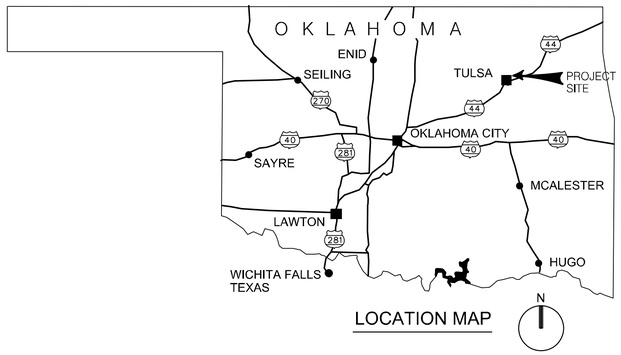
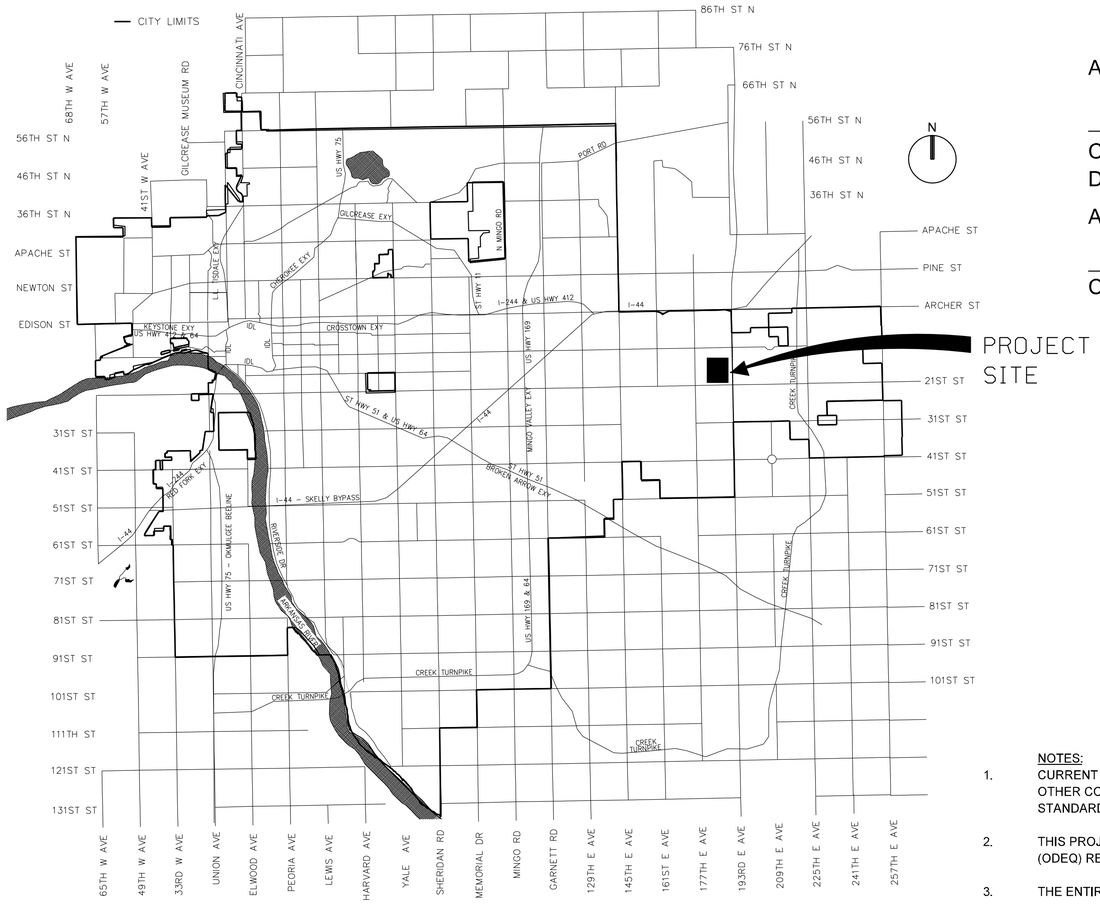
CONSTRUCTION PLANS FOR
A.B. JEWELL WATER TREATMENT PLANT
CLARIFIER NO.3 IMPROVEMENTS

PROJECT NUMBER TMUA-W 18-19 C2
ENGINEERING SERVICES DEPARTMENT
CITY OF TULSA, OKLAHOMA

ISSUED FOR CONSTRUCTION





UTILITY COORDINATION BOX

NAME	NUMBER	NOTIFIED
WATER DESIGN	918-596-9580	
WASTEWATER DESIGN	918-596-9564	
STORMWATER DESIGN	918-596-9243	
TRANSPORTATION DESIGN	918-596-9636	
TRAFFIC ENGINEERING DESIGN	918-596-9649	
AEP/PSO - LONNY HICKS	918-250-6211	
OKLAHOMA NATURAL GAS CO.	918-831-8261	
TULSA PERMIT CENTER	918-596-1865	
AT&T	918-596-4237	
AT&T DISTRIBUTION - WAYNE GROOM	918-527-7309	
AT&T TRANSMISSION - KEVIN WINGARD	918-931-7688	
COX COMMUNICATION - JASON HOLT	918-830-7238	
OKLAHOMA NATURAL GAS CO. - TIM HELBIG	918-831-8387	
CITY OF TULSA UTILITY COORDINATOR - CHRIS KOVAC	918-596-9649	
AB JEWELL WTP	918-596-8020	
AMERICAN ELECTRIC POWER/PUBLIC SERVICE COMPANY OF OKLAHOMA (AEP/PSO)	918-831-8261	

3/17/22

APPROVED BY:

CITY OF TULSA WATER AND SEWER DEPARTMENT DIRECTOR — DATE

APPROVED BY:

CITY OF TULSA CITY ENGINEER — DATE

JACOBS
401 S. Boston, Suite 330
Tulsa, OK 74103
(918) 583-3057

NOTES:

1. CURRENT CITY OF TULSA STANDARD SPECIFICATIONS AND STANDARD DETAILS GOVERN. ALL OTHER CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE 2009 OKLAHOMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
2. THIS PROJECT COMPLIES WITH ALL OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ) REQUIREMENTS.
3. THE ENTIRE PROJECT IS WITHIN CORPORATE LIMITS OF CITY OF TULSA (COT).

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

SHT NO.	DWG NO.	DRAWING TITLE
		GENERAL
1	01-G-001	COVER/LOCATION MAP
2	01-G-002	DRAWING INDEX
3	01-G-003	GENERAL LEGEND AND NOTES
4	01-G-004	ABBREVIATIONS
5	01-G-005	CIVIL AND YARD PIPING LEGEND
6	01-G-006	STRUCTURAL GENERAL NOTES
7	01-G-007	STRUCTURAL SPECIAL INSPECTIONS - 1
8	01-G-008	STRUCTURAL SPECIAL INSPECTIONS - 2
9	01-G-010	MECHANICAL LEGEND
10	01-G-011	ELECTRICAL LEGEND - 1
11	01-G-012	ELECTRICAL LEGEND - 2
12	01-G-013	INSTRUMENTATION AND CONTROL LEGEND - 1
13	01-G-014	INSTRUMENTATION AND CONTROL LEGEND - 2
14	01-G-015	PROCESS FLOW DIAGRAM
15	01-G-016	PIPE, GATE, AND VALVE SCHEDULES
		SITE
16	05-CE-100	CIVIL - STORM WATER MANAGEMENT PLAN
17	05-C-100	CIVIL - OVERALL SITE PLAN
18	05-C-101	CIVIL - YARD PIPING PLAN - AREA 1
19	05-M-100	PROCESS MECHANICAL - OVERALL SITE PLAN
20	05-SM-401	STRUCTURAL/PROCESS MECHANICAL - RAW WATER INSERTION METER
21	05-SM-402	STRUCTURAL/PROCESS MECHANICAL - RAW WATER INSERTION METER DETAILS
22	05-E-100	ELECTRICAL - CLARIFIER NO. 2 AND NO. 3 SITE PLAN OVERALL
		INSTRUMENTATION AND CONTROL
23	09-N-001	CLARIFIER NO. 2 INFLUENT P&ID
24	09-N-003	CLARIFIER NO. 3 INFLUENT P&ID
25	09-N-004	CLARIFIER NO. 3 EFFLUENT P&ID
26	09-N-006	CLARIFIER NO. 3 SLUDGE COLLECTION P&ID
27	09-N-008	SLUDGE PUMP STATION NO. 2 P&ID
28	09-N-009	SYSTEM BLOCK DIAGRAM P&ID
29	09-N-501	WIRING DIAGRAMS - RAPID MIXER MXR-10X0X (4) TYPICAL AFD WIRING DETAIL
30	09-N-502	WIRING DIAGRAMS - RAPID MIXER MXR-10X0X (4) TYPICAL AFD WIRING DETAIL
31	09-N-503	WIRING DIAGRAMS - FLOCCULATOR DRIVE FLOC-10XXX (16) TYPICAL AFD WIRING DETAIL
32	09-N-504	WIRING DIAGRAMS - FLOCCULATOR DRIVE FLOC-10XXX (16) TYPICAL AFD WIRING DETAIL
		DEMOLITION
33	22-X-110	CLARIFIER NO. 3 RAPID MIX PLAN, SECTIONS AND DETAILS
34	30-X-110	CLARIFIER NO. 3 PLAN AND DETAIL
		STRUCTURAL
35	25-S-110	CLARIFIER NO. 3 RAW WATER CONTROLLER VAULT PLANS AND SECTION
36	25-S-301	CLARIFIER NO. 3 RAW WATER CONTROLLER VAULT SECTIONS AND DETAILS
37	30-S-110	CLARIFIER NO. 3 FOUNDATION PLAN
38	30-S-120	CLARIFIER NO. 3 TOP PLAN
39	30-S-301	CLARIFIER NO. 3 OVERALL SECTIONS
40	30-S-302	CLARIFIER NO. 3 DIFFUSER WALL SECTIONS AND DETAILS
41	30-S-401	CLARIFIER NO. 3 ENLARGED PLAN, SECTIONS AND DETAIL
42	30-S-402	CLARIFIER NO. 3 ENLARGED PLANS, SECTIONS AND DETAILS
43	30-S-403	CLARIFIER NO. 3 ENLARGRED PLANS AND DETAILS
44	30-S-404	CLARIFIER NO. 3 EXISTING WALKWAY REPAIR PLAN AND DETAILS
45	41-S-110	SLUDGE PUMP STATION NO. 1 PLANS
46	41-S-301	SLUDGE PUMP STATION NO. 1 SECTIONS AND DETAILS
		PROCESS MECHANICAL
47	22-M-110	CLARIFIER NO. 3 RAPID MIX PLAN AND SECTIONS
48	30-M-110	CLARIFIER NO. 3 LOWER PLAN
49	30-M-120	CLARIFIER NO. 3 UPPER PLAN
50	30-M-301	CLARIFIER NO. 3 SECTIONS
51	30-M-302	CLARIFIER NO. 3 SECTIONS AND DETAILS
52	30-M-303	CLARIFIER NO. 3 SECTIONS
53	40-M-110	SLUDGE PUMP STATION NO. 2 PLAN
54	40-M-301	SLUDGE PUMP STATION NO. 2 SECTIONS
55	40-M-902	SLUDGE PUMP STATION NO. 2 ISOMETRIC DETAIL
		ELECTRICAL
56	22-E-120	CLARIFIER NO. 3 RAPID MIX UPPER PLAN AND SECTIONS
57	30-E-120	CLARIFIER NO. 3 UPPER PLAN
58	30-E-601	CLARIFIER NO. 3 PANELBOARD SCHEDULES AND LUMINAIRE SCHEDULE
59	30-E-701	CLARIFIER NO. 3 ONE-LINE DIAGRAM
60	30-E-702	CLARIFIER NO. 3 CABLE BLOCK DIAGRAM
61	30-E-703	CLARIFIER NO. 3 CABLE BLOCK DIAGRAMS
62	40-E-110	SLUDGE PUMP STATION NO. 2 PLAN
		STANDARD DETAILS
63	99-C-501	CIVIL SITE DETAILS
64	99-N-501	INSTRUMENTATION AND CONTROLS STANDARD DETAILS
65	99-N-502	INSTRUMENTATION AND CONTROLS STANDARD DETAILS
66	99-N-503	INSTRUMENTATION AND CONTROLS STANDARD DETAILS
67	99-N-504	INSTRUMENTATION AND CONTROLS STANDARD DETAILS
68	99-S-501	STRUCTURAL STANDARD DETAILS
69	99-S-502	STRUCTURAL STANDARD DETAILS
70	99-S-503	STRUCTURAL STANDARD DETAILS
71	99-S-504	STRUCTURAL STANDARD DETAILS
72	99-S-505	STRUCTURAL STANDARD DETAILS
73	99-S-506	STRUCTURAL STANDARD DETAILS
74	99-M-501	MECHANICAL STANDARD DETAILS
75	99-M-502	MECHANICAL STANDARD DETAILS
76	99-E-501	ELECTRICAL STANDARD DETAILS
		FOR REFERENCE ONLY
	I-4	SLUDGE PUMP STATION NO. 1 P&ID
	I-5	SLUDGE PUMP STATION NO. 1 P&ID

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

OKLAHOMA PROFESSIONAL ENGINEER
B. LUKE LENARD
28364
3/17/22

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

GENERAL
DRAWING INDEX

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS
PROFILE SCALE:
HORIZONTAL:
VERTICAL

DRAWN J WILLIAMSON
DESIGNED K WHITTIER
SURVEY
FIELD MGR.
SECT. MGR.
PROJ. MGR.
RECOMMENDED:
DESIGN MANAGER

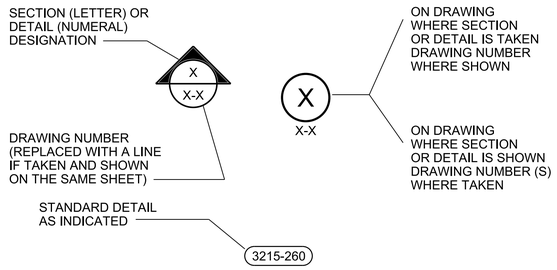
APPROVED:
CITY ENGINEER

FILE: 01-G-002
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 2 OF 76 SHEETS

FILENAME: C3-01-G-002_WFXQ2600.dgn PLOT DATE: 3/16/2022 PLOT TIME: 1:02:44 PM

SUMMARY OF CONTRACT QUANTITIES				
ITEM NUMBER		ITEM DESCRIPTION	UNIT	QUANTITY
01	01 29 00	MOBILIZATION	EA	1
02	01 50 00	EROSION CONTROL	EA	1
03	01 50 00	TRAFFIC CONTROL	EA	1
04	02 41 00	DEMOLITION	EA	1
05	05-C-401	84-INCH FLOW METER	EA	1
06	22-X-110	RAPID MIX BOX NO. 3 - METAL STAIRS	EA	1
07	22-X-110	RAPID MIX BOX NO. 3 - REPLACE EXISTING GRATING WITH NEW GRATING, BEAMS AND PLATES	SF	125
08	22-M-110	RAPID MIX BOX NO. 3 - 1-INCH ALUMINUM CHLOROHYDRATE CPVC PIPE WITH FITTINGS AND VALVES	LF	100
09	22-M-110	RAPID MIX BOX NO. 3 - 1-INCH COAGULANT AID POLYMER CPVC PIPE WITH FITTINGS AND VALVES	LF	120
10	22-M-110	RAPID MIX BOX NO. 3 - 48-INCH INFLUENT SLIDE GATE	EA	2
11	22-M-110	RAPID MIX BOX NO. 3 - RAPID MIXER	EA	2
12	25-S-110	RAW WATER CONTROLLER VAULT - ACCESS STRUCTURE	EA	1
13	25-S-110	RAW WATER CONTROLLER VAULT - ALUMINUM DOOR AND FRAME	EA	1
14	25-S-110	RAW WATER CONTROLLER VAULT - CONCRETE COATINGS	EA	1
15	25-S-110	RAW WATER CONTROLLER VAULT - EXHAUST FAN	EA	1
16	05-C-100 05-C-101	RAW WATER CONTROLLER VAULT - REMOVE AND REPLACE 36-INCH ISOLATION BUTTERFLY VALVE	EA	3
17	30-S-110	CLARIFIER NO. 3 - GROUND PENETRATING RADAR	EA	1
18	30-S-110	CLARIFIER NO. 3 - INJECT GROUT UNDER SLAB	CY	50
19	30-S-110	CLARIFIER NO. 3 - WALL CRACK INJECTION	LF	240
20	30-S-110	CLARIFIER NO. 3 - FLOOR JOINT CHEMICAL INJECTION	LF	1,950
21	30-S-403	CLARIFIER NO. 3 - WALKWAY CRACK INJECTION	LF	50
22	30-S-403	CLARIFIER NO. 3 - REPAIR DEFICIENT CONCRETE SURFACES	SF	14,290
23	30-S-110	CLARIFIER NO. 3 - CONCRETE WALLS	CY	41
24	30-S-110	CLARIFIER NO. 3 - CONCRETE COLUMNS AT DIFFUSER WALLS	EA	26
25	30-S-302	CLARIFIER NO. 3 - CONCRETE PIER SUPPORTS AT FLOCCULATOR PADDLES DET 2	EA	12
26	30-S-401	CLARIFIER NO. 3 - CONCRETE PIER SUPPORTS AT FLOCCULATOR PADDLES DET 4	EA	8
27	30-S-110	CLARIFIER NO. 3 - SUPPORT COLUMN FOUNDATION TYPE A	EA	8
28	30-S-110	CLARIFIER NO. 3 - SUPPORT COLUMN FOUNDATION TYPE B	EA	4
29	30-S-120	CLARIFIER NO. 3 - CONCRETE ELEVATED DECK	CY	48
30	30-S-110	CLARIFIER NO. 3 - CONCRETE FILL	CY	1,670
31	30-S-120	CLARIFIER NO. 3 - CONSTRUCT METAL STAIRS	EA	1
32	30-S-401	CLARIFIER NO. 3 - ALUMINUM GRATING AND REMOVABLE HATCH AT EXISTING OPENING	SF	40
33	30-S-402	CLARIFIER NO. 3 - ALUMINUM GRATING	SF	15
34	30-S-120	CLARIFIER NO. 3 - LADDER	EA	2
35	30-S-120	CLARIFIER NO. 3 - FLOCCULATION STAGE DIVIDERS	EA	1
36	30-S-110	CLARIFIER NO. 3 - CONCRETE COATINGS	EA	1
37	30-M-110	CLARIFIER NO. 3 - 4-INCH SLUDGE SST PIPE WITH FITTINGS	LF	36
38	30-M-110	CLARIFIER NO. 3 - 4-INCH PLUG VALVE	EA	6
39	30-M-302	CLARIFIER NO. 3 - 12-INCH DR DI PIPE WITH FITTINGS	LF	49
40	30-M-120	CLARIFIER NO. 3 - WATER MONITOR	EA	4
41	35 20 16	CLARIFIER NO. 3 - EFFLUENT SLIDE GATE	EA	2
42	44 42 63	CLARIFIER NO. 3 - SLUDGE COLLECTORS	EA	6
43	44 44 57	CLARIFIER NO. 3 - PLATE SETTLERS INCLUDING EFFLUENT TROUGHS AND WALKWAY	EA	24
44	44 44 36	CLARIFIER NO. 3 - FLOCCULATORS, DRIVE AND PADDLE ASSEMBLY	EA	8
45	41-S-110	SLUDGE PUMP STATION NO. 1 - ACCESS STRUCTURE	EA	1
46	40-M-110	SLUDGE PUMP STATION NO. 2 - 4-INCH SLUDGE DI PIPE WITH FITTINGS	LF	8
47	40 27 02	SLUDGE PUMP STATION NO. 2 - 4-INCH PLUG VALVE	EA	2
48	40 27 02	SLUDGE PUMP STATION NO. 2 - 4-INCH CHECK VALVE	EA	1
49	40-M-110	SLUDGE PUMP STATION NO. 2 - SLUDGE PUMP	EA	2
50	25-S-110 30-S-120 41-S-110	HANDRAIL	LF	1,945
51	30-M-110	BURIED 4-INCH W1 DI PIPE WITH FITTINGS	LF	50
52	12-E-110	ELECTRICAL AT RAPID MIX BOX NO. 3	EA	1
53	20-E-120	ELECTRICAL AT CLARIFIER NO. 3	EA	1
54	05-E-100	ELECTRICAL AT RAW WATER CONTROLLER VAULT	EA	1
55	40-E-110	ELECTRICAL AT SLUDGE PUMP STATION NO. 2	EA	1
56	40 90 01	I&C AT CLARIFIER NO. 3	EA	1
57	40 90 01	I&C AT SLUDGE PUMP STATION NO. 2	EA	1
58	25-S-110	CLARIFIER 2&3 VENTURI AND BUTTERFLY VALVE	EA	2
59	30-M-120	CLARIFIER NO. 4 - WATER MONITOR	EA	3
60	30-M-120	CLARIFIER NO. 1 - WATER MONITOR	EA	2
61	01 29 00	OWNER'S ALLOWANCE	ALLOW	1
62	01 29 00	AS-BUILT DRAWINGS	EA	1
63	01 29 00	LUCITY DATABASE ASSET MANAGEMENT SPREADSHEET	EA	1
64	01 29 00	ALL OTHER WORK SPECIFIED AND SHOWN ON DRAWINGS OR SPECIFICATIONS BUT NOT COVERED IN OTHER BID ITEMS	EA	1

GENERAL LEGEND



DETAIL AND SECTION DESIGNATION

BID SCHEDULE:

THE UNIT PRICE WORK IS DESCRIBED IN MORE DETAIL IN SECTION 01 29 00 PAYMENT PROCEDURES.

GENERAL NOTES:

1. FACILITIES ARE SHOWN HEAVY LINED. SCREENING IS USED IN ORDER TO CLARIFY DRAWINGS. FOR EXAMPLE, STRUCTURES ARE SCREENED ON MECHANICAL DRAWINGS TO HIGH-LIGHT PIPING AND EQUIPMENT.
2. DEMOLITION WORK IS SHOWN BY SHOWING FACILITIES TO BE REMOVED CROSS HATCHED.
3. REPETITIVE FEATURES ARE NOT DRAWN IN THEIR ENTIRETY AND SHALL BE COMPLETELY PROVIDED AS IF DRAWN IN FULL.
4. LINE OF EXISTING GRADES, AS SHOWN ON THE BUILDING ELEVATIONS AND SECTIONS ARE APPROXIMATE. THEY ARE AT THE BUILDING FACE, OR ON THE SECTION END EXCEPT AS NOTED.
5. REFER TO STRUCTURAL, MECHANICAL, ELECTRICAL AND OTHER CATEGORIES OF DRAWINGS FOR ADDITIONAL NOTES.
6. VERIFY SIZE AND LOCATION OF, AND PROVIDE: ALL OPENINGS THROUGH FLOORS AND WALLS, ACCESS DOORS, FURRING, CURBS, ANCHORS AND INSERTS. PROVIDE ALL BASES, BLOCKING REQUIRED FOR ACCESSORIES, MECHANICAL, ELECTRICAL AND OTHER EQUIPMENT.

GENERAL CONSTRUCTION NOTES:

1. BURIED BOLTS, HARNESS LUGS, AND COUPLINGS SHALL BE GIVEN TWO COATS OF KOPPER'S BITUMASTIC 00-M (DRY MIL THICKNESS OF 16 MILS) OR EQUAL. COST TO BE INCLUDED IN UNIT PRICE BID FOR PIPE AND FITTINGS.
2. CONTRACTOR TO EXCAVATE ALL UTILITY CROSSINGS AHEAD OF PIPE LAYING SO THAT THE GRADES CAN BE ADJUSTED ON THE PROPOSED WATER MAIN TO AVOID UTILITY CONFLICTS. FAILURE TO DO SO SHALL NOT ENTITLE THE CONTRACTOR TO CLAIM EXTRA COMPENSATION FOR ADJUSTMENTS TO THE PROPOSED WATER MAIN. COST FOR EXCAVATING UTILITY CROSSINGS SHALL BE INCLUDED IN UNIT PRICE BID FOR PIPE.
3. CONTRACTOR IS REMINDED TO BED AND BACKFILL ALL TRENCHES EXCAVATED ACROSS ANY EXISTING OR PROPOSED DRIVING OR PARKING SURFACE WITH 1-1/2" TYPE A AGGREGATE BASE, PLACED IN 8-INCH MAXIMUM LIFTS AND COMPACTED TO 98% MODIFIED PROCTOR DENSITY. COST TO BE INCLUDED IN COST OF PIPE INSTALLATION. NO ADDITIONAL PAYMENT SHALL BE MADE.
4. THE "CONSTRUCTION CONTINGENCY ALLOWANCE" CAN BE USED FOR VARIOUS WORK AND MISCELLANEOUS ITEMS NOT IDENTIFIED IN THE CONTRACT DOCUMENTS WITH THE FOLLOWING PROVISIONS:
   - I. THE ALLOWANCE SHALL BE USED FOR COST OF MATERIALS, LABOR, INSTALLATION AND 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.
   - II. 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.
   - III. 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.
   - IV. 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.

WATER CONSTRUCTION NOTES:

1. MINIMUM COVER OVER WATER LINES SHALL BE AS NOTED ON PLANS.
2. CONTRACTOR SHALL REPLACE EXISTING GRASS WITH SEED/SOD OF SAME TYPE AND VARIETY OR AS NOTED ON THE PLANS.
3. CITY CREWS ONLY ARE TO OPERATE ALL VALVES. CONTRACTOR SHALL NOTIFY CITY THRU INSPECTOR.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING UTILITIES ON THE PLANT SITE. THE NOTIFICATION CENTER OF THE OKLAHOMA ONE-CALL SYSTEM, INC, WILL NOT LOCATE UTILITIES ON THE PLANT SITE.
5. CONSTRUCTION FOR ALL PUBLIC WORKS 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).
6. 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 OR IMPACT 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.

GENERAL CONSTRUCTION NOTES:

1. PAY ITEMS LISTED IN THE BID SCHEDULE ARE THE ONLY PAY ITEMS FOR THE PROJECT. ANY OTHER ITEMS NECESSARY FOR A COMPLETE PROJECT, BUT NOT SHOWN IN THE BID SCHEDULE SHALL BE CONSIDERED AN INCIDENTAL ITEM AND ITS COST TO BE INCLUDED IN OTHER ITEMS.
2. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO BIDDING PROJECT. ALL UTILITY LOCATIONS SHOWN ARE APPROXIMATE, EXCEPT AS NOTED.
3. ANY CONTRACTOR-CAUSED DAMAGE TO UTILITY AND/OR SERVICE LINES, SHOWN OR NOT SHOWN ON THE PLANS, SHALL BE REPAIRED OR REPLACED AT NO COST TO THE TMUA AND SHALL BE ACCOMPLISHED BY THE CONTRACTOR, SUBCONTRACTOR OR LICENSED PLUMBER AS APPROVED BY THE CITY ENGINEER.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTAL ITEMS NEEDED TO PROVIDE ADEQUATE CONSTRUCTION SIGNING, BARRICADES, TRAFFIC CONTROL DEVICES AND OTHER RELATED ITEMS FOR THE PROJECT AREA, DURING THE CONSTRUCTION PERIOD. THIS WORK IS TO BE CONSIDERED AN INCIDENTAL ITEM AND THE COST OF THIS ITEM IS TO BE INCLUDED IN OTHER PAY ITEMS.
5. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO THE START OF WORK.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SURVEYING AND CONSTRUCTION STAKING FOR THE PROJECT.
7. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED TRADE PERMITS PRIOR TO WORK. ALL TRADE LABOR SHALL BE INSPECTED BY THE LOCAL AUTHORITY HAVING JURISDICTION AND SHALL PASS A FINAL INSPECTION.
8. THE CONTRACTOR SHALL CONDUCT ALL WORK IN ACCORDANCE WITH APPLICABLE OSHA STANDARDS, STATE OF OKLAHOMA AND CITY OF TULSA SAFETY POLICIES.

SUMMARY OF WORK:

THE COMPLETED WORK WILL PROVIDE THE OWNER WITH AN IMPROVED CLARIFER NO. 3 AT THE A.B. JEWELL WATER TEREAMENT PLANT. THE PROJECT INCLUDES BUT IS NOT LIMITED TO:

1. INSTALLATION OF NEW CLARIFIER ISOLATION VALVES.
2. MODIFICATIONS TO EXISTING RAW WATER CONTROLLER VAULT.
3. POTABLE WATER AND SLUDGE YARD PIPING.
4. DEMOLITION OF EXISTING CLARIFIER MECHANISMS, FLOCCULATORS AND BAFFLES.
5. INSTALLATION OF NEW CONCRETE COATINGS.
6. CONSTRUCTION OF NEW FLOCCULATION STAGE BAFFLE WALS AND DIFFUSION WALL.
7. PROCUREMENT AND INSTALLATION OF NEW FLOCCULATORS AND DRIVE MECHANISMS.
8. PROCUREMENT AND INSTALLATION OF NEW SLUDGE COLLECTION SYSTEM WITH DRIVES ALONG WITH ELECTRICAL AND CONTROL COMPONENTS.
9. CONSTRUCTION OF SLUDGE COLLECTION PIPING, PUMP AND VALVES.
10. INSTALLATION OF PLATE SETTLERS.
11. MODIFICATIONS TO SLUDGE PUMP STATION NO. 1.
12. MODIFICATIONS TO SLUDGE PUMP STATION NO. 2.

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER — B. LUKE LENARD 28364 — OKLAHOMA

5/17/22

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

GENERAL
GENERAL LEGEND AND NOTES

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	JW	MAR 2022	APPROVED:
	DESIGNED	KW	MAR 2022	
	SURVEY			
PROFILE SCALE:	FIELD MGR.			
HORIZONTAL:	SECT. MGR.			
	PROJ. MGR.			
VERTICAL	RECOMMENDED:			
	DESIGN MANAGER			CITY ENGINEER

FILE: 01-G-003 DATE: MARCH 2022
ATLAS PAGE NO: 543 SHEET 3 OF 76 SHEETS

FILENAME: C3-01-G-003_WFXQ2600.dgn PLOT DATE: 5/17/2022 PLOT TIME: 3:08:52 PM

ABBREVIATIONS

A	AMMETER, AMPERES, AWNINGS
AB	ANCHOR BOLT, ABOVE
ABDN	ABANDON
AC	ACOUSTICAL, ACOUSTICAL CEILING
AC	ALTERNATING CURRENT
AC	ASPHALTIC CONCRETE
ACFL	ACCESS FLOORING
ACI	AMERICAN CONCRETE INSTITUTE
ACMU	ACOUSTICAL CONCRETE MASONRY UNIT, UNIT, ACOUSTICAL CMU
ACP	ACOUSTICAL PANELS
ACST	ACOUSTICAL
ACT	ACOUSTICAL TILE
AD	AREA DRAIN
ADDL	ADDITIONAL
ADJ	ADJACENT
ADW	DRY WEATHER AVERAGE
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AG	ACOUSTICAL, ACOUSTICAL GLASS
AGGR	AGGREGATE
AHR	ANCHOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AJ	ADJUSTABLE
AL	ALUMINUM
ALKY	ALKALINITY
ALTN	ALTERNATE
AM	AUTO-MANUAL
AMRD	ACOUSTICAL METAL ROOF DECKING
ANDZ	ANODIZE
APPROX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
AR	ANALOG RELAY
AS	AS SELECTED
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AVG	AVERAGE
AWW	WET WEATHER AVERAGE
@	AT
B	BELL
BAL	BALANCE
BETW	BETWEEN
BF	BLIND FLANGE, BOTTOM FACE
BFV	BUTTERFLY VALVE
BL	BASELINE
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
BLK	BLOCK
BM	BEAM, BENCHMARK
BO	BOTTOM OF
B.O.B.	BOTTOM OF BEAM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BRG	BEARING
BRK	BRICK
BRKR	BREAKER
BSP	BLACK STEEL PIPE
BV	BALL VALVE, BLOCK VENT
BVC	BEGINNING OF VERTICAL CURVE
C	CONDUIT, CASEMENT
°C	DEGREE CELSIUS
C TO C	CENTER TO CENTER
CAB	CABINET
CB	CATCH BASIN, CIRCUIT BREAKER
CC	CENTER OF CIRCLE
CC	CONTROL CABLE
CCP	CENTRAL CONTROL PANEL
CCS	CENTRAL CONTROL SYSTEM
CDF	CONTROLLED DENSITY FILL
CE	CONSTRUCTION ENTRANCE
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHEM	CHEMICAL
CHKD	CHECKERED
CI	CAST IRON
CIP	CAST IRON PIPE, CAST IN PLACE
CIP	CULVERT INLET PROTECTION
CISP	CAST IRON SOIL PIPE
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CENTERLINE
CLDI	CEMENT LINED DUCTILE IRON
CLSF	CONTROLLED LOW STRENGTH FILL
CLG	CEILING
CLR	CLEAR, CLEARANCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CMP	CENTRAL MONITORING PANEL
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
CO	CLEANOUT, CARBON MONOXIDE
COL	COLUMN, COLOR
CONC	CONCRETE
COND	CONDENSATE
CONDTN	CONDITIONED
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUED, CONTINUOUS, CONTINUATION
CONTR	CONTRACTOR
COORD	COORDINATE
COP	COPPER
CP	CENTER PIVOT
CP-X	CONTROL PANEL NO. X
CPLG	COUPLING
CPRSR	COMPRESSOR
CPT	CONTROL POWER TRANFORMER, CARPET
CPVC	CHLORINATED PVC
CR	CONTROL RELAY
CRS	COLD ROLLED STEEL
CRS	CONSTRUCTION ROAD STABILIZATION
CT	CERAMIC TILE
CT	CURRENT TRANSFORMER
CTC	COMPUTER TERMINAL CABINET
CTR	CENTER
CTRD	CENTERED
CTSK	COUNTERSUNK
CU	CUBIC
CU FT	CUBIC FOOT
CU IN	CUBIC INCH
CUH	COPPER TUBING, HARD DRAWN
CV	CHECK VALVE
CWR	CABINET DOOR MOUNTED WASTE RECEPTACLE
CY, CU YD	CUBIC YARD
CWS	CLEAN WATER SERVICES
D	DEEP, DRAIN
d	PENNY NAIL SIZE
DA	DUAL ACTION
DAS	DATA ACQUISTION SYSTEM
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DET	DETAIL
DF	DOUGLAS FIR, DRINKING FOUNTAIN
DDI	DROP INLET
DH	DOUBLE HUNG
DI	DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIP	DUCTILE IRON PIPE
DIR	DIRECTION
DISCH	DISCHARGE
DN	DOWN
DO	DISSOLVED OXYGEN
DOL	DIRECT-ON-LINE
DP, DPNL	DISTRIBUTION PANEL
DR	DOOR
DS	DOWNSPOUT
DWG	DRAWING
DWL	DOWEL
△	DELTA
E	EAST, EMPTY
EA	EACH, EXHAUST AIR
EB, EBCT	EMPTY BED CONTACT TIME
ECC	ECCENTRIC
EE	EMERGENCY EYEWASH
EDF	EGG-SHAPED DIGESTER FACILITY
EF	EACH FACE, EXHAUST FAN
EFF	EFFICIENCY, EFFICIENT
EFL	EFFLUENT
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EL	ELEVATION
ELB	ELBOW
ELC	ELECTRICAL LOAD CENTER
ELEC	ELECTRIC, ELECTRICAL
ENGR	ENGINEER
EOP	EDGE OF PAVEMENT
ESC	EROSION AND SEDIMENT CONTROL
EP	EXPLOSION PROOF, EDGE OF PAVING
EQL	EQUAL
EQL SP	EQUALLY SPACED
EQPT	EQUIPMENT
ESC	EROSION AND SEDIMENT CONTROL
ETM	ELAPSED TIME METER
EVC	END OF VERTICAL CURVE
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EXH	EXHAUST
EXP	EXPANSION, EXPOSED
EXP AB	EXPANSION ANCHOR BOLT
EXP JT	EXPANSION JOINT
EXST	EXISTING
EXT	EXTERIOR
°F	DEGREE FAHRENHEIT
FB	FLAT BAR
F, FU	FUSE
F, FX	FIXED
FAP	FIRE ALARM PANEL
FC	FLEXIBLE CONDUIT
FCA	FLANGED COUPLING ADAPTER
FCL2	FREE CHLORINE RESIDUAL
FCO	FLOOR CLEANOUT
FCTY	FACTORY
FD	FLOOR DRAIN
FDN	FOUNDATION
FDR	FEEDER
FEXT	FIRE EXTINGUISHER
FF	FINISHED FLOOR
FG	FINISH GRADE, FLOAT GLASS
FH	FLAT HEAD
FHY	FIRE HYDRANT
FIG	FIGURE
FL	FLOW LINE
FLG	FLANGE
FL	FLOOR
FLEX	FLEXIBLE
FLH	FLAT HEAD
FLTR	FILTER
FLUOR	FLUORESCENT
FNSH	FINISH
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FP	FIELD PANEL
FPM	FEET PER MINUTE
FR	FORWARD REVERSE
FRP	FIBERGLASS REINFORCED PLASTIC
FSHS	FOLDING SHOWER SEAT
FT	FOOT OR FEET
FTG	FOOTING
FU	FIXTURE UNIT
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
FWD	FORWARD
G, GND	GROUND
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GYPSUM BOARD
GC	GROOVED COUPLING
GCMU	GLAZED CONCRETE MASONRY UNITS
GFA	GROOVED FLANGE ADAPTER
GFI	GROUND FAULT INTERRUPTER
GFR	GROUND FAULT RELAY
GH	GREENHOUSE
GL	GLASS
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPS	GLOBAL POSITION SYSTEM
GRTG	GRATING
GSB	GYPSUM SOFFIT BOARD
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
GVL	GRAVEL
GWB	GYPSUM WALLBOARD
GYP	GYPSUM
H	HIGH, HORN OR HOWLER
H2S	HYDROGEN SULFIDE
H.A.S.	HEADED ANCHOR STUD
HC	HOLLOW CORE WOOD
HCL	HYDROCHLORIC ACID
HDNR	HARDENER
HDNS	HARDNESS
HDR	HEADER
HDW	HARDWARE
HGL	HYDRAULIC GRADE LINE
HK	HOOK
HGT	HEIGHT
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HK	HOOK
HM	HOLLOW METAL
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPT	HIGH POINT
HPU	HYDRAULIC POWER UNIT
HR	HOSE RACK, HANDRAIL
HV	HOSE VALVE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWL	HIGH WATER LEVEL
IC	INTERRUPTING CAPACITY
ID	INDUCED DRAFT, INSIDE DIAMETER
IE	INVERT ELEVATION
I.F.	INSIDE FACE
IG	INSULATING, INSULATING GLASS
IN	INCH
INCAND	INCANDESCENT
INFL	INFLUENT
INJS	INJECTIONS
INST	INSTANTANEOUS
INSTM	INSTRUMENT, INSTRUMENTATION
INSUL	INSULATION
INVT	INVERT
IP	INLET PROTECTION, INSTRUMENTATION PANEL
IRRIG	IRRIGATION
ITG	INSULATED TEMPERED GLASS
ITX	ISOLATION TRANSFORMER
IU	INTAKE UNIT
IW	IRRIGATION WELL
J	JALOUSIE
JA	JAL-AWNING
JB	JUNCTION BOX
JAN	JANITOR
JCT	JUNCTION
JT	JOINT
K	KEY GROUP, KEY INTERLOCK
KIP	THOUSAND POUNDS
KIT	KITCHEN
K-PL	KICKPLATE
KSK	KITCHEN SINK
KV	KILOVOLTS
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERES REACTIVE
KW	KILOWATT
L	ANGLE, LENGTH
LA	LIGHTNING ARRESTER
LAB	LABORATORY
LAM	LAMINATE
LAT	LATITUDE
LB	POUND
LC	LIGHTING CONTACTOR
LD	COMBINATION LOUVER/DAMPER
LDG	LOADING DOCK
LEL	LOWER EXPLOSIVE LIMIT
LF	LINEAR FEET
LG	LONG
LH	LEFT HAND
LHR	LEFT HAND REVERSE
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LNTL	LINTEL
LONG	LONGITUDINAL
LOS	LOCK-OUT STOP PUSHBUTTON
LP	LIGHT POLE, LIGHTING PANEL, LOCAL PANEL
LPT	LOW POINT
LR	LATCHING RELAY
LR	LOCAL-REMOTE
LR	LONG RADIUS
LS	LABORATORY SINK
LT	LEFT
LTG, LTS	LIGHTS OR LIGHTING
LTX	LIGHTING TRANSFORMER
LWL	LOW WATER LEVEL
MA	MANUAL-AUTO
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MC	MASONRY CLEARANCE
MC	MODULATE-CLOSE
MCC	MOTOR CONTROL CENTER
MCJ	MASONRY CONTROL JOINT
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MFD	MANUFACTURED
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE, MOUNTING HEIGHT
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MLO	MAIN LUGS ONLY
MMDW	DRY WEATHER MAXIMUM MONTH
MMP	MECHANICAL MOUNTING PANEL
MMWW	WET WEATHER MAXIMUM MONTH
MO	MANUAL OPERABLE, MASONRY OPENING
MP	METAL PANEL
MPU	MULTIPURPOSE UNIT
MS	MANUFACTURER'S STANDARD
MSC	MANUFACTURER SUPPLIED CABLE
MSR	GROUPED MOTOR CONTROL
MT	MOUNT
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MTS	MILL TYPE STEEL PIPE
MU	MULCHING
MV	MERCURY VAPOR
MWS	MAXIMUM WATER SURFACE
N	NORTH, NEUTRAL
NA	NOT APPLICABLE
NA	NON-AUTOMATIC
NC	NORMALLY CLOSED
NEUT	NEUTRAL
NG	NATURAL GAS
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
NO., #	NUMBER
NOM	NOMINAL
NP	NON-PROTECTED
NPT	NATIONAL PIPE THREADS
NS	NON-SHRINK
NTS	NOT TO SCALE
O2	OXYGEN
O TO O	OUT TO OUT
OA	OVERALL, ODOROUS AIR
OC	ON CENTER
OC	OPEN-CLOSE (O)
OCA	OPEN-CLOSE-AUTO
OCR	OPEN-CLOSE-REMOTE
OD	OUTSIDE DIAMETER, OVERFLOW DRAIN
O.F.	OUTSIDE FACE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OL	OVERLOAD RELAY
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
OP	OPAQUE PANEL, OUTLET PROTECTION
OPER	OPERATOR
OPNG	OPENING
OPP	OPPOSITE
OSA	OUTSIDE AIR
OSC	OPEN-STOP-CLOSE
OSD	OPEN SITE DRAIN
OWSJ	OPEN WEB STEEL JOIST
OZ	OUNCE
P	PROJECTED
P	PILASTER, PIPE
PAVT	PAVER TILE
PB	PUSHBUTTON SWITCH
PC	POINT OF CURVE, PHOTOCELL
PC	PRECAST CONCRETE PANEL
PCCP	PRECAST CONCRETE CYLINDER PIPE
PCV	PRESSURE CONTROL VALVE
PE	PLAIN END
PED	PEDESTAL, PEDESTRIAN
PEP	POLYETHYLENE PIPE
PEN.	PENETRATION
PFC	POUNDS PER CUBIC FOOT
PH	PENTHOUSE
pH	HYDROGEN ION CONCENTRATION
PH	PHASE
PI	POINT OF INTERSECTION
PIT	PILOT TUBE TEST STATION
PJF	PREMOULDED JOINT FILLER
PL	PLATE (STEEL)
PL	PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER, PLASTIC
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLYWD	PLYWOOD
PNL	PANEL
PP	POWER POLE
P-P	PUSH-PULL
PPL	POLYPROPYLENE LINED
PR	PAIR
PRC	POINT OF REVERSE CURVE
PRCST	PRECAST
PREFAB	PREFABRICATION
PRES	PRESSURE
PRI	PRIMARY
PRM	PERMANENT REFERENCED MARKER
PROJ	PROJECTION
PROP	PROPERTY
PS	PLASTIC SHEET, POLYCARBONATE SHEET
PS	PAINT SYSTEM
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
PT	POINT OF TANGENCY
PT	POTENTIAL TRANSFORMER
PT	PRESSURE TREATED
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
QAA	AVERAGE FLOW
QMM	MAXIMUM 30 DAY FLOW
QPI	PEAK INSTANTANEOUS FLOW
QPP	PEAK PUMPING FLOW
QT	QUARRY TILE
R	RISER
R OR RAD	RADIUS
RA	RETURN AIR
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RCPT	RECEPTACLE
RD	ROAD, ROOF DRAIN
RDCR	REDUCER
RDW	REDWOOD
RECIR	RECIRCULATION
REF	REFER OR REFERENCE
REFR	REFRIGERATE, REFRIGERANT

NOTES:

1. CONTACT ENGINEER FOR ABBREVIATIONS USED BUT NOT SHOWN ON THIS DRAWING.

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

GENERAL
ABBREVIATIONS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	JW	
	DESIGNED	KW	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE:	01-G-004
DATE:	MARCH 2022
ATLAS PAGE NO:	543
SHEET	4 OF 76 SHEETS

FILENAME: C3-01-G-004_WFXQ2600.dgn PLOT DATE: 3/16/2022 PLOT TIME: 1:02:48 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP

GENERAL SITE NOTES:

1. SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS ARE BASE MAPS CREATED FOR THE 2017 AB JEWELL WATER TREATMENT PLANT CLARIFIER NO. 4 IMPROVEMENTS PROJECT. ADDITIONAL MAPPING HAS BEEN ADDED FROM AS-BUILT DATA AND SUPPLEMENT SURVEY FROM MESHEK & ASSOCIATES, JUNE 2020. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING TOPOGRAPHY, STRUCTURES, AND SITE FEATURES ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW FINISH GRADE, STRUCTURES, AND SITE FEATURES ARE SHOWN HEAVY-LINED.
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD 83), CURRENT ADJUSTMENT, STATE PLANE COORDINATES FOR OKLAHOMA, SURVEY FEET
4. VERTICAL DATUM: NORTH AMERICAN DATUM OF 1988 (NAVD 88), CURRENT ADJUSTMENT.
5. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
6. FOR LOCATION OF CONTROL POINT ON STRUCTURES, SEE STRUCTURAL DRAWINGS.
7. COORDINATES AND DIMENSIONS SHOWN FOR ROADWAY IMPROVEMENTS ARE TO FACE OF CURB OR EDGE OF PAVEMENT.
8. STAGING AREA SHALL BE FOR CONTRACTOR'S EMPLOYEE PARKING, CONTRACTOR'S TRAILERS AND ON-SITE STORAGE OF MATERIALS.
9. PROVIDE TEMPORARY FENCING AS NECESSARY TO MAINTAIN SECURITY AT ALL TIMES.
10. ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN.
11. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
12. UNLESS SHOWN ON THE LANDSCAPING PLANS, ALL DISTURBED AREAS NOT RECEIVING A HARD SURFACE SHALL BE COVERED WITH GRASS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. EROSION CONTROL DEVICES (3125-165) AND (3125-186) ARE THE MINIMUM REQUIRED.
14. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE. CONTRACTOR TO SUBMIT EROSION CONTROL PLAN.

GENERAL YARD PIPING AND UTILITIES NOTES:

1. EXISTING UNDERGROUND UTILITIES OBTAINED FROM AS-BUILTS AND FROM FIELD SURVEY. CONTRACTOR SHALL FIELD VERIFY DEPTH AND LOCATION PRIOR TO EXCAVATION. PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION.
2. FOR PIPING FLOW STREAM IDENTIFICATION, SEE DRAWING 01-G-016.
3. EXISTING PIPING AND EQUIPMENT ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW PIPING AND EQUIPMENT ARE SHOWN HEAVY-LINED.
4. UNLESS OTHERWISE SHOWN ALL PIPING SHALL HAVE A MINIMUM OF 3' COVER.
5. ALL PIPES SHALL HAVE A CONSTANT SLOPE BETWEEN INVERT ELEVATIONS UNLESS A FITTING IS SHOWN.
6. ALL NEW WATER PIPES MUST BE PROPERLY FLUSHED, PRESSURE TESTED, CHLORINATED AND BACTERIOLOGICALLY TESTED PER SPECIFICATION 40 27 00.
7. FOR TRENCHING AND BACKFILL, SEE (3123-110).
8. FOR SURFACE RESTORATION OF ASPHALT CONCRETE, SEE (3212-210). FOR GRAVEL ROADS, SEE (3215-260), AND FOR GRASS, SEE SPECIFICATION 31 23 23.
9. MINIMUM ALLOWABLE CLEARANCE BETWEEN PIPES AT CROSSINGS SHALL BE 3". FLOWABLE FILL SUPPORT IS REQUIRED AS SHOWN ON (3123-120).

GENERAL NOTE:

1. THIS IS A STANDARD LEGEND SHEET. THEREFORE, NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

CIVIL LEGEND

EXISTING	THIS CONTRACT	
× 157.7	⊗ 158.5	SPOT ELEVATION
155	155	CONTOUR LINE
	3:1	EMBANKMENT AND SLOPE
		DRAINAGEWAY OR DITCH
	CB OR CB	CATCH BASIN OR INLET
		TRENCH DRAIN
	OR	SIGN
	D OR S	MANHOLE
E	E	ELECTRICAL MANHOLE
H	H	ELECTRIC HANDHOLE
		POST OR GUARD POST
		GUY ANCHOR
		FIRE HYDRANT
		UTILITY POLE
		LIGHT POLE
	BM	BENCH MARK
		SURVEY CONTROL POINT OR POINT OF INTERSECTION
		BRUSH/TREE LINE
		TREE
		PROPERTY LINE
		CENTER LINE, BUILDING, ROAD, ETC.
		STAGING OR WORK AREA LIMITS
	N 1000.00 E 1000.00	STRUCTURE, BUILDING OR FACILITY LOCATION POINT - COORDINATES
	B-1	BORING LOCATION AND NUMBER
	TP-2	TEST PIT LOCATION AND NUMBER
	P-3	PIEZOMETER LOCATION AND NUMBER
OR OR		DEMOLITION
OR	OR	STRUCTURE, BUILDING OR FACILITY
		ASPHALT CONCRETE PAVEMENT
		GRAVEL SURFACING
		CONCRETE PAVEMENT
		CURB
		CURB AND GUTTER
		SINGLE SWING GATE
		DOUBLE SWING GATE
		SLIDING GATE
		GUARD RAIL
		CHAIN LINK FENCE
		ARCHITECTURAL FENCE
		WIRE FENCE
		CULVERT

YARD PIPING LEGEND

EXISTING	THIS CONTRACT	
	8" PE	NOMINAL PIPE DIAMETER PIPE USE IDENTIFICATION
8" PE		PIPING < 30" DIAMETER
		PIPING ≧ 30" DIAMETER
		EXISTING PIPE TO BE ABANDONED
		EXISTING PIPE TO BE REMOVED
		NON-FREEZE HOSE VALVE (V-X) X = NO. IN SPECIFICATIONS
		NON-FREEZE HOSE VALVE WITH HOSE RACK (V-X) X = NO. IN SPECIFICATIONS
		INDICATOR POST VALVE
		GATE VALVE AND VALVE BOX
		BUTTERFLY VALVE AND VALVE BOX
		PLUG VALVE AND VALVE BOX
		FLEXIBLE COUPLING
		90° ELBOW UP
		90° ELBOW DOWN
		BEND < 90° UP
		BEND < 90° DOWN
		CONCENTRIC REDUCER
		CAP OR PLUG
		CLEANOUT
		FIRE HYDRANT

EROSION CONTROL LEGEND

COVER PRACTICES	SYMBOL
SILT FENCE	
BIOFILTER BAG INLET BARRIER	

B. LAKE LENARD 28364 PROFESSIONAL ENGINEER LICENSED OKLAHOMA

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

GENERAL

CIVIL AND YARD PIPING LEGEND

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN J PFEIFER	APPROVED:
	DESIGNED S CHANDLER	
	SURVEY	
PROFILE SCALE:	FIELD MGR.	
HORIZONTAL:	SECT. MGR.	
	PROJ. MGR.	
VERTICAL	RECOMMENDED: DESIGN MANAGER	CITY ENGINEER
FILE: 01-G-005		DATE: MARCH 2022
ATLAS PAGE NO: 543		SHEET OF 76 SHEETS

FILENAME: C3-01-G-005_WFXQ2600.dgn PLOT DATE: 3/16/2022 PLOT TIME: 1:17:26 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

DESIGN CRITERIA

1. APPLICABLE CODE: 2018 INTERNATIONAL BUILDING CODE (IBC), AS AMENDED BY THE CITY OF TULSA AND ALL OTHER APPLICABLE LOCAL AGENCIES.
2. REFER TO THE DRAWINGS FOR ADDITIONAL AND SPECIFIC STRUCTURE LOADINGS AND REQUIREMENTS.
3. ALL LOADS SHOWN ARE SERVICE LEVEL (UNFACTORED) UNLESS SPECIFICALLY NOTED OTHERWISE.
4. DEAD LOADS:
   A. SELF WEIGHT
5. FLOOR LIVE LOADS:

CORRIDORS, EXITS, STAIRS	100 PSF
WALKWAYS AND ELEVATED PLATFORMS	100 PSF

6. WIND LOADS:

BASIC WIND SPEED (3-SECOND GUST)	= 120 MPH
EXPOSURE CATEGORY	= C
RISK CATEGORY	= III

7. SEISMIC LOADS:

MAPPED SPECTRAL RESPONSE ACCELERATIONS	
S_S	= 0.131g
S_1	= 0.068g
DESIGN SPECTRAL RESPONSE ACCELERATIONS	
S_{DS}	= 0.139g
S_{D1}	= 0.11g
SITE CLASS	= D
SEISMIC DESIGN CATEGORY	= B
IMPORTANCE FACTOR, Ie	= 1.25

   STRUCTURES HAVE BEEN ANALYZED USING THE EQUIVALENT LATERAL FORCE PROCEDURES OF ASCE 7.
8. LATERAL FORCE-RESISTING SYSTEMS
   CLARIFIER FACILITY (SERVICE LOAD VALUES)
   ORDINARY REINFORCED CONCRETE SHEAR WALLS R = 2
9. HYDRAULIC LOADS: SEE PLANS FOR STRUCTURE SPECIFIC LOADS
10. FROST DEPTH: 18 IN

GENERAL INFORMATION

1. FOR ABBREVIATIONS NOT LISTED, SEE ASME Y14.38 “ABBREVIATIONS AND ACRONYMS: PUBLICATION AS DISTRIBUTED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).
2. DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.
3. VERIFY FINAL OPENING DIMENSIONS IN WALLS, SLABS, AND DECKS WITH OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION OF THESE ELEMENTS.
4. FOR NUMBER, TYPE, SIZE, ARRANGEMENT, AND/OR LOCATION OF EQUIPMENT PADS, SEE OTHER DISCIPLINE DRAWINGS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO PLACING SLABS, WALLS AND FOUNDATIONS. COORDINATE PIPING OPENINGS WITH OTHER DISCIPLINE DRAWINGS.
5. DO NOT CUT OR MODIFY STRUCTURAL MEMBERS FOR PIPES, DUCTS, ETC, UNLESS SPECIFICALLY DETAILED OR APPROVED IN WRITING BY THE ENGINEER.
6. VISITS TO THE JOB SITE BY THE ENGINEER TO OBSERVE THE CONSTRUCTION DO NOT IN ANY WAY MEAN THAT ENGINEER IS GUARANTOR OF CONSTRUCTOR'S WORK, NOR RESPONSIBLE FOR THE COMPREHENSIVE OR SPECIAL INSPECTIONS, COORDINATION, SUPERVISION, OR SAFETY AT THE JOB SITE.
7. INFORMATION (DETAILING, DIMENSIONS, CONFIGURATIONS, AND ELEVATIONS, ETC.) OF EXISTING CONSTRUCTION SHOWN REFLECTS AVAILABLE EXISTING DESIGN DOCUMENTS, AND DOES NOT NECESSARILY REPRESENT THE AS-CONSTRUCTED CONDITIONS. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS, ELEVATIONS AND DETAILING OF THE EXISTING STRUCTURES PRIOR TO UNDERTAKING ANY WORK THAT IS AFFECTED BY THE EXISTING STRUCTURE. NOTIFY ENGINEER IF CONDITIONS VARY FROM THAT SHOWN PRIOR TO STARTING WORK.

