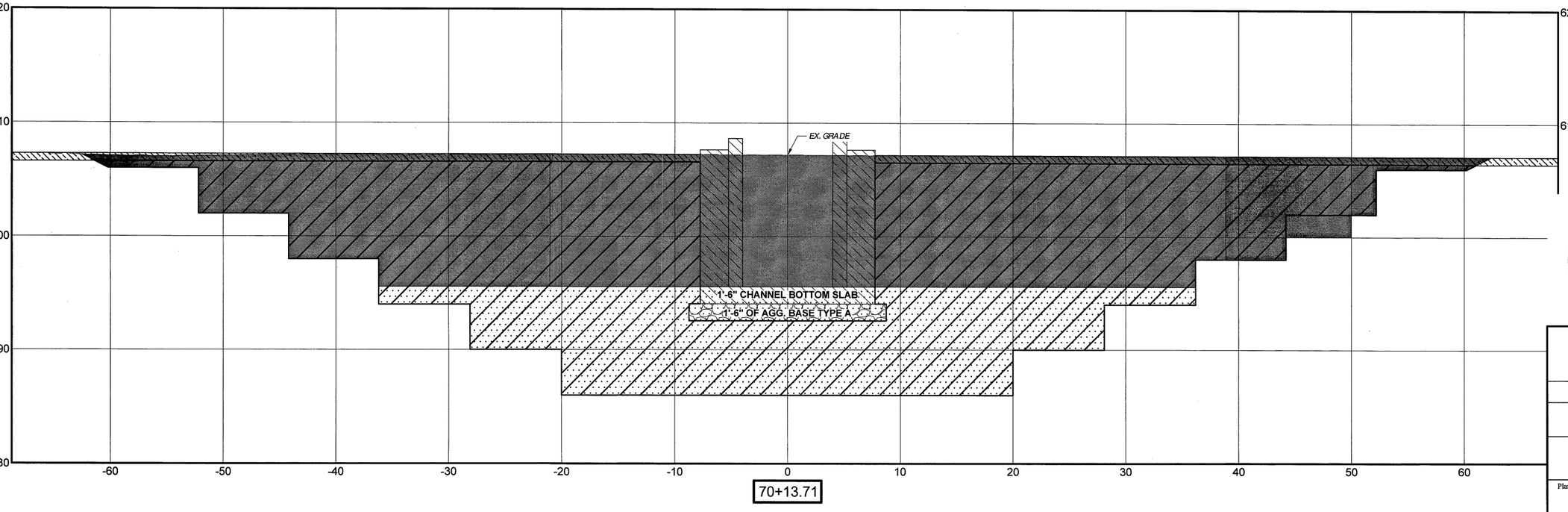


70+10.00



70+13.71

LEGEND

- SIZE #1 CRUSHED STONE AGG.
- CONCRETE
- SELECT BACKFILL
- UNCLASSIFIED EXCAVATION
- STRUCTURAL EXCAVATION
- AGGREGATE BASE TYPE A

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 01/29/2026 — OKLAHOMA

OKIE811 know what's below! 811 before you dig.

CROSS SECTIONS EAST BERM GATE STRUCTURE STA 70+10 TO 70+13.71

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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	DESIGNED	DAK	01-29-2026
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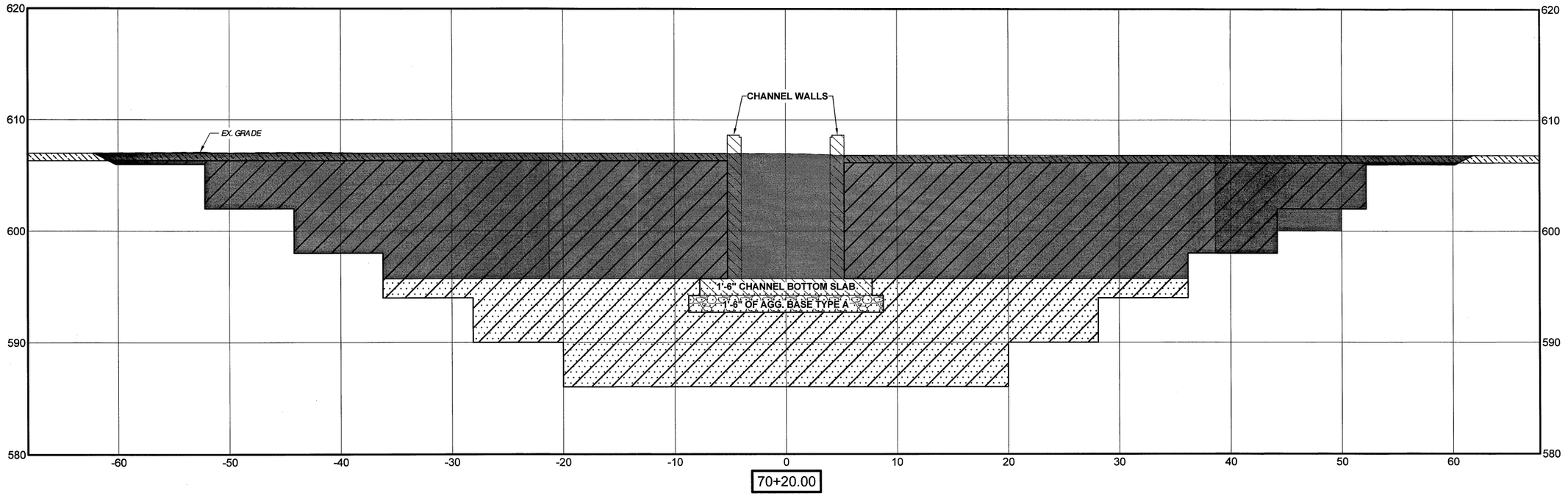
HORIZONTAL:	PROJECT MGR		
VERTICAL:	LEAD ENGINEER		
	FIELD MGR		

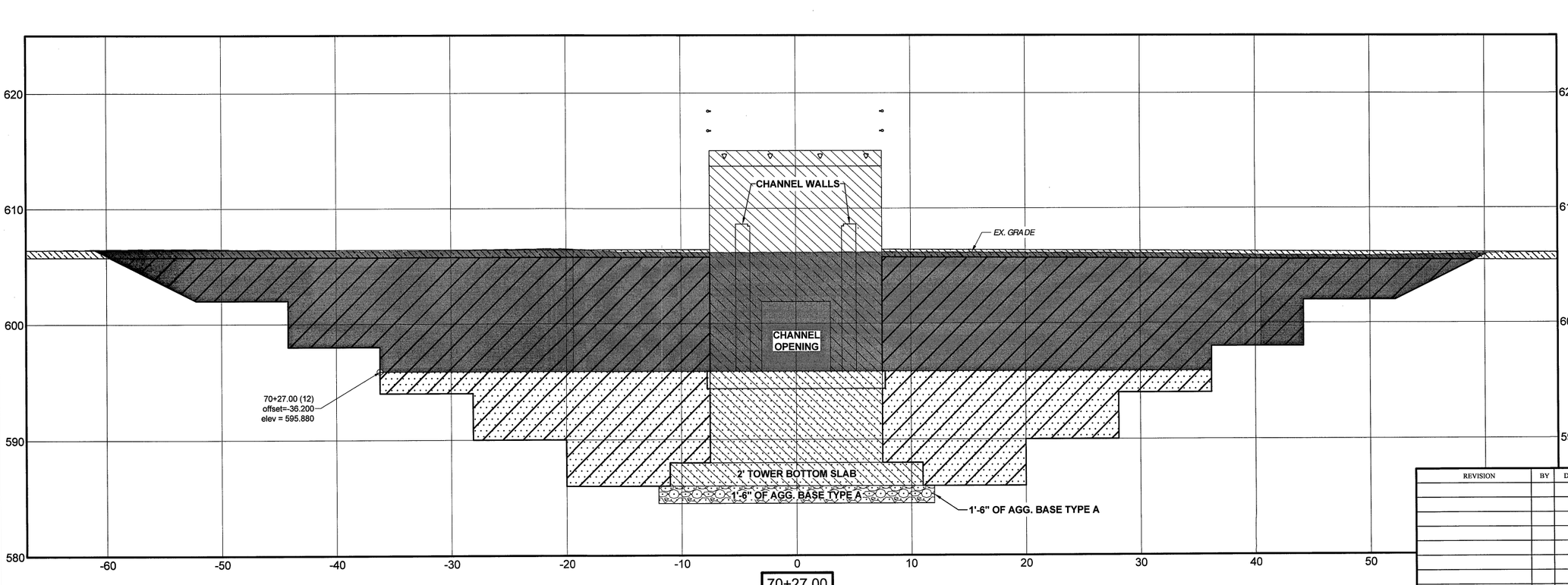
APPROVED: DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 44 OF 55 SHEETS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resrvr.2023 Improv_W-25-08\03.0_Plans, XS & Stnds\1.2_Plan Sheets\24.33_Y_CROSS SECTIONS.dwg, 1/29/2026 9:22:27 AM





LEGEND

- SIZE #1 CRUSHED STONE AGG.
- CONCRETE
- SELECT BACKFILL
- UNCLASSIFIED EXCAVATION
- STRUCTURAL EXCAVATION
- AGGREGATE BASE TYPE A

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA

OKIE811 Know what's below. Call before you dig.

