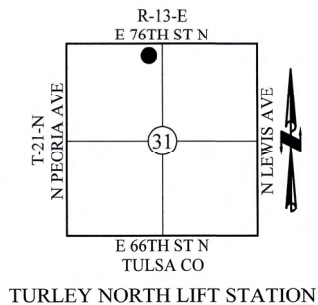


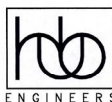
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# CONSTRUCTION PLANS FOR CITYWIDE LIFT STATION IMPROVEMENTS TURLEY NORTH LIFT STATION PROJECT NO. TMUA ES 2022-10 WATER AND SEWER DEPARTMENT CITY OF TULSA, OKLAHOMA



PLANS PREPARED BY

**Holloway, Updike and Bellen, Inc.**  
Muskogee - Broken Arrow, Oklahoma  
2001 N WILLOW AVE, BROKEN ARROW, OK. 74012  
918-251-0717, FAX 918-251-0754  
(C.A. No. 219, EXP. 6-30-25)

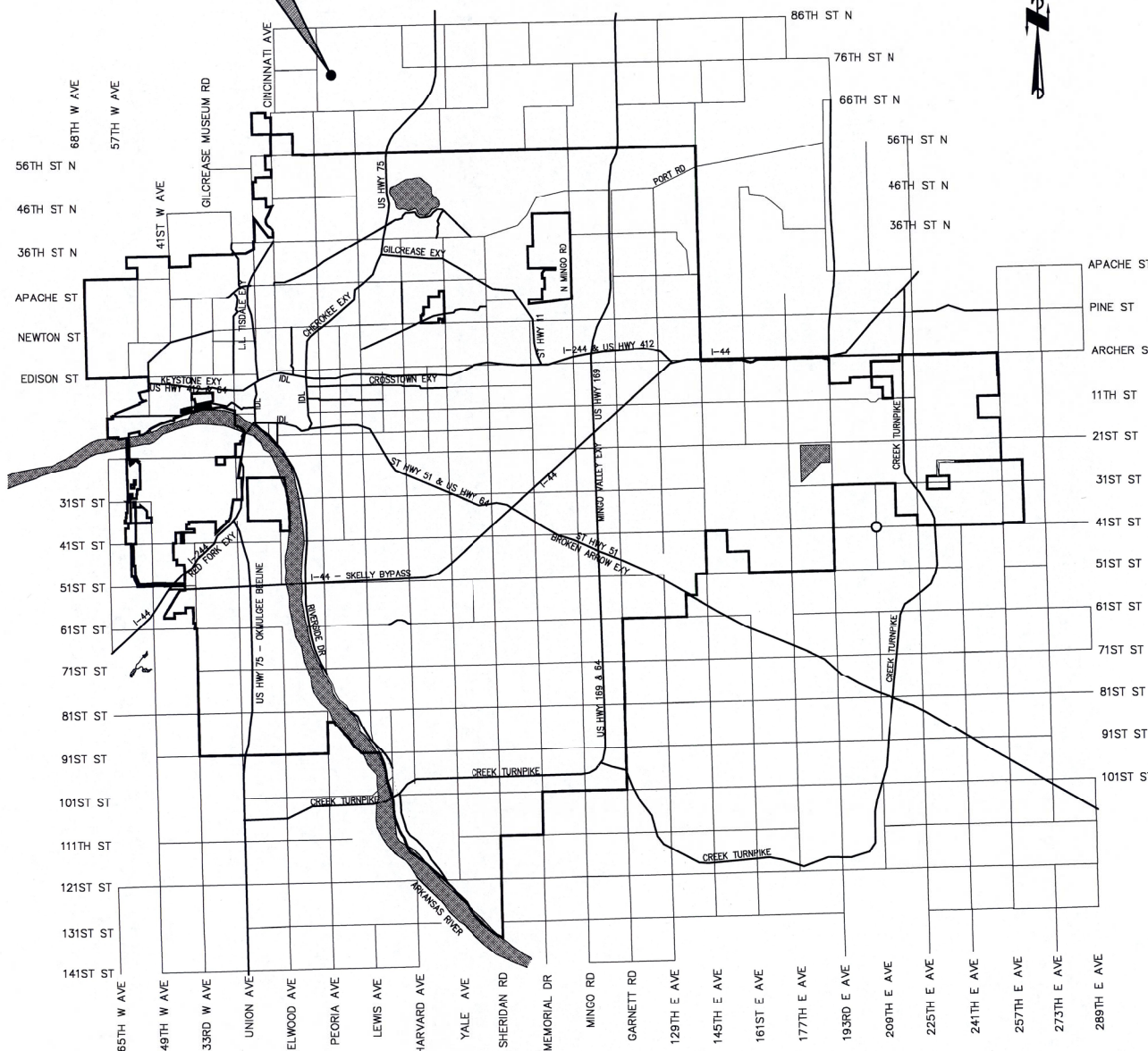


**Brown Engineers of Arkansas, LLC**  
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501-448-0100, FAX 866-846-4197  
(C.A. No. 4933, EXP. 6-30-24)

TURLEY NORTH  
LIFT STATION  
PROJECT SITE

BID ADVERTISE DATE \_\_\_\_\_

PROJECT LOCATION — CITY LIMITS



CITY OF TULSA STANDARD			
STD 102	PROJECT SIGN	STD 713	PAVEMENT REMOVAL & REPLACEMENT
STD 126	STD. SILT FENCE AND CONST ENT.	STD 714	STD. DETAIL FOR PAVEMENT CUTS
STD 304	BEDDING DETAIL - RIGID PIPE		
STD 305	BEDDING DETAIL SEMI-RIGID PIPE		
STD 358	PRE-CAST SANITARY SEWER MANHOLES		
STD 405	PIPELINE AND INSTALLATION		
STD 409	CONCRETE MANHOLE COLLAR		
STD 702	RESIDENTIAL CONCRETE DRIVEWAY		



SURVEY DATUM:  
HORIZONTAL - OKLAHOMA STATE PLANE COORDINATE (NAD 1983)  
VERTICAL - (NAVD 1988)

UTILITY COORDINATION INFORMATION	
TULSA ENGINEERING SERVICES DEPARTMENT	
WATER DESIGN	596-9566
WASTEWATER DESIGN	596-9564
TRANSPORTATION DESIGN	596-9636
TRAFFIC ENGINEERING DESIGN	596-9741
STORMWATER DESIGN	596-9498
COT UTILITY COORDINATION	596-9649
OKLAHOMA NATURAL GAS CO.	831-8215
COX COMMUNICATIONS	286-4716
AEP/PSO	250-6257
AT&T	596-4237
MTA	830-0024



APPROVED BY

DIRECTOR, WATER AND SEWER  
DEPARTMENT

DALE SEATON, P.E.  
HOLLOWAY, UPDIKE & BELLEN INC.



1-3-2025

DATE

12-12-24

DATE

**SUMMARY OF PAY ITEMS - LIFT STATION AND FORCEMAIN**

ITEM NUMBER	SPEC NUMBER	ITEM DESCRIPTION	PAY NOTES	UNIT	QUANTITY
1	201(A)	CLEARING AND GRUBBING	4	EA	1
2	220	SWPPP	10	FA	1
3	221(C)	TEMPORARY SILT FENCE		LF	442
4	230(A)	SOLID SLAB SODDING	7	SY	178
5	303(A)	AGGREGATE BASE TYPE 'A'		CY	175
6	306	18 INCH REINFORCED CONCRETE PIPE		LF	75
7	310(B)	SUBGRADE METHOD 'B' - 6 INCHES		SY	751
8	312	6 INCH DIP - WYE, RJ	3	EA	1
9	312	6 INCH DIP - SLEEVE, RJ	3	EA	1
10	317	6 INCH PLUG VALVE	3	EA	1
11	312	6 INCH 45 DEGREE BEND, RJ	3	EA	2
12	325	SEPARATOR FABRIC		SY	532
13	335	CONTRACTOR QUALITY CONTROL		LSUM	1
14	335	CONTRACTOR AS-BUILT		EA	1
15	405	6 INCH PVC C900 DR18	5	LF	66
16	405	12 INCH PVC - SDR 35 OPEN CUT	5	LF	48
17	414(A)	P.C. CONCRETE PAVEMENT (PLACEMENT)		SY	700
18	414(B)	P.C. CONCRETE PAVEMENT - REINFORCED		CY	136
19	509(B)	CLASS 'A' CONCRETE		CY	141
20	611(A)	4 FOOT PRECAST MANHOLE, COMPLETE	8	EA	1
21	611(A)	VERTICAL FOOT OF MANHOLE DEPTH OVER 6 FEET		VF	6
22	613(M)	CULVERT END TREATMENT		EA	4
23	624	SECURITY FENCING AND GATES		LF	320
24	641	MOBILIZATION		EA	1
25	642	CONSTRUCTION STAKING	1	EA	1
26	COT 702	CONCRETE DRIVEWAY		SY	250
27	SPECIAL	TURLEY NORTH LIFT STATION IMPROVEMENTS	9,11,12	EA	1
28	SPECIAL	TURLEY NORTH LIFT STATION DEMOLITION	2	EA	1
29	SPECIAL	OWNER'S ALLOWANCE	6	ALLOW	100,000
<b>ADDITIVE ALTERNATE NO. 1</b>					
30	SPECIAL	ADDITIONAL LIFT STATION PUMP, NOT INSTALLED		EA	1



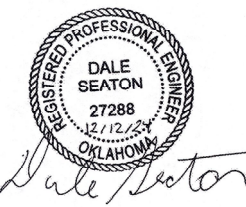
1 TURLEY NORTH LIFT STATION  
2 NTS

**PAY ITEM NOTES – LIFT STATION REHABILITATION:**

- INCLUDES THE COST OF ALL SURVEYING AND STAKING NECESSARY TO COMPLETE THE ENTIRE PROJECT. WORK SHALL BE PERFORMED BY AN OKLAHOMA REGISTERED LAND SURVEYOR.
- INCLUDES DEMOLITION OF EXISTING LIFT STATION AND SITE RESTORATION. SEE DEMOLITION PLAN SHEETS FOR ADDITIONAL REQUIREMENTS.
- ALL SANITARY SEWER DUCTILE IRON PIPE AND FITTINGS 6 INCHES DIAMETER AND LARGER SHALL BE PROTECTED 401 LINED.
- INCLUDES RIGHT-OF-WAY CLEARING AND RESTORATION FOR GRAVITY SEWER AND FORCE MAIN. EXISTING FENCES DISTURBED DUE TO CONSTRUCTION SHALL BE REPLACED WITH NEW MATERIALS AND SHALL BE INCLUDED IN THE COST FOR RIGHT-OF-WAY CLEARING AND RESTORATION FOR LINES 4-INCH DIAMETER AND LARGER. NO ADDITIONAL PAYMENT SHALL BE MADE.
- INCLUDES ALL COSTS FOR UNCLASSIFIED EXCAVATION AND BACKFILL FOR THE PROPOSED GRAVITY SEWER AND FORCE MAIN. THIS ITEM INCLUDES PAYMENT FOR COMPACTED CLASS A AGGREGATE BACKFILL WHERE REQUIRED UNDER PAVEMENT IN ACCORDANCE WITH STANDARD SPECIFICATION 302. THIS ITEM DOES NOT INCLUDE COSTS FOR LIFT STATION DEMOLITION. BLASTING WILL NOT BE PERMITTED. ALL BACKFILL SHALL BE COMPACTED TO 95% STANDARD DENSITY UNLESS NOTED SPECIFICALLY OTHERWISE.
- REFER TO SPECIFICATION SECTION SP1.1 – ALLOWANCE FOR REQUIREMENTS.
- PAYMENT OF SOD IS BASED ON THE LIMITS OF CITY LS SITE EASEMENT AND UTILITY EASEMENT. OTHER DISTURBED AREAS ARE NOT INCLUDED IN THESE QUANTITIES.
- ALL MANHOLES SHALL BE COMPLETE IN PLACE. THIS PAY ITEM INCLUDES FRAME, COVER, CONCRETE AND ALL OTHER INCIDENTALS REQUIRED FOR PLACEMENT. MANHOLES SHALL HAVE LOCKING LID.
- THIS ITEM INCLUDES ALL IMPROVEMENTS INCLUDING CONSTRUCTION OF THE PROPOSED TURLEY NORTH LIFT STATION, ELECTRICAL IMPROVEMENTS, BACK UP GENERATOR AND ALL APPURTENANCES.
- ITEM INCLUDES ALL COSTS FOR PREPARATION AND APPROVAL OF SWPPP AS COMPLETED AND COORDINATED BY CONTRACTOR IN ACCORDANCE WITH CONSTRUCTION DOCUMENTS.
- INCLUDES ALL COSTS ASSOCIATED WITH THE CONSTRUCTION OF THE PROPOSED ELECTRICAL INFRASTRUCTURE.
- CONTRACTOR SHALL INCLUDE ALL COSTS TO FULLY COMPLY WITH APPLICABLE REQUIREMENTS OF THE DIVISION 7 – WATER AND SEWER DEPARTMENT STANDARDS INCLUDING:
  - A. 701 – SPECIAL REQUIREMENTS, 702 – PREFERRED MANUFACTURERS AND NEW EQUIPMENT PURCHASES:  
<https://www.cityoftulsa.org/media/2405/water-sewer-guidelines-701-and-702.pdf>
  - B. 730 – SCADA STANDARDS:  
<https://www.cityoftulsa.org/government/departments/public-works/engineering-services/specifications-checklists-and-details-8x11/730-scada-standards/>



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LOCATION MAP & QUANTITIES SUMMARY  
 TMUA PROJECT NUMBER ES 2022-10  
 CITYWIDE LIFT STATION IMPROVEMENTS  
 CITY OF TULSA, OKLAHOMA  
 WATER AND SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:  
 **HOLLOWAY, UPDIKE + BELLEN, Inc.**  
 2001 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012  
 (918) 251-0727, FAX (918) 251-0754

REVISION	BY	DATE	PLAN SCALE:	DRAWN	PGM	06/2024	APPROVED:
				DESIGNED	TJR	06/2024	
			PROFILE SCALE:	SURVEY	CWC	06/2024	
			HORIZONTAL:	PROJ. MGR.	ADN	12/24	
			VERTICAL:	LEAD ENGR.	ADN	12/24	
				FIELD MGR.	ADN	12/24	
			FILE:	DRAWING:	22TMUATURLEY		DESIGN MANAGER
			ATLAS PAGE NO: 947, 636				ADVERTISMENT DATE: 2024
							SHEET 2 OF 24 SHEETS

**GENERAL NOTES**

1. THE CONTRACTOR SHALL CALL OKIE AT 1-800-522-6543 PRIOR TO ANY EXCAVATION TO DETERMINE LOCATION OF EXISTING UTILITIES.
2. THE CONTRACTOR SHALL, AT HIS EXPENSE, UNCOVER AND DETERMINE THE DEPTH OF PIPE LINES AND OTHER UTILITIES WHICH, IN HIS OPINION, COULD INTERFERE WITH THE CONSTRUCTION.
3. THE CITY OF TULSA ENGINEERING SERVICES DEPARTMENT STANDARD SPECIFICATIONS AND STANDARD DETAILS, CURRENT VERSION, ARE HEREBY ADOPTED AS PART OF THESE SPECIFICATIONS WHERE REFERENCE IS MADE. SAID SPECIFICATIONS WILL BE HEREINAFTER REFERRED TO AS THE "STANDARD SPECIFICATIONS".
4. CONTRACTOR SHALL HAVE ONE (1) EXECUTED COPY OF THE CONTRACT DOCUMENTS, SPECIFICATIONS AND DRAWINGS AT THE JOBS SITE AT ALL TIMES.
5. CONTRACTOR SHALL MAINTAIN SANITARY FACILITIES FOR THE CONSTRUCTION WORKERS AND OTHER ON-SITE VISITORS AT THE PROJECT SITE AT ALL TIMES.
6. CONTRACTOR SHALL MAINTAIN A CLEAN CONSTRUCTION SITE AT ALL TIMES. TRASH, SPENT PALLETS, CONTAINER REMNANTS, BINDINGS, ETC. SHALL BE PICKED UP WHEN NO LONGER IN USE AND DEPOSITED IN TRASH CONTAINERS.
7. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL CLEARED DEBRIS, BRUSH AND TIMBER AT CONTRACTOR'S EXPENSE.
8. ALL STAINLESS STEEL SHALL BE MINIMUM TYPE 316 SUITABLE FOR SANITARY APPLICATIONS, UNLESS OTHERWISE NOTED.
9. ALL DIMENSIONS SHOWN WITH ± SHALL BE CONFIRMED BY THE CONTRACTOR ACCORDING TO ACTUAL FIELD CONDITIONS OR EQUIPMENT REQUIREMENTS.
10. DISSIMILAR METALS SHALL BE SEPARATED BY GASKETS OR OTHER MATERIAL SELECTION TO PREVENT GALVANIC CORROSION.
11. ANY EXISTING ITEMS, EQUIPMENT, STRUCTURES OR SURFACES DISTURBED OR DAMAGED BY CONTRACTOR SHALL BE REPAIRED OR REPLACED TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE OWNER.
12. CONTRACTOR SHALL VERIFY EXISTING UTILITIES IN THE VICINITY OF PROPOSED CONSTRUCTION PRIOR TO CONSTRUCTION. NOTIFY ENGINEER OF DISCREPANCIES FROM DRAWINGS.
13. CONTRACTOR SHALL CONFIRM ALL DIMENSIONS WITH EQUIPMENT SUPPLIERS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF DISCREPANCIES FROM DRAWINGS.
14. CONSTRUCTION STAKING SHALL BE PROVIDED BY THE CONTRACTOR.
15. THE IMPROVEMENTS SET FORTH IN THE PLANS SHALL NOT PROHIBIT ON-SITE TRAFFIC AND/OR RELATED TASKS REQUIRED IN THE TREATMENT AND DISCHARGE OF WASTEWATER.
16. TOPSOIL (MINIMUM 6-INCH) IN THE DISTURBED AREAS SHALL BE REMOVED, STOCKPILED AND REPLACED AFTER CONSTRUCTION OPERATIONS. ALL WASTE SOILS AND DEBRIS BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE HAULED OFFSITE AND DISPOSED OF PROPERLY.
17. ALL CONSTRUCTION TO BE IN STRICT ACCORDANCE WITH CURRENT CITY OF TULSA ENGINEERING SERVICES DEPARTMENT STANDARDS AND SPECIFICATIONS.
18. ALL WORKMANSHIP SHALL BE NEAT, PLUMB, SQUARE AND CONSTRUCTED IN A PROFESSIONAL MANNER.
19. ALL ELECTRICAL CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH ALL N.E.C. AND CITY OF TULSA ELECTRICAL CODES. ELECTRICAL, MECHANICAL, AND PLUMBING INSPECTIONS ARE REQUIRED AT BOTH ROUGH AND FINAL STAGES OF THE PROJECT.
20. COMPILER ALL PRODUCT AND DATA SHEETS, OF ANY AND ALL EQUIPMENT INSTALLED IN EACH LIFT STATION, TO FORM A USABLE O&M MANUAL. PROVIDE THE CITY OF TULSA (3) THREE HARD COPIES AND (2) TWO DIGITAL COPIES IN PDF FORMAT OF THESE O&M MANUALS (10) TEN DAYS PRIOR TO THE REQUESTED FINAL ACCEPTANCE DATE. MANUALS SHALL BE TABBED AND AN INDEX SHEET PROVIDED TO ALLOW OWNER TO QUICKLY FIND INDIVIDUAL SECTIONS AND EQUIPMENT. COPIES OF ALL ELECTRICAL START UP REPORTS AND EQUIPMENT TESTING INFORMATION SHALL BE INCLUDED IN THE O&M MANUALS. PRELIMINARY O&M'S SHALL BE SUBMITTED PRIOR TO EQUIPMENT START UP AND TRAVELING.
21. SHUT DOWN TIMES SHALL BE LIMITED TO (2) TWO HOURS DURING LOW FLOW PERIODS (8 P.M. TO 4 A.M.). ALL SHUT DOWNS SHALL BE COORDINATED WITH CITY OF TULSA SEWER OPERATIONS AND MAINTENANCE GROUP, AT LEAST (48) FORTY EIGHT HOURS IN ADVANCE OF SHUT DOWN. LONGER SHUT DOWN PERIODS WILL REQUIRE BYPASS PUMPING TO BE PROVIDED AND OPERATED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY. CONTACT NUMBER FOR JOSH DRYBREAD IS 918-586-6958 (WORK).
22. CONTRACTOR MUST ENSURE PROPER PROTOCOLS IN PLACE FOR 24-HOUR MONITORED BYPASS PUMPING AND THE CONTRACTOR MUST COMPLETE A SOM BYPASS PUMPING FORM BEFORE COMPLETING ANY BYPASS PUMPING.
23. ANY BYPASS PUMPING AND/OR BYPASS PIPING INSTALLED SHALL BE OPERATED AND MAINTAINED BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING UNAUTHORIZED DISCHARGES.
24. CONTRACTOR IS RESPONSIBLE FOR ANY DEWATERING REQUIRED TO CONSTRUCT FOUNDATIONS IN DRY CONDITIONS AND TO PROTECT EXCAVATION SIDE SLOPES.
25. ALL BURIED CONSTRUCTION, INCLUDING BUT NOT LIMITED TO PIPE AND CONDUIT, SHALL BE PHOTOGRAPHED PRIOR TO COVER. EQUIPMENT DATA TAGS SHALL ALSO BE PHOTOGRAPHED WITH EQUIPMENT. SUBMIT IN A DIGITAL JPEG FORMAT ON USB DRIVE AS PART OF CONTRACTORS CONSTRUCTION PHOTOGRAPHIC RECORD. CONTRACTOR SHALL SUBMIT GPS COORDINATES AND ELEVATIONS OF THE CL OF ALL PIPING AT BENDS, FITTINGS, VALVES AND OTHER BURIED ITEMS.

26. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH STANDARDS ESTABLISHED BY THE CITY OF TULSA SEWER OPERATION AND MAINTENANCE GROUP. LIFT STATION STANDARDS ARE AVAILABLE FROM SEWER OPERATIONS & MAINTENANCE DEPARTMENT.
27. CONTRACTOR SHALL SUBMIT A PROFESSIONAL ENGINEERED TRENCH AND EXCAVATION PLAN FOR ALL EXCAVATIONS IN EXCESS OF 20 FEET.
28. ALL ELECTRICAL WORK SHALL BE DONE BY A LICENSED ELECTRICAL CONTRACTOR.
29. ALL NEW INSTALLED MANHOLES REGARDLESS OF DIAMETER WILL HAVE 30-INCH LID AND COVER AND NO STEPS.
30. CONSTRUCTION SHALL ADJUST AS NEEDED TO AVOID DISTURBING EXISTING UTILITIES

**GENERAL PIPING NOTES**

- P1. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
- P2. SIZE OF FITTINGS SHOWN ON THE PLANS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED.
- P3. ALL BURIED D.I.P., C.I.P. AND PVC PIPE SHALL UTILIZE D.I. MECHANICAL JOINT FITTINGS AT ALL CONNECTIONS UNLESS OTHERWISE DEPICTED ON THE PLANS. PUSH ON JOINTS SHALL BE UTILIZED ONLY FOR STRAIGHT SEGMENTS UNLESS OTHERWISE NOTED.
- P4. ALL BURIED FITTINGS SUCH AS BENDS, TEES, WYES, ETC. SHALL BE BLOCKED FOR THRUST BLOCKS AS SHOWN ON STANDARD DETAILS. THIS REQUIREMENT INCLUDES BOTH GRAVITY AND PRESSURE PIPING.
- P5. A MINIMUM OF 10 FEET OF HORIZONTAL SEPARATION (FOR PARALLEL LINES) AND 2 FEET OF VERTICAL SEPARATION (FOR LINES CROSSING) SHALL BE MAINTAINED BETWEEN WATER AND SANITARY SEWER LINES IN ACCORDANCE WITH OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY.
- P6. CONTRACTOR SHALL REMOVE AND RECONSTRUCT INVERTS WHERE NEW CONNECTIONS ARE MADE TO EXISTING MANHOLES.
- P7. ALL FLANGE COUPLING ADAPTERS SHOWN ON THE CONSTRUCTION DRAWINGS SHALL BE RESTRAINED TYPE, MEGAFLANGE SERIES 2100, OR EQUAL.
- P8. CONTRACTOR IS REQUIRED TO VACUUM TEST ALL MANHOLES ACCORDING TO CITY OF TULSA, WATER AND SEWER STANDARDS AND SPECIFICATIONS.

**SPECIAL PROJECT NOTES AND REQUIREMENTS:**

1. ALL UNISTRUT, BRACKETS, SUPPORTS AND RELATED DEVICES SHALL BE 316 STAINLESS STEEL UNLESS SPECIFICALLY NOTED OTHERWISE. ALL ANCHOR BOLTS, BOLTS, SCREWS, CLIPS, NAILS, BRADS, RIVETS, WASHERS AND OTHER FASTENING DEVICES SHALL BE 316 STAINLESS STEEL UNLESS SPECIFICALLY NOTED OTHERWISE.
2. IF NOT WALL MOUNTED, ALL NEW DISCONNECTS, ELECTRICAL PANELS, CONTROL PANELS AND DISPLAY DEVICES SHALL BE MOUNTED ON THE PLANT STANDARD CUSTOM ALUMINUM PANEL SUPPORT DETAIL 2/22 UNLESS SPECIFICALLY NOTED OTHERWISE PER PLAN SHEET NOTES.
3. ALL NEW PIPING AND MODIFIED PIPING SHALL BE PAINTED, STANDARD COLOR CODED WITH DIRECTION ARROWS AND SIGNAGE AS PART OF THE NEW WORK. SEE ODEQ STANDARDS FOR STANDARD COLORS AS APPLICABLE AND SUBMIT FOR APPROVAL WITH PAINT/COATINGS SUBMITTAL(S). COST SHALL BE IN OTHER AREAS OF WORK.
4. ALL AREAS OF NEW WORK AND DEMOLITION SHALL INCLUDE REPAIRS TO THE WALLS, CEILING, ROOF, FLOORING, CONCRETE PAD OR OTHER AREAS. INCLUDE TOUCH UP PAINTING TO MATCH THE EXISTING AND CONCRETE REPAIR DETAIL 3/21 AS REQUIRED. SEE SPECIFICATIONS AND SPECIFIC PLAN SHEETS FOR ADDITIONAL DETAILS.
5. ALL ELECTRICAL AND CONTROLS DEMOLITION FOR BIDDING PURPOSES, UNLESS SPECIFICALLY NOTED OTHERWISE, SHALL BE REMOVED COMPLETELY BACK TO CLOSEST POINT OF TERMINATION. CONTRACTOR SHALL SUBMIT WRITTEN SKETCHES, DETAILS AND A WORK PLAN TO FURTHER DEFINE EXTENT OF EACH AREA OF DEMOLITION AND NEW WORK.
6. SEE SPECIFICATIONS AND CITY OF TULSA STANDARDS AND DETAILS FOR ADDITIONAL REQUIREMENTS. ALL FACILITY'S ROADS, PARKING AND PAVED AREAS ARE CONSIDERED CITY OF TULSA ROADS AND CITY OF TULSA STANDARDS APPLY.
7. CONTRACTOR SHALL PAY CLOSE ATTENTION AND PROVIDE DETAILS TO MINIMIZE CORROSION IN ALL AREAS OF WORK. EVERY EFFORT SHALL BE MADE TO MINIMIZE DISSIMILAR METALS, ALUMINUM COATED IN CONTACT WITH CONCRETE AND OTHER MATERIAL SELECTION FOR WASTEWATER APPLICATIONS.
8. ALL EXPOSED COPPER PIPING, TUBING OR LINES SHALL BE OPTIONED FOR CORROSION RESISTANT COATINGS BY THE MANUFACTURER IF AVAILABLE. IF A FACTORY COATING OPTION IS NOT AVAILABLE, APPLY A SPRAY COATING ONSITE WITH HERESITE COATING OR EQUAL PRIOR TO ASSEMBLY/INSTALLATION. REQUIREMENTS APPLY TO ALL HVAC MECHANICAL EQUIPMENT AND PLUMBING SYSTEMS WITHIN ALL FACILITY GROUNDS, EXTERIOR EQUIPMENT, SERVICES, INSIDE OF BUILDINGS, MANHOLES, VAULTS, SHEDS OR OTHER AREAS. OCCUPIED SPACES SUCH AS OPERATIONS BUILDING, OFFICE SPACE OR ADMINISTRATION BUILDINGS ARE EXEMPT FROM ADDITIONAL COPPER COATING REQUIREMENTS, UNLESS SPECIFICALLY NOTED OTHERWISE. BURIED COPPER WATERLINES ARE ALSO EXEMPT.