INSPECTION AND TESTING

1. SPECIAL INSPECTION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR INSPECTIONS REQUIRED BY THE BUILDING OFFICIAL. THE CONTRACTOR SHALL SCHEDULE BOTH INSPECTIONS.
2. SPECIFIED CONCRETE AND OTHER MATERIAL TESTING RELATED TO SPECIAL INSPECTION DURING CONSTRUCTION WILL BE OWNER FURNISHED.
3. SPECIFIED LABORATORY TEST MIXES AND SIMILAR TEST RESULTS TO VERIFY MATERIAL QUALITY AND CONFORMANCE TO SPECIFICATIONS, AND SUBMITTED FOR REVIEW PRIOR TO ACCEPTANCE FOR USE ON THE PROJECT, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. SPECIAL INSPECTION, TESTING AND OBSERVATION (OWNER FURNISHED) IS REQUIRED IN ACCORDANCE WITH IBC SECTIONS 110 AND 1704 AS INDICATED IN THE STATEMENT OF SPECIAL INSPECTIONS. REFER TO DRAWINGS 01-G-007 AND 01-G-008.

FOUNDATIONS

1. EXCAVATIONS SHALL BE SHORED TO PREVENT SUBSIDENCE AND DAMAGE TO ADJACENT EXISTING STRUCTURES, ROADS, UTILITIES, ETC.
2. FOUNDATION SLABS, SLABS-ON-GRADE AND WALL AND COLUMN FOUNDATIONS SPECIFICALLY NOTED TO BE ON FILL SHALL BEAR ON 6 INCHES OF COMPACTED GRANULAR FILL.
3. FOUNDATION BEARING SURFACES SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF FORMWORK OR REINFORCING STEEL. THE OBSERVATION SHALL VERIFY IF THE ACTUAL EXPOSED SUBGRADE IS AS ANTICIPATED BY THE SITE SPECIFIC TESTING.
4. NO BACKFILL SHALL BE PLACED BEHIND WALLS UNTIL THE WALL'S CONCRETE HAS ATTAINED 100 PERCENT AND TOP SUPPORTING SLAB'S CONCRETE HAS ATTAINED 80 PERCENT OF THEIR SPECIFIED 28 DAY COMPRESSIVE STRENGTH, OR UNTIL TOP-OF-WALL FRAMING SYSTEMS, INCLUDING STEEL OR WOOD DIAPHRAGMS, HAVE BEEN COMPLETED.
5. NO BACKFILL SHALL BE PLACED BEHIND CANTILEVERED, FREE TOP WALLS UNTIL THE CONCRETE HAS ATTAINED 100 PERCENT OF ITS SPECIFIED 28 DAY COMPRESSIVE STRENGTH.

FORMWORK, SHORING, AND BRACING

1. STRUCTURES SHOWN ON THE DRAWINGS HAVE BEEN DESIGNED FOR STABILITY UNDER FINAL CONDITIONS ONLY. DESIGN SHOWN DOES NOT INCLUDE NECESSARY COMPONENTS OR EQUIPMENT FOR STABILITY OF THE STRUCTURES DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR WORK RELATING TO CONSTRUCTION ERECTION METHODS, BRACING, SHORING, RIGGING, GUYS, SCAFFOLDING, FORMWORK, AND OTHER WORK AIDS REQUIRED TO SAFELY PERFORM THE WORK SHOWN.

CONCRETE REINFORCING

1. REINFORCING STEEL:
   TYPICAL: ASTM A615, GRADE 60
   WELDED: ASTM A706, GRADE 60 (WELDING IS ONLY PERMITTED WITH WRITTEN PERMISSION FROM ENGINEER)
2. FABRICATION AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CRSI MSP-1 “MANUAL OF STANDARD PRACTICE”AND ACI 301 “SPECIFICATIONS FOR STRUCTURAL CONCRETE”.
3. MINIMUM REINFORCING FOR CONCRETE WALLS AND SLABS SHALL BE AS FOLLOWS:

THICKNESS	REINF EACH WAY	LOCATION
6”	#4@12”	CENTERED
8”	#5@12”	CENTERED
10”	#4@12”	EACH FACE
12”	#5@12”	EACH FACE

   PROVIDE LARGER SIZES AND MORE REINFORCING IN SECTIONS OF CONCRETE WHERE REQUIRED BY THE DETAILS ON THE DRAWINGS OR BY THE SPECIFICATIONS.
4. CONCRETE COVER FOR REINFORCING, UNLESS SHOWN OTHERWISE, SHALL BE:
   WHEN CAST AGAINST EARTH: 3”
   CONCRETE EXPOSED TO EARTH, LIQUID, WASHDOWN, OR WEATHER:
   WALLS AND SLABS 2”
   BEAM STIRRUPS AND COLUMN TIES 2”
   BEAM AND COLUMN PRIMARY REINFORCING 2 1/2"
5. 90 DEGREE BENDS, UNLESS OTHERWISE SHOWN, SHALL BE ACI 318 STANDARD HOOKS.
6. REINFORCING STEEL FOR FOOTINGS AND SLABS ON GRADE SHALL BE ADEQUATELY SUPPORTED ON BAR SUPPORTS WITH SPACERS TO KEEP REINFORCING ABOVE THE PREPARED GRADE. LIFTING REINFORCING OFF GRADE DURING CONCRETE PLACEMENT IS NOT PERMITTED.
7. REFER TO OPENING REINFORCING DETAIL 0330-001.
8. REINFORCEMENT BENDS AND LAPS, UNLESS OTHERWISE NOTED, SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENTS:

CONCRETE DESIGN STRENGTH = 4,000 PSI MIN AT 28 DAYS[3] GRADE 60 REINFORCING STEEL										
BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11
LAP SPLICE LENGTH										
SPACING = 3”	TOP BAR [2]	1’-4”	1’-8”	2’-1”	3’-0”	5’-2”	6’-8”	8’-6”	10’-10”	13’-4”
	OTHER BAR	1’-4”	1’-4”	1’-8”	2’-4”	4’-0”	5’-2”	6’-7”	8’-4”	10’-3”
SPACING = 4”	TOP BAR [2]	1’-4”	1’-8”	2’-0”	2’-5”	3’-10”	5’-0”	6’-5”	8’-1”	10’-0”
	OTHER BAR	1’-4”	1’-4”	1’-7”	1’-10”	3’-0”	3’-11”	4’-11”	6’-3”	7’-8”
SPACING ≥ 6”	TOP BAR [2]	1’-4”	1’-8”	2’-0”	2’-5”	3’-6”	4’-0”	5’-0”	6’-2”	7’-5”
	OTHER BAR	1’-4”	1’-4”	1’-7”	1’-10”	2’-9”	3’-1”	3’-10”	4’-9”	5’-8”
EMBEDMENT LENGTH										
SPACING = 3”	TOP BAR [2]	1’-0”	1’-3”	1’-8”	2’-4”	4’-0”	5’-2”	6’-7”	8’-4”	10’-3”
	OTHER BAR	1’-0”	1’-0”	1’-3”	1’-10”	3’-1”	4’-0”	5’-1”	6’-5”	7’-11”
SPACING = 4”	TOP BAR [2]	1’-0”	1’-3”	1’-7”	1’-10”	3’-0”	3’-11”	4’-11”	6’-3”	7’-8”
	OTHER BAR	1’-0”	1’-0”	1’-3”	1’-5”	2’-4”	3’-0”	3’-10”	4’-10”	5’-11”
SPACING ≥ 6”	TOP BAR [2]	1’-0”	1’-3”	1’-7”	1’-10”	2’-9”	3’-1”	3’-10”	4’-9”	5’-8”
	OTHER BAR	1’-0”	1’-0”	1’-3”	1’-5”	2’-1”	2’-5”	3’-0”	3’-8”	4’-5”

   1. LAP LENGTHS ARE BASED ON MINIMUM CONCRETE COVER OF 2”. LONGER LENGTHS ARE REQUIRED FOR CONCRETE COVER LESS THAN 2”.
   2. TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12 INCHES OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.
   3. WHERE 3000 PSI CONCRETE IS USED, INCREASE ABOVE LENGTHS BY 16 PERCENT. WHERE 3500 PSI CONCRETE IS USED, INCREASE ABOVE LENGTHS BY 7 PERCENT.

CAST IN PLACE CONCRETE

1. 28-DAY COMPRESSIVE STRENGTHS (TO MEET STRUCTURAL STRENGTH REQUIREMENTS):
   HYDRAULIC AND BELOW-GRADE STRUCTURES: 4000 PSI
   CURBS AND SIDEWALKS: 3000 PSI
   DUCT BANKS AND PIPE ENCASEMENTS NOT INTEGRAL WITH FOUNDATIONS: 3000 PSI
2. 56-DAY COMPRESSIVE STRENGTHS (TO MEET DURABILITY REQUIREMENTS OF ACI 318 AND ACI 350):
   HYDRAULIC AND BELOW-GRADE STRUCTURES: 5000 PSI
3. DESIGN STRENGTHS ARE SAME AS 28-DAY COMPRESSIVE STRENGTHS.
4. CONTINUOUS WATERSTOP AS SPECIFIED SHALL BE INSTALLED IN CONSTRUCTION JOINTS OF HYDRAULIC STRUCTURES, CHANNELS, AND BELOW GRADE STRUCTURES, EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE.
5. CONSTRUCTION JOINTS INDICATED ARE SUGGESTED LOCATIONS. CONTRACTOR MAY REVISE LOCATION OF JOINTS, SUBJECT TO SPECIFIED REQUIREMENTS. LAYOUT SHOWING ALL CONSTRUCTION JOINT LOCATIONS SHALL BE SUBMITTED FOR REVIEW BY ENGINEER.
6. CLEAN AND ROUGHEN CONSTRUCTION JOINT TO 1/4" AMPLITUDE IN WALLS AND SLABS AS SPECIFIED PRIOR TO PLACING ADJACENT CONCRETE.
7. COORDINATE PLACEMENT OF OPENINGS, PIPE PENETRATIONS, CURBS, DOWELS, SLEEVES, CONDUITS, BOLTS AND INSERTS PRIOR TO PLACEMENT OF CONCRETE.
8. NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.
9. DO NOT PLACE CONDUIT PARALLEL TO BEAM OR COLUMN REINFORCEMENT UNLESS SPECIFICALLY INDICATED IN DRAWINGS.

WELDING

1. WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS):
   D1.1, STRUCTURAL WELDING CODE STEEL
   D1.2, STRUCTURAL WELDING CODE ALUMINUM
   D1.6, STRUCTURAL WELDING CODE STAINLESS STEEL
2. REPAIR WELDS FOUND DEFECTIVE IN ACCORDANCE WITH AWS D1.1 SECTION 5.26.
3. USE INTERMITTENT WELDS AT FIELD WELDS OF EMBED PLATES AND ANGLES TO AVOID SPALLING OR CRACKING OF THE EXISTING CONCRETE.
4. BUTT JOINT WELDS SHALL BE COMPLETE JOINT PENETRATION (CJP) UNLESS INDICATED OTHERWISE.

STRUCTURAL STEEL AND METAL FABRICATIONS

1. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

W-SHAPES	A992
MISCELLANEOUS SHAPES INCLUDING ANGLES, CHANNELS, PLATES, ETC.	A36 (UNO) OR A572, GRADE 50
HOLLOW STRUCTURAL SECTIONS (HSS)	A500, GRADE B
STEEL PIPE	A53, GRADE B
STAINLESS STEEL SHAPES	A276 TYPE 316

2. ALUMINUM SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

STRUCTURAL SHAPES	B308
PLATES	B209

3. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN CONFORMANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION, AND CURRENT OSHA STANDARDS.
4. FASTENERS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO THE FOLLOWING ASTM STANDARDS EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE:

UNLESS SHOWN OTHERWISE	A325-N
ANCHOR BOLTS (AB)	
STAINLESS STEEL	F593, AISI TYPE 316, CONDITION CW
STEEL OR GALVANIZED STEEL	F1554, GR 36 / A153
MACHINE BOLTS (MB)	
STEEL	A307
STAINLESS STEEL	F593, AISI TYPE 316, CONDITION CW
GALVANIZED STEEL	A307 / A153

5. ITEMS TO BE EMBEDDED IN CONCRETE SHALL BE CLEAN AND FREE OF OIL, DIRT AND PAINT.
6. NO HOLES OTHER THAN THOSE SPECIFICALLY DETAILED SHALL BE ALLOWED THROUGH STRUCTURAL STEEL MEMBERS. NO CUTTING OR BURNING OF STRUCTURAL STEEL IS PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER.

DEFERRED SUBMITTALS

1. DEFERRED SUBMITTALS ARE THOSE PORTIONS OF THE DESIGN WHICH ARE NOT SUBMITTED AT THE TIME OF PERMIT APPLICATION AND WHICH ARE TO BE SUBMITTED TO THE PERMITTING AGENCY FOR ACCEPTANCE PRIOR TO INSTALLATION OF THAT PORTION OF THE WORK.
2. THE FOLLOWING IS A LIST OF DEFERRED SUBMITTALS PER IBC SECTION 106.3.4.2 THAT ARE EXPECTED TO CONTAIN STRUCTURAL CALCULATIONS OR SAFETY RELATED SYSTEM INFORMATION FOR REVIEW TO MEET BUILDING PERMITTING REQUIREMENTS FOR DESIGNED SYSTEMS. PRIOR TO INSTALLATION OF THE INDICATED STRUCTURAL ELEMENT, EQUIPMENT, DISTRIBUTION SYSTEM, OR COMPONENT OR ITS ANCHORAGE, THE CONTRACTOR SHALL SUBMIT THE REQUIRED CALCULATIONS AND SUPPORTING DATA AND DRAWINGS FOR REVIEW AND ACCEPTANCE BY THE ENGINEER. ADDITIONALLY, ACCEPTANCE INDICATED ON THE ENGINEER'S COMMENT FORM, ALONG WITH THE COMPLETED, FINAL SUBMITTAL SHALL THEN BE SUBMITTED BY THE CONTRACTOR TO THE PERMITTING AGENCY AND APPROVED PRIOR TO INSTALLATION OF THESE ITEMS.

SPECIFICATION SECTION	ITEM
01 88 15	ANCHORAGE AND BRACING
35 20 16	FABRICATED SLIDE GATES
43 22 56	RAPID MIXERS
44 42 28	STAINLESS STEEL BAFFLE SYSTEM
44 44 36	HORIZONTAL PADDLE FLOCCULATION SYSTEM
44 44 57	PARALLEL PLATE SETTLER SYSTEM
OTHER	ANY EQUIPMENT OR COMPONENT IN WHICH A TECHNICAL SPECIFICATION REQUIRES SUBMITTAL OF EQUIPMENT OR ANCHORAGE SYSTEM CALCULATIONS

5/17/22

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1”

NO.	REVISION	BY	DATE

GENERAL
STRUCTURAL GENERAL NOTES

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
	DESIGNED	LY	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: 01-G-006
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 6 OF 76 SHEETS

FILENAME: C3-01-G-006_WFXQ2600.dgn PLOT DATE: 5/17/2022 PLOT TIME: 3:08:52 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

GENERAL NOTES

1. THE SPECIAL INSPECTION DRAWINGS PROVIDE PROJECT COMPLIANCE WITH THE PROVISIONS OF THE 2018 INTERNATIONAL BUILDING CODE (IBC) CHAPTER 17 FOR SPECIAL INSPECTION, STRUCTURAL OBSERVATION, AND QUALITY ASSURANCE FOR WIND AND SEISMIC RESISTANCE AS APPLICABLE. THIS INSPECTION IS OWNER FURNISHED.
2. STANDARD SPECIAL INSPECTION REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS ARE CONTAINED IN TABLE 1.
3. STANDARD SPECIAL INSPECTION REQUIREMENTS FOR STRUCTURAL COMPONENTS, IRREGARDLESS OF WIND OR SEISMIC DESIGN CATEGORIES, ARE CONTAINED IN TABLE 2. STANDARD TESTING REQUIREMENTS FOR STRUCTURAL COMPONENTS ARE CONTAINED IN TABLE 3.
4. FOR ADDITIONAL REQUIREMENTS, REFER TO SPECIFICATION SECTION 01 45 33, SPECIAL INSPECTION OBSERVATION AND TESTING. THESE INCLUDE:
   A. CONTRACTOR'S REQUIREMENTS TO PROVIDE ACCESS TO THE WORK FOR REQUIRED INSPECTIONS, AND TO PROVIDE NOTICE OF REQUIRED INSPECTIONS AND STRUCTURAL OBSERVATION.
   B. CONTRACTOR'S STATEMENT OF RESPONSIBILITY FOR WORK TO BE PERFORMED ON SYSTEMS DESIGNATED UNDER THE QUALITY ASSURANCE PLAN FOR WIND OR SEISMIC RESISTANCE.
   C. DEFINITIONS AND TERMINOLOGY USED IN THIS PLAN.

SPECIAL INSPECTION

1. SPECIAL INSPECTION SHALL BE IN ACCORDANCE WITH IBC SECTION 1704 TOGETHER WITH LOCAL AND STATE AMENDMENTS. REFER TO THE TABLES CONTAINED ON THESE GENERAL SHEETS FOR PROJECT SPECIFIC INSPECTION TYPES AND FREQUENCIES.
2. SPECIAL INSPECTIONS AND ASSOCIATED TESTING SHALL BE PERFORMED BY AN APPROVED ACCREDITED INDEPENDENT AGENCY. THE OWNER WILL SECURE AND PAY FOR THE SERVICES OF THE AGENCY TO PERFORM ALL SPECIAL INSPECTION AND ASSOCIATED TESTS. INSPECTORS FOR EACH SYSTEM AND MATERIAL SHALL BE INTERNATIONAL CODE COUNCIL (ICC) CERTIFIED OR OTHERWISE APPROVED BY THE BUILDING OFFICIAL.
3. THE SPECIAL INSPECTOR SHALL OBSERVE THE INDICATED WORK FOR COMPLIANCE WITH THE APPROVED CONTRACT DOCUMENTS AND SUBMIT RECORDS OF INSPECTION. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.
4. SPECIAL INSPECTION AND ASSOCIATED TESTING REPORTS SHALL BE SUBMITTED TO THE ENGINEER, CONTRACTOR, BUILDING OFFICAL, AND OWNER WITHIN ONE WEEK OF INSPECTION OR WITHIN ONE WEEK OF TEST COMPLETION. INSPECTIONS FOR WHICH REPORTING SHALL BE REQUIRED ARE NOTED IN THE TABLES CONTAINED ON THIS PLAN.
5. AT THE CONCLUSION OF CONSTRUCTION, A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND CORRECTION OF PREVIOUSLY NOTED DISCREPANCIES SHALL BE SUBMITTED.

GEOTECHNICAL OBSERVATION

1. ALL FOUNDATION BEARING SURFACES SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL. ADDITIONAL SPECIAL INSPECTION REQUIREMENTS ARE LISTED ON TABLE 1.
2. GEOTECHNICAL TESTING REQUIREMENTS ARE LISTED IN TABLE 3.

STRUCTURAL OBSERVATION

1. STRUCTURAL OBSERVATION SHALL BE IN ACCORDANCE WITH IBC SECTION 1709 TOGETHER WITH LOCAL AND STATE AMENDMENTS. REFER TO PROJECT SPECIFIC NOTES ON THIS SHEET.
2. STRUCTURAL OBSERVATION WILL BE PERFORMED BY A REGISTERED PROJECT DESIGN PROFESSIONAL FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS. STRUCTURAL OBSERVATION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR ANY REQUIRED SPECIAL INSPECTIONS OR INSPECTIONS BY THE BUILDING OFFICIAL.
3. STRUCTURAL OBSERVATION REPORTS, NOTING ANY DEFICIENCIES, WILL BE DELIVERED TO THE CONTRACTOR, BUILDING OFFICIAL, AND OWNER WITHIN ONE WEEK OF THE OBSERVATION. THE CONTRACTOR WILL BE NOTIFIED ON-SITE OR BY PHONE OR EMAIL WITHIN 24 HOURS UPON FINDING DEFICIENCIES.
4. AT THE CONCLUSION OF CONSTRUCTION, A WRITTEN STATEMENT WILL BE PROVIDED TO VERIFY THAT THE STRUCTURAL OBSERVATION SITE VISITS WERE MADE AND WHETHER THERE REMAIN ANY STRUCTURAL DEFICIENCIES THAT HAVE NOT BEEN RESOLVED.
5. STRUCTURAL OBSERVATION SHALL INCLUDE VISUAL OBSERVATION OF THE STRUCTURAL SYSTEM AT SIGNIFICANT CONSTRUCTION STAGES AND AT COMPLETION OF THE STRUCTURAL SYSTEM FOR EACH STRUCTURE CONTAINED IN THE WORK. THE CONTRACTOR SHALL SCHEDULE AND FACILITATE STRUCTURAL OBSERVATION INCLUDING THE FOLLOWING:

STRUCTURAL OBSERVATION TABLE

	SYSTEM FOR FACILITY	STAGE	ITEMS	COMMENTS
1	FOUNDATION SLAB OF STRUCTURE	PRIOR TO FIRST CONCRETE PLACEMENT OF FIRST SECTION WHEN ITEMS CAN STILL BE REVISED	REINFORCING STEEL, CONCRETE WALL DOWELS, WATERSTOPS, EMBEDS, AND SIMILAR ITEMS	NOTE 1
2	CONCRETE WALLS OF STRUCTURE	PRIOR TO FIRST CONCRETE PLACEMENT OF FIRST SECTION WHEN ITEMS CAN STILL BE REVISED	REINFORCING STEEL, WALL DOWELS, WATERSTOPS, EMBEDS, AND SIMILAR ITEMS	NOTE 1
3	WALL TO FOUNDATION CONNECTIONS PRIOR TO FORM CLOSURE	PRIOR TO FIRST CONCRETE PLACEMENT OF FIRST SECTION WHEN ITEMS CAN STILL BE REVISED		NOTE 1
4	ELEVATED CONCRETE SLABS AND BEAMS PRIOR TO CONCRETE PLACEMENT	PRIOR TO FIRST CONCRETE PLACEMENT OF FIRST SECTION WHEN ITEMS CAN STILL BE REVISED	REINFORCING STEEL, WALL DOWELS, WATERSTOPS, EMBEDS, AND SIMILAR ITEMS	NOTE 1
5	CONCRETE STRUCTURES	PRIOR TO FIRST CONCRETE PLACEMENT ON FIRST LIQUID HOLDING STRUCTURE WHEN ITEMS CAN STILL BE REVISED	REINFORCING STEEL, WALL DOWELS, WATERSTOPS, EMBEDS, AND SIMILAR ITEMS	NOTE 1
6	SYSTEM CONNECTION EMBEDS	PRIOR TO GROUT OR CONCRETE PLACEMENT		NOTE 1
7	AT ADDITIONAL TIMES DURING CONSTRUCTION AT WHICH THE ENGINEER OF RECORD OR OWNER DEEM THE NEED FOR ADDITIONAL STRUCTURAL OBSERVATION			NOTE 1
8	AT SUBSTANTIAL COMPLETION OF PRIMARY STRUCTURAL SYSTEM FOR DETERMINATION OF FINAL CONDITION OF STRUCTURE			NOTE 1

NOTES:
1. STRUCTURAL OBSERVER TO DISCUSS ITEMS AND SITE SPECIFIC CONDITIONS WITH SPECIAL INSPECTOR AND FIELD INSPECTION STAFF DURING OBSERVATION.

TABLE 1
REQUIRED NON-STRUCTURAL SPECIAL INSPECTION
REFER TO SPECIFICATION SECTION 01 45 33

SYSTEM OR MATERIAL	2018 IBC CODE REFERENCE	REFERENCED STANDARD	PERIODIC OWNER FURNISHED SPECIAL INSPECTION (SEE NOTE 1)	CONTINUOUS OWNER FURNISHED SPECIAL INSPECTION	COMMENTS	TESTING FOR SPECIAL INSPECTION
GEOTECHNICAL						
1. SOILS:						
A. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	1705.6, 1803.5.8, 1803.5.9, 1804.6	SECTION 31 23 13, SUBGRADE PREPARATION	X		PROFESSIONAL OBSERVATION BY GEOTECHNICAL ENGINEER	
B. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	1705.6	SECTION 31 23 16, EXCAVATION	X		PROFESSIONAL OBSERVATION BY GEOTECHNICAL ENGINEER	
C. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	1705.6	SECTION 31 23 23, FILL AND BACKFILL	X			SEE TABLE 3 FOR GRADATION TEST REQUIREMENTS
D.VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	1705.6, 1803.5.8	SECTION 31 23 23, FILL AND BACKFILL		X		SEE TABLE 3 FOR DENSITY TEST REQUIREMENTS
E. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY	1705.6	SECTION 31 23 13, SUBGRADE PREPARATION	X		PROFESSIONAL OBSERVATION BY GEOTECHNICAL ENGINEER	SEE TABLE 3 FOR DENSITY TEST REQUIREMENTS
GENERAL						
1. CONSTRUCTION MATERIALS AND SYSTEMS THAT ARE ALTERNATIVES TO MATERIALS AND SYSTEMS PRESCRIBED BY CODE	1705.1.1 ITEM 1		X			
2. UNUSUAL DESIGN APPLICATION OF CODE MATERIALS	1705.1.1 ITEM 2			X		
3. INSTALLATION OF MATERIALS THAT REQUIRE ADDITIONAL MANUFACTURER'S INSTRUCTIONS BEYOND CODE REQUIREMENTS	1703.4.2, 1705.1.1 ITEM 3	ICC-ES EVALUATION REPORTS		X		
STRUCTURAL						
SEE TABLE 2.						

NOTES:
1. PERIODIC INSPECTION IS DEFINED AS INSPECTION BY THE SPECIAL INSPECTOR OF ALL MATERIALS AND SYSTEMS, IN SOME CASES PERFORMED DURING THEIR PLACEMENT AND IN ALL CASES PERFORMED UPON COMPLETION OF THEIR PLACEMENT. THE COMPLETION INSPECTION SHALL BE PERFORMED SO THAT WORK CAN BE CORRECTED PRIOR TO OTHER RELATED WORK PROCEEDING AND COVERING INSPECTED WORK.

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

GENERAL
STRUCTURAL SPECIAL INSPECTIONS - 1

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
	DESIGNED	LY	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
	SECT. MGR.		
HORIZONTAL:	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: 01-G-007 DATE: MARCH 2022
ATLAS PAGE NO: 543 SHEET 7 OF 76 SHEETS

FILENAME: C3-01-G-007_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 4:26:45 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

TABLE 2
REQUIRED STRUCTURAL SPECIAL INSPECTION
REFER TO SPECIFICATION SECTION 01 45 33

SYSTEM	2018 IBC CODE REFERENCE	REFERENCED STANDARD	PERIODIC OWNER FURNISHED SPECIAL INSPECTION (SEE NOTE 1)	CONTINUOUS OWNER FURNISHED SPECIAL INSPECTION	COMMENTS	TESTING FOR SPECIAL INSPECTION
CONCRETE						
1. INSPECTION OF REINFORCING STEEL AND PLACEMENT	1705.3, 1908.4	ACI 318: CH20, CH25, CH26	X			
2. INSPECTION OF ANCHORS CAST IN CONCRETE	1705.3, 1908.5, 1909.1	ACI 318: 17.8.2	X			
3. INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS	1705.3, 1909.1	ACI 318: 17.8.2, ICC-ES EVALUATION REPORTS	X		PROVIDE CONTINUOUS SPECIAL INSPECTION WHERE REQUIRED BY ICC-ES REPORT	
4. VERIFYING USE OF REQUIRED DESIGN MIX	1705.3, 1904.2, 1910.2, 1910.3	ACI 318: Ch. 19,	X			
5. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	1705.3, 1910.10	ASTM C 172, ASTM C 31, ACI 318		X		SEE TABLE 3 FOR CONCRETE TEST REQUIREMENTS
6. INSPECTION OF CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	1705.3, 1910.6, 1910.7, 1910.8	ACI 318		X		
7. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	1705.3, 1910.9	ACI 318	X			
8. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED	1705.3	ACI 318	X			
9. INSPECTION OF WATERSTOPS FOR PROPER SHAPE, LOCATION, JOINT QUALITY, AND SURROUNDING CONCRETE PLACEMENT			X			
ALUMINUM						
1. MATERIAL VERIFICATION OF ALUMINUM:						
A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS	1705.1.1 ITEM 2		X			
B. MANUFACTURERS' CERTIFIED MILL TEST REPORTS	1705.1.1 ITEM 2		X			
3. INSPECTION OF WELDING:						

NOTES:
1. PERIODIC INSPECTION IS DEFINED AS INSPECTION BY THE SPECIAL INSPECTOR OF ALL MATERIALS AND SYSTEMS, IN SOME CASES PERFORMED DURING THEIR PLACEMENT AND IN ALL CASES PERFORMED UPON COMPLETION OF THEIR PLACEMENT. THE COMPLETION INSPECTION SHALL BE PERFORMED SO THAT WORK CAN BE CORRECTED PRIOR TO OTHER RELATED WORK PROCEEDING AND COVERING INSPECTED WORK.

2. VISUAL INSPECTION IS THE RESPONSIBILITY OF THE CONTRACTOR'S WELDING INSPECTOR(S) AND IS NOT CONSIDERED SPECIAL INSPECTION. CONTRACTOR MUST PROVIDE A QUALIFIED WELDING INSPECTOR TO OVERSEE CONTRACTOR'S WELDING OPERATIONS, AS REQUIRED BY AWS D1.1, SECTIONS 6.1.2 & 6.6, SPECIFICATIONS SECTION 05 05 23 AND REFERENCED WELDING CODES.

TABLE 3
TESTING FOR REQUIRED SPECIAL INSPECTION
REFER TO SPECIFICATION SECTION 01 45 33

MATERIAL	TYPE OR SCOPE	STANDARD	2018 IBC CODE REFERENCE	FREQUENCY	BY WHOM	COMMENTS
GEOTECHNICAL						
COMPACTED FILL	GRADATION	ASTM C117, C136	1705.6	SECTION 31 23 23, FILL AND BACKFILL	OWNER'S TESTING AGENCY	
COMPACTED FILL	COMPACTION	ASTM **[D698] [D1557]**	1705.6	SECTION 31 23 23, FILL AND BACKFILL	OWNER'S TESTING AGENCY	
COMPACTED FILL	DENSITY	ASTM **[D1556] [D6938]**	1705.6	SECTION 31 23 23, FILL AND BACKFILL	OWNER'S TESTING AGENCY	
PREPARED SUBGRADE	DENSITY	ASTM **[D698] [D1557]**	1705.6	SECTION 31 23 13, SUBGRADE PREPARATION	OWNER'S TESTING AGENCY	
CONCRETE						
CONCRETE	STRENGTH	ASTM C39	1705.3	ONCE EACH DAY, BUT NOT LESS THAN ONE SAMPLE FOR EACH 150 CUBIC YARDS OR 5,000 SFT OF WALLS OR SLABS PLACED	OWNER'S TESTING AGENCY	
SHOTCRETE	STRENGTH	ASTM C42	1705.3, 1910.10	ONCE EACH SHIFT, BUT NOT LESS THAN ONE SAMPLE FOR EACH 50 CUBIC YARDS PLACED	OWNER'S TESTING AGENCY	
CONCRETE	SLUMP	ASTM C143, C94	1705.3	ONE SAMPLE PER STRENGTH TEST	OWNER'S TESTING AGENCY	
CONCRETE	AIR CONTENT	ASTM C231, C94	1705.3	ONE SAMPLE PER STRENGTH TEST	OWNER'S TESTING AGENCY	
CONCRETE	TEMPERATURE	ASTM C1064	1705.3	ONE SAMPLE PER STRENGTH TEST	OWNER'S TESTING AGENCY	

TABLE 4
REQUIRED SPECIAL INSPECTION FOR SEISMIC RESISTANCE FOR STRUCTURAL SYSTEMS
REFER TO TABLE 2 FOR STANDARD STRUCTURAL SPECIAL INSPECTION REQUIREMENTS
REFER TO SPECIFICATION SECTION 01 45 33

The Seismic Design Category (SDC) for this Project is B.

SYSTEM	INSPECTION REQUIRED FOR FOLLOWING SEISMIC DESIGN CATEGORIES	2018 IBC CODE REFERENCE	PERIODIC OWNER FURNISHED SPECIAL INSPECTION (SEE NOTE 1)	CONTINUOUS OWNER FURNISHED SPECIAL INSPECTION	COMMENTS	TESTING FOR SPECIAL INSPECTION
NOT REQUIRED						

TABLE 5
REQUIRED SPECIAL INSPECTION FOR WIND RESISTANCE FOR STRUCTURAL SYSTEMS
REFER TO SPECIFICATION SECTION 01 45 33

The Nominal Design Wind Speed (3-second-gust) for this Project is 120 mph.
The Wind Exposure is Category C.

SYSTEM	2018 IBC CODE REFERENCE	STANDARD OR CODE	PERIODIC OWNER FURNISHED SPECIAL INSPECTION (SEE NOTE 1)	CONTINUOUS OWNER FURNISHED SPECIAL INSPECTION	COMMENTS
NOT REQUIRED					

TABLE 6
TESTING FOR SEISMIC RESISTANCE
REFER TO SPECIFICATION SECTION 01 45 33

MATERIAL	TYPE OR SCOPE	STANDARD	2018 IBC CODE REFERENCE	FREQUENCY	BY WHOM	COMMENTS
NOT REQUIRED						

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

GENERAL
STRUCTURAL SPECIAL INSPECTIONS - 2

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
	DESIGNED	LY	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 01-G-008 DATE: MARCH 2022
ATLAS PAGE NO: 543 SHEET 8 OF 76 SHEETS

FILENAME: C3-01-G-008_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 4:29:04 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

PIPE AND FITTING SYMBOLS

DOUBLE LINE | SINGLE LINE

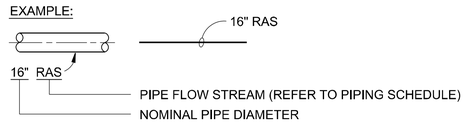
- EXISTING PIPE
- NEW PIPE
- EXISTING PIPE TO BE ABANDONED
- EXISTING PIPE TO BE REMOVED
- WELDED JOINT
- GROOVED END JOINT
- FLANGED JOINT
- MECHANICAL JOINT
- BELL & SPIGOT JOINT (LEADED)
- HUB & SPIGOT JOINT (RUBBER GASKET)
- BALL JOINT
- ADAPTER SIDE
  GROOVED END ADAPTER FLANGE
- FLANGED COUPLING ADAPTER
- FLANGED COUPLING ADAPTER WITH THRUST TIES
- FLEXIBLE COUPLING
- FLEXIBLE COUPLING WITH THRUST TIES
- STEEL BELLOWS EXP JOINT
- ELASTOMER BELLOWS EXP JOINT
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- LATERAL UP
- LATERAL DOWN
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- REDUCING BUSHING
- UNION

MISCELLANEOUS PIPING SYMBOLS

- STRAINER
- SIGHT GLASS
- FLEXIBLE (ELASTOMER) PIPE CONNECTION
- GAUGE WITH COCK
- THERMOMETER
- ROTAMETER
- HV-5 — HOSE VALVE ASSEMBLY
- WM-1 — WATER MONITOR AND NOZZLE
- YH-2 — SELF-DRAINING POST HYDRANT
- PS 26-1-2 — TYPICAL INSTRUMENT SYMBOL (SEE I&C LEGEND)

PIPING DESIGNATION

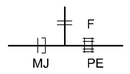
EXAMPLE:



PIPE AND FITTING END PATTERNS

B	BELL	PE	PLAIN END
S	SPIGOT	GE	GROOVED END
F	FLANGE	MJ	MECHANICAL JOINT
		PRJ	PROPRIETARY RESTRAINED JOINT

EXAMPLE:



- CAP
- ANCHOR
- ELBOW, 90 DEGREE
- CROSS
- TEE
- ELBOW, 45 DEGREE
- LATERAL

NOTES:

1. ONLY FLANGED END CONNECTIONS ARE SHOWN HERE FOR DOUBLE LINE FITTINGS. FITTINGS WITH OTHER END PATTERNS ARE SHOWN SIMILARLY ON THE CONSTRUCTION DRAWINGS. ALSO SEE PIPING SPECIFICATIONS.
2. SYMBOLS SHOWN HERE FOR SINGLE LINE FITTINGS ARE GENERIC ONLY. REFER TO PIPING SPECIFICATIONS FOR SPECIFIC END CONNECTIONS FOR SINGLE LINE PIPE AND FITTINGS.
3. EXISTING PIPE AND EQUIPMENT IS SHOWN LIGHT-LINED AND/OR SCREENED AND IS NOTED AS EXISTING. NEW PIPING AND EQUIPMENT IS SHOWN HEAVY-LINED.
4. SEE DRAWING 01-G-14 FOR FLOWSTREAM ID'S

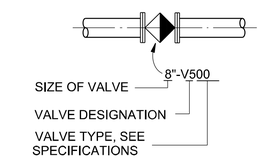
VALVE SYMBOLS

COMMON | ALTERNATE

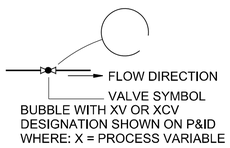
- GATE
- K — KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- V — VEE-BALL
- SEATING PORT
- ECCENTRIC PLUG
- PLUG OR COCK
- NEEDLE
- DIAPHRAGM — (3D)
- PINCH
- SWING CHECK — (3D)
- BALL CHECK
- HOSE VALVE (HV- X) OR (V-X)
  X = NO. IN SPECS
- S — SAMPLE
- MUD
- PRESSURE RELIEF
- AIR AND/OR VACUUM RELEASE
- REGULATED SIDE
- PRESSURE CONTROL
- MULTI-PORT VALVE (BALL VALVE SHOWN FOR OTHER VALVE TYPES, APPROPRIATE VALVE SYMBOL SHOWN.) ARROWS INDICATE FLOW PATTERN. SEATING PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
- FIRE HYDRANT

VALVE DESIGNATIONS

MANUAL VALVES AND CHECK VALVES



CONTROL VALVES



ACTUATOR SYMBOLS

- P Z — PNEUMATIC W/POSITIONER
- P S — PNEUMATIC W/SOLENOID
- E — ELECTRIC
- E Z — ELECTRIC W/POSITIONER
- H — HYDRAULIC
- MANUAL
- S — SOLENOID

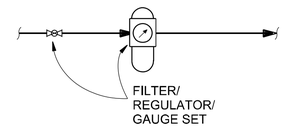
GATE SYMBOLS

EL VIEW | PLAN VIEW

- SLUICE
- BUTTERFLY
- FLAP
- SHEAR
- FABRICATED SLIDE

PLANT AIR LEGEND

- PB — PULL BOX
- J-XXX-YY — JUNCTION BOX (XXX = FACILITY NO.; YY = BOX NO.)
- AP — AIR PURGE SET
- HARD COP — COPPER TUBING
- P — PLASTIC TUBING
- 2" CND — CONDUIT SIZE
- 3/8"(X) — PLASTIC TUBE SIZE X = NO. OF ," PLASTIC TUBES
- INSTRUMENT AIR - COPPER TUBING
- X — INSTRUMENT AIR TUBING BUNDLE X = NO. OF ," PLASTIC TUBES
- XX — AIR SET XX = SUPPLY PRESSURE IN PSIG



Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

GENERAL
PROCESS MECHANICAL LEGEND

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	CB	MAR 2022
	DESIGNED	LM	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE:	01-G-010
ATLAS PAGE NO:	543
DATE:	MARCH 2022
SHEET	9 OF 76 SHEETS

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

FILENAME: C3-01-G-010_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 5:14:27 PM

ONE-LINE DIAGRAM-1

SYMBOL	DESCRIPTION
	DRAW OUT AIR CIRCUIT BREAKER, LOW VOLTAGE
400	CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE, UNO
AS/AF or AT/AF	CIRCUIT BREAKER, STATIC TRIP UNIT, SENSOR AMP TRIP AND FRAME RATINGS SHOWN, 3 POLE, UNO
100/M	CIRCUIT BREAKER, MAGNETIC TRIP ONLY, TRIP RATING SHOWN, 3 POLE, UNO
400 400	CIRCUIT BREAKER WITH CURRENT LIMITING FUSES, TRIP AND FUSE RATING INDICATED, 3 POLE, UNO
400 225	FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE, UNO
100	SWITCH, CURRENT RATING INDICATED, 3 POLE, UNO
60 (3)	FUSE, CURRENT RATING AND QUANTITY INDICATED
1	MAGNETIC STARTER WITH OVERLOAD, NEMA SIZE INDICATED, FVNR UNO
AFD	ELECTRONIC STARTER/SPEED CONTROL RVSS = REDUCED VOLTAGE SOFT STARTER AFD = AC ADJUSTABLE FREQUENCY DRIVE DC = DC ADJUSTABLE SPEED DRIVE RVAT = REDUCED VOLTAGE AUTO TRANSFORMER TYPE RVRT = REDUCED VOLTAGE REACTOR TYPE
	CABLE OR BUS CONNECTION POINT
K	KEY INTERLOCK
	SURGE ARRESTER (GAP TYPE)
10	CAPACITOR - KVAR INDICATED, 3 PHASE
3	AC MOTOR, SQUIRREL CAGE INDUCTION - HORSEPOWER INDICATED
G 500/625	GENERATOR, KW/KVA RATING SHOWN
VS V 0-600V	ANALOG METER WITH SWITCH - SCALE RANGE SHOWN V = VOLTAGE KW = KILOWATTS A = AMPERAGE KVAR = KILOVARS PF = POWER FACTOR
DPM	DIGITAL POWER METER (MULTIFUNCTION)
	GROUND
15 KVA 480-120/240V 1 PH	TRANSFORMER, SIZE, VOLTAGE RATINGS, AND PHASE INDICATED
480-120V (3)	POTENTIAL TRANSFORMER, VOLTAGE RATING AND QUANTITY INDICATED
100:5 (3)	CURRENT TRANSFORMER, RATIO(100:5) AND QUANTITY INDICATED (3)
SPD	SURGE PROTECTIVE DEVICE

ONE-LINE DIAGRAM-2

SYMBOL	DESCRIPTION
	DRAWOUT POWER CIRCUIT BREAKER, MEDIUM VOLTAGE
	NON DRAWOUT FUSED SWITCH, MEDIUM VOLTAGE
	DRAWOUT FUSED SWITCH AND CONTACTOR, MEDIUM VOLTAGE
	DRAWOUT FUSED SWITCH AND VACUUM CONTACTOR, MEDIUM VOLTAGE
	DRAWOUT VACUUM CONTACTOR, MEDIUM VOLTAGE
	MEDIUM VOLTAGE CABLE STRESS CONE TYPE TERMINATION, OPEN TERMINATOR OR ELBOW
	SWITCH - LOAD BREAK, GROUP OPERATED, MEDIUM VOLTAGE
	SWITCH W/ARCING HORNS, MEDIUM VOLTAGE
	DISCONNECTING FUSE - SOLID MATERIAL, MEDIUM VOLTAGE
	SWITCH - HOOK STICK OPERATED, SINGLE POLE, MEDIUM VOLTAGE
	FUSE - EXPULSION, HOOK STICK OPERATED, SINGLE POLE, MEDIUM VOLTAGE
	GROUND SWITCH, GANG OPERATED
	TERMINAL BLOCK LUG
	DELTA CONNECTION
	WYE GROUNDED CONNECTION, SOLID GROUND
50:5 (1)	CURRENT TRANSFORMER, ZERO SEQUENCE, RATIO AND QUANTITY INDICATED
MO	MOTOR OPERATOR, BREAKER OR SWITCH
MPR	MOTOR PROTECTION RELAY

CONTROL DIAGRAM-1

SYMBOL	DESCRIPTION
	PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN
	PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED
	PUSH BUTTON SWITCH, MAINTAINED CONTACTS WITH MECHANICAL INTERLOCK
	3 POSITION SELECTOR SWITCH MAINTAINED CONTACT
HAND OFF REMOTE	SELECTOR SWITCH - MAINTAINED CONTACT - CHART IDENTIFIES OPERATION WHEN NEEDED FOR CLARITY:

	POSITION		
CKT	HAND	OFF	REMOTE
1	X	O	O
2	O	O	X

X - CLOSED CONTACT
O - OPEN CONTACT

SYMBOL	DESCRIPTION
	TOGGLE SWITCH, ON-OFF TYPE
ON OFF	SELECTOR SWITCH, ON-OFF TYPE
	MUSHROOM HEAD PUSHBUTTON SWITCH
A	INDICATING LIGHT, PUSH-TO-TEST, LETTER INDICATES COLOR

CONTROL DIAGRAM-2

SYMBOL	DESCRIPTION
A	INDICATING LIGHT - LETTER INDICATES COLOR A - AMBER G - GREEN S - STROBE B - BLUE R - RED C - CLEAR W - WHITE
ETM	ELAPSED TIME METER
M	MOTOR STARTER CONTACTOR COIL
CRX	CONTROL RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT
TDR X	TIME DELAY RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT
	CONTACT - NORMALLY OPEN
	CONTACT - NORMALLY CLOSED
	REMOTE DEVICE
	TIME DELAY RELAY CONTACT, NORMALLY OPEN, CLOSES WHEN ENERGIZED AND TIMED OUT
	TIME DELAY RELAY CONTACT, NORMALLY CLOSED, OPENS WHEN ENERGIZED AND TIMED OUT
	TIME DELAY RELAY CONTACT, CLOSES WHEN ENERGIZED, OPENS WHEN DE-ENERGIZED AND TIMED OUT
	TIME DELAY RELAY CONTACT, OPENS WHEN ENERGIZED, CLOSES WHEN DE-ENERGIZED AND TIMED OUT
	MOTOR SPACE HEATER
	TERMINAL BLOCK, REMOTE
	TERMINAL BLOCK, INTERNAL
	FUSE, RATING INDICATED
CPT 120V	TRANSFORMER, CONTROL POWER
	CAPACITOR
+ −	BATTERY
	LIMIT SWITCH, NORMALLY OPEN, CLOSES AT END OF TRAVEL
	LIMIT SWITCH, NORMALLY CLOSED, OPENS AT END OF TRAVEL
	TEMPERATURE SWITCH, OPENS ON TEMPERATURE RISE
	TEMPERATURE SWITCH, CLOSES ON TEMPERATURE RISE
	FLOAT SWITCH, NORMALLY OPEN, CLOSES ON DESCENDING LEVEL
	FLOAT SWITCH, NORMALLY OPEN, CLOSES ON RISING LEVEL
	PRESSURE SWITCH, NORMALLY CLOSED, OPENS ON RISING PRESSURE
	PRESSURE SWITCH, NORMALLY OPEN, CLOSES ON RISING PRESSURE
	FLOW SWITCH, CLOSES ON INCREASED FLOW
	FLOW SWITCH, OPENS ON INCREASED FLOW

NOTES:

1. THESE ARE STANDARD LEGEND SHEETS. SOME SYMBOLS AND ABBREVIATIONS MAY APPEAR ON THE LEGEND AND NOT ON THE DRAWINGS.
2. FOR ADDITIONAL ABBREVIATIONS OF OTHER DIVISIONS (HVAC, MECHANICAL, AND STRUCTURAL/ARCHITECTURAL) SEE OTHER LEGENDS.

POWER SYSTEM PLAN-1

SYMBOL	DESCRIPTION
	CONNECTION POINT TO EQUIPMENT SPECIFIED. RACEWAY, CONDUCTOR,TERMINATION AND CONNECTION IN THIS DIVISION.
M	MOTOR, SQUIRREL CAGE INDUCTION
G	GENERATOR, VOLTAGE AND SIZE AS INDICATED.
LPXXA	HOME RUN - DESTINATION SHOWN

NOTE:
ALL UNMARKED CONDUIT RUNS CONSIST OF TWO NO. 12, ONE NO. 12 GROUND CONDUCTORS IN 3/4" CONDUIT.

SYMBOL	DESCRIPTION
	LIQUID TIGHT FLEXIBLE METALLIC CONDUIT
[A1]	CONDUIT AND CONDUCTOR CALLOUT, SEE CIRCUIT SCHEDULE
	CONDUIT DOWN
	CONDUIT UP
	CONDUIT, STUBBED AND CAPPED
	CONDUIT, ROUTED EXPOSED
	U/G CONCRETE ENCASED DUCTBANK, OR CONDUITS EMBEDDED IN CONCRETE
UE	ONCOR U/G CIRCUITS
E-OVH	ONCOR OVERHEAD LINES
DB	DIRECT BURIED CONDUIT
FO	FIBER OPTIC CONDUIT
	CONDUIT SEAL-OFF FITTING (FOR CLASS I DIV 2 LOCATION)
T	TRANSFORMER
HH	UNDERGROUND HANDHOLE
J	PULLBOX, OR JUNCTION BOX WITH TERMINAL BLOCKS
CS	CONTROL STATION, SEE CONTROL DIAGRAMS FOR CONTROL DEVICE(S) REQUIRED.
30	NONFUSED DISCONNECT SWITCH, CURRENT RATING INDICATED, 3 POLE
60/40	FUSED DISCONNECT SWITCH, CURRENT RATING INDICATED (60/40, 60=SWITCH RATING / 40=FUSE RATING) 3 POLE
2	COMBINATION CIRCUIT BREAKER AND MAGNETIC STARTER, NEMA SIZE INDICATED
G	UNDERGROUND TIN-PLATED BARE COPPER CONDUCTOR
	THERMO-WELD (TAP TO GROUND GRID)
	GROUND ROD
	GROUND TEST WELL
	GROUND PIGTAIL, COIL UP MINIMUM 12'-0"

BLAIR I. BEADERSTADT 32520 OKLAHOMA LICENSED PROFESSIONAL ENGINEER
3/17/2022

GENERAL
ELECTRICAL
LEGEND - 1

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PLAN SCALE: AS NOTED ON PLANS
PROFILE SCALE:
HORIZONTAL:
VERTICAL

DRAWN	CM	MAR 2022
DESIGNED	BB	MAR 2022
SURVEY		
FIELD MGR.		
SECT. MGR.		
PROJ. MGR.		
RECOMMENDED: DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: 01-G-011
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 10 OF 76 SHEETS

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

FILENAME: C3-01-G-011_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 12:45:36 PM

POWER SYSTEM PLAN-2

PB — PULL BOX, SIZE AS REQUIRED

TB — TERMINAL BOX, WITH WIRE TERMINALS

100/40 — BREAKER, SEPARATELY MOUNTED, CURRENT RATING INDICATED
(100/40, 100 = FRAME SIZE; 40 = TRIP RATING)
3 POLE

XX — CONVENIENCE RECEPTACLE - DUPLEX UNLESS NOTED OTHERWISE
XP - EXPLOSION PROOF
WP - WEATHERPROOF
GFCI - GROUND FAULT CIRCUIT INTERRUPTER
SUBSCRIPT NUMBER AT RECEPTACLE INDICATES CIRCUIT

L20R 20 — RECEPTACLE, SPECIAL PURPOSE-NEMA CONFIGURATION AND AMPERAGE INDICATED

T — THERMOSTAT

UTILITY REVENUE METERING FACILITY

EUH — ELECTRIC UNIT HEATER

AC — ELECTRIC AIR CONDITIONER (SELF CONTAINED UNIT)

UTILITY POLE

FADED LINES REPRESENT EXISTING WORK

DARK LINES REPRESENT NEW WORK

LIGHTING SYSTEM PLAN

LUMINAIRE, SEE SCHEDULE

LUMINAIRE, SEE SCHEDULE

LUMINAIRE WITH INTERNAL BATTERY BACKUP, SEE SCHEDULE

LUMINAIRE AND POLE, SEE SCHEDULE

WALL MOUNTED LUMINAIRE, SEE SCHEDULE

STANDBY LIGHTING UNIT, SURFACE MOUNTED, SEE SCHEDULE

XX or XX — EXIT LIGHTS - FILLED SECTION INDICATES LIGHTED FACE, ARROW INDICATES EGRESS DIRECTIONAL INDICATORS, XX = FIXTURE NUMBER, SEE SCHEDULE

$a or 2a — SMALL LETTER SUBSCRIPT AT SWITCH AND LUMINAIRE INDICATES SWITCHING. SUBSCRIPT NUMBER AT LUMINAIRE INDICATES CIRCUIT

$3 — WALL SWITCH:

2-	DOUBLE POLE	P-	PILOT LIGHT
3-	THREE WAY	K-	KEY OPERATED
4-	FOUR WAY	D-	DIMMER
WP-	WEATHERPROOF	CRE-	CORROSION RESISTANT
XP-	EXPLOSIONPROOF	L-	MOMENTARY 3-WAY
M-	MOTOR RATED	MS-	MANUAL STARTER WITH OVERLOADS

PC — PHOTOCELL

POWER SYSTEM PLAN-3

PULLBOX DESIGNATION

PB-X (DI, AN, FO, LV)

- LOW VOLTAGE CIRCUITS (480V, 120V)
- FIBER OPTIC CABLE
- ANALOG SIGNALS
- DISCRETE SIGNALS
- SEQUENTIAL NUMBER (1, 1A, 2, 2A ...)
- TYPE OF EQUIPMENT: PB - NEMA 3R STAINLESS STEEL CABLE PULLBOX

CIRCUIT SCHEDULE

NOTE:
CONDUIT SIZES SHOWN ARE FOR EXPOSED CONDUITS.
MINIMUM SIZE OF UNDERGROUND CONDUIT SHALL BE 2 INCHES.