CROSS SECTIONS
EAST BERM GATE STRUCTURE
STA 70+20 TO 70+27

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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

REVISION	BY	DATE

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HORIZONTAL:	PROJECT MGR			
VERTICAL:	LEAD ENGINEER			DESIGN MANAGER
	FIELD MGR			
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 45 OF 55 SHEETS

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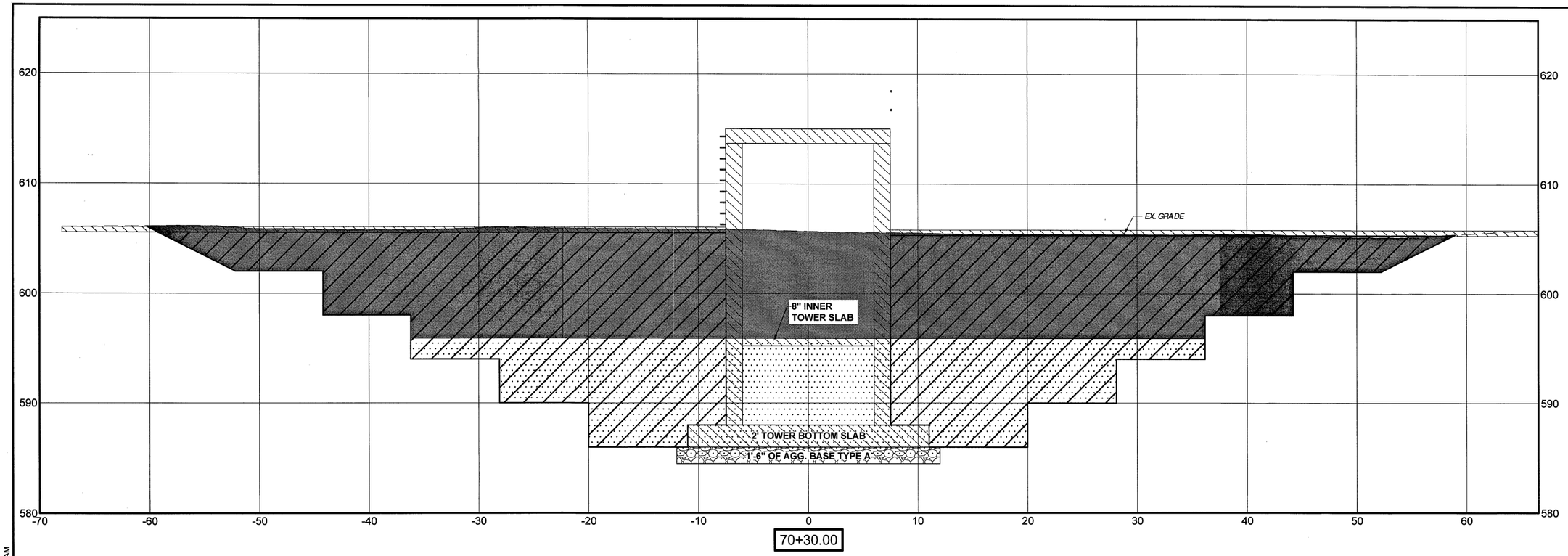
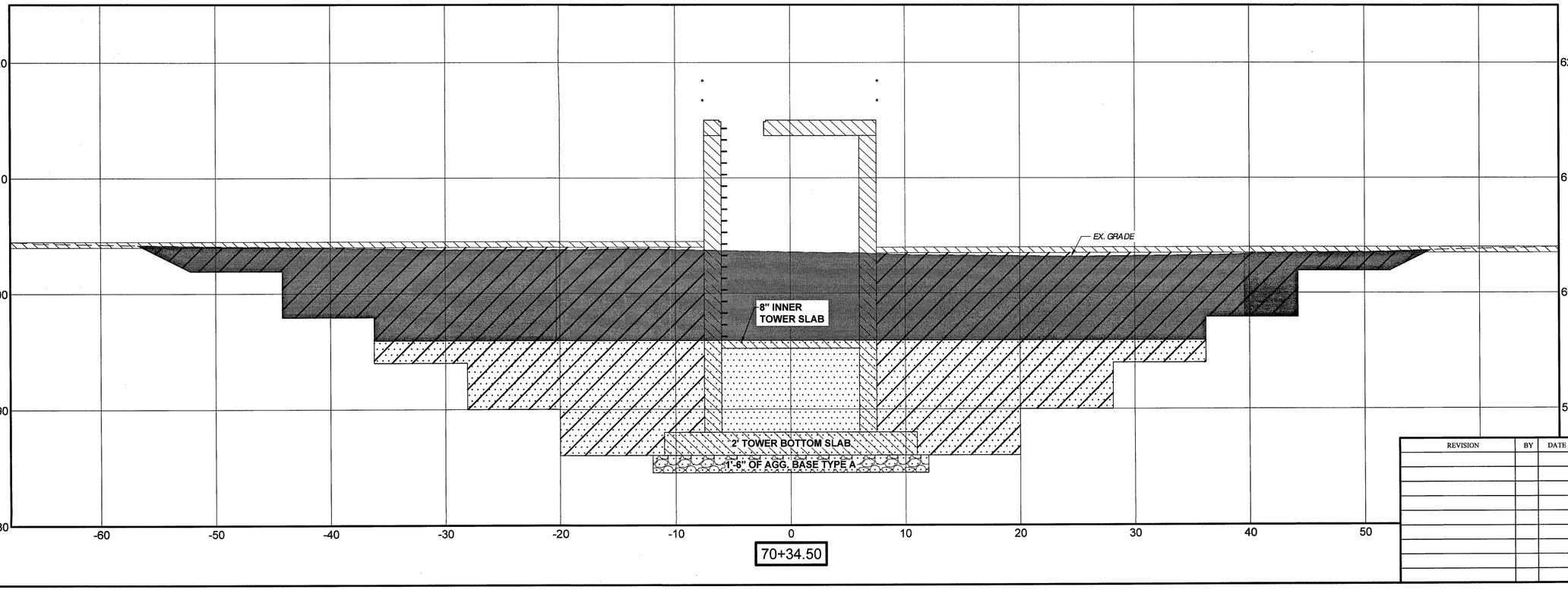


70+30.00



70+34.50

LEGEND

- SIZE #1 CRUSHED STONE AGG.
- CONCRETE
- SELECT BACKFILL
- UNCLASSIFIED EXCAVATION
- STRUCTURAL EXCAVATION
- AGGREGATE BASE TYPE A

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA
LICENSED

OKIE 811 Know what's below. Call before you dig.

CROSS SECTIONS
EAST BERM GATE STRUCTURE
STA 70+30 TO 70+34.50

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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

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PROFILE SCALE	SURVEY	NJR	03-20-2020
HORIZONTAL:	PROJECT MGR		
VERTICAL:	LEAD ENGINEER		
	FIELD MGR		

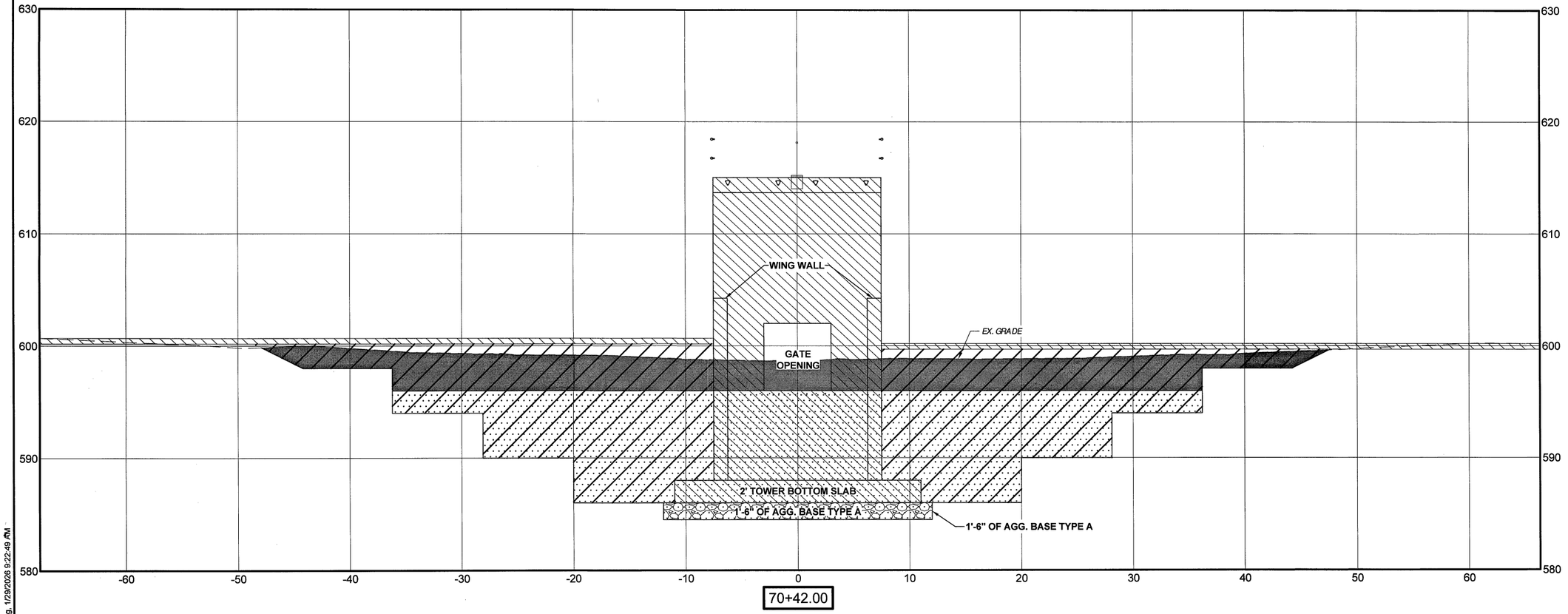
APPROVED:

DESIGN MANAGER

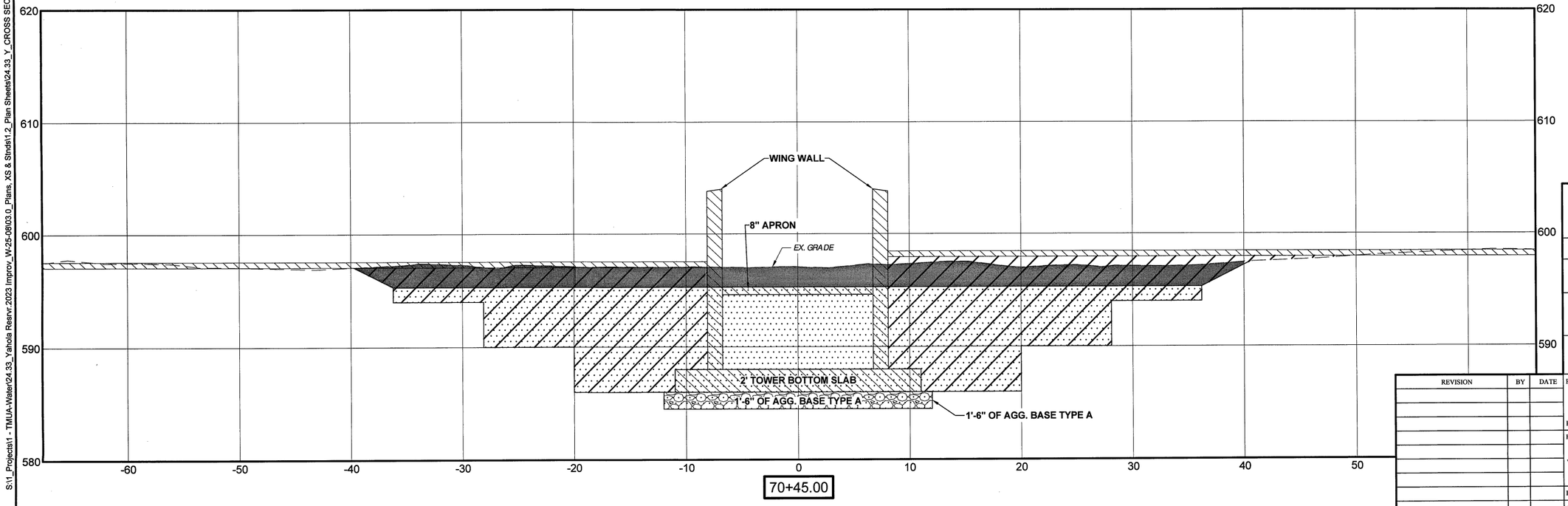
FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 46 OF 55 SHEETS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resvr.2023 Improv_W-25-08\03.0_Plans_XS & Stnds\1.2_Plan Sheets\24.33_Y_CROSS SECTIONS.dwg, 1/29/2026 9:22:42 AM



70+42.00



70+45.00

LEGEND

- SIZE #1 CRUSHED STONE AGG.
- CONCRETE
- SELECT BACKFILL
- UNCLASSIFIED EXCAVATION
- STRUCTURAL EXCAVATION
- AGGREGATE BASE TYPE A

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

Daniel A. Keithline 17348 01/29/2026 OKLAHOMA PROFESSIONAL ENGINEER

OKIE 811

CROSS SECTIONS EAST BERM GATE STRUCTURE STA 70+42 TO 70+45

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

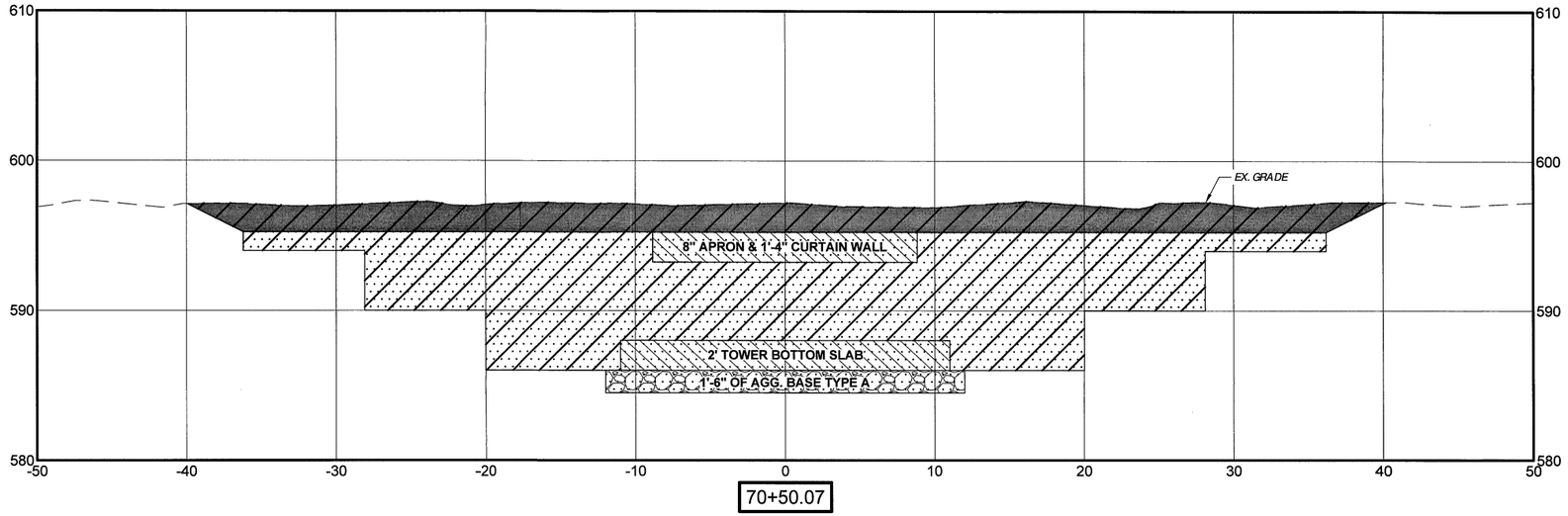
CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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	01-29-2026	APPROVED:
	DESIGNED	DAK	01-29-2026	
PROFILE SCALE	SURVEY	NJR	03-20-2020	
HORIZONTAL:	PROJECT MGR			
VERTICAL:	LEAD ENGINEER			DESIGN MANAGER
	FIELD MGR			
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 47 OF 55 SHEETS

S:\1_Projects\1 - TMUA-Water\24.33_Yahola Resvr.2023 Improv_W-25-08\03.0_Plans, XS & Strds\1.2_Plan Sheets\24.33_Y_CROSS SECTIONS.dwg, 1/29/2026 9:22:49 AM



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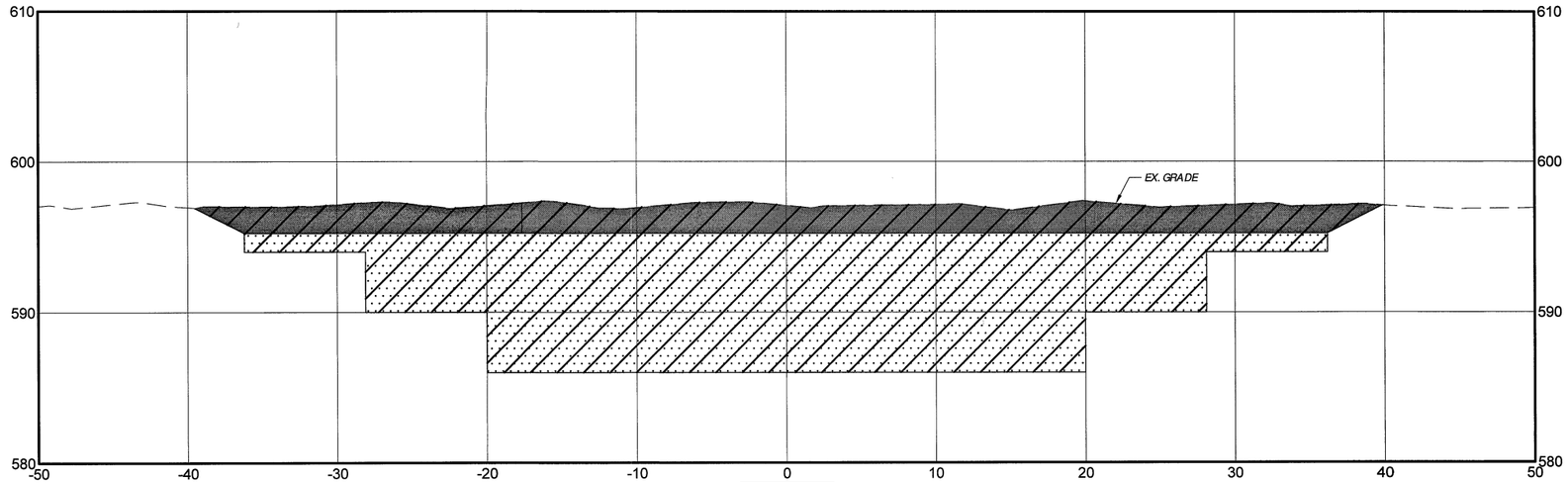

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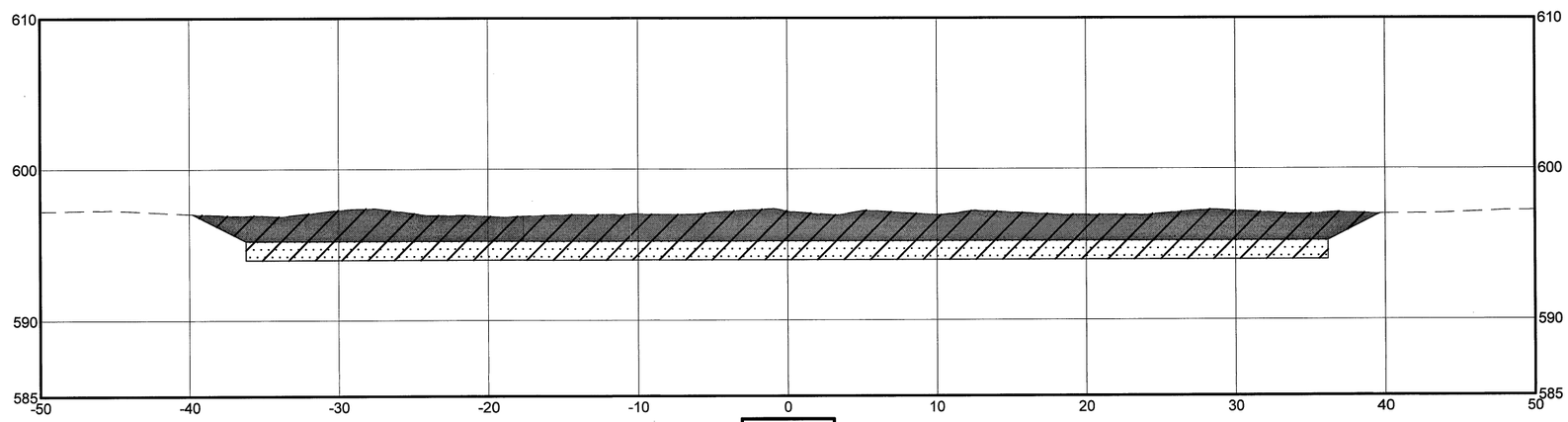

70+70.00

LEGEND	
	SIZE #1 CRUSHED STONE AGG.
	CONCRETE
	SELECT BACKFILL
	UNCLASSIFIED EXCAVATION
	STRUCTURAL EXCAVATION
	AGGREGATE BASE TYPE A

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
LICENSED
OKLAHOMA

OKIE811 Know what's below. Call before you dig.