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*Dale Seaton*

GENERAL NOTES				
TMUA PROJECT NUMBER ES 2022-10				
CITYWIDE LIFT STATION IMPROVEMENTS				
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT				
PLANS AND ESTIMATES PREPARED BY:				
 HOLLOWAY, UPDIKE + BELLEN, Inc. 2001 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012 (918) 259-0777, FAX (918) 259-0754				
REVISION	BY	DATE	APPROVED:	
			 DESIGN MANAGER	
PLAN SCALE:	DRAWN	PGM		06/2024
	DESIGNED	TJR		06/2024
PROFILE SCALE:	SURVEY	CWC		06/2024
HORIZONTAL:	PROJ. MGR.	<i>MM</i>	7/2/24	
	LEAD ENGR.	<i>MM</i>	7/2/24	
	FIELD MGR.	<i>MM</i>	7/2/24	
	FILE:	DRAWING:	22TMUAUTURLEY	
	ATLAS PAGE NO:	947, 636	ADVERTISEMENT DATE: 2024	
			SHEET 3 OF 24 SHEETS	

STANDARD ABBREVIATIONS

AC	ASBESTOS CEMENT PIPE	LS	LUMP SUM
ASP	ASPHALT	LT	LEFT
AWWA	AMERICAN WATER WORKS ASSOC.	MAX	MAXIMUM
BM	BENCH MARK - ELEVATION	MIN	MINIMUM
CI	CAST IRON INLET	MJ	MECHANICAL JOINT PIPE FITTING
C-C	CENTER TO CENTER	MSL	MEAN SEA LEVEL
CFS	CUBIC FEET PER SECOND	O.C.	ON CENTER
CIP	CAST IRON PIPE	OD	OUTSIDE DIAMETER
CL	CENTER LINE	ODEQ	OK. DEPT. OF ENV. QUALITY
CMP	CORRUGATED METAL PIPE	ODOT	OK. DEPT. OF TRANSPORTATION
CMPA	CORRUGATED METAL PIPE - ARCH	PE	POLYETHYLENE PIPE
CONC	CONCRETE	PL	PROPERTY LINE
CP	SURVEY CONTROL POINT	PP	POWER POLE
CPVC	CHLORINATED POLYVINYL CHLORIDE PIPE	PSI	POUNDS PER SQUARE INCH
CY	CUBIC YARD	PVC	POLYVINYL CHLORIDE PIPE
D/E	DRAINAGE EASEMENT	Q100	100 YR FLOW
DIP	DUCTILE IRON PIPE	RCB	REINFORCED CONCRETE BOX
EA	EACH	RCP	REINFORCED CONCRETE PIPE
EL	ELEVATION	RJ	RESTRAINED JOINT - PIPE
E-W	EACH WAY	RT	RIGHT
FG	FINISHED GROUND ELEVATION	RW	RIGHT OF WAY LINE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	STA	STATION
FM	FORCE MAIN (SEWER)	STM	STORM SEWER LINE
GV	GATE VALVE	SY	SQUARE YARD
HW	HEADWALL	TYP	TYPICAL
HYD	FIRE HYDRANT	U/E	UTILITY EASEMENT
ID	INSIDE DIAMETER	WL	WATER LINE
IP	IRON PIN		
LF	LINEAL FEET		

MISCELLANEOUS SYMBOLS AND ABBREVIATIONS

SYMBOL	ABBREV.	DESCRIPTION	SYMBOL	DESCRIPTION
021 S 12	PF	PARSHALL FLUME	—x—	FENCE
	LL	LINE LABELS	---	SECTION LINE
	FM	FLOW METER	—P—	PROPERTY LINE
	GV	GATE VALVE	Ø	POWER POLE
	BFV	BUTTERFLY VALVE	p	TRAFFIC SIGN
	BV	BALL VALVE	☀	LIGHT POLE
	BCV	BALL CHECK VALVE	—700—	PROPOSED CONTOUR
	CV	CHECK VALVE	—700—	EXIST. CONTOUR
	PV	PLUG VALVE	OOO	TREES
	PRV	PRESSURE RELIEF VALVE	Q SWALE & FLOW	Q SWALE & FLOW
	PCV	PRESSURE CONTROL VALVE	— — — —	CREEK OR DITCH SWALE
		VALVE w/ MECHANICAL OPERATOR	— — —	DRIVES & MINOR ROADS
	DV	DIAPHRAGM VALVE	+++++	RAILROAD
	BFP	BACK FLOW PREVENTER	— —	EXIST. RIGHT OF WAY
	ARV	AIR RELIEF VALVE	△	REFERENCE POINT
	SW	STRUCTURE WALL	▲ B-3	BORING LOCATION
	ES	EXISTING STRUCTURE	— —	SURVEY BASE LINE
	B	BLOWER	— —	PROPOSED LINE
	P	PUMPS	— —	CONDUIT
	MV	MUD VALVE	○	IRON PIN
	FC	FLEXIBLE COUPLING	~	EXISTING TREE LINE
	FC	FLEXIBLE METAL COUPLING	~	PROPOSED CLEARING LIMIT
		SAMPLER	#####	PIPING (TO BE ABANDONED)
	TV	TELESCOPIC VALVE	— —	MATCHLINE
		MOTOR OPERATOR	○	SECTION NUMBER OR DETAIL LETTER
		PRESSURE GAUGE	○	SHEET NUMBER WHERE SECTION OR DETAIL APPEARS
		TEMPERATURE GAUGE		
	SA	SURFACE AERATOR		
	PT	PRESSURE TRANSDUCER		
	BF	BLIND FLANGE		
		HOSE CONNECTION		
		"Y" TYPE STRAINER		
		EXPANSION JOINT		
		AIR RELEASE VALVE		

PIPE FITTINGS AND PLUMBING ITEMS

DOUBLE LINE	SINGLE LINE	DESCRIPTION	ABBREV.
		WELDED JOINT	
		GROOVED END JOINT	
		BELL & SPIGOT JOINT	
		FLANGED COUPLING ADAPTER WITH THRUST TIES	
		FLEXIBLE COUPLING	FLW. CPLG.
		FLEXIBLE COUPLING WITH THRUST TIES	
		ELASTOMETER BELLOWS EXP. JOINT	EXP. JT.
		ELBOW UP	ELL
		ELBOW DOWN	ELL
		ELBOW 90 DEGREE	ELL
		ELBOW 45 DEGREE	
		LATERAL	
		TEE	TEE
		TEE UP	TEE
		TEE DOWN	TEE
		CROSS	CROSS
		Y-STRAINER	YS
		COUPLING	CPLG

SURVEY SYMBOLS

SYMBOL	DESCRIPTION
	WATER METER
	WATER VALVE
	FIRE HYDRANT
	IRON PIN FOUND
	SANITARY SEWER MANHOLE
	TELEPHONE PEDESTAL
	FIBER OPTIC PEDESTAL
	ELECTRICAL BOX
	BENCH MARK
	POWER POLE
	GUY WIRE
	STORM SEWER MANHOLE
	TRAFFIC SIGN
	SANITARY SEWER CLEANOUT

EXISTING UTILITY LINE SYMBOLS

SYMBOL	DESCRIPTION
— WL —	WATER LINE
— SS —	SANITARY SEWER LINE
— FM —	SANITARY SEWER FORCE MAIN
— STM —	STORM SEWER
— UGE —	UNDERGROUND ELECTRIC
— GAS —	GAS LINE
— OHE —	OVERHEAD ELECTRIC
— TUG —	UNDERGROUND TELEPHONE
— FOC —	FIBER OPTIC CABLE
— PL —	PROPERTY LINE

FLOW STREAM IDENTIFICATION

ALP - AIR, LOW PRESSURE
CGP - CHLORINE GAS, PRESSURE
CGV - CHLORINE GAS, VACUUM
CS - CHLORINE SOLUTION
DR - DRAIN (PLANT PROCESS)
DS - DIGESTED SLUDGE
GR - GRIT
MLSS - MIXED LIQUOR SUSPENDED SOLIDS
NPW - NONPOTABLE WATER (SAME AS W3)
PEW - PLANT EFFLUENT WATER (NONPOTABLE)
PLE - PLANT EFFLUENT
PO - LIQUID POLYMER
PSW - PLANT SERVICE WATER (NONPOTABLE)
PW - POTABLE WATER
RS - RAW SEWAGE
RAS/WAS - RETURN/WASTE ACITVATED SLUDGE
RAS - RETURN ACTIVATED SLUDGE
SCUM - SCUM
SDS - SULFUR DIOXIDE SOLUTION
SE - SECONDARY EFFLUENT
SHX - SODIUM HYDROXIDE
SS - SANITARY SEWER
STM - STORMWATER
W3 - EQUIPMENT WATER (NONPOTABLE)
WAS - WASTE ACTIVATED SLUDGE

PIPE FITTINGS AND PLUMBING ITEMS

DOUBLE LINE	SINGLE LINE	DESCRIPTION	ABBREV.
		LATERAL UP	
		LATERAL DOWN	
		CONCENTRIC REDUCER	CONC. RED.
		ECCENTRIC REDUCER	ECC. RED.
		UNION	UN
		CAP	
		FLANGED JOINT	FLG
		FLANGED COUPLING ADAPTER	FCA
		MECHANICAL JOINT	MJ
		MJ w/ RETAINER GLAND	RJ

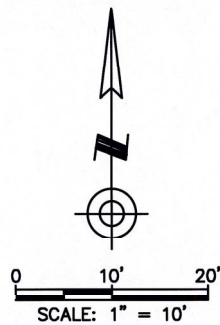


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SYMBOLS & LEGEND			
TMUA PROJECT NUMBER ES 2022-10			
CITYWIDE LIFT STATION IMPROVEMENTS			
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT			
PLANS AND ESTIMATES PREPARED BY: HOLLOWAY, UPDKE + BELLEN, Inc. 2021 N WILLOW AVE. BUCKEN APPROX. OKLAHOMA 74122 918-259-0727, FAX 918-259-0794			
REVISION	BY	DATE	APPROVED:
PLAN SCALE:	DRAWN	PGM	03/2023
	DESIGNED	TJR	03/2023
PROFILE SCALE:	SURVEY	CWC	03/2023
HORIZONTAL:	PROJ. MGR.		
	LEAD ENGR.		
VERTICAL:	FIELD MGR.		
FILE:	DRAWING:	22TMUATURLEY	ADVERTISEMENT DATE: 2024
			SHEET 4 OF 24 SHEETS



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E 76TH ST N

10+00

PI: 10+47.21  
N=466362.02  
E=2567098.25

BP: 10+00.00  
N=466363.22  
E=2567145.44

2  
Δ605.30  
CP1/2"

S88° 33' 12"W

47.21'

S88° 51' 36"W

S01° 26' 48"E  
14.07'

X605.42  
NE PROPOERTY CORNER

10.50'

12" SS

10.00'

BLOCK 2  
GOLDEN HILL ADDITION

CITY OF  
TULSA  
7548

LOT 1 BLOCK 2

SANKO  
DANIEL LEE

7539

LOT 21 BLOCK 1

BLOCK 1  
GOLDEN HILL ADDITION  
SUB B1

11+00

S01° 26' 48"E

34.04'

6" FM

PI: 11+19.31  
N=466289.94  
E=2567100.07

6" FM

S49° 52' 42"E

53.15'

TRENTON AVE

BM 607.90  
IN POWER POLE

1  
Δ606.14  
CP1/2"

EP: 11+72.47  
N=466255.69  
E=2567140.72



CHARLES W. CHASTAIN L.S. # 1352

THE SURVEYS FOR THE INFORMATION CONTAINED ON THESE SURVEY SHEETS WERE CONDUCTED UNDER MY SUPERVISION AND THE INFORMATION CONTAINED HEREIN IS A CORRECT REPRESENTATION OF SAID SURVEY.

SURVEY DATUM:  
HORIZONTAL - OKLAHOMA STATE PLANE  
COORDINATE (NAD1983)  
VERTICAL - (NAVD 1988)



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SURVEY DATA

TMUA PROJECT NUMBER ES 2022-10

CITYWIDE LIFT STATION IMPROVEMENTS

CITY OF TULSA, OKLAHOMA  
WATER AND SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:

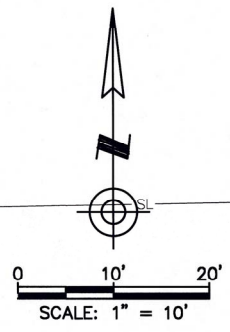
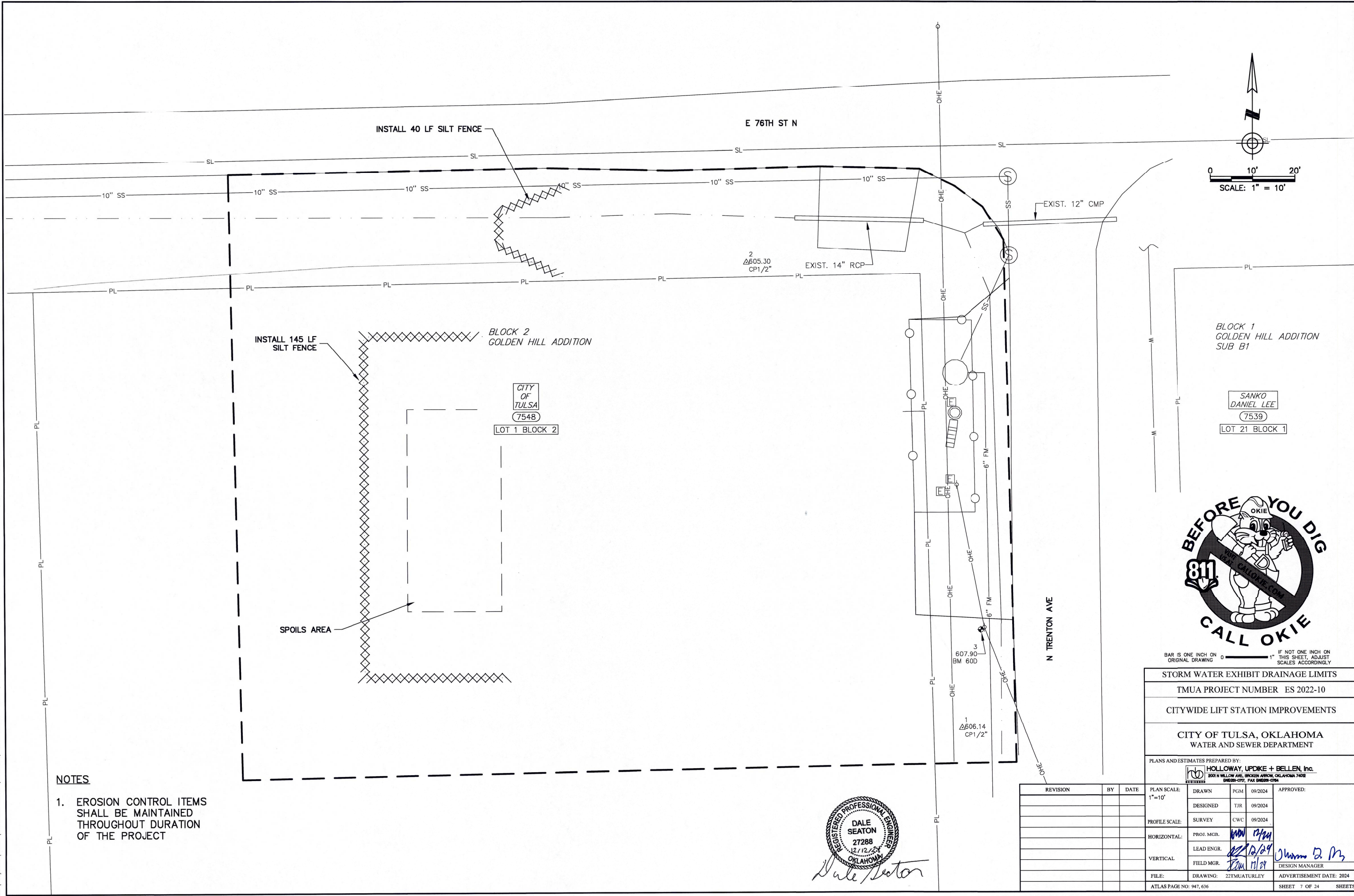
HOLLOWAY, UPDIKE + BELLEN, Inc.  
2001 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012  
(918)228-0777, FAX (918)228-0764

SURVEY DATA				
ID	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	CP1/2"	466251.55	2567133.79	606.14
2	CP1/2"	466361.49	2567083.13	605.30
3	BM 60D IN POWER POLE	466274.71	2567138.41	607.90
4	NE PROPOERTY CORNER	466358.85	2567124.34	605.42

REVISION	BY	DATE	PLAN SCALE: 1"=10'	DRAWN	PGM	DATE	APPROVED:
				DESIGNED	TJR	09/2024	
				SURVEY	CWC	09/2024	
				PROJ. MOR.		09/24	
				LEAD ENGR.		10/24	
				FIELD MGR.		12/24	
				DRAWING:	22TMUATURLEY		ADVERTISMENT DATE: 2024
				ATLAS PAGE NO:	947, 636		SHEET 5 OF 24 SHEETS



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BLOCK 1  
GOLDEN HILL ADDITION  
SUB B1

SANKO  
DANIEL LEE  
7539  
LOT 21 BLOCK 1



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STORM WATER EXHIBIT DRAINAGE LIMITS  
TMUA PROJECT NUMBER ES 2022-10  
CITYWIDE LIFT STATION IMPROVEMENTS  
CITY OF TULSA, OKLAHOMA  
WATER AND SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:  
HOLLOWAY, UPDIKE + BELLEN, Inc.  
2001 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012  
918-259-0797, FAX 918-259-0794

**NOTES**

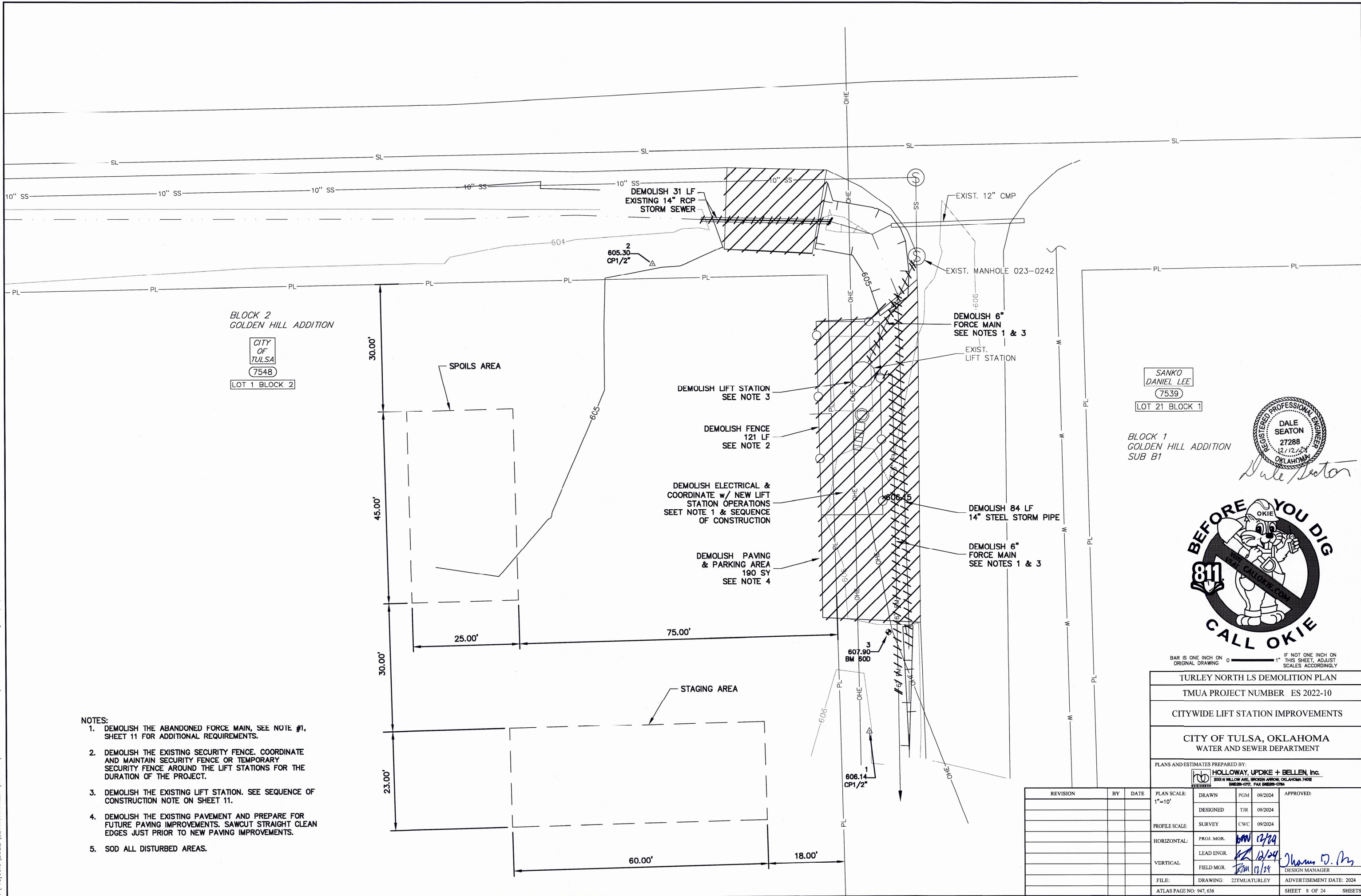
1. EROSION CONTROL ITEMS SHALL BE MAINTAINED THROUGHOUT DURATION OF THE PROJECT



*Dale Seaton*

REVISION	BY	DATE	PLAN SCALE:	DRAWN	PGM	DATE	APPROVED:
			1"=10'				
				DESIGNED	TJR	09/2024	
			PROFILE SCALE:	SURVEY	CWC	09/2024	
			HORIZONTAL:	PROJ. MGR.	<i>[Signature]</i>	12/24	
			VERTICAL:	LEAD ENGR.	<i>[Signature]</i>	12/24	
				FIELD MGR.	<i>[Signature]</i>	11/29	<i>[Signature]</i>
			FILE:	DRAWING:	22TMUATURLEY		DESIGN MANAGER
			ATLAS PAGE NO: 947,636				ADVERTISMENT DATE: 2024
							SHEET 7 OF 24 SHEETS

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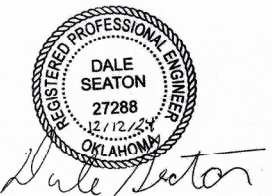


BLOCK 2  
GOLDEN HILL ADDITION

CITY OF  
TULSA  
7548  
LOT 1 BLOCK 2

SANKO  
DANIEL LEE  
7539  
LOT 21 BLOCK 1

BLOCK 1  
GOLDEN HILL ADDITION  
SUB B1



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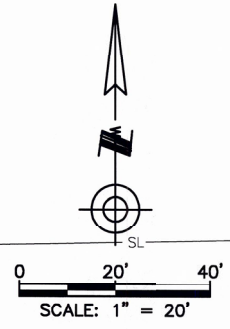
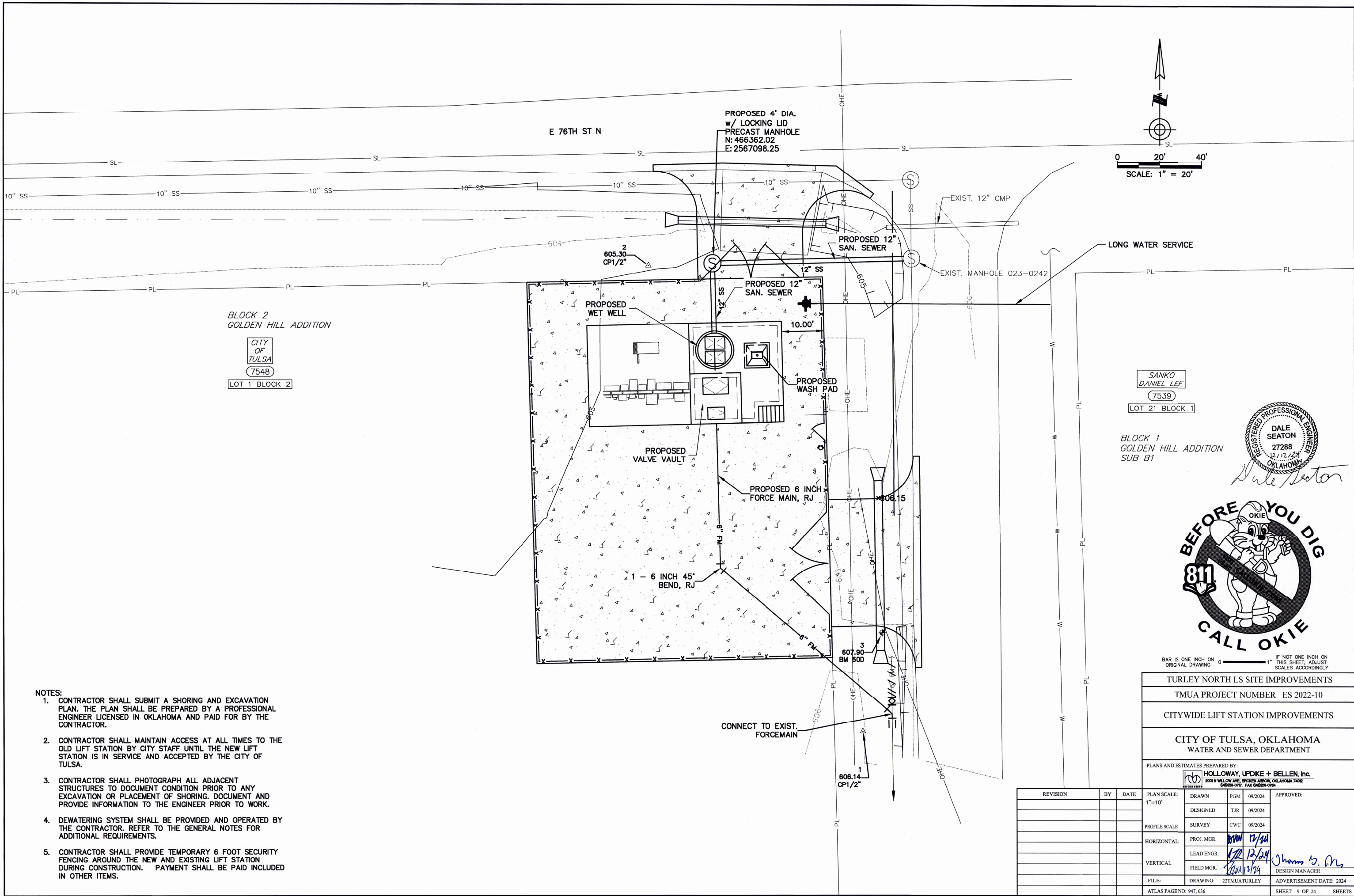
TURLEY NORTH LS DEMOLITION PLAN
TMUA PROJECT NUMBER ES 2022-10
CITYWIDE LIFT STATION IMPROVEMENTS
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:  
HOLLOWAY, UPDIKE + BELLEN, Inc.  
2003 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012  
(918) 259-0707, FAX (918) 259-0764

- NOTES:
1. DEMOLISH THE ABANDONED FORCE MAIN, SEE NOTE #1, SHEET 11 FOR ADDITIONAL REQUIREMENTS.
  2. DEMOLISH THE EXISTING SECURITY FENCE. COORDINATE AND MAINTAIN SECURITY FENCE OR TEMPORARY SECURITY FENCE AROUND THE LIFT STATIONS FOR THE DURATION OF THE PROJECT.
  3. DEMOLISH THE EXISTING LIFT STATION. SEE SEQUENCE OF CONSTRUCTION NOTE ON SHEET 11.
  4. DEMOLISH THE EXISTING PAVEMENT AND PREPARE FOR FUTURE PAVING IMPROVEMENTS. SAWCUT STRAIGHT CLEAN EDGES JUST PRIOR TO NEW PAVING IMPROVEMENTS.
  5. SOD ALL DISTURBED AREAS.