CIRCUIT SCHEDULE
POWER: 1Phase, 2Wire

CKT ID	CKT AMPS	CONDUIT AND CONDUCTOR SIZE
PA1	15	3/4"C, 2#14, 1#14G
PA2	20	3/4"C, 2#12, 1#12G
PA3	30	3/4"C, 2#10, 1#10G
PA4	40	3/4"C, 2#8, 1#10G
PA5	50	1"C, 2#6, 1#10G
PA6	60	1"C, 2#4, 1#10G
PA7	70	1"C, 2#4, 1#8G
PA8	80	1"C, 2#3, 1#8G
PA9	90	1"C, 2#2, 1#8G
PA10	100	1"C, 2#2, 1#8G
PA12	125	1 1/2"C, 2#1, 1#6G
PA15	150	1 1/2"C, 2#1/0, 1#6G
PA20	200	1 1/2"C, 2#3/0, 1#6G
PA22	225	2"C, 2#4/0, 1#4G

CIRCUIT SCHEDULE
POWER: 1Phase, 3Wire or 3Phase, 3Wire

CKT ID	CKT AMPS	CONDUIT AND CONDUCTOR SIZE
PB1	15	3/4"C, 3#14, 1#14G
PB2	20	3/4"C, 3#12, 1#12G
PB3	30	3/4"C, 3#10, 1#10G
PB4	40	3/4"C, 3#8, 1#10G
PB5	50	3/4"C, 3#6, 1#10G
PB6	60	1"C, 3#4, 1#10G
PB7	70	1"C, 3#4, 1#8G
PB8	80	1 1/2"C, 3#3, 1#8G
PB9	90	1 1/2"C, 3#2, 1#8G
PB10	100	1 1/2"C, 3#2, 1#8G
PB12	125	1 1/2"C, 3#1, 1#6G
PB15	150	1 1/2"C, 3#1/0, 1#6G
PB17	175	2"C, 3#2/0, 1#6G
PB20	200	2"C, 3#3/0, 1#6G
PB22	225	2"C, 3#4/0, 1#4G
PB25	250	2 1/2"C, 3#250KCM, 1#4G
PB30	300	3"C, 3#350KCM, 1#4G
PB35	350	4"C, 3#500KCM, 1#3G
PB40	400	2 SETS: 2"C, 3#3/0, 1#3G
PB45	450	2 SETS: 2"C, 3#4/0, 1#2G
PB50	500	2 SETS: 2 1/2"C, 3#250KCM, 1#2G
PB60	600	2 SETS: 3"C, 3#350KCM, 1#1G
PB80	800	2 SETS: 4"C, 3#500KCM, 1#1/0G
PB100	1000	3 SETS: 3"C, 3#500KCM, 1#2/0G

CIRCUIT SCHEDULE
POWER: 3Phase, 4Wire

CKT ID	CKT AMPS	CONDUIT AND CONDUCTOR SIZE
PC1	15	3/4"C, 4#14, 1#14G
PC2	20	3/4"C, 4#12, 1#12G
PC3	30	3/4"C, 4#10, 1#10G
PC4	40	3/4"C, 4#8, 1#10G
PC5	50	1"C, 4#6, 1#10G
PC6	60	1 1/4"C, 4#4, 1#10G
PC7	70	1 1/4"C, 4#4, 1#8G
PC8	80	1 1/4"C, 4#3, 1#8G
PC9	90	1 1/2"C, 4#2, 1#8G
PC10	100	1 1/2"C, 4#2, 1#8G
PC12	125	1 1/2"C, 4#1, 1#6G
PC15	150	2"C, 4#1/0, 1#6G
PC20	200	2"C, 4#3/0, 1#6G
PC22	225	2 1/2"C, 4#4/0, 1#4G
PC25	250	2 1/2"C, 4#250KCM, 1#4G
PC30	300	3"C, 4#350KCM, 1#4G
PC35	350	3 1/2"C, 4#500KCM, 1#3G
PC40	400	4"C, 4#500KCM, 1#2G
PC50	500	2 SETS: 2 1/2"C, 4#250KCM, 1#2G
PC60	600	2 SETS: 3"C, 4#350KCM, 1#1G
PC80	800	2 SETS: 4"C, 4#500KCM, 1#1/0G
PC100	1000	3 SETS: 4"C, 4#500KCM, 1#2/0G
PC120	1200	4 SETS: 4"C, 4#500KCM, 1#3/0G
PC160	1600	5 SETS: 4"C, 4#500KCM, 1#4/0G
PC200	2000	6 SETS: 4"C, 4#500KCM, 1#250KCM G
PC250	2500	6 SETS: 4"C, 4#750KCM, 1#350KCM G
PC300	3000	8 SETS: 4"C, 4#500KCM, 1#400KCM G

CONTROL: DISCRETE (TYPE 1 CABLE)

CKT ID	CONDUIT AND CONDUCTOR SIZE (SINGLE OR MULTIPLE CONDUCTOR)
C1	1"C (MIN), WITH MSC (SEE NOTE 1)
C2	3/4"C, 2#14, 1#14G
C3	3/4"C, 3#14, 1#14G
C4	3/4"C, 4#14, 1#14G
C5	3/4"C, 5#14, 1#14G
C6	3/4"C, 6#14, 1#14G
C7	1"C, 7#14, 1#14G
C8	1"C, 8#14, 1#14G
C10	1"C, 10#14, 1#14G
C12	1"C, 12#14, 1#14G
C14	1"C, 14#14, 1#14G
C16	1 1/2"C, 16#14, 1#14G
C18	1 1/2"C, 18#14, 1#14G
C20	1 1/2"C, 20#14, 1#14G
C24	1 1/2"C, 24#14, 1#14G
C28	1 1/2"C, 28#14, 1#14G
C32	1 1/2"C, 32#14, 1#14G
C34	2"C, 34#14, 1#14G
C36	2"C, 36#14, 1#14G
C38	2"C, 38#14, 1#14G
C40	2"C, 40#14, 1#14G
C42	3"C, 42#14, 1#14G
C48	3"C, 48#14, 1#14G

CIRCUIT SCHEDULE
CONTROL: ANALOG

CKT ID	CONDUIT AND CONDUCTOR SIZE
A1	3/4"C, 1 TYPE 3
A2	1"C, 2 TYPE 3
A3	1"C, 3 TYPE 3
A4	1"C, 4 TYPE 3
A5	1"C, 5 TYPE 3
A6	1 1/4"C, 6 TYPE 3
A7	1 1/4"C, 7 TYPE 3
A8	1 1/2"C, 8 TYPE 3
A9	1 1/2"C, 9 TYPE 3
A10	1 1/2"C, 10 TYPE 3
A11	1 1/2"C, 11 TYPE 3
A12	2"C 12 TYPE 3
A15	2"C 15 TYPE 3
A16	2"C 16 TYPE 3
A17	2"C 17 TYPE 3
A20	2"C, 20 TYPE 3
A21	2 1/2"C, 21 TYPE 3
A22	2 1/2"C, 22 TYPE 3
A24	3"C, 24 TYPE 3

CIRCUIT SCHEDULE
POWER: ADJUSTABLE FREQUENCY DRIVES (TYPE 8 CABLE)

CKT ID	HORSE POWER	CONDUIT AND CONDUCTOR SIZE
AFD1	30	3/C #12 W/G-SHD
AFD2	60	2"C, 3/C #1 W/G-SHD
AFD3	75	3"C, 3/C #2/0 W/G-SHD
AFD4	100	3"C, 3/C #3/0 W/G-SHD
AFD5	125	4"C, 3/C #250kCMIL W/G-SHD

CIRCUIT SCHEDULE
CONTROL: CAT-6+ (TYPE 30 CABLE)

CKT ID	CONDUIT AND CONDUCTOR SIZE
CAT1	3/4"C, 1 TYPE 30
CAT2	3/4"C, 2 TYPE 30
CAT3	1"C, 3 TYPE 30
CAT4	1"C, 4 TYPE 30
CAT5	1"C, 5 TYPE 30

CIRCUIT SCHEDULE
FIBER OPTIC CABLE (SEE SPEC)

CKT ID	CONDUIT AND CONDUCTOR SIZE
F0	2"C, 12-PAIR FIBER OPTIC CABLE, 0.49" OD
F1	2"C, 6-PAIR FIBER OPTIC CABLE, 0.49" OD
F2	2"C, 2[6-PAIR FIBER OPTIC CABLE, 0.49" OD]
F3	2"C, 3[6-PAIR FIBER OPTIC CABLE, 0.49" OD]

GENERAL NOTES:

1. MSC = MANUFACTURER SUPPLIED CABLE. CONTRACTOR SHALL ENSURE SUFFICIENT LENGTH OF CABLE IS FURNISHED PRIOR TO CABLE INSTALLATION. SUFFICIENT LENGTH SHALL BE DEFINED AS WHAT IS REQUIRED TO INSTALL THE CABLE BETWEEN THE DEVICES PLUS 50 FEET OF EXTRA CABLE. CONTRACTOR SHALL COIL UP AND LOCATE THE EXTRA LENGTH OF CABLE IN HANDHOLE OR NEMA 4X STAINLESS STEEL PULLBOX, AS APPLICABLE. SPLICING OF CABLE IS STRICTLY PROHIBITED. MINIMUM SIZE OF CONDUIT AS INDICATED ON DRAWINGS. CONTRACTOR SHALL BE REQUIRED TO FURNISH LARGER SIZE CONDUIT IN ORDER TO INSTALL THE MSC.
2. ALL CONDUITS SHOWN ARE SIZED BASED ON CIRCUIT CONDUCTORS BEING IN A SINGLE EXPOSED CONDUIT. IF SUCH CIRCUIT CONDUCTORS ARE ROUTED IN UNDERGROUND CONDUIT DUCTBANK, SEE THE ASSOCIATED CONDUIT DUCTBANK DETAILS FOR SIZE OF CONDUIT WITH SAID CIRCUIT CONDUCTORS.

LICENSED PROFESSIONAL ENGINEER — BLAIR I. BEADERSTADT — 32520 — OKLAHOMA
3/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

GENERAL
ELECTRICAL
LEGEND - 2

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	CM	MAR 2022	APPROVED:
	DESIGNED	BB	MAR 2022	
	SURVEY			
PROFILE SCALE:	FIELD MGR.			
HORIZONTAL:	SECT. MGR.			
	PROJ. MGR.			
VERTICAL	RECOMMENDED:			
	DESIGN MANAGER			CITY ENGINEER
FILE: 01-G-012			DATE: MARCH 2022	
ATLAS PAGE NO: 543			SHEET 11 OF 76 SHEETS	

FILENAME: C3-01-G-012_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 12:45:35 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

INSTRUMENT IDENTIFICATION

DIGITAL SYSTEM INTERFACES

- ▲ ANALOG INPUT
- ▼ ANALOG OUTPUT
- $\triangle_X$ DISCRETE INPUT
- ∇_X DISCRETE OUTPUT

GENERAL INSTRUMENT OR FUNCTIONAL SYMBOLS

- FIELD MOUNTED
- REAR-OF-PANEL MOUNTED (OPERATOR INACCESSIBLE)
- PANEL MOUNTED (OPERATOR ACCESSIBLE)
- MCC MOUNTED
- COMPUTER FUNCTION
- PLC FUNCTION
- SHARED DISPLAY, SHARED CONTROL

TRANSDUCERS

A	ANALOG	I	CURRENT
D	DIGITAL	P	PNEUMATIC
E	VOLTAGE	PF	PULSE FREQUENCY
F	FREQUENCY	PD	PULSE DURATION
H	HYDRAULIC	R	RESISTANCE

EXAMPLE

CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

ACCESSORY DEVICES

A	ALARM	T	TRANSMITTER
C	CONTROLLER	X	UNCLASSIFIED
I	INDICATOR		
R	RECORDER	EXAMPLE	
S	SWITCH		

TRANSMITTER AS AN ACCESSORY TO A FLOW ELEMENT

SURGE SUPPRESSOR SYMBOLS

SEE SPECIFICATION SECTION 40 90 01 INSTRUMENTATION AND CONTROL FOR PROCESS SYSTEMS FOR TAG NUMBER REQUIREMENTS.

- SS-1 SURGE SUPPRESSOR: PROTECTS 120VAC, SINGLE PHASE POWER IN CONTROL PANELS
- SS-2 SURGE SUPPRESSOR: PROTECTS ANALOG SIGNALS WITHIN CONTROL PANELS
- SS-3 SURGE SUPPRESSOR: PROTECTS ANALOG SIGNAL OF 2-WIRE TRANSMITTERS
- SS-4 SURGE SUPPRESSOR: PROTECTS BOTH ANALOG SIGNAL AND 120VAC POWER OF SINGLE AND DUAL CHANNEL 4-WIRE TRANSMITTER
- SS-5 SURGE SUPPRESSOR: PROTECTS CATEGORY 5/5e/6 ETHERNET SIGNALS WITHIN CONTROL PANELS
- SS-6 SURGE SUPPRESSOR: PROTECTS MODBUS DATA NETWORK SIGNALS IN CONTROL PANELS
- SS-7 SURGE SUPPRESSOR: PROTECTS HART DATA NETWORK SIGNALS IN CONTROL PANELS

INSTRUMENT IDENTIFICATION LETTERS TABLE

LETTER	FIRST-LETTER: PROCESS OR INITIATING VARIABLE	FIRST-LETTER: MODIFIER	SUCCEEDING-LETTERS: READOUT OR PASSIVE FUNCTION	SUCCEEDING-LETTERS: READOUT OR PASSIVE FUNCTION	SUCCEEDING-LETTERS: READOUT OR PASSIVE FUNCTION
A	ANALYSIS (+)		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
C	USER'S CHOICE (*)			CONTROL	CLOSE
D	USER'S CHOICE (*)	DIFFERENCE, DIFFERENTIAL			DEVIATION
E	VOLTAGE		SENSOR, PRIMARY ELEMENT		
F	FLOW, FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE (*)		GLASS, GAUGE, VIEWING DEVICE	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER		SCAN		
K	TIME, SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	USER'S CHOICE (*)	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE (*)		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
O	USER'S CHOICE (*)		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE, TOTALIZE	INTEGRATE, TOTALIZE		
R	RADIATION		RECORD OR PRINT		RUN
S	SPEED, FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTI VARIABLE		MULTI FUNCTION	MULTI FUNCTION	
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL, PROBE		
X	UNCLASSIFIED (*)	X AXIS	ACCESSORY DEVICES, UNCLASSIFIED (*)	UNCLASSIFIED (*)	UNCLASSIFIED (*)
Y	EVENT, STATE OR PRESENCE	Y AXIS		AUXILLARY DEVICES	
Z	POSITION, DIMENSION	Z AXIS, SAFETY INSTRUMENTED SYSTEM		DRIVE, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

TABLE BASED ON THE INTERNATIONAL SOCIETY OF AUTOMATION (ISA) STANDARD.
(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.
(*) WHEN USED, DEFINE THE MEANING HERE FOR THE PROJECT.

SPECIAL CASES

STOP-START HAND SWITCH MOMENTARY CONTACT SWITCHES (CONTROLLED DEVICE WILL NOT RESTART ON RETURN OF POWER AFTER POWER FAILURE)

ON-OFF HAND SWITCH, MAINTAINED CONTACT SWITCH (CONTROLLED DEVICE WILL RESTART ON RETURN OF POWER AFTER POWER FAILURE)

(SEE BELOW)

EVENT LIGHTS (SEE BELOW)

YY:
WP - WEATHERPROOF
XP - EXPLOSION-PROOF

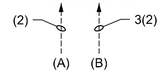
XXX:

CLOSE	- VALVE COMMANDED TO "CLOSE"
CONTROL POWER	- INDICATES CONTROL POWER TO THE CONTROL PANEL
ED	- 'E-STOP' DEPRESSED
E-STOP	- EMERGENCY STOP; MAINTAINED-CONTACT, TWIST-TO-RELEASE MUSHROOM HEAD PUSH BUTTON
FAULT	- INDICATES AN EQUIPMENT FAULT
FOR	- FORWARD-OFF-REVERSE, MAINTAINED-CONTACT IN "FORWARD" AND "OFF" POSITION; SPRING-RETURN TO CENTER IN "REVERSE" POSITION, THREE-POSITION SELECTOR SWITCH
HI TEMP	- HIGH TEMPERATURE
HT	- HIGH TORQUE
IA	- IN AUTO STATUS
LEAK	- "LEAK" DETECTION
LHH	- "HIGH HIGH LEVEL"
LLL	- "LOW LOW LEVEL"
LOR	- LOCAL-OFF-REMOTE, MAINTAINED-CONTACT, THREE-POSITION SELECTOR SWITCH
MA	- MANUAL/AUTO
MOA	- "MANUALLY INITIATE-OFF-AUTO," MAINTAINED CONTACT, THREE-POSITION SELECTOR SWITCH
OCA	- OPEN-CLOSE-AUTO, MAINTAINED-CONTACT, THREE-POSITION SELECTOR SWITCH
OIU	- OPERATOR INTERFACE UNIT
OL	- OVERLOAD TRIPPED
OPEN	- VALVE COMMANDED TO "OPEN"
OR	- OFF-RUN, MAINTAINED-CONTACT, TWO-POSITION SELECTOR SWITCH RUNNING
OSH	- SEAL LEAK
PH	- "HIGH PRESSURE"
PL	- "LOW PRESSURE"
POT	- POTENTIOMETER
PWR	- "UTILITY POWER OK"
SEAL FAIL	- SEAL FAILURE
SILENCE	- ALARM SILENCE
STOPPED	- STOPPED
RD	- RECYCLE DISCHARGE
RESET	- ALARM / EQUIPMENT RESET
ROA	- RUN-OFF-AUTO, MAINTAINED-CONTACT, THREE-POSITION SELECTOR SWITCH
ROR	- RUN-OFF-REMOTE, MAINTAINED-CONTACT, THREE-POSITION SELECTOR SWITCH
RUN	- "RUNNING'

LINE LEGEND

- PRIMARY PROCESS (CLOSED CONDUIT, DASHED LINE INDICATES ALTERNATE FLOW STREAM)
- SECONDARY PROCESS
- BYPASS PROCESS
- PROCESS (OPEN CHANNEL)
- ANALOG SIGNAL (4 TO 20 mAdc, ETC.)
- DISCRETE (ON/OFF, ETC.)
- PNEUMATIC SIGNAL
- FILLED SYSTEM SIGNAL
- HYDRAULIC SYSTEM SIGNAL
- DATA LINK
- BUILDING OR FACILITY BOUNDARY
- PACKAGE SYSTEM EQUIPMENT
- TYPICAL BREAK
- POWER FEED
- MANUFACTURER SUPPLIED CABLE
- ETHERNET
- HEAT TRACE

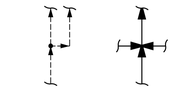
PARALLELING LINES



(A) TOTAL OF 2 SIGNALS

(B) 3 TYPICAL SETS OF 2 SIGNALS EACH. TOTAL OF 6 SIGNALS.

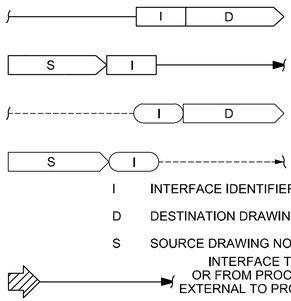
CONNECTING LINES



NON-CONNECTING LINES

CONTINUATION MATCHPOINT EXAMPLES (ON SAME DWG):

INTERFACE SYMBOLS



EQUIPMENT TAG NUMBERS

SEE SPECIFICATION SECTION 40 90 01 INSTRUMENTATION AND CONTROL FOR PROCESS SYSTEMS FOR TAG NUMBER REQUIREMENTS.

EACH EQUIPMENT IS UNIQUELY IDENTIFIED BY A TAG STRUCTURED AS

P&ID TAG	PLANT ACRONYMS	-	AREA NAMES	-	SUB AREA NAME	-	EQUIPMENT/ DEVICE NAME	-	EQUIPMENT/ DEVICE TAG
TYPE	ALPHABETIC		ALPHABETIC		ALPHA NUMERIC		ALPHABETIC		ALPHA NUMERIC

WHERE
- PLANT ACRONYM
- AREA NAME
- SUB AREA NAME

ABJ	: AB JEWELL
CLAR	: CLARIFIER
CLAR02	: CLARIFIER 02
CLAR03	: CLARIFIER 03
SLG	: SLUDGE COLLECTION UNIT

AND EQUIPMENT/DEVICE NAME AND TAG ARE ASSOCIATED WITH LOCAL EQUIPMENT TYPE AND SERIAL IDENTIFICATION.

DEVICE	DESCRIPTION
LVL	LEVEL
PMP	PUMP
RECIR PUMP	RECIRCULATION PUMP
XPUMP	TRANSFER PUMP
MXR	MIXER
FLOC	FLOCCULATOR
FLW	FLOW
TNK	TANK
FEEDER	CHEMICAL FEED PUMP
TEMP	TEMPERATURE

DEVICE	DESCRIPTION
MTR	MOTOR
BRNG	BEARING
WINDG	WINDING
pH	pH
VLV	VALVE
INFL	INFLUENT
EFFL	EFFLUENT

ABBREVIATIONS & LETTER SYMBOLS

AC	ALTERNATING CURRENT
AM	AUTO-MANUAL
CAM	COMPUTER-AUTO-MANUAL
CCS	CENTRAL CONTROL SYSTEM
CL_2 etc.	CHLORINE (TYPICAL: USE STANDARD CHEMICAL ELEMENT ABBREVIATIONS)
CM	COMPUTER-MANUAL
COD	CHEMICAL OXYGEN DEMAND
CP-X	CONTROL PANEL NO. X
DAF	DISSOLVED AIR FLOTATION
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DCU	DISTRIBUTED CONTROL UNIT
DO	DISSOLVED OXYGEN
FCL_2	FREE CHLORINE RESIDUAL
F	FAULT
FC	FULLY CLOSED
FLP	FAIL LAST POSITION
FO	FULLY OPENED
FOS	FAST-OFF-SLOW
FOSA	FAST-OFF-SLOW-AUTO
FOSR	FAST-OFF-SLOW-REMOTE
FP-W-X	FIELD PANEL NO. WX \ (W=UNIT PROCESS NUMBER, X=PANEL NUMBER)
FR	FORWARD-REVERSE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
ISR	INTRINSICALLY SAFE RELAY
LEL	LOWER EXPLOSIVE LIMIT
LOR	LOCAL-OFF-REMOTE
LOS	LOCKOUT STOP
LR	LOCAL-REMOTE
MA	MANUAL-AUTO
MC	MODULATE-CLOSE
MCC-X	MOTOR CONTROL CENTER NO. X
MS	MOTOR STARTER
MSC	MANUFACTURER SUPPLIED CABLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OC	OPEN-CLOSE (SPRING-RETURN TO CENTER)
OCA	OPEN-CLOSE-AUTO
OCR	OPEN-CLOSE-REMOTE
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
ORP	OXIDATION REDUCTION POTENTIAL
OSC	OPEN-STOP-CLOSE
PDN	PULSATION DAMPENER
PE	PUMP ENABLE
PFU	POLYMER FEED UNIT
pH	HYDROGEN ION CONCENTRATION
PLC	PROGRAMMABLE LOGIC CONTROLLER
PMA	PUMP MONITORING ASSEMBLY
PMP	PUMP
PSPS	PRIMARY SLUDGE PUMP STATION
PTZ	PAN, TILT, ZOOM
PROC	PROCESS MECHANICAL
PWR	POWER
R	RUNNING
RD	RECYCLE/DISCHARGE
RIO	REMOTE I/O UNIT
RM-X	REMOTE MULTIPLEXING MODULE NO. X
RTU-X	REMOTE TELEMETRY UNIT NO. X
S	STOPPED
SA	SCADA AUTO MODE
SDC	SOLID STATE CONTROL DEVICE (A.K.A. PLC)
SF	SLOWER-FASTER
SM	SCUM PUMP
SP	STOP
SS	START-STOP
SSPS	SECONDARY SLUDGE PUMP STATION
ST	START
SSC	SUPERVISORY SET POINT CONTROL
TCL_2	TOTAL CHLORINE RESIDUAL
TOC	TOTAL ORGANIC CARBON
TOD	TOTAL OXYGEN DEMAND
TSP	TWISTED, SHIELDED PAIR
TURB	TURBIDITY
UP	UNIT PROCESS
UVI	ULTRAVIOLET INTENSITY
UVT	ULTRAVIOLET TRANS
VHC	VOLATILE HYDROCARBONS
VIB	VIBRATION
VLV	VALVE
WIP	WIPER
WP	WEATHER PROOF
XP	EXPLOSION PROOF
Δ	DIFFERENCE
Σ	SUM
×	MULTIPLY
÷	DIVIDE
F(X)	CHARACTERIZED
X^n	RAISED TO THE Nth POWER
$\sqrt{\ }$	SQUARE ROOT
AVG	AVERAGE
1:1	REPEAT OR BOOST
>	SELECT HIGHEST SIGNAL
<	SELECT LOWEST SIGNAL

GENERAL NOTES

1. COMPONENTS AND PANELS SHOWN WITH A SINGLE ASTERISK (∗) ARE TO BE PROVIDED AS PART OF A PACKAGE SYSTEM.
2. COMPONENTS AND PANELS SHOWN WITH A DIAMOND (◆) ARE TO BE PROVIDED UNDER DIVISION 26, ELECTRICAL.
3. THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THE PROJECT.
4. RETAG ANY EXISTING MODIFIED EQUIPMENT WITH THE NEW TAG NUMBERS AS INDICATED WITHIN THESE CONTRACT DOCUMENTS.

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

GENERAL
INSTRUMENTATION AND CONTROL LEGEND - 1

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	JB	APPROVED:
	DESIGNED	LG	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER

FILE: 01-G-013 DATE: MARCH 2022
ATLAS PAGE NO: 543 SHEET 12 OF 76 SHEETS

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

FILENAME: C3-01-G-013_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:02 PM

VALVE SYMBOLS

GATE
KNIFE GATE
BUTTERFLY
GLOBE
BALL
V
VEE-BALL
PLUG
SEAT PORT ECCENTRIC PLUG
DIAPHRAGM
KNIFE
PINCH
NEEDLE
SWING CHECK
BALL CHECK
BACKFLOW PREVENTER
ROTARY
TELESCOPE
S
SAMPLE
MUD
PRESSURE RELIEF
AIR AND/OR VACUUM RELEASE
REGULATED SIDE PRESSURE CONTROL
PRESSURE REGULATION (CLAY-TYPE)
MULTI-PORT VALVE (GATE VALVE SHOWN. FOR OTHER VALVE TYPES, APPROPRIATE VALVE SYMBOL SHOWN.) SEAT PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
ANGLE GATE

GATE SYMBOLS

FULL APERTURE SEALING SLIDE GATE
FABRICATED SLIDE GATE
STOP LOG
WEIR GATE
BUTTERFLY
FLAP
SHEAR

ACTUATOR SYMBOLS

PNEUMATIC DIAPHRAGM SPRING-OPPOSED, SINGLE OR DOUBLE ACTING
VALVE POSITIONER
MANUAL
PNEUMATIC CYLINDER SINGLE OR DOUBLE ACTING ACTUATED BY ONE INPUT
H
HYDRAULIC
M
ELECTRIC MOTOR
DIAPHRAGM, DIFFERENTIAL PRESSURE
S
SOLENOID
E/H
ELECTROHYDRAULIC

NOTE:
ON LOSS OF PRIMARY POWER (PNEUMATIC, ELECTRICAL, OR HYDRAULIC)

XX: FO FAIL OPEN
FC FAIL CLOSED
FLP FAIL TO LAST POSITION

PRIMARY ELEMENT SYMBOLS

PARSHALL FLUME
PROPELLER OR TURBINE METER
WEIR
THERMAL FLOWMETER
ORIFICE PLATE
LEVEL (BUBBLER TUBE)
FLOW TUBE
PITOT-STATIC
VORTEX METER
ULTRASONIC FLOWMETER
M
ELECTROMAGNETIC FLOWMETER
LS
LEVEL (FLOAT)
FI
ROTAMETER
DE
DENSITY METER
XX
GENERIC
LE
ULTRASONIC LEVEL
LE/LIT
2-WIRE, 78 GHz RADAR LEVEL
LE
ULTRASONIC FLOW, BASED ON LEVEL MEASDUREMENT

MISCELLANEOUS SYMBOLS

V
VENT TO ATMOSPHERE
AIR GAP
T
DRIP TRAP
PIG INSERT POINT
PIG CATCH POINT
A
SELF CONTAINED AIR SUPPLY
AP
AIR PURGE SET
F
FLUSHING CONNECTION
S
SEAL WATER SET
WP
WATER PURGE SET
FLEXIBLE CONNECTION
AERATOR
DIAPHRAGM SEAL
ANNULAR DIAPHRAGM SEAL
SS
COMPOSITE SAMPLER
FLAME TRAP
CALIBRATION COLUMN
S
INLINE SILENCER
BLIND FLANGE
PIPE CAP
STRAINER
BASKET STRAINER
FILTER
PULSATION DAMPENER
EXPANSION CHAMBER
INLINE PUMP RUN DRY DETECTOR
SEAL-OFF FITTING

FFLCPLLLX
PANEL CONTINUED ON SAME OR OTHER DRAWING
PANEL OUTLINE
PANEL NAME
120V
120 VOLT, 60 HZ POWER
480V
480 VOLT, 60 HZ POWER
XX
AIR SET XX = SUPPLY PRESSURE IN PSIG.
PLUG
RECEPTACLE
RUPTURE DISK (VACUUM)
RUPTURE DISK (PRESSURE)
TV
TV MONITOR
TV
TV CAMERA
A B AND C
LOGIC ELEMENT: IF A AND NOT B THEN C
A B OR C
LOGIC ELEMENT: IF A OR B THEN C
RADIO ANTENNA
XX I
OR I
INTERLOCK, SEE CONTROL DIAGRAMS

XX: IR INTERPOSING RELAY
ISB INTRINSIC SAFETY BARRIER
ISR INTRINSICALLY SAFE RELAY
DLRI DUAL-LOOP REPEATER ISOLATOR
MS MOTOR STARTER
TLRI TRI-LOOP REPEATER ISOLATOR

VOICE COMMUNICATION POINT
SKIMMING MECHANISM
SCREW CONVEYOR
MIXER
ELECTRIC MOTOR
OA
ODOR CONTROL NOZZLE
GOODSENECK VENT (ALSO AIR INLET)

PUMP AND COMPRESSOR SYMBOLS

XX
CENTRIFUGAL PUMP (DRY PIT)
PROGESSING CAVITY PUMP
PISTON PUMP
CENTRIFUGAL WET PIT PUMP OR TURBINE PUMP
COMPRESSOR (CENTRIFUGAL)
SUBMERSIBLE SUMP PUMP
RECIPROCATING OR METERING PUMP (POSITIVE DISPLACEMENT)
COMPRESSOR (PISTON)
ROTARY PUMP
DIAPHRAGM PUMP
BLOWER OR FAN (CENTRIFUGAL)
VACUUM PUMP
GEAR PUMP OR BLOWER (POSITIVE DISPLACEMENT)
EJECTOR
SCREW PUMP

XX: AS - ADJUSTABLE SPEED
CS-1 - CONSTANT SPEED (SINGLE SPEED)
CS-2 - CONSTANT SPEED (TWO SPEED)
CS-FR - CONSTANT SPEED (SINGLE SPEED) REVERSING MOTOR

LINE SIZE AND FLOW STREAM IDENTIFICATION

18" NPW
PIPE DIAMETER IN INCHES
FLOW STREAM IDENTIFICATION

FLOW STREAM IDENTIFICATION

ACH	ALUMINUM CHLOROHYDRATE
CAP	COAGULANT AND POLYMER
CLO2	CHLORINE DIOXIDE
CS	CHLORINE SOLUTION
CW	CLARIFIED WATER
D	DRAIN (SANITARY)
DR	DRAIN (PROCESS)
FE	FILTER EFFLUENT
FI	FILTER INFLUENT
NA	SODIUM HYDROXIDE
NH3	AMMONIA
PAC	POLYALUMINUM CHLORIDE
PLE	PLANT EFFLUENT
RCY	RECYCLE
RW	RAW WATER
SA	SAMPLE
SL	SLUDGE
W1	POTABLE WATER
W2	NON-POTABLE WATER

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER
RICARDO J. VILLALOBOS
32159
OKLAHOMA
3/17/22

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

GENERAL
INSTRUMENTATION AND CONTROL
LEGEND - 2

PROJECT NO. TMUA-W 18-19 C2

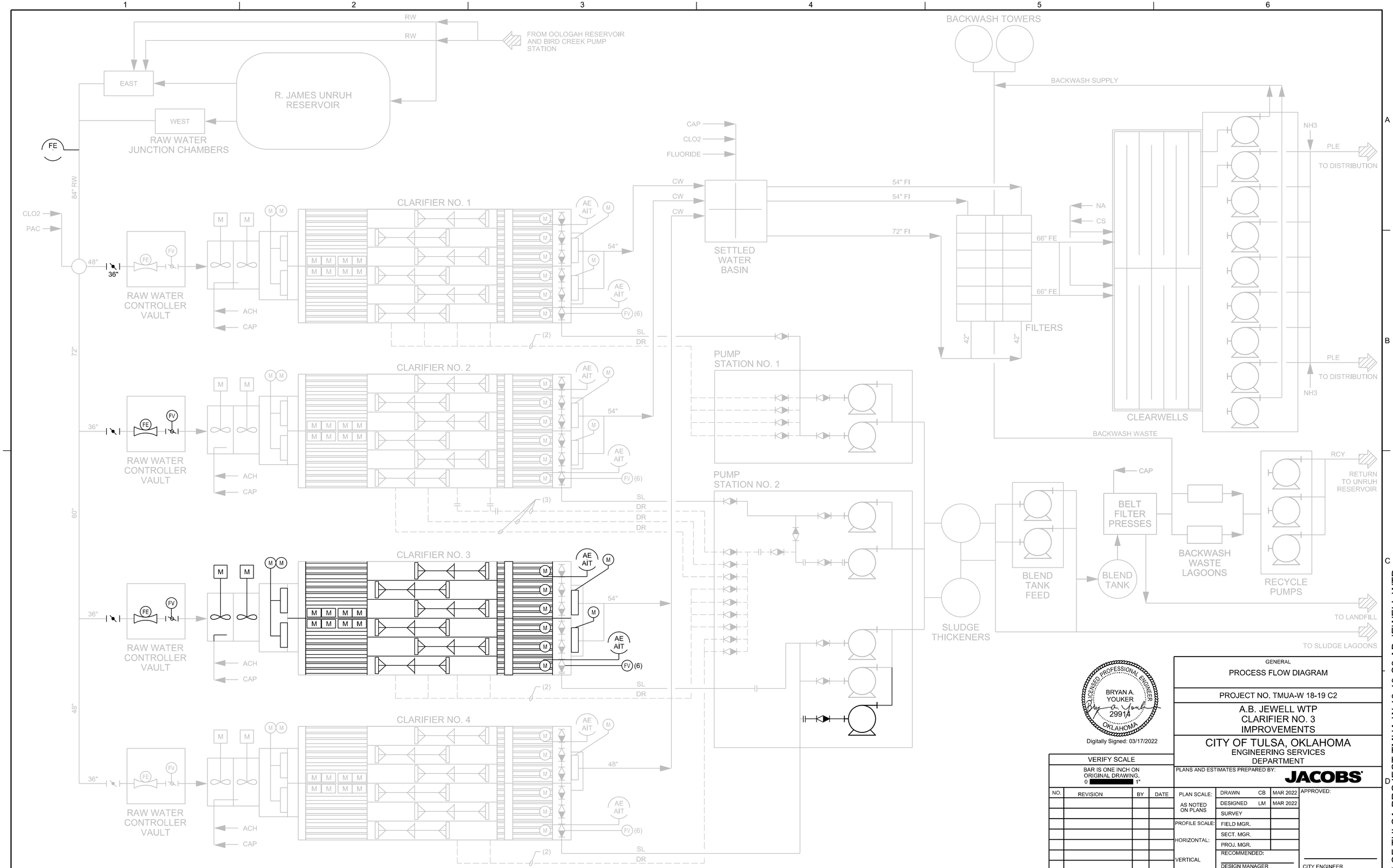
A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	JB	APPROVED:
	DESIGNED	LG	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 01-G-014			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 13 OF 76 SHEETS

FILENAME: C3-WFXQ2600_ANSI_D_BDR.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:01 PM



CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

GENERAL
PROCESS FLOW DIAGRAM

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	CB	MAR 2022
	DESIGNED	LM	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 01-G-015
DATE: MARCH 2022
ATLAS PAGE NO: 543
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FILENAME: C3-01-G-015_WFXQ2600.dgn
PLOT DATE: 3/15/2022
PLOT TIME: 6:01:54 PM

PIPING SCHEDULE

FLOW STREAM	SERVICE	NOMINAL PIPE SIZE (IN.) (NOTE 1)	INSTALLATION (NOTE 2)	MATERIAL (NOTE 3)	SPECIFICATION SECTION	JOINT TYPE (NOTE 4)	PROTECTIVE LINING (NOTE 6)	PROTECTIVE COATING (NOTE 6)	PIPE PAINT COLOR	TEST PRESSURE (PSIG)	TEST TYPE (NOTE 5)	REMARKS (ALSO SEE NOTE 7)
ACH	ALUMINUM CHLOROHYDRATE	ALL	EXP, SUB	CPVC	40 27 00.11	W	NONE	SYSTEM 25	YELLOW WITH ORANGE BANDS	25	H	HEAT TRACE AND INSULATE OUTDOOR AND EXPOSED PIPING
CAP	COAGULANT AID POLYMER	ALL	EXP, SUB	CPVC	40 27 00.11	W	NONE	SYSTEM 25	ORANGE WITH GREEN BANDS	25	H	HEAT TRACE AND INSULATE OUTDOOR AND EXPOSED PIPING
DR	DRAIN, PROCESS	< 4	EXP, IND	PVC	40 27 00.10	FL	NONE	SYSTEM 25	NONE	25	H	
			BUR					POLY				
		>= 4	EXP, IND	CLDI	40 27 00.01	FL, W	CEMENT	SYSTEM 5	NONE			
			BUR					POLY				
SL	SLUDGE	ALL	BUR	CLDI	40 27 00.01	FL, PRJ	CEMENT	NONE	NONE	25	H	
			EXP	CLDI	40 27 00.01	FL, PRJ	CEMENT	SYSTEM 4	LIGHT BROWN			
			SUB	SST	40 27 00.08	FL	NONE	NONE	LIGHT BROWN BANDS			
W1	WATER, POTABLE FIRE SERVICE	<= 2	ALL	CU	40 27 00.13	FL, S, W	NONE	SYSTEM 10	DARK BLUE	100	H	WHERE INDICATED ON DRAWINGS, HEAT TRACE AND INSULATE OUTDOOR AND EXPOSED PIPING
		2.5 - 3	EXP, IND	STL	40 27 00.03	FL, W, GR		SYSTEM 5				
		>= 4	EXP, IND	CLDI	40 27 00.01	FL, PRJ	CEMENT	SYSTEM 5	DARK BLUE			
			BUR					POLY				
			SUB					SYSTEM 2				

NOTES:

1. "ALL" REFERS TO ALL SIZES
   > GREATER THAN
   < LESS THAN
   >= GREATER THAN OR EQUAL TO
   <= LESS THAN OR EQUAL TO

2. ALL = ALL INSTALLATIONS
   BUR = BURIED INSTALLATIONS BELOW GRADE
   EXP = EXPOSED OUTDOOR INSTALLATIONS
   SUB = SUBMERGED INSTALLATIONS INCLUDING WET OR DRY AREAS SUBJECT TO HYDROSTATIC LOADING
   IND = EXPOSED INDOOR INSTALLATIONS

3. PIPING AS SPECIFIED IN APPLICABLE PIPING SPECIFICATIONS
   CLDI: CEMENT-LINED DUCTILE IRON
   CPVC: CHLORINATED POLYVINYL CHLORIDE
   PVC: POLYVINYL CHLORIDE
   SST: STAINLESS STEEL (TYPE 316/316L UNLESS OTHERWISE NOTED)
   STL: STEEL

4. JOINTS AS SPECIFIED IN APPLICABLE PIPING SPECIFICATIONS. JOINT BONDING AND INSULATED FITTINGS SHALL BE AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH OTHER PIPING SPECIFICATION SECTIONS AS APPLICABLE.
   FL: FLANGED
   PRJ: PROPRIETARY RESTRAINED MECHANICAL JOINT
   S: SCREWED OR THREADED
   W: WELDED, FUSED, SOLDERED, SOCKET WELDED, GLUED OR SOLVENT WELDED

5. TEST TYPE:
   H: HYDROSTATIC TEST TO INDICATED PRESSURE
   SEE SPECIFICATION 40 80 01 FOR MECHANICAL PIPING LEAKAGE TESTING REQUIREMENTS

6. LININGS AND COATINGS:
   SYSTEM NO.: IN ACCORDANCE WITH SPECIFICATION SECTION 09 90 00
   CEMENT (CLDI): AWWA C104 MORTAR LINING IN ACCORDANCE WITH SPECIFICATIONS
   CEMENT (STL): AWWA C205 MORTAR LINING IN ACCORDANCE WITH SPECIFICATIONS

7. REFER TO SPECIFICATION 40 05 15, PIPING SUPPORT SYSTEMS, AND SPECIFICATION 40 42 13, PROCESS PIPING INSULATION.

ELECTRIC ACTUATED VALVE SCHEDULE

TAG NUMBER	DRAWING	PROCESS FLUID	VALVE TYPE (NOTE 1)	SIZE (INCHES)	MAXIMUM OPERATING FLOW (GPM)	MAXIMUM ΔP (PSI)	SERVICE (NOTE 2)	FAIL POSITION	TRAVEL TIME (SECONDS)	REMOTE HAND STATION	MOTOR AND CONTROL NEMA RATING	POWER SUPPLY VOLTAGE (NOTE 1)	POWER SUPPLY PHASE	OTHER CONTROL FEATURES
VLV-10305	09-N-006	SL	V404	4	250	10	O/C	LAST	30	YES	250, TYPE 6	120	1	NOTES 3, 4, 5, 6
VLV-10306	09-N-006	SL	V404	4	250	10	O/C	LAST	30	YES	250, TYPE 6	120	1	NOTES 3, 4, 5, 6
VLV-10307	09-N-006	SL	V404	4	250	10	O/C	LAST	30	YES	250, TYPE 6	120	1	NOTES 3, 4, 5, 6
VLV-10308	09-N-006	SL	V404	4	250	10	O/C	LAST	30	YES	250, TYPE 6	120	1	NOTES 3, 4, 5, 6
VLV-10309	09-N-006	SL	V404	4	250	10	O/C	LAST	30	YES	250, TYPE 6	120	1	NOTES 3, 4, 5, 6
VLV-10310	09-N-006	SL	V404	4	250	10	O/C	LAST	30	YES	250, TYPE 6	120	1	NOTES 3, 4, 5, 6

NOTES:

1. FOR VALVE TYPES, REFER TO SPECIFICATION SECTION 40 27 02.

2. SERVICE
   O/C: OPEN-CLOSE
   M: MODULATING
   T: THROTTLING

3. LOCAL OPEN-CLOSE MOMENTARY PUSHBUTTONS OR "OPEN-STOP-CLOSE" THREE POSITION, MOMENTARY CONTACT, SPRING RETURN-TO-CENTER SELECTOR SWITCH THAT MUST BE CONTINUOUSLY DEPRESSED TO INITIATE/MAINTAIN VALVE TRAVEL; TRAVEL STOPS WHEN PUSHBUTTON OR SELECTOR SWITCH IS RELEASED OR END OF TRAVEL LIMIT IS REACHED.

4. REMOTE OPEN-CLOSE MAINTAINED DRY CONTACTS; TRAVEL STOPS WHEN REMOTE CONTACT OPENS, OR WHEN END OF TRAVEL LIMIT IS REACHED.

5. "LOCAL-OFF-REMOTE" THREE-POSITION, MAINTAINED CONTACT SELECTOR SWITCH WITH DRY-CONTACT CLOSURE FOR "LOCAL" AND "REMOTE" POSITIONS RATED A MINIMUM OF 2 AMPS AT 120 VAC.

6. FURNISH CONTACT CLOSURE WHEN VALVE IS IN ITS "FULLY OPENED" AND "FULLY CLOSED" STATES. CONTACT SHALL BE RATED A MINIMUM OF 2 AMPS AT 120 VAC.

MANUAL VALVE SCHEDULE

FLOW STREAM ID	SERVICE	GATE VALVES	GLOBE VALVES	BALL VALVES	PLUG VALVES	BUTTERFLY VALVES	CHECK VALVES	REMARKS
ACH	ALUMINUM CHLOROHYDRATE			V330				
CAP	COAGULANT AID POLYMER			V330				
DR	DRAIN, PROCESS				V405			
RW	RAW WATER					V500		
SL	SLUDGE				V405		V632	
W1	WATER, POTABLE FIRE SERVICE	V100	V208	V300			V632	

SELF-REGULATED VALVE SCHEDULE

P&ID	TAG NUMBER (NOTES 1 AND 2)	FLOW STREAM	SIZE (INCHES)	VALVE TYPE (NOTE 4)	INLET PRESSURE (PSIG)	OUTLET PRESSURE (PSIG)	MAXIMUM OPERATING FLOW (GPH)
09-N-003	PRV-10301A	CAP	1	V720	5	0	25
09-N-003	PRV-10301B	CAP	1	V720	5	0	25
09-N-003	PRV-10302A	ACH	1	V720	5	0	25
09-N-003	PRV-10302B	ACH	1	V720	5	0	25
09-N-008	PRV-10303	W1	1/2	V711	85	65 (NOTE 5)	300

NOTES:

1. TAG NUMBERS HAVE BEEN ASSIGNED TO ALL VALVES SHOWN ON P&IDs.

2. SELF-REGULATED VALVES LISTED ABOVE THAT ARE NOT SHOWN ON P&IDs ARE TAGGED ACCORDING TO MECHANICAL DRAWINGS AND DETAIL NUMBERS.

3. SELF-REGULATED VALVES THAT ARE NOT LISTED ABOVE ARE INCLUDED WITH PACKAGED SYSTEMS.

4. FOR VALVE TYPES, REFER TO SPECIFICATION SECTION 40 27 02.

5. COORDINATE FINAL OUTLET PRESSURE WITH PUMP MANUFACTURER.

SLIDE GATE SCHEDULE

TAG NUMBER	DESCRIPTION	P&ID NO	REFERENCE DRAWING	DETAIL NUMBER	SPEC SECTION	GATE AND FRAME STYLE (NOTE 1)	GATE OPENING WIDTH (INCHES)	GATE OPENING HEIGHT (INCHES)	GATE OPENING INVERT EL. (FT) (NOTE 2)	SLIDE GATE HEIGHT (INCHES)	DESIGN OPERATING MAX WATER SURFACE (FEET)	DESIGN OPERATING CONDITION (NOTE 3)	OPERATING FLOOR EL. (FT) (NOTE 5)	OPERATOR TYPE (NOTE 4)	NOTES
VLV-10302	CLARIFIER 3 NORTH RAPID MIX INFLUENT GATE	09-N-003	22-M-110	3520-281	35 20 16.25	STYLE A	48	48	652.58	48	660.50	S	663.50	TYPE 4,STYLE 2	NOTE 5
VLV-10303	CLARIFIER 3 SOUTH RAPID MIX INFLUENT GATE	09-N-003	22-M-110	3520-281	35 20 16.25	STYLE A	48	48	652.58	48	660.50	S	663.50	TYPE 4,STYLE 2	NOTE 5
VLV-10304	CLARIFIER 3 NORTH EFFLUENT GATE	09-N-004	30-M-110	3520-281	35 20 16.25	STYLE A	48	48	649.08	48	660.08	S	662.00	TYPE 4,STYLE 2	NOTE 5
VLV-10311	CLARIFIER 3 SOUTH EFFLUENT GATE	09-N-004	30-M-110	3520-281	35 20 16.25	STYLE A	48	48	649.08	48	660.08	S	662.00	TYPE 4,STYLE 2	NOTE 5

NOTES:

1. SLIDE GATE STYLES:
   STYLE A: RISING STEM UPWARD ACTING WALL SURFACE MOUNT ON CONCRETE STRUCTURES.
   STYLE B: RISING STEM DOWNWARD ACTING WALL SURFACE MOUNT ON CONCRETE STRUCTURES.

2. INVERT ELEVATIONS FOR WEIR GATES ARE THE THRESHOLD ELEVATIONS OF OPENINGS CAST IN THE RESPECTIVE CONCRETE WALL SECTION

3. S: SEATING
   US: UNSEATING
   S/US: SEATING OR UNSEATING BASED ON FLOW DIRECTION

4. OPERATOR TYPES FURTHER DEFINED IN SECTION 35 20 16.25
   TYPE 4: ELECTRIC OPERATOR
   STYLE 1: LOCAL OPEN/STOP/CLOSE PUSHBUTTON STATION
   STYLE 2: SEE 35 20 16.25 FOR DESCRIPTION
   STYLE 3: SEE 35 20 16.25 FOR DESCRIPTION
   STYLE 4: SEE 35 20 16.25 FOR DESCRIPTION

5. FIELD VERIFY EXISTING GATE AND OPERATING FLOOR ELEVATIONS, GATE OPENING DIMENSIONS, AND CHANNEL DIMENSIONS.

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

GENERAL
PIPE, GATE, AND VALVE SCHEDULES

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN JB		APPROVED:
	DESIGNED LM		
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 01-G-016			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 15 OF 76 SHEETS

FILENAME: C3-01-G-016_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:01:52 PM

STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: THE PROJECT SITE LIES ENTIRELY WITHIN THE AB JEWELL WATER TREATMENT PLANT LOCATED NEAR TULSA, OK. GROUND DISTURBANCE WILL BE 10 FEET FROM THE CENTERLINE OF THE PROPOSED TRENCHING FOR PIPE LINE INSTALLATION, 5 FEET FROM THE EDGE OF GRAVEL RESURFACING OR OTHER ROAD WORK, AND 5 FEET FROM THE EDGE OF THE DESIGNATED STAGING AREA.

PROJECT DESCRIPTION: THE PROJECT CONSISTS OF THE REHABILITATION OF CLARIFIER NO. 3 AND RELATED FACILITIES. CONSTRUCTION ACTIVITIES INCLUDE, BUT ARE NOT LIMITED TO DEMOLITION AND DISPOSAL OF DEBRIS IN THE CLARIFIER, INSTALLATION OF VARIOUS PIPELINES, INSTALLATIONS OF CONCRETE STRUCTURE AND MECHANICAL EQUIPMENT IN THE CLARIFIER, CONSTRUCTION OF NEW STAIRCASE INTO THE CLARIFIER NO. 3 RAW WATER CONTROLLER VAULT, AND RELATED STRUCTURAL, ELECTRICAL, AND INSTRUMENTATION AND CONTROL IMPROVEMENTS.

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES: CONTRACTOR TO INSTALL SILT FENCE AT STAGING AREA PRIOR TO USING THE STAGING AREA AND STARTING CONSTRUCTION ACTIVITIES. INSTALL INLET SEDIMENT FILTERS AT CULVERTS ADJACENT TO CLARIFIERS NO. 1, NO. 2 AND NO. 3. REMOVE SEDIMENT FROM FILTERS AS NEEDED TO PREVENT FAILURE OF THE SEDIMENT FILTERS OR LOCALIZED FLOODING. REMOVE EXCESS DIRT FROM ROADS DAILY DURING CONSTRUCTION.