CROSS SECTIONS
EAST BERM GATE STRUCTURE
STA 70+50.07 TO 70+70

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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PROFILE SCALE	SURVEY	NJR	03-20-2020	
HORIZONTAL:	PROJECT MGR		01/29/2026	
VERTICAL:	LEAD ENGINEER		1/29/26	DESIGN MANAGER
	FIELD MGR		1/29/26	
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 48 OF 55 SHEETS

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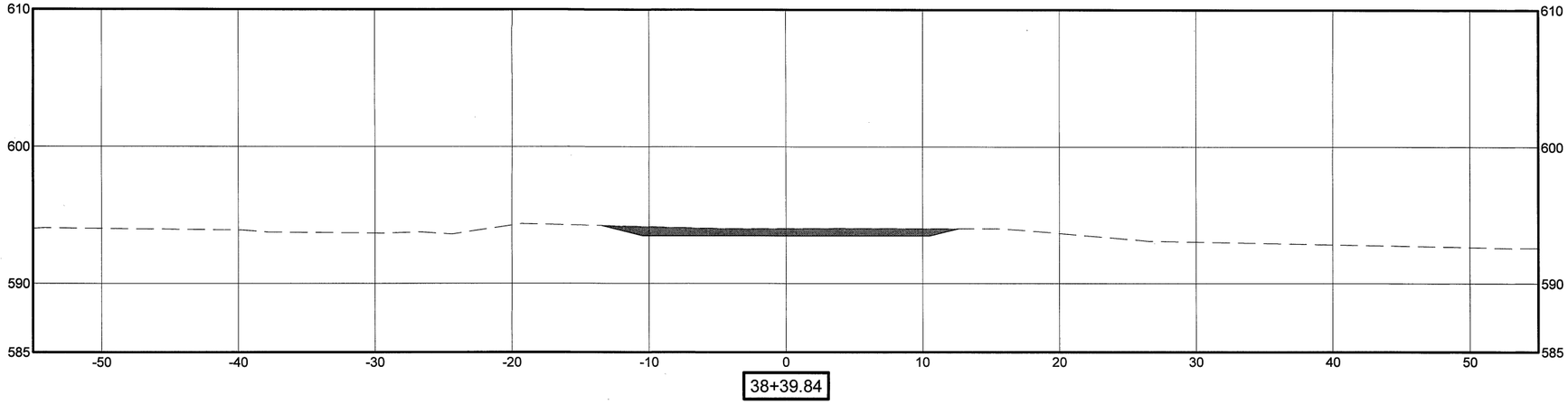

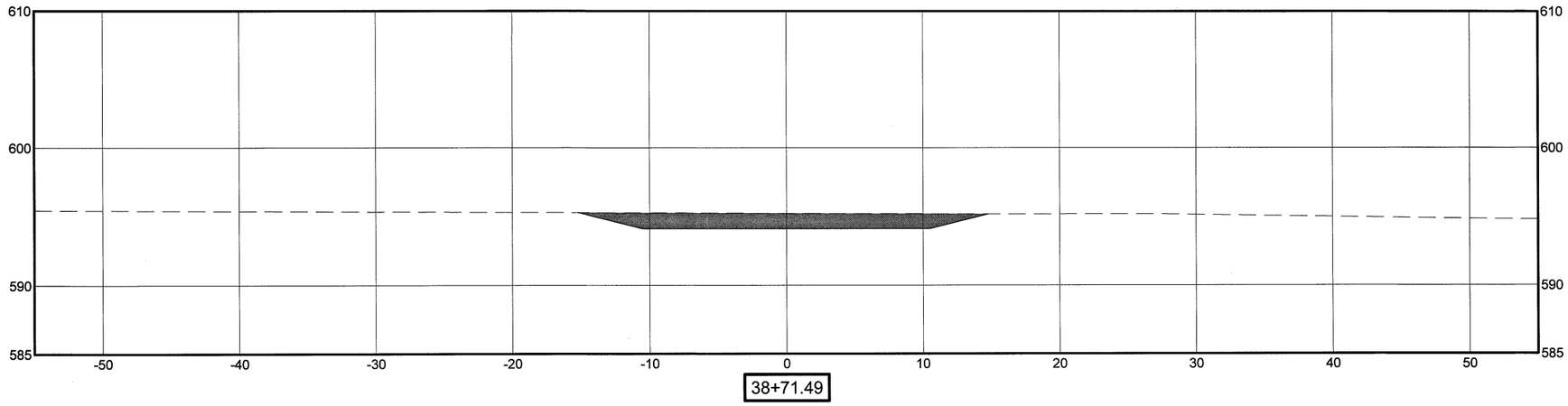

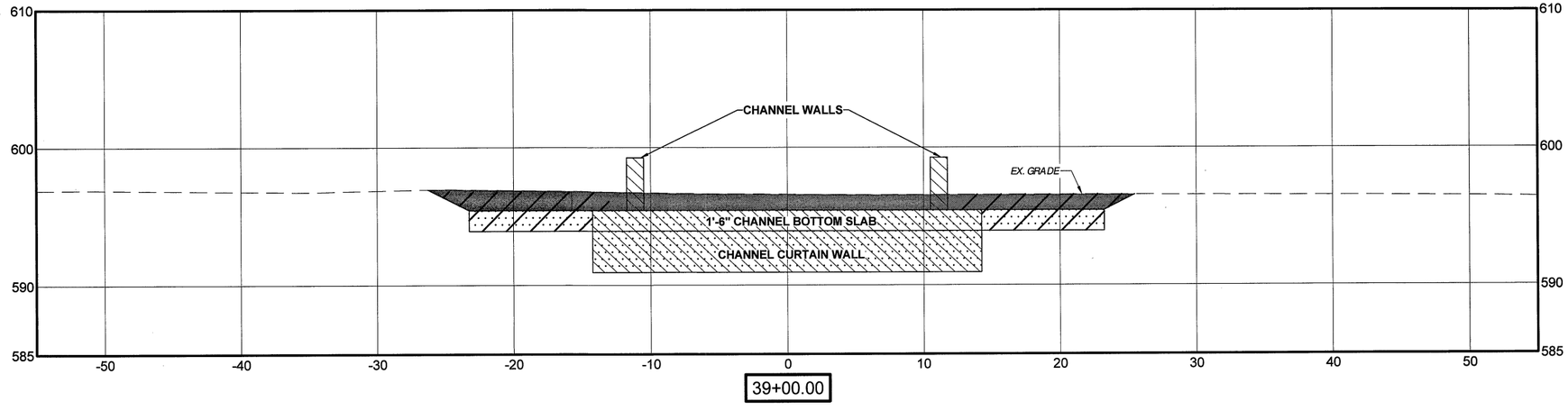

LEGEND

- SIZE #1 CRUSHED STONE AGG.
- CONCRETE
- SELECT BACKFILL
- UNCLASSIFIED EXCAVATION
- STRUCTURAL EXCAVATION
- AGGREGATE BASE TYPE A

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA

OKIE 811

CROSS SECTIONS
WEST BERM GATE STRUCTURE
STA 39.84 TO 39+00

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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VERTICAL:	LEAD ENGINEER		1/29/26	DESIGN MANAGER
	FIELD MGR		1/29/26	
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 49 OF 55 SHEETS

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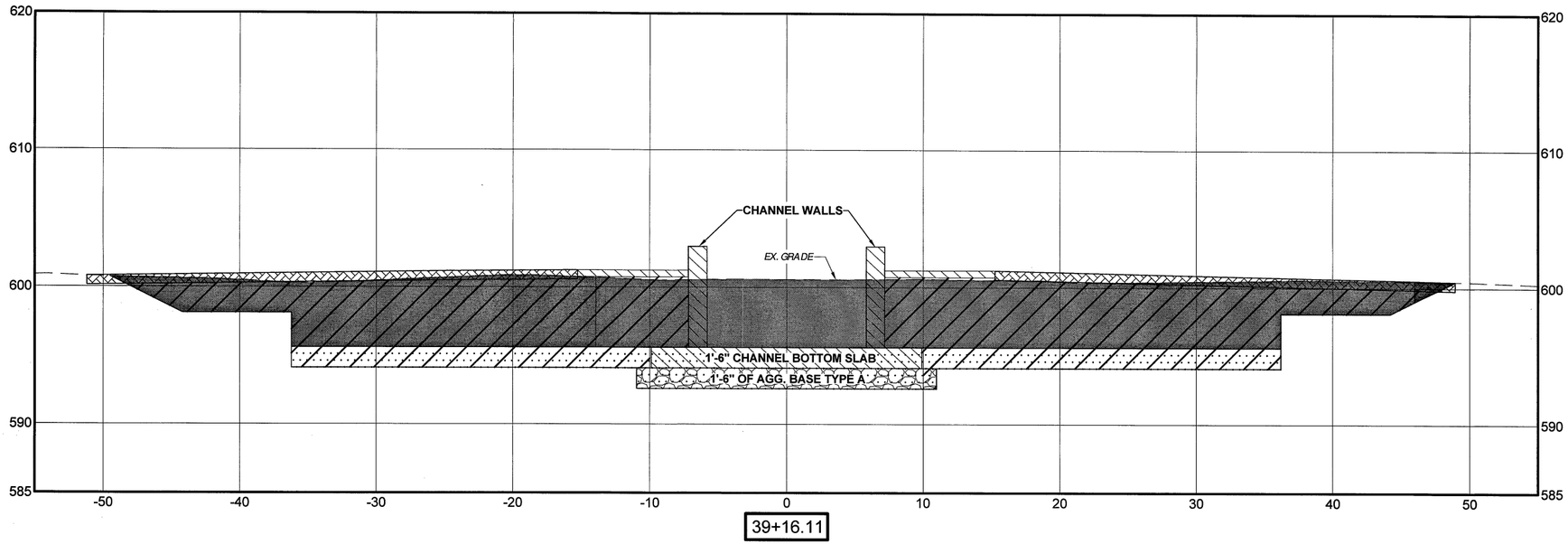