REVISION	BY	DATE	PLAN SCALE:	DRAWN	PGM	DATE	APPROVED:
			1"=10'				
			PROFILE SCALE:	DESIGNED	TJR	09/2024	
				SURVEY	CWC	09/2024	
			HORIZONTAL:	PROJ. MGR.	BM	12/24	
				LEAD ENGR.		12/24	
			VERTICAL:	FIELD MGR.	BM	12/24	
			FILE:	DRAWING:	22TMUATURLEY		DESIGN MANAGER
			ATLAS PAGE NO: 947,636				ADVERTISMENT DATE: 2024
							SHEET 8 OF 24 SHEETS

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BLOCK 2  
GOLDEN HILL ADDITION  
CITY OF TULSA  
7548  
LOT 1 BLOCK 2

SANKO  
DANIEL LEE  
7539  
LOT 21 BLOCK 1

BLOCK 1  
GOLDEN HILL ADDITION  
SUB B1



*Dale Seaton*



BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

- NOTES:
1. CONTRACTOR SHALL SUBMIT A SHORING AND EXCAVATION PLAN. THE PLAN SHALL BE PREPARED BY A PROFESSIONAL ENGINEER LICENSED IN OKLAHOMA AND PAID FOR BY THE CONTRACTOR.
  2. CONTRACTOR SHALL MAINTAIN ACCESS AT ALL TIMES TO THE OLD LIFT STATION BY CITY STAFF UNTIL THE NEW LIFT STATION IS IN SERVICE AND ACCEPTED BY THE CITY OF TULSA.
  3. CONTRACTOR SHALL PHOTOGRAPH ALL ADJACENT STRUCTURES TO DOCUMENT CONDITION PRIOR TO ANY EXCAVATION OR PLACEMENT OF SHORING. DOCUMENT AND PROVIDE INFORMATION TO THE ENGINEER PRIOR TO WORK.
  4. DEWATERING SYSTEM SHALL BE PROVIDED AND OPERATED BY THE CONTRACTOR. REFER TO THE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
  5. CONTRACTOR SHALL PROVIDE TEMPORARY 6 FOOT SECURITY FENCING AROUND THE NEW AND EXISTING LIFT STATION DURING CONSTRUCTION. PAYMENT SHALL BE PAID INCLUDED IN OTHER ITEMS.

TURLEY NORTH LS SITE IMPROVEMENTS			
TMUA PROJECT NUMBER ES 2022-10			
CITYWIDE LIFT STATION IMPROVEMENTS			
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT			
PLANS AND ESTIMATES PREPARED BY: <b>HOLLOWAY, UPDIKE + BELLEN, Inc.</b> <small>2001 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012 (918) 251-0771 FAX (918) 251-0784</small>			
REVISION	BY	DATE	APPROVED:
			DRAWN: PGM 09/20/24
			DESIGNED: TJR 09/20/24
			PROFILE SCALE: SURVEY: CWC 09/20/24
			HORIZONTAL: PROJ. MGR. <i>[Signature]</i> 12/24
			LEAD ENGR. <i>[Signature]</i> 12/24
			FIELD MGR. <i>[Signature]</i> 12/24
			DESIGN MANAGER: <i>[Signature]</i>
			FILE: DRAWING: 22TMUA/TURLEY
			ADVERTISEMENT DATE: 2024
			ATLAS PAGENO: 947,636
			SHEET 9 OF 24 SHEETS



0 20' 40'  
SCALE: 1" = 20'

BLOCK 2  
GOLDEN HILL ADDITION

CITY  
OF  
TULSA  
(7548)

LOT 1 BLOCK 2

SANKO  
DANIEL LEE  
(7539)

LOT 21 BLOCK 1

BLOCK 1  
GOLDEN HILL ADDITION  
SUB B1



*Dale Seaton*



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TURLEY N LS PAVING & GRADING IMPROVEMENTS  
TMUA PROJECT NUMBER ES 2022-10  
CITYWIDE LIFT STATION IMPROVEMENTS  
CITY OF TULSA, OKLAHOMA  
WATER AND SEWER DEPARTMENT

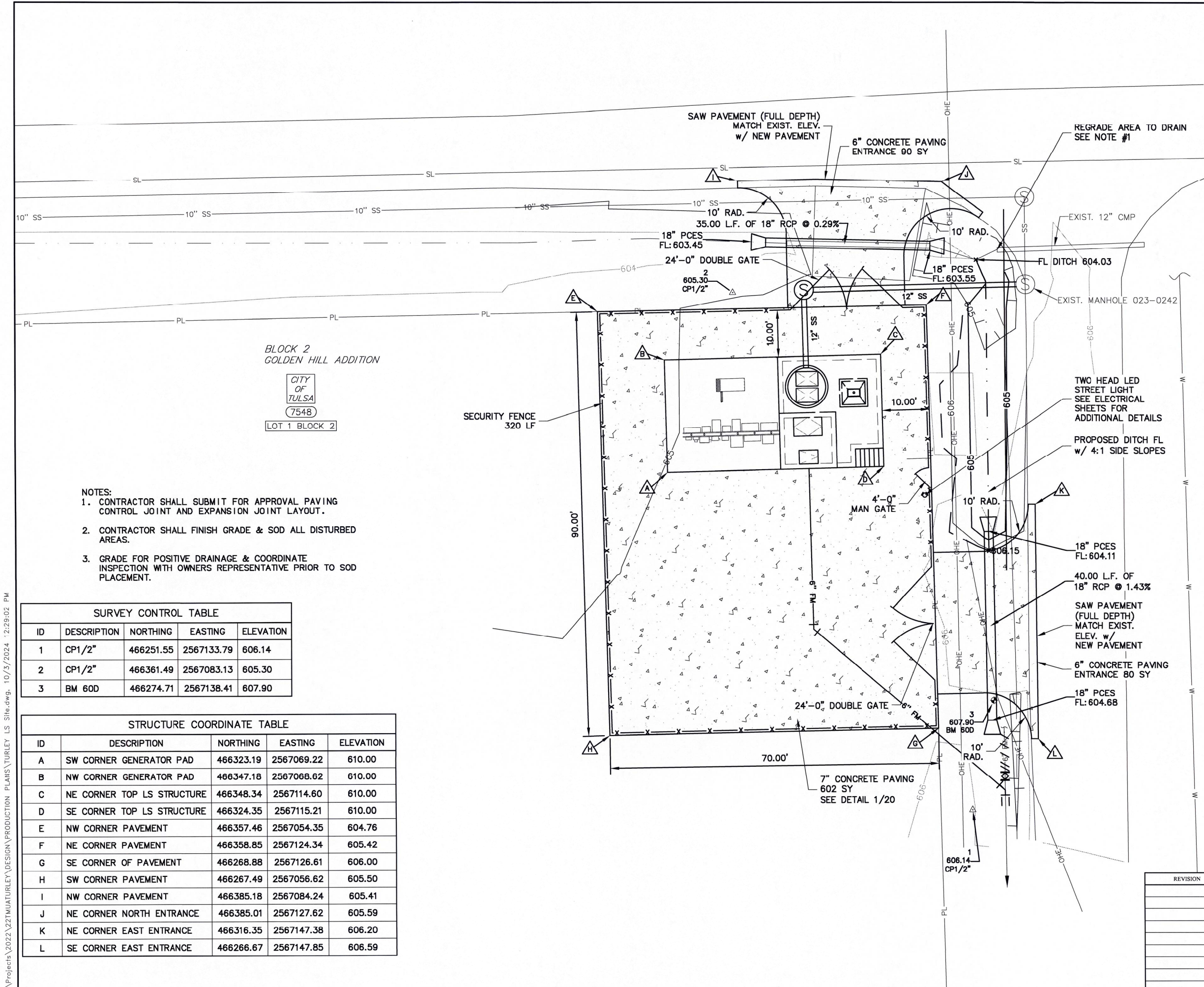
PLANS AND ESTIMATES PREPARED BY:  
HOLLOWAY, UPDIKE + BELLEN, Inc.  
2003 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012  
(918)291-0777, FAX (918)291-0764

REVISION	BY	DATE	PLAN SCALE:	DRAWN	PGM	DATE	APPROVED:
			1"=10'	DESIGNED	TJR	09/2024	
			PROFILE SCALE:	SURVEY	CWC	09/2024	
			HORIZONTAL:	PROJ. MGR.	<i>[Signature]</i>	09/24	
			VERTICAL:	LEAD ENGR.	<i>[Signature]</i>	12/24	
				FIELD MGR.	<i>[Signature]</i>	12/24	<i>[Signature]</i>
			FILE:	DRAWING:	22TMUATURLEY		ADVERTISMENT DATE: 2024
			ATLAS PAGE NO: 947, 636				SHEET 10 OF 24 SHEETS

- NOTES:
1. CONTRACTOR SHALL SUBMIT FOR APPROVAL PAVING CONTROL JOINT AND EXPANSION JOINT LAYOUT.
  2. CONTRACTOR SHALL FINISH GRADE & SOD ALL DISTURBED AREAS.
  3. GRADE FOR POSITIVE DRAINAGE & COORDINATE INSPECTION WITH OWNERS REPRESENTATIVE PRIOR TO SOD PLACEMENT.

ID	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	CP1/2"	466251.55	2567133.79	606.14
2	CP1/2"	466361.49	2567083.13	605.30
3	BM 60D	466274.71	2567138.41	607.90

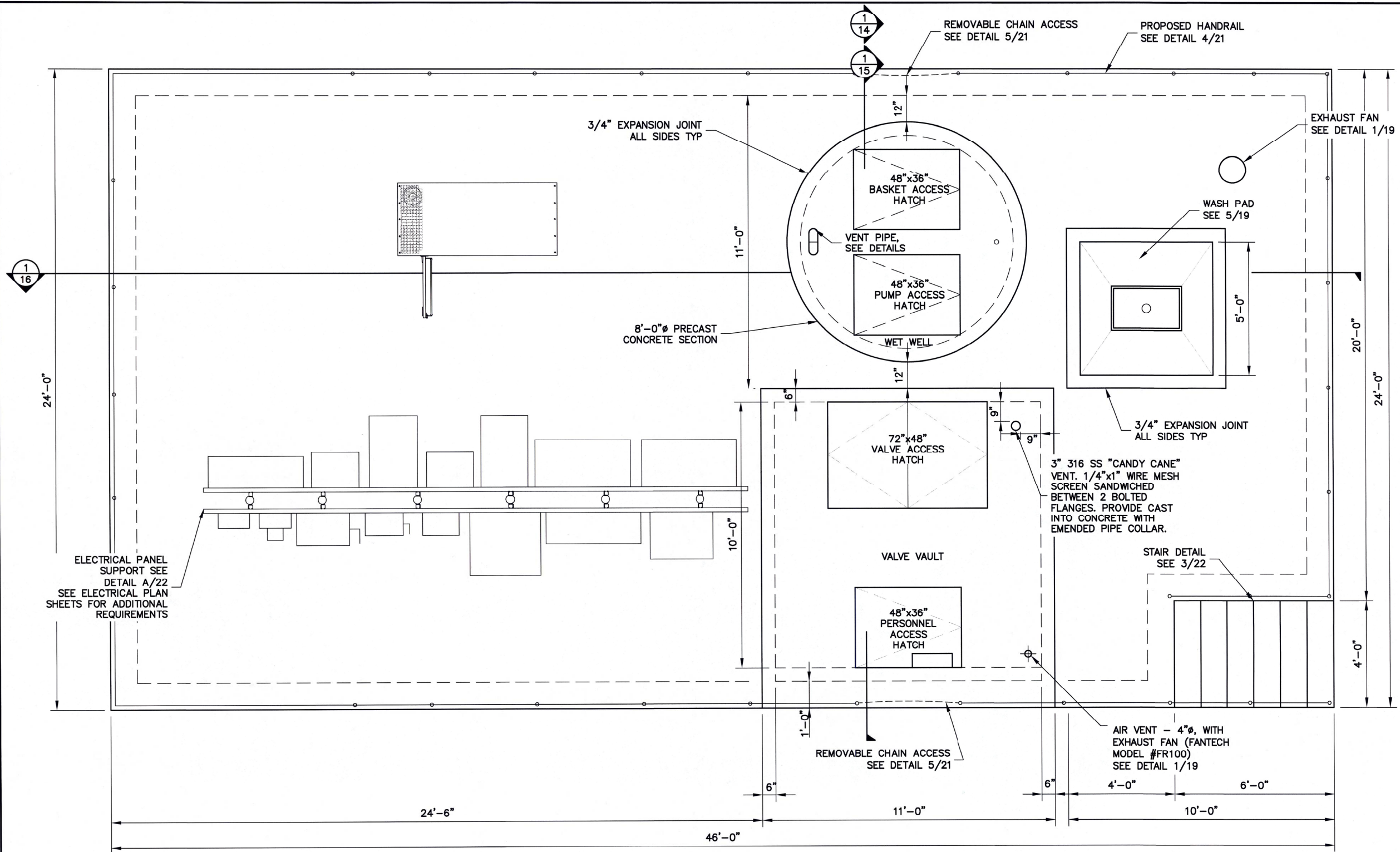
ID	DESCRIPTION	NORTHING	EASTING	ELEVATION
A	SW CORNER GENERATOR PAD	466323.19	2567069.22	610.00
B	NW CORNER GENERATOR PAD	466347.18	2567068.62	610.00
C	NE CORNER TOP LS STRUCTURE	466348.34	2567114.60	610.00
D	SE CORNER TOP LS STRUCTURE	466324.35	2567115.21	610.00
E	NW CORNER PAVEMENT	466357.46	2567054.35	604.76
F	NE CORNER PAVEMENT	466358.85	2567124.34	605.42
G	SE CORNER OF PAVEMENT	466268.88	2567126.61	606.00
H	SW CORNER PAVEMENT	466267.49	2567056.62	605.50
I	NW CORNER PAVEMENT	466385.18	2567084.24	605.41
J	NE CORNER NORTH ENTRANCE	466385.01	2567127.62	605.59
K	NE CORNER EAST ENTRANCE	466316.35	2567147.38	606.20
L	SE CORNER EAST ENTRANCE	466266.67	2567147.85	606.59



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- NOTES:**
- PERSONAL ACCESSES AS SHOWN SHALL BE ALUMINUM DOORS WITH CAM ACTION HINGES AND 300 LB/SF LOAD RATING. AUTO LOCK HOLD DOOR OPEN ARMS AND FACTORY CUSTOM 3" DEEP, 4" X 6" PAD LOCK BOX WITH SMALL FLUSH MOUNTED HINGED DOOR SHALL BE INCLUDED. ALL HARDWARE SHALL BE 316 STAINLESS HARDWARE, FASTENERS AND HINGES. VALVE VAULT HATCH WITH CHANNEL FRAME AND SCH 80 PVC DRAIN PIPED WITH STAINLESS PIPE SUPPORTS/ANCHORS SHALL BE ROUTED TO THE FLOOR DRAIN. HATCH HANDLES TO BE RECESSED TO AVOID TRIP HAZARD. PROVIDE 3/4" SCH40 PVC DRAIN FOR EACH HATCH ALONG CEILING TO WALL AND DOWN TO FLOOR w/ 316 SST PIPE CLAMPS @ 4'-0" O.C., TYP.
- |                  |   |
|------------------|---|
| VALVE ACCESS     | HALLIDAY, 316 STAINLESS WITH SAFETY GRATING AND CUSTOM HINGED RECESSED PAD LOCK BOX OR EQUAL. |
| PUMP ACCESS      | HALLIDAY, 316 STAINLESS WITH SAFETY GRATING AND CUSTOM HINGED RECESSED PAD LOCK BOX OR EQUAL. |
| PERSONNEL ACCESS | HALLIDAY, 316 STAINLESS WITH SAFETY GRATING AND CUSTOM HINGED RECESSED PAD LOCK BOX OR EQUAL. |
- ACCESS LADDERS SHALL BE 316 S.S. CONSTRUCTION WITH 316 S.S. HARDWARE. INSTALL PER OSHA REQUIREMENTS & MANUFACTURERS RECOMMENDATION.



BAR IS ONE INCH ON ORIGINAL DRAWING 1" THIS SHEET, ADJUST SCALES ACCORDINGLY

1 LIFT STATION ACCESS PLAN (UPPER)  
12 SCALE: 1/2" = 1'-0"



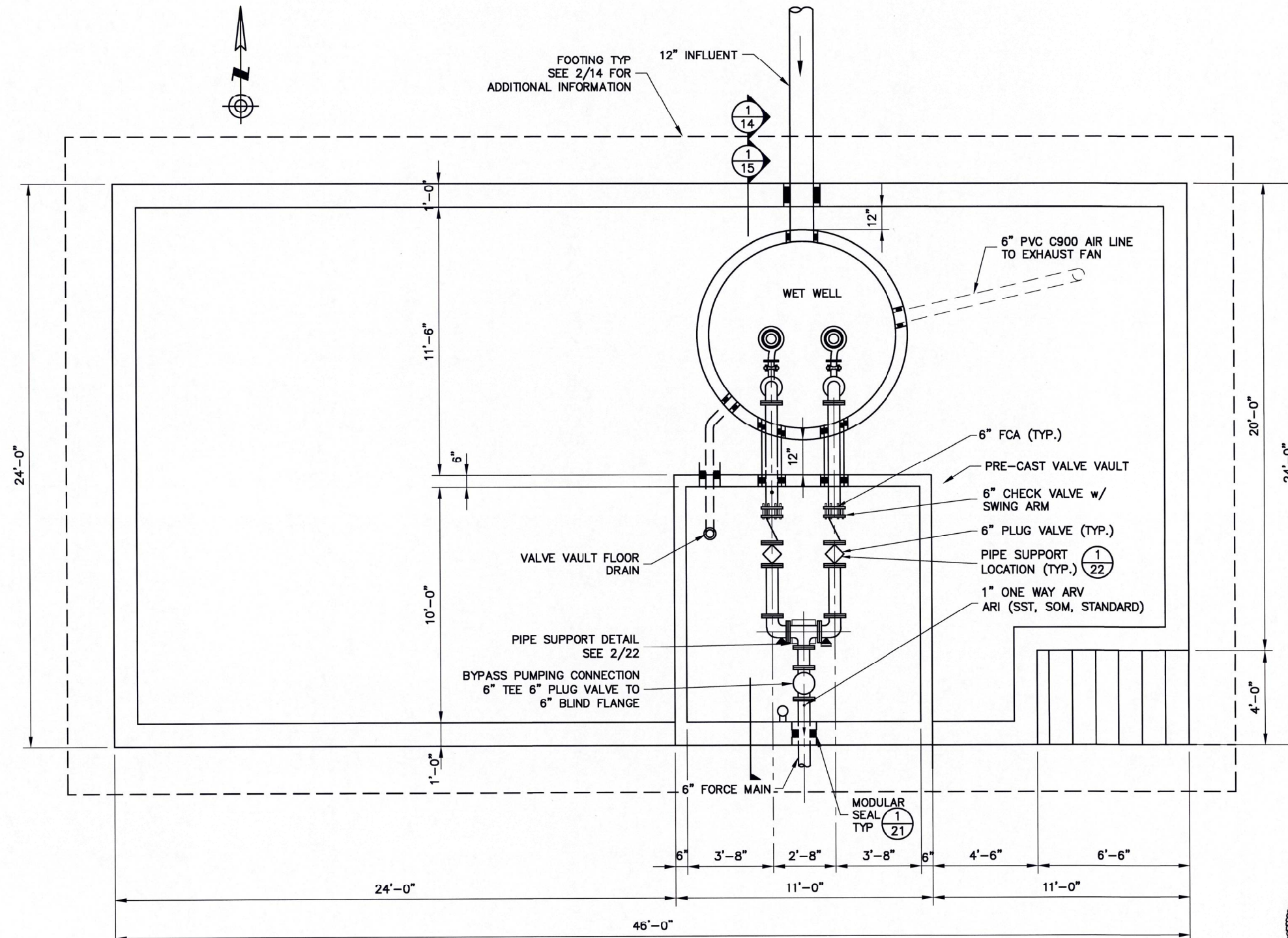
TURLEY NORTH LIFT STATION PLAN
TMUA PROJECT NUMBER ES 2022-10
CITYWIDE LIFT STATION IMPROVEMENTS
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:  
HOLLOWAY, UPDIKE + BELLEN, Inc.  
2001 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012  
(918) 251-0777, FAX (918) 251-0764

REVISION	BY	DATE	PLAN SCALE:	DRAWN	PGM	DATE	APPROVED:
			1/2" = 1'-0"				
				DESIGNED	TJR	09/20/24	
			PROFILE SCALE:	SURVEY	CWC	09/20/24	
			HORIZONTAL:	PROJ. MGR.	UPDIKE	10/24	
				LEAD ENGR.	UPDIKE	10/24	
			VERTICAL:	FIELD MGR.	UPDIKE	10/24	
			FILE:	DRAWING:	22TMUATURLEY	ADVERTISEMENT DATE: 2024	
			ATLAS PAGE NO: 947, 636			SHEET 12 OF 24	SHEETS

PUMP DESIGN CAPACITIES & HEADS						
PUMP	CAPACITY(GPM)	TOTAL DYNAMIC HEAD (FT)	HORSEPOWER	SPEED	VOLTAGE	PHASE
#01	525	52	15HP	1800	230/460	3
#02	525	52	15HP	1800	230/460	3
FIRM CAPACITY (GPM):	525	MAX CAPACITY (GPM):	700			

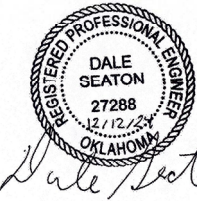
- NOTES:**
- CONTRACTOR TO VERIFY THAT INSTALLED BYPASS PUMPING HOSE CAN BE CONNECTED TO BYPASS PUMPING CONNECTION BLIND FLANGE THROUGH HATCH.
  - PROVIDE 1/2" BLOW OFF TEST PORT AT TOP OF DISCHARGE PIPING, INCLUDE NIPPLE, BALL VALVE AND SMALL SECTION OF 1/2" THREADED STAINLESS STEEL PIPING. ORIENT PIPING WITH OUTLET TOWARDS THE FLOOR OF THE VAULT.



**1**  
**13** LIFT STATION PLAN (LOWER)  
SCALE: 3/8" = 1'-0"



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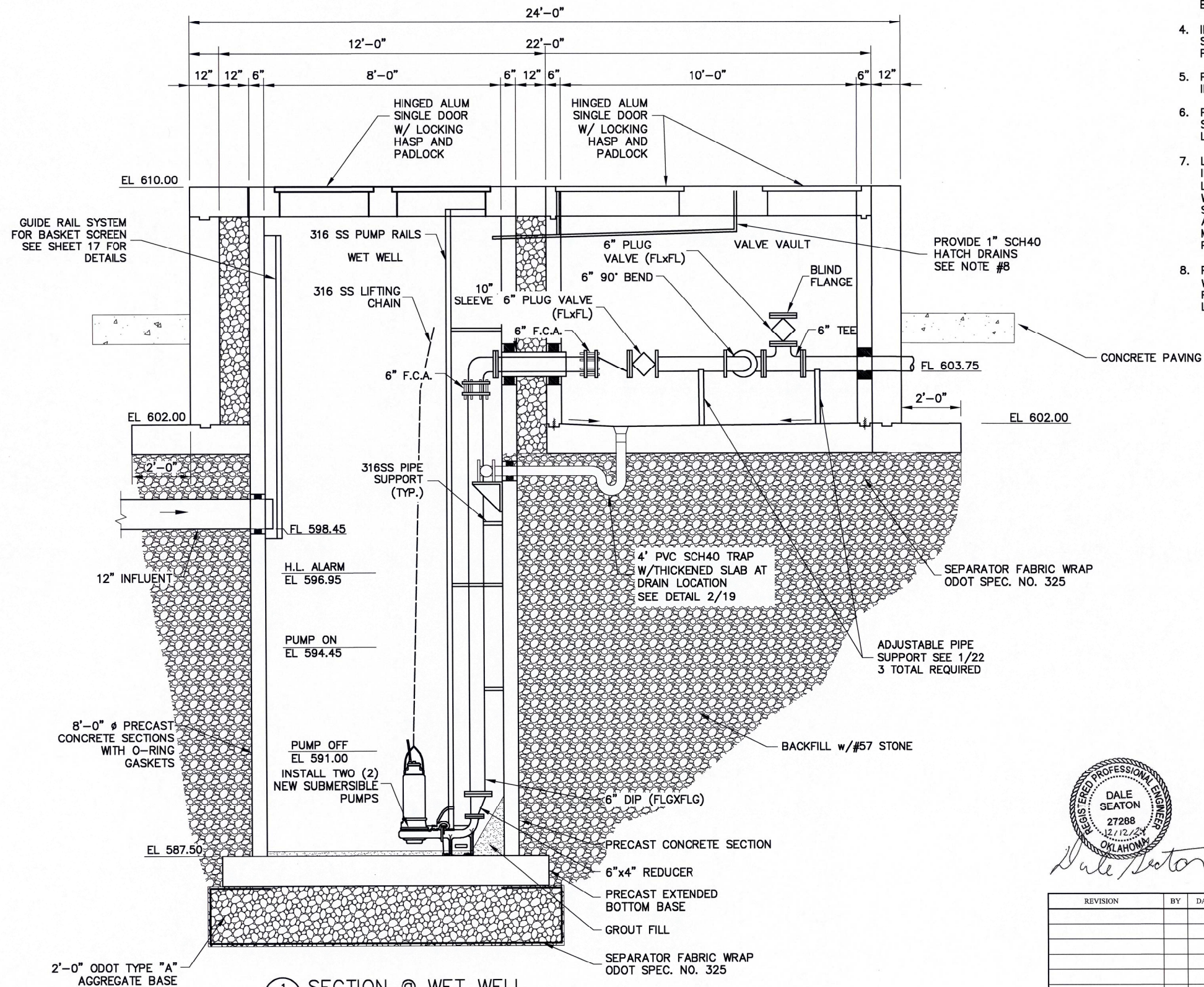


TURLEY NORTH LIFT STATION PLAN  
TMUA PROJECT NUMBER ES 2022-10  
CITYWIDE LIFT STATION IMPROVEMENTS  
CITY OF TULSA, OKLAHOMA  
WATER AND SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:  
HOLLOWAY, UPDIKE + BELLEN, Inc.  
2001 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012  
(918) 251-0777, FAX (918) 251-0764

REVISION	BY	DATE	PLAN SCALE:	DRAWN	PGM	DATE	APPROVED:
			1/2" = 1'-0"				
				DESIGNED	TJR	09/2024	
			PROFILE SCALE:	SURVEY	CWC	09/2024	
			HORIZONTAL:	PROJ. MGR.	MMW	12/24	
			VERTICAL:	LEAD ENGR.	MMW	12/24	
				FIELD MGR.	MMW	12/24	
			FILE:	DRAWING:	22TMUATURLEY		DESIGN MANAGER
			ATLAS PAGE NO:	947, 636			ADVERTISEMENT DATE: 2024
							SHEET 13 OF 24 SHEETS

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1 SECTION @ WET WELL  
14 SCALE: 1/2"=1'-0"

- NOTES:**
1. ALL HARDWARE IN THE WET WELL MUST BE 316 SS STAINLESS STEEL OR BETTER (NO 304).
  2. PROVIDE 3'x3'x1' SUMP UNDER PERSONNEL ACCESS HATCH. SLOPE REMAINDER OF FLOOR TO SUMP. PROVIDE A LEVEL AREA FOR THE PUMPS PER MFR. SPECIFICATIONS.
  3. COAT INTERIOR OF WET WELL WITH EPOXY COATING. REFER TO SPECIFICATION SECTION 9.2 FOR REQUIREMENTS. INSTALL ALL ANCHOR BOLTS AND EMBEDMENTS PRIOR TO COATING APPLICATION.
  4. INSTALL 2" TAP AND 2" BRONZE BALL VALVE. VALVE SHALL BE PADLOCK LOCKABLE IN OPEN AND CLOSED POSITION.
  5. PROVIDE 316 STAINLESS STEEL LADDER. MP INDUSTRIES INCORPORATED OR EQUAL.
  6. PROVIDE AMTEC CORP. OR EQUAL 316 STAINLESS STEEL CABLE GRIPS AT ALL CABLE AND WIRE LOCATIONS.
  7. LADDER(S) MUST MEET CURRENT OSHA STANDARDS, INCLUDING BUT NOT LIMITED TO FIRST RUNG LOCATIONS/ELEVATION, WALL OFFSET, COORDINATION WITH HATCH LOCATION, BOTTOM STEP AND LANDING SPACE AT THE BOTTOM. CONTRACTOR SHALL SUBMIT AND COORDINATE INSTALLATION OF THE MANUFACTURED LADDER WITH SEWER OPERATIONS PRIOR TO INSTALLATION.
  8. PROVIDE 1" SCH 40 HATCH DRAIN(S) TO THE WET WELL w/ 316 SS PIPE SUPPORTS AT 2'-0" O.C. AS REQUIRED. FIELD ROUTE AND COORDINATE FINAL LAYOUT WITH OWNERS REPRESENTATIVE.