SOIL TYPE: USDA MAP UNIT SYMBOL 14 DENNIS SILT LOAM AND 44 OKEMAH-PARSONS-PHAROAH COMPLEX

AREA TO BE DISTURBED: 0.85 ACRES

OFFSITE AREA TO BE DISTURBED: (FOR CONTRACTOR USE)

MAXIMUM ACRES TO BE DISTURBED AT ANY ONE TIME: (FOR CONTRACTOR USE)

LATITUDE & LONGITUDE OF CENTER OF PROJECT: 36.134702°, -95.769281°

NAME OF RECEIVING WATERS: SPUNKY CREEK

SENSITIVE WATERS OR WATERSHEDS: YES [ ] NO [X]

303(d) IMPAIRED WATERS: YES [ ] NO [X]

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

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
- ____ RIP RAP
- _X_ INLET SEDIMENT FILTER
- ____ TEMPORARY BRUSH SEDIMENT BARRIERS
- ____ SANDBAG BERMS
- ____ TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:

- ____ HAUL ROADS DAMPENED FOR DUST CONTROL
- ____ 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, DRAINAGEWAYS, 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 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

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

IN ADDITION:

"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, OCTOBER 18, 2017.

PROFESSIONAL ENGINEER — B. LUKE LENARD 28364 — OKLAHOMA

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

SITE
CIVIL
STORM WATER MANAGEMENT PLAN

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	SR	MAR 2022
	DESIGNED	SC	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		

APPROVED:

CITY ENGINEER

FILE: 05-CE-100 — DATE: MARCH 2022

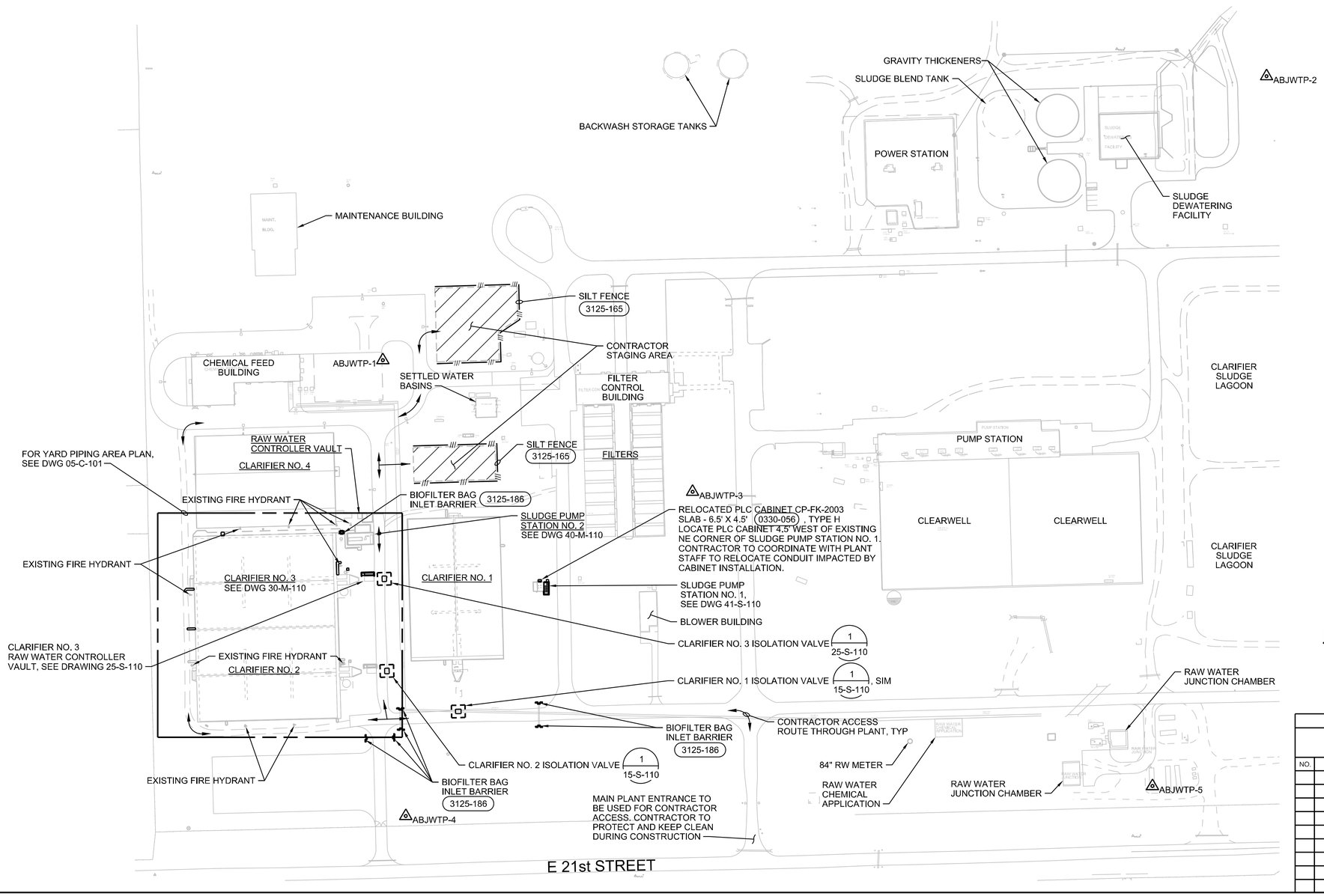
ATLAS PAGE NO: 543 — SHEET 16 OF 76 SHEETS

FILENAME: C3-05-CE-100_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 10:43:42 AM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

SURVEY CONTROL POINT TABLE

SURVEY CONTROL POINT ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
ABJWTP-1	421068.024	2627166.320	661.38	3/4" DIA ALUMINUM ROD WITH DIMPLE IN TOP
ABJWTP-2	421568.877	2628724.391	645.36	3/4" DIA ALUMINUM ROD WITH DIMPLE IN TOP
ABJWTP-3	420835.867	2627712.440	653.60	3/4" DIA ALUMINUM ROD WITH DIMPLE IN TOP
ABJWTP-4	420264.137	2627206.840	656.99	3/4" DIA ALUMINUM ROD WITH DIMPLE IN TOP
ABJWTP-5	420317.025	2628523.170	645.93	3/4" DIA ALUMINUM ROD WITH DIMPLE IN TOP



N

0 100 200 300

Scale In Feet

NOTES:

1. CONTRACTOR SHALL MAINTAIN ACCESS TO PLANT FACILITIES FOR PLANT STAFF. COORDINATE ALL ACCESS CONFLICTS WITH PLANT STAFF PRIOR TO OBSTRUCTING ACCESS TO PLANT FACILITIES.
2. CONTRACTOR SHALL COORDINATE ALL SYSTEM SHUTDOWNS WITH PLANT STAFF AND ENGINEER.
3. EROSION CONTROL MEASURES SHOWN ARE THE MINIMUM REQUIRED.
4. INSTALL EROSION CONTROL MEASURES PRIOR TO BEGINNING GROUND DISTURBING ACTIVITIES.
5. RESTORATION LIMITS SHOWN ARE MINIMUM REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL SURFACES DISTURBED DURING CONSTRUCTION.
6. CONTRACTOR SHALL PROTECT ALL PAVEMENT AND FACILITIES TO REMAIN.
7. CONTRACTOR SHALL SAWCUT EXISTING PAVEMENT AND SLABS PRIOR TO DEMOLITION.
8. BURIED PIPING SHALL BE BACKFILLED PER DETAIL (3123-110)
9. CONTRACTOR SHALL EXPOSE AND VERIFY LOCATION AND ELEVATION OF EXISTING PIPING AT ALL TIE-IN LOCATIONS AND REPORT FINDINGS TO ENGINEER PRIOR TO STARTING CONSTRUCTION AND SUBMITTING PIPE LAYOUT PLAN FOR APPROVAL.
10. CUT EXISTING PIPING AT LEAST 2' FROM AN EXISTING JOINT.
11. CITY OF TULSA (COT) DETAILS ARE INCLUDED BY REFERENCE. SEE COT WEBSITE FOR CURRENT VERSION OF DETAIL.

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

B. LUKE LENARD 28364 — LICENSED PROFESSIONAL ENGINEER — OKLAHOMA

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

SITE
CIVIL
OVERALL SITE PLAN

PROJECT NO. TMUA-W 18-19 C2

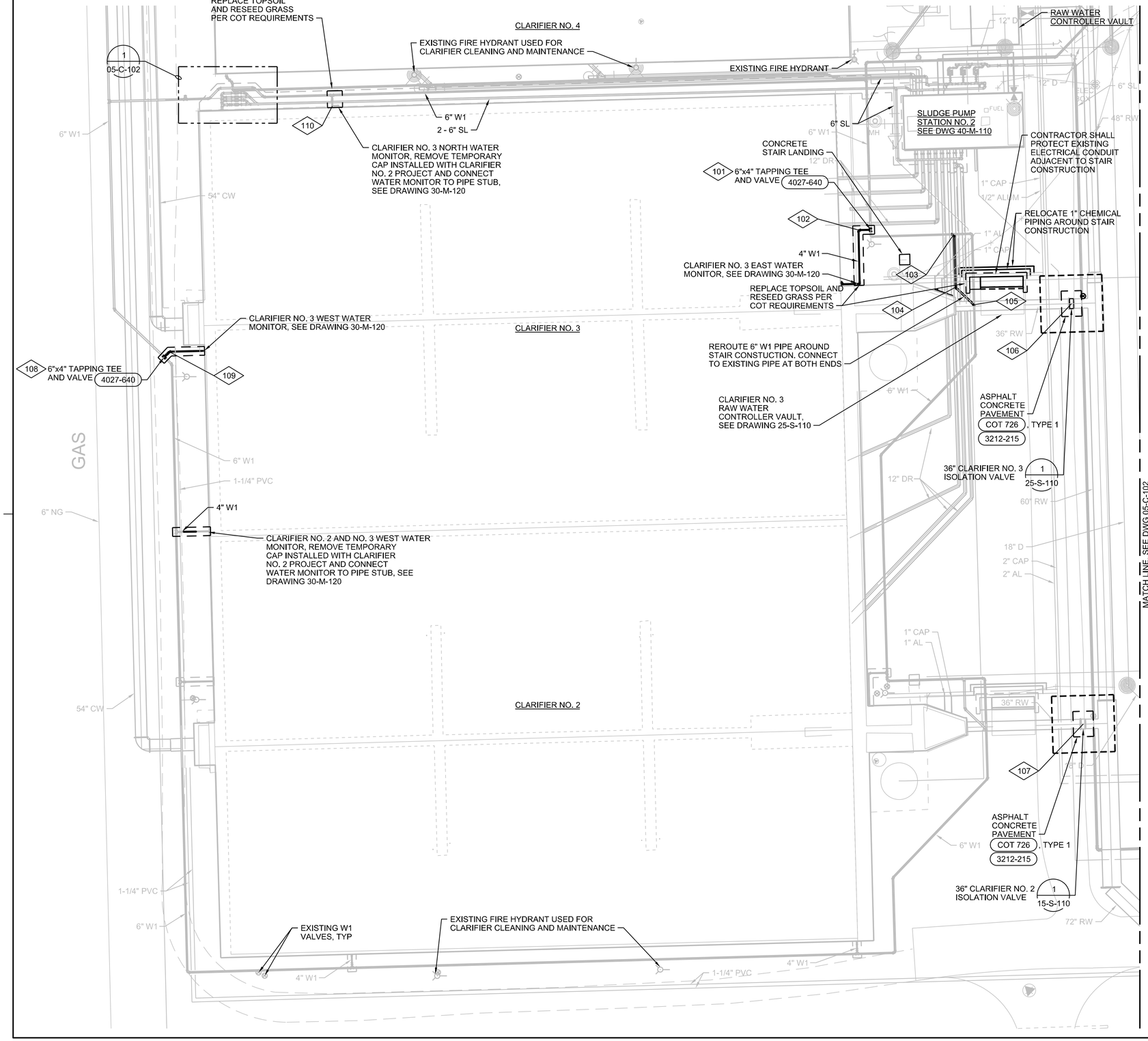
A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN JP	MAR 2022	APPROVED:
	DESIGNED SC	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 05-C-100			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 17 OF 76 SHEETS

FILENAME: C3-05-C-100_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 10:43:44 AM



NOTES:

1. CONTRACTOR SHALL MAINTAIN ACCESS TO PLANT FACILITIES FOR PLANT STAFF. COORDINATE ALL ACCESS CONFLICTS WITH PLANT STAFF PRIOR TO OBSTRUCTING ACCESS TO PLANT FACILITIES.
2. CONTRACTOR SHALL COORDINATE ALL SYSTEM SHUTDOWNS WITH PLANT STAFF AND ENGINEER.
3. FOR EROSION CONTROL MEASURES, SEE DRAWING 05-C-100 AND DRAWING 01-G-017. MEASURES SHOWN ARE THE MINIMUM REQUIRED.
4. TAPPING SLEEVES AND VALVES SHALL BE PER THE REQUIREMENTS OF THE CITY OF TULSA STANDARD SPECIFICATIONS DIVISION II MATERIAL SPECIFICATIONS APPROVED FITTINGS MANUFACTURERS. CONTRACTOR TO SUBMIT PROPOSED TAPPING SLEEVES AND VALVES TO ENGINEER FOR APPROVAL PRIOR TO PROCUREMENT OF TAPPING SLEEVES AND VALVES.
5. RESTORATION LIMITS SHOWN ARE MINIMUM REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL SURFACES DISTURBED DURING CONSTRUCTION.
6. CONTRACTOR SHALL PROTECT ALL PAVEMENT AND FACILITIES TO REMAIN.
7. CONTRACTOR SHALL SAWCUT EXISTING PAVEMENT AND SLABS PRIOR TO DEMOLITION.
8. BURIED PIPING SHALL BE BACKFILLED PER DETAIL 3123-110
9. CONTRACTOR SHALL EXPOSE AND VERIFY LOCATION AND ELEVATION OF EXISTING PIPING AT ALL TIE-IN LOCATIONS AND REPORT FINDINGS TO ENGINEER PRIOR TO STARTING CONSTRUCTION AND SUBMITTING PIPE LAYOUT PLAN FOR APPROVAL.
10. CUT EXISTING PIPING AT LEAST 2' FROM AN EXISTING JOINT.

COORDINATE TABLE

POINT NO.	DESCRIPTION	CL ELEV	NORTHING	EASTING
101	6"x4" W1, TAPPING TEE	654.50	420711.03	2627091.28
102	4" W1, 90° BEND	653.91	420710.92	2627086.58
103	6" W1, 90° BEND, CONNECT TO EXST	654.52	420709.31	2627123.53
104	6" W1, 90° BEND	654.52	420688.80	2627124.12
105	6" W1, 45° VERT BEND, CONNECT TO EXST	654.52	420682.01	2627131.30
106	36" ISOLATION VALVE	651.02	420682.49	2627168.98
107	36" ISOLATION VALVE	652.61	420520.01	2627173.52
108	6"x4" W1, TAPPING TEE	654.33	420661.83	2626818.17
109	4" W1, 45° BEND	654.33	420663.93	2626820.18
110	4" W1, 90° BEND	654.18	420758.88	2626883.14

N

0 20 40 60

Scale In Feet

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE
1			

SITE
CIVIL
YARD PIPING PLAN - AREA 1

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

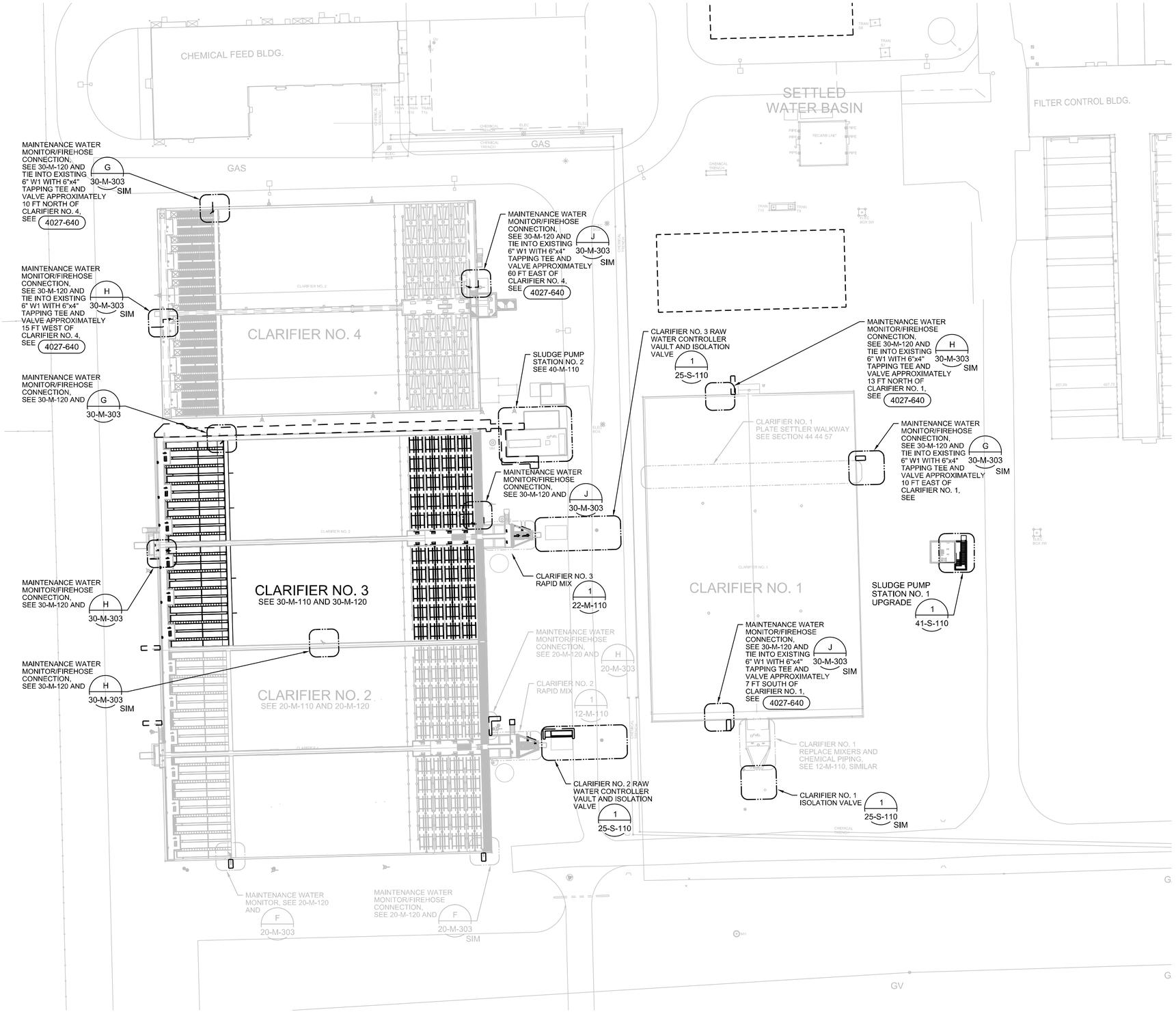
PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	SR	MAR 2022
	DESIGNED	SC	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE:	05-C-101
DATE:	MARCH 2022
ATLAS PAGE NO:	543
SHEET	18 OF 76 SHEETS

FILENAME: C3-05-C-101_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 10:44:07 AM



CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

SITE
PROCESS MECHANICAL
OVERALL SITE PLAN

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

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	DESIGNED LM	MAR 2022	
	SURVEY		
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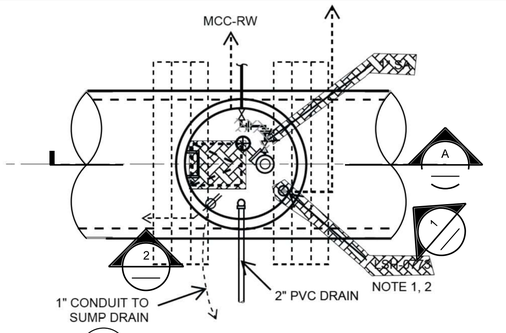
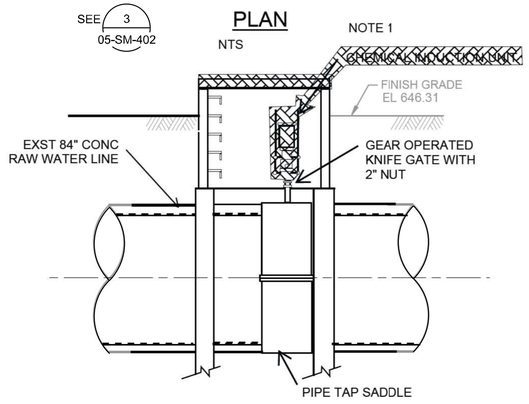
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 05-M-100			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 19 OF 76 SHEETS

FILENAME: C3-05-M-100_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 4:45:07 PM



PLAN

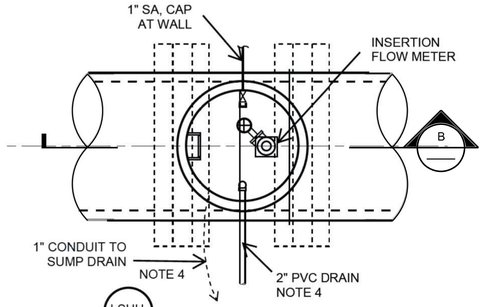
NTS



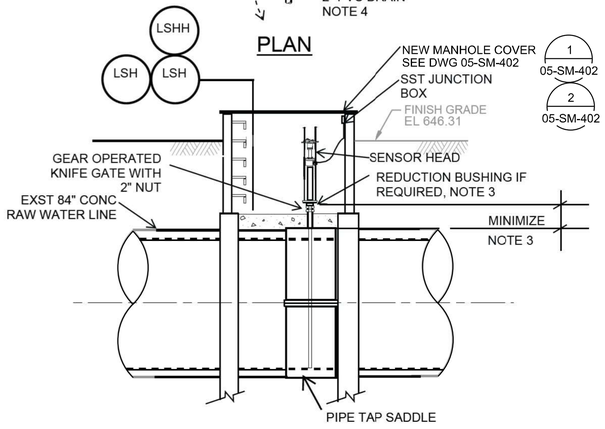
A SECTION

NTS

SULFURIC ACID MANHOLE DEMOLITION



PLAN



B SECTION

NTS

INSERTION FLOW METER

DEMOLISH EXISTING PIPING, INSTRUMENTATION, AND EQUIPMENT LEAVING THE GATE VALVE UNDISTURBED

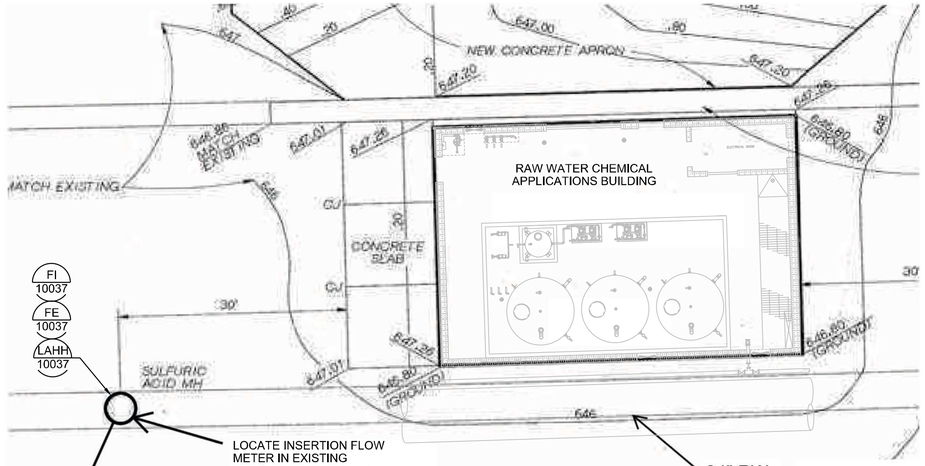
1 DETAIL

NTS NOTE 1, 2

DEMOLISH AND REPLACE EXISTING MANHOLE HATCH AND COVER

2 DETAIL

NTS NOTE 1, 2



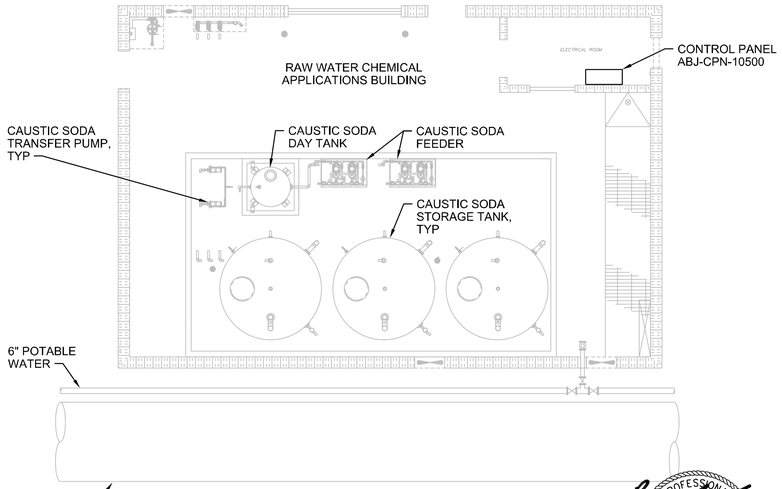
SITE PLAN

1"=10'

N

0 10 20 30

Scale In Feet



RAW WATER CHEMICAL FEED BUILDING PLAN

NTS

NOTES:

1. DEMOLISH SULFUR ACID INJECTION SYSTEM INCLUDING ALL ASSOCIATED PIPING, VALVES, FITTINGS AND CHEMICAL INDUCTION UNIT. CAP AT WALL. PRESERVE AND PROTECT GEAR OPERATED KNIFE GATE AND 2" NUT.
2. DEMOLISH LEVEL INSTRUMENTATION AND MANHOLE COVER.
3. CONTRACTOR SHALL CONFIRM GATE VALVE DIAMETER AND MINIMIZE REDUCTION FITTING LENGTH TO PROVIDE THE REQUIRED 2" DIAMETER FOR THE INSERTION FLOW METER.
4. CONTRACTOR TO REPLACE ALL DRAIN SYSTEM COMPONENTS INCLUDING PUMP. CONTRACTOR TO ENSURE DRAIN PIPING FROM MANHOLE IS CLEAR AND FREE-DRAINING TO SUMP FILL AREA.

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

SITE

STRUCTURAL/ PROCESS MECHANICAL
RAW WATER INSERTION METER

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

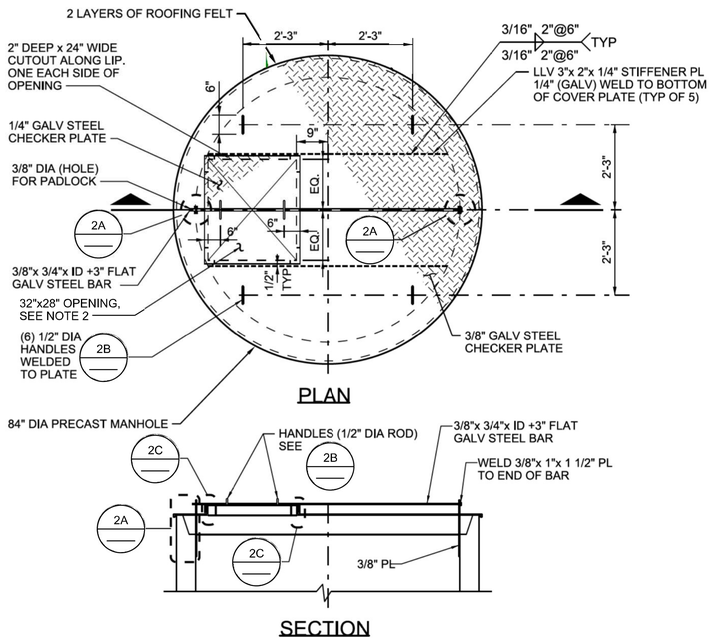
PLAN SCALE: AS NOTED ON PLANS	DRAWN CM	MAR 2022	APPROVED:
	DESIGNED LM	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 05-SM-401			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 20 OF 76 SHEETS

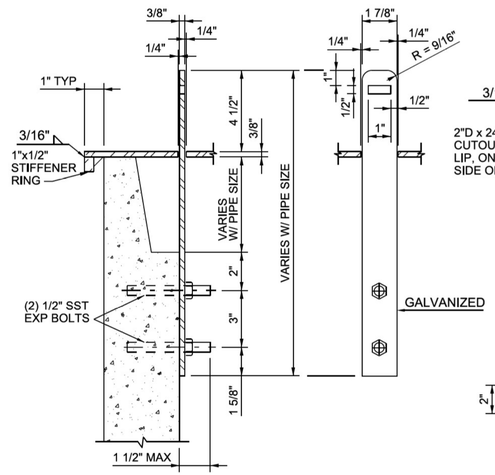
FILENAME: C3-05-SM-401_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 4:45:00 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

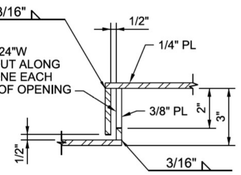
NOTES:

1. CONTRACTOR TO REPLACE ALL DRAIN SYSTEM COMPONENTS INCLUDING PUMP. CONTRACTOR TO ENSURE DRAIN PIPING FROM MANHOLES IS CLEAR AND FREE-DRAINING TO SUMP FILL AREA.
2. CONTRACTOR TO ENSURE LOCATION OF THE OPENING SHALL BE CENTERED TO THE INSERTATION METER BELOW.

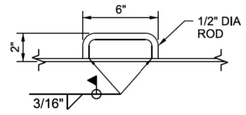




2A DETAIL
NTS



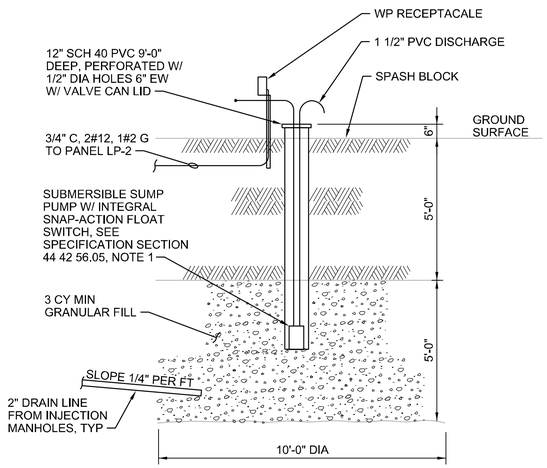
2C DETAIL
NTS



2B DETAIL
NTS

1 FLOW METER MANHOLE COVER DETAIL
NTS
05-SM-401

2 FLOW METER MANHOLE COVER DETAIL
NTS
05-SM-401



3 SUMP DRAIN DETAIL
NTS
05-SM-401

3/17/22

VERIFY SCALE
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NO.	REVISION	BY	DATE

SITE
STRUCTURAL/ PROCESS MECHANICAL
RAW WATER INSERTION METER DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

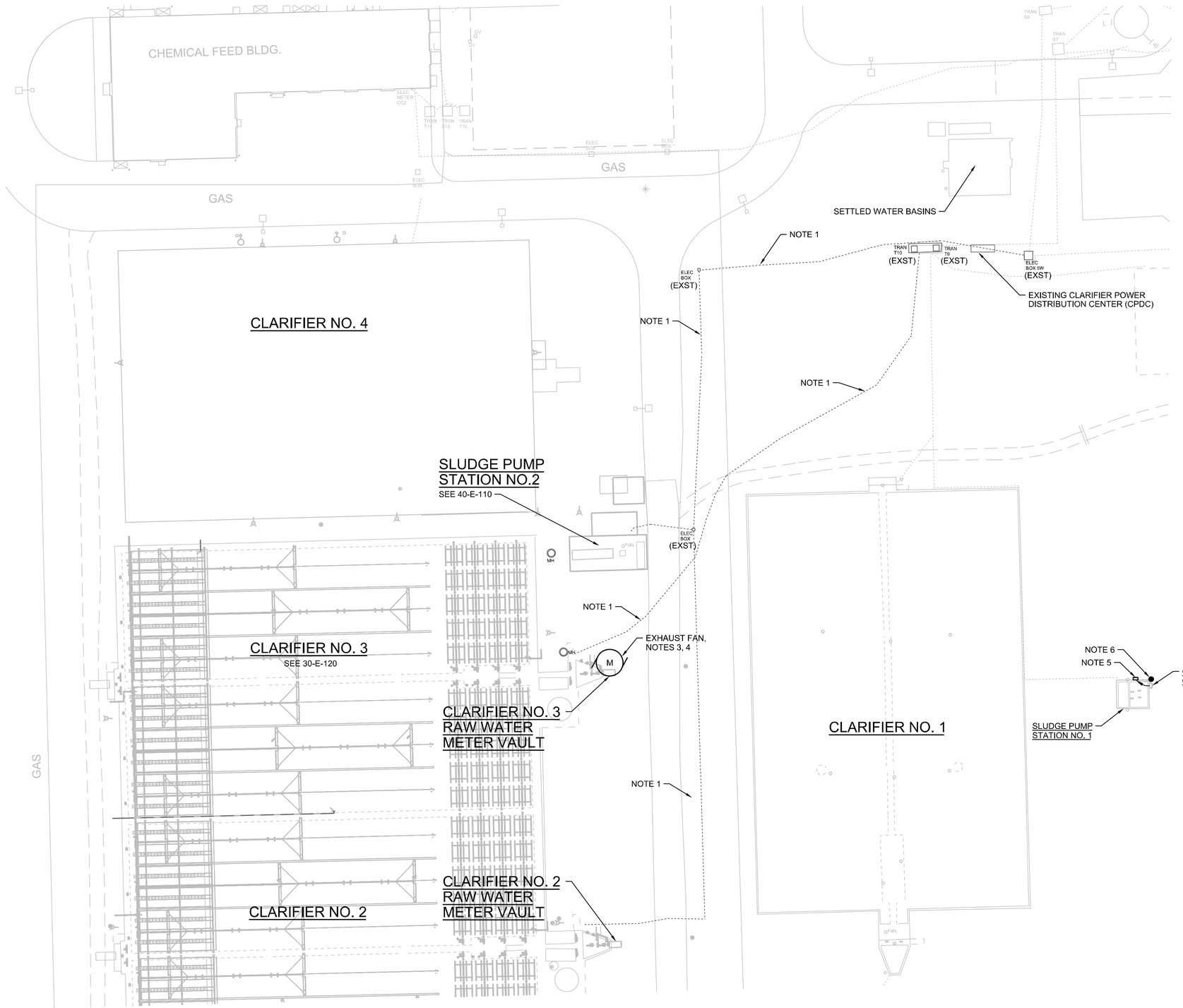
PLAN SCALE: AS NOTED ON PLANS	DRAWN	CB	MAR 2022
	DESIGNED	LM	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE:	05-SM-402
DATE:	MARCH 2022
ATLAS PAGE NO:	543
SHEET	21 OF 76 SHEETS

FILENAME: C3-05-SM-402_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 4:44:58 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



NOTES:

1. PRESERVE RACEWAYS AND CONDUCTORS FROM CPDC TO POWER TERMINAL BOXES AT CLARIFIERS FOR REUSE.
2. FOR DEMOLITION REQUIREMENTS, SEE NOTE 6 ON DRAWING 30-X-110.
3. CONNECT NEW EXHAUST FAN TO THE LIGHTING CIRCUIT USING [PA2] WIRING SO THE FAN TURNS ON/OFF ALONG WITH THE LIGHTS. FOR EXACT LOCATION, SEE DWG 25-S-110. FOR WIRING, SEE DRAWING 30-E-702.
4. REPLACE LIGHTS WITH NEW LIGHTS FOR WIRING, SEE DRAWING 30-E-702.
5. RELOCATE THE CONTROL PANEL TO THE LOCATION SHOWN TO MAKE WAY FOR THE NEW STAIRS. MAINTAIN CIRCUITING BY RELOCATING UNDERGROUND CONDUIT AND CONDUCTORS TO ALSO AVOID THE NEW STAIRS. FOR CIRCUIT INFO, SEE THE RECORD DRAWINGS AT THE END OF THIS SET.
6. RELOCATE TWO CONDUITS AND FITTINGS TO AVOID THE NEW STAIRS. MAINTAIN CIRCUITING.

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER
BLAIR I. BEADERSTADT
32520
OKLAHOMA
3/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

ELECTRICAL
CLARIFIER NO. 3
SITE PLAN OVERALL

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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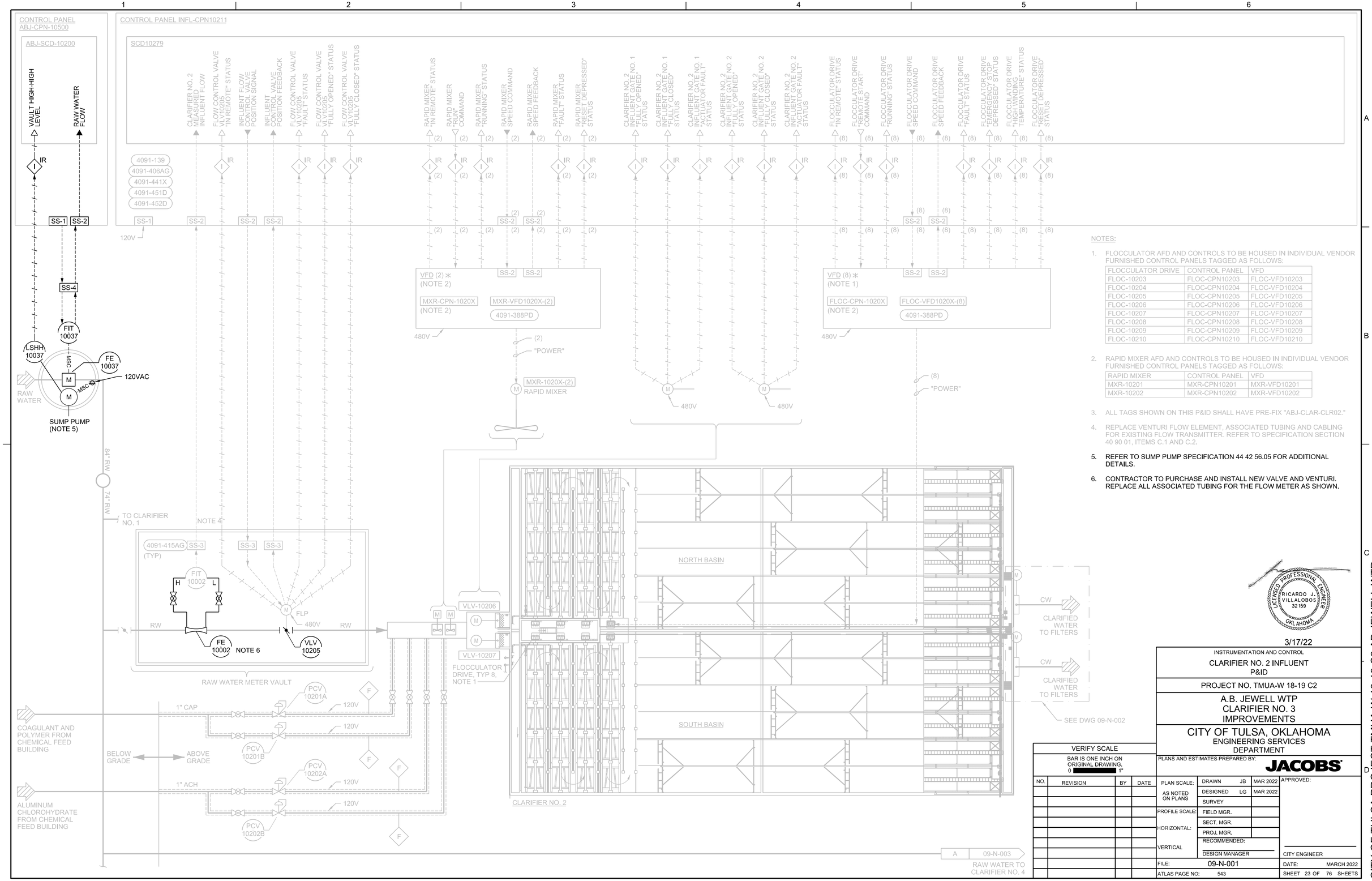
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 05-E-100			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 22 OF 76 SHEETS

FILENAME: C3-05-E-100_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 12:47:27 PM



NOTES:

1. FLOCCULATOR AFD AND CONTROLS TO BE HOUSED IN INDIVIDUAL VENDOR FURNISHED CONTROL PANELS TAGGED AS FOLLOWS:

FLOCCULATOR DRIVE	CONTROL PANEL	VFD
FLOC-10203	FLOC-CPN10203	FLOC-VFD10203
FLOC-10204	FLOC-CPN10204	FLOC-VFD10204
FLOC-10205	FLOC-CPN10205	FLOC-VFD10205
FLOC-10206	FLOC-CPN10206	FLOC-VFD10206
FLOC-10207	FLOC-CPN10207	FLOC-VFD10207
FLOC-10208	FLOC-CPN10208	FLOC-VFD10208
FLOC-10209	FLOC-CPN10209	FLOC-VFD10209
FLOC-10210	FLOC-CPN10210	FLOC-VFD10210

2. RAPID MIXER AFD AND CONTROLS TO BE HOUSED IN INDIVIDUAL VENDOR FURNISHED CONTROL PANELS TAGGED AS FOLLOWS:

RAPID MIXER	CONTROL PANEL	VFD
MXR-10201	MXR-CPN10201	MXR-VFD10201
MXR-10202	MXR-CPN10202	MXR-VFD10202

3. ALL TAGS SHOWN ON THIS P&ID SHALL HAVE PRE-FIX "ABJ-CLAR-CLR02."
4. REPLACE VENTURI FLOW ELEMENT, ASSOCIATED TUBING AND CABLING FOR EXISTING FLOW TRANSMITTER. REFER TO SPECIFICATION SECTION 40 90 01, ITEMS C.1 AND C.2.
5. REFER TO SUMP PUMP SPECIFICATION 44 42 56.05 FOR ADDITIONAL DETAILS.
6. CONTRACTOR TO PURCHASE AND INSTALL NEW VALVE AND VENTURI. REPLACE ALL ASSOCIATED TUBING FOR THE FLOW METER AS SHOWN.

LICENSED PROFESSIONAL ENGINEER
RICARDO J. VILLALOBOS
32159
OKLAHOMA

3/17/22

INSTRUMENTATION AND CONTROL

CLARIFIER NO. 2 INFLUENT P&ID

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3 IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

PLAN SCALE: AS NOTED ON PLANS
PROFILE SCALE:
HORIZONTAL:
VERTICAL

DRAWN	JB	MAR 2022
DESIGNED	LG	MAR 2022
SURVEY		
FIELD MGR.		
SECT. MGR.		
PROJ. MGR.		
RECOMMENDED: DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: 09-N-001
ATLAS PAGE NO: 543
DATE: MARCH 2022
SHEET 23 OF 76 SHEETS

FILENAME: C3-09-N-001_WFXQ2600.dgn
PLOT DATE: 3/15/2022
PLOT TIME: 6:02:34 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

CONTROL PANEL INFL-CPN10311

SCD10379

CLARIFIER NO. 3 MEASURED INFLUENT FLOW
FLOW CONTROL VALVE VLV10305 "IN REMOTE" STATUS
INFLUENT FLOW CONTROL VALVE POSITION SIGNAL
INFLUENT CONTROL VALVE POSITION FEEDBACK
FLOW CONTROL VALVE VLV10305 "FAULT" STATUS
FLOW CONTROL VALVE VLV10305 "FULLY OPENED" STATUS
FLOW CONTROL VALVE VLV10305 "FULLY CLOSED" STATUS
RAPID MIXER "IN REMOTE" STATUS
RAPID MIXER "FAULT" COMMAND
RAPID MIXER "RUNNING" STATUS
RAPID MIXER SPEED COMMAND
RAPID MIXER SPEED FEEDBACK
RAPID MIXER "FAULT" STATUS
RAPID MIXER "RESET DEPRESSED" STATUS
CLARIFIER NO. 3 INFLUENT GATE NO. 1 "FULLY OPENED" STATUS
CLARIFIER NO. 3 INFLUENT GATE NO. 1 "FULLY CLOSED" STATUS
CLARIFIER NO. 3 INFLUENT GATE NO. 1 "ACTUATOR FAULT" STATUS
CLARIFIER NO. 3 INFLUENT GATE NO. 2 "FULLY OPENED" STATUS
CLARIFIER NO. 3 INFLUENT GATE NO. 2 "FULLY CLOSED" STATUS
CLARIFIER NO. 3 INFLUENT GATE NO. 2 "ACTUATOR FAULT" STATUS
FLOCCULATOR DRIVE "IN REMOTE" STATUS
FLOCCULATOR DRIVE "REMOTE START" COMMAND
FLOCCULATOR DRIVE "RUNNING" STATUS
FLOCCULATOR DRIVE SPEED COMMAND
FLOCCULATOR DRIVE SPEED FEEDBACK
FLOCCULATOR DRIVE "FAULT" STATUS
FLOCCULATOR DRIVE "EMERGENCY STOP DEPRESSED" STATUS
FLOCCULATOR DRIVE "HIGH WINDING TEMPERATURE" STATUS
FLOCCULATOR DRIVE "RESET DEPRESSED" STATUS

4091-139
4091-406AG
4091-441X
4091-451D
4091-452D

SS-1
120V
SS-2

VFD (2) ✳
(NOTE 2)
MXR-CPN-1030X
(NOTE 2)
MXR-VFD1030X-(2)
4091-388PD
480V
(2)
"POWER"
MXR-1030X-(2)
RAPID MIXER

VFD (8) ✳
(NOTE 1)
FLOC-CPN-1030X
(NOTE 2)
FLOC-VFD1030X-(8)
4091-388PD
480V
(8)
"POWER"

480V
480V

NOTE 4
4091-415AG SS-3
(TYP)
SS-3
SS-3
FIT 10003
H
L
FLP
480V
09-N-001 A
FROM RAW WATER HEADER
RW
RW
FE 10003
VLV 10301
RAW WATER METER VAULT

VLV10302
VLV10303
FLOCCULATOR DRIVE, TYP 8, NOTE 1

NORTH BASIN
SOUTH BASIN
CLARIFIER NO. 3

CW
CLARIFIED WATER TO FILTERS
CW
CLARIFIED WATER TO FILTERS
SEE DWG 09-N-004

1" CAP
COAGULANT AND POLYMER FROM CHEMICAL FEED BUILDING
BELOW GRADE
ABOVE GRADE
1" ACH
ALUMINUM CHLOROHYDRATE FROM CHEMICAL FEED BUILDING

PCV 10301A
PCV 10301B
PCV 10302A
PCV 10302B
120V
F

NOTES:

1. FLOCCULATOR AFD AND CONTROLS TO BE HOUSED IN INDIVIDUAL VENDOR FURNISHED CONTROL PANELS TAGGED AS FOLLOWS:

FLOCCULATOR DRIVE	CONTROL PANEL	VFD
FLOC-10303	FLOC-CPN10303	FLOC-VFD10303
FLOC-10304	FLOC-CPN10304	FLOC-VFD10304
FLOC-10305	FLOC-CPN10305	FLOC-VFD10305
FLOC-10306	FLOC-CPN10306	FLOC-VFD10306
FLOC-10307	FLOC-CPN10307	FLOC-VFD10307
FLOC-10308	FLOC-CPN10308	FLOC-VFD10308
FLOC-10309	FLOC-CPN10309	FLOC-VFD10309
FLOC-10310	FLOC-CPN10310	FLOC-VFD10310

2. RAPID MIXER AFD AND CONTROLS TO BE HOUSED IN INDIVIDUAL VENDOR FURNISHED CONTROL PANELS TAGGED AS FOLLOWS:

RAPID MIXER	CONTROL PANEL	VFD
MXR-10301	MXR-CPN10301	MXR-VFD10301
MXR-10302	MXR-CPN10302	MXR-VFD10302

3. ALL TAGS SHOWN ON THIS P&ID SHALL HAVE PRE-FIX "ABJ-CLAR-CLR03."

4. CONTRACTOR TO PURCHASE AND INSTALL NEW VALVE AND VENTURI. REPLACE ALL EXISTING CABLES AND ASSOCIATED TUBING FOR THE FLOW METER AND VALVE AS SHOWN.

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER
RICARDO J. VILLALOBOS
32159
OKLAHOMA

3/17/22

INSTRUMENTATION AND CONTROL
CLARIFIER NO. 3 INFLUENT P&ID

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3 IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PLAN SCALE: AS NOTED ON PLANS
PROFILE SCALE:
HORIZONTAL:
VERTICAL

DRAWN	JB	MAR 2022
DESIGNED	LG	MAR 2022
SURVEY		
FIELD MGR.		
SECT. MGR.		
PROJ. MGR.		
RECOMMENDED: DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: 09-N-003
ATLAS PAGE NO: 543
DATE: MARCH 2022
SHEET 24 OF 76 SHEETS

FILENAME: C3-09-N-003_WFXQ2600.dgn
PLOT DATE: 3/15/2022
PLOT TIME: 6:02:41 PM

CONTROL PANEL CPN10317 (NOTE 2)

SCD10377 (NOTE 2)
SEE NOTE 3

4091-139
4091-406AG
4091-441X
4091-451D
4091-452D

SS-1
120V

GATE VLV10311 "FULLY OPENED" STATUS
GATE VLV10311 "FULLY CLOSED" STATUS
VLV10311 "FAULT" STATUS
GATE VLV10304 "FULLY OPENED" STATUS
GATE VLV10304 "FULLY CLOSED" STATUS
VLV10304 "FAULT" STATUS
EFFLUENT MEASURED TURBIDITY
EFFLUENT MEASURED "pH"
EFFLUENT "TURBIDITY HIGH" ALARM
EFFLUENT "LOW pH" ALARM
EFLL-CTL10301 "FAULT" STATUS
EFFLUENT MEASURED TURBIDITY
EFFLUENT MEASURED "pH"
EFFLUENT "TURBIDITY HIGH" ALARM
EFFLUENT "LOW pH" ALARM
EFLL-CTL10302 "FAULT" STATUS

IR

120V SS-1 SS-2 SS-2
120V SS-1 SS-2 SS-2

"POWER"
4091-420US SS-4
"POWER"

EFLL CTL10301
4091-388PD
CLARIFIER NO. 2 NORTH EFFLUENT TURBIDITY/pH TRANSMITTER

EFLL CTL10302
4091-388PD
CLARIFIER NO. 2 SOUTH EFFLUENT TURBIDITY/pH TRANSMITTER

TURB EFLL TRB10010 4091-156PD
CLARIFIER NO. 3 NORTH EFFLUENT TURBIDITY PROBE

pH EFLL PHH10005 4091-156PD
CLARIFIER NO. 3 NORTH EFFLUENT pH PROBE

TURB EFLL TRB10011 4091-156PD
CLARIFIER NO. 3 SOUTH EFFLUENT TURBIDITY PROBE

pH EFLL PHH10006 4091-156PD
CLARIFIER NO. 3 SOUTH EFFLUENT pH PROBE

NORTH BASIN

SOUTH BASIN

M
VLV10304
CW
CLARIFIED WATER TO FILTERS

M
VLV10311
CW
CLARIFIED WATER TO FILTERS

CLARIFIER NO. 3

NOTES:

1. ALL INSTRUMENT TAGS SHOWN ON THIS P&ID SHALL HAVE PRE-FIX "ABJ-CLAR-CLR03."
2. PANEL AND PLC SHOWN ON THIS P&ID SHALL HAVE PRE-FIX "ABJ-CLAR-SLG-CLR03."
3. CONTROL PANEL COMMUNICATES WITH REMOTE I/O PER SHEET 09-N-009 VIA ETHERNET/DATA LINK.