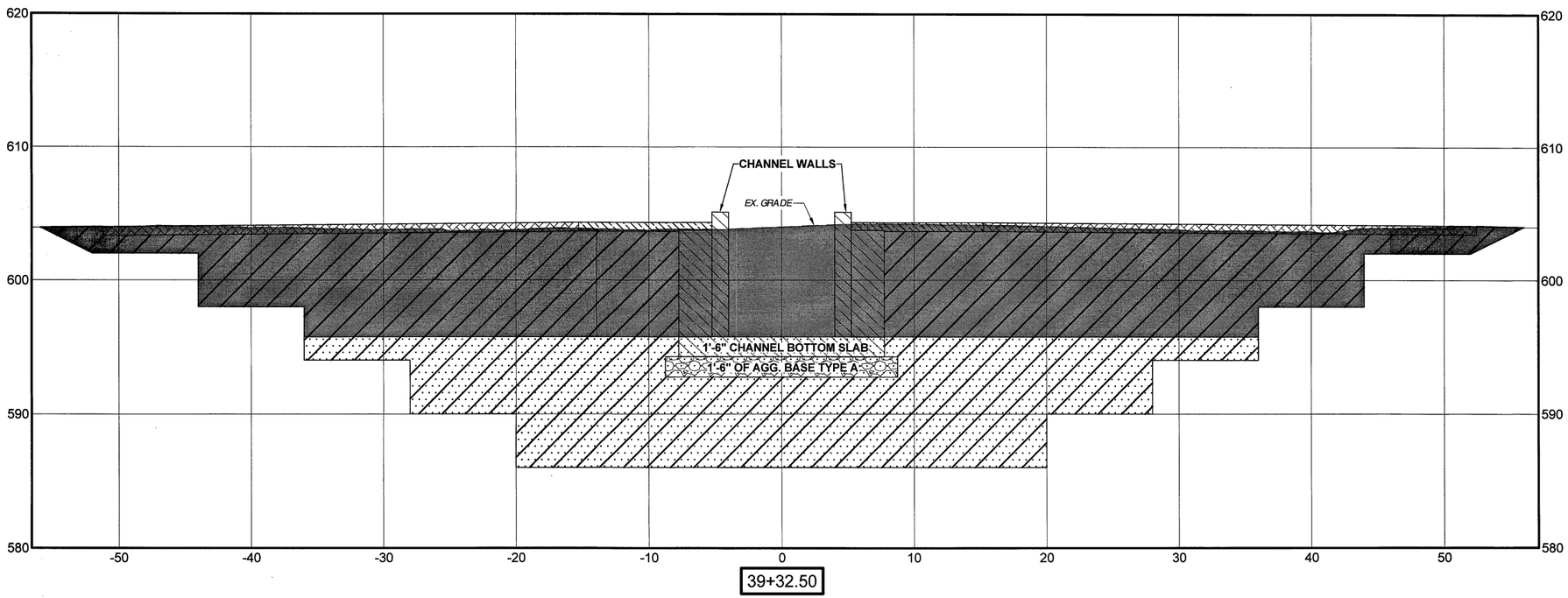

LEGEND
SIZE #1 CRUSHED STONE AGG.
CONCRETE
SELECT BACKFILL
UNCLASSIFIED EXCAVATION
STRUCTURAL EXCAVATION
AGGREGATE BASE TYPE A

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 01/29/2026 — LICENSED — OKLAHOMA

OKIE 811 know what's below before you dig.

CROSS SECTIONS
WEST BERM GATE STRUCTURE
STA 39+16.11 TO 39+32.50

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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VERTICAL:	LEAD ENGINEER		1/29/26
	FIELD MGR		2/26

APPROVED: DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 50 OF 55 SHEETS

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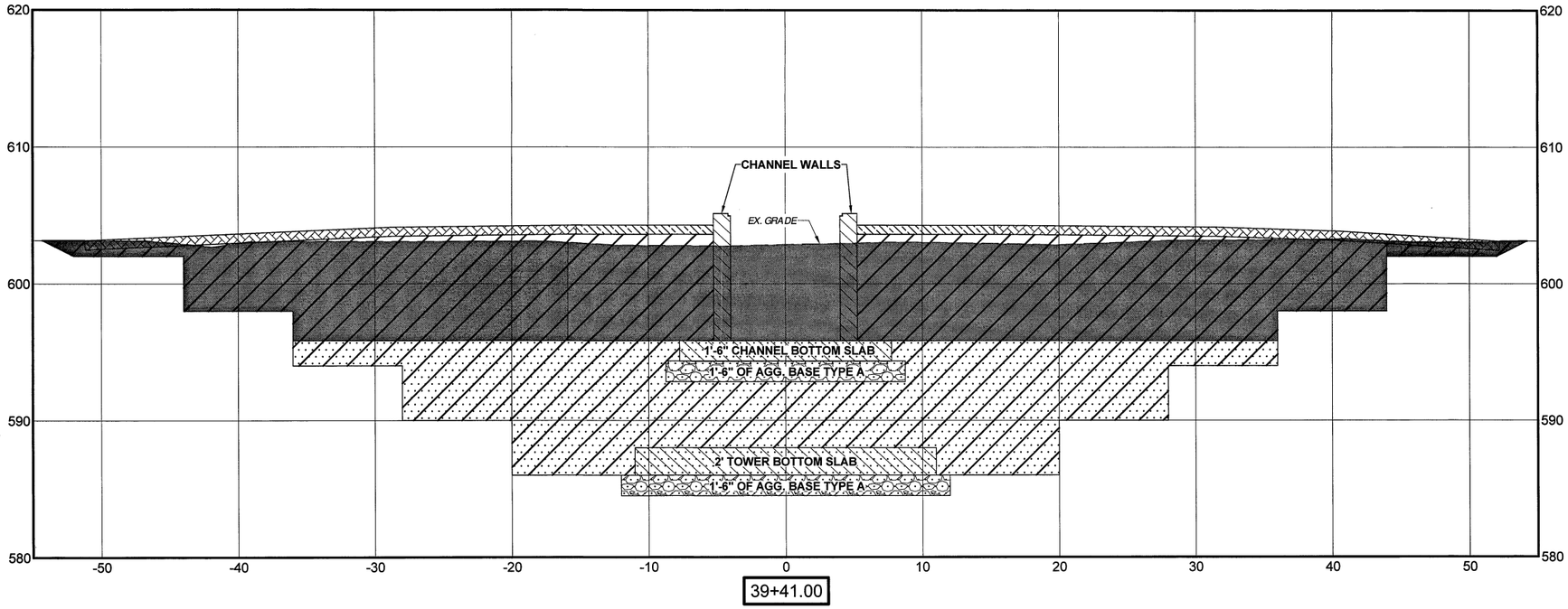
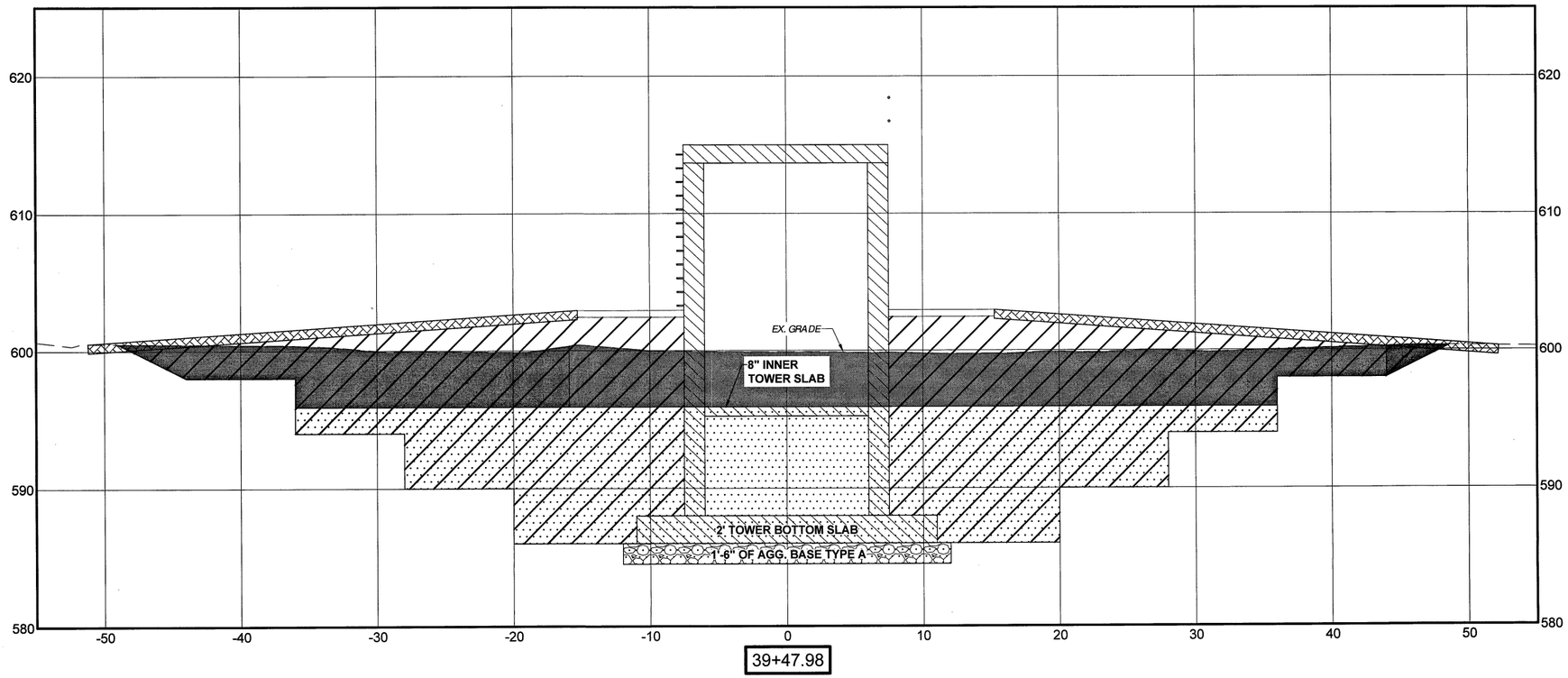