IF NOT ONE INCH ON ORIGINAL DRAWING 0 1" THIS SHEET, ADJUST SCALES ACCORDINGLY

TURLEY NORTH LIFT STATION SECTIONS  
TMUA PROJECT NUMBER ES 2022-10  
CITYWIDE LIFT STATION IMPROVEMENTS  
CITY OF TULSA, OKLAHOMA  
WATER AND SEWER DEPARTMENT

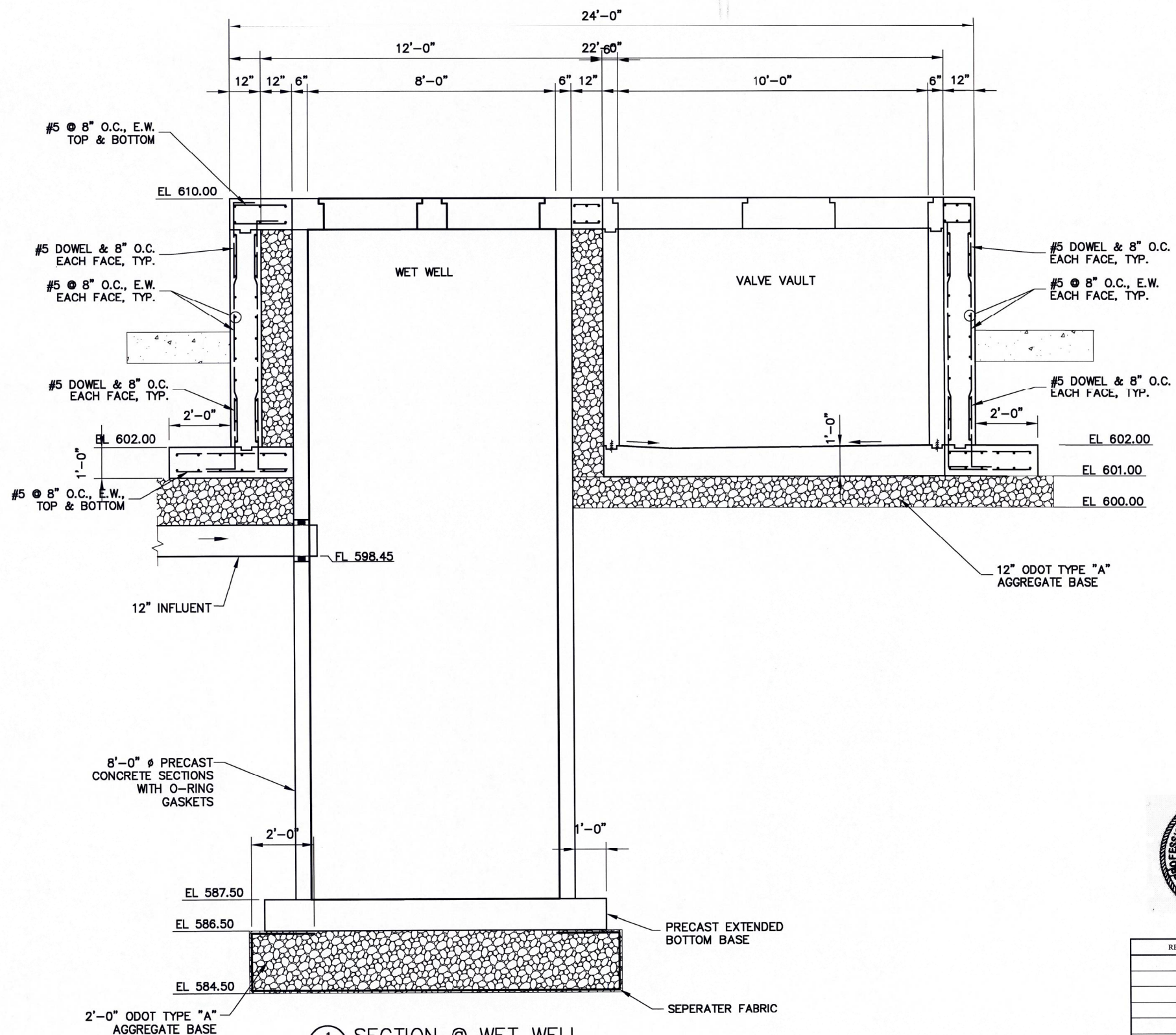


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REVISION	BY	DATE	PLAN SCALE:	DRAWN	PGM	09/2024	APPROVED:
				DESIGNED	TJR	09/2024	
			PROFILE SCALE:	SURVEY	CWC	09/2024	
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				LEAD ENGR.	12/24		
			VERTICAL:	FIELD MGR.	12/24		
			FILE:	DRAWING:	22TMUATURLEY	ADVERTISEMENT DATE: 2024	
			ATLAS PAGE NO: 947, 636			SHEET 14 OF 24	SHEETS

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- NOTES:**
- IF STRUCTURE BEARS ON ROCK AS DETERMINED BY ENGINEER, OMIT SEPARATOR FABRIC, GEOGRID AND REDUCE AGGREGATE BASE TO A 6" LEVELING COURSE.
  - PROVIDE CORROSION RESISTANT COATING SYSTEM TO INTERIOR AREAS OF THE WET WELLS WALLS CEILING, HATCH AREAS & EXPOSED CONCRETE. WET WELL FLOOR DOES NOT REQUIRE CORROSION RESISTANT COATING SYSTEM. COATING SHALL COMPLY WITH TULSA STANDARD SPECIFICATION 217.
  - COMPACT ALL BACKFILL AND BASE MATERIAL UNDER OR WITHIN THE STRUCTURE TO 98% STANDARD PROCTOR.



1 SECTION @ WET WELL  
15 SCALE: 1/2"=1'-0"



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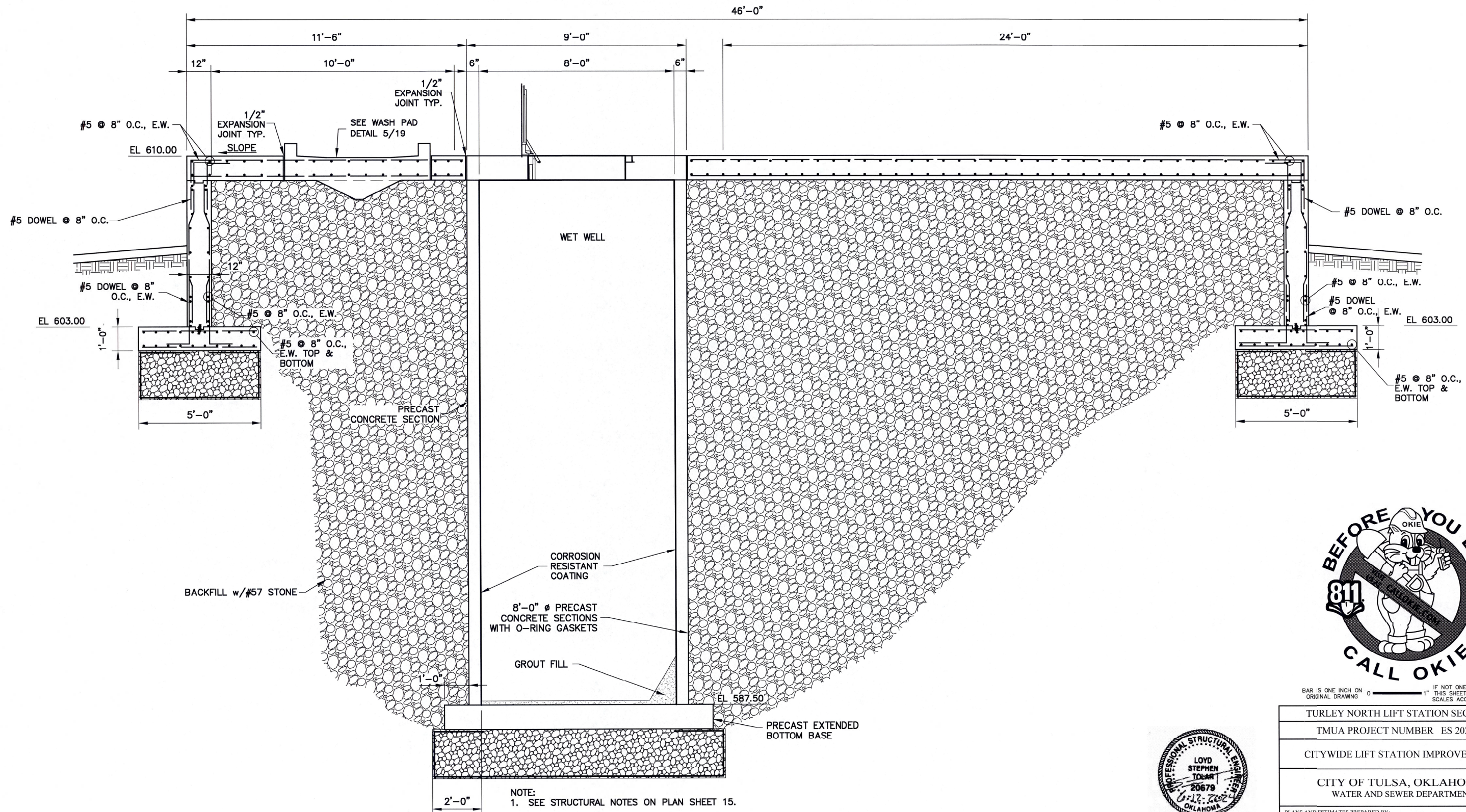
TURLEY NORTH LIFT STATION SECTIONS  
TMUA PROJECT NUMBER ES 2022-10  
CITYWIDE LIFT STATION IMPROVEMENTS  
CITY OF TULSA, OKLAHOMA  
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				DESIGNED	TJR	09/2024	
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			FILE:	DRAWING:	22TMUA/TURLEY		ADVERTISEMENT DATE: 2024
			ATLAS PAGE NO:	947, 636			SHEET 15 OF 24 SHEETS

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



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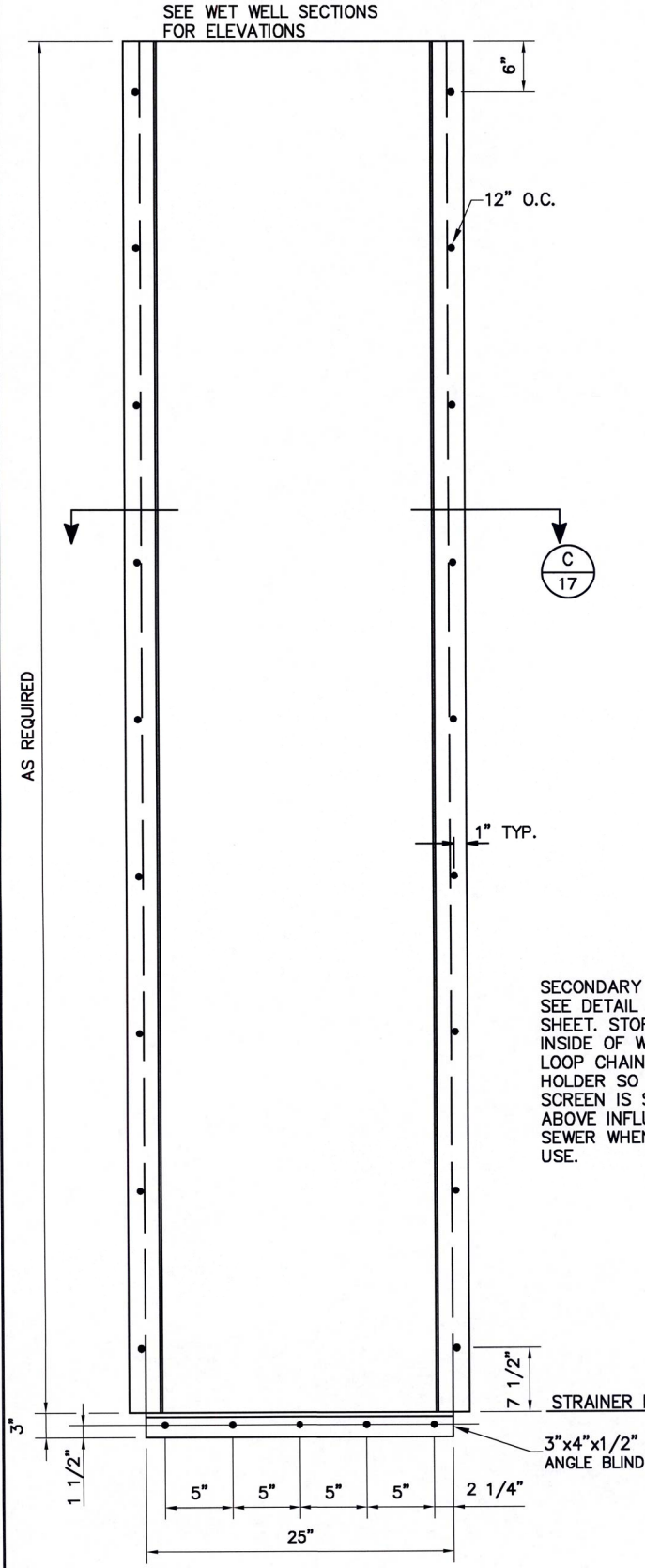
TURLEY NORTH LIFT STATION SECTIONS  
 TMUA PROJECT NUMBER ES 2022-10  
 CITYWIDE LIFT STATION IMPROVEMENTS  
 CITY OF TULSA, OKLAHOMA  
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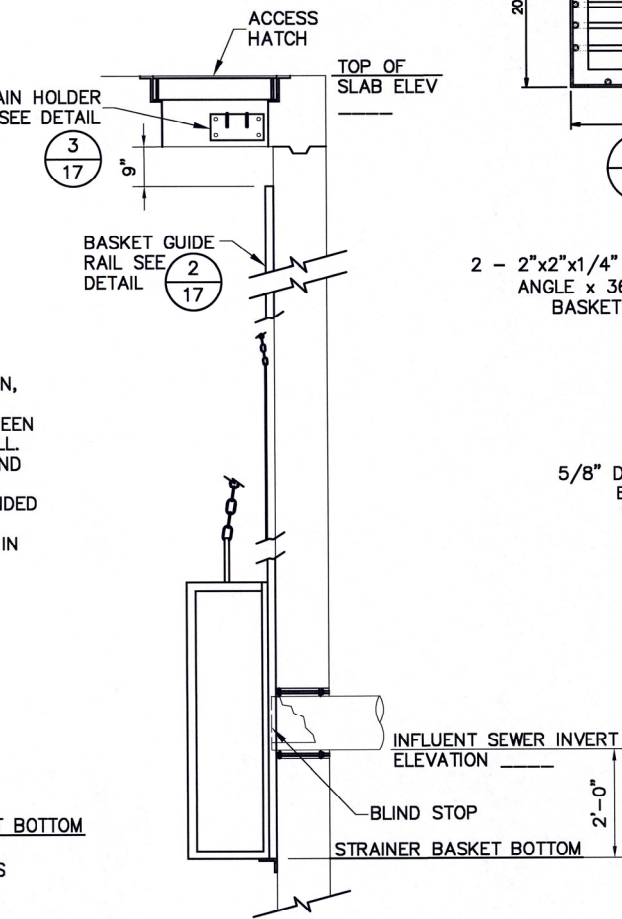
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				LEAD ENGR.	<i>[Signature]</i>	12/14	
			VERTICAL:	FIELD MGR.	<i>[Signature]</i>	12/14	<i>[Signature]</i> DESIGN MANAGER
			FILE:	DRAWING:	22TMUATURLEY		ADVERTISMENT DATE: 2024
				ATLAS PAGE NO:	947, 636		SHEET 16 OF 24 SHEETS

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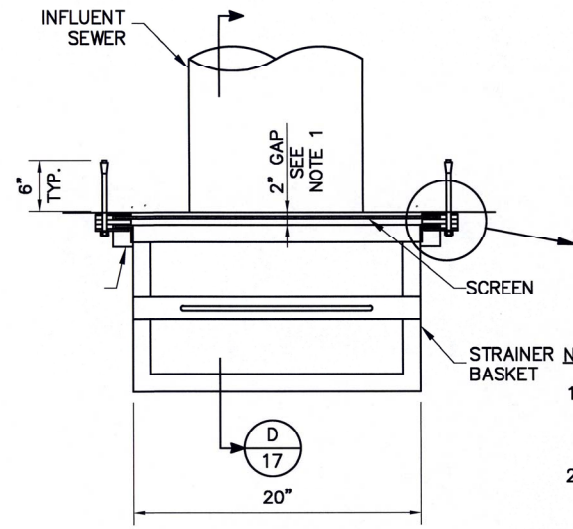


**2** BASKET GUIDE RAIL & BLIND STOP  
17 NTS

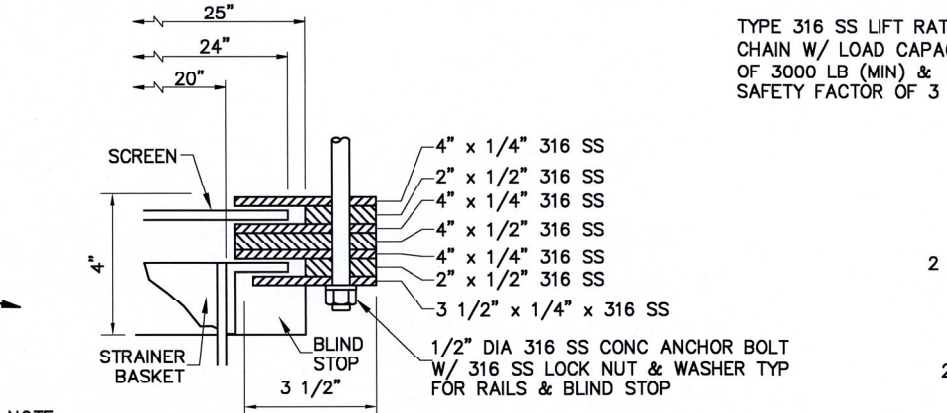
SECONDARY SCREEN, SEE DETAIL THIS SHEET. STORE SCREEN INSIDE OF WET WELL. LOOP CHAIN AROUND HOLDER SO THAT SCREEN IS SUSPENDED ABOVE INFLUENT SEWER WHEN NOT IN USE.



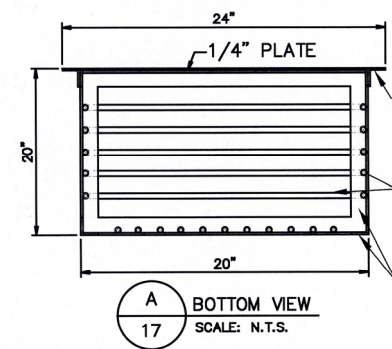
**D** SOUTH WALL OF WET WELL  
17 NTS



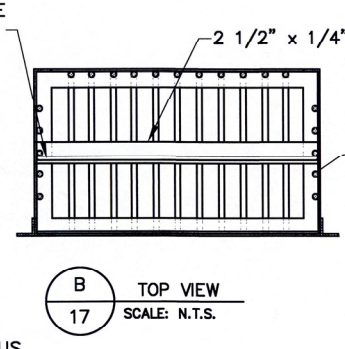
**C** SECTION  
17 NTS



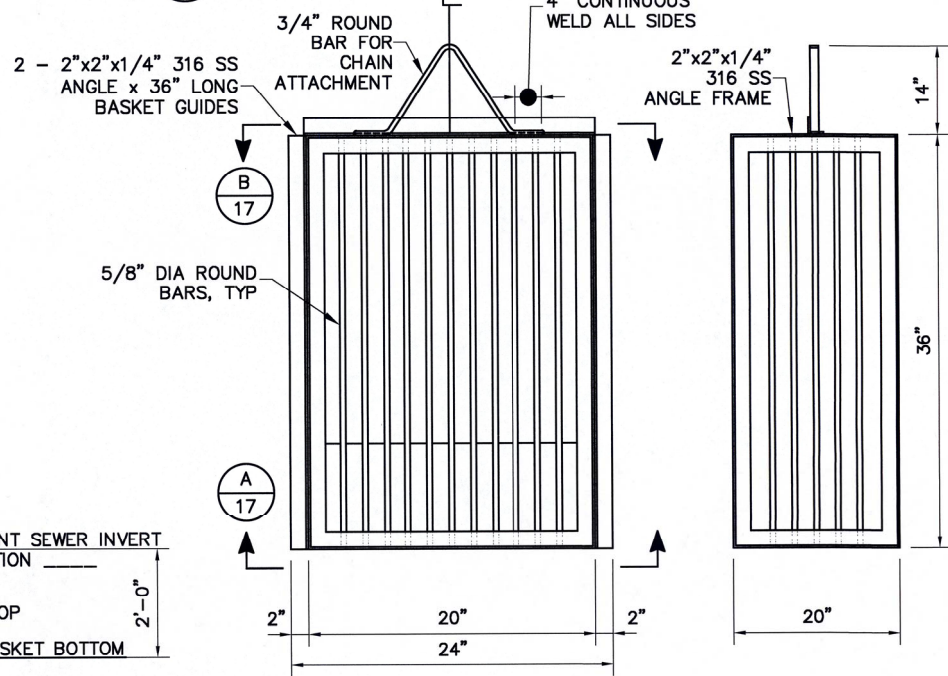
1. AFTER INSTALLATION OF BASKET, SCREEN AND GUIDE FRAME IS COMPLETE, VERIFY THAT SCREEN CAN BE LOWERED OVER INFLUENT SEWER WITHOUT OBSTRUCTION (GAP SHOULD NOT BE MORE THAN 2 1/4").
2. PRIOR TO CITY ACCEPTANCE, CONTRACTOR SHALL VERIFY BASKET CAN BE REMOVED, WITH SECONDARY SCREEN IN PLACE. BASKET MUST RAISE PAST SECONDARY SCREEN. DEMONSTRATE THE BASKET IS FULLY FUNCTIONAL.
3. THE DRAWINGS OF THE BASKET SCREEN ARE REPRESENTATIVE ONLY AND ARE NOT TO SCALE. CONSTRUCT SCREEN IN ACCORDANCE WITH DIMENSIONS AND SPACINGS SHOWN.
4. ALL STAINLESS MATERIALS INCLUDING BASKET RAIL COMPONENTS, BOLTS, ANCHOR BOLTS, CHAIN AND REPLATED ITEMS SHALL BE 3/16 STAINLESS STEEL. ALL CONNECTIONS AND ATTACHMENT POINTS SHALL BE FULLY WELDED ALL SIDES. NO SEGMENT OR STITCH WELDS WILL BE PERMITTED.



**A** BOTTOM VIEW  
17 SCALE: N.T.S.



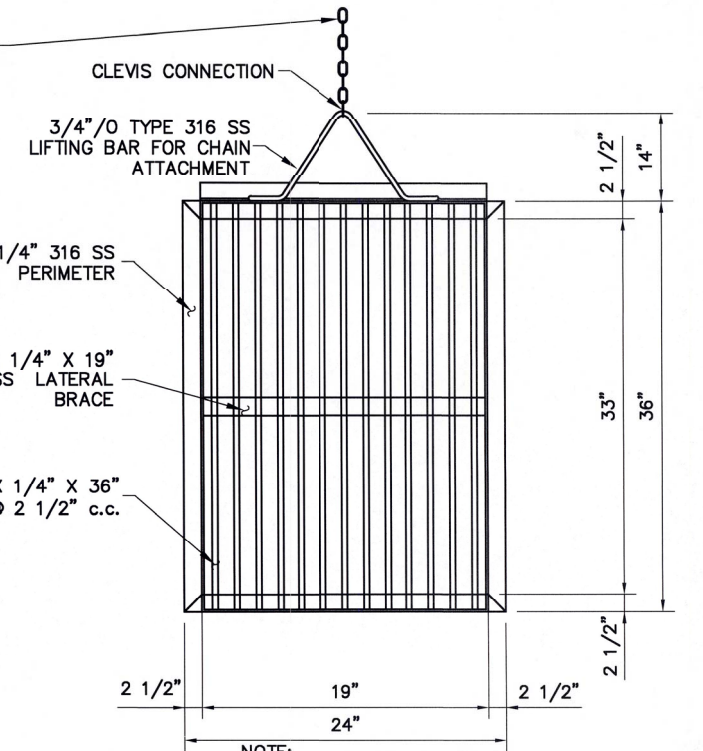
**B** TOP VIEW  
17 SCALE: N.T.S.



**1** STRAINER BASKET  
17 NTS

NOTE: ALL WELDED CONNECTIONS SHALL BE FULLY WELDED ALL SIDES.

TYPE 316 SS LIFT RATED CHAIN W/ LOAD CAPACITY OF 3000 LB (MIN) & SAFETY FACTOR OF 3



**3** FRONT VIEW SCREEN  
17 NTS

NOTE: SEE STRAINER BASKET DETAIL 1/17 FOR ADDITIONAL INFORMATION.



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BASKET SCREEN			
TMUA PROJECT NUMBER ES 2022-10			
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CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT			
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REVISION	BY	DATE	APPROVED:
PLAN SCALE:	DRAWN	PGM	02/2023
	DESIGNED	TJR	02/2023
PROFILE SCALE:	SURVEY	CWC	02/2023
HORIZONTAL:	PROJ. MGR.	MMW	12/24
	LEAD ENGR.	KZ	12/24
VERTICAL:	FIELD MGR.	SM	12/24
FILE:	DRAWING:	22TMUA TURLEY	ADVERTISMENT DATE: 2024
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1 PHOTO — EXISTING LIFT STATION  
18 NTS