LICENSED PROFESSIONAL ENGINEER
RICARDO J VILLALOBOS
32159
OKLAHOMA

3/17/22

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

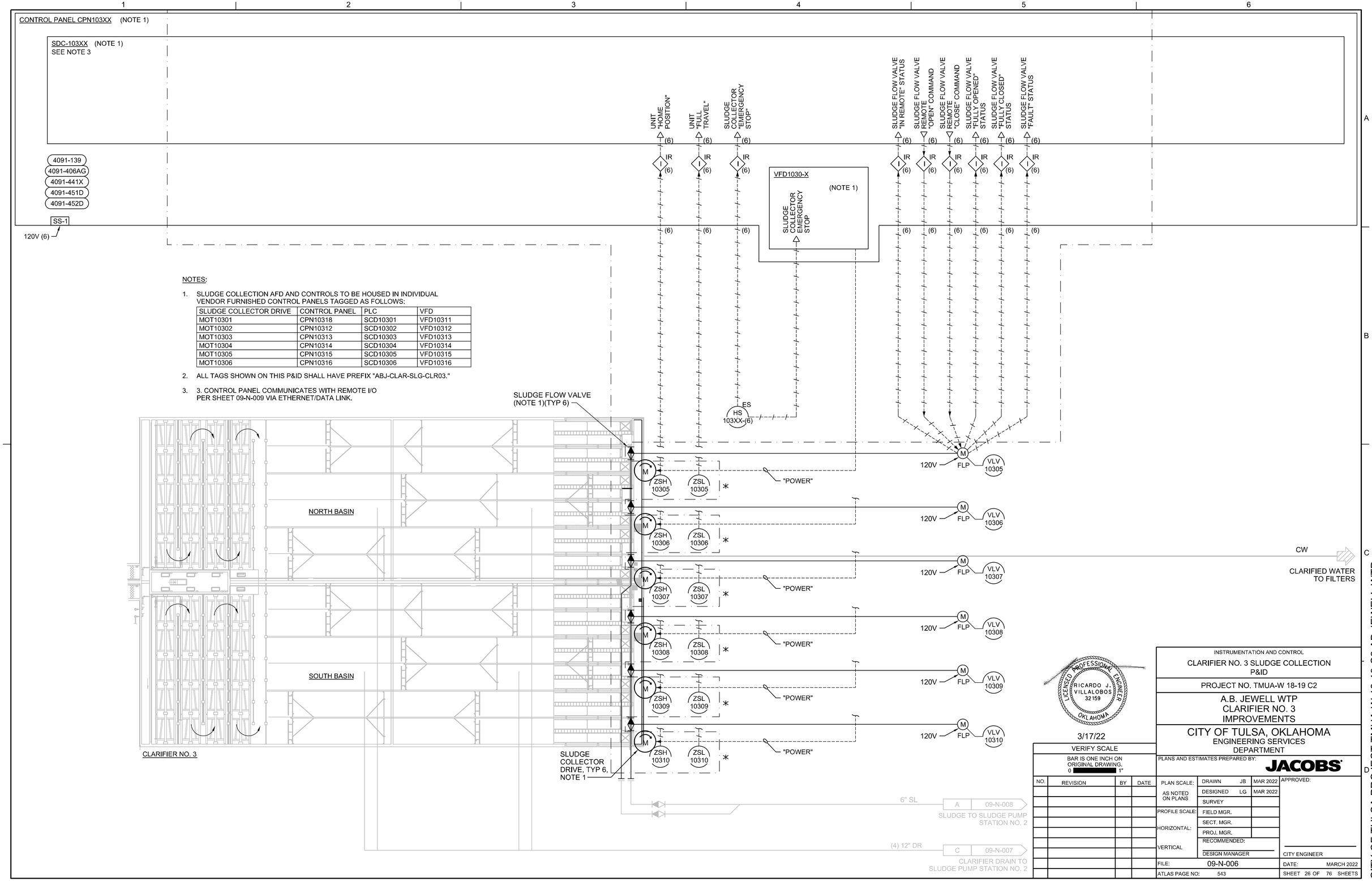
INSTRUMENTATION AND CONTROL
CLARIFIER NO. 3 EFFLUENT P&ID
PROJECT NO. TMUA-W 18-19 C2
A.B. JEWELL WTP
CLARIFIER NO. 3 IMPROVEMENTS
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN JB	MAR 2022	APPROVED:
	DESIGNED LG	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 09-N-004			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 25 OF 76 SHEETS

FILENAME: C3-09-N-004_WFXQ2600.dgn PLOT DATE: 2022\03\16 PLOT TIME: 3:31:47 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



NOTES:

1. SLUDGE COLLECTION AFD AND CONTROLS TO BE HOUSED IN INDIVIDUAL VENDOR FURNISHED CONTROL PANELS TAGGED AS FOLLOWS:

SLUDGE COLLECTOR DRIVE	CONTROL PANEL	PLC	VFD
MOT10301	CPN10318	SCD10301	VFD10311
MOT10302	CPN10312	SCD10302	VFD10312
MOT10303	CPN10313	SCD10303	VFD10313
MOT10304	CPN10314	SCD10304	VFD10314
MOT10305	CPN10315	SCD10305	VFD10315
MOT10306	CPN10316	SCD10306	VFD10316

2. ALL TAGS SHOWN ON THIS P&ID SHALL HAVE PREFIX "ABJ-CLAR-SLG-CLR03."
3. 3. CONTROL PANEL COMMUNICATES WITH REMOTE I/O PER SHEET 09-N-009 VIA ETHERNET/DATA LINK.

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER
RICARDO J. VILLALOBOS
32159
OKLAHOMA
3/17/22

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

INSTRUMENTATION AND CONTROL
CLARIFIER NO. 3 SLUDGE COLLECTION
P&ID

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN JB	MAR 2022	APPROVED:
	DESIGNED LG	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 09-N-006			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 26 OF 76 SHEETS

FILENAME: C3-09-N-006_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:26 PM

RICARDO J. VILLALOBOS 32159 LICENSED PROFESSIONAL ENGINEER OKLAHOMA

3/17/22

NOTE:

1. ALL TAGS SHOWN ON THIS P&ID SHALL HAVE PREFIX "ABJ-CLAR-SLG."

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

INSTRUMENTATION AND CONTROL

SLUDGE PUMP STATION NO. 2
P&ID

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

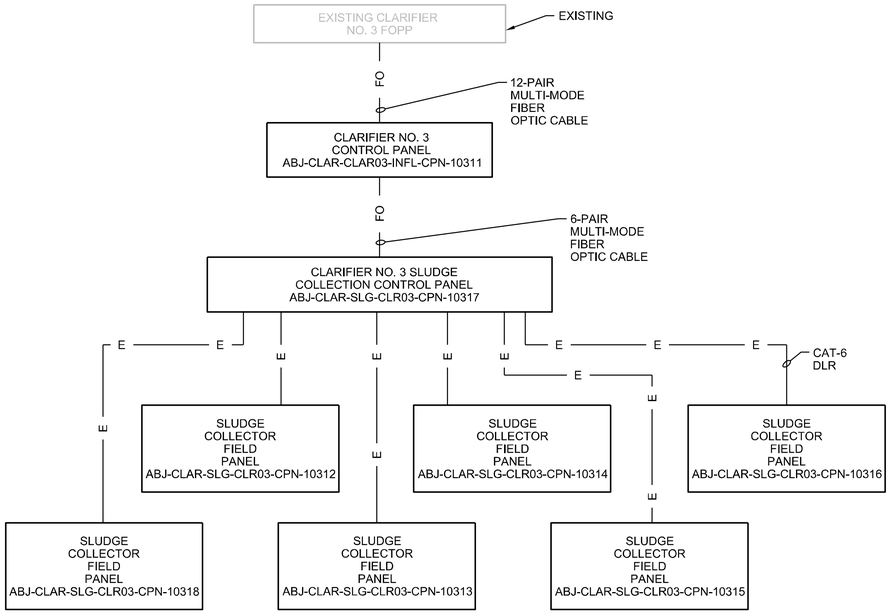
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	JB	MAR 2022	APPROVED:
	DESIGNED	LG	MAR 2022	
	SURVEY			
PROFILE SCALE:	FIELD MGR.			
HORIZONTAL:	SECT. MGR.			
	PROJ. MGR.			
VERTICAL	RECOMMENDED: DESIGN MANAGER			CITY ENGINEER
FILE:	09-N-008			DATE: MARCH 2022
ATLAS PAGE NO:	543			SHEET 27 OF 76 SHEETS

FILENAME: C3-09-N-008_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:32 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



CLARIFIER NO. 3

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER
RICARDO J. VILLALOBOS
32159
OKLAHOMA

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

INSTRUMENTATION AND CONTROL

SYSTEM BLOCK DIAGRAM
P&ID

PROJECT NO. TMUA-W 18-19 C2

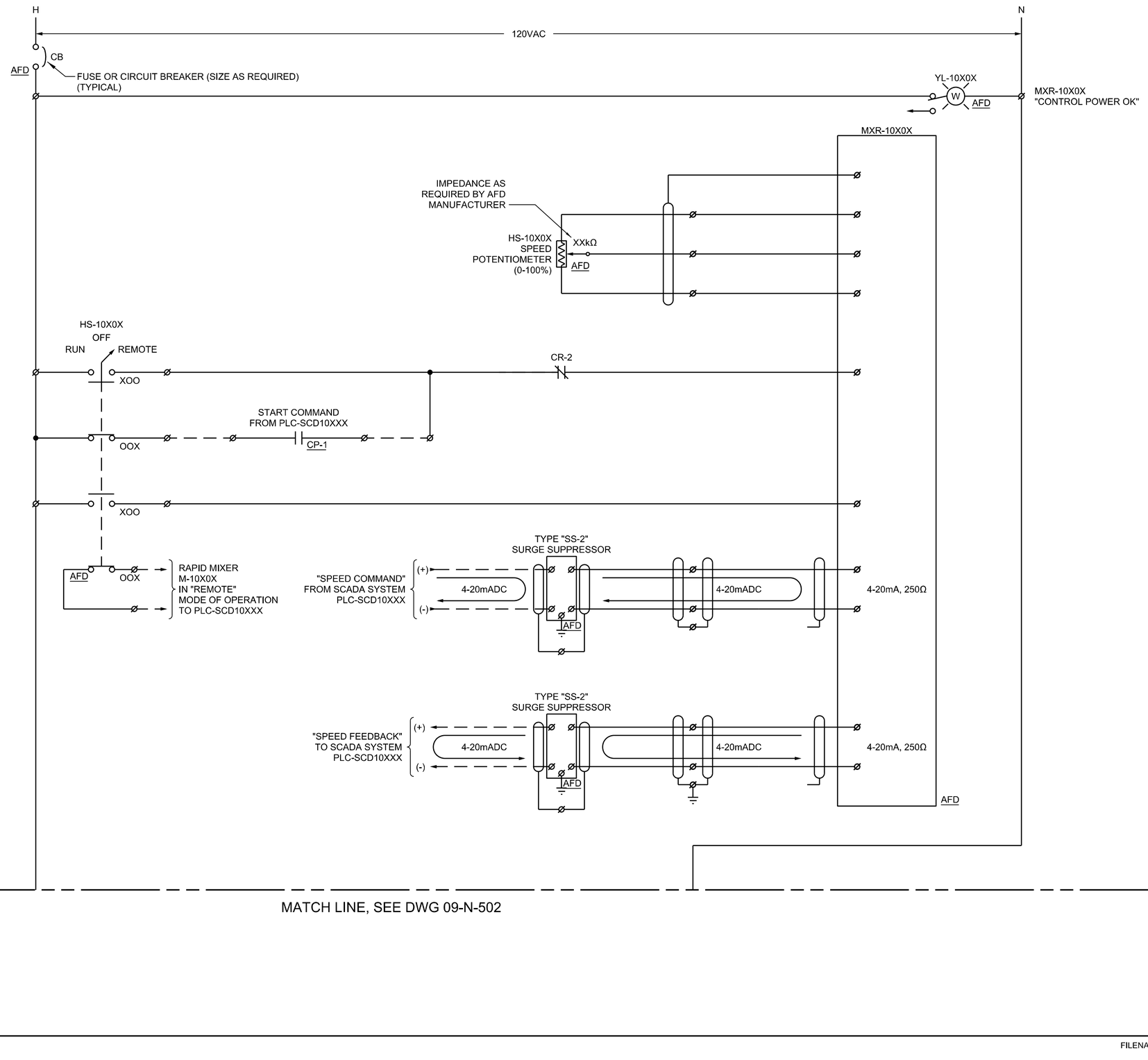
A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN JB	MAR 2022	APPROVED:
	DESIGNED LG	MAR 2022	
PROFILE SCALE:	SURVEY		
	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 09-N-009			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 28 OF 76 SHEETS

FILENAME: C3-09-N-009_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:30 PM



MATCH LINE, SEE DWG 09-N-502

NOTE:

1. VERIFY WIRING DETAIL WITH VFD WIRING REQUIREMENTS.

LICENSED PROFESSIONAL ENGINEER
RICARDO J. VILLALOBOS
32159
OKLAHOMA

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

INSTRUMENTATION AND CONTROL

WIRING DIAGRAMS - RAPID MIXER MXR-10X0X (4)
TYPICAL AFD WIRING DETAIL

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

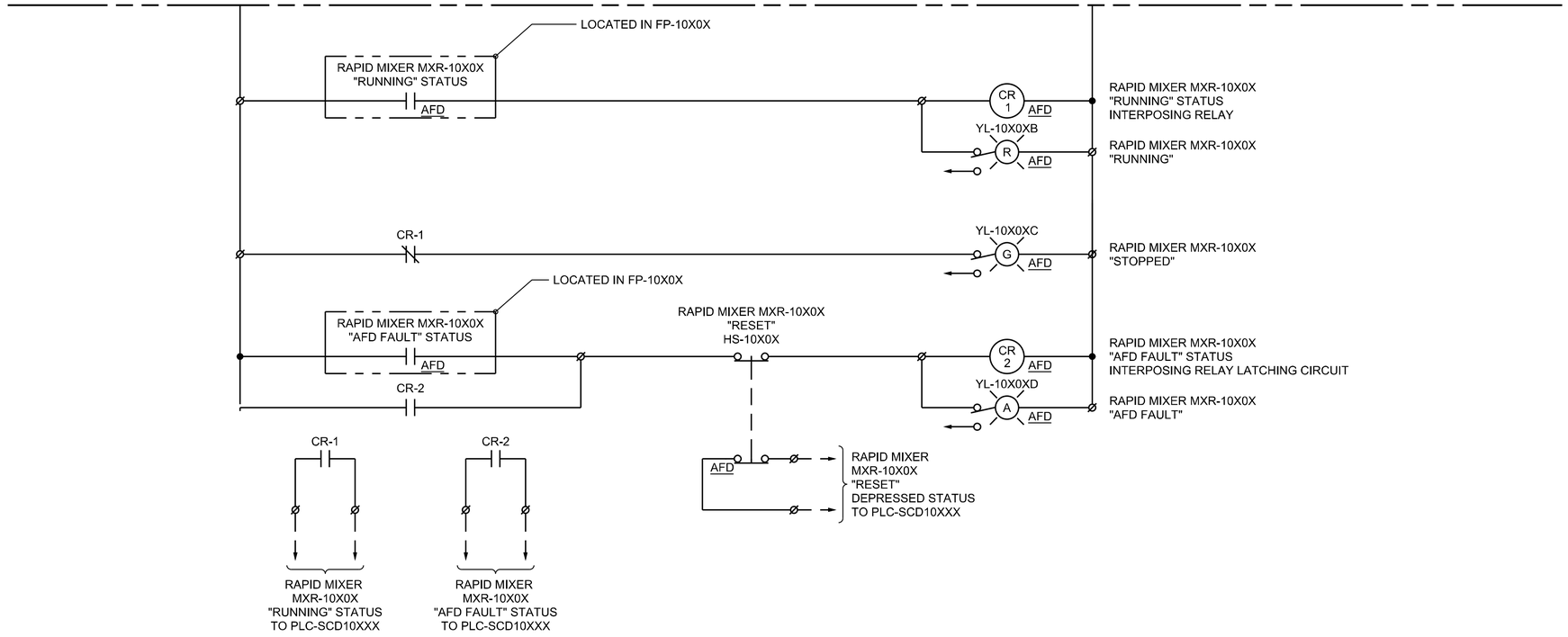
PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN JB	MAR 2022	APPROVED:
	DESIGNED LG	MAR 2022	
	SURVEY		
PROFILE SCALE: HORIZONTAL: VERTICAL	FIELD MGR.		
	SECT. MGR.		
	PROJ. MGR.		
	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 09-N-501			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 29 OF 76 SHEETS

FILENAME: C3-09-N-501_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:41 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

MATCH LINE, SEE DWG 09-N-501



RAPID MIXER MXR-10X0X (4)
TYPICAL AFD WIRING DETAIL
TYP OF (4)

LEGEND:

CP-1	INDICATES A DEVICE OR RELAY CONTACT LOCATED IN THE CLARIFIER NO. 2 OR NO. 3 CONTROL PANEL CPN10XXX
F	INDICATES A DEVICE OR RELAY CONTACT LOCATED IN THE FIELD
AFD	INDICATES A DEVICE OR RELAY CONTACT LOCATED IN THE AFD ENCLOSURE
●	WIRING NODE
— —	FIELD WIRING
———	WIRING WITHIN ENCLOSURE

NOTE: WIRING DETAIL INDICATES FUNCTIONAL INTENT ONLY.

NOTE:

1. VERIFY WIRING DETAIL WITH VFD WIRING REQUIREMENTS.

LICENSED PROFESSIONAL ENGINEER
RICARDO J. VILLALOBOS
32159
OKLAHOMA

3/17/22

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

INSTRUMENTATION AND CONTROL
WIRING DIAGRAMS - RAPID MIXER MXR-10X0X (4)
TYPICAL AFD WIRING DETAIL

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

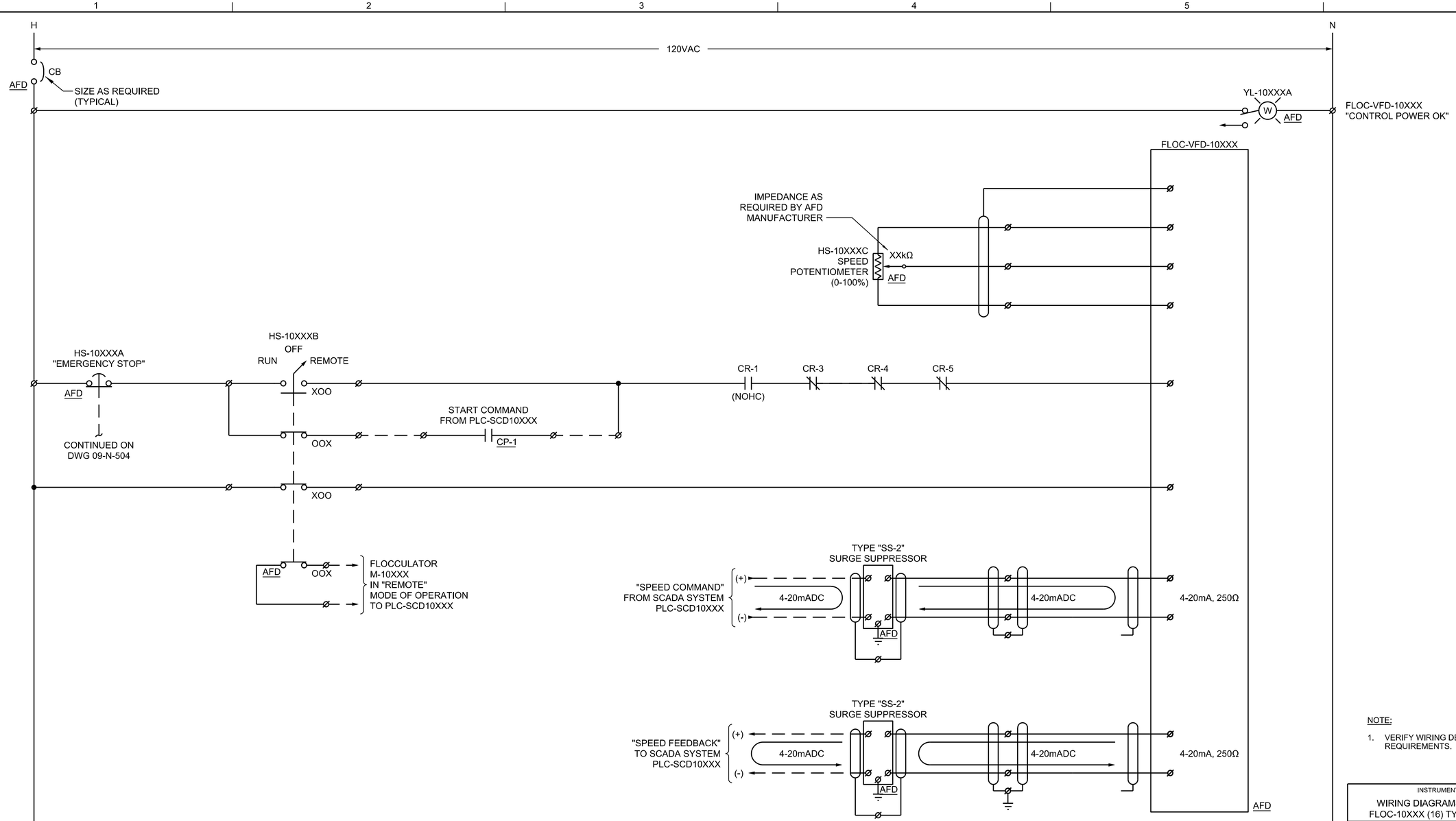
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN JB	MAR 2022	APPROVED:
	DESIGNED LG	MAR 2022	
	SURVEY		
PROFILE SCALE: HORIZONTAL: VERTICAL	FIELD MGR.		
	SECT. MGR.		
	PROJ. MGR.		
	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 09-N-502			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 30 OF 76 SHEETS

FILENAME: C3-09-N-502_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:41 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



MATCH LINE, SEE DWG 09-N-504

NOTE:

1. VERIFY WIRING DETAIL WITH VFD WIRING REQUIREMENTS.

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

INSTRUMENTATION AND CONTROL

WIRING DIAGRAMS - FLOCCULATOR DRIVE
FLOC-10XXX (16) TYPICAL AFD WIRING DETAIL

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

NO.	REVISION	BY	DATE

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

PLAN SCALE: AS NOTED ON PLANS
PROFILE SCALE:
HORIZONTAL:
VERTICAL

DRAWN	JB	MAR 2022
DESIGNED	LG	MAR 2022
SURVEY		
FIELD MGR.		
SECT. MGR.		
PROJ. MGR.		
RECOMMENDED:		
DESIGN MANAGER		

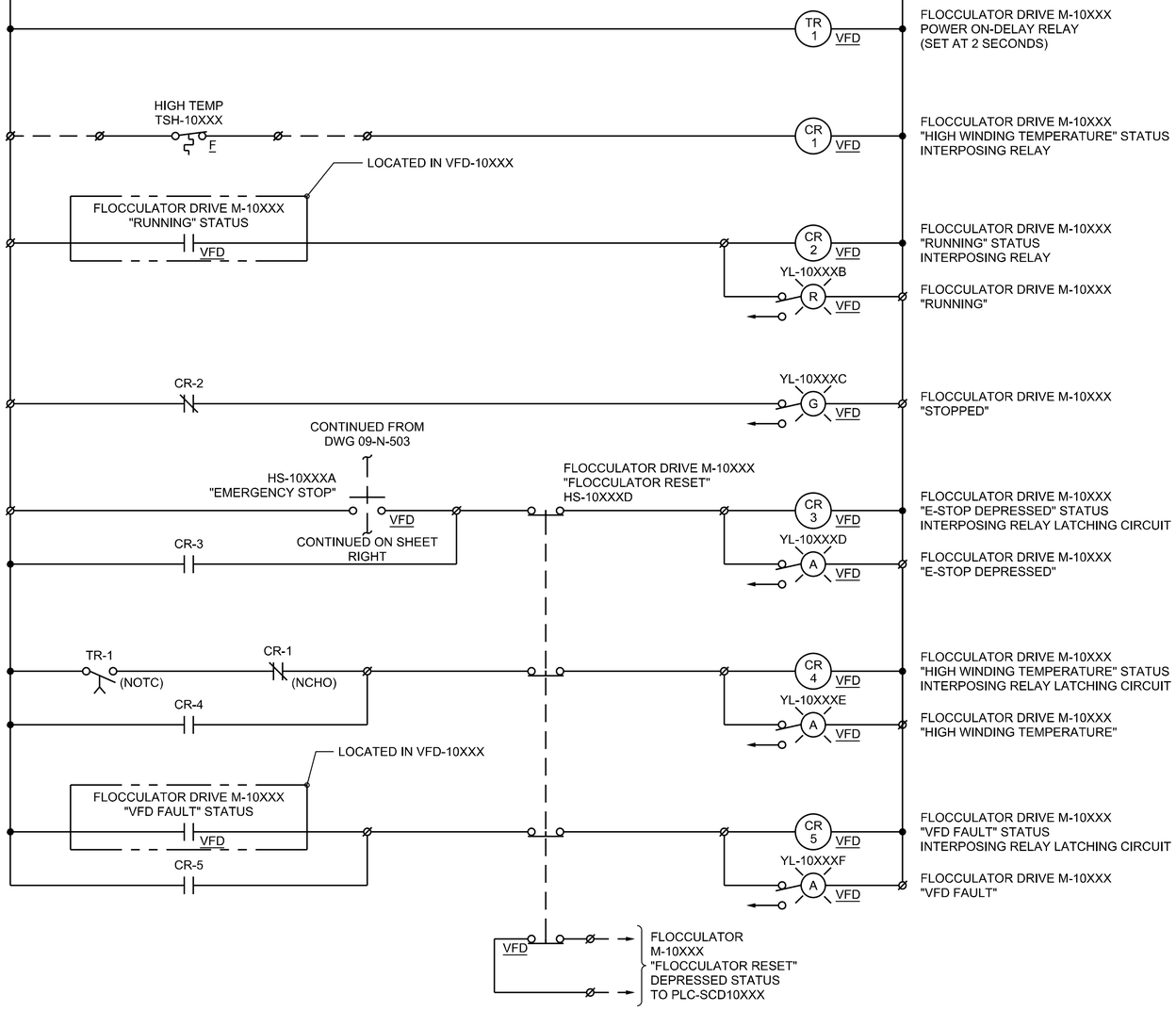
APPROVED:
CITY ENGINEER

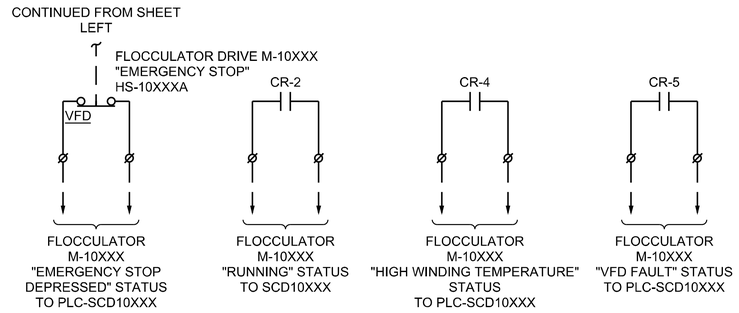
FILE: 09-N-503
ATLAS PAGE NO: 543
DATE: MARCH 2022
SHEET 31 OF 76 SHEETS

LICENSED PROFESSIONAL ENGINEER
RICARDO J. VILLALOBOS
32159
OKLAHOMA
3/17/22

FILENAME: C3-09-N-503_WFXQ2600.dgn
PLOT DATE: 3/15/2022
PLOT TIME: 6:02:42 PM

MATCH LINE, SEE DWG 09-N-503





FLOCCULATOR DRIVE M-10XXX
TYPICAL VFD WIRING DETAIL

LEGEND:

CP-1	INDICATES A DEVICE OR RELAY CONTACT LOCATED IN THE CLARIFIER NO. 2 OR NO. 3 CONTROL PANEL CPN10XXX
F	INDICATES A DEVICE OR RELAY CONTACT LOCATED IN THE FIELD
VFD	INDICATES A DEVICE OR RELAY CONTACT LOCATED IN THE VFD ENCLOSURE
NCHO	INDICATES A RELAY CONTACT, NORMALLY-CLOSED, HELD-OPEN
NOHC	INDICATES A RELAY CONTACT, NORMALLY-OPEN, HELD-CLOSED
NOTC	INDICATES A TIMER CONTACT, NORMALLY-OPEN, TIMED-CLOSED
SPDT	INDICATES A SINGLE-POLE, DOUBLE-THROW RELAY CONTACT
⌀	TERMINAL BLOCK
●	WIRING NODE
— —	FIELD WIRING
———	WIRING WITHIN ENCLOSURE

NOTE: WIRING DIAGRAM INDICATES FUNCTIONAL INTENT ONLY.

NOTE:

1. VERIFY WIRING DETAIL WITH VFD WIRING REQUIREMENTS.

LICENSED PROFESSIONAL ENGINEER
RICARDO J VILLALOBOS
32159
OKLAHOMA

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

INSTRUMENTATION AND CONTROL

WIRING DIAGRAMS - FLOCCULATOR DRIVE
FLOC-10XXX (16) TYPICAL AFD WIRING DETAIL

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

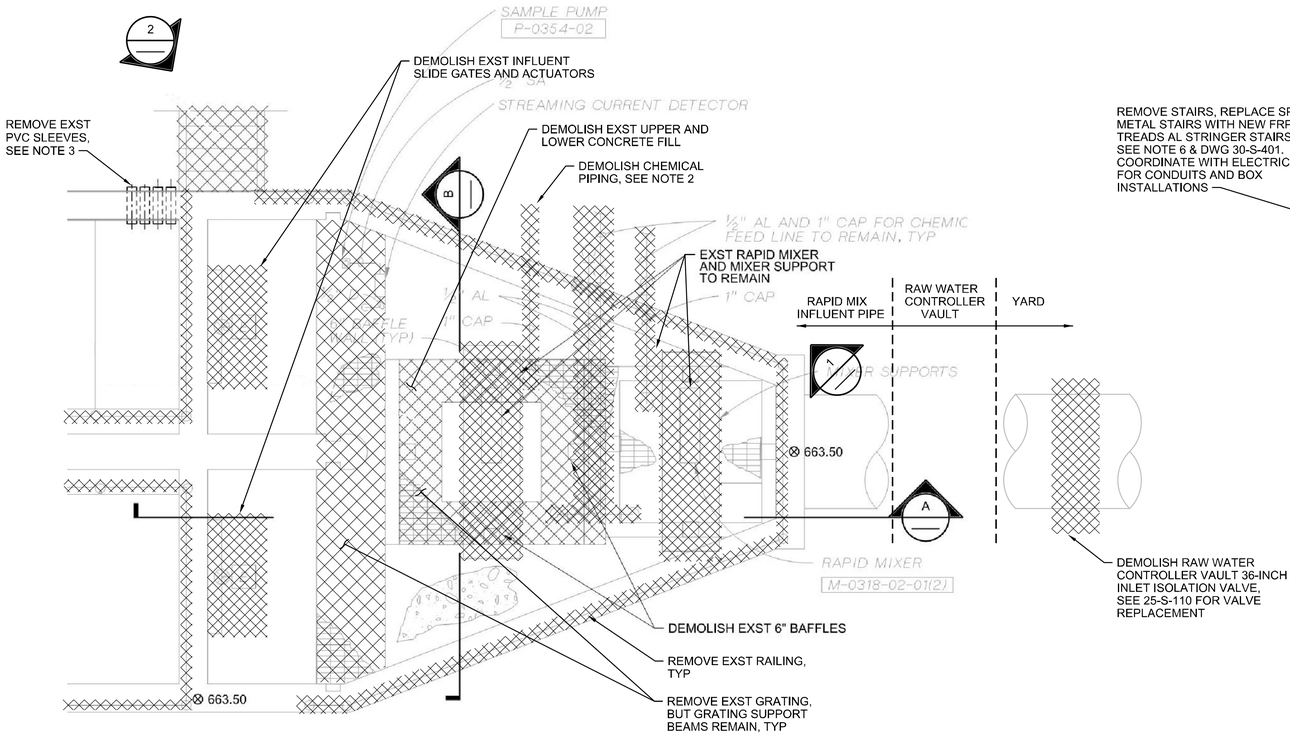
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN JB	MAR 2022	APPROVED:
	DESIGNED LG	MAR 2022	
	SURVEY		
PROFILE SCALE: HORIZONTAL: VERTICAL	FIELD MGR.		
	SECT. MGR.		
	PROJ. MGR.		
	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 09-N-504			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 32 OF 76 SHEETS

FILENAME: C3-09-N-504_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:36 PM

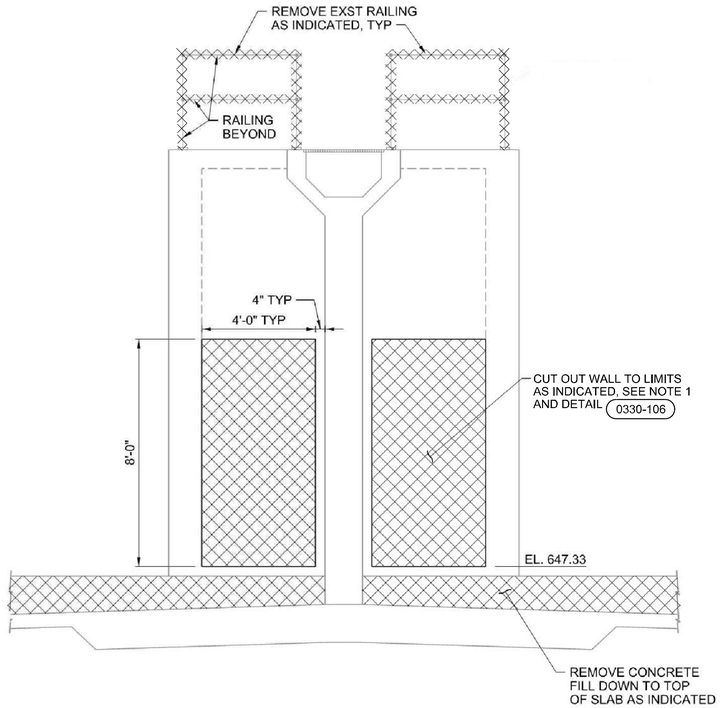
CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



REMOVE STAIRS, REPLACE SP METAL STAIRS WITH NEW FRP TREADS AL STRINGER STAIRS, SEE NOTE 6 & DWG 30-S-401. COORDINATE WITH ELECTRICAL FOR CONDUITS AND BOX INSTALLATIONS

DEMOLISH RAW WATER CONTROLLER VAULT 36-INCH INLET ISOLATION VALVE, SEE 25-S-110 FOR VALVE REPLACEMENT

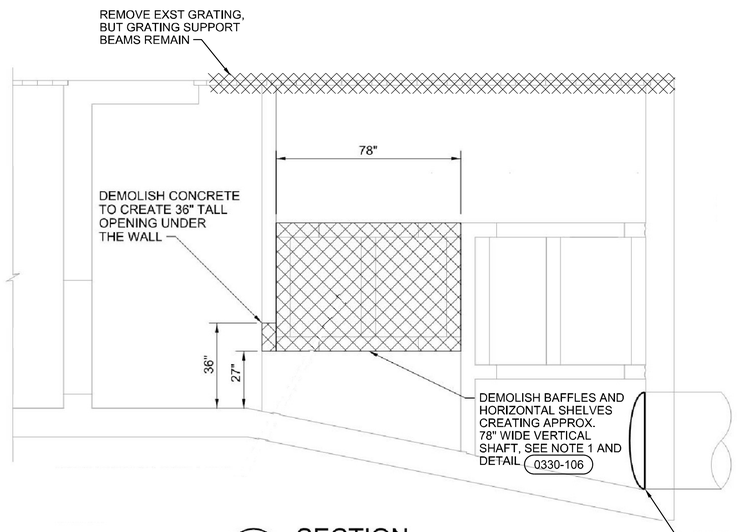
2 DETAIL
NTS



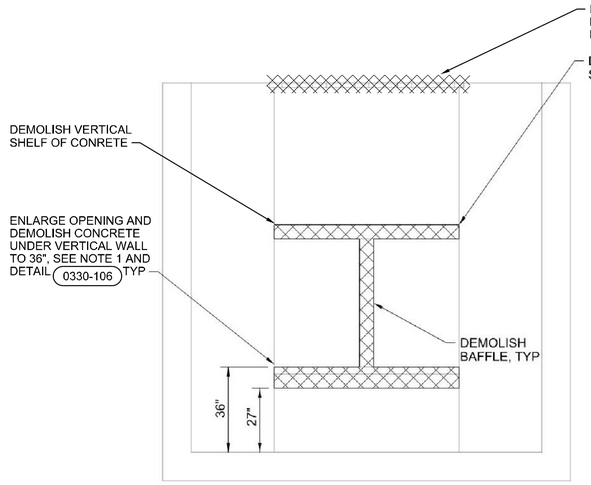
C SECTION
3/8"=1'-0"
30-X-110

N

RAPID MIXER PARTIAL PLAN
3/8"=1'-0"



A SECTION
3/8"=1'-0"



B SECTION
3/8"=1'-0"

DEMOLISH CHEMICAL PIPING, INSULATION, FITTINGS, AND INSTRUMENTS, SEE NOTE 2

1 DETAIL
NTS

NOTES:
1. CHIP OUT AROUND ANY EXPOSED REINFORCING STEEL AND REMOVE TO A MINIMUM DEPTH OF 1 1/2" BELOW CONCRETE SURFACE. PATCH HOLES WITH NON-SHRINK GROUT.
2. DEMOLISH CHEMICAL PIPING AND SUPPORTS, INSULATION, FITTINGS, AND INSTRUMENTS 1'-0" ABOVE EXISTING GRADE AND CAP.
3. REMOVE FOUR 4" DIAMETER PVC SLEEVES THROUGH WALL AT APPROXIMATELY 1'-0" TOP OF WALL. SEAL REMAINING HOLES BY PACKING WITH NON-SHRINK GROUT.
4. DEMOLISH PIPE, WALL THIMBLE, GATE, FRAME, OPERATOR/SUPPORTS AND STEM GUIDES.
5. REMOVAL OF EXISTING ANCHOR BOLTS: CORE DRILL 2" DIAMETER HOLE, 1 1/2" DEEP. AND CHIP AND GRIND TO REMOVE EXISTING EQUIPMENT ANCHORS TO 1 1/2" MINIMUM BELOW TOP OF EXISTING CONCRETE TO REMAIN. CLEAN AND SOAK, AND DRY-PACK WITH NON-SHRINK GROUT.
6. COORDINATE FINAL DISPOSITION OF STAIRS WITH OWNER.

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

DEMOLITION
CLARIFIER NO. 3 RAPID MIX PLAN, SECTIONS AND DETAILS
PROJECT NO. TMUA-W 18-19 C2
A.B. JEWELL WTP
CLARIFIER NO. 3 IMPROVEMENTS
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT
PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN ILT	MAR 2022	APPROVED:
	DESIGNED LY	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 22-X-110			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 33 OF 76 SHEETS

FILENAME: C3-22-X-110_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 2:07:17 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

NOTE 8

REMOVE EXISTING RAILING BOTH SIDES OF WALKWAY AND REPLACE WITH ALUMINUM RAILING, TYP

REMOVE 5'-0" SQ PORTION OF EXISTING SLAB PER (0512-011) TYP OF 8 PLACES

REMOVE EXST CLARIFIER MECHANISM, TYP OF 4

REMOVE 5'-0" x 7'-0" PORTION OF EXISTING SLAB PER (0512-011) TYP OF 4 PLACES, SEE NOTE 7

NOTE 8

DEMOLISH EFFLUENT SLIDE GATES AND OPERATORS, TYP OF 2

REMOVE CONCRETE FILL ON FLOOR DOWN TO TOP OF SLAB, TYP-2 PLCS

NOTE 8

NOTE 8

NOTE 8

NOTE 8

REMOVE CONCRETE FILL ON FLOOR FOR FLOCCULATOR DRIVE PIT EXTENSION, SEE C 22-X-110

CLARIFIER NO. 3
NORTH BASIN

REMOVE EXST LADDER AND REPLACE W/ NEW

NOTE 9, TYP
NOTE 10, TYP

1

NOTE 8

REMOVE SECTION OF WALL ON EACH SIDE OF CENTER DIVIDER WALL, SEE C 22-X-110

C 22-X-110

REMOVE ALL EXISTING RAILING AND REPLACE WITH ALUMINUM RAILING, TYP, UNO

NOTE 8

NOTE 8

EXST BASIN DRAIN TO REMAIN, TYP OF 4

REMOVE EXST CATWALK, TYP OF 4

REMOVE EXST GRATING AND RAILING AROUND SLAB OPNG

CLARIFIER NO. 3
SOUTH BASIN

NOTE 8

NOTE 8

NOTE 8

REMOVE EXST STEEL FACING FROM SIDE OF CURB, TYP OF 4 SEE NOTE 3

REMOVE EXST EFFLUENT TROUGHS, INCLUDING 2 SUPPORTS COLUMNS BELOW EACH TROUGH, TYP OF 16, SEE NOTE 1

REMOVE TOP PORTION OF EXST WALL, WALKWAY AND RAILING, SEE NOTE 4 AND A 30-S-402

EXST RAILING ON TOP OF DIVIDING WALL WALKWAY BETWEEN CLARIFIER #2 AND CLARIFIER #3

REMOVE EXST WOOD DIFFUSION & DIVIDER WALLS, TYP OF BOTH SIDES, SEE NOTE 2

CLARIFIER NO. 2

FOR DETAILED DEMOLITION PLAN IN RAPID MIX AREA, SEE DWG 22-X-110

REMOVE EXST FLOCCULATORS, TYP

FLOCCULATION PADDLE SHAFT SUPPORT PIERS TO REMAIN, TYP

BAFFLE SUPPORT COLUMNS TO REMAIN

REMOVE EXST RAILING, TYP

REMOVE STAIRWAY OVER CONDUIT AND TURN OVER TO OWNER. RE-ROUTE CONDUIT. REMOVE ANCHORS AND REPAIR CONCRETE

1 DETAIL
NTS

N

CLARIFIER NO. 3 - PLAN
3/32"=1'-0"

NOTES:

1. AT THE BASE OF THE COLUMNS, CHIP OUT ANY EXPOSED REINFORCING STEEL AND REMOVE TO A MINIMUM DEPTH OF 1 1/2" BELOW CONCRETE SURFACE. PATCH HOLES WITH NON-SHRINK GROUT.
2. REMOVE ONLY THE EXISTING WOOD DIFFUSION AND DIVIDER WALLS TAKING CARE SO AS NOT TO DAMAGE THE CONCRETE COLUMNS. COLUMNS SHALL REMAIN AND WILL BE USED TO SUPPORT THE NEW DIVIDER WALLS. REMOVE EXISTING ANGLE BRACKETS SUPPORTS FROM COLUMNS AND WALLS, TAKING CARE SO AS NOT TO DAMAGE THE CONCRETE. EXISTING ANCHOR BOLTS SHALL BE REMAINED IN PLACE, BUT CUT THE DAMAGED OR RUSTED EXISTING ANCHOR BOLTS AND COAT THE CUTTING SURFACE WITH COATING SYSTEM NO. 2A SPECIFIED IN SECTION 09 90 00 COATING AND PAINT. THE REMAINED ANCHOR BOLTS WILL BE USED TO SUPPORT THE NEW STAINLESS BAFFLE BRACKETS.
3. THE STEEL FACING IS EMBEDDED INTO THE FACE OF THE WALL. USE CARE IN REMOVAL SO AS TO NOT DAMAGE EXISTING WALL REINFORCING. CHIP OUT AROUND ANY EXPOSED STEEL ANCHORAGE AND REMOVE TO A MINIMUM DEPTH OF 1 1/2" BEYOND WALL SURFACE. PATCH HOLES WITH NON-SHRINK GROUT.
4. REMOVE TOP PORTION OF WALL DOWN TO ELEVATION 657.92, FOR RECONSTRUCTION OF THIS WALL, SEE STRUCTURAL DRAWINGS.
5. REMOVE COMBIFLEX AND INJECT GROUT TO SEAL JOINTS AT THE FOUR COMBIFLEX LOCATIONS.
6. DEMOLISH ELECTRICAL EQUIPMENT, INCLUDING BUT NOT LIMITED TO, EXPOSED CONDUIT, PANELS, TRANSFORMERS, AND JUNCTION BOXES. STUB AND CAP EXPOSED CONDUIT AT GRADE. PRESERVE RACEWAYS AND CONDUCTORS FROM CPDC TO POWER TERMINAL BOXES AT CLARIFIERS FOR REUSE.
7. REMOVE PORTION OF SLAB FOR WALKWAY SUPPORT COLUMN FOOTING PER (0512-011) TYPICAL OF 4 LOCATIONS.
8. DEMOLISH THE CONCRETE AND GROUT IN THIS AREA. GROUT MAY NOT BE LEVEL IN THIS AREA. SAW CUT JOINTS TO AVOID DAMAGE OF REBARS PRIOR TO JACK HAMMERING. CONTACT ENGINEER AFTER STARTING DEMO TO DISCUSS REINFORCING SECTIONS. REPLACE WITH FILL CONCRETE.
9. DEMOLISH EXISTING CONCRETE PEDESTAL PIPE SUPPORTS. MAXIMUM 5-INCHES FROM FACE OF EXISTING WALL, TYP OF 6. REPAIR SURFACES PER STANDARD DETAIL (0330-143).
10. DEMOLISH EXISTING CONCRETE WALL TO ENLARGE THE EXISTING OPENING, TYP OF 6. COORDINATE OPENING SIZE WITH FLOCCULATION EQUIPMENT MANUFACTURER. SEE DETAIL (0330-022) TYPE A.

PROFESSIONAL STRUCTURAL ENGINEER
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VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

DEMOLITION
CLARIFIER NO. 3
PLAN AND DETAIL

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN ILT	MAR 2022	APPROVED:
	DESIGNED LY	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 30-X-110			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 34 OF 76 SHEETS

FILENAME: C3-30-X-110_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 3:47:25 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
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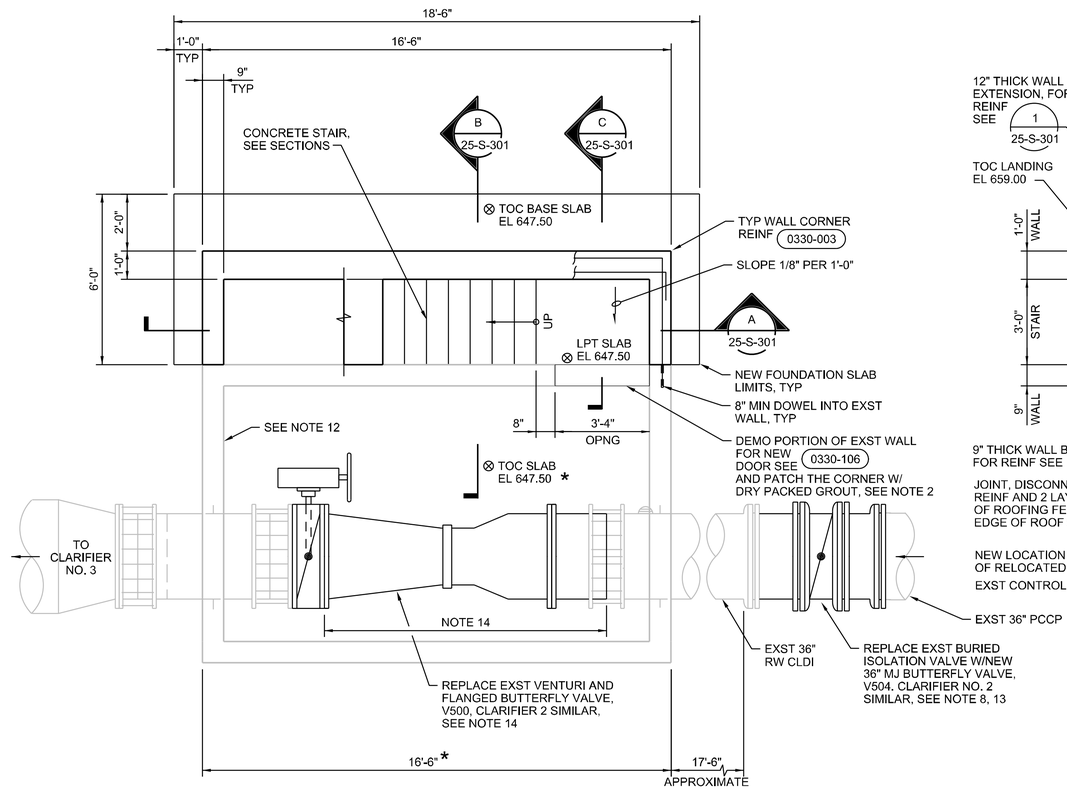
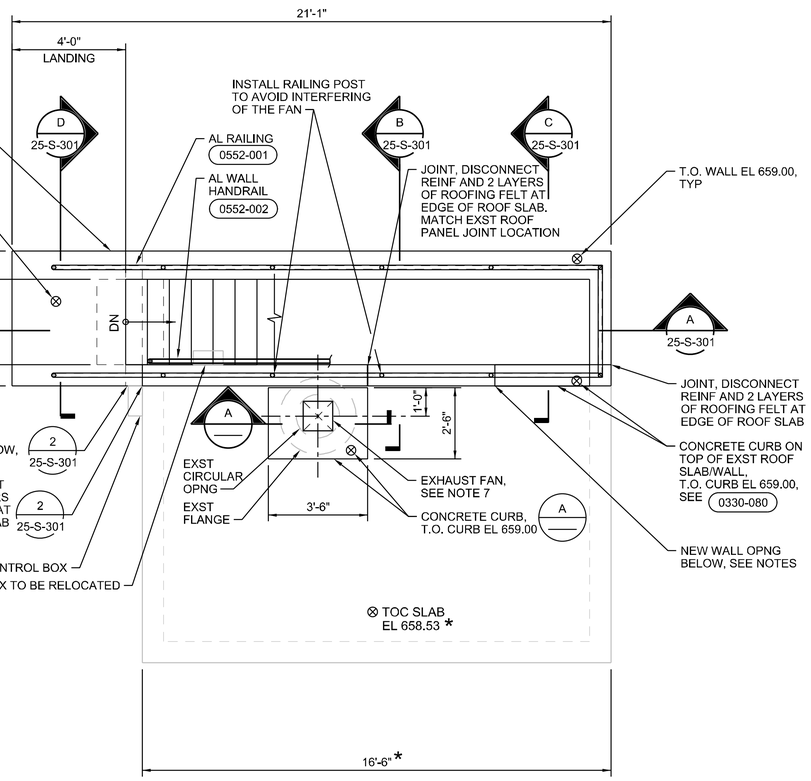


N

1 CLARIFIER NO. 3
CONTROLLER VAULT - FOUNDATION PLAN
3/8"=1'-0"

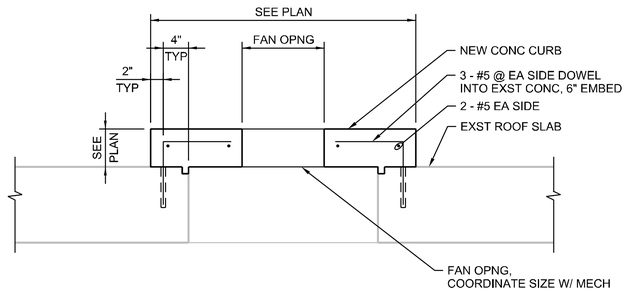
05-C-100
05-C-101



N

2 CLARIFIER NO. 3
CONTROLLER VAULT - TOP PLAN
3/8"=1'-0"

05-C-100
05-C-101



A SECTION
1"=1'-0"

FACILITY NOTES:

1. CUT OUT EXISTING WALL TO ROUGH OPENING DIMENSIONS OF 3'-4" WIDE AND 7'-4" HIGH. COORDINATE OPENING WITH PROVIDED DOOR FRAME. CHIP OUT AROUND ANY EXPOSED REINFORCING STEEL AND REMOVE TO A MINIMUM DEPTH OF 1 ½"BEYOND CONCRETE SURFACE. PATCH WITH NONSHRINK GROUT.
2. PROVIDE AND INSTALL A 3''-0"X 7''-1"FLUSH ALUMINUM DOOR AND FRAME AS MANUFACTURED BY: CLINE ALUMINUM DOORS, INC. (800-648-6736), MODEL: SERIES 100BE. CONTRACTOR TO PROVIDE AND INSTALL (3) 4-1/2" FIVE KNUCKLE BALL BEARING HEAVY DUTY FULL MORTISE ALUMINUM HINGES WITH NON-REMOVABLE PINS. DOOR SHALL INCLUDE A 24" x 12" BOTTOM DOOR LOUVER AND INSECT SCREEN. DOOR FRAME PROFILE SHALL BE 1.75" x 5". INSTALL DOOR AS HINGE RIGHT SWING OUT. INSTALL DOOR WITHOUT DOOR SILL WEATHERSTRIPPING OR THRESHOLD. DOOR AND FRAME FINISH SHALL BE CLEAR ANODIZED. PROVIDE AND INSTALL DOOR LOCKSET. COORDINATE HARDWARE REQUIREMENTS WITH OWNER BEFORE ORDERING DOOR AND FRAME. COORDINATE HARDWARE PREP WITH CLINE DOORS. PROVIDE 1"CLEAR SPACE BETWEEN BOTTOM OF DOOR AND TOP OF CONCRETE FLOOR. INSTALL DOOR AND FRAME IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. DOOR HARDWARE TO NOT INCLUDE A LOCKING MECHANISM FOR VAULT STAIRS.
3. GRANULAR FILL SHALL BE 1 INCH MINUS CRUSHED GRAVEL OR CRUSHED ROCK, FREE FROM DIRT, CLAY BALLS, AND ORGANIC MATERIAL, WELL-GRADED FROM COARSE TO FINE AND CONTAINING SUFFICIENT FINES TO BIND MATERIAL WHEN COMPACTED, BUT WITH MAXIMUM 8 PERCENT BY WEIGHT PASSING NO. 200 SIEVE.
4. PREPARE AND PAINT EXTERIOR EXPOSED WALL SURFACES OF THE METER VAULT WITH PAINT SYSTEM NO. 112 AS SPECIFIED IN SECTION 09 90 00 PAINTING AND COATING. COATING SHALL EXTEND FROM A POINT 1'-0" BELOW GRADE UP TO THE TOP OF THE EXTERIOR WALLS AND INTERIOR WALL SURFACES OF THE STAIRWELL. CONTRACTOR TO CONFIRM COATING COLORS MATCH CLARIFIER NO. 4 PRIOR TO COATING THE CLARIFIER.
5. * FIELD VERIFY
6. UTILIZE FCA TO CREATE ADEQUATE SPACE FOR REMOVAL OF EXISTING VALVE. INSTALL NEW VALVE WITH NEW BOLTS AND GASKETS PER SPECIFICATION. ADJUST FCA TO MATCH FLANGE ON NEW VALVE AND ENGAGE THRUST RESTRAINS ON FCA.
7. EXHAUST FAN, GREENHECK MODEL G-090-D, 400 CFM @ 0.50 E.S.P., 1/15 HP, 115V, SINGLE PHASE. APPROXIMATE LOCATION SHOWN, CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS. FOR MOUNTING SEE 2334-834.
8. BURIED VALVE IS LOCATED ON THE OTHER SIDE OF THE ROADWAY, FIELD VERIFY.
9. CONTRACTOR TO DO FOLLOWING BEFORE AND DURING CONSTRUCTION:
   A. PREPARE WALL BY REMOVING SPALLED OR LOOSE CONCRETE AND SANDBLASTING SURFACE.
   B. CLEAN EXISTING PIPING AT CONTACT SURFACE WITH NEW WALL AND INSTALL ONE WRAP OF HYDROPHILIC WATERSTOP AROUND THE PIPE AT THE CENTER OF THE WALL.
   C. ADHESIVE DOWELS ARE TO BE PLACED ALONG THE EAST WALL, WEST WALLS AND FLOOR.
10. PROTECT EXISTING STRUCTURE AGAINST MOVEMENT AND/OR DAMAGE DURING CONSTRUCTION.
11. DO NOT USE EXISTING STRUCTURE FOR SHORING OF EXISTING GRADE. EXCAVATE THE NORTH SIDE OF THE STRUCTURE TO ELEVATION 655.00 DURING CONSTRUCTION OF THE STAIR AND WALLS TO AVOID SLIDING OF THE EXISTING STRUCTURE.
12. REPAIR EAST WALL PER SPECIFICATION 03 01 32 REPAIR OF VERTICAL AND OVERHEAD CONCRETE SURFACES. APPROXIMATE ARE TO BE REPLACED IS 25 SQUARE FOOT FOR EAST WALL.
13. 36" ISOLATION VALVE REPLACEMENT:
    - CONTRACTOR TO DEVELOP SEQUENCE OF WORK FOR VALVE REPLACEMENT. SEQUENCE WORK TO MINIMIZE PLANT SHUT DOWN.
    - VALVE REPLACEMENT WILL REQUIRE COORDINATION WITH OPERATIONS AND INVOLVE DEWATERING OF RAW WATER HEADER PIPING THAT CANNOT BE ISOLATED.
    - POTHOLE 36" PIPE TO FIELD VERIFY JOINT TYPE, LOCATION AND ORIENTATION.
    - BASED ON PIPE JOINT TYPE, LOCATION AND ORIENTATION, PROVIDE NECESSARY PIPING AND FITTINGS.
    - SUBMIT SEQUENCE PLAN TO ENGINEER FOR APPROVAL.
14. DEMOLISH EXISTING BUTTERFLY VALVE, VENTURI FLOW METER, AND PIPE SPOOL. INSTALL NEW 36" V500 AND VENTURI FLOW METER ON EXST FLANGE. INSTALL NEW FLG x PE SPOOL UPSTREAM. ADJUST LENGTH AS REQUIRED. CONTRACTOR TO VERIFY DIMENSIONS OF NEW VENTURI AND VALVE WILL FIT EXISTING CONDITIONS PRIOR TO PURCHASE.