39+41.00



39+47.98

LEGEND

- SIZE #1 CRUSHED STONE AGG.
- CONCRETE
- SELECT BACKFILL
- UNCLASSIFIED EXCAVATION
- STRUCTURAL EXCAVATION
- AGGREGATE BASE TYPE A

PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 01/29/2026 — OKLAHOMA

OKIE 811

CROSS SECTIONS WEST BERM GATE STRUCTURE STA 34+41 TO 39+47.98

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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	01-29-2026	APPROVED:
	DESIGNED	DAK	01-29-2026	
PROFILE SCALE	SURVEY	NJR	03-20-2020	
HORIZONTAL:	PROJECT MGR		01/29/26	
VERTICAL:	LEAD ENGINEER		1/29/26	
	FIELD MGR		1/29/26	DESIGN MANAGER
FILE:	DRAWING:			DATE: JANUARY 29, 2026
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PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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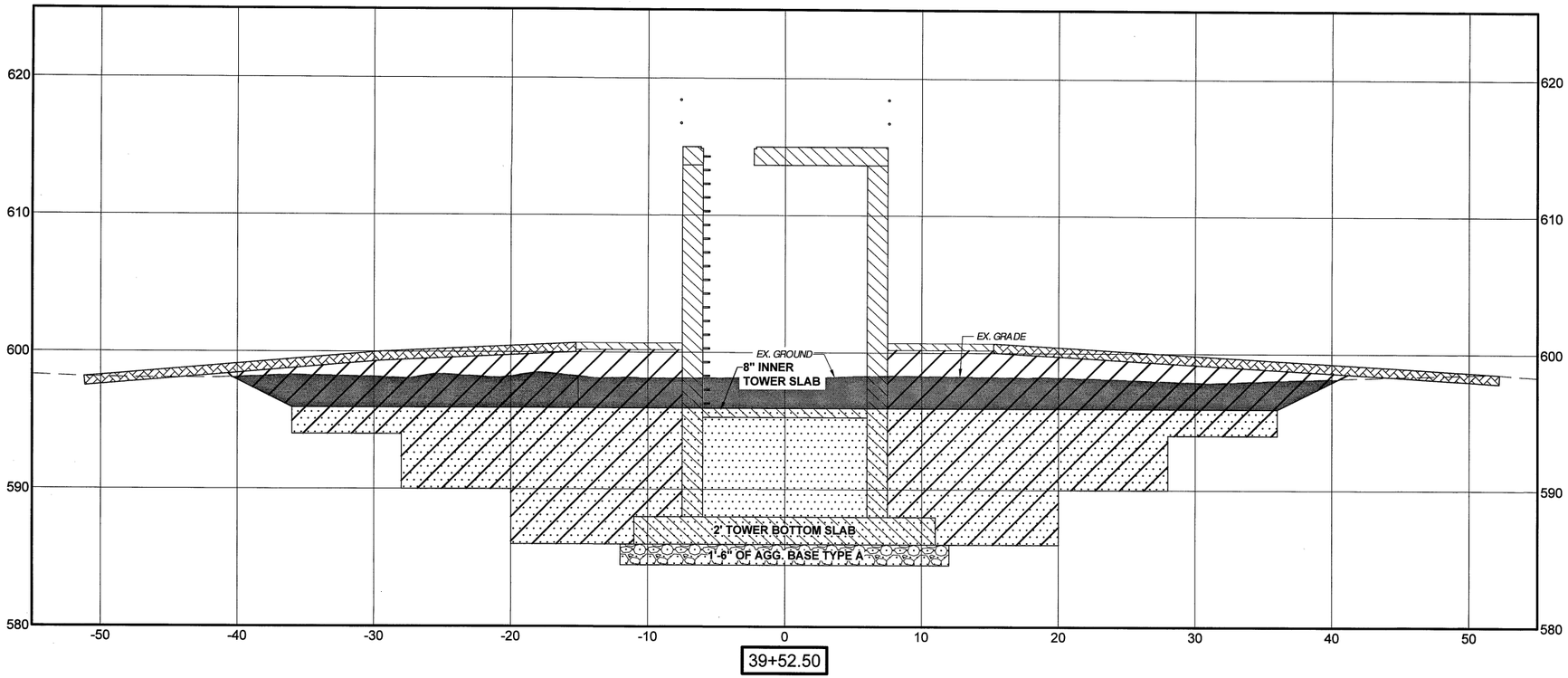

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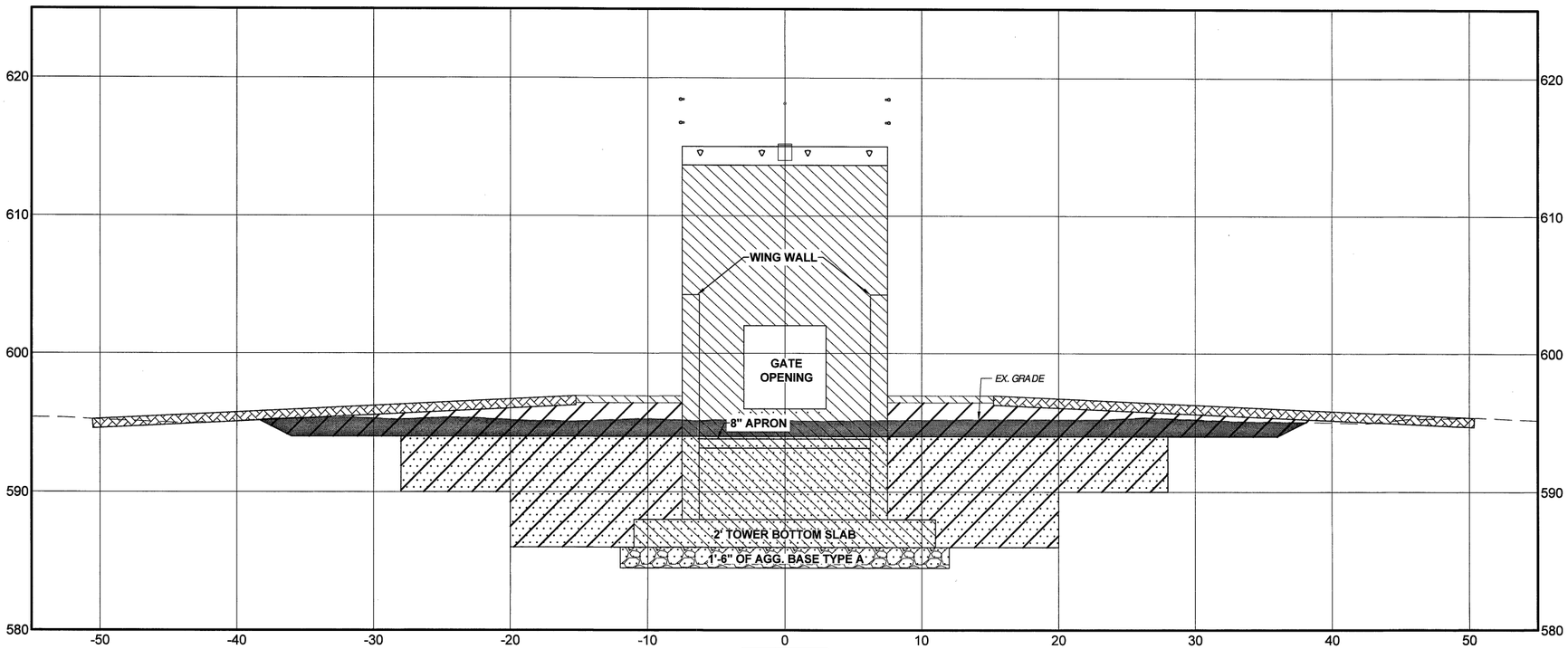

39+60.00

LEGEND

- SIZE #1 CRUSHED STONE AGG.
- CONCRETE
- SELECT BACKFILL
- UNCLASSIFIED EXCAVATION
- STRUCTURAL EXCAVATION
- AGGREGATE BASE TYPE A

PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 01/29/2026 — OKLAHOMA

OKIE811

CROSS SECTIONS
WEST BERM GATE STRUCTURE
STA 39+52.50 TO 39+60

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

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HORIZONTAL:	PROJECT MGR		
VERTICAL:	LEAD ENGINEER		
	FIELD MGR		

APPROVED:
DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 52 OF 55 SHEETS

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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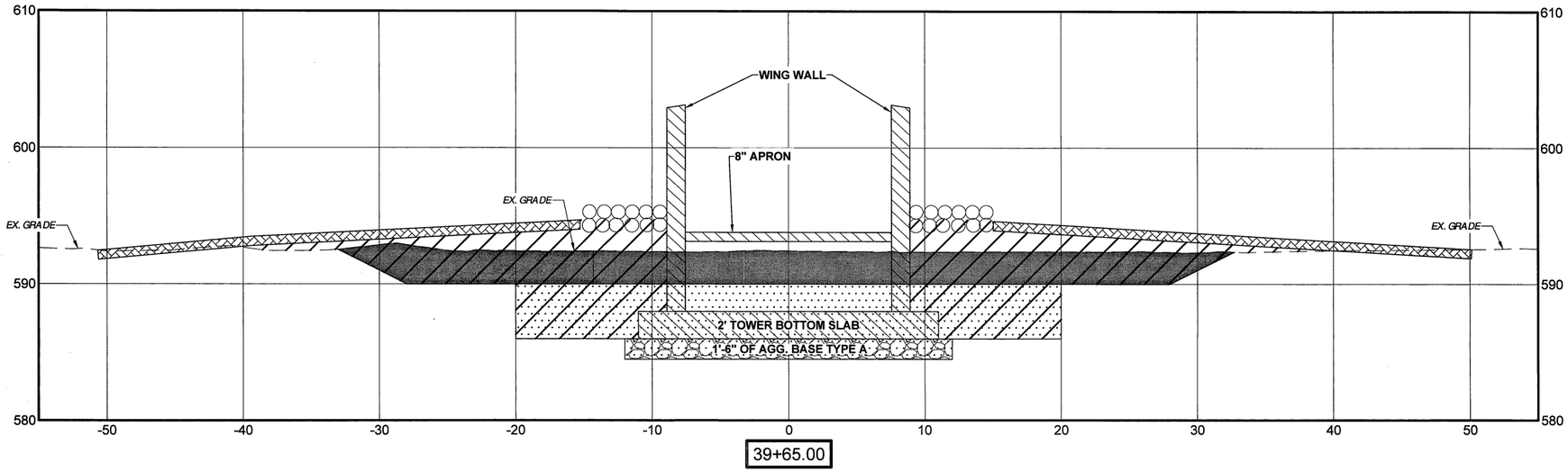

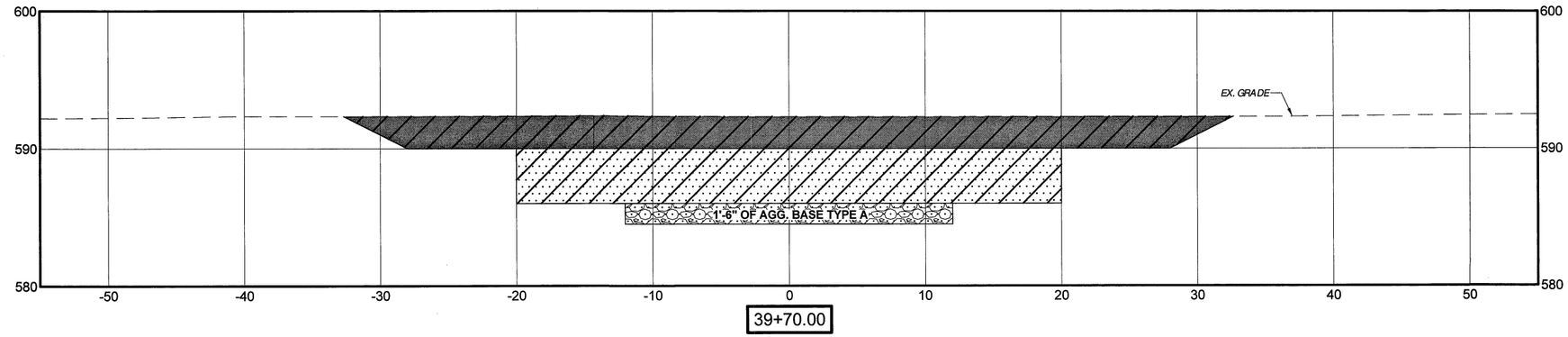

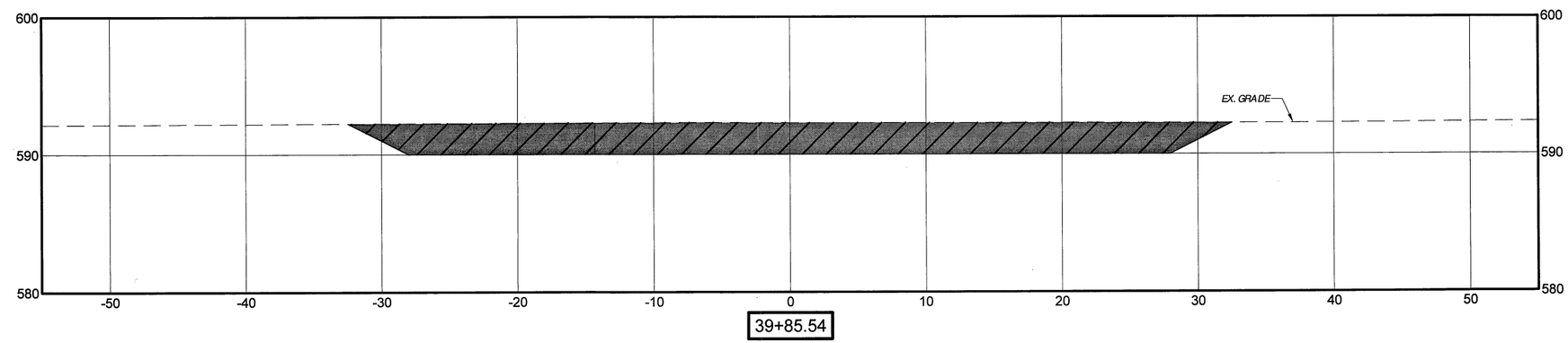

LEGEND

- SIZE #1 CRUSHED STONE AGG.
- CONCRETE
- SELECT BACKFILL
- UNCLASSIFIED EXCAVATION
- STRUCTURAL EXCAVATION
- AGGREGATE BASE TYPE A

PROFESSIONAL ENGINEER — Daniel A. Keithline 17348 01/29/2026 — OKLAHOMA

OKIE 811

CROSS SECTIONS WEST BERM GATE STRUCTURE STA 39+65 TO 39+85.54

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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

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	DESIGNED	DAK	01-29-2026
PROFILE SCALE	SURVEY	NJR	03-20-2020
HORIZONTAL:	PROJECT MGR		01/29/26
VERTICAL:	LEAD ENGINEER		1/29/26
	FIELD MGR		1/29/26

APPROVED: DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

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PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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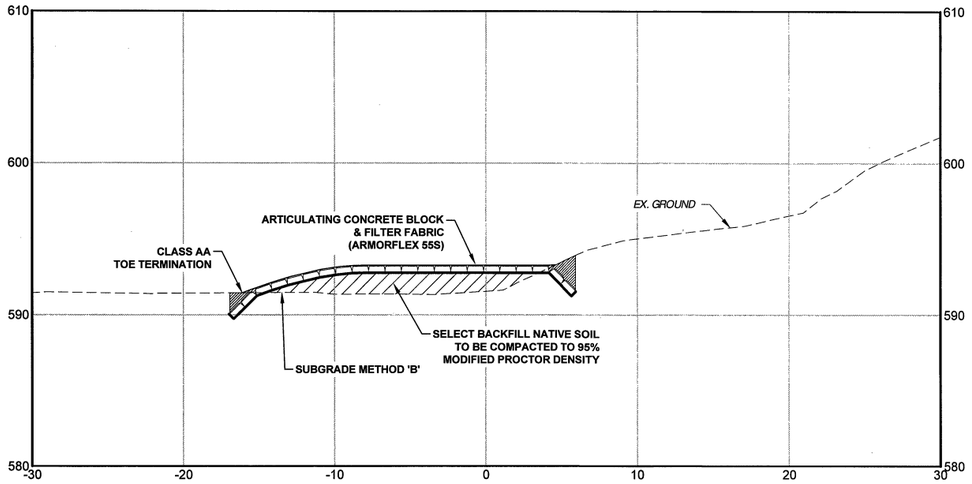

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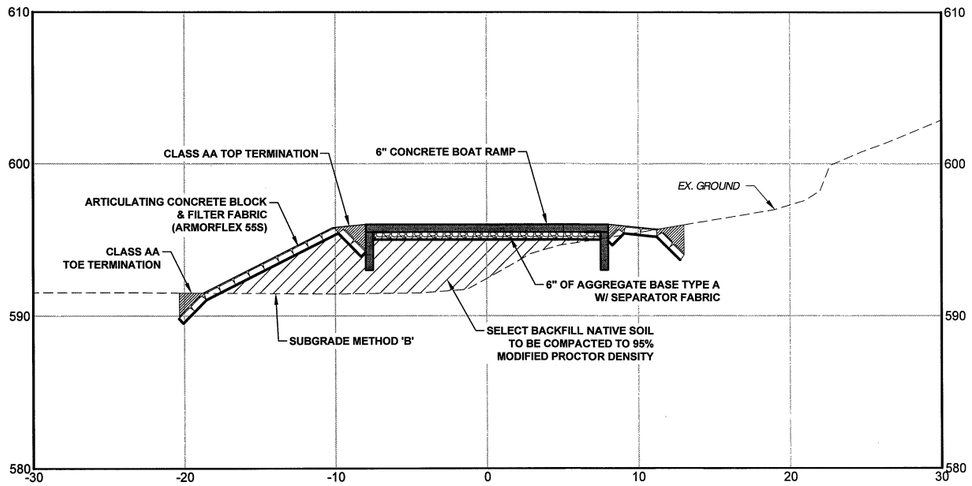

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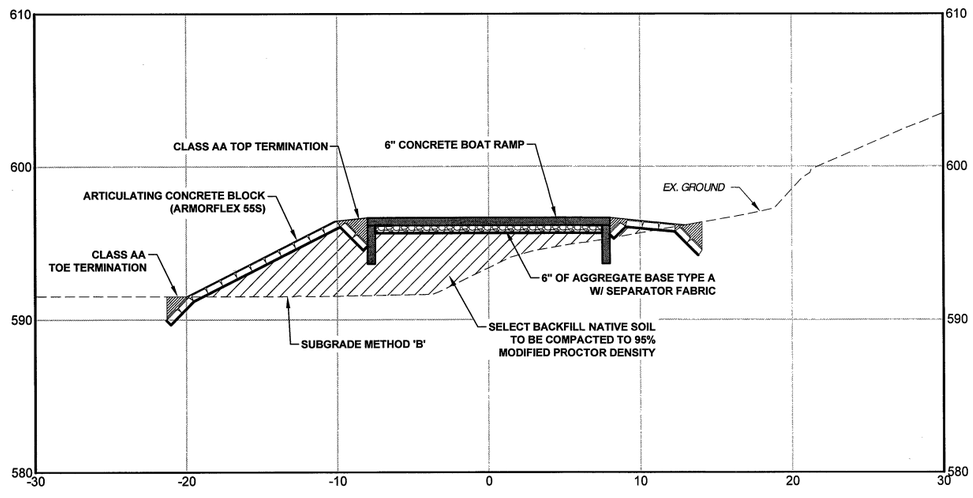