2 PHOTO — EXISTING LIFT STATION  
18 NTS



3 PHOTO — EXISTING ELECTRICAL SERVI  
18 NTS

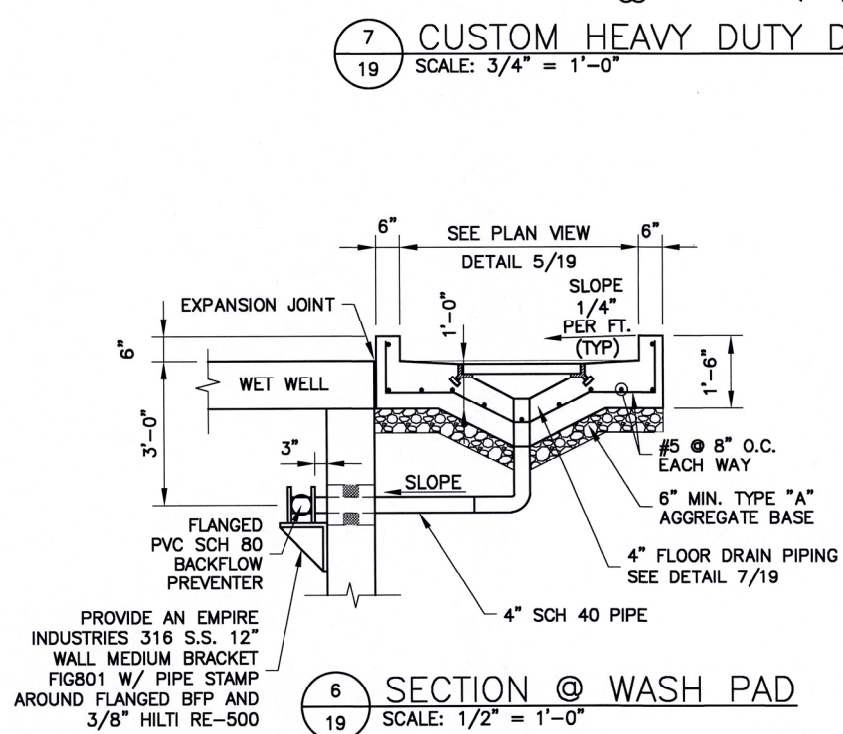
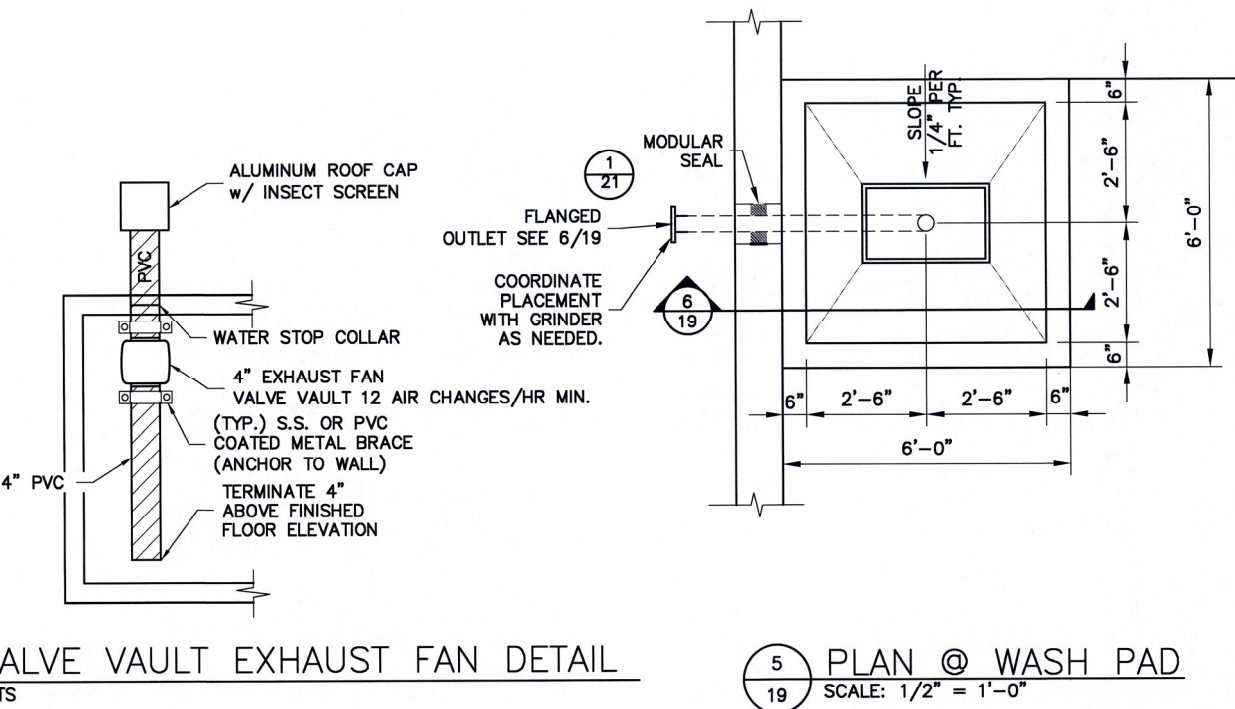
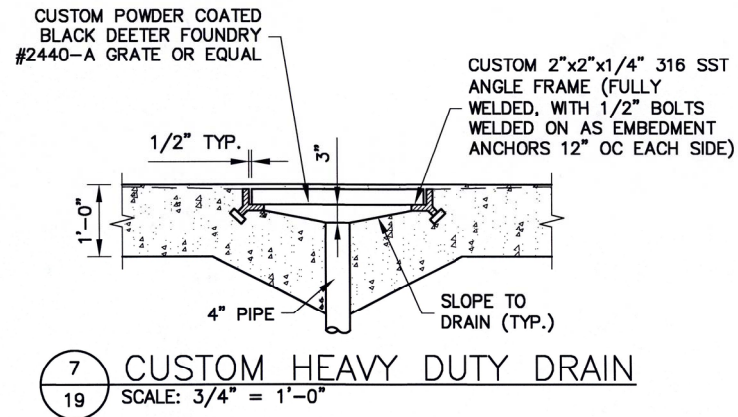
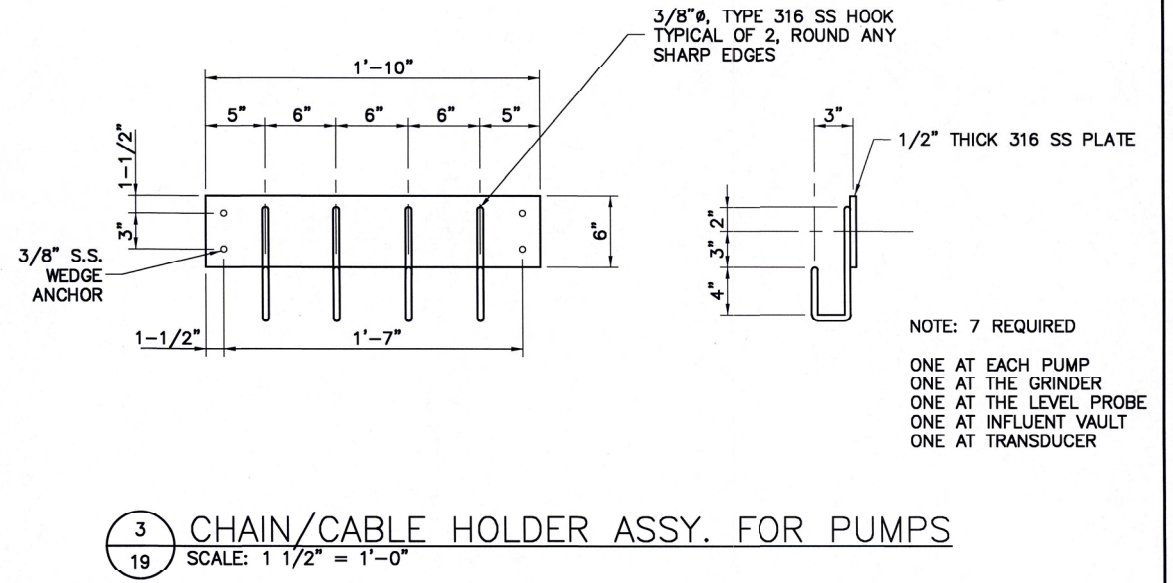
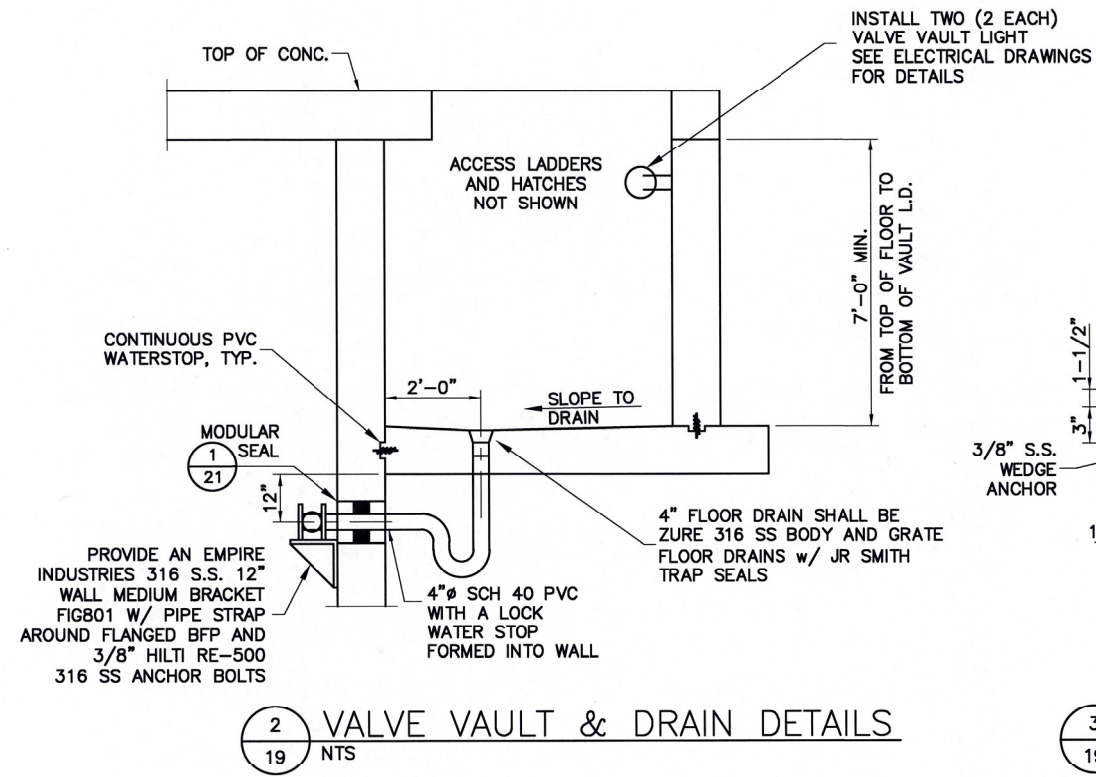
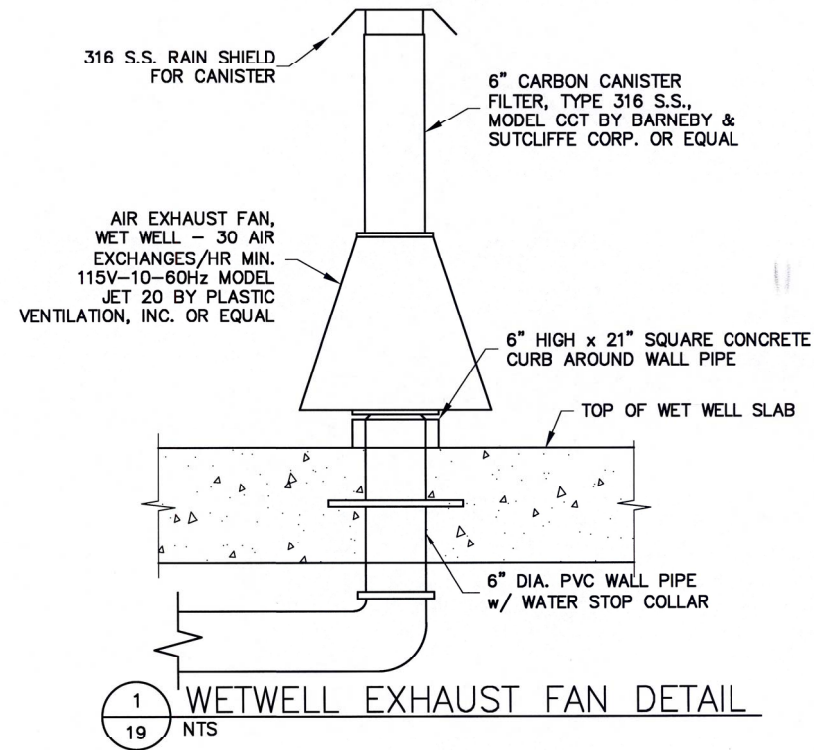


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TURLEY NORTH LIFT STATION REFERENCE PHOTOS			
TMUA PROJECT NUMBER ES 2022-10			
CITYWIDE LIFT STATION IMPROVEMENTS			
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT			
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	DESIGNED	TJR	07/2024
PROFILE SCALE:	SURVEY	CWC	07/2024
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	LEAD ENGR.	<i>Paul T...</i>	12/24
VERTICAL:	FIELD MGR.	<i>Paul T...</i>	12/24
FILE:	DRAWING:	22TMUA/TURLEY	ADVERTISEMENT DATE: 2024
ATLAS PAGE NO: 947,636			SHEET 18 OF 24 SHEETS

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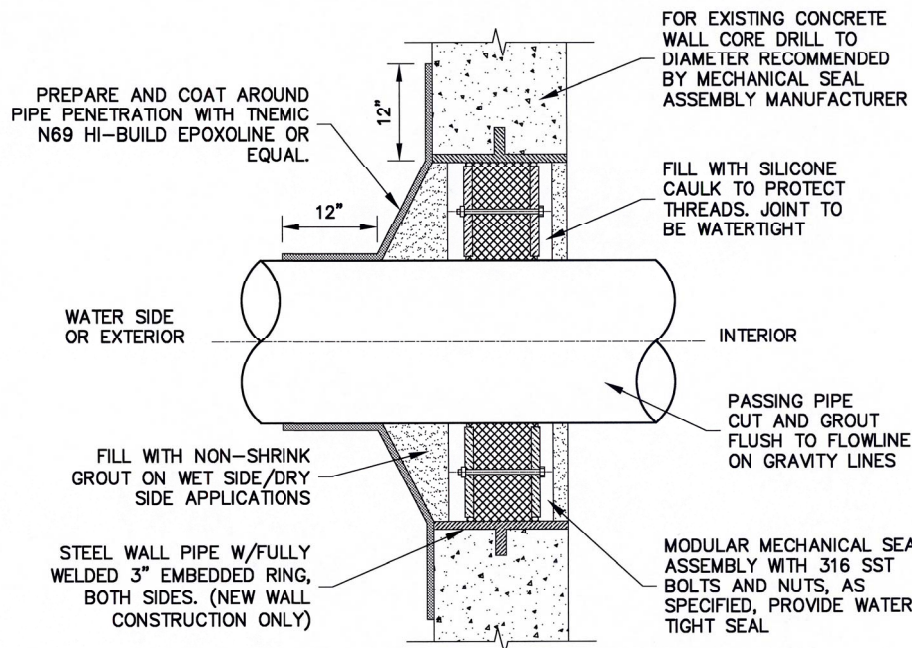
TURLEY NORTH LIFT STATION DETAILS  
TMUA PROJECT NUMBER ES 2022-10  
CITYWIDE LIFT STATION IMPROVEMENTS  
CITY OF TULSA, OKLAHOMA  
WATER AND SEWER DEPARTMENT

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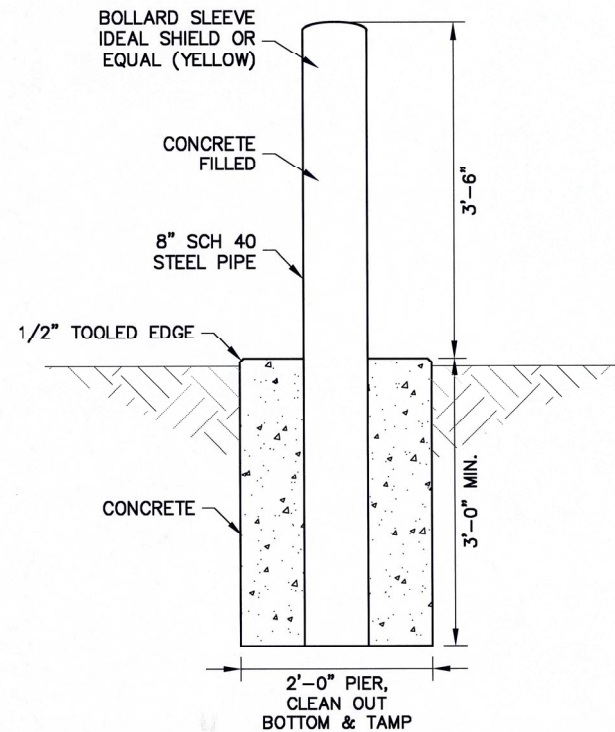


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							SHEET 19 OF 24 SHEETS

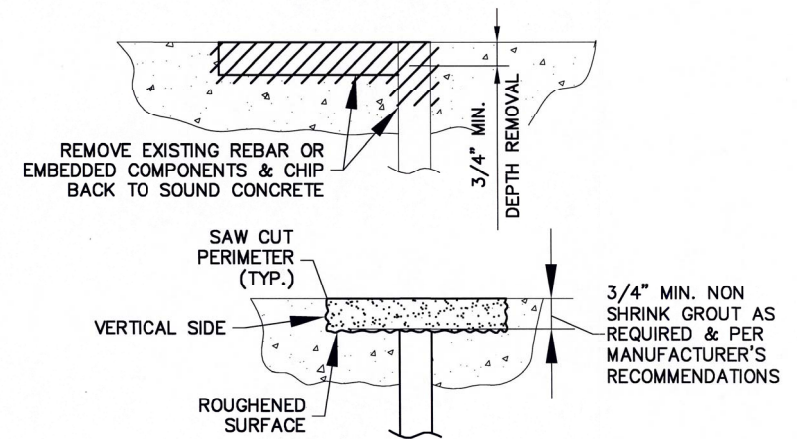




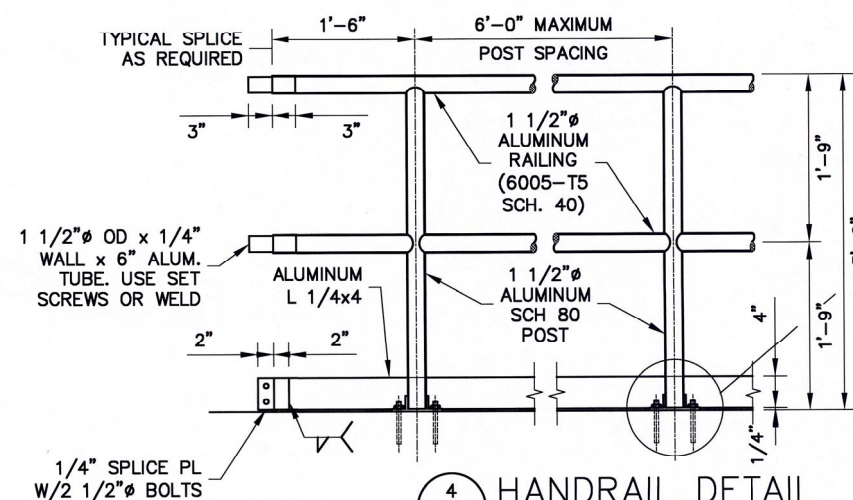
1 WALL PENETRATION SEAL  
SCALE: NTS



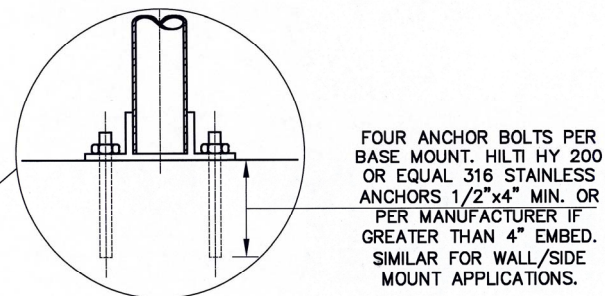
2 BOLLARD DETAIL  
SCALE: 1" = 1'-0"



3 REBAR & EMBEDDED ITEM CONCRETE REPAIR DETAIL  
SCALE: NTS

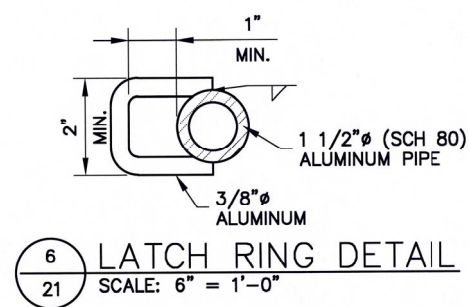


4 HANDRAIL DETAIL  
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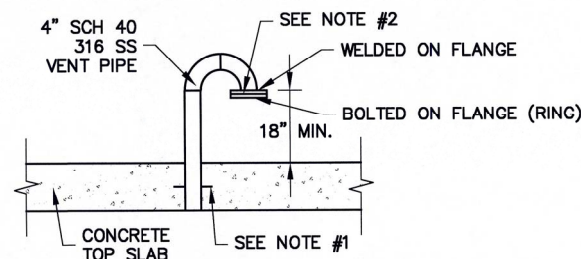


5 REMOVABLE CHAIN ACCESS DETAIL  
SCALE: 1" = 1'-0"

DETAIL NOTES:  
1. 3'-0" MAX POST SPACING. INSTALL SLEEVED POST AS REQUIRED FOR FULL OPENING SHOWN ON PLAN SHEETS.



6 LATCH RING DETAIL  
SCALE: 6" = 1'-0"



7 VENT PIPE DETAIL  
SCALE: 1/2" = 1'-0"

- DETAIL NOTE:
1. PROVIDE A FULLY WELDED 3/16"x3" COLLAR.
  2. 1/4" 316 SS BIRD SCREEN INSTALLED BETWEEN BOLTED FLANGES



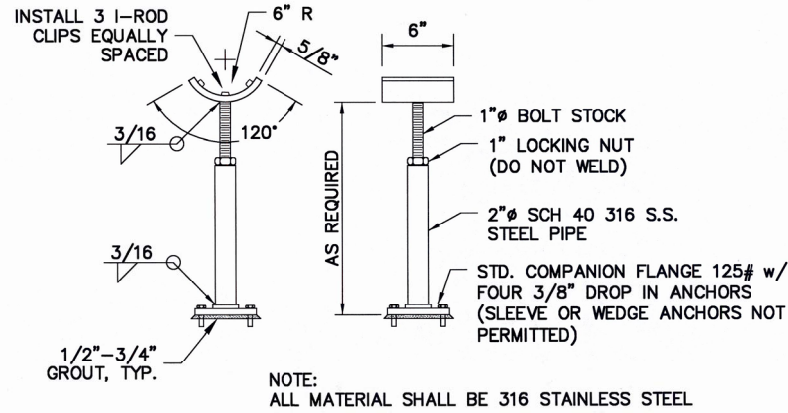
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MISCELLANEOUS DETAILS	
TMUA PROJECT NUMBER	ES 2022-10
CITYWIDE LIFT STATION IMPROVEMENTS	
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT	

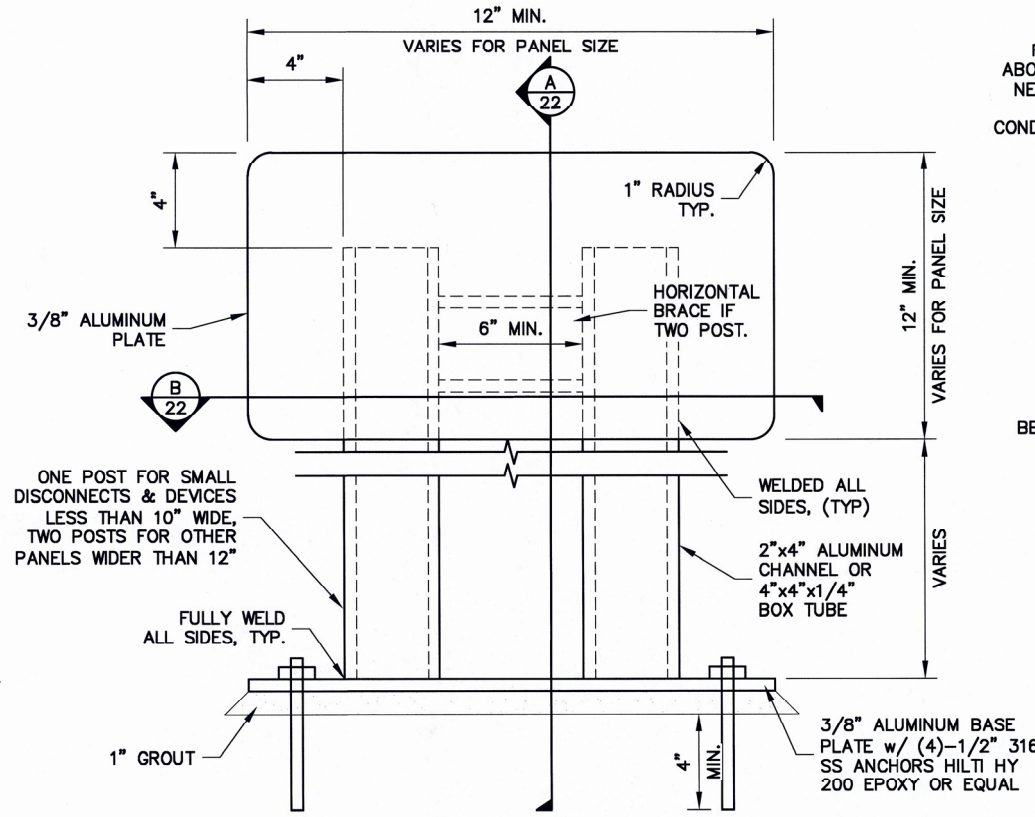


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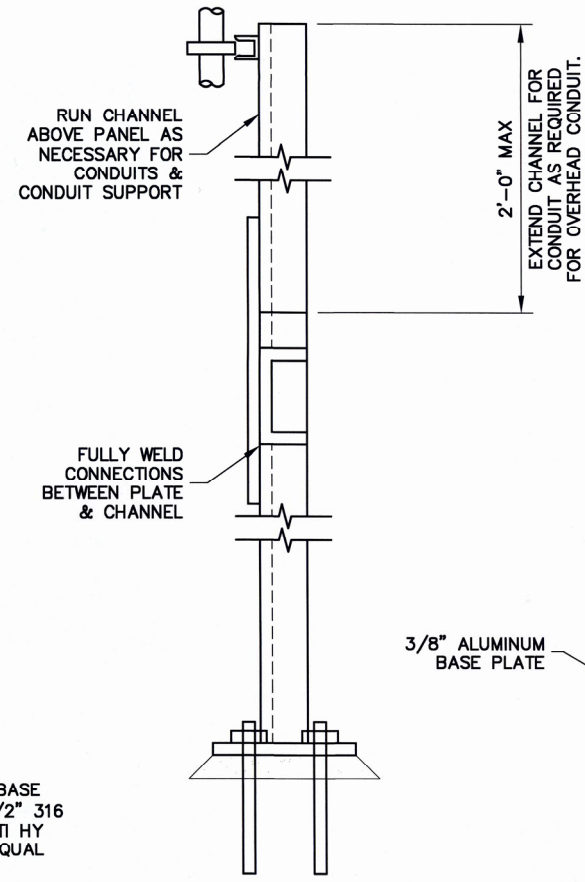
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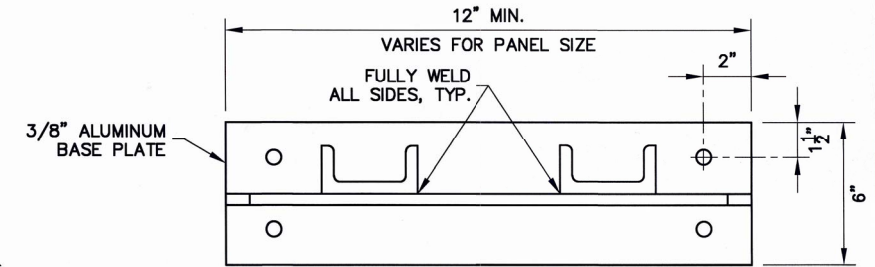
1 ADJUSTABLE PIPE SUPPORT DETAIL  
22 NTS



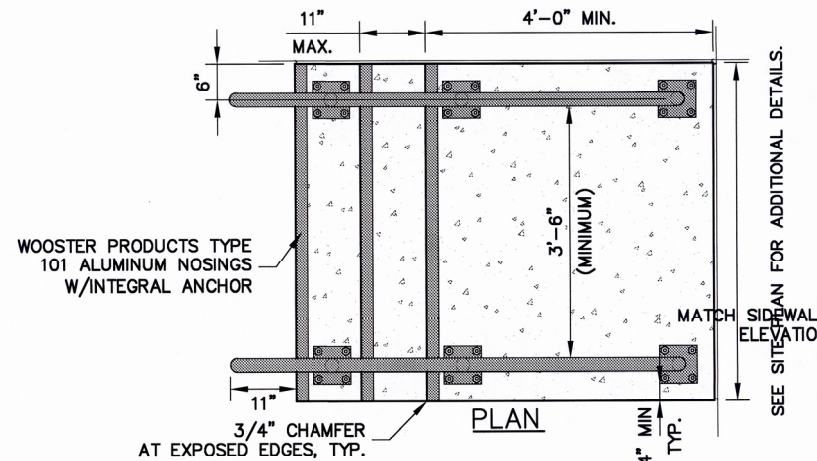
2 CUSTOM ALUMINUM PANEL SUPPORT  
22 SCALE: 3" = 1'-0"



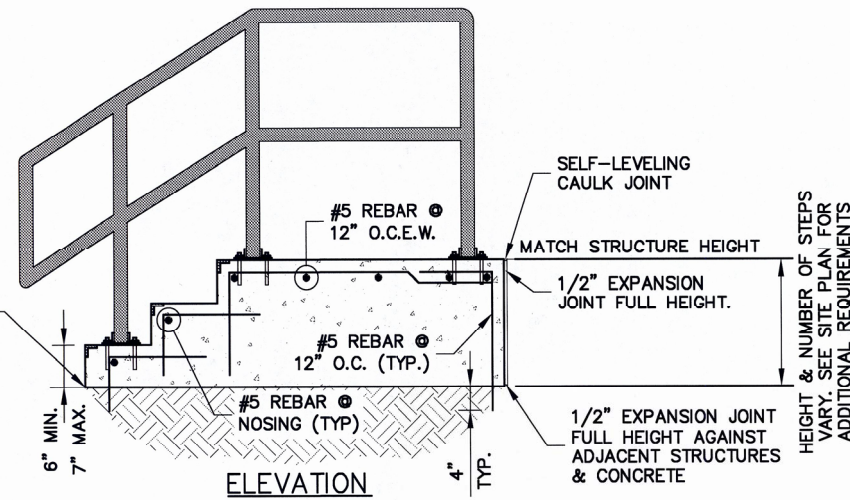
A SUPPORT SECTION  
22 SCALE: 3" = 1'-0"



B BASE PLATE DETAIL  
22 SCALE: 3" = 1'-0"



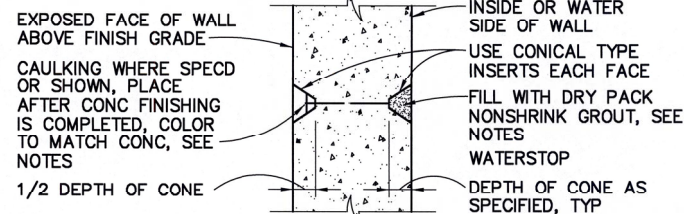
3 STAIR DETAIL  
22 SCALE: 3/4" = 1'-0"