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

STRUCTURAL

CLARIFIER NO. 3 RAW WATER CONTROLLER VAULT PLANS AND SECTION

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PLAN SCALE: AS NOTED ON PLANS
PROFILE SCALE:
HORIZONTAL:
VERTICAL

DRAWN	ILT	MAR 2022
DESIGNED	LY	MAR 2022
SURVEY		
FIELD MGR.		
SECT. MGR.		
PROJ. MGR.		
RECOMMENDED: DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 25-S-110
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 35 OF 76 SHEETS

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
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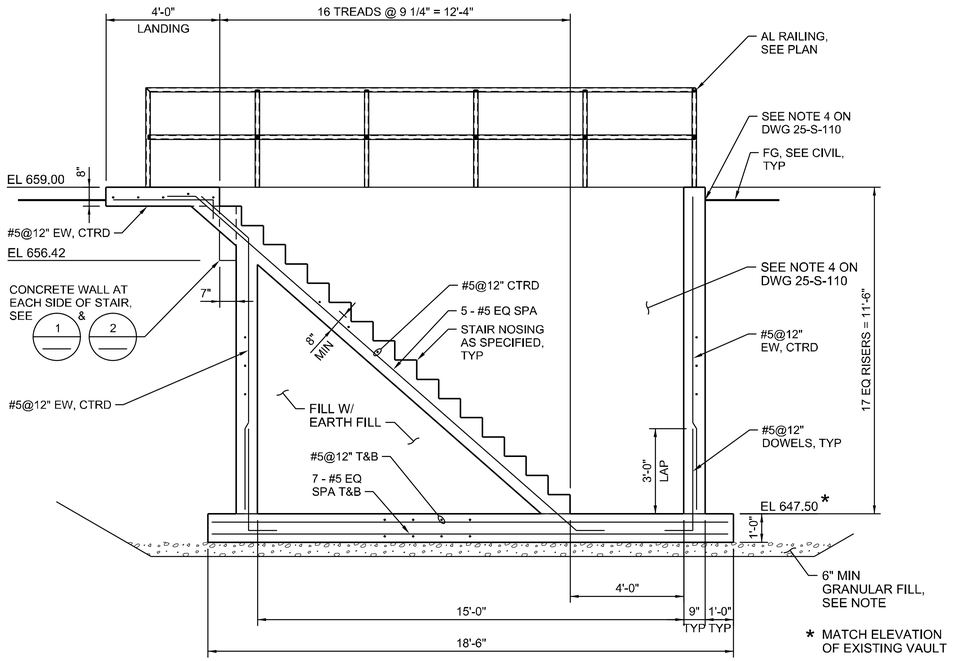
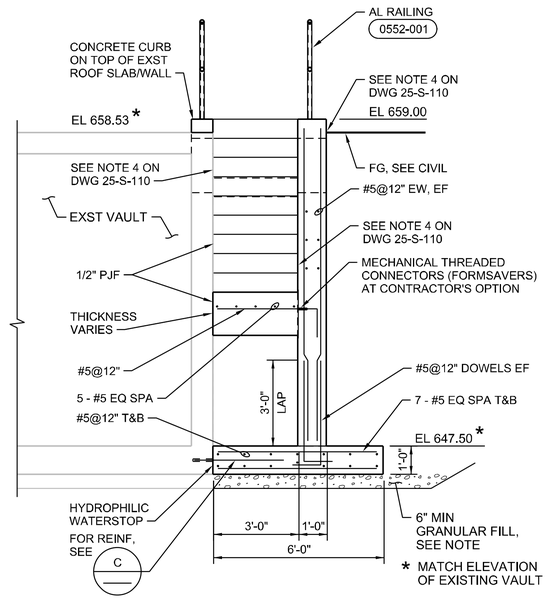
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

FILENAME: C3-25-S-110_WFXQ2600.dgn
PLOT DATE: 2022\03\15
PLOT TIME: 2:10:28 PM

NOTE:
FOR INFORMATION NOT SHOWN AND FACILITY NOTES, SEE DRAWING 25-S-110.



A SECTION
3/8"=1'-0"
25-S-110



B SECTION
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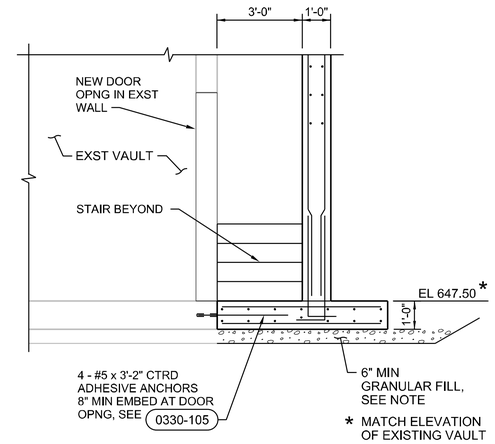
25-S-110



C SECTION
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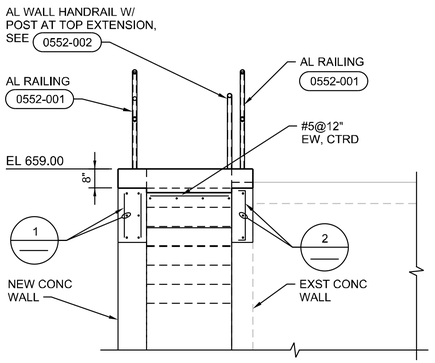

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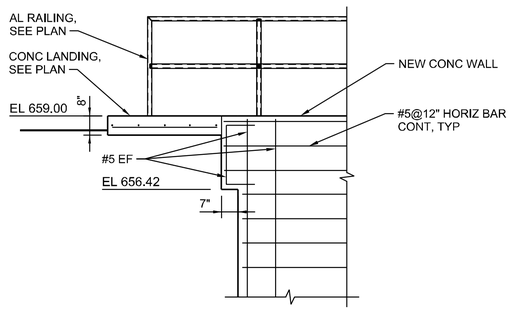
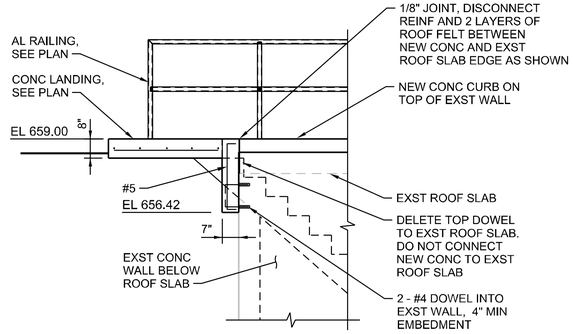
3/8"=1'-0"
25-S-110



1 DETAIL
3/8"=1'-0"
25-S-110



2 DETAIL
3/8"=1'-0"
25-S-110

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

STRUCTURAL
CLARIFIER NO. 3 RAW WATER CONTROLLER VAULT SECTIONS AND DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
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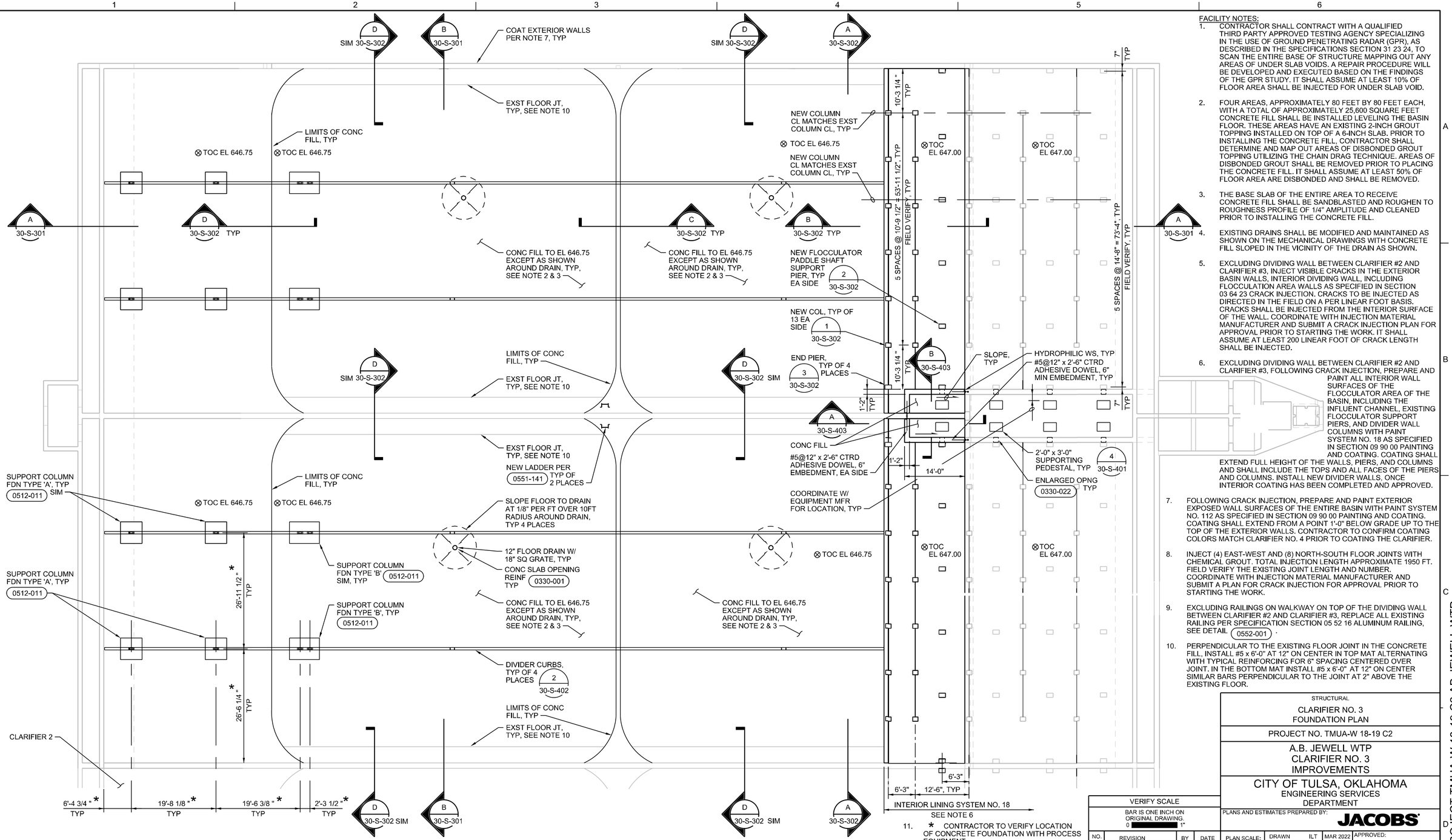
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		
FILE:	25-S-301		
ATLAS PAGE NO:	543		

APPROVED:
CITY ENGINEER
DATE: MARCH 2022
SHEET 36 OF 76 SHEETS

FILENAME: C3-25-S-301_WFXQ2600.dgn
PLOT DATE: 2022\03\15
PLOT TIME: 2:29:30 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



FACILITY NOTES:

1. CONTRACTOR SHALL CONTRACT WITH A QUALIFIED THIRD PARTY APPROVED TESTING AGENCY SPECIALIZING IN THE USE OF GROUND PENETRATING RADAR (GPR), AS DESCRIBED IN THE SPECIFICATIONS SECTION 31 23 24, TO SCAN THE ENTIRE BASE OF STRUCTURE MAPPING OUT ANY AREAS OF UNDER SLAB VOIDS. A REPAIR PROCEDURE WILL BE DEVELOPED AND EXECUTED BASED ON THE FINDINGS OF THE GPR STUDY. IT SHALL ASSUME AT LEAST 10% OF FLOOR AREA SHALL BE INJECTED FOR UNDER SLAB VOID.
2. FOUR AREAS, APPROXIMATELY 80 FEET BY 80 FEET EACH, WITH A TOTAL OF APPROXIMATELY 25,600 SQUARE FEET CONCRETE FILL SHALL BE INSTALLED LEVELING THE BASIN FLOOR. THESE AREAS HAVE AN EXISTING 2-INCH GROUT TOPPING INSTALLED ON TOP OF A 6-INCH SLAB. PRIOR TO INSTALLING THE CONCRETE FILL, CONTRACTOR SHALL DETERMINE AND MAP OUT AREAS OF DISBONDED GROUT TOPPING UTILIZING THE CHAIN DRAG TECHNIQUE. AREAS OF DISBONDED GROUT SHALL BE REMOVED PRIOR TO PLACING THE CONCRETE FILL. IT SHALL ASSUME AT LEAST 50% OF FLOOR AREA ARE DISBONDED AND SHALL BE REMOVED.
3. THE BASE SLAB OF THE ENTIRE AREA TO RECEIVE CONCRETE FILL SHALL BE SANDBLASTED AND ROUGHEN TO ROUGHNESS PROFILE OF 1/4" AMPLITUDE AND CLEANED PRIOR TO INSTALLING THE CONCRETE FILL.
4. EXISTING DRAINS SHALL BE MODIFIED AND MAINTAINED AS SHOWN ON THE MECHANICAL DRAWINGS WITH CONCRETE FILL SLOPED IN THE VICINITY OF THE DRAIN AS SHOWN.
5. EXCLUDING DIVIDING WALL BETWEEN CLARIFIER #2 AND CLARIFIER #3, INJECT VISIBLE CRACKS IN THE EXTERIOR BASIN WALLS, INTERIOR DIVIDING WALL, INCLUDING FLOCCULATION AREA WALLS AS SPECIFIED IN SECTION 03 64 23 CRACK INJECTION. CRACKS TO BE INJECTED AS DIRECTED IN THE FIELD ON A PER LINEAR FOOT BASIS. CRACKS SHALL BE INJECTED FROM THE INTERIOR SURFACE OF THE WALL. COORDINATE WITH INJECTION MATERIAL MANUFACTURER AND SUBMIT A CRACK INJECTION PLAN FOR APPROVAL PRIOR TO STARTING THE WORK. IT SHALL ASSUME AT LEAST 200 LINEAR FOOT OF CRACK LENGTH SHALL BE INJECTED.
6. EXCLUDING DIVIDING WALL BETWEEN CLARIFIER #2 AND CLARIFIER #3, FOLLOWING CRACK INJECTION, PREPARE AND PAINT ALL INTERIOR WALL SURFACES OF THE FLOCCULATOR AREA OF THE BASIN, INCLUDING THE INFLUENT CHANNEL, EXISTING FLOCCULATOR SUPPORT PIERS, AND DIVIDER WALL COLUMNS WITH PAINT SYSTEM NO. 18 AS SPECIFIED IN SECTION 09 90 00 PAINTING AND COATING. COATING SHALL EXTEND FULL HEIGHT OF THE WALLS, PIERS, AND COLUMNS AND SHALL INCLUDE THE TOPS AND ALL FACES OF THE PIERS AND COLUMNS. INSTALL NEW DIVIDER WALLS, ONCE INTERIOR COATING HAS BEEN COMPLETED AND APPROVED.
7. FOLLOWING CRACK INJECTION, PREPARE AND PAINT EXTERIOR EXPOSED WALL SURFACES OF THE ENTIRE BASIN WITH PAINT SYSTEM NO. 112 AS SPECIFIED IN SECTION 09 90 00 PAINTING AND COATING. COATING SHALL EXTEND FROM A POINT 1'-0" BELOW GRADE UP TO THE TOP OF THE EXTERIOR WALLS. CONTRACTOR TO CONFIRM COATING COLORS MATCH CLARIFIER NO. 4 PRIOR TO COATING THE CLARIFIER.
8. INJECT (4) EAST-WEST AND (8) NORTH-SOUTH FLOOR JOINTS WITH CHEMICAL GROUT. TOTAL INJECTION LENGTH APPROXIMATE 1950 FT. FIELD VERIFY THE EXISTING JOINT LENGTH AND NUMBER. COORDINATE WITH INJECTION MATERIAL MANUFACTURER AND SUBMIT A PLAN FOR CRACK INJECTION FOR APPROVAL PRIOR TO STARTING THE WORK.
9. EXCLUDING RAILINGS ON WALKWAY ON TOP OF THE DIVIDING WALL BETWEEN CLARIFIER #2 AND CLARIFIER #3, REPLACE ALL EXISTING RAILING PER SPECIFICATION SECTION 05 52 16 ALUMINUM RAILING, SEE DETAIL 0552-001 .
10. PERPENDICULAR TO THE EXISTING FLOOR JOINT IN THE CONCRETE FILL, INSTALL #5 x 6'-0" AT 12" ON CENTER IN TOP MAT ALTERNATING WITH TYPICAL REINFORCING FOR 6" SPACING CENTERED OVER JOINT. IN THE BOTTOM MAT INSTALL #5 x 6'-0" AT 12" ON CENTER SIMILAR BARS PERPENDICULAR TO THE JOINT AT 2" ABOVE THE EXISTING FLOOR.
11. * CONTRACTOR TO VERIFY LOCATION OF CONCRETE FOUNDATION WITH PROCESS EQUIPMENT.

CLARIFIER NO. 3 - FOUNDATION PLAN

3/32"=1'-0"

DIGITALLY SIGNED 03/16/2022

STRUCTURAL

CLARIFIER NO. 3
FOUNDATION PLAN

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PLAN SCALE: AS NOTED ON PLANS
PROFILE SCALE:
HORIZONTAL:
VERTICAL

DRAWN	ILT	MAR 2022
DESIGNED	LY	MAR 2022
SURVEY		
FIELD MGR.		
SECT. MGR.		
PROJ. MGR.		
RECOMMENDED:		
DESIGN MANAGER		

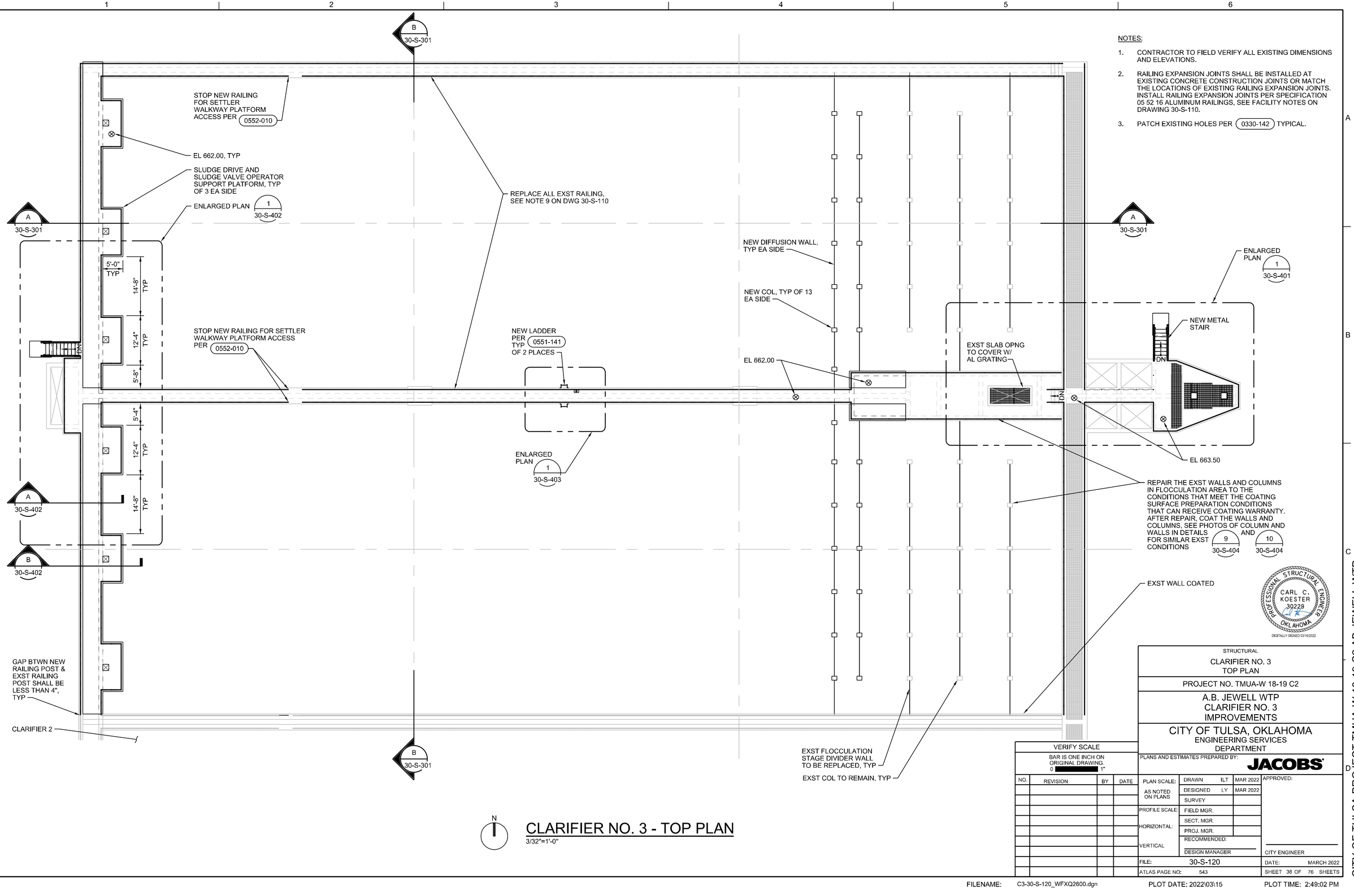
APPROVED:

CITY ENGINEER

FILE: 30-S-110
ATLAS PAGE NO: 543
DATE: MARCH 2022
SHEET 37 OF 76 SHEETS

FILENAME: C3-30-S-110_WFXQ2600.dgn PLOT DATE: 2022\03\17 PLOT TIME: 3:49:50 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL EXISTING DIMENSIONS AND ELEVATIONS.
2. RAILING EXPANSION JOINTS SHALL BE INSTALLED AT EXISTING CONCRETE CONSTRUCTION JOINTS OR MATCH THE LOCATIONS OF EXISTING RAILING EXPANSION JOINTS. INSTALL RAILING EXPANSION JOINTS PER SPECIFICATION 05 52 16 ALUMINUM RAILINGS, SEE FACILITY NOTES ON DRAWING 30-S-110.
3. PATCH EXISTING HOLES PER 0330-142 TYPICAL.

N

CLARIFIER NO. 3 - TOP PLAN

3/32"=1'-0"

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

STRUCTURAL

CLARIFIER NO. 3
TOP PLAN

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

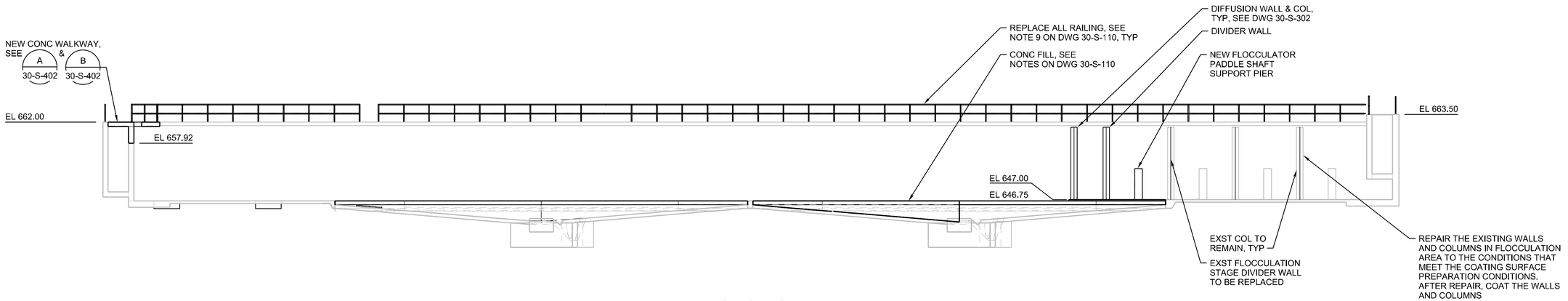
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

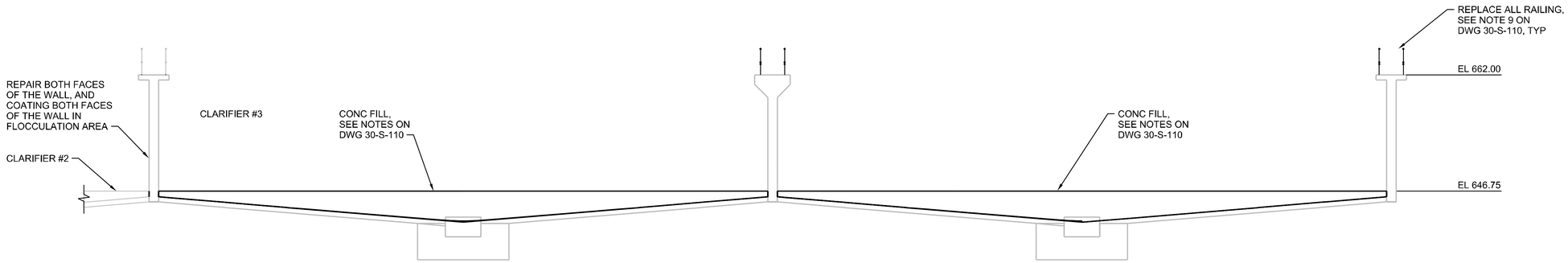
PLAN SCALE: AS NOTED ON PLANS	DRAWN ILT	MAR 2022	APPROVED:
	DESIGNED LY	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 30-S-120			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 38 OF 76 SHEETS

FILENAME: C3-30-S-120_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 2:49:02 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



A SECTION
3/32"=1'-0"
30-S-110
30-S-120



B SECTION
1/8"=1'-0"
30-S-110
30-S-120

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
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0 1"

NO.	REVISION	BY	DATE

STRUCTURAL
CLARIFIER NO. 3
OVERALL SECTIONS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

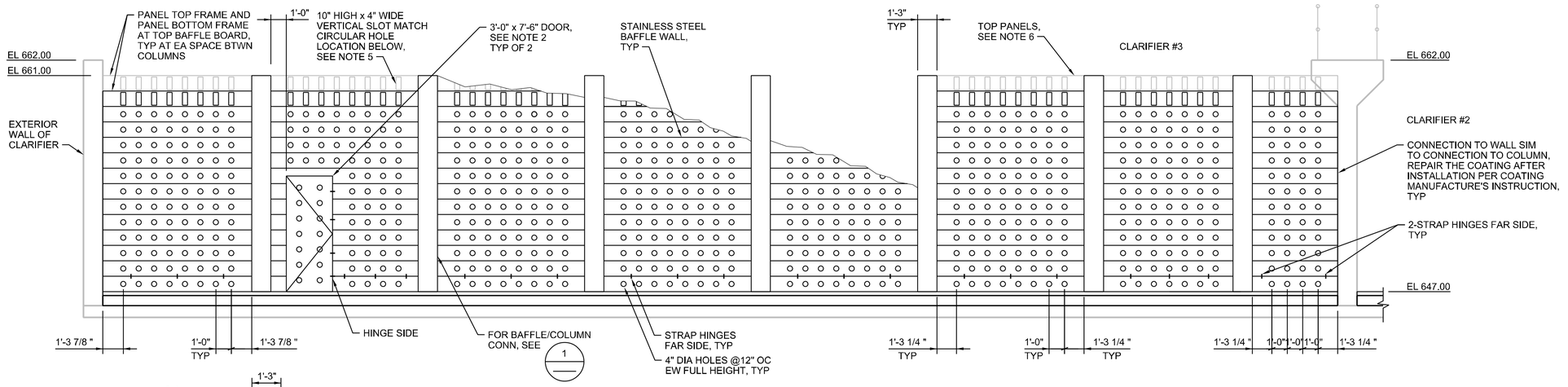
PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
	DESIGNED	LY	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
	SECT. MGR.		
HORIZONTAL:	PROJ. MGR.		
	RECOMMENDED:		
VERTICAL	DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 30-S-301
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 39 OF 76 SHEETS

FILENAME: C3-30-S-301_WFXQ2600.dgn
PLOT DATE: 2022\03\15
PLOT TIME: 2:56:13 PM

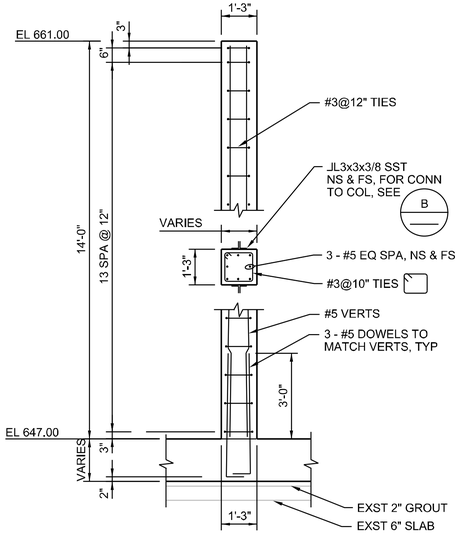
CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



A ELEVATION - DIFFUSION WALL
1/4"=1'-0"
30-S-110

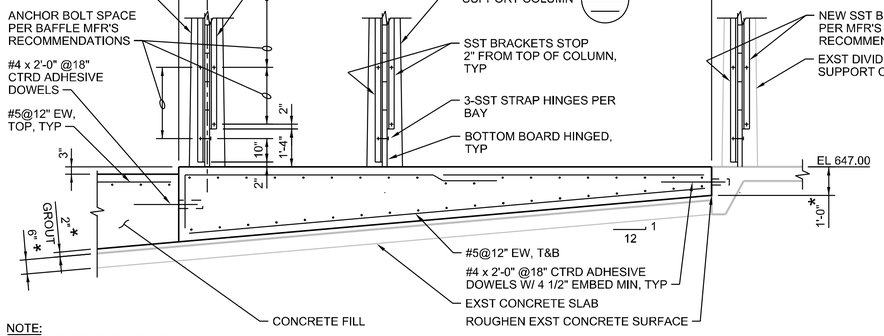
BAFFLE NOTES:

1. BAFFLE SHALL BE CONSTRUCTED OF STAINLESS STEEL 304L PANELS. HINGE BOTTOM BOARD OF EACH BAFFLE AND DIVIDER WALL AS SHOWN.
2. CONSTRUCT DOOR FROM SAME MATERIAL AS THE BAFFLE TO THE DIMENSIONS SHOWN. PROVIDE 4"x4" STAINLESS STEEL ANGLE FOR STIFFENING. PROVIDE 4 - STAINLESS STEEL STRAP HINGES SIMILAR TO MCMASTER CARR TYPE 12575A631 HINGES OR EQUAL. DOOR LATCH SHALL BE MODEL NO. 10635A65 BY MCMASTER CARR OR EQUAL.
3. CONNECT BAFFLE TO CONCRETE USING EXISTING REMAINED STAINLESS STEEL ANCHOR BOLTS AS SHOWN. ADD NEW ANCHOR BOLTS. OVERALL SPACE AND NEW BOLT SIZE PER BAFFLE MANUFACTURER'S RECOMMENDATIONS. ALL BOLTS SHALL BE STAINLESS STEEL (SST).
4. DIVIDER WALLS ARE SIMILAR BUT WITHOUT HOLES.
5. TOP TWO BAFFLE PANEL BOARDS TO HAVE ELONGATED CUTOUTS AS SHOWN.
6. TOP PANELS SHOWN SCREENED FOR FUTURE INSTALLATION.



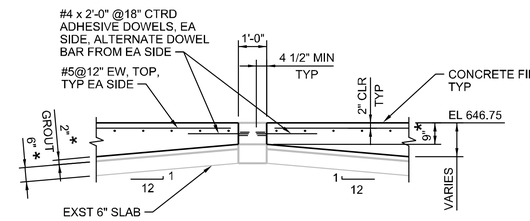
NOTE:
ALL COLUMNS TO BE CONSTRUCTED 1'-3" FROM BOTTOM TO TOP.

1 DETAIL
3/8"=1'-0"
30-S-110



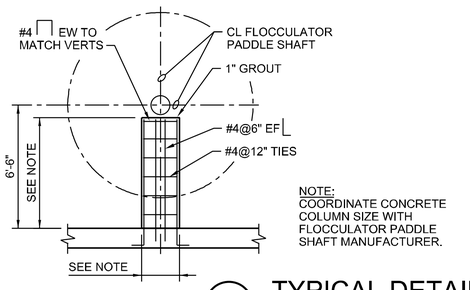
NOTE:
* FIELD VERIFY DIMENSION, TYPICAL.

B SECTION
3/8"=1'-0"
30-S-110



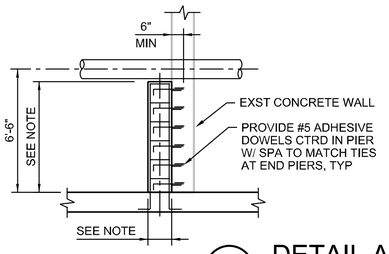
NOTE:
* FIELD VERIFY DIMENSION, TYPICAL.

C SECTION
3/8"=1'-0"
30-S-110



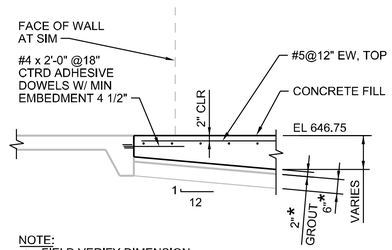
NOTE:
COORDINATE CONCRETE COLUMN SIZE WITH FLOCCULATOR PADDLE SHAFT MANUFACTURER.

2 TYPICAL DETAIL
NTS
30-S-110



NOTE:
COORDINATE CONCRETE COLUMN SIZE WITH FLOCCULATOR PADDLE SHAFT MANUFACTURER.

3 DETAIL AT END
NTS
30-S-110



NOTE:
* FIELD VERIFY DIMENSION, TYPICAL.

D SECTION
3/8"=1'-0"
30-S-110

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
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0 1"

NO.	REVISION	BY	DATE

STRUCTURAL
CLARIFIER NO. 3
DIFFUSER WALL SECTIONS AND DETAILS
PROJECT NO. TMUA-W 18-19 C2
A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
	DESIGNED	LY	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		
FILE:	30-S-302		
ATLAS PAGE NO:	543		

APPROVED:
CITY ENGINEER
DATE: MARCH 2022
SHEET 40 OF 76 SHEETS

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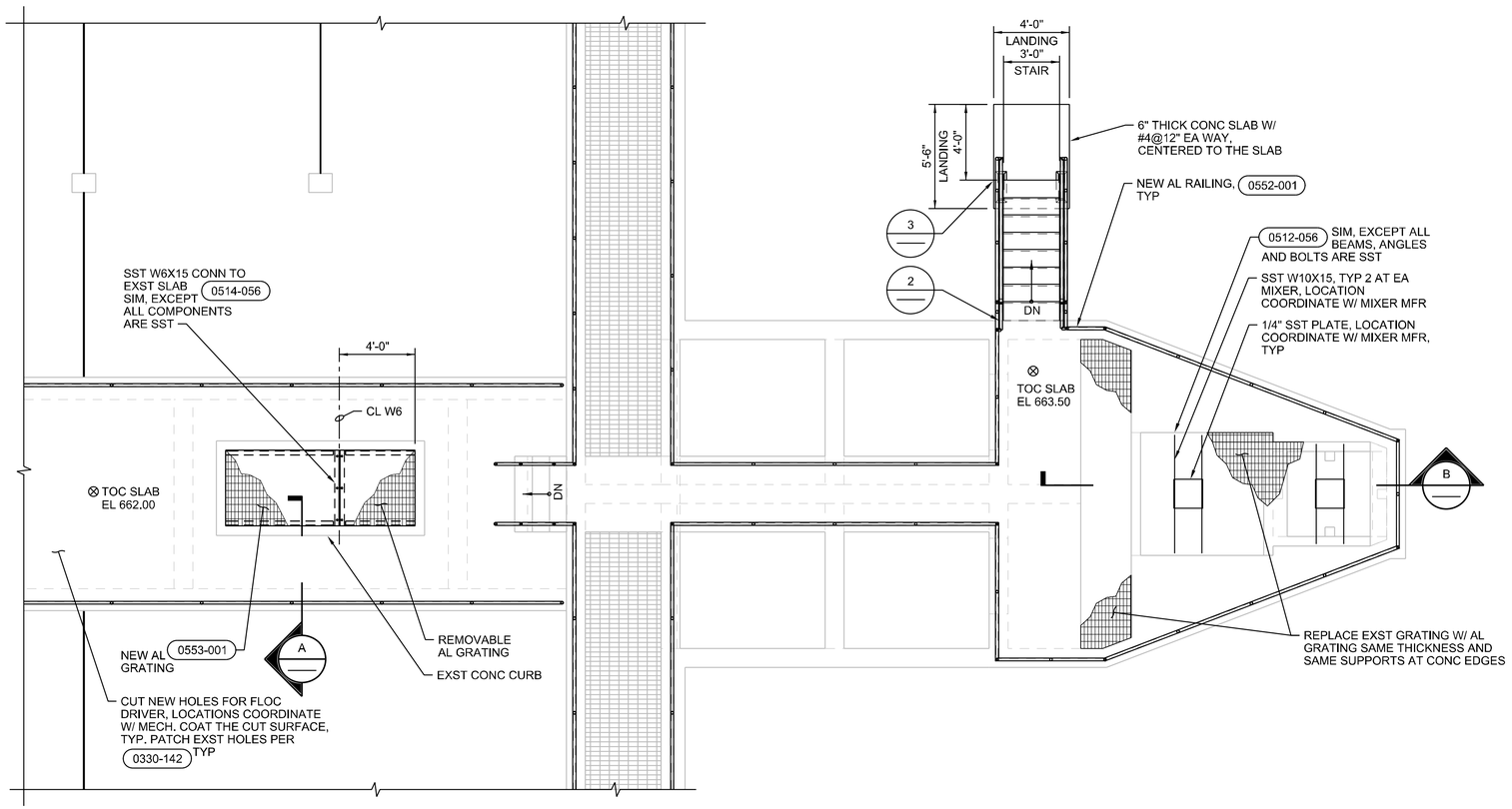
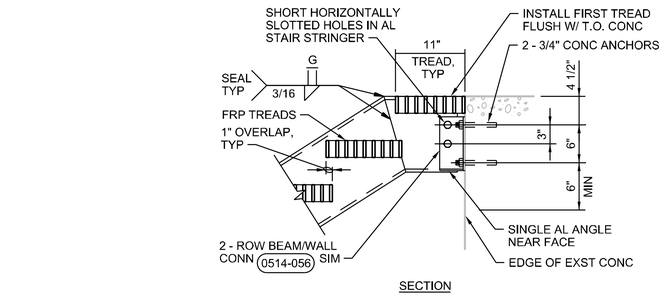
PLOT DATE: 2022\03\17
PLOT TIME: 3:53:05 PM



1 ENLARGED PLAN
1/4"=1'-0"
30-S-120

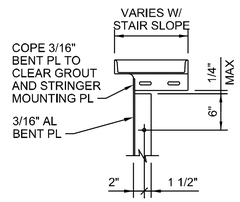


SECTION

2 TOP CONNECTION DETAIL
NTS

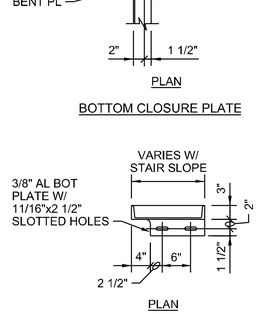
NOTES FOR DETAIL 2 AND 3:

1. STAIR TREADS SHALL BE FIBERTRED AS MANUFACTURED BY FIBERGATE COMPOSITE STRUCTURES INC, 5151 BELT LINE ROAD, DALLAS, TX.
2. FIBERTRED SHALL BE SECURED BY CLIPS, NUTS, WASHERS, AND BOLTS PROVIDED BY FIBERGATE AND PER FIBERGATE INSTALLATION INSTRUCTION.

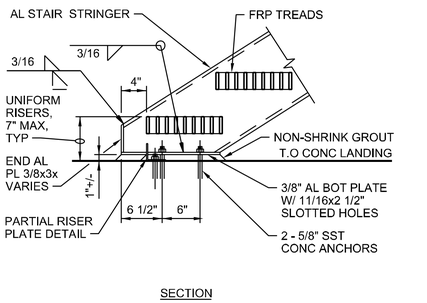


PLAN

BOTTOM CLOSURE PLATE

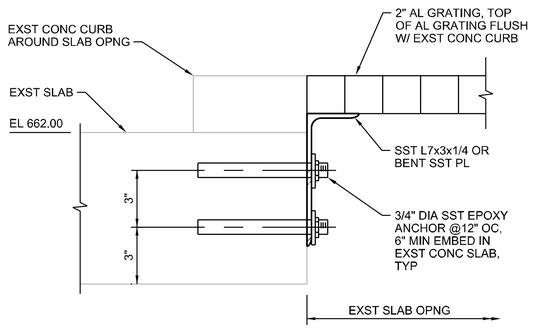


PLAN

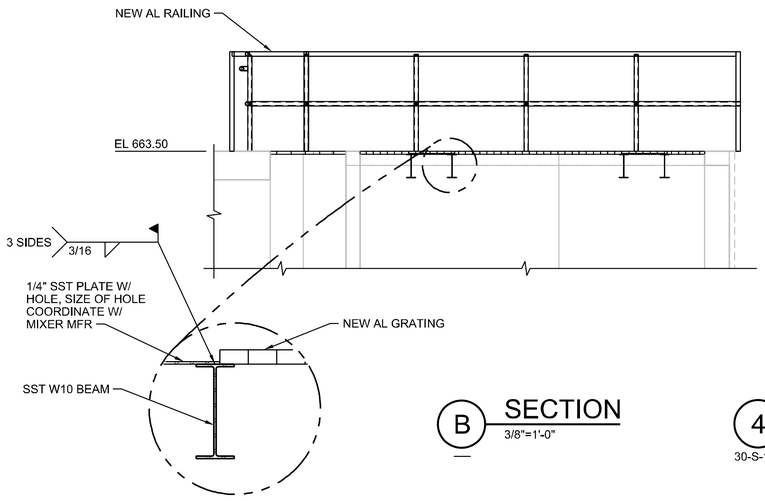


SECTION

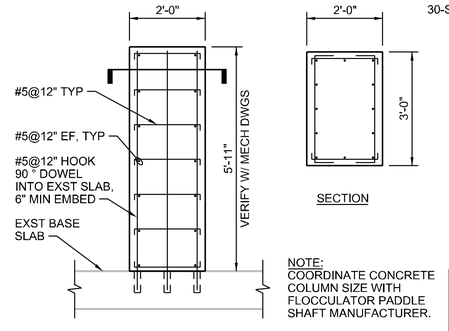
3 BOTTOM CONNECTION DETAIL
NTS
30-S-402



A SECTION
3"=1'-0"



B SECTION
3/8"=1'-0"



SECTION

NOTE:
COORDINATE CONCRETE COLUMN SIZE WITH FLOCCULATOR PADDLE SHAFT MANUFACTURER.

4 SUPPORTING PEDESTAL DETAIL
1/2"=1'-0"
30-S-110

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

STRUCTURAL
CLARIFIER NO. 3
ENLARGED PLAN, SECTIONS AND DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
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	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		
FILE:	30-S-401		
ATLAS PAGE NO:	543		

APPROVED:

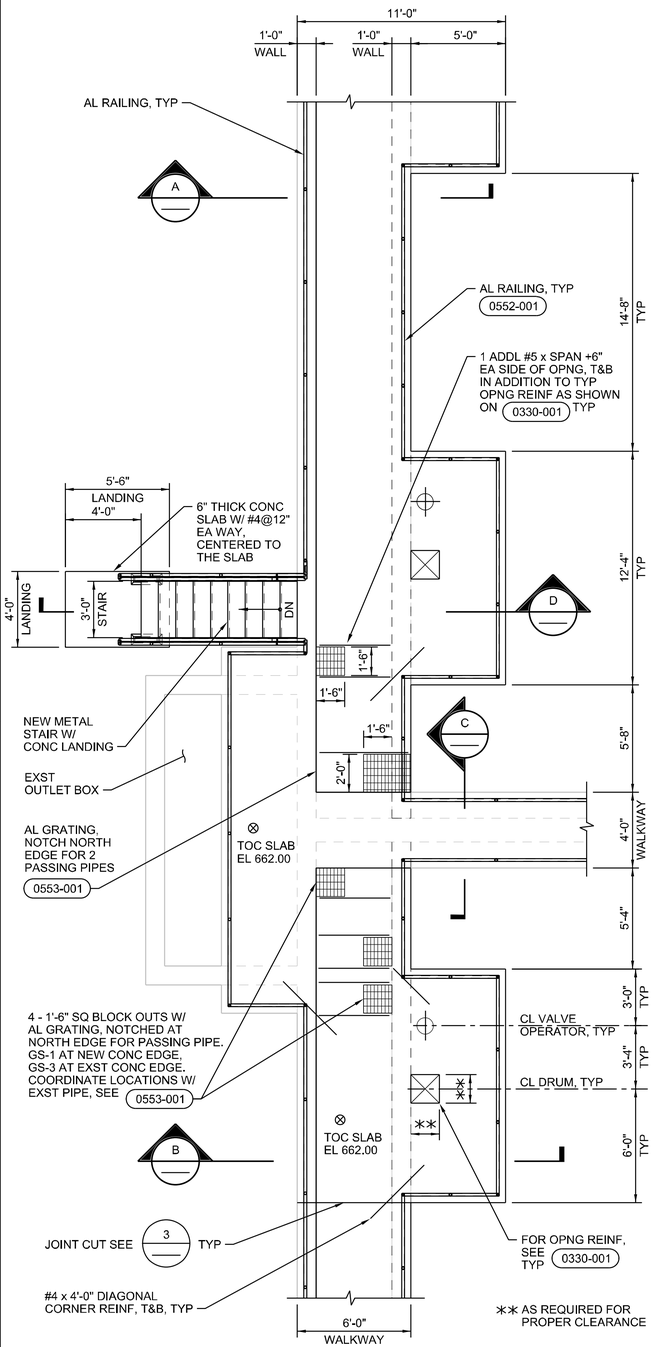
CITY ENGINEER

DATE: MARCH 2022

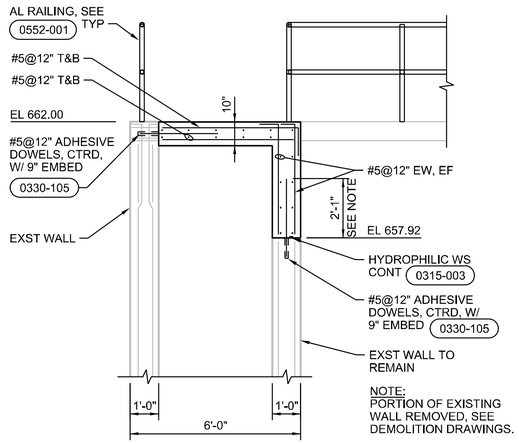
SHEET 41 OF 76 SHEETS

FILENAME: C3-30-S-401_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 3:12:26 PM

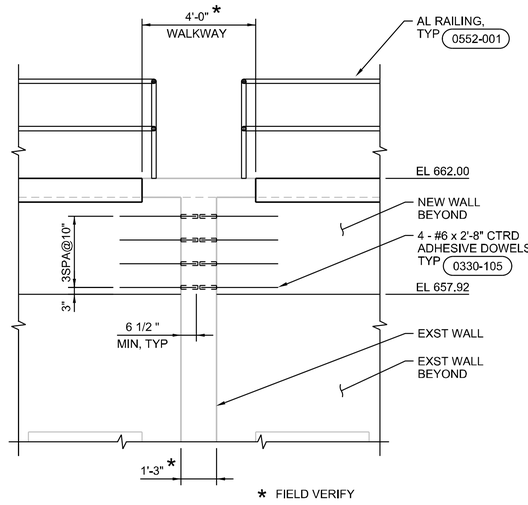
CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



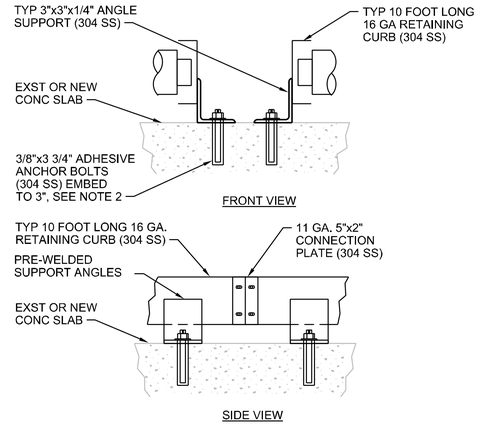
1 ENLARGED PLAN
1/4"=1'-0"
30-S-120



A SECTION
3/8"=1'-0"
30-X-110
30-S-120
30-S-301



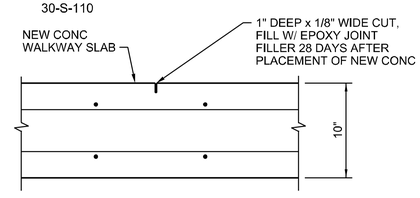
C SECTION
3/8"=1'-0"



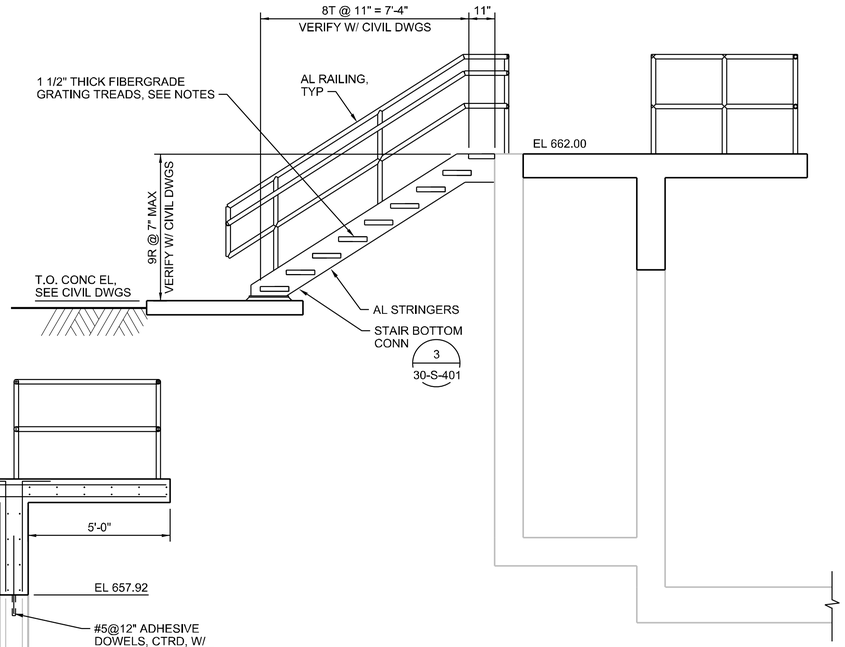
NOTES:

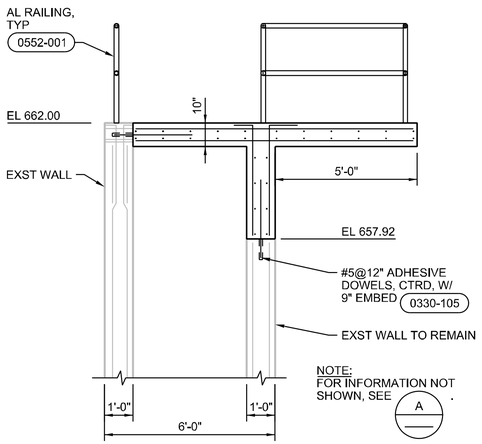
1. CURBS PROVIDED AS PART OF HOSELESS SLUDGE COLLECTOR EQUIPMENT PACKAGE. INSTALLED BY CONTRACTOR.
2. COORDINATE ANCHOR BOLT LOCATION WITH SLUDGE COLLECTOR MANUFACTURER.