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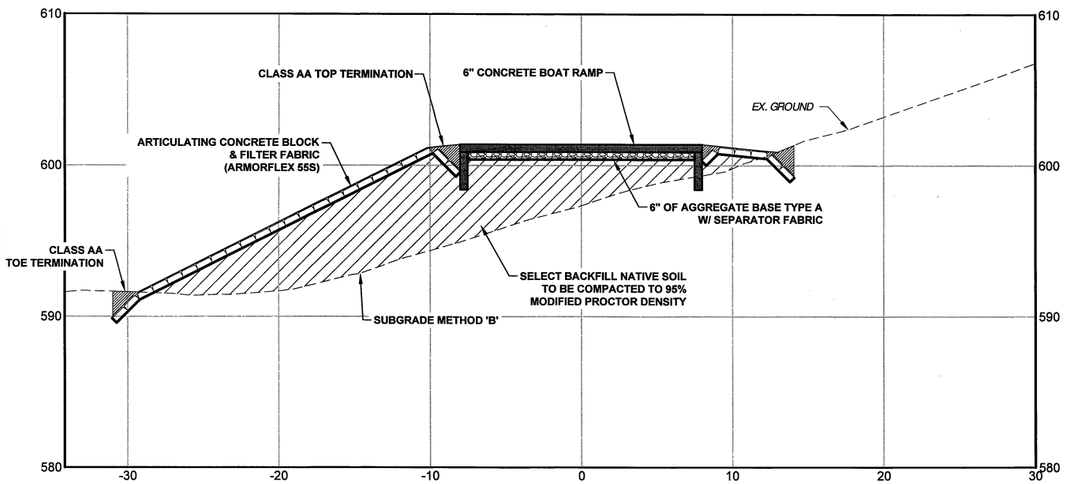

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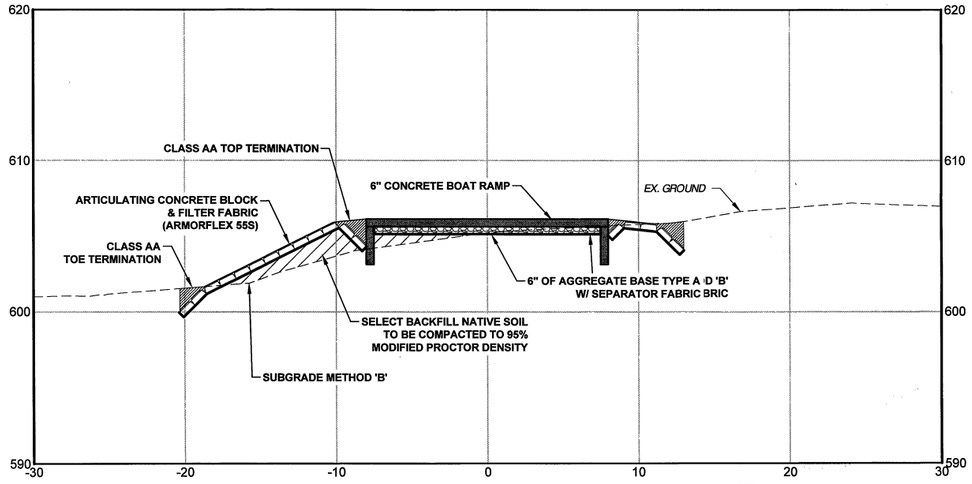

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

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PROFESSIONAL ENGINEER
Daniel A. Keithline
17348
01/29/2026
OKLAHOMA

OKIE811 Know what's below. Call before you dig.

CROSS SECTIONS
SEQUOYAH BOAT RAMP

TMUA-W 25-08

YAHOLA TERMINAL STORAGE
RESERVOIR IMPROVEMENTS

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

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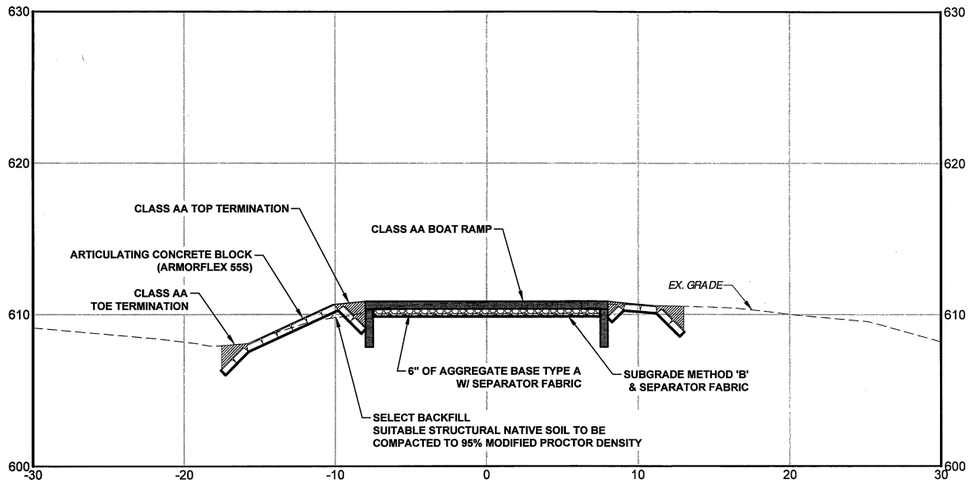
PROFILE SCALE	SURVEY	NJR	03-20-2020	
HORIZONTAL:	PROJECT MGR	AB	01/29/26	
VERTICAL:	LEAD ENGINEER	DAK	2/2/26	DESIGN MANAGER
	FIELD MGR		2/2/26	
FILE:	DRAWING:			DATE: JANUARY 29, 2026
ATLAS PAGE NO: 433, 434, 354, 355, 284				SHEET 54 OF 55 SHEETS

101+50.00



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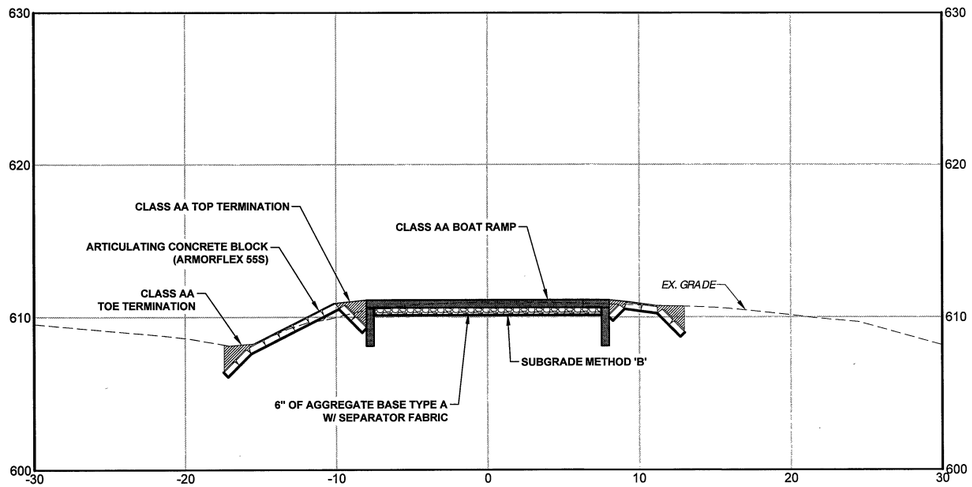

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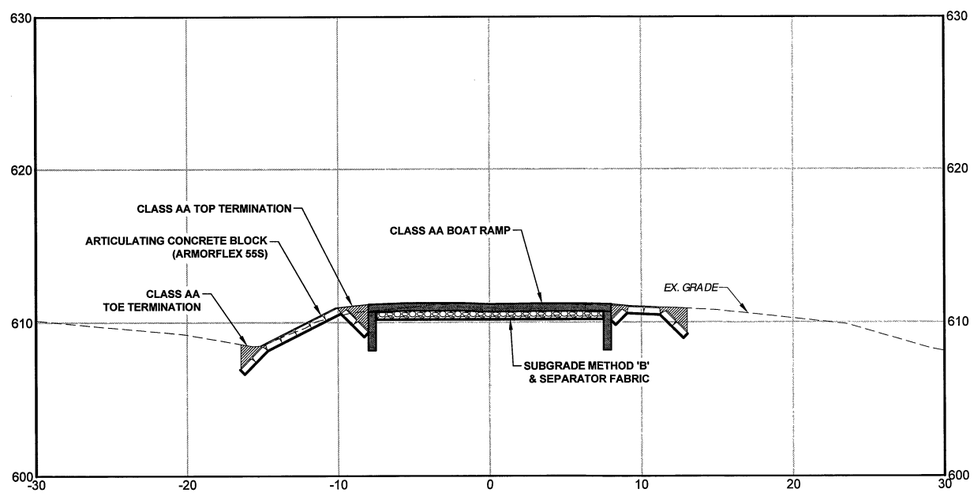

PROJECT NO. TMUA-W-25-08 YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

Daniel A. Keithline 17348 01/29/2026 OKLAHOMA PROFESSIONAL ENGINEER

OKIE 811

CROSS SECTIONS SEQUOYAH BOAT RAMP

TMUA-W 25-08

YAHOLA TERMINAL STORAGE RESERVOIR IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
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VERTICAL:	LEAD ENGINEER		3/26
	FIELD MGR		2/26

APPROVED:

DESIGN MANAGER

FILE: DRAWING: DATE: JANUARY 29, 2026

ATLAS PAGE NO: 433, 434, 354, 355, 284 SHEET 55 OF 55 SHEETS

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