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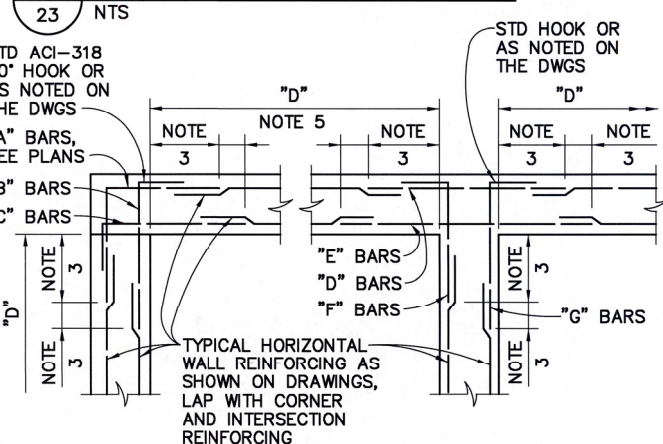
MISCELLANEOUS DETAILS				
TMUA PROJECT NUMBER ES 2022-10				
CITYWIDE LIFT STATION IMPROVEMENTS				
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT				
PLANS AND ESTIMATES PREPARED BY: HOLLOWAY, UPDIKE + BELLEN, Inc. 2021 N WILLOW AVE., BROCKEN ARROW, OKLAHOMA 74012 (918) 298-0717, FAX (918) 298-0766				
REVISION	BY	DATE	PLAN SCALE:	APPROVED:
			DRAWN PGM 09/2024	
			DESIGNED TJR 09/2024	
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			PROFILE SCALE:	
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			LEAD ENGR. <i>KL</i> 10/24	
			FIELD MGR. <i>mm</i> 10/24	<i>John M. O...</i> DESIGN MANAGER
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			DRAWING: 22TMUATURLY	ADVERTISEMENT DATE: 2024
			ATLAS PAGE NO: 947, 636	SHEET 22 OF 24 SHEETS





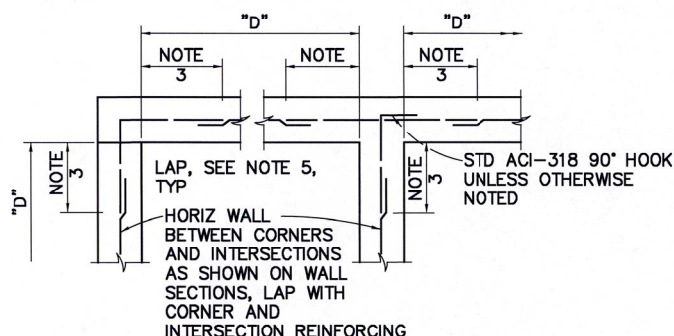
- NOTES:
- FOR FORM TIE HOLES ON OUTSIDE FACE OF WALL BELOW GRADE. FILL WITH NONSHRINK GROUT, (DRY PACK)
  - THE SPACING OF FORM TIES ON EXPOSED PORTIONS OF WALLS SHALL BE APPROXIMATELY EQUAL HORIZONTALLY AND VERTICALLY AND SHALL BE UNIFORM IN EACH DIRECTION
  - WHERE CHAULKING IS NOT SPECIFIED OR SHOWN, DRY PACK EXTERIOR TIE HOLES WITH NONSHRINK GROUT WITH COLOR OF GROUT TO MATCH COLOR OF CONCRETE AS CLOSE AS POSSIBLE
  - DRY PACK METHOD SHALL BE AS SPECIFIED USING STEEL TOOLS

**1 FORM SNAP TIE-HOLE**



**2 TYPICAL DOUBLE MAT CORNER AND INTERSECTION REINFORCING**

23 NTS  
(SEE PLANS FOR SIZE AND SPACING)



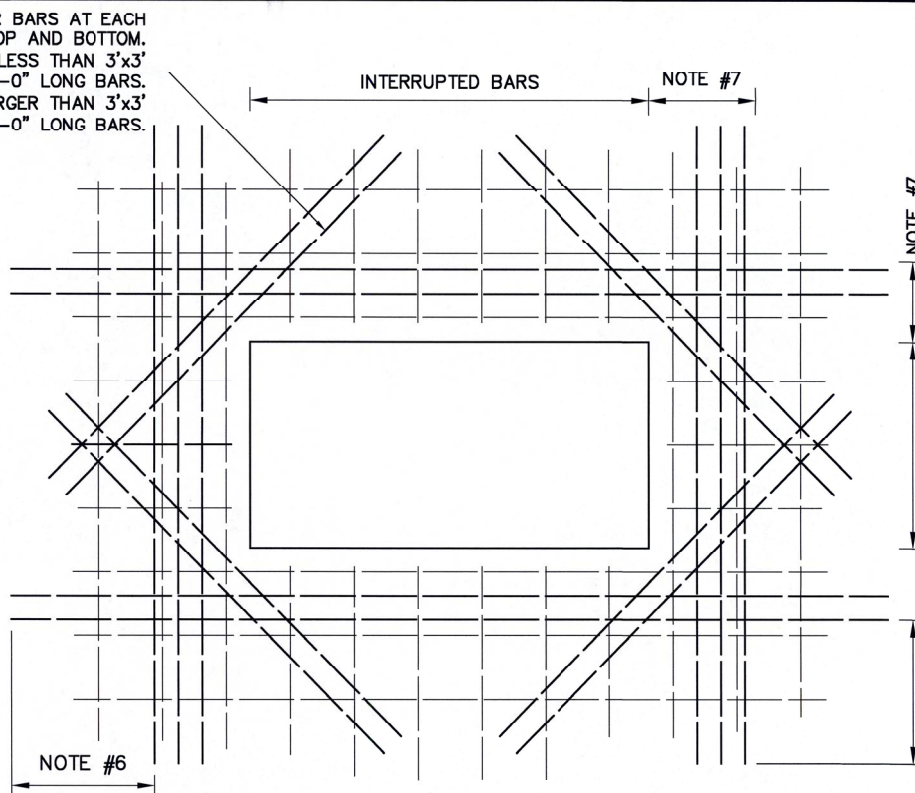
**3 TYPICAL SINGLE MAT CORNER AND INTERSECTION REINFORCING**

23 NTS

CONCRETE REINFORCING LAP SCHEDULE		
BAR SIZE	LAP LENGTH (F'C=4500 PSI)	
	TOP BARS (NOTE 1)	OTHER
#3	18"	15"
#4	24"	18"
#5	30"	24"
#6	36"	28"
#7	42"	33"
#8	48"	38"
#9	60"	46"
#10	74"	58"

- NOTES:
- "TOP BARS" ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF FRESH CONCRETE CAST BELOW THE SPLICE
  - MINIMUM CLEAR COVER = 2"
  - MINIMUM BAR SPACING = 6"

2-#5 CORNER BARS AT EACH CORNER, TOP AND BOTTOM. OPENING LESS THAN 3'x3' PROVIDE 3'-0" LONG BARS. OPENINGS LARGER THAN 3'x3' PROVIDE 5'-0" LONG BARS.

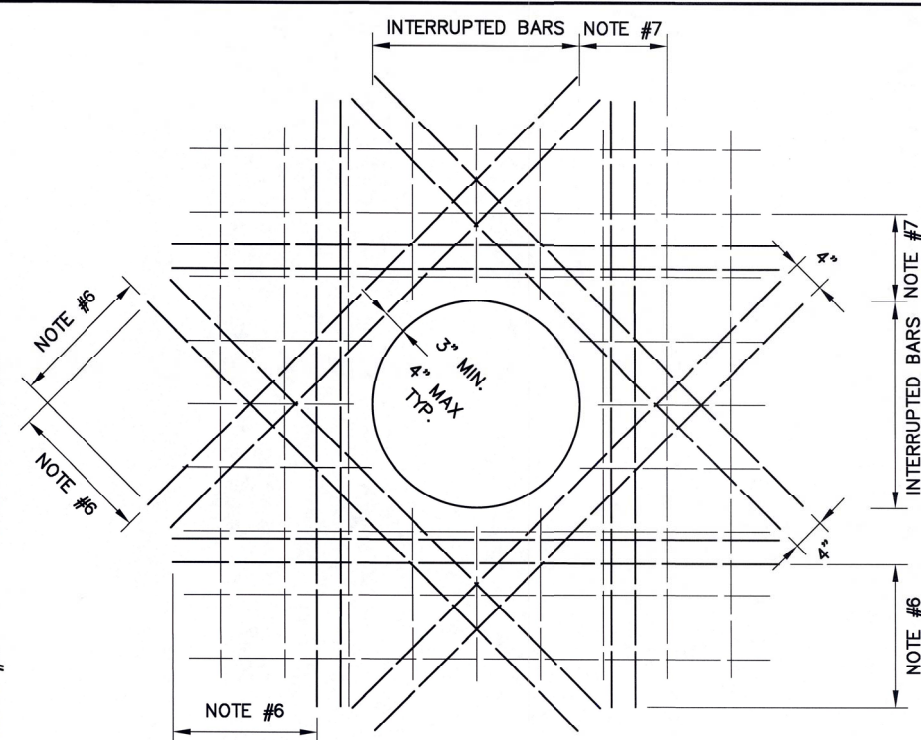


**4 OPENING REINFORCING**

23 NTS

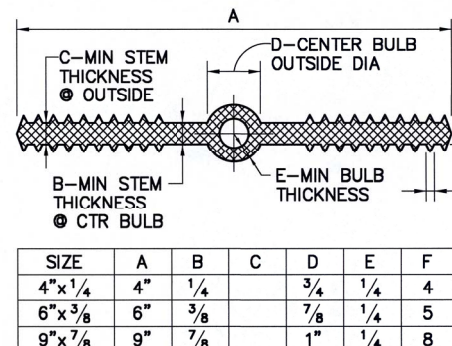
- NOTES:
- TYPICAL FOR ALL OPENINGS IN CONCRETE WALLS AND SLABS. PROVIDE ADDITIONAL REINFORCEMENT IN ACCORDANCE WITH THIS DETAIL UNLESS OTHER DETAILS ARE SHOWN IN THE CONTRACT DOCUMENTS.
  - INTERRUPTED BARS MATCH SIZE OF REQUIRED REINFORCEMENT. PLACE ADDITIONAL REINFORCEMENT TO MATCH REQUIRED BAR ORIENTATION AND ELEVATION.
  - DO NOT WELD REINFORCEMENT TO PIPE SLEEVES AND INSERTS.
  - DETAILS APPLY TO EACH MAT OF REINFORCEMENT.
  - IF UNEVEN NUMBER OF BARS ARE INTERRUPTED, PLACE ADDITIONAL BAR OF EQUAL SIZE TO HAVE EVEN NUMBER OF BARS ON EACH SIDE OF OPENING.
  - PROVIDE MINIMUM LAP LENGTHS AS REQUIRED
  - PLACEMENT OF ADDED BARS SHALL HAVE MINIMUM SPACING OF 2" O.C. & MAXIMUM SPACING OF 4" O.C., TYPICAL ALL SIDES WHILE MAINTAINING REQUIRED CLEAR DISTANCE BETWEEN BARS FOR CONCRETE PLACEMENT.

THICKNESS OF CONCRETE	BAR SIZE	BAR LENGTH "C"
<12"	5	3'-0"
12" TO 18"	5	3'-0"
>18"	6	4'-0"



**GENERAL CONSTRUCTION NOTES**  
CORNER AND INTERSECTION REINFORCING DETAILS

- TYPICAL HORIZONTAL WALL CORNER AND INTERSECTION REINFORCING LAYOUT IS SHOWN TO AVOID CONGESTION AND PERMIT PROPER PLACEMENT. FOR SIZE AND SPACING SEE PLANS. ALL HORIZONTAL REINFORCING AT CORNERS AND INTERSECTIONS SHALL BE FABRICATED AND INSTALLED WITH SPLICES LOCATED WHERE SHOWN REGARDLESS OF BAR SIZE AND SPACING
- WHERE THE CORNER OR INTERSECTION REINFORCING SIZE AND SPACING IS NOT SHOWN, NOTED OR TABULATED ON THE PLANS, THE SIZE AND SPACING SHALL BE THE SAME AS THE WALL HORIZONTAL REINFORCING SHOWN ON THE WALL SECTIONS OR AS NOTED FOR THE REINFORCING BETWEEN THE CORNERS OR INTERSECTIONS
- EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 3" SHALL BE THE LESSER OF D/4, 10 FEET, OR 1.0 TIMES THE HEIGHT OF THE WALL, EXCEPT THAT IN NO CASE SHALL IT BE LESS THAN 2.0 FEET
- D = LENGTH OF WALL PARALLEL TO THE BAR LENGTH IN QUESTION
- EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 5" SHALL BE EQUAL TO ONE "LAP LENGTH" AS REQUIRED BY THE GENERAL STRUCTURAL NOTES. USE THE LAP LENGTH AS REQUIRED FOR THE SMALLER OF THE TWO REINFORCING BARS BEING SPLICED
- UNLESS OTHERWISE NOTED, "B" AND "C" BARS ARE THE SAME SIZE AND SPACING AND "F" AND "G" BARS ARE THE SAME SIZE AND SPACING



**5 PLASTIC WATER STOP**

23 NTS

F-APPROXIMATE NO OF RIBS EA SIDE, EA FACE OF WS  
1/8" PROJECTION ALL RIBS, TYP

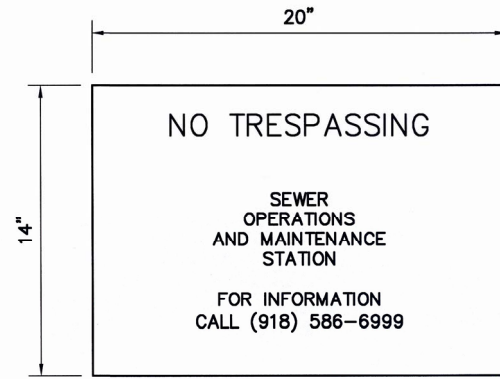
- NOTE:
- MATERIAL QUALITY PER SPECIFICATIONS
  - DIM REQUIREMENTS INDICATED SHOULD BE GIVEN TO SUPPLIERS PRIOR TO PLACING ORDERS
  - NON-ROUND CENTER BULBS SHALL HAVE A MIN OUTSIDE DIM OF "D"



BAR IS ONE INCH ON ORIGINAL DRAWING 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

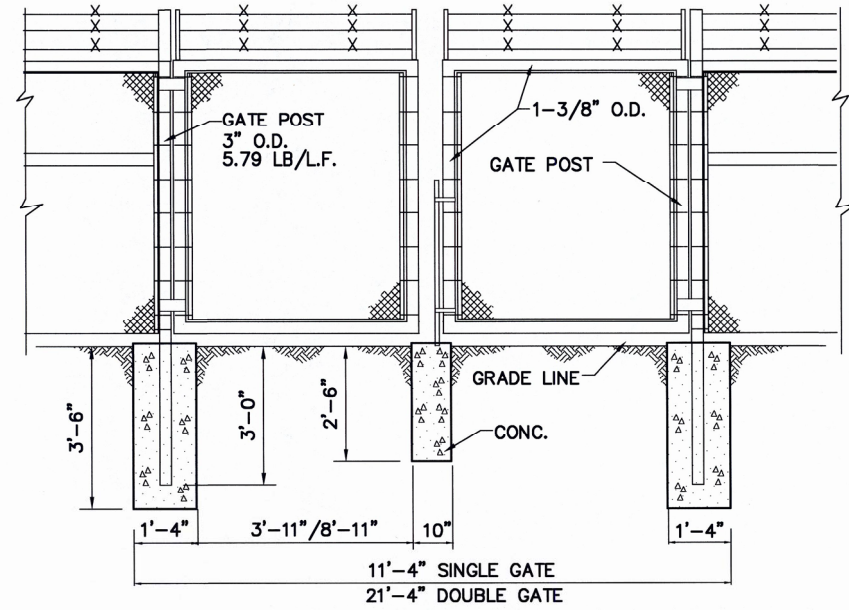


STRUCTURAL DETAILS				
TMUA PROJECT NUMBER ES 2022-10				
CITYWIDE LIFT STATION IMPROVEMENTS				
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT				
PLANS AND ESTIMATES PREPARED BY: HOLLOWAY, UPDKE + BELLEN, Inc. 2000 W WILLOW AVE, SUITE 200, OKLAHOMA 74102 (918) 497-0700, FAX (918) 497-0704				
REVISION	BY	DATE	PLAN SCALE	APPROVED:
			NONE	
			DRAWN	PGM 05/2024
			DESIGNED	TJR 05/2024
			SURVEY	CWC 05/2024
			HORIZONTAL:	PROJ. MGR. [Signature] 7/2/24
			VERTICAL:	LEAD ENGR. [Signature] 12/2/24
			FIELD MGR.	[Signature] 12/2/24
			FILE:	DRAWING: 22TMUATURLEY DESIGN MANAGER [Signature]
			ATLAS PAGE NO: 947, 636	ADVERTISEMENT DATE: 2024
			SHEET 23 OF 24	SHEETS

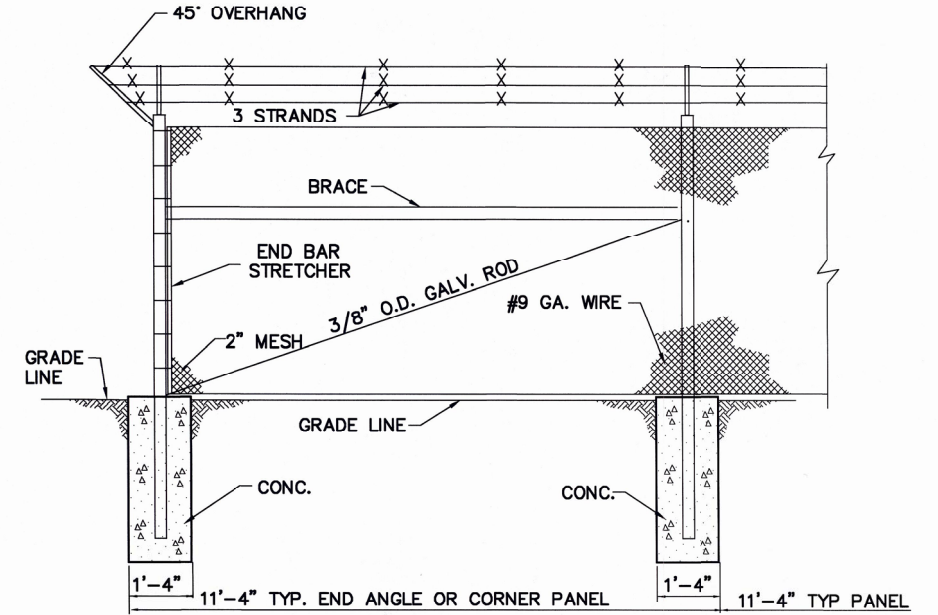


- NOTES:
1. SIGNS SHALL BE UV RESISTANT SCREEN PRINTED 0.08" ALUMINUM.
  2. CONTRACTOR SHALL INSTALL SIGN A MINIMUM OF EVERY 50 LF ALONG EXTERIOR PERIMETER OF PROPOSED SECURITY FENCE.
  3. SIGNS SHALL BE SECURED AT ALL FOUR CORNERS USING DRILLED HOLES AND STAINLESS WIRE TIES.

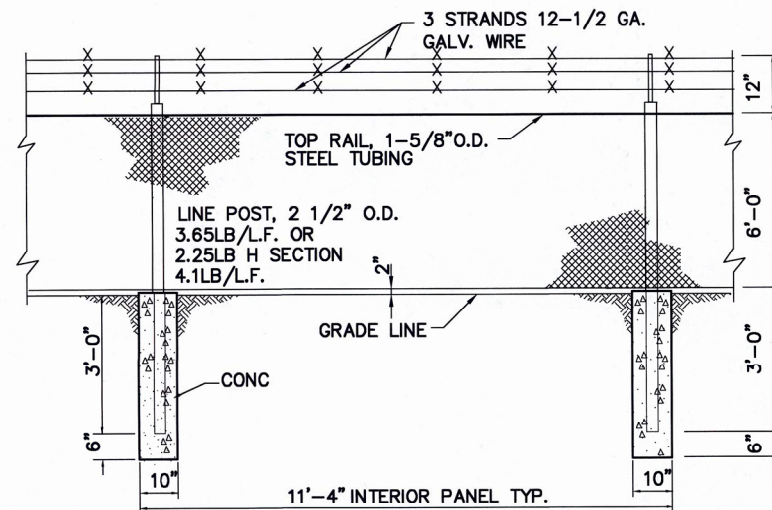
1  
24  
WARNING SIGN DETAIL  
NTS



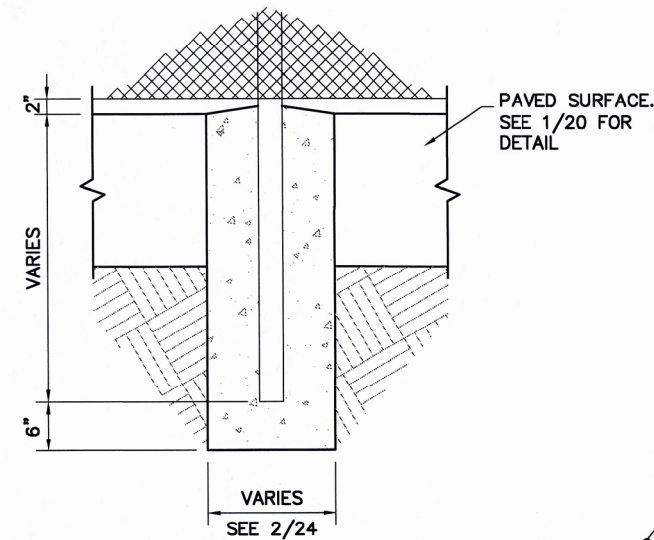
2  
24  
VEHICLE ACCESS SWING GATE  
NTS



3  
24  
TYPICAL END OR CORNER PANEL  
NTS



4  
24  
TYPICAL INTERIOR PANEL  
NTS



5  
24  
POST DETAIL AT PAVED SURFACE  
NTS  
NOTE: 3000 PSI CONCRETE.





























































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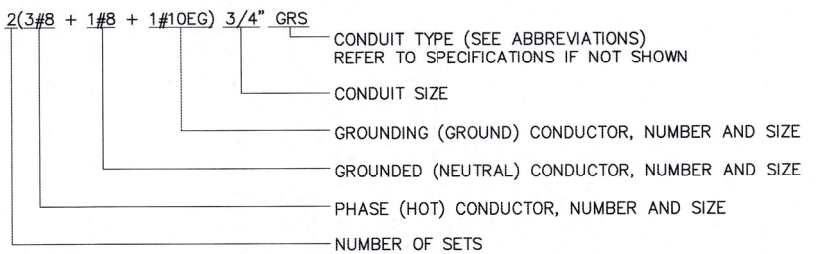


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				PROFILE SCALE:	SURVEY	CWC	06/2024	
				HORIZONTAL:	PROJ. MGR.	WJH	12/24	
				LEAD ENGR.	AK	12/24		
				FIELD MGR.	JAM	12/24		
				FILE:	DRAWING:	22TMUATURLEY	ADVERTISEMENT DATE: 2024	
				ATLAS PAGE NO: 947, 636			SHEET 24 OF 24	SHEETS

**POWER, LIGHTING & SYSTEM LEGEND**

-  UNDER CABINET LIGHT FIXTURE
-  1x4 FLUORESCENT LIGHT
-  2x4 FLUORESCENT LIGHT
-  FLUORESCENT LIGHT WITH EMERGENCY LIGHT (EL) BATTERY  
1400 LUMENS MINIMUM FOR 2 LAMPS
-  2x2 FLUORESCENT LIGHT
-  RECESSED LIGHT, UNLESS OTHERWISE SHOWN
-  WALL MOUNTED LIGHT-MOUNTING HEIGHT AS INDICATED
-  LED EXIT LIGHT, CEILING MOUNTED OR AS INDICATED, DARKENED AREA INDICATES FACE, ARROWS INDICATE DIRECTION OF EGRESS
-  EMERGENCY EXIT LIGHT, WALL MOUNT 7'-6" A.F.F. OR AS NOTED
-  4 FT. STRIP FLUORESCENT LIGHT
-  LIGHT SWITCH, MTD. 4'-0" A.F.F.
-  LIGHT SWITCH, 2 POLE, MTD. 4'-0" A.F.F.
-  LIGHT SWITCH, 3-WAY, MTD. 4'-0" A.F.F.
-  LIGHT SWITCH, 4-WAY, MTD. 4'-0" A.F.F.
-  LIGHT SWITCH WITH PILOT LIGHT, MTD. 4'-0" A.F.F.
-  20 AMP DUPLEX RECEPTACLE MTD. HORIZ. 6" ABOVE COUNTER TOP UNLESS OTHERWISE SHOWN
-  20 AMP DUPLEX RECEPTACLE MTD. 18" A.F.F., WITH #12 GROUND WIRE, GFCI INDICATES GROUND FAULT CIRCUIT INTERRUPTER, WP INDICATES WEATHERPROOF WHILE IN USE ENCLOSURE AND COVER
-  SINGLE RECEPTACLE, RATINGS AS NOTED
-  HP RATED TOGGLE SWITCH, 1 OR 2 POLES AS REQUIRED W/OVERLOADS
-  NON-FUSED DISCONNECT SWITCH, SIZE AS NOTED
-  COMBINATION DISCONNECT AND MOTOR STARTER, SIZE AS NOTED, FUSED TYPE SHOWN.
-  FUSED DISCONNECT SWITCH, SIZE AS NOTED
-  PUSHBUTTON STATION, NEMA 4X
-  ELECTRICAL PANEL, SURFACE MOUNTED, 5'-6" TO TOP OF ENCLOSURE
-  ELECTRICAL PANEL, RECESSED MOUNTED, 5'-6" TO TOP OF ENCLOSURE
-  EQUIPMENT CABINET SIZE AS NOTED, RECESSED MOUNTED, 5'-6" TO TOP OF ENCLOSURE
-  EQUIPMENT CABINET SIZE AS NOTED, SURFACE MOUNTED, 5'-6" TO TOP OF ENCLOSURE
-  HOME RUN TO PANEL, RECEPTACLES AND EQUIPMENT SHALL HAVE GREEN GROUND WIRE. NUMBER OF ARROWS INDICATES NUMBER OF PHASE CONDUCTORS, LETTER(S) INDICATE NAME OF PANEL, NUMBER(S) INDICATE CIRCUIT NUMBERS
-  BRANCH CIRCUIT WITH PHASE, NEUTRAL, SWITCHED PHASE AND EQUIPMENT GROUNDING CONDUCTORS
-  TELEPHONE OR DATA OUTLET, SINGLE GANG BOX MTD. 18" A.F.F. WITH 3/4" STUB TO ABOVE LAY-IN CEILING. "W" INDICATES 4'-6" MTD. HEIGHT FOR WALL PHONE.
