2 CURB DETAIL
NTS
30-S-110



3 WALKWAY CONTROL JOINT DETAIL
1 1/2"=1'-0"





B SECTION
3/8"=1'-0"
30-S-120, 30-S-301

NOTES:

1. LANDING FRP GRATING SHALL BE MANUFACTURED BY FIBERGATE COMPOSITE STRUCTURES INC, 5151 BELT LINE ROAD, DALLAS, TX.
2. GRATING SHALL BE SECURED BY CLIPS, NUTS, WASHERS, AND BOLTS PROVIDED BY FIBERGATE AND PER FIBERGATE INSTALLATION INSTRUCTION.

D SECTION
3/8"=1'-0"

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

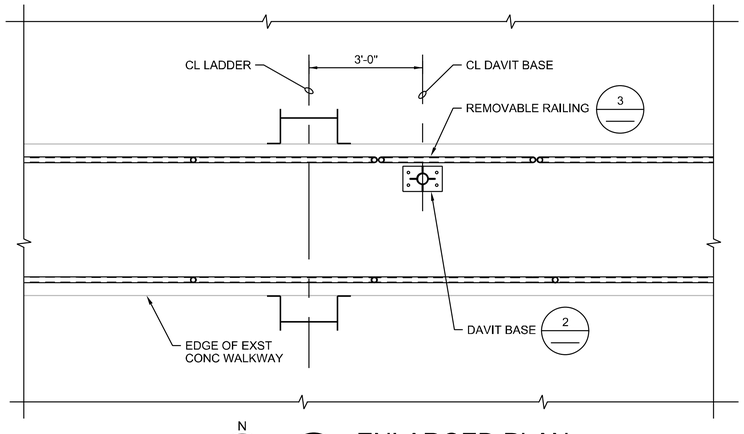
NO.	REVISION	BY	DATE

STRUCTURAL
CLARIFIER NO. 3
ENLARGED PLANS, SECTIONS AND DETAILS
PROJECT NO. TMUA-W 18-19 C2
A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT
PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN ILT	MAR 2022	APPROVED:
	DESIGNED LY	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 30-S-402			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 42 OF 76 SHEETS

FILENAME: C3-30-S-402_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 3:21:38 PM

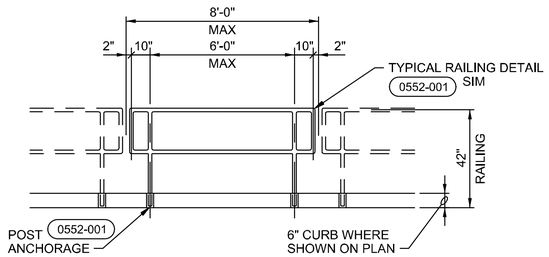
CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



N

1 ENLARGED PLAN
1/2"=1'-0"

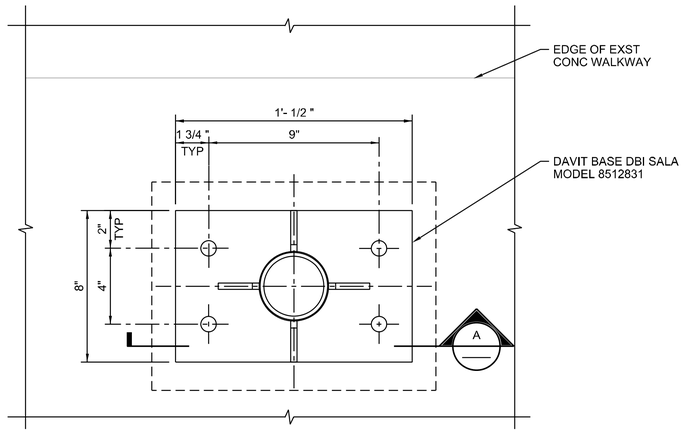
30-S-120



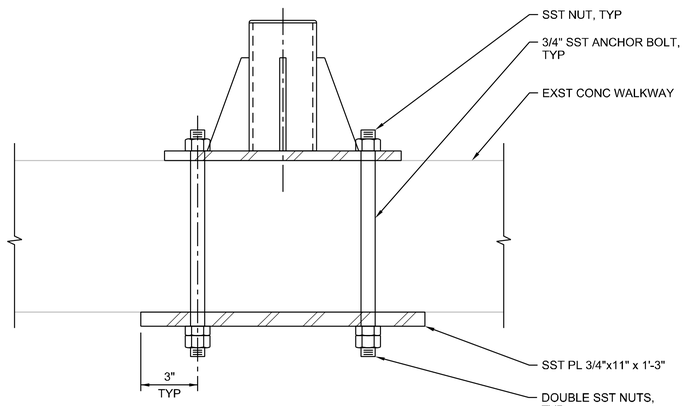
NOTES:

1. DETAIL SHOWN AT CURBED OPENING. WHERE NO CURB, PROVIDE 6" EDGE DISTANCE AND STIFFENED KICK PLATE ATTACHED TO REMOVABLE RAILING.
2. FABRICATE REMOVABLE RAILING IN MAXIMUM 8'-0" SECTIONS WITH 2 POSTS EACH SECTION.

3 REMOVABLE TWO RAIL RAILING - ALUMINUM
NTS

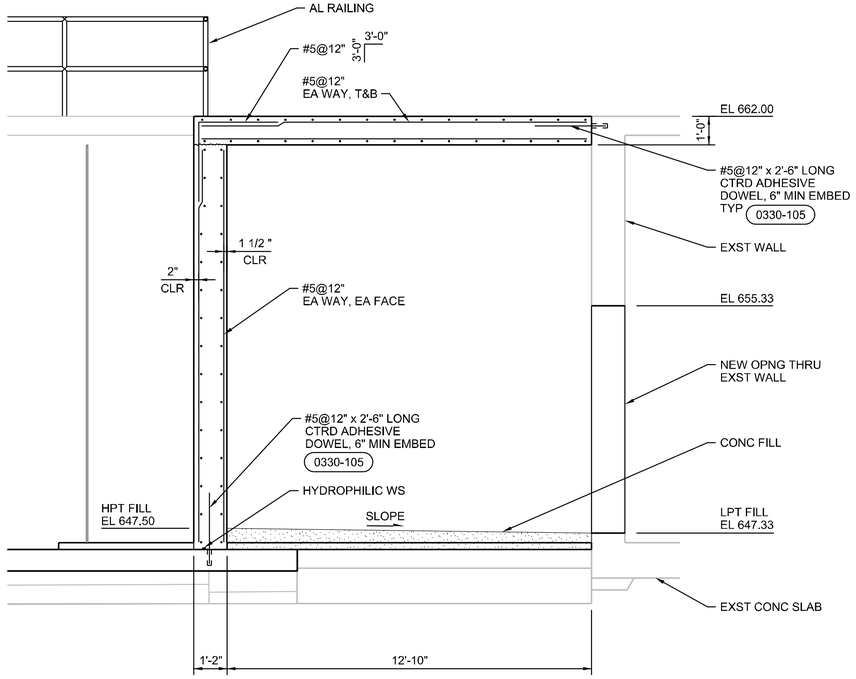


PLAN



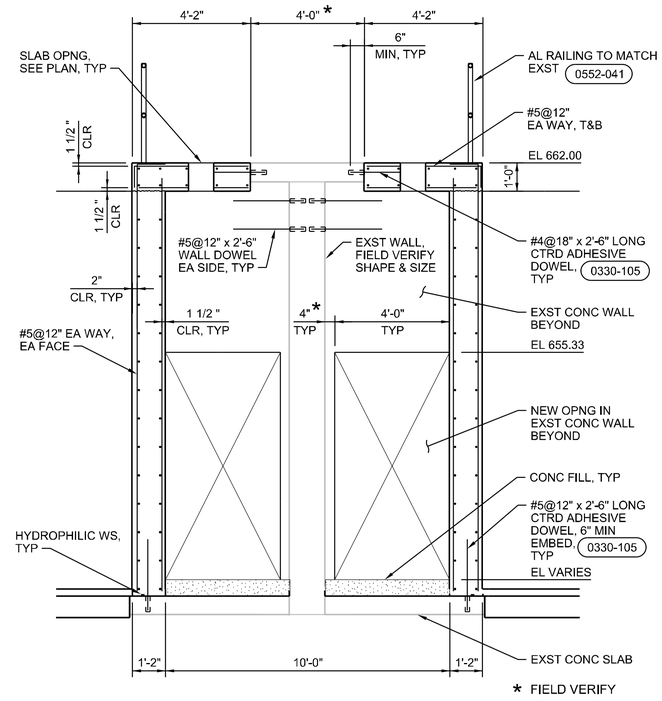
SECTION A

2 DAVIT BASE DETAIL
3"=1'-0"



A SECTION
3/8"=1'-0"

30-S-110
30-S-120



* FIELD VERIFY

B SECTION
3/8"=1'-0"

30-S-110
30-S-120

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

STRUCTURAL
CLARIFIER NO. 3
ENLARGED PLAN, SECTIONS, AND DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PLAN SCALE: AS NOTED ON PLANS
PROFILE SCALE:
HORIZONTAL:
VERTICAL

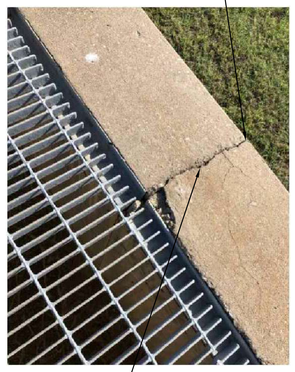
DRAWN	ILT	MAR 2022
DESIGNED	LY	MAR 2022
SURVEY		
FIELD MGR.		
SECT. MGR.		
PROJ. MGR.		
RECOMMENDED: DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 30-S-403
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 43 OF 76 SHEETS

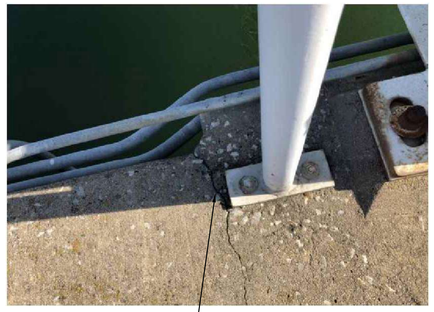
FILENAME: C3-30-S-403_WFXQ2600.dgn
PLOT DATE: 2022\03\15
PLOT TIME: 3:27:15 PM

CRACK AT EDGE OF WALKWAY, COMBINED HORIZONTAL AND VERTICAL REPAIR



HORIZONTAL SURFACE REPAIR

1 DETAIL NTS



NEW RAILING POST SHALL BE INSTALLED AFTER THE REPAIR, AND THE POST ANCHOR BOLT SHALL BE AT LEAST 9" AWAY FROM THE REPAIRED CRACK

4 DETAIL NTS

VERTICAL SURFACE AREA REPAIR

6 DETAIL NTS

EXISTING WALL TO BE REPAIRED, SEE NOTE 5

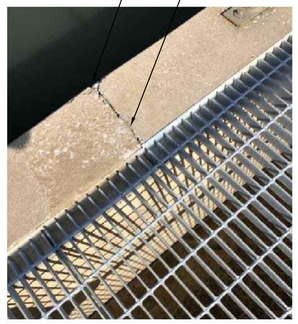
9 DETAIL NTS

NOTES:

1. ABOVE WATER WALKWAY SLAB AND SLAB VERTICAL EDGE SHALL BE REPAIRED PER SPECIFICATION SECTION 03 01 32 REPAIR OF VERTICAL AND OVERHEAD CONCRETE SURFACE, AND SPECIFICATION SECTION 03 01 33 REPAIR OF HORIZONTAL CONCRETE SURFACE. COORDINATE WITH THE REPAIR MATERIAL MANUFACTURER AND SUBMIT A REPAIR PLAN FOR APPROVAL PRIOR TO STARTING THE WORK.
2. REPAIR THE CRACKS AS DIRECTED IN THE FIELD BY THE OWNER'S REPRESENTATIVE ON A PER LINEAR FOOT BASIS. IT SHALL ASSUME THE TOTAL LINEAR FOOT OF SURFACE CRACK BE 50 FT. REPRESENTATIVE CRACKS ARE SHOWN IN PHOTO DETAILS 1, 2, 3, AND 4.
3. REPAIR THE DEFICIENT CONCRETE SURFACE AREA AS DIRECTED IN THE FIELD BY THE OWNER'S REPRESENTATIVE ON A PER SQUARE FEET BASIS IT SHALL ASSUME THE TOTAL DEFICIENT CONCRETE SURFACE AREA BE 200 SQUARE. THE REPRESENTATIVE DEFICIENT SURFACES ARE SHOWN IN PHOTO DETAILS 5, 6, AND 7.
4. FOLLOWING REPAIR, PREPARE AND PAINT EXTERIOR EXPOSED WALL SURFACES OF THE ENTIRE BASIN WITH PAINT SYSTEM NO. 112 AS SPECIFIED IN SECTION 09 90 00 PAINTING AND COATING. COATING SHALL EXTEND FROM A POINT 1'-0" BELOW GRADE UP TO THE TOP OF THE EXTERIOR WALLS, SEE NOTE 7 ON DRAWING 30-S-110.
5. REPAIR THE EXISTING WALLS AND COLUMNS IN FLOCCULATION AREA TO THE CONDITIONS THAT MEET THE COATING SURFACE PREPARATION CONDITIONS, SEE DETAILS 9 AND 10.

CRACK AT EDGE OF WALKWAY, COMBINED HORIZONTAL AND VERTICAL REPAIR

HORIZONTAL SURFACE REPAIR



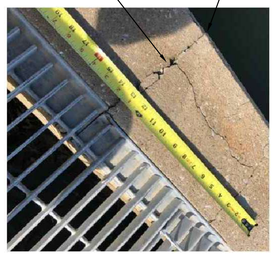
2 DETAIL NTS

HORIZONTAL SURFACE AREA REPAIR

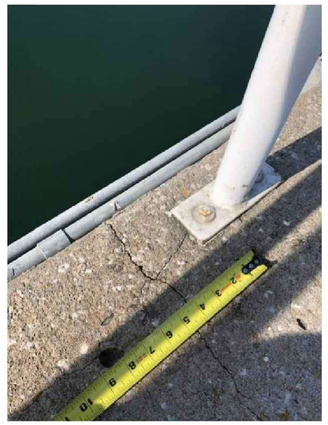
5 DETAIL NTS

HORIZONTAL SURFACE REPAIR

CRACK AT EDGE OF WALKWAY, COMBINED HORIZONTAL AND VERTICAL REPAIR



3 DETAIL NTS



7 DETAIL NTS

EXISTING COLUMN TO BE REPAIRED, SEE NOTE 5

10 DETAIL NTS

8 DETAIL NTS

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

STRUCTURAL
CLARIFIER NO. 3
EXISTING WALKWAY REPAIR PLAN AND DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

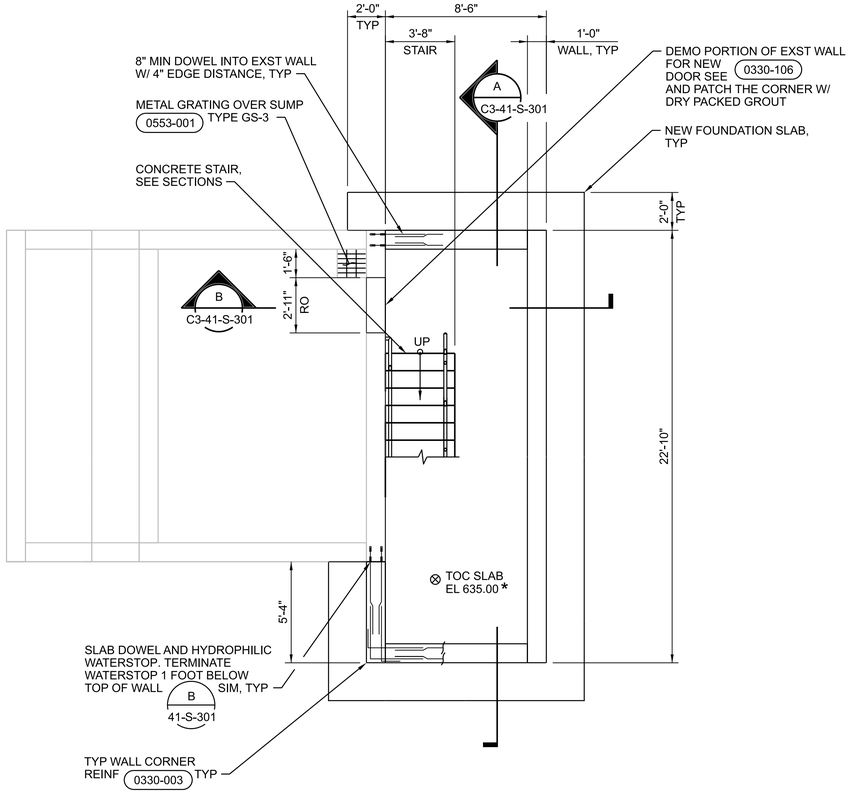
PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
	DESIGNED	LY	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
	SECT. MGR.		
HORIZONTAL:	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 30-S-404
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 44 OF 76 SHEETS

FILENAME: C3-30-S-404_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 3:38:30 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

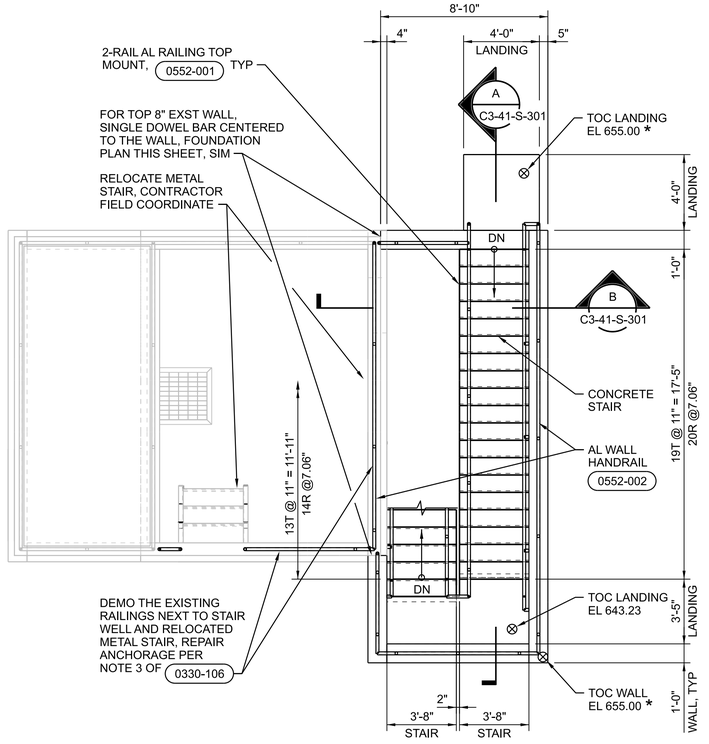


N

1 SLUDGE PUMP STATION NO.1 - FOUNDATION PLAN

3/8"=1'-0"

05-C-100
05-C-101



N

2 SLUDGE PUMP STATION NO.1 - TOP PLAN

3/8"=1'-0"

05-C-100
05-C-101

FACILITY NOTES:

1. CUT OUT EXISTING WALL TO ROUGH OPENING DIMENSIONS AS SHOWN. CHIP OUT AROUND ANY EXPOSED REINFORCING STEEL AND REMOVE TO A MINIMUM DEPTH OF 1 ½" BEYOND CONCRETE SURFACE. PATCH WITH NONSHRINK GROUT.
2. GRANULAR FILL SHALL BE 1 INCH MINUS CRUSHED GRAVEL OR CRUSHED ROCK, FREE FROM DIRT, CLAY BALLS, AND ORGANIC MATERIAL, WELL-GRADED FROM COARSE TO FINE AND CONTAINING SUFFICIENT FINES TO BIND MATERIAL WHEN COMPACTED, BUT WITH MAXIMUM 8 PERCENT BY WEIGHT PASSING NO. 200 SIEVE.
3. PREPARE AND PAINT EXTERIOR EXPOSED WALL SURFACES OF THE VAULT WITH PAINT SYSTEM NO. 112 AS SPECIFIED IN SECTION 09 90 00 PAINTING AND COATING. COATING SHALL EXTEND FROM A POINT 1'-0" BELOW GRADE UP TO THE TOP OF THE EXTERIOR WALLS AND INTERIOR WALL SURFACES OF THE STAIRWELL. CONTRACTOR TO CONFIRM COATING COLORS MATCH CLARIFIER NO. 4 PRIOR TO COATING THE WALLS.
4. * FIELD VERIFY
5. PROTECT EXISTING STRUCTURE AGAINST MOVEMENT AND/OR DAMAGE DURING CONSTRUCTION.
6. DO NOT USE EXISTING STRUCTURE FOR SHORING OF EXISTING GRADE. EXCAVATE THE WEST SIDE OF THE STRUCTURE TO ELEVATION 655.00 DURING CONSTRUCTION OF THE STAIR AND WALLS TO AVOID SLIDING OF THE EXISTING STRUCTURE.

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 05/23/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

STRUCTURAL
SLUDGE PUMP STATION NO.1
PLANS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

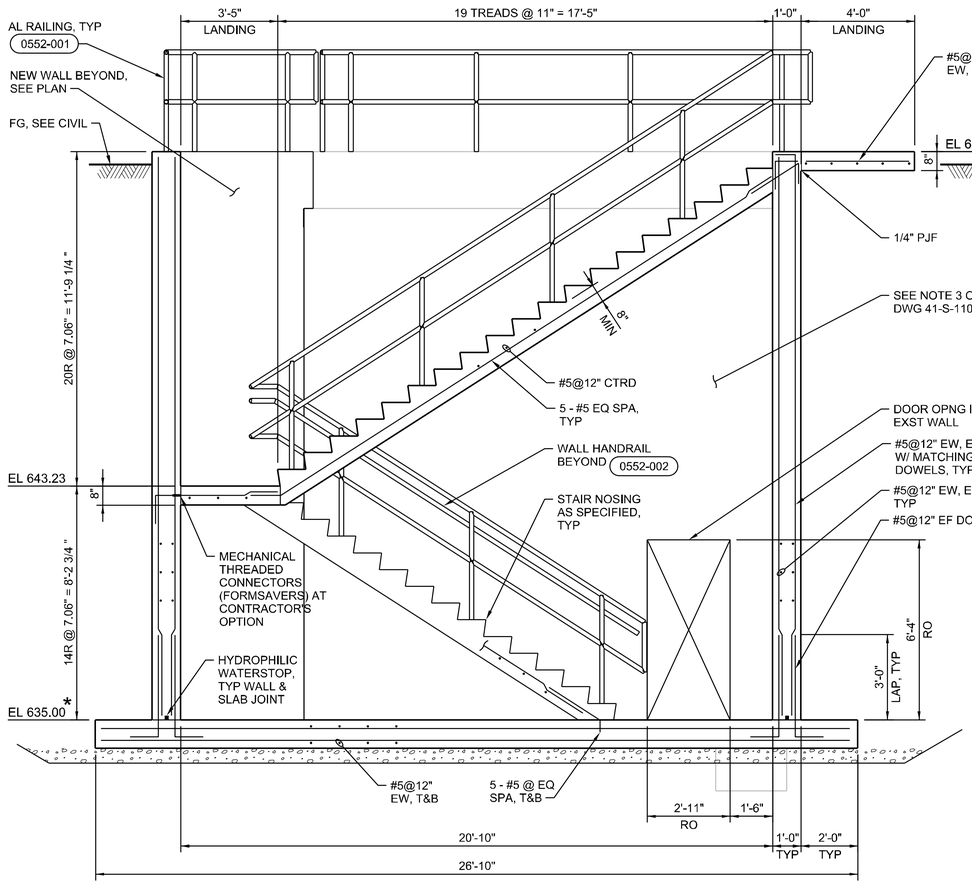
PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
	DESIGNED	LY	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

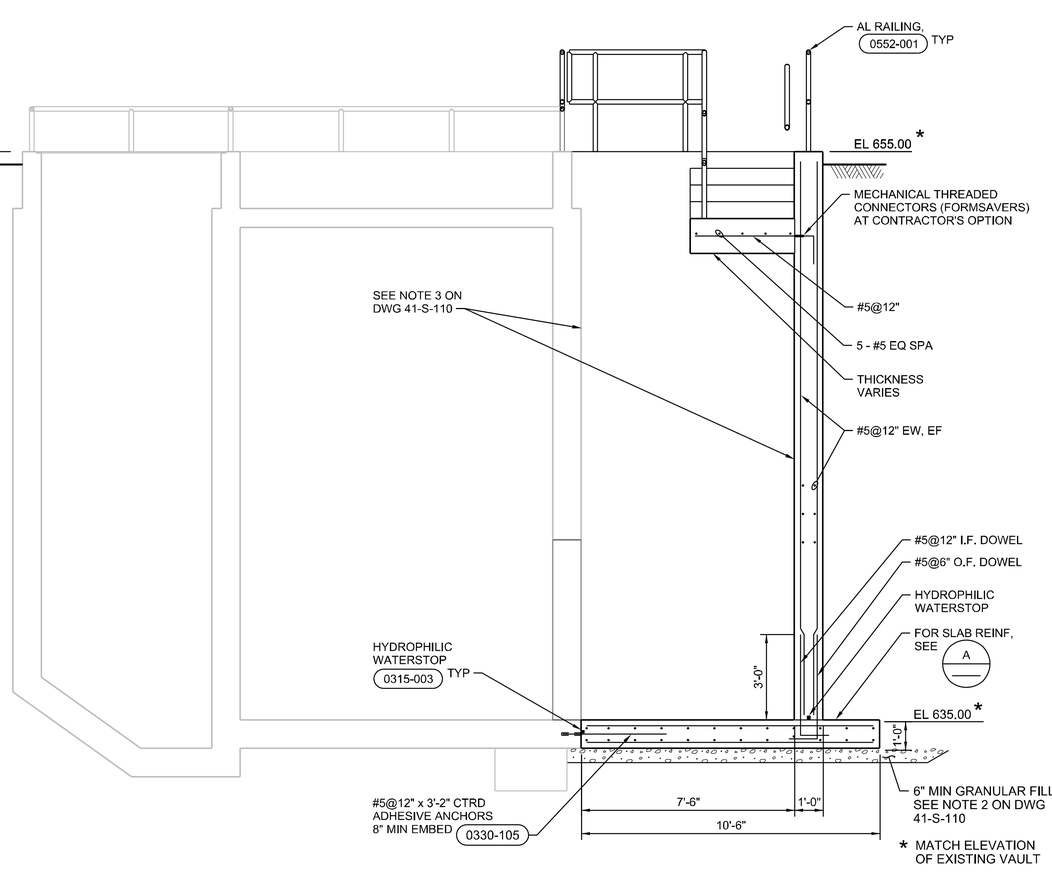
APPROVED: CITY ENGINEER

FILE: 41-S-110 DATE: MARCH 2022
ATLAS PAGE NO: 543 SHEET 45 OF 76 SHEETS

FILENAME: C3-41-S-110_WFXQ2600.dgn PLOT DATE: 5/17/2022 PLOT TIME: 3:10:50 PM



A SECTION
3/8"=1'-0"
41-S-110



B SECTION
3/8"=1'-0"
41-S-110

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

STRUCTURAL
SLUDGE PUMP STATION NO.1
SECTIONS AND DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

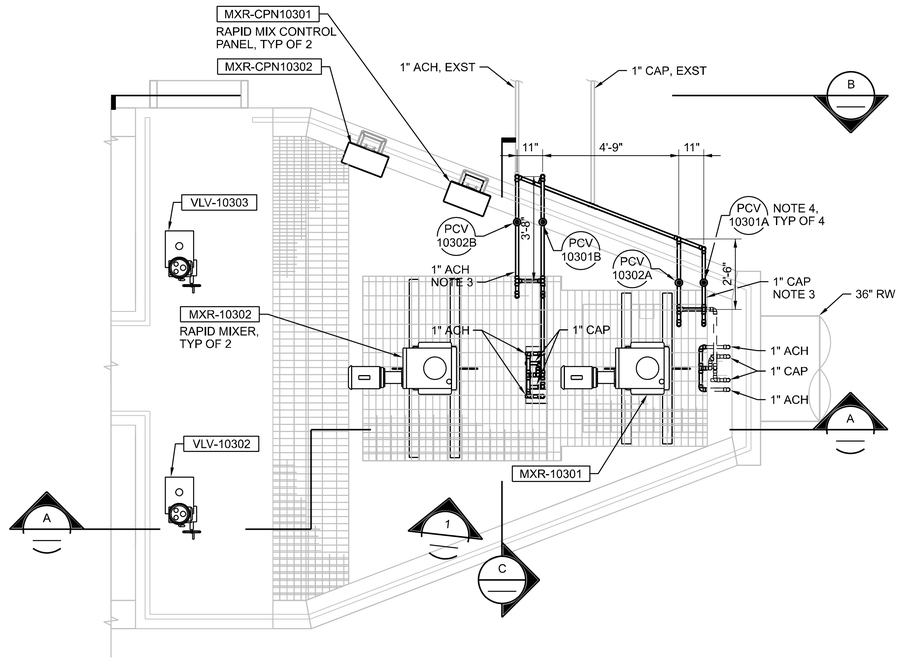
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

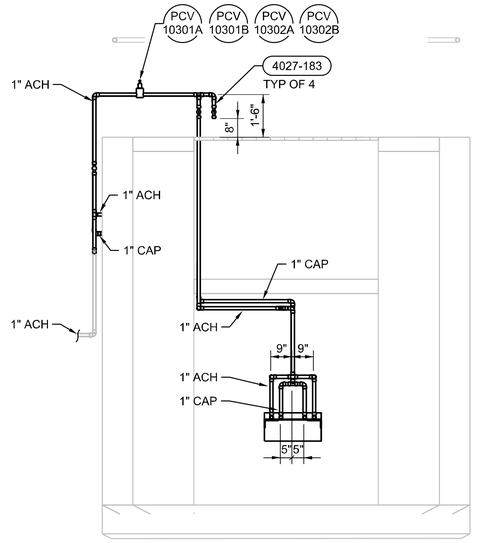
PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN ILT	MAR 2022	APPROVED:
	DESIGNED LY	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
	SECT. MGR.		
HORIZONTAL:	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 41-S-301			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 48 OF 76 SHEETS

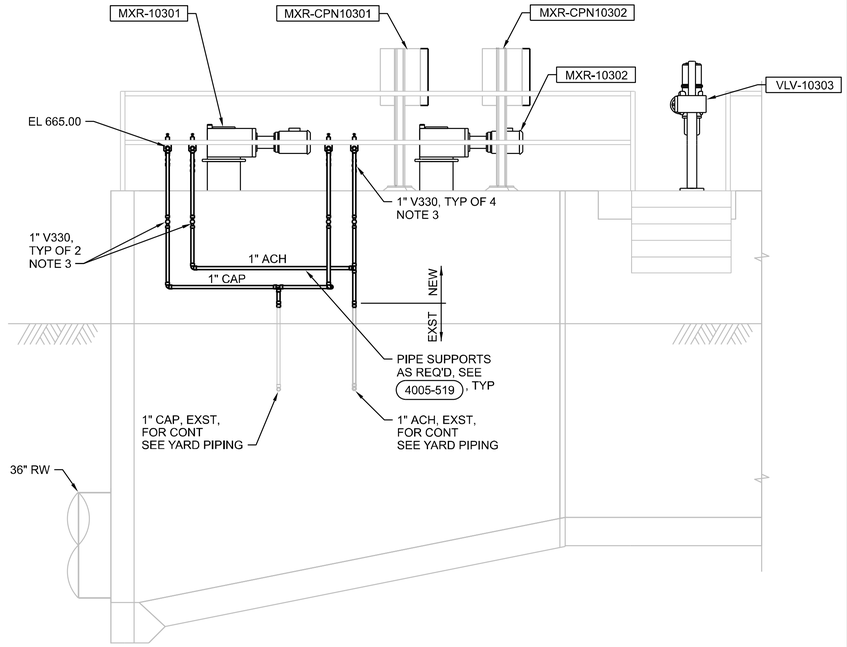
FILENAME: C3-41-S-301_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 3:55:47 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION





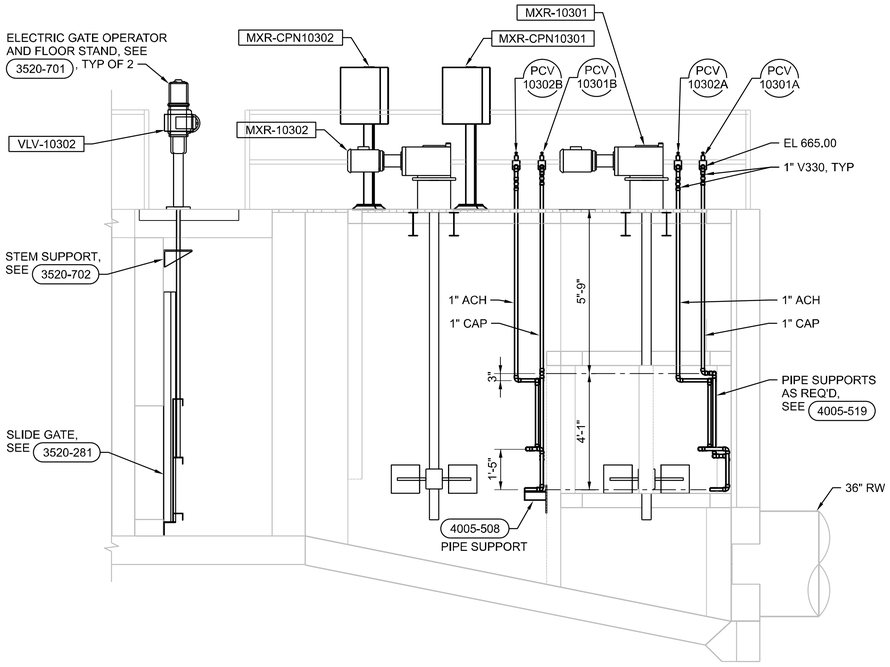
C SECTION
3/8"=1'-0"



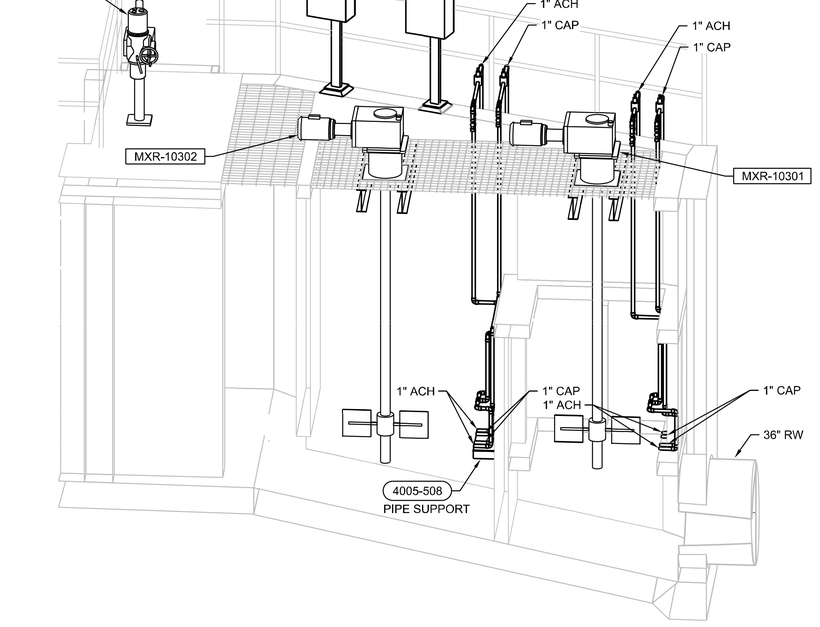
B SECTION
3/8"=1'-0"

N

1 ENLARGED PLAN
3/8"=1'-0"
30-M-120



A SECTION
3/8"=1'-0"



1 DETAIL
NTS

NOTES:

1. ALL TAGS SHOWN ON THIS DRAWING HAVE PRE-FIX "ABJ-CLAR-CLR02" IN OTHER ENGINEERING DOCUMENTS/DRAWINGS.
2. FOR INSTRUMENT MOUNTING DETAILS, SEE P&ID'S AND INSTRUMENT LIST.
3. HEAT TRACE AND INSULATE ALL EXPOSED ACH AND CAP PIPE.
4. SET PCV AT 5 PSIG BACK PRESSURE.

LICENSED PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

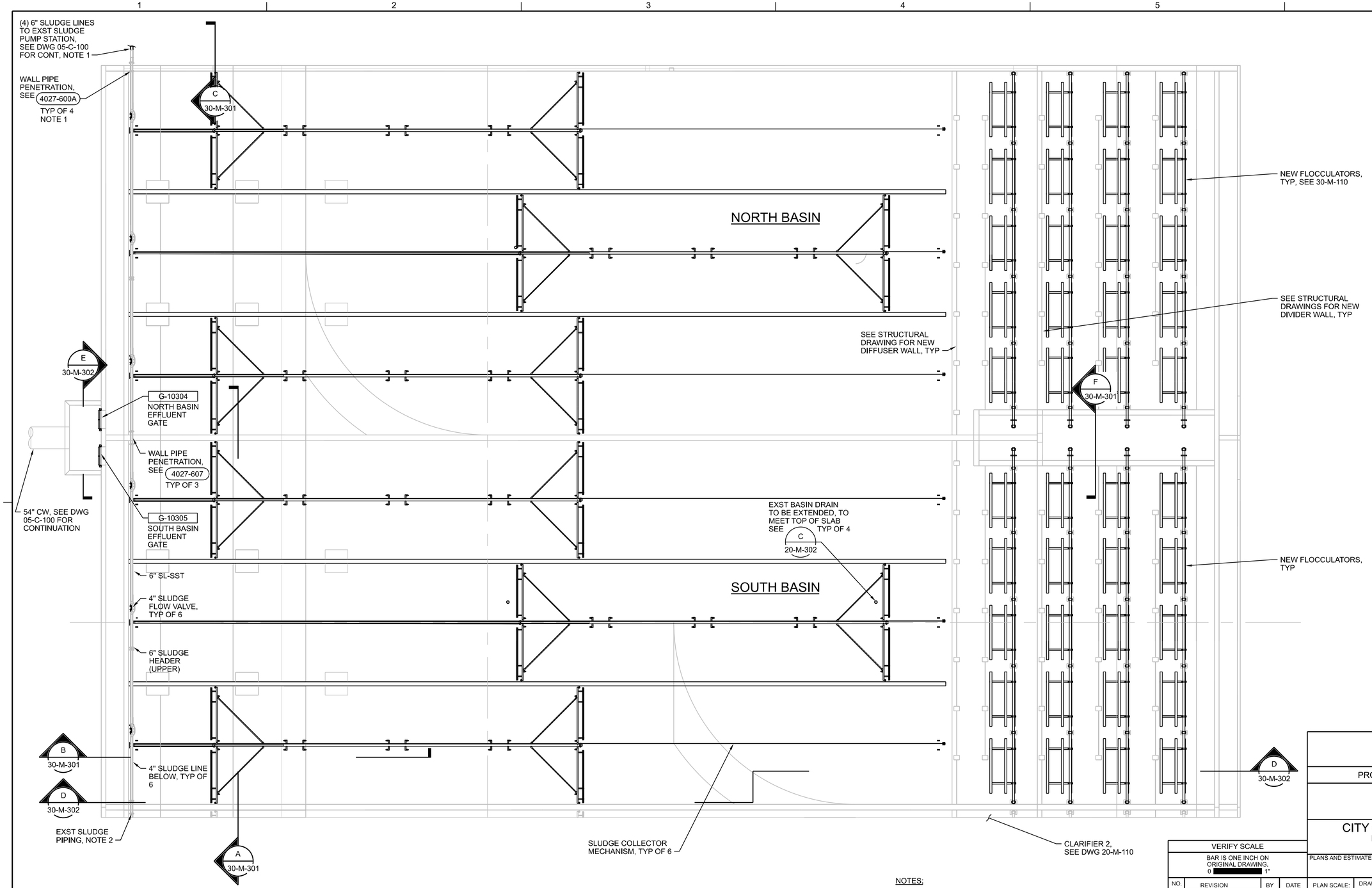
NO.	REVISION	BY	DATE

PROCESS MECHANICAL
CLARIFIER NO. 3 RAPID MIX PLAN AND SECTIONS
PROJECT NO. TMUA-W 18-19 C2
A.B. JEWELL WTP
CLARIFIER NO. 3 IMPROVEMENTS
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT
PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN CB	MAR 2022	APPROVED:
	DESIGNED LM	MAR 2022	
PROFILE SCALE:	SURVEY		
	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 22-M-110			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 47 OF 76 SHEETS

FILENAME: C3-22-M-110_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 5:13:21 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



N

CLARIFIER NO. 3
LOWER PLAN
3/32"=1'-0"

NOTES:

1. TWO OF THE (4) 6" SLUDGE LINES WERE INSTALLED AS PART OF THE CLARIFIER NO. 2 PACKAGE.
2. SLUDGE FROM CLARIFIER NO. 2 IS THROUGH CLARIFIER NO. 3.

LICENSED PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PROCESS MECHANICAL

CLARIFIER NO. 3
LOWER PLAN

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN CB	MAR 2022	APPROVED:
	DESIGNED LM	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 30-M-110		DATE:	MARCH 2022
ATLAS PAGE NO: 543		SHEET	48 OF 76 SHEETS

FILENAME: C3-30-M-110_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 5:09:46 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

4027-600A

EXST SL CONNECTIONS, PRESERVE AND PROTECT, SEE DETAIL 1, SIMILAR

G 30-M-303

4" W1 FOR CONT SEE 05-C-101

YH-2

WM-1, HV-5

VLV-10310 SLUDGE VALVE OPERATOR, TYP OF 6

MOT-10306 * SLUDGE COLLECTOR DRIVE, TYP OF 6

CPN-10317 * SLUDGE COLLECTOR CONTROL PANEL, TYP OF 6

C 30-M-301

3'-0" WIDE ACCESS PLATFORM W/STAIRS TO WALKWAY ELEVATION, TYP

VLV-10309

MOT-10305 *

CPN-10316 *

TURB EFLL TRB10011

pH EFLL PHH10006

EFLL CTL10302 NOTE 2

VLV-10308

INTEGRAL EFFLUENT TROUGH, TYP OF 12 *

MOT-10304 *

PLATE SETTLERS (TYP OF 24 ROWS) *

E 30-M-302

CPN-10315 *

VLV-10311 *

CPN-10318

VLV-10304

VLV-10307

MOT-10303 *

CPN-10314 *

H 30-M-303

EFLL CTL10301

TURB EFLL TRB10010

pH EFLL PHH10005 NOTE 2

VLV-10306

CPN-10313 *

MOT-10302 *

VLV-10305

MOT-10301 *

CPN-10312 *

3'-0" WIDE ACCESS PLATFORM W/STAIRS TO WALKWAY ELEVATION, TYP

NORTH BASIN

SOUTH BASIN

DIFFUSER WALL

EXST SL CONNECTIONS, PRESERVE AND PROTECT, SEE DETAIL 3, SIMILAR

EXST SL CONNECTIONS, PRESERVE AND PROTECT

1 DETAIL NTS

FLOC-CPN10308 *

FLOC-10308 *

FLOC-CPN10307 *

FLOC-10307 *

EXST SL CONNECTIONS, PRESERVE AND PROTECT

FLOC-10309 *

FLOC-CPN10309 *

4" W1, FOR CONT SEE 05-C-101

J 30-M-303

2

EXST SL CONNECTIONS, PRESERVE AND PROTECT

FLOC-10310 *

FLOC-CPN10310 *

INFL-CPN10311 *

F 30-M-301

YH-2

WM-1, HV-5

RAPID MIX

1 22-M-110

FLOC-CPN10306 *

FLOC-10306 *

EXST SL CONNECTIONS, PRESERVE AND PROTECT, SEE DETAIL 2, SIMILAR

FLOC-10303 *

FLOC-CPN10303 *

FLOC-CPN10305 *

FLOC-10305 *

FLOCCULATOR DRIVE, TYP OF 6

FLOC-10304 *

FLOC-CPN10304 *

FLOCCULATOR CONTROL PANEL, TYP OF 6

3

EXST SL CONNECTIONS, PRESERVE AND PROTECT

D 30-M-302

CLARIFIER 2, SEE DWG 20-M-120

1

D 30-M-302

4" W1, FOR CONT SEE 05-C-101

EXST SL CONNECTIONS, PRESERVE AND PROTECT

B 30-M-301

MAINTENANCE WATER MONITOR/FIREHOSE CONNECTION, SEE 30-M-302

WM-1, HV-5

2 1/2" W1

120'-0"

A 30-M-301

6'-3" TYP

6'-3" TYP

NOTES:

1. ALL TAGS SHOWN ON THIS DRAWING HAVE PRE-FIX "ABJ-CLAR-CLR02" IN OTHER ENGINEERING DOCUMENTS/DRAWINGS.
2. FOR INSTRUMENT MOUNTING DETAILS, SEE P&ID'S AND INSTRUMENT LIST.
3. * PROVIDE AS PART OF PACKAGE SYSTEM.
4. FOR CONTINUATION OF PIPING, SEE 05-C-101.

EXST SL CONNECTIONS, PRESERVE AND PROTECT

3 DETAIL NTS

EXST SL CONNECTIONS, PRESERVE AND PROTECT

2 DETAIL NTS

N

CLARIFIER NO. 3
UPPER PLAN
3/32"=1'-0"

LICENSED PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PROCESS MECHANICAL
CLARIFIER NO. 3
UPPER PLAN

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

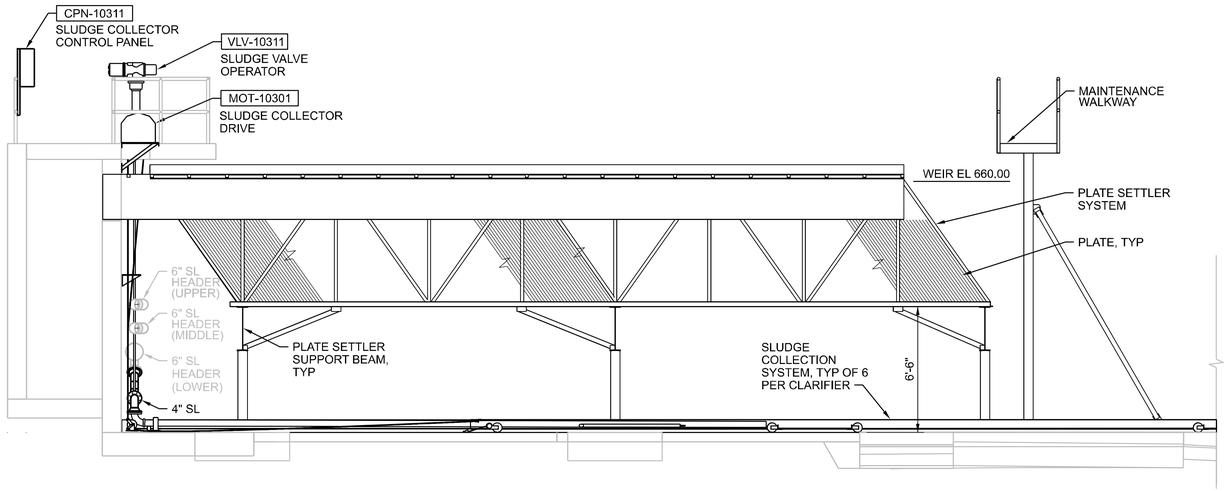
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

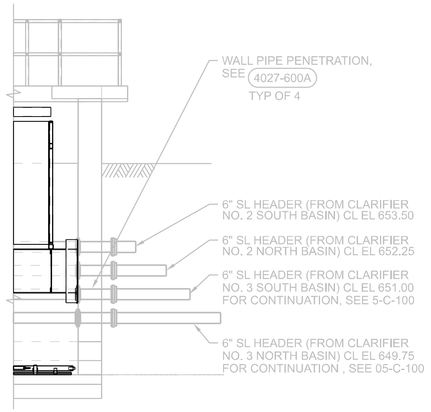
PLAN SCALE: AS NOTED ON PLANS	DRAWN CB	MAR 2022	APPROVED:
	DESIGNED LM	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 30-M-120			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 49 OF 76 SHEETS

FILENAME: C3-30-M-120_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 5:09:54 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



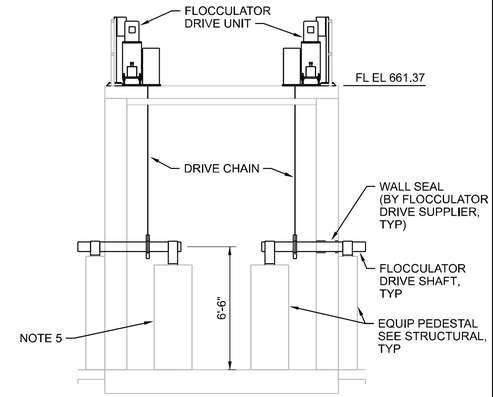
B SECTION
1/4"=1'-0"
30-M-110
30-M-120



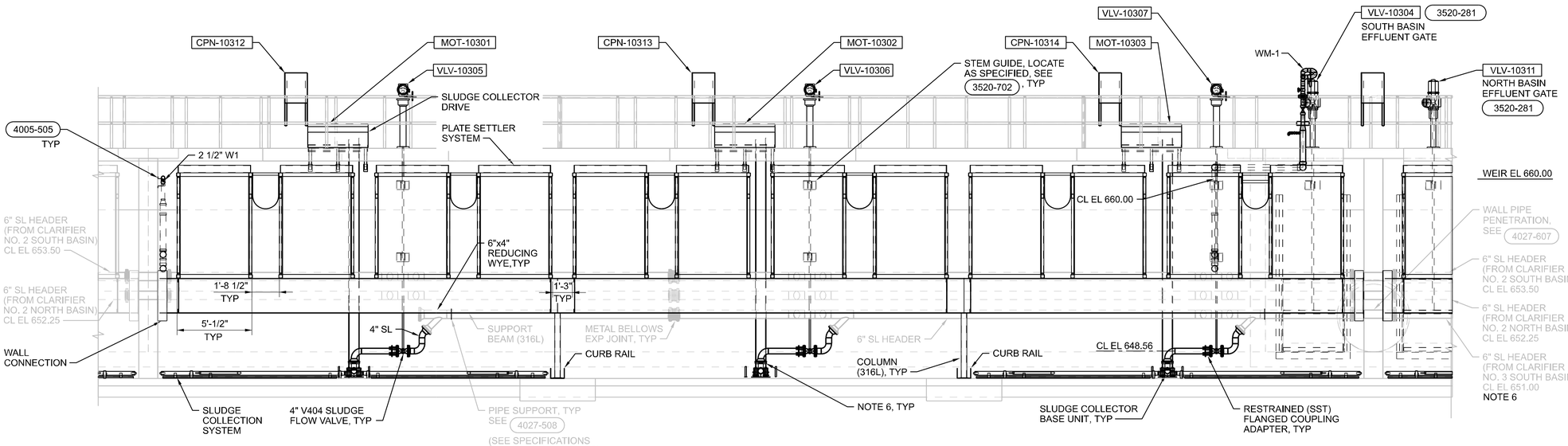
C SECTION
1/4"=1'-0"
30-M-110
30-M-120

NOTES:

1. ALL TAGS SHOWN ON THIS DRAWING HAVE PRE-FIX "ABJ-CLAR-CLR03" IN OTHER ENGINEERING DOCUMENTS/DRAWINGS.
2. FOR INSTRUMENT MOUNTING DETAILS, SEE P&ID'S AND INSTRUMENT LIST.
3. CONTRACTOR TO VERIFY ELEVATIONS AND DIMENSIONS OF EXISTING STRUCTURE AND PIPING.
4. CONTRACTOR TO PROVIDE SUPPORT DESIGN FOR PIPE SIZES SMALLER THAN 30". WHEN SPECIFIC DETAILS ARE CALLED FOR, UTILIZE THE GENERAL SUPPORT TYPE INDICATED IN SUPPORT DESIGN. REFER TO SPECIFICATIONS 40 05 15 FOR ADDITIONAL REQUIREMENTS.
5. CONTRACTOR TO FIELD-VERIFY.
6. SST SLUDGE HEADERS INSTALLED IN CLARIFIER NO. 2 PROJECT. REMOVE BLINDS FOR SLUDGE COLLECTOR EQUIPMENT.