-  3/4" PLYWOOD TELEPHONE BACKBOARD, SIZE AS NOTED, MTD. 5'-6" TO TOP
-  JUNCTION BOX 42 CUBIC INCH MINIMUM CAPACITY
-  SMOKE DETECTOR, WALL MTD.
-  SMOKE DETECTOR, CEILING MTD.
-  FIRE ALARM PULL STATION MTD. 4'-0" A.F.F.
-  FIRE ALARM PULL STATION MTD. 4'-0" A.F.F. AND HORN MTD. 7'-0" A.F.F.
-  SMOKE DETECTOR, HVAC DUCT MTD.
-  FIRE ALARM CHIME 7'-0" A.F.F.
-  SPRINKLER FLOW SWITCH
-  FLOOR TELEPHONE OUTLET, CAST JUNCTION-BOX
-  WALL TELEPHONE/DATA OUTLET
-  DOOR SWITCH MOUNTED IN DOOR JAMB
-  DOOR BUTTON WEATHER PROOF, 50" A.F.F.
-  DOOR BUZZER MTD. 7'-0" A.F.F.
-  HANDHOLE OR MANHOLE, IDENTIFIER SHOWN, REFER TO HANDHOLE OR MANHOLE SCHEDULE FOR SIZE
-  CIRCUIT BREAKER, TRIP RATING SHOWN, 3-POLE UNLESS NOTED
-  FUSE, CURRENT LIMITING, RATING AS SHOWN
-  TRANSFORMER, RATINGS AS SHOWN
-  ELECTRIC MOTOR, HORSEPOWER SHOWN
-  MOTOR STARTER, SIZE AS SHOWN OR REQUIRED, FVNR UNLESS NOTED
-  VARIABLE FREQUENCY DRIVE
-  DUCT BANK, IDENTIFIER SHOWN, REFER TO DUCT BANK SCHEDULE FOR SIZE AND CONFIGURATION.
-  3/4" x 10' COPPER CLAD GROUND ROD
-  SURGE ARRESTER
-  GENERATOR
-  ATS
-  WEATHERHEAD
-  CABLE CONNECTION



**ABBREVIATIONS**

- |       |  |      |   |
|-------|--|------|---|
| A     | AMP                                      | AMP  | AMP                                       |
| ACU   | AIR CONDITIONING UNIT                    | AFF  | ABOVE FINISHED FLOOR                      |
| AIC   | AMPS INTERRUPTING CAPACITY               | AM   | AMP-METER                                 |
| ANN   | ANNUNCIATOR                              | AP   | AERIAL PRIMARY                            |
| AS    | AERIAL SECONDARY                         | AUX  | AUXILIARY                                 |
| BFI   | BLOWN FUSE INDICATOR                     | BKR  | BREAKER                                   |
| C     | CONDUIT                                  | CGRS | PVC COATED GALVANIZED RIGID STEEL CIRCUIT |
| CKT   | CIRCUIT                                  | COM  | COMMON                                    |
| CONT  | CONTINUOUS                               | CP   | CONTROL PANEL                             |
| CPT   | CONTROL POWER TRANSFORMER                | CR   | CONTROL RELAY                             |
| CS    | CORD SET                                 | CU   | COEFFICIENT OF UTILIZATION                |
| DEB   | DIRECT EARTH BURIED                      | EC   | EMPTY OR EMBEDDED CONDUIT                 |
| EF    | EXHAUST FAN                              | EG   | EQUIPMENT GROUND                          |
| EL    | ELEVATION                                | EMT  | ELECTRICAL METALLIC TUBING                |
| ETM   | ELAPSED TIME METER                       | FA   | FIRE ALARM                                |
| FAP   | FIRE ALARM PANEL                         | FC   | FAN COIL                                  |
| FLR   | FLOOR                                    | FLR  | FLOOR                                     |
| FOC   | FIBER OPTIC CABLE                        | FS   | FLOAT SWITCH                              |
| FT    | FEET                                     | FT   | FEET                                      |
| FVNR  | FULL VOLTAGE NON-REVERSING STARTER       | FVR  | FULL VOLTAGE REVERSING STARTER            |
| GFCI  | GROUND FAULT CIRCUIT INTERRUPTER         | GND  | GROUND                                    |
| GRS   | GALVANIZED RIGID STEEL                   | HOA  | HAND-OFF-AUTO                             |
| HP    | HORSEPOWER OR HEAT PUMP                  | HR   | HOUR                                      |
| JB    | JUNCTION BOX                             | KB   | KILOVOLT-AMPERE                           |
| KVA   | KILOVOLT-AMPERE                          | KVAR | KILOVOLT-AMPERE, REACTIVE                 |
| KW    | KILOWATT                                 | LA   | LIGHTNING ARRESTOR                        |
| L.O.  | LUGS ONLY                                | L.V. | LOW VOLTAGE                               |
| MCB   | MAIN CIRCUIT BREAKER                     | MCC  | MOTOR CONTROL CENTER                      |
| MCP   | MOTOR CIRCUIT PROTECTOR                  | MFR  | MANUFACTURER                              |
| MIN   | MINIMUM                                  | MS   | MOTOR STARTER                             |
| MTD   | MOUNTED                                  | MTD  | MOUNTED                                   |
| NFDS  | NON-FUSED DISCONNECT SWITCH              | NTS  | NOT TO SCALE                              |
| OC    | ON CENTER                                | OH   | OVERHEAD                                  |
| OL    | OVERLOAD                                 | PB   | PUSH BUTTON                               |
| PEC   | PHOTO ELECTRIC CELL                      | PF   | POWER FACTOR                              |
| PL    | PILOT LIGHT                              | PL   | PILOT LIGHT                               |
| PMR   | PHASE MONITOR RELAY                      | PNL  | PANEL                                     |
| PTT   | PUSH-TO-TEST                             | PVC  | SCHEDULE 40 POLYVINYL CONDUIT             |
| RECPT | RECEPTACLE                               | RM   | ROOM                                      |
| RVAT  | REDUCED VOLTAGE AUTO-TRANSFORMER STARTER | S    | SECOND                                    |
| SA    | SURGE ARRESTER                           | SA   | SURGE ARRESTER                            |
| SDBC  | SOFT DRAWN BARE COPPER                   | SE   | SERVICE ENTRANCE                          |
| SHT   | SHEET                                    | SHT  | SHEET                                     |
| SN    | SOLID NEUTRAL                            | SS   | STAINLESS STEEL                           |
| STA   | STATION                                  | SW   | SWITCH                                    |
| TC    | TIME CLOCK                               | TEL  | TELEPHONE                                 |
| TD    | TIME DELAY                               | TDD  | TIME DELAY ON DE-ENERGIZATION             |
| TDE   | TIME DELAY ON ENERGIZATION               | TYP  | TYPICAL                                   |
| TVSS  | TRANSIENT VOLTAGE SURGE SUPPRESSOR       | UG   | UNDER GROUND                              |
| UH    | UNIT HEATER                              | UP   | UNDERGROUND PRIMARY                       |
| US    | UNDERGROUND SECONDARY                    | VA   | VOLT-AMP                                  |
| VFD   | VARIABLE FREQUENCY DRIVE                 | VM   | VOLT-METER                                |
| W     | WATT OR WIRE                             | WH   | WEATHER HEAD                              |
| WM    | WATT METER                               | WP   | WEATHERPROOF                              |
| W/    | WITH                                     | XMFR | TRANSFORMER                               |

**CONTROL SCHEMATIC LEGEND**

-  PUSHBUTTON SWITCH, NORMALLY OPEN
-  PUSHBUTTON SWITCH, NORMALLY CLOSED
-  SELECTOR SWITCH, NUMBER OF POSITIONS AND CONTACTS AS SHOWN
-  RELAY CONTACT, NORMALLY OPEN
-  RELAY CONTACT, NORMALLY CLOSED
-  TIME DELAY CONTACT, CLOSE ON ENERGIZATION
-  TIME DELAY CONTACT, OPEN ON ENERGIZATION
-  TIME DELAY CONTACT, OPEN ON DE-ENERGIZATION
-  TIME DELAY CONTACT, CLOSE ON DE-ENERGIZATION
-  LEVEL SWITCH
-  PRESSURE SWITCH
-  LIMIT SWITCH CONTACT, NORMALLY OPEN
-  LIMIT SWITCH CONTACT, NORMALLY CLOSED
-  LIMIT SWITCH CONTACT, HELD OPEN
-  LIMIT SWITCH CONTACT, HELD CLOSED
-  RELAY COIL, "TR" INDICATES "TIMING RELAY"
-  PILOT LIGHT; "A" INDICATES "AMBER LENS," "G" INDICATES "GREEN LENS," "R" INDICATES "RED LENS"
-  SOLENOID
-  ELAPSED TIME METER
-  TERMINAL BLOCK
-  ELECTRICAL CONNECTION
-  FUSE, AMPERE RATING AS SHOWN OR REQUIRED "BFI" INDICATES "BLOWN FUSE INDICATOR" TYPE
-  GROUND CONNECTION TO ENCLOSURE GROUND BAR




BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" THIS SHEET, ADJUST SCALES ACCORDINGLY

ELECTRICAL LEGEND AND ABBREVIATIONS	
TMUA PROJECT NUMBER ES 2022-10	
CITYWIDE LIFT STATION IMPROVEMENTS	
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT	
PLANS AND ESTIMATES PREPARED BY: HOLLOWAY, UPDIKE + BELLEN, Inc. 2001 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012 (918)251-0797, FAX (918)251-0754	
REVISION	BY DATE
PLAN SCALE: AS SHOWN	DRAWN CD 04/2024
	DESIGNED BB 04/2024
PROFILE SCALE:	SURVEY CWC 01/2024
HORIZONTAL:	PROJ. MGR. [Signature] 12/24
	LEAD ENGR. [Signature] 12/24
VERTICAL:	FIELD MGR. [Signature] 12/24
FILE:	DRAWING: 22TMUAUTURLEY DATE: 2024
ATLAS PAGE NO.	SHEET E1 OF E6 SHEETS

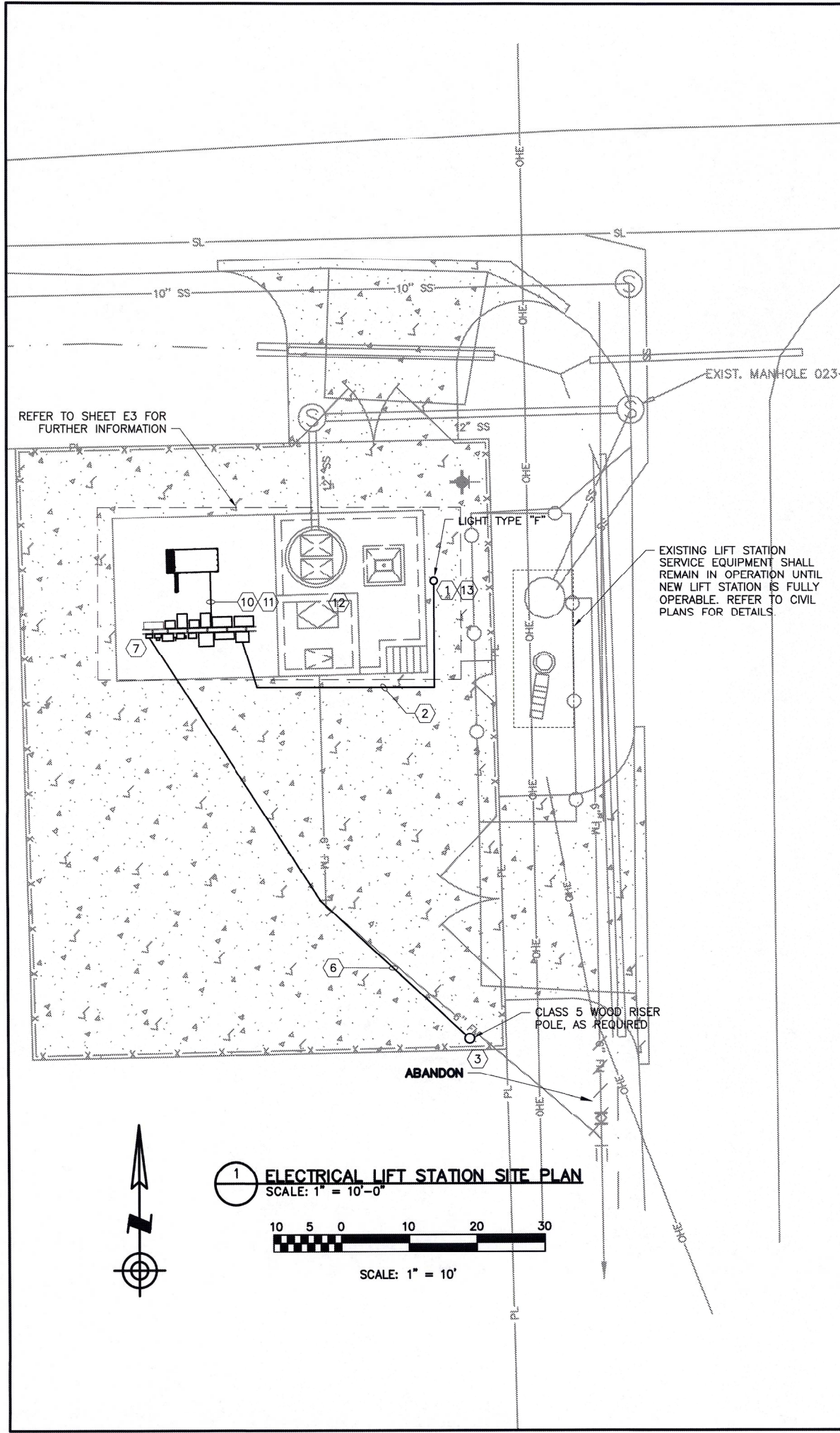


**LINE TYPES**

-  FURNISH + INSTALL
-  EXISTING

**GENERAL NOTE:**

- SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT BE UTILIZED ON THE PROJECT.

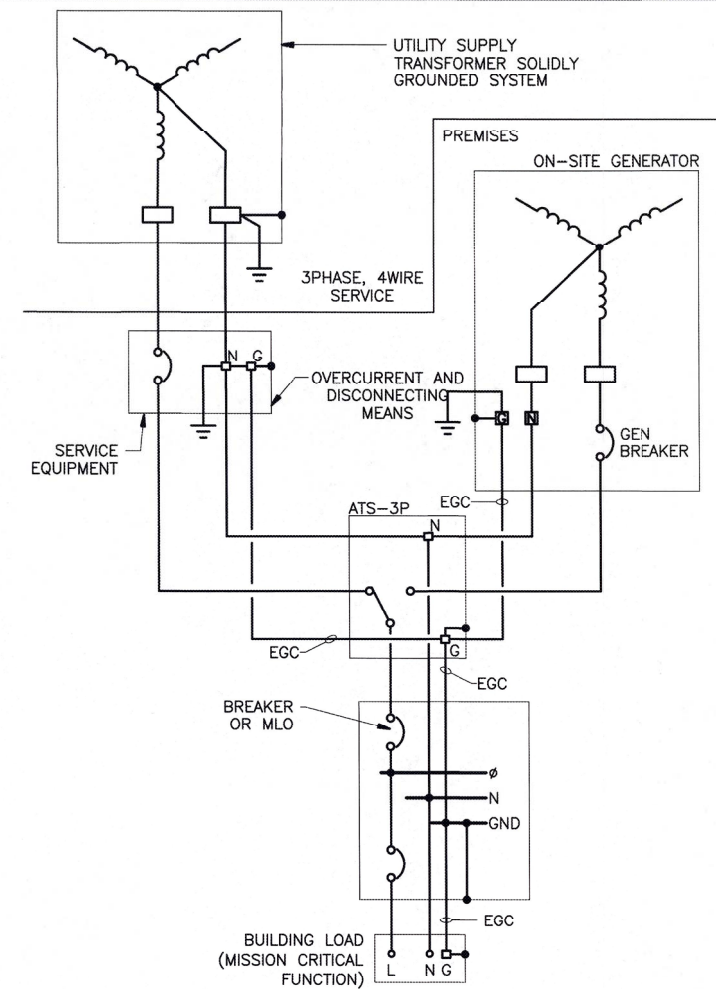


**KEYED NOTES:**

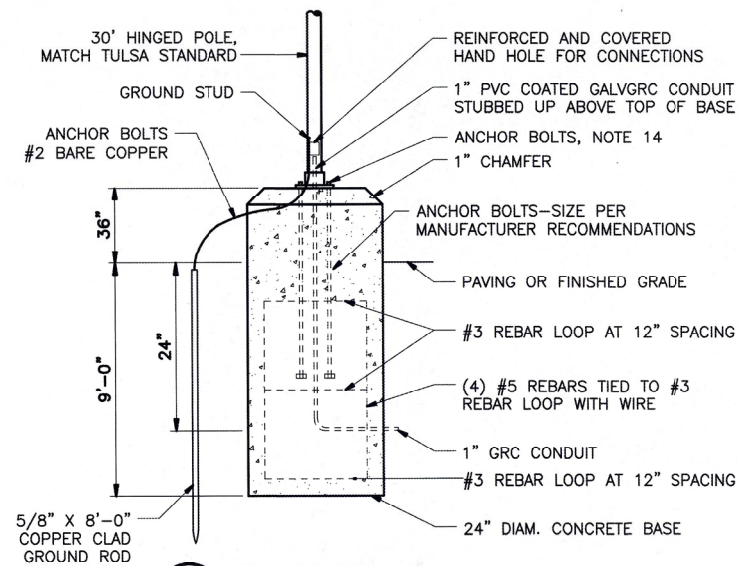
1. FURNISH AND INSTALL POLE/LIGHT FIXTURE AND CONCRETE BASE. SEE DETAIL 3 THIS SHEET FOR POLE BASE DETAIL.
2. BUILD (2#10+1#10EG)1"GRS MINIMUM 24" BELOW FINISHED GRADE.
3. CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITY TO PROVIDE NEW 200A, 480/277V, 3-PHASE SERVICE.
4. NOT USED.
5. NOT USED.
6. NEW UNDERGROUND SECONDARY. BUILD (3) PARALLEL 4" GRS CONDUITS 36" BELOW GRADE. TWO SHALL BE EMPTY SPARE, ONE CONDUIT SHALL CONTAIN (3#3/0+1#3/ON+1#6EG).
7. FURNISH AND INSTALL NEW METER DISCONNECT, METER, AND SERVICE ENTRANCE DISCONNECT ON NEW ELECTRICAL EQUIPMENT RACK. SEE SHEET E3 FOR ELECTRICAL EQUIPMENT RACK LAYOUT.
8. NOT USED.
9. NOT USED.
10. BUILD (2) PARALLEL 2-1/2" GRS 36" BELOW PAVING. ONE CONDUIT SHALL BE EMPTY SPARE, ONE CONDUIT SHALL CONTAIN (3#1/0+1#1/ON+1#6EG).
11. (6#4)1"GRS
12. BUILD (3#12)1"GRS+(3#10)1"GRS FOR BATTERY CHARGER AND BLOCK HEATER.
13. CONTRACTOR SHALL PROVIDE ANCHOR BOLTS SIZE AND DETAILS AS REQUIRED BY CONTRACTOR'S SELECTED POLE MANUFACTURER AND AS DESIGNED BY AN OKLAHOMA LICENSED ENGINEER.

**GENERAL NOTES:**

1. ALL PANELS MUST BE 6'-6" FROM FINISHED FLOOR TO THE TOP OF THE PANEL(S).
2. ALL PANELS ADJUSTED ON 1-5/8" UNISTRUT RACKS.
3. CONTROL PANEL SHALL BE UL LISTED. A DRAWING OF THE CONTROL PANEL WIRING DIAGRAM SHALL BE SUBMITTED TO THE UNDERGROUND COLLECTIONS DEPARTMENT, CITY OF TULSA FOR REVIEW AND APPROVAL.
4. CONTROL PANEL LIGHTS:  
FAIL - RED  
RUN - GREEN  
READY - AMBER
5. NOT USED.
6. NOT USED
7. ALL ITEMS LISTED MAY BE SUBSTITUTED WITH AN APPROVED EQUAL AS SELECTED BY THE CITY OF TULSA, UNDERGROUND COLLECTION SYSTEMS SUPERVISOR.
8. ALL CIRCUIT BREAKERS SHALL BE LOCK-OUT TAG-OUT ACCEPTABLE PER OSHA REQUIREMENTS. PADLOCK LOCKABLE.
9. CONTRACTOR IS TO GET ALL REQUIRED LOCAL PERMITS INCLUDING BUT NOT LIMITED TO BUILDING PLUMBING / MECHANICAL / ELECTRICAL PERMITS, AS NEEDED FOR THE CONSTRUCTION SHOWN.
10. ALL CONDUIT SHALL BE 316 STAINLESS STEEL.



**2 GROUNDING DIAGRAM 3 POLE**  
SCALE: NONE



**3 POLE BASE DETAIL**  
SCALE: NONE



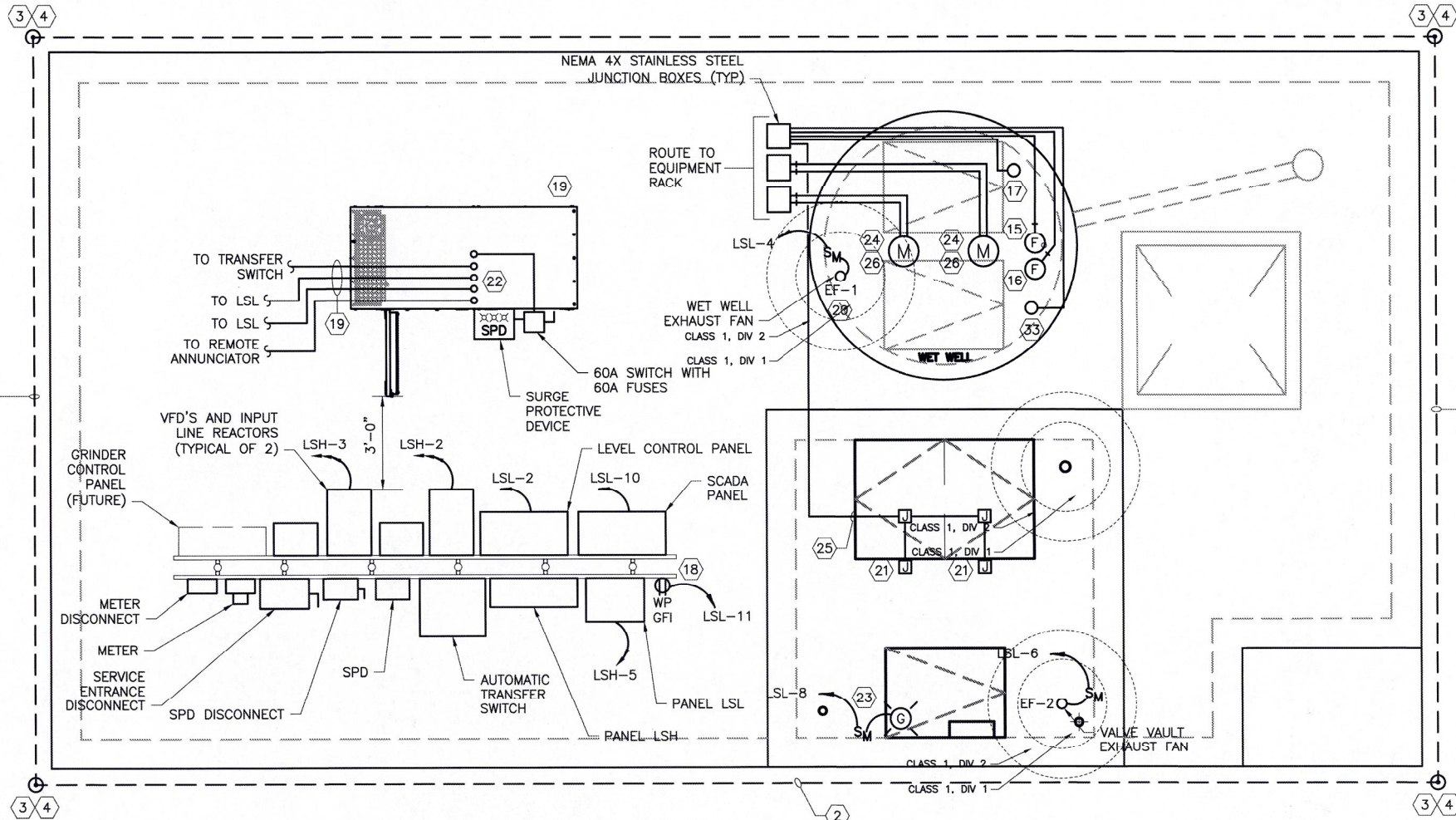
BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

<b>ELECTRICAL LIFT STATION SITE PLAN</b>			
TMUA PROJECT NUMBER ES 2022-10			
CITYWIDE LIFT STATION IMPROVEMENTS			
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT			
PLANS AND ESTIMATES PREPARED BY: <b>HOLLOWAY, UPDIKE + BELLEN, Inc.</b> 2001 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012 (918)251-0717, FAX (918)251-0754			
REVISION	BY	DATE	APPROVED:
PLAN SCALE: AS SHOWN	DRAWN	CD	04/2024
	DESIGNED	BB	04/2024
PROFILE SCALE:	SURVEY	CWC	01/2024
HORIZONTAL:	PRJ. MGR.	<i>[Signature]</i>	
	LEAD ENGR.	<i>[Signature]</i>	
VERTICAL:	FIELD MGR.	<i>[Signature]</i>	<i>[Signature]</i> DESIGN MANAGER
FILE:	DRAWING:	22TMUAUTURLEY	DATE: 2024
ATLAS PAGE NO:			SHEET E2 OF E6 SHEETS



**GENERAL NOTES:**

- PVC IS NOT ALLOWED.
- ONLY INSULATED FITTINGS ALLOWED.
- EMT COMPRESSION FITTINGS NOT ALLOWED.
- EMT LOK CONNECTOR SHALL NOT BE USED.
- EMT DIE CAST ZINC SHALL NOT BE USED, SET SCREW OR COMPRESSION.
- ALL ENCLOSURES SHALL HAVE BUCKLE TYPE QUICK LATCHES.
- ALL STAINLESS STEEL 316.
- CONCRETE ANCHORS AND T-BOLTS SHALL BE 316 S.S. WEDGE ANCHORS NOT ALLOWED.
- OUTDOOR RECEPTACLES SHALL BE GFCI AND WEATHER RESISTANT. ALL WEATHERPROOF COVERS SHALL BE WEATHERPROOF WHILE IN USE, HEAVY DUTY, LOCKABLE.
- GROUND RODS SHALL BE 3/4"X10'.
- ALL GROUND ROD CONNECTIONS SHALL BE EXOTHERMICALLY WELDED.

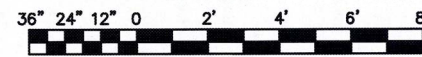


**KEYED NOTES:**

- NOT USED.
- BUILD #1/0 BARE STRANDED COPPER MINIMUM 18" BELOW GRADE
- FURNISH AND INSTALL 3/4" X 10' COPPER CLAD STEEL GROUND ROD
- EXOTHERMIC WELD ALL UNDERGROUND GROUNDING CONNECTIONS
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- BACKUP FLOAT SWITCH
- HIGH WET WELL FLOAT SWITCH
- MULTI TRODE PROBE, FOG ROD, OR APPROVED EQUAL.
- WEATHERPROOF/GFCI RECEPTACLE.
- REFER TO ONE-LINE RISER DIAGRAM FOR CONDUCTOR AND CONDUIT SIZE.
- EF-1 CONDUIT SHALL NOT ENTER WET WELL.
- FURNISH AND INSTALL ALLEN-BRADLEY 802T-A SWITCH AND ALLEN-BRADLEY 802T-W2D LEVER FOR CHECK VALVE SWITCH. COORDINATE INSTALLATION WITH CITY.
- BUILD (2) SIMPLEX RECEPTACLES IN GENERATOR ENCLOSURE. LOCATE AS INSTRUCTED BY GENERATOR MANUFACTURER. RECEPTACLES WILL BE USED FOR BATTERY CHARGER AND WATER JACKET HEATER.
- FURNISH AND INSTALL LIGHT FIXTURE. COORDINATE EXACT LOCATION WITH CITY.

- SUPPORT CORD WITH 316 STAINLESS STEEL KELLEMS GRIP. ALL CORDS SHALL BE UN CUT, WITH EXCESS LENGTH COILED AND SUPPORTED NEXT TO ACCESS HATCHES. COORDINATE EXACT LOCATION WITH CITY IN FIELD.
- INSTALL CHECK VALVE SWITCH CABLE WITH (6) #16 STRANDED CONDUCTORS INSIDE A PVC OUTER JACKET.
- FURNISH AND INSTALL CHASE NIPPLE ON END AT CONDUIT, FLUSH WITH CONCRETE. WHERE CONDUIT IS EMPTY. FURNISH AND INSTALL OZ GEDNEY TYPE CSBG CONDUIT SEALING BUSHING WITH SOLID RUBBER SEAL IN CONDUIT INSIDE THE JUNCTION BOX.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- MAINTAIN N.E.C. REQUIRED CLEARANCES.
- 3/4" FOR LEVEL TRANSDUCER.

**1 LIFT STATION POWER PLAN**  
SCALE: 3/8" = 1'-0"



SCALE: 3/8" = 1'-0"

**GENERAL NOTE:**

- CONTRACTOR SHALL NOT INSTALL CONDUIT WITHIN WETWELL OR ROUTE CONDUIT ON TOP OF WETWELL THUS CREATING A TRIP HAZARD. CONDUIT SHALL BE BURIED AND INSTALLED AROUND PERIMETER OF WETWELL TO CONTROL PANEL.



BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY



ELECTRICAL LIFT STATION PLANS  
TMUA PROJECT NUMBER ES 2022-10  
CITYWIDE LIFT STATION IMPROVEMENTS  
CITY OF TULSA, OKLAHOMA  
WATER AND SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:  
**HOLLOWAY, UPDIKE + BELLEN, Inc.**  
2001 N WILLOW AVE, BROKEN ARROW, OKLAHOMA 74012  
(918)291-0777, FAX (918)281-0754

REVISION	BY	DATE	PLAN SCALE:	DRAWN	CD	04/2024	APPROVED:
			AS SHOWN	DESIGNED	BB	04/2024	
			PROFILE SCALE:	SURVEY	CWC	01/2024	
			HORIZONTAL:	PROJ. MGR.	BB	12/24	
			VERTICAL:	LEAD ENGR.	BB	12/24	
				FIELD MGR.	BB	12/24	
			FILE:	DRAWING:	22TMUATURLEY	DATE: 2024	
			ATLAS PAGE NO:				SHEET E3 OF E6 SHEETS

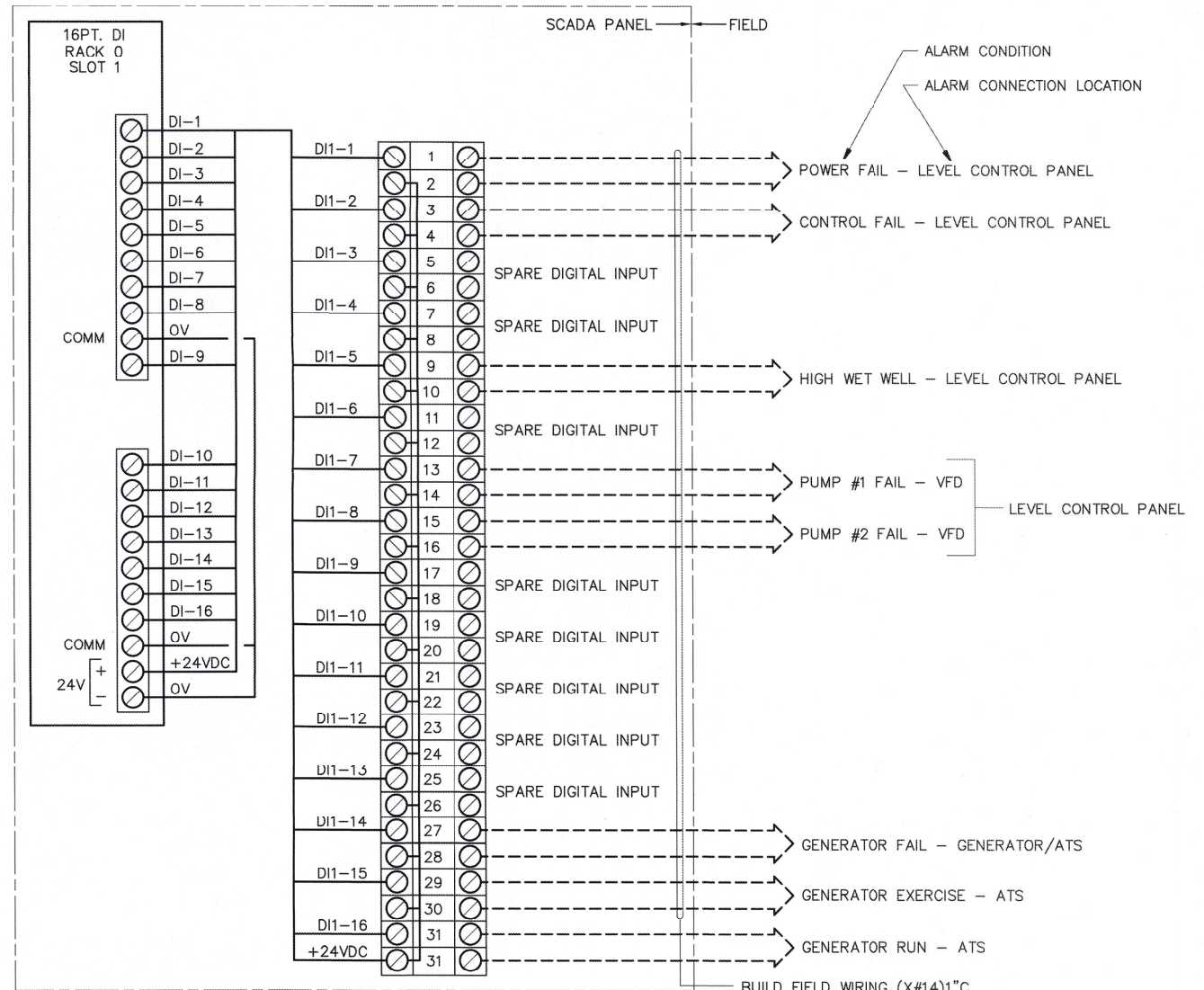
POWER PANEL "LSH"		200 AMP MAIN CIRCUIT BREAKER							
480 Y / 277 VOLTS, 3 PHASE 4 WIRE		85,000 AIC							
CKT.	DESCRIPTION	LOAD			OVERCURRENT				
		KVA	AMPS	HP	STARTER	TRIP	POLES	FRAME	
1	SURGE PROTECTION DEVICE	0.000	0.00	0	--	60A	3		
2	PUMP 1 VFD	22.447	27.00	20	--	60A	3		
3	PUMP 2 VFD	22.447	27.00	20	--	60A	3		
4	SPARE	0.000	0.00	0	--	20A	3		
5	LSL	6.250	13.02	0	--	70A	2		
6	SPARE	0.000	0.00	0	--	20A	3		
7	SPARE	0.000	0.00	0	--	30A	3		
8	SPARE	0.000	0.00	0	--	50A	3		
9	SPARE	0.000	0.00	0	--	80A	3		
10		0.000	0.00						
11		0.000	0.00						
12		0.000	0.00						
13		0.000	0.00						
14		0.000	0.00						
15		0.000	0.00						
16		0.000	0.00						
17		0.000	0.00						
18		0.000	0.00						
19		0.000	0.00						
20		0.000	0.00						
CONNECTED LOAD		51.144	KVA						
DESIGN FACTOR		1.2500							
DESIGN LOAD		63.930	KVA						
DESIGN CURRENT		76.90	AMPS						

PANELBOARD SCHEDULE									
PANEL: "LSL"		VOLTS: 240/120 1PH, 3W			MAIN: 100A MCB			85,000 AIC	
DESCRIPTION	BKR	NO.	A	B	A	B	NO.	BKR	DESCRIPTION
SURGE PROTECTION DEVICE	60A/2P	1	0.000		1.500		2	20A/1P	LEVEL CONTROL PANEL
SURGE PROTECTION DEVICE	--	3		0.000		0.500	4	20A/1P	EF-1 (WET WELL FAN)
GENERATOR BLOCK HEATER	30A/2P	5	1.000		0.500		6	20A/1P	EF-2 (VALVE VAULT FAN)
GENERATOR BLOCK HEATER	30A/2P	7		1.000		0.500	8	20A/1P	VALVE VAULT LIGHT
BATTERY CHARGER	20A/1P	9	0.500		0.500		10	20A/1P	SCADA PANEL
RECEPTACLE	20A/1P	11		0.180		0.000	12		
OUTDOOR LIGHT	20A/2P	13	0.480		0.000		14		
SPARE	20A/2P	15		0.000		0.000	16		
SPARE	--	17	0.000		0.000		18		
SPARE	30A/1P	19		0.000		0.000	20		
SPARE	20A/1P	21	0.000		0.000		22		
SPARE	20A/1P	23		0.000		0.000	24		
		25	0.000		0.000		26		
		27		0.000		0.000	28		
		29	0.000		0.000		30		
		31		0.000		0.000	32		
		33	0.000		0.000		34		
		35		0.000		0.000	36		
		37	0.000		0.000		38		
		39		0.000		0.000	40		
		41	0.000		0.000		42		
			1.980	1.180	2.500	1.000			
			4.480	2.180	TOTAL CONNECTED KVA				
			6.660						
			10.406		DESIGN KVA				
			43		DESIGN AMPS				

UCS RADIO TELEMETRY SYSTEM (SCADA)		
ITEM #	PART #	PART DESCRIPTION
1	ACE-3600	ACE-3600 (REFER TO CITY OF TULSA COMMUNICATION DEPARTMENT FOR RADIO REQUIREMENTS AND MDLC. CHASSIS ONLY, WITH HOFFMAN CDS ENCLOSURE (NEMA 12), MOUNTED ON 15"X15" PANEL (MOTOROLA APX6500 RADIO)
2	V115	MIXED I/O MODULE-16DI+4DO+4AI
3	ASP 931 (ASP-930N DISCONTINUED)	806-894 Mhz TRANSIT ANTENNA, UNITY dB GAIN
4	SP240-36BFUM (ANTENNA WHIP)	36" OF LMR-240 FLEXIBLE COMMUNICATION CABLE BNC MALE/UHF-MALE

**SCADA SYSTEM NOTES:**

- CONTRACTOR SHALL FURNISH AND INSTALL COMPLETE SCADA SYSTEM EQUIPMENT, ENCLOSURES, POWER SUPPLIES AND FIELD WIRING. PURCHASE EQUIPMENT FROM PRIME CONTROLS, INC. 1725 LAKE POINTE DR LEWISVILLE, TX 75057 TOLL FREE NUMBER 866-99-SCADA
- LOW VOLTAGE CABLE FOR SCADA FIELD WIRING MAY BE NEATLY RUN, EXPOSED IN CONTROL BUILDING.
- GENERATOR RUN AND GENERATOR EXERCISE ALARMS REQUIRE TWO RELAYS BE ADDED IN AUTOMATIC TRANSFER SWITCH. FURNISH AND INSTALL ALL NECESSARY RELAYS AND WIRING. COORDINATE WIRING WITH CITY.
- ACE3600 TO BE MOUNTED IN ENCLOSURE. HOFFMAN CSD302412 WITH ACCESSORY CWHNL.
- NETWORK COMMUNICATION FROM PLC FOR PUMP RUN TIMES SHALL BE PROVIDED



**GENERAL NOTES:**

- CARRY CODE SIZE GROUND WIRE IN ALL FEEDER AND BRANCH CONDUITS AND ATTACH TO ALL DEVICES, FIXTURES AND EQUIPMENT.
- RACEWAYS CONTAINING #10 OR SMALLER PHASE CONDUCTORS: DO NOT INSTALL MORE THAN SIX PHASE CONDUCTORS WHICH TO SHARE TWO NEUTRALS MAXIMUM IN A 3/4" OR LARGER RACEWAY UNLESS SO INDICATED ON PLAN.
- FURNISH AND INSTALL MARKED BRADY TYPE PULLSTRING IN ALL EMPTY CONDUITS.
- ALL CONDUIT SHALL BE GRC UNLESS SPECIFICALLY NOTED OTHERWISE.
- NO CONDUIT SHALL BE LESS THAN 3/4" TRADE SIZE.
- ALL UNDERGROUND BENDS AND ELBOWS SHALL BE LONG SWEEP.
- USE 1-5/8" X 1-5/8" HOT DIPPED GALVANIZED STEEL STRUT WITH LONG SLOTTED HOLES TO SUPPORT ALL PANELS, ENCLOSURES, AND BOXES TO WALLS OF BUILDING.
- ANCHORS IN BLOCK WALLS SHALL BE EXPANSION TYPE WHEN HOLE DOES NOT ENTER BLOCK VOID. USE "T" BOLTS WHERE HOLE ENTERS BLOCK VOID. NO TOGGLE BOLTS ALLOWED.
- PROVIDE 20% SPARE, OR AT LEAST (2)-SPARE CONDUCTORS, WHICHEVER IS GREATER IN ALL CONDUITS CONTAINING #12 OR SMALLER CONDUCTORS THAT ARE INSTALLED UNDERGROUND OR PASS THROUGH A VAPOR SEAL.
- MOUNT ALL ELECTRICAL PANELS, ATS, PUMP CONTROL PANEL, AND SCADA PANEL 6"-6" AFF TO TOP.



BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" THIS SHEET, ADJUST SCALES ACCORDINGLY

ELECTRICAL SCHEDULES AND SCHEMATICS  
 TMUA PROJECT NUMBER ES 2022-10  
 CITYWIDE LIFT STATION IMPROVEMENTS  
 CITY OF TULSA, OKLAHOMA  
 WATER AND SEWER DEPARTMENT

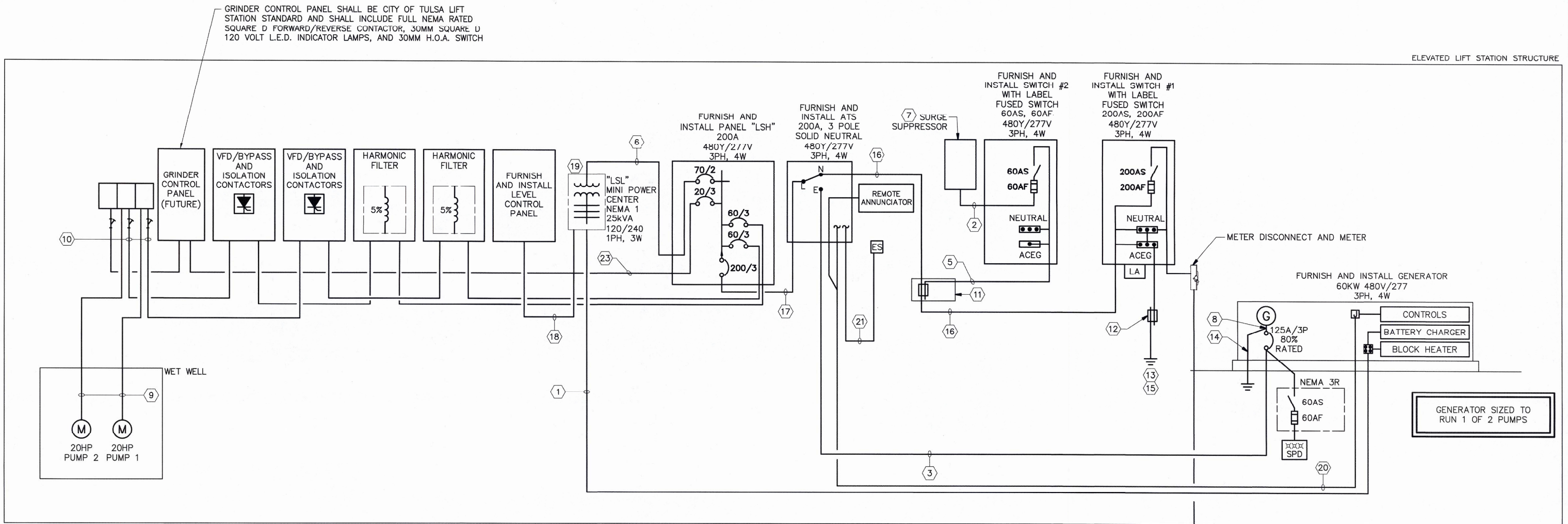
PLANS AND ESTIMATES PREPARED BY:  
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				FIELD MGR.	WEN	04/24	
			FILE:	DRAWING:	22TMUA/TURLEY		
			ATLAS PAGE NO:				

John M. ...  
 DESIGN MANAGER

DATE: 2024  
 SHEET E4 OF E6 SHEETS



1 ONE-LINE RISER DIAGRAM  
E6 SCALE: NONE

KEYED NOTES:

1. BUILD [(3#12)+(3#10)]1"C FOR BATTERY CHARGER AND BLOCK HEATER
2. BUILD (4#6+1#6G)1"C, WIRE LENGTH 36" MAXIMUM FOR SURGE SUPPRESSOR
3. BUILD (2) 2" GALVANIZED RIGID STEEL CONDUITS 36" BELOW PAVING. ONE CONDUIT SHALL BE EMPTY SPARE, ONE CONDUIT SHALL CONTAIN (3#2+1#2N+1#8)3"C
4. NOT USED.
5. BUILD (3#6+1#6)1-1/2"C
6. BUILD (2#4+1#8G)1-1/2"C
7. FURNISH AND INSTALL RAYCAP TVSS TECHNOLOGY WITH ASCO 500 SERIES - PART NO. 0-51-SSY-B-G-0100-N-0XF (X=120A ALARM BOARD LED'S AND CONTACTS) OR RAYCAP PART NO. 277-3Y-M3-4-06-C. CONFIRM WITH SYSTEM VOLTAGE.
8. DO NOT BOND ENGINE GENERATOR NEUTRAL TO GROUND. ENGINE GENERATOR SHALL NOT BE A SEPARATELY DERIVED SYSTEM
9. REFER TO ELECTRICAL PLAN FOR DETAILS
10. BUILD (3#6+1#10G)1-1/2", REFER ELECTRICAL PLAN FOR DETAILS
11. BUILD 36"W X 12"H X 6"D SPLICE BOX WITH SCREW COVER. USE COMPRESSION "H" OR "C" TAPS. TAP SWITCH #2 CONDUCTORS TO SWITCH #1 CONDUCTORS. SWITCH #1 CONDUCTORS SHALL BE CONTINUOUS, WITHOUT SPLICE, FROM TRANSFER SWITCH TO FUSED SWITCH.
12. USE COMPRESSION "C" OR "H" TAP. DO NOT CUT GROUNDING ELECTRODE CONDUCTOR
13. RE: POWER PLAN FOR UNDERGROUND GROUNDING SYSTEM
14. BUILD #1/0 BARE COPPER GROUNDING ELECTRODE CONDUCTOR.
15. FURNISH AND INSTALL GROUNDING ROD PER PSO-AEP REQUIREMENTS AND BOND TO UNDERGROUND GROUNDING SYSTEM.
16. BUILD (3#3/0+1#3/0N+1#6EG)3"C.
17. BUILD (3#3/0+1#3/0N+1#6EG)3"C.
18. BUILD (3#12)3/4"C.
19. MOUNT MINI POWER CENTER TO WALL USING BRACKETS SUPPLIED BY TRANSFORMER MANUFACTURER
20. (12#14)1"C - START COMMAND, ENGINE FAIL ALARM, ETC. (MODBUS CABLE)1"C-REMOTE ANNUNCIATOR.
21. (3#14)1"C
22. NEW UNDERGROUND SECONDARY. BUILD (3) PARALLEL 3" GRS CONDUITS 36" BELOW GRADE. TWO SHALL BE EMPTY SPARE (PLUG SPARE CONDUIT BOTH ENDS), ONE CONDUIT SHALL CONTAIN (3#3/0+1#3/0N)
23. (3#12+1#12N+1#12EG)1"C



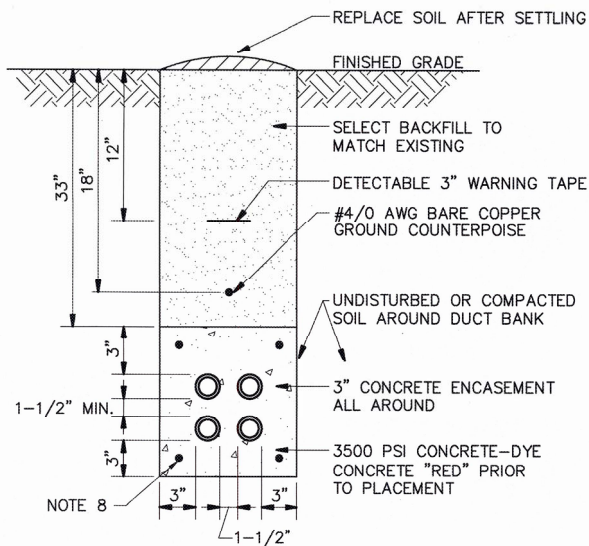
BAR IS ONE INCH ON ORIGINAL DRAWING 0 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

ONE-LINE RISER DIAGRAM	
TMUA PROJECT NUMBER ES 2022-10	
CITYWIDE LIFT STATION IMPROVEMENTS	
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT	



PLANS AND ESTIMATES PREPARED BY:  
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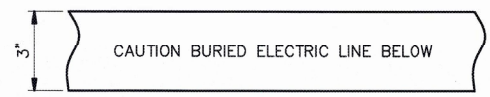
REVISION	BY	DATE	PLAN SCALE:	DRAWN	CD	04/2024	APPROVED:
			AS SHOWN				
				DESIGNED	BB	04/2024	
			PROFILE SCALE:	SURVEY	CWC	01/2024	
			HORIZONTAL:	PROJ. MGR.	MMW	12/24	
			VERTICAL:	LEAD ENGR.	MMW	12/24	
				FIELD MGR.	MMW	12/24	J. HOLLOWAY DESIGN MANAGER
			FILE:	DRAWING:	22TMUAUTURLEY		DATE: 2024
			ATLAS PAGENO:				SHEET E5 OF E6 SHEETS



**1 CONCRETE ENCASED ELECTRICAL DUCT**  
SCALE: NONE

**ELECTRICAL DUCT NOTES:**

1. CONTRACTOR SHALL STAKE THE DUCT INSTALLATION IN PLAN AND ELEVATION FOR NEW ELECTRICAL DUCTS TO AVOID EXISTING UTILITIES.
2. CONTRACTOR SHALL ADJUST THE DEPTH OF THE ELECTRICAL DUCTS AS REQUIRED TO MAINTAIN THE MINIMUM COVER REQUIREMENT INDICATED AND AVOID EXISTING UTILITIES.
3. SIMILAR CONSTRUCTION FOR OTHER DUCT SIZES. SEE DUCT BANK SCHEDULE FOR QUANTITY AND SIZES.
4. INSTALL DUCT CONDUIT SUPPORTS AT 5'-0" O.C. MAXIMUM SPACING (TYPICAL ALL DUCTS).
5. INSTALL GROUND RODS AT ENDS OF ELECTRICAL DUCT OR CONNECT TO GROUND RING.
6. INSTALL CONDUCTORS AND CABLES AS NOTED ON DRAWING. INSTALL PULLWIRE IN ALL SPARE DUCTS.
7. PROVIDE 4EA-#5 REBAR LONGITUDINALLY AT DUCT BANK, FOUR CORNERS (TWO TOP AND TWO BOTTOM) WITH #4 STIRRUPS 2' O.C.
8. PROVIDE #4 REBAR LONGITUDINALLY WITH 18" LAPS AND #3 STIRRUPS AT 2' O.C.



**GENERAL NOTES:**

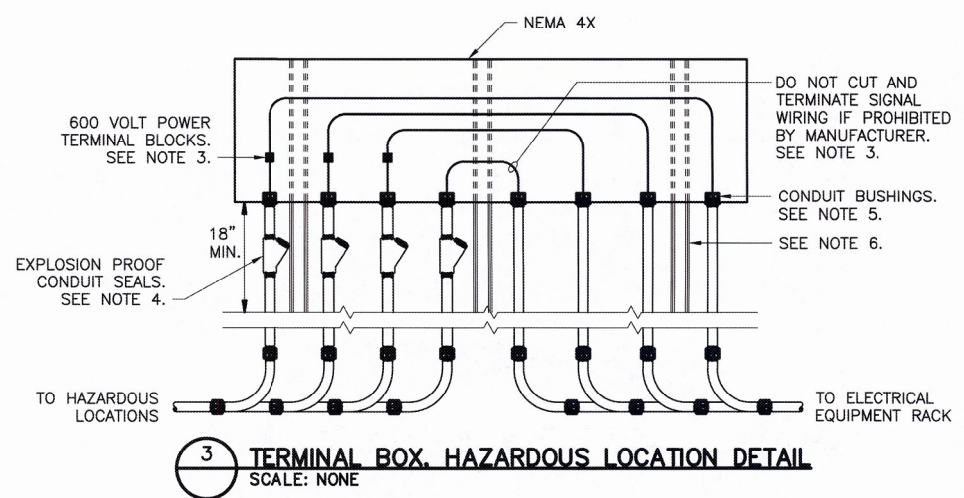
1. POWER MARKING TAPES SHALL BE DETECTABLE TYPE CONSTRUCTION WITH RED BACKGROUND AND BLACK LETTERING.
2. COMMUNICATION MARKING TAPES SHALL BE DETECTABLE TYPE CONSTRUCTION WITH ORANGE BACKGROUND AND BLACK LETTERING, "TELEPHONE LINE" OR "FIBER OPTIC LINE" RESPECTIVELY.
3. TAPE SHALL BE DETECTABLE, DURABLE, HIGHLY VISIBLE, RESISTANT TO ELEMENTS, MEETING AND/OR EXCEEDING ALL INDUSTRY STANDARDS.

**2 UNDERGROUND DETECTABLE WARNING TAPE**  
SCALE: NONE

**KEYED NOTES:**

1. BUILD (2) SIMPLEX RECEPTACLES IN GENERATOR ENCLOSURE. LOCATE AS INSTRUCTED BY GENERATOR MANUFACTURER. RECEPTACLES WILL BE USED FOR BATTERY CHARGER AND WATER JACKET HEATER.
2. BUILD CONDUCTORS AND CABLES AS INSTRUCTED BY GENERATOR MANUFACTURER, BUILD 1" C
3. GENERATOR OUTPUT CIRCUIT BREAKER FURNISHED WITH GENERATOR, FACTORY MOUNTED. 100% RATED. BREAKER SHALL BE PAD-LOCKABLE
4. EMERGENCY STOP PUSHBUTTON (LOCATED IN BUILDING NEXT TO MAIN HANDLE)

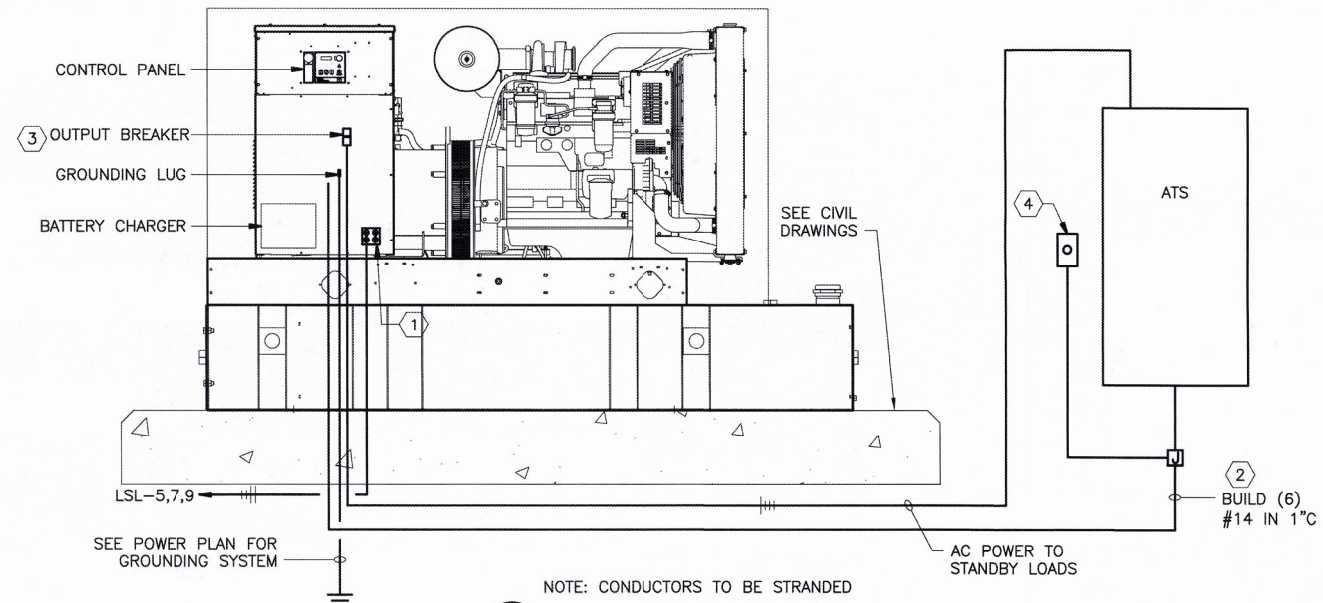
LIGHT FIXTURE SCHEDULE						
MARK	MANUFACTURER	MODEL	LAMPS	FINISH	MOUNTING	REMARKS
F	GENERAL ELECTRIC	EASB1U5N7504SDKBZF	(2) 5000K, 30,000 LU LED	BRONZE	HINGED STEEL POLE VALMONT "20 FEET" WITH WINCHDSF10400F20P7FPGV8KFCAB2180A	SWITCH TO BE LOCATED INSIDE CONTROL BUILDING. NO PHOTO CELL
G	CROUSE HINDS	EVLEDXC2C701	LED	STANDARD	CEILING SURFACE	IN VALVE VAULT CEILING



**3 TERMINAL BOX, HAZARDOUS LOCATION DETAIL**  
SCALE: NONE

**TERMINAL BOX NOTES:**

1. TERMINAL BOX SHALL BE NEMA 4X STAINLESS STEEL, CONTINUOUS HINGE, OIL TIGHT, 1/4 TURN SEMI-FLUSH LATCH JUNCTION BOX.
2. ROUTE ALL WIRING FROM HAZARDOUS LOCATIONS THROUGH TERMINAL BOX.
3. ALL WIRING SHALL BE TERMINATED ON 600 VOLT TERMINAL BLOCKS IN TERMINAL BOX EXCEPT FOR SIGNAL CABLES, SUCH AS ULTRASONIC LEVEL TRANSDUCERS, THAT ARE REQUIRED NOT TO BE CUT BY THE EQUIPMENT MANUFACTURER.
4. INSTALL EXPLOSION PROOF CONDUIT SEALS BETWEEN ALL HAZARDOUS LOCATIONS AND THE TERMINAL BOX.
5. INSTALL CONDUIT BUSHINGS ON ALL CONDUIT ENTERING TERMINAL BOX.
6. SUPPORT TERMINAL BOX WITH STAINLESS STEEL STRUT CHANNEL SUPPORTS WITH CONCRETE BASE.



**4 GENERATOR WIRING DIAGRAM**  
SCALE: NONE

NOTE: CONDUCTORS TO BE STRANDED




BAR IS ONE INCH ON ORIGINAL DRAWING 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

ELECTRICAL DETAILS	
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REVISION	BY	DATE	PLAN SCALE:	APPROVED:
			DRAWN AS SHOWN	 DESIGN MANAGER
			DESIGNED	
			SURVEY	
			PROJ. MGR.	
			LEAD ENGR.	
			FIELD MGR.	DATE: 2024
			DRAWING: 22TMUA/TURLEY	SHEET E6 OF E6 SHEETS