F SECTION
1/4"=1'-0"
30-M-110
30-M-120



A SECTION
1/4"=1'-0"
30-M-110
30-M-120

LICENSED PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

PROCESS MECHANICAL
CLARIFIER NO. 3
SECTIONS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

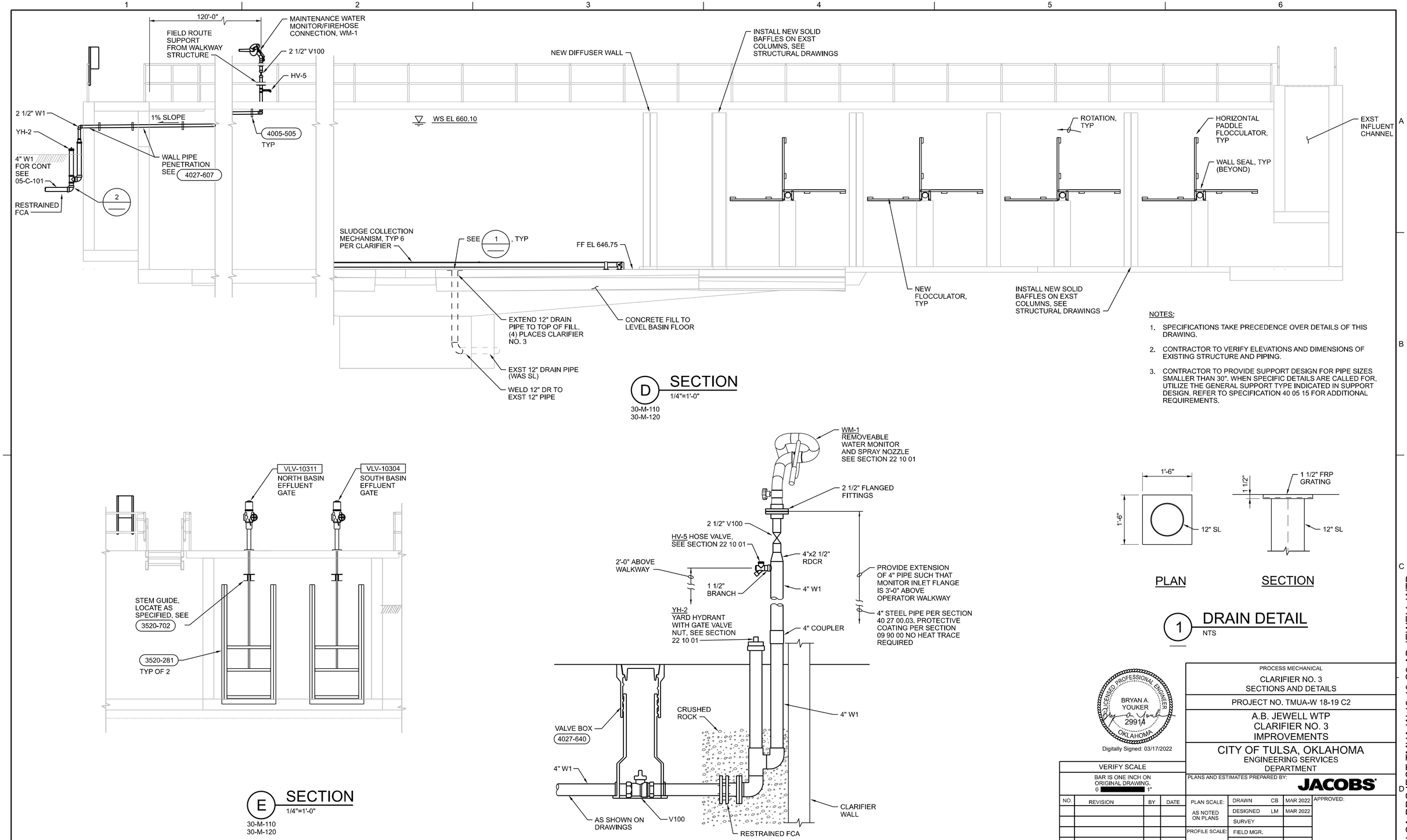
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PLAN SCALE: AS NOTED ON PLANS	DRAWN CB	MAR 2022	APPROVED:
	DESIGNED LM	MAR 2022	
PROFILE SCALE:	SURVEY		
	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 30-M-301			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 50 OF 76 SHEETS

FILENAME: C3-30-M-301_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 5:12:41 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



D SECTION
1/4"=1'-0"

30-M-110
30-M-120

NOTES:

1. SPECIFICATIONS TAKE PRECEDENCE OVER DETAILS OF THIS DRAWING.
2. CONTRACTOR TO VERIFY ELEVATIONS AND DIMENSIONS OF EXISTING STRUCTURE AND PIPING.
3. CONTRACTOR TO PROVIDE SUPPORT DESIGN FOR PIPE SIZES SMALLER THAN 30". WHEN SPECIFIC DETAILS ARE CALLED FOR, UTILIZE THE GENERAL SUPPORT TYPE INDICATED IN SUPPORT DESIGN. REFER TO SPECIFICATION 40 05 15 FOR ADDITIONAL REQUIREMENTS.

E SECTION
1/4"=1'-0"

30-M-110
30-M-120

2 TYPICAL WASH-DOWN HYDRANT DETAIL
NTS

30-M-303

PLAN SECTION

1 DRAIN DETAIL
NTS

LICENSED PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PROCESS MECHANICAL
CLARIFIER NO. 3
SECTIONS AND DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

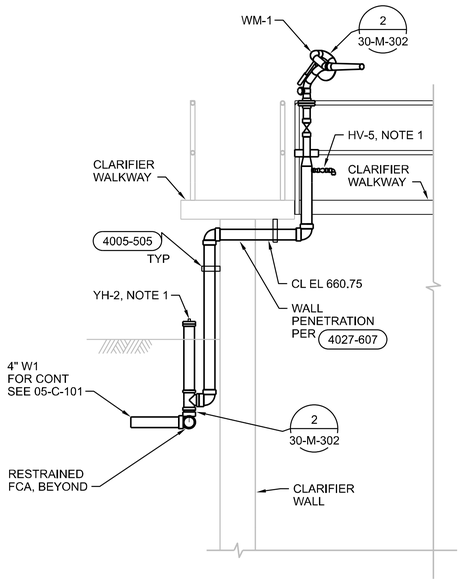
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

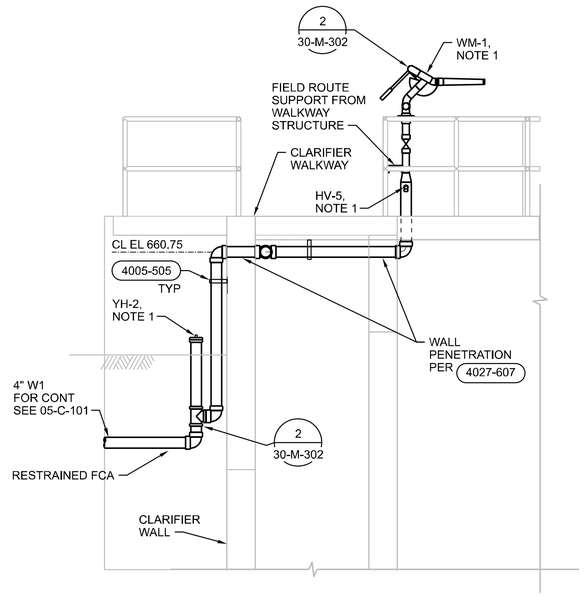
PLAN SCALE: AS NOTED ON PLANS	DRAWN CB	MAR 2022	APPROVED:
	DESIGNED LM	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 30-M-302			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 51 OF 76 SHEETS

FILENAME: C3-30-M-302_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 5:11:12 PM

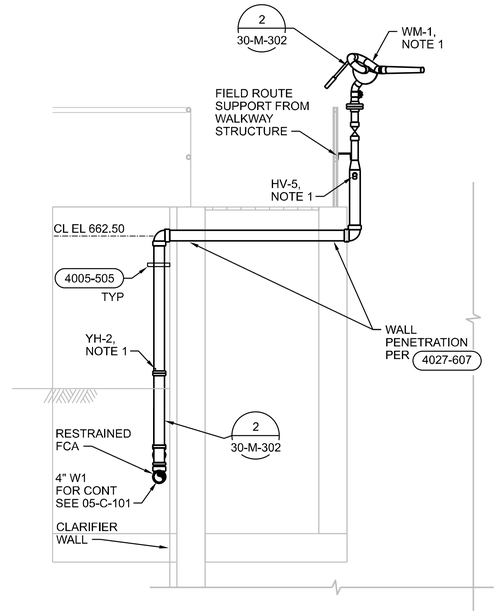
CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



G SECTION
3/8"=1'-0"
30-M-120



H SECTION
3/8"=1'-0"
30-M-120



J SECTION
3/8"=1'-0"
30-M-120

NOTES:

1. SEE SPECIFICATION SECTION 22 10 01, PLUMBING PIPING AND ACCESSORIES.

LICENSED PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PROCESS MECHANICAL
CLARIFIER NO. 3
SECTIONS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

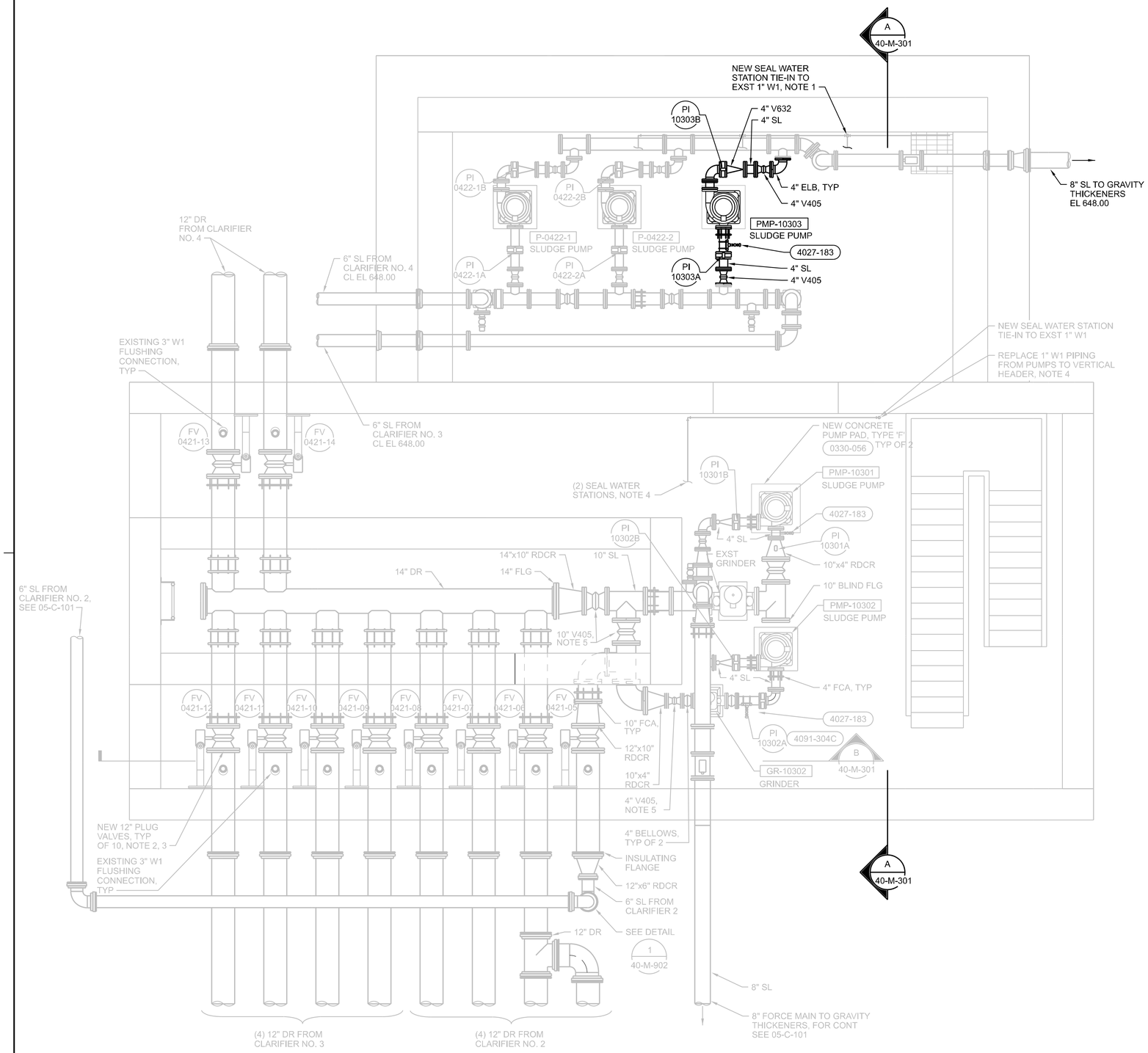
PLAN SCALE: AS NOTED ON PLANS	DRAWN	CB	MAR 2022
	DESIGNED	LM	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 30-M-303
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 52 OF 76 SHEETS

FILENAME: C3-30-M-303_WFXQ2600.dgn
PLOT DATE: 3/14/2022
PLOT TIME: 5:11:27 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



SLUDGE PUMP STATION NO. 2 - PLAN

3/8"=1'-0"

GENERAL NOTES:

1. ALL TAGS SHOWN ON THIS DRAWING HAVE PRE-FIX "ABJ-CLAR-SLG" IN OTHER ENGINEERING DOCUMENTS/ DRAWINGS.
2. CONTRACTOR TO PROVIDE SUPPORT DESIGN FOR PIPE SIZES SMALLER THAN 30". WHEN SPECIFIC DETAILS ARE CALLED FOR, UTILIZE THE GENERAL SUPPORT TYPE INDICATED IN SUPPORT DESIGN. REFER TO SPECIFICATION 40 05 15 FOR ADDITIONAL REQUIREMENTS.
3. CONTRTACTOR TO VERIFY ELEVATIONS AND DIMENSIONS OF EXISTING STRUCTURE AND PIPING.

NOTES:

1. FIELD VERIFY LOCATION OF SEAL WATER HEADER. ADD SEAL WATER STATION FOR (3) NEW PUMPS SIMILAR TO SEAL WATER STATIONS FOR EXISTING SLUDGE PUMPS SEE (4442-861).

LICENSED PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

NO.	REVISION	BY	DATE

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

PROCESS MECHANICAL
SLUDGE PUMP STATION NO. 2
PLAN

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

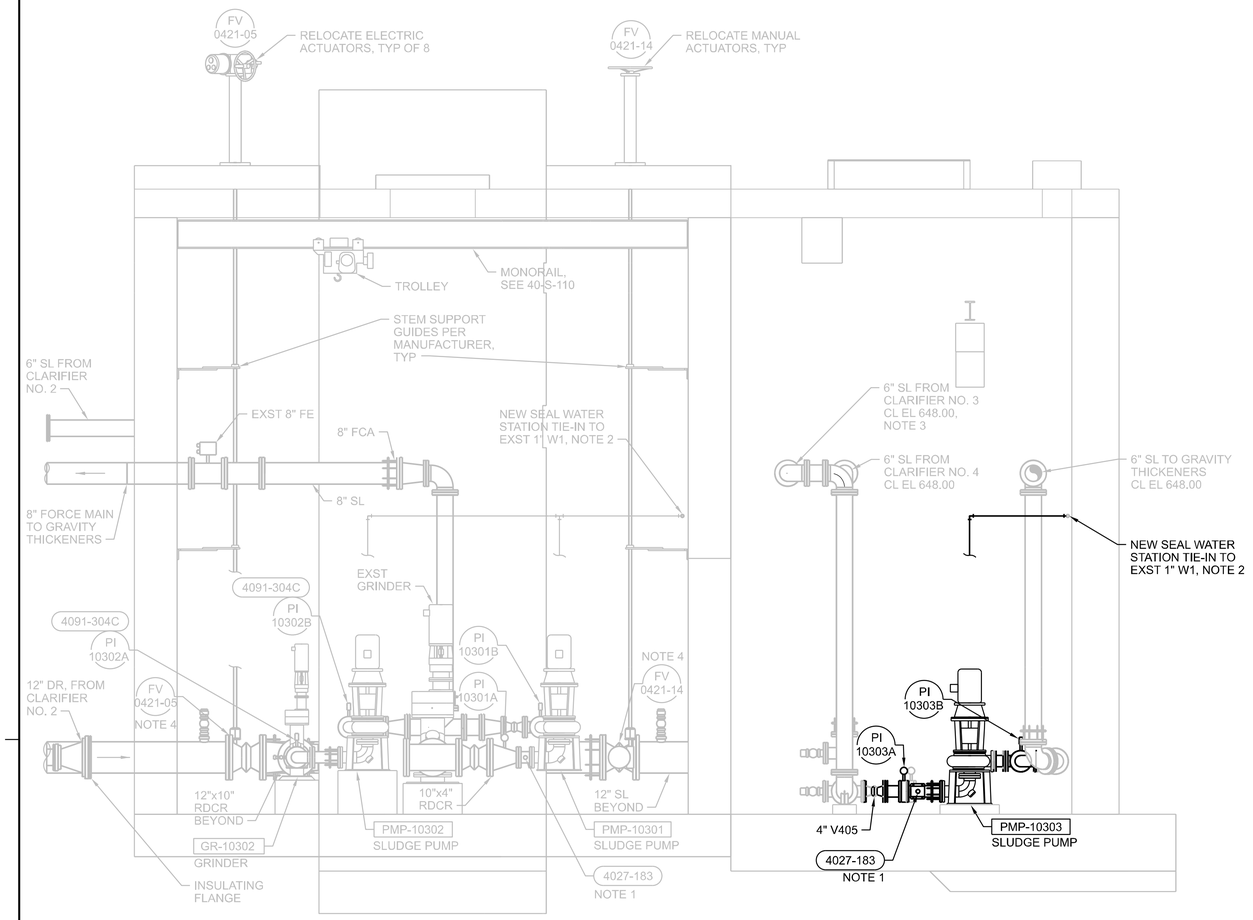
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

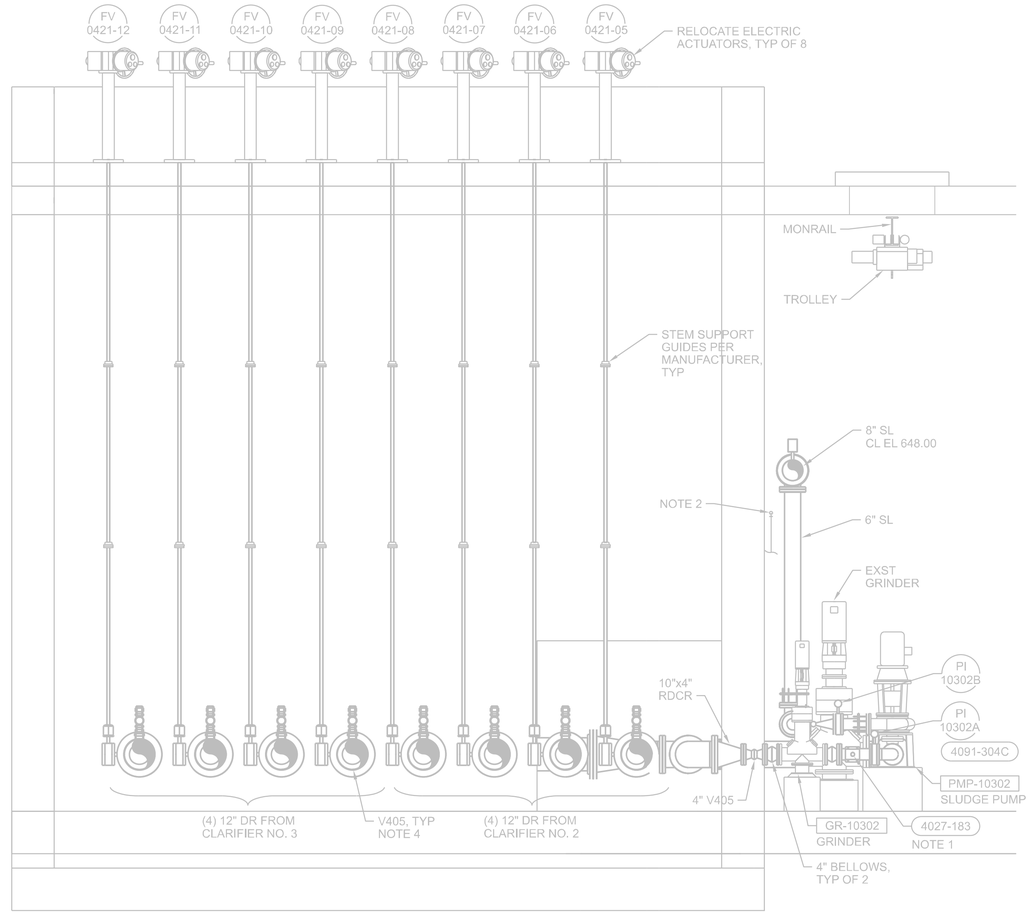
PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN CB	MAR 2022	APPROVED:
	DESIGNED LM	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 40-M-110			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 53 OF 76 SHEETS

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

FILENAME: C3-40-M-110_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 5:10:31 PM





GENERAL NOTES:

1. ALL TAGS SHOWN ON THIS DRAWING HAVE PRE-FIX "ABJ-CLAR-SLG" IN OTHER ENGINEERING DOCUMENTS/DRAWINGS.
2. CONTRACTOR TO PROVIDE SUPPORT DESIGN FOR PIPE SIZES SMALLER THAN 30". WHEN SPECIFIC DETAILS ARE CALLED FOR, UTLIZE THE GENERAL SUPPORT TYPE INDICATED IN SUPPORT DESIGN. REFER TO SPECIFICATION 40 05 15 FOR ADDITIONAL REQUIREMENTS.

NOTES:

1. FOR INSTRUMENT MOUNTING DETAILS, SEE P&ID'S AND INSTRUMENT LIST.
2. FIELD VERIFY LOCATION OF SEAL WATER HEADER. ADD SEAL WATER STATION FOR (3) NEW PUMPS SIMILAR TO SEAL WATER STATIONS FOR EXISTING SLUDGE PUMPS, SEE STANDARD DETAIL (4442-661).
3. CONTRACTOR TO VERIFY ELEVATIONS AND DIMENSIONS OF EXISTING STRUCTURE AND PIPING.

A SECTION
3/8"=1'-0"
40-M-110

B SECTION
3/8"=1'-0"
40-M-110

LICENSED PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PROCESS MECHANICAL
SLUDGE PUMP STATION NO. 2
SECTIONS
PROJECT NO. TMUA-W 18-19 C2
A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT
PLANS AND ESTIMATES PREPARED BY: JACOBS

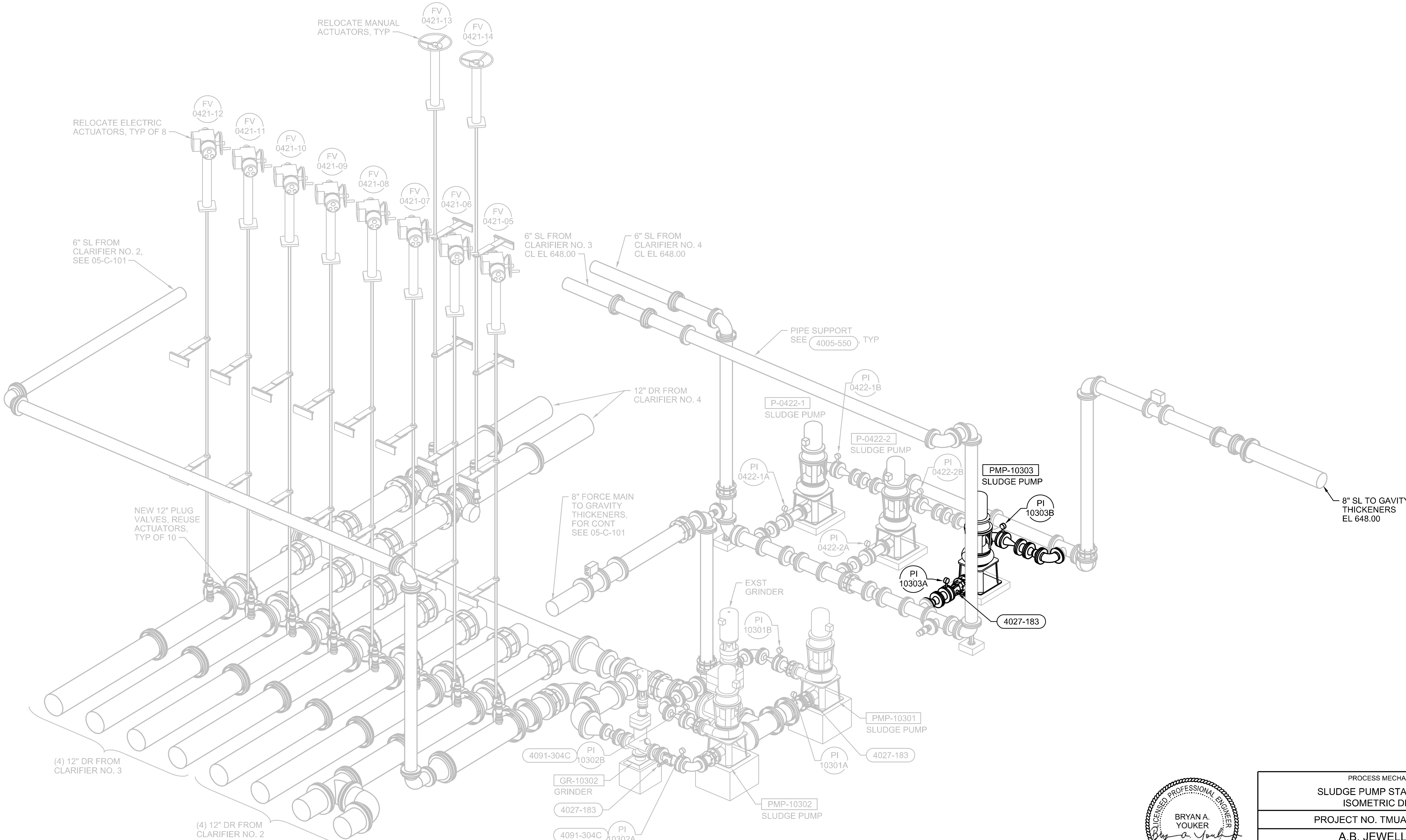
PLAN SCALE: AS NOTED ON PLANS	DRAWN CB	MAR 2022	APPROVED:
	DESIGNED LM	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 40-M-301			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 54 OF 76 SHEETS

FILENAME: C3-40-M-301_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 5:11:02 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

1 2 3 4 5 6

A B C D



1 ISOMETRIC DETAIL

NTS

40-M-110

LICENSED PROFESSIONAL ENGINEER BRYAN A. YOUKER 29914 OKLAHOMA

Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

PROCESS MECHANICAL

SLUDGE PUMP STATION NO. 2
ISOMETRIC DETAIL

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

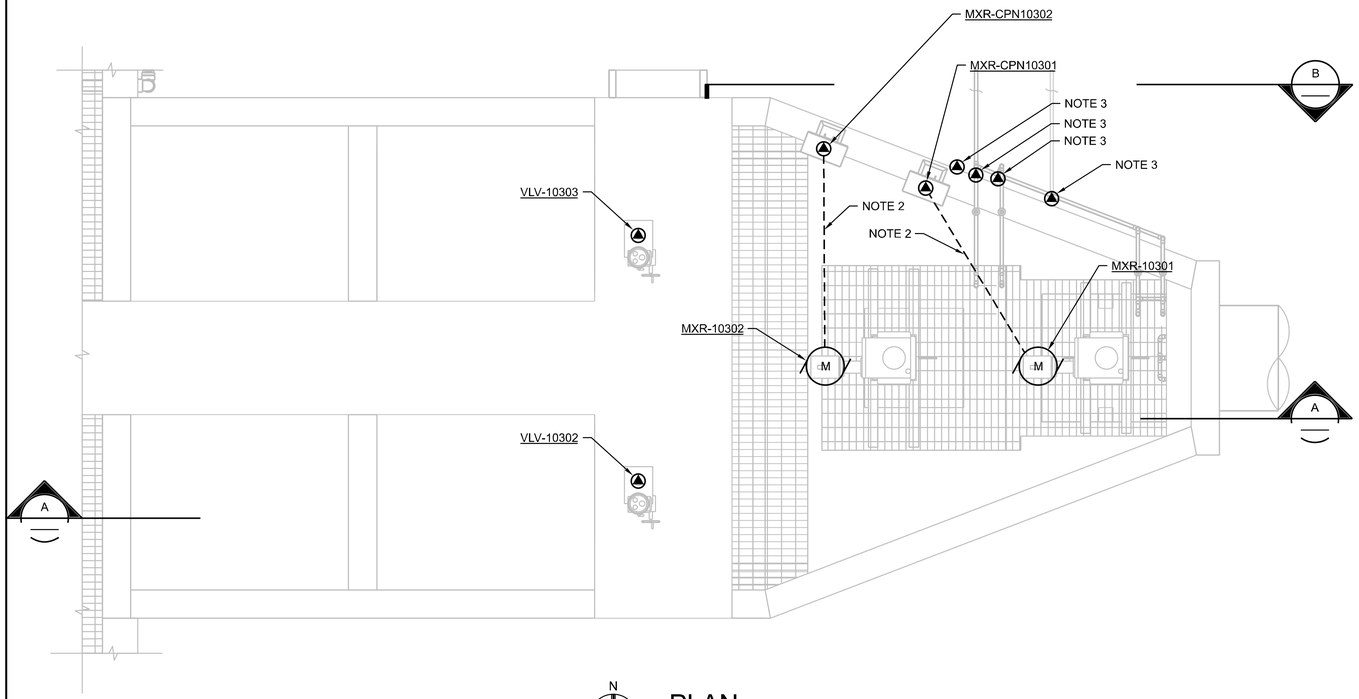
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE:	DRAWN	CB	MAR 2022	APPROVED:
AS NOTED ON PLANS	DESIGNED	LM	MAR 2022	
	SURVEY			
PROFILE SCALE:	FIELD MGR.			
HORIZONTAL:	SECT. MGR.			
	PROJ. MGR.			
VERTICAL	RECOMMENDED:			
	DESIGN MANAGER			CITY ENGINEER
FILE:	40-M-902			DATE: MARCH 2022
ATLAS PAGE NO:	543			SHEET 55 OF 76 SHEETS

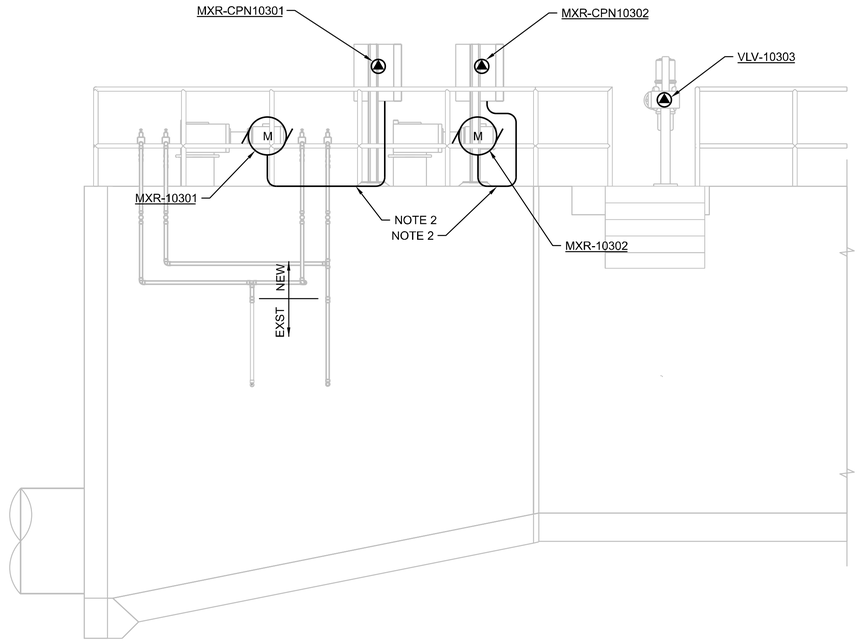
FILENAME: C3-40-M-902_AWSK_C2_BC.dgn PLOT DATE: 3/14/2022 PLOT TIME: 5:10:55 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



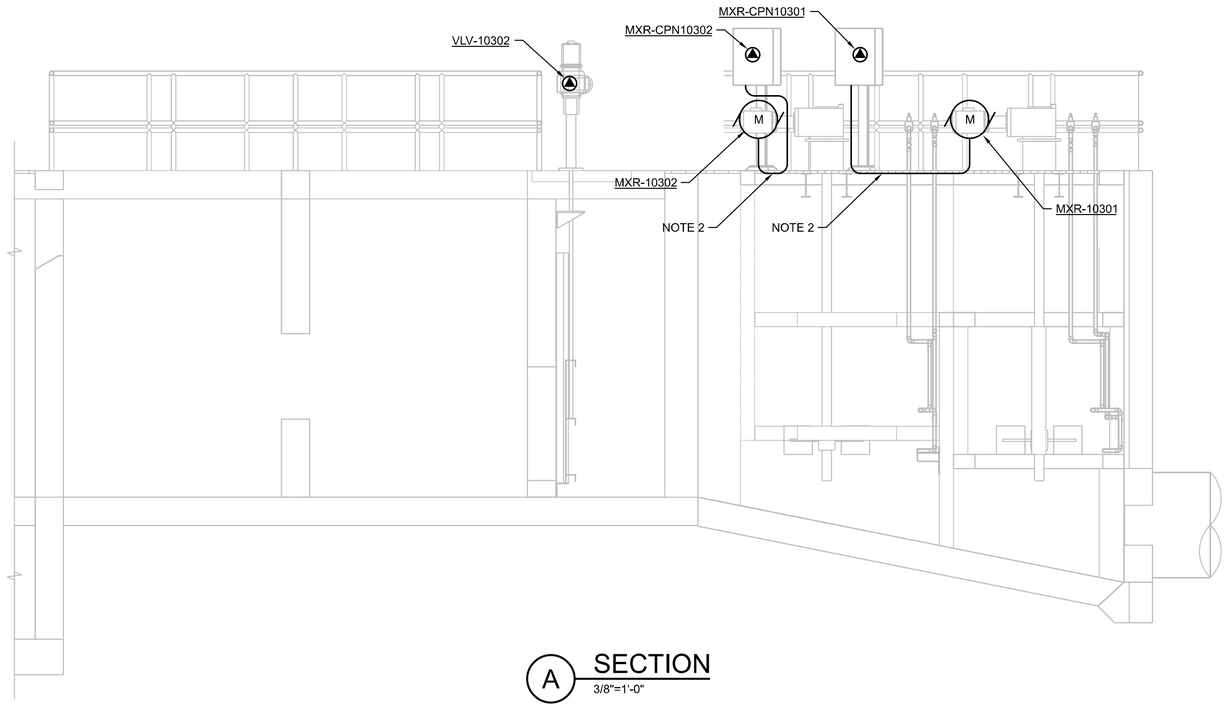
N

PLAN
3/8"=1'-0"



B

SECTION
3/8"=1'-0"



A

SECTION
3/8"=1'-0"

NOTES:

1. ALL TAGS SHOWN ON THIS DRAWING HAVE PRE-FIX "ABJ-CLAR-CLR03" IN OTHER ENGINEERING DOCUMENTS/DRAWINGS.
2. FIELD ROUTE CONDUIT UNDER DECKING TO AVOIDE TRIPPING HAZARDS.
3. PROVIDE HEAT TRACING ON EXPOSED 1" CAP AND 1" ACH PIPING. CIRCUIT TO PANEL MPC-L3 USING [PA2] CIRCUIT.

LICENSED PROFESSIONAL ENGINEER
BLAIR I. BEADERSTADT
32520
OKLAHOMA

3/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

ELECTRICAL
CLARIFIER NO. 3 RAPID MIX
UPPER PLAN AND SECTIONS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

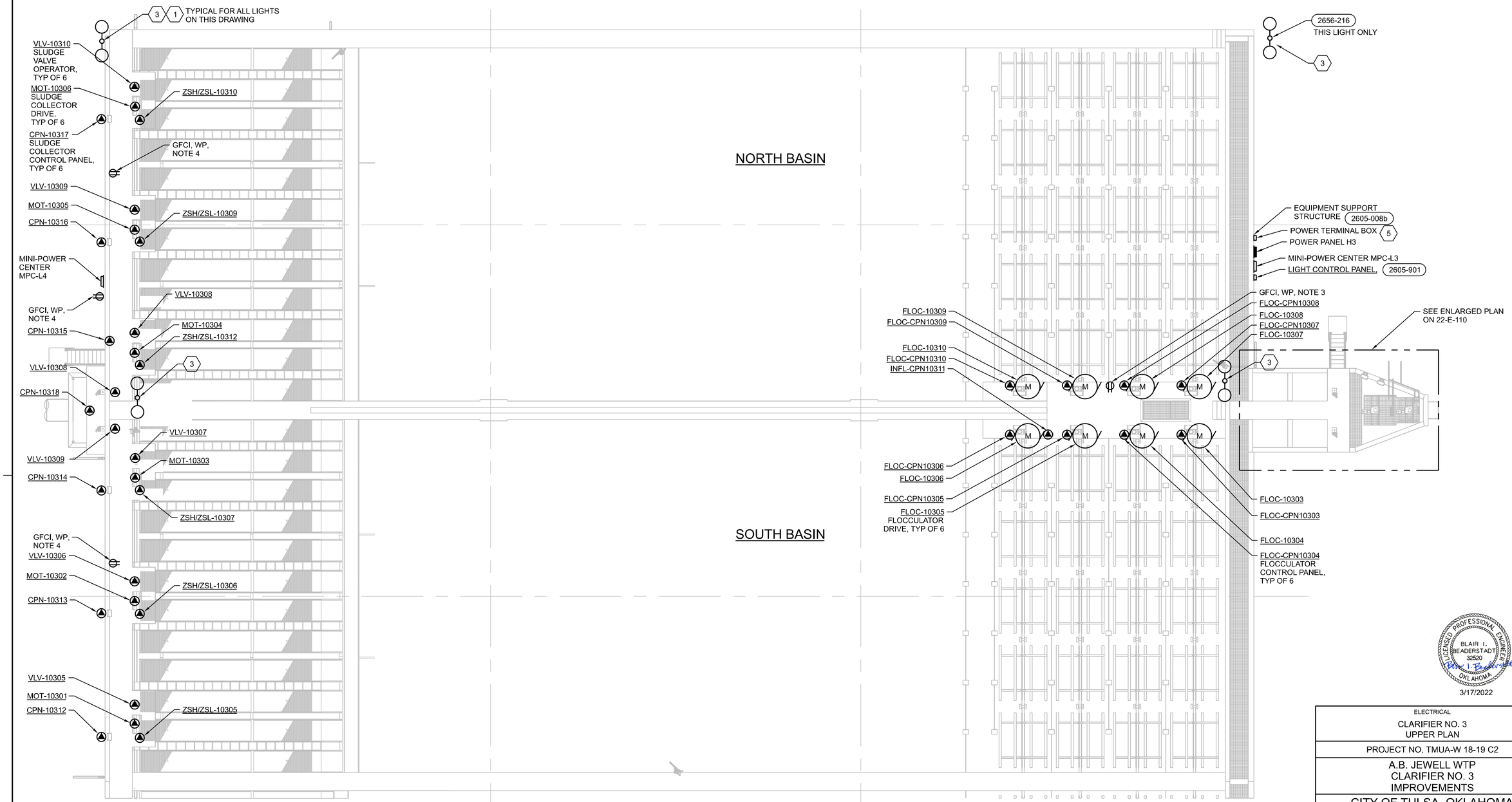
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN CM	MAR 2022	APPROVED:
	DESIGNED BB	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 22-E-120			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 56 OF 76 SHEETS

FILENAME: C3-22-E-120_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 12:48:58 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



GENERAL NOTES:

1. ALL TAGS SHOWN ON THIS DRAWING HAVE PRE-FIX "ABJ-CLAR-CLR03" IN OTHER ENGINEERING DOCUMENTS/DRAWINGS.
2. FIELD ROUTE CONDUITS. CONDUIT ROUTINGS SHOWN ON THIS DRAWING AND INFORMATION ON WIRING DIAGRAMS ARE FOR GENERAL RECOMMENDATIONS ONLY. FIELD VERIFY EXACT ROUTING PATH. PROVIDE ADDITIONAL JUNCTION/PULL BOXES AND SUPPORTS AS REQUIRED BY NEC FOR PROPER INSTALLATION.
3. DO NOT INSTALL ANY CONDUIT OR RACEWAY SYSTEM ON OR ALONG WALKWAYS THAT CAN CAUSE TRIPPING HAZARD. ROUTE CONDUIT UNDER WALKWAY AND STUB UP INTO EQUIPMENT.
4. CADWELD GROUNDING SYSTEMS: GROUND GRID, GROUND RODS, PANELS ON WALKWAYS, ETC. CADWELDED CONNECTIONS TO BE VISIBLE AT GROUND LEVEL. CONCEAL COPPER GROUND WIRES IN PVC SCHEDULE 40 CONDUIT, WHERE EXPOSED.

KEYED NOTES:

1. INSTALL LIGHT POLES AND LIGHTS. INSTALLATION TO INCLUDE POLE BASE FOUNDATION, POWER AND CONTROL WIRING FOR EACH LIGHT. SEE DETAIL 0512-122
2. MOUNT ON FACE OF CONCRETE WALL USING TWO VERTICAL STAINLESS STEEL CHANNEL STRUTS, COPER B-LINE PART NUMBER B22H17/8 SS4 OR EQUAL. USE A MINIMUM OF FOUR EQUALLY SPACED 1/2" ADHESIVE ANCHORS PER STRUT.
3. CIRCUIT TO PANEL MPC-L3 VIA THE LIGHTING CONTROL PANEL USING [PA3] CIRCUIT. FIXTURE MOUNTS AND ONE POLE ARE FURNISHED BY OWNER.
4. INSTALL NEW POWER TERMINAL BOX IN SAME LOCATIONS AS DEMOLISHED BOX IN ORDER TO REUSE POWER FEEDER FROM CPDC.

N

CLARIFIER NO. 3
UPPER PLAN
3/32"=1'-0"

LICENSED PROFESSIONAL ENGINEER
BLAIR I. BEADERSTADT
32500
OKLAHOMA
3/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

ELECTRICAL

CLARIFIER NO. 3
UPPER PLAN

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	CM	MAR 2022
	DESIGNED	BB	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: 30-E-120
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 57 OF 76 SHEETS

FILENAME: C3-30-E-120_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 12:47:53 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

ELECTRICAL PANELBOARD SCHEDULE

PANEL: MPC-L3
VOLTAGE: 208Y/120V, 3-PHASE
BUS SIZE: ---
MAIN SIZE: 50A
SCCR: 18kAIC

LOCATION: OUTSIDE WALL OF CLARIFIER 3
MOUNTING: SURFACE
FED FROM: PANEL H3
MAIN TYPE: CIRCUIT BREAKER
NOTE: ALTERNATIVELY, SPD MAY BE INSTALLED IN AN EXTERNAL ENCLOSURE

CIRCUIT TITLE	BREAKER CKT NO.	BREAKER AMP	BREAKER POLE	LOAD, VA PHASE A	LOAD, VA PHASE B	LOAD, VA PHASE C	LOAD, VA PHASE A	LOAD, VA PHASE B	LOAD, VA PHASE C	BREAKER POLE	BREAKER AMP	BREAKER CKT NO.	CIRCUIT TITLE
FIT-10003 (IN RAW WATER VAULT)	1	20	1	100			1130			1	20	2	LIGHT POLES - EAST SIDE
EXHAUST FAN (IN RAW WATER VAULT)	3	20	1		200			1130		1	20	4	LIGHT POLES - WEST SIDE
INFL-CPN10321	5	20	1			1000			1000	1	20	6	HEAT TRACE "CAP" AND "ACH" PIPING
SPARE	7	20	1							1	20	8	SPARE
SPARE	9	20	1							1	20	10	SPARE
SPARE	11	20	1							1	20	12	SPARE
SPACE	13		1							1		14	SPACE
SPACE	15		1							1		16	SPACE
SPACE	17		1							1		18	SPACE
SPACE	19		1							3	30	20	SPD (SEE NOTE)
SPACE	21		1							--	--	22	--
SPACE	23		1							--	--	24	--
TOTAL LOAD				100	200	1000	1130	1130	1000				

PHASE A LOAD (VA) = 1230
PHASE B LOAD (VA) = 1330
PHASE C LOAD (VA) = 2000
TOTAL LOAD (VA)= 4560

AMPS= 12.7

ELECTRICAL PANELBOARD SCHEDULE

PANEL: MPC-L4
VOLTAGE: 208Y/120V, 3-PHASE
BUS SIZE: ---
MAIN SIZE: 70A
SCCR: 18kAIC

LOCATION: OUTSIDE WALL OF CLARIFIER NO. 3
MOUNTING: SURFACE
FED FROM: PANEL H3
MAIN TYPE: CIRCUIT BREAKER
NOTE: ALTERNATIVELY, SPD MAY BE INSTALLED IN AN EXTERNAL ENCLOSURE

CIRCUIT TITLE	BREAKER CKT NO.	BREAKER AMP	BREAKER POLE	LOAD, VA PHASE A	LOAD, VA PHASE B	LOAD, VA PHASE C	LOAD, VA PHASE A	LOAD, VA PHASE B	LOAD, VA PHASE C	BREAKER POLE	BREAKER AMP	BREAKER CKT NO.	CIRCUIT TITLE
VLV-10309	1	20	1	1125			2000			1	40	2	CPN10312
VLV-10310	3	20	1		1125			2000		1	40	4	CPN10313
VLV-10311	5	20	1			1125			2000	1	40	6	CPN10314
VLV-10312	7	20	1	1125			2000			1	40	8	CPN10315
VLV-10313	9	20	1		1125			2000		1	40	10	CPN10316
VLV-10314	11	20	1			1125			2000	1	40	12	CPN10317
VLV-10304	13	20	1	1125						1	20	14	SPARE
SPARE	15	20	1					600		1	20	16	CPN10307
SPARE	17	20	1							1	20	18	SPARE
SPARE	19	20	1							3	30	20	SPD (SEE NOTE)
SPARE	21	20	1							--	--	22	--
SPARE	23	20	1							--	--	24	--
TOTAL LOAD				3375	2250	2250	4000	4600	4000				

PHASE A LOAD (VA) = 7375
PHASE B LOAD (VA) = 6850
PHASE C LOAD (VA) = 6250
TOTAL LOAD (VA)= 20475

AMPS= 56.8

LUMINAIRE SCHEDULE

DESCRIPTION	TYPE	VOLTAGE	INPUT WATTS	DESCRIPTION	MANUFACTURER AND CATALOG NO.	LAMPS	MOUNTING
"STADIUM" LIGHT	LED	120	186	16" ROUND LED HIGH BAY. RATED FOR OUTDOOR INDUSTRIAL APPLICATIONS. COPPER FREE ALUMINUM HOUSING. POLYESTER POWDER COATED FINISH. TEMPERED GLASS LENS. UL LISTED. NEMA 4X. DARK SKY COMPLIANT.	DIALIGHT "VIGILANT" HEU-LMC2-ENNW-NGN	132 LPW 24,500 LUMENS 5,000K	POLE
"STADIUM" LIGHT ACCESSORY	N/A	N/A	N/A	SWIVEL BRACKET AND CABLE GLAND	DIALIGHT HBXW2	N/A	POLE
"STADIUM" LIGHT ACCESSORY	N/A	N/A	N/A	SLIP-FIT STANCHION MOUNT	DIALIGHT HZXSTAN200S	N/A	POLE
FLOODLIGHT	LED	120	385	DUAL 16" ROUND LED HIGH BAY. RATED FOR OUTDOOR INDUSTRIAL APPLICATIONS. COPPER FREE ALUMINUM HOUSING. POLYESTER POWDER COATED FINISH. TEMPERED GLASS LENS. UL LISTED. NEMA 4X. DARK SKY COMPLIANT.	DIALIGHT "VIGILANT" FLOODLIGHT FDU76C2MDSNNGN	145 LPW 56,000 LUMENS 5,000K	POLE
FLOODLIGHT ACCESSORY	N/A	N/A	N/A	TENON POLE TOPPER FOR FLOODLIGHT	DIALIGHT FLX-1TPT-20DB	N/A	POLE
LIGHT POLE	N/A	N/A	N/A	SQUARE NON-TAPERED 25-FOOT STEEL POLE. ONE PIECE CONSTRUCTION FROM A WELDABLE GRADE CARBON STEEL STRUCTURAL TUBING. 11 GAUGE. POLYESTER THERMOSETTING POWDER COATED FINISH, 3 MILS MINIMUM. HANDHOLE. BRONZE.	WJM POLES SS500725-BZ-2-BC	N/A	POLE
LIGHT POLE ACCESSORY	N/A	N/A	N/A	BULL HORN MOUNT FOR 2 LIGHTS	DIALIGHT FLX-2RSR-20DB	N/A	POLE
LIGHT POLE ACCESSORY	N/A	N/A	N/A	BULL HORN MOUNT FOR 3 LIGHTS	DIALIGHT FLX-3RSR-20DB	N/A	POLE
"VAULT" LIGHT	LED	120	28	WALL PACK WITH POLYCARBONATE LENS. DIE-CAST ALUMINUM HOUSING, FULLY GASKETED. UL LISTED.	LITHONIA TWP TWP LED ALO 50K STEP 4	111 LPW 3,087 LUMENS 5,000K	WALL

LICENSED PROFESSIONAL ENGINEER
BLAIR I. BEADERSTADT
32520
OKLAHOMA
3/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

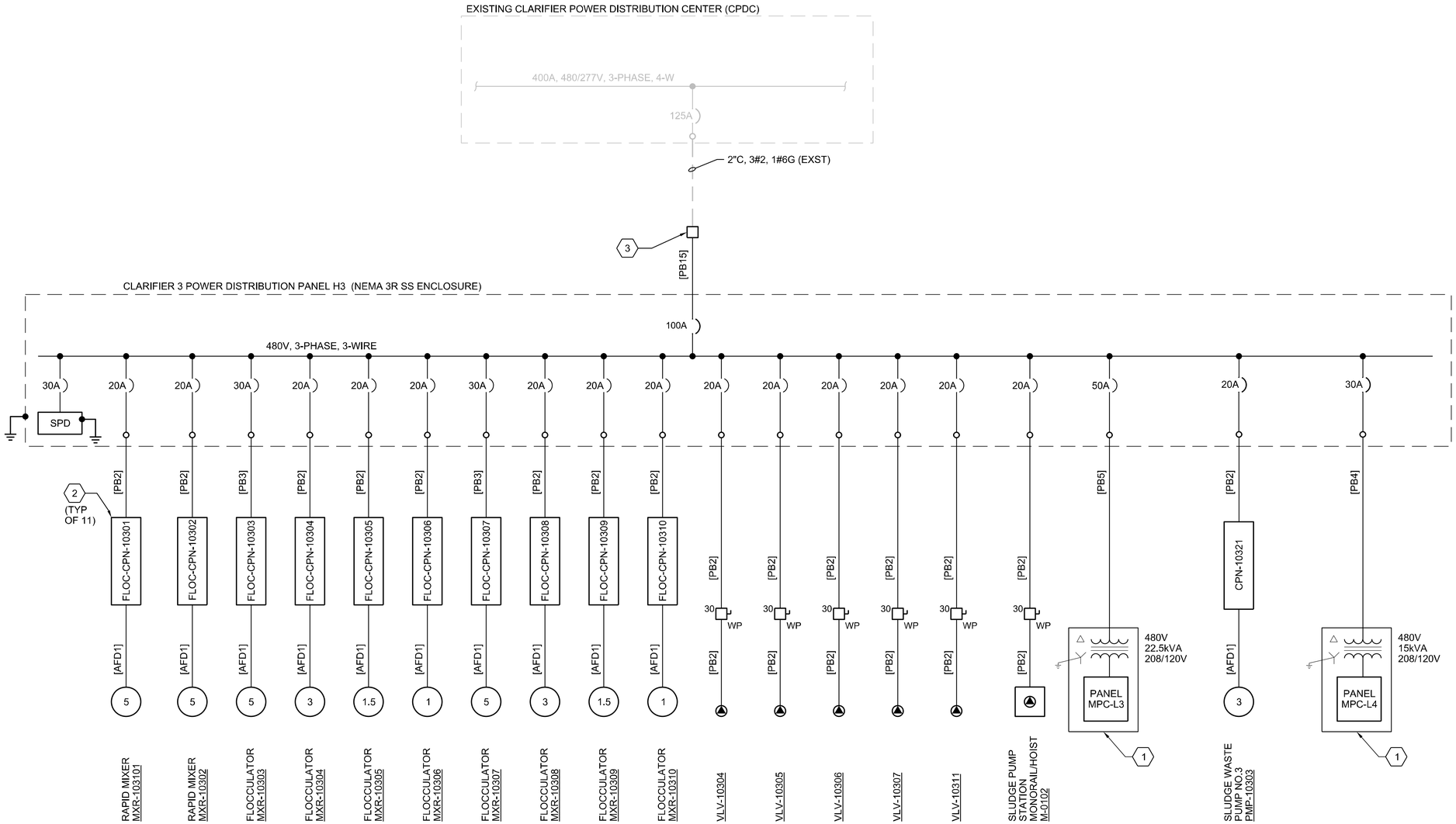
NO.	REVISION	BY	DATE

ELECTRICAL
CLARIFIER NO. 3 PANELBOARD SCHEDULES AND LUMINAIRE SCHEDULE
PROJECT NO. TMUA-W 18-19 C2
A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT
PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN CM	MAR 2022	APPROVED:
	DESIGNED BB	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 30-E-601			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 58 OF 76 SHEETS

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

FILENAME: C3-30-E-601_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 12:47:26 PM



GENERAL NOTES:

1. ALL GROUNDS SHOWN SHALL BE TO EXISTING GROUND GRID FOR CLARIFIER NO. 3, USE #4/0 BARE COPPER CABLE.
2. ALL TAGS SHOWN ON THIS DRAWING SHALL HAVE PRE-FIX "ABL-CLAR-CLR03", UNLESS NOTED OTHERWISE.

KEYED NOTES:

1. MINI-POWER CENTER, 480V-208/120V WITH MAIN CIRCUIT BREAKER AND BOLT-ON TYPE BRANCH BREAKERS. SEE PANEL SCHEDULES FOR QUANTITIES.
2. FIELD CONTROL PANEL W/AFD. FIELD PANEL SHALL BE FURNISHED BY SYSTEM SUPPLIER, AND SHALL BE INSTALLED AND TERMINATED BY THE ELECTRICAL CONTRACTOR. SEE SPECIFICATION 44 44 36
3. POWER TERMINAL BOX IN NEMA 3R STAINLESS STEEL ENCLOSURE, WITH TERMINAL LUGS FOR THE INCOMING EXISTING CIRCUIT AND THE NEW LOAD SIDE CIRCUIT. MATCH NEW TERMINAL LUGS WITH SAME TYPE AND SIZE AS DEMOLISHED LUGS.
4. SLUDGE PUMP AND ASSOCIATED CONTROL PANEL SHALL HAVE PRE-FIX "ABJ-CLAR-SLG".

LICENSED PROFESSIONAL ENGINEER
BLAIR I. BEADERSTADT
32520
OKLAHOMA
3/17/2022

VERIFY SCALE
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0 1"

NO.	REVISION	BY	DATE

ELECTRICAL
CLARIFIER NO. 3
ONE-LINE DIAGRAM

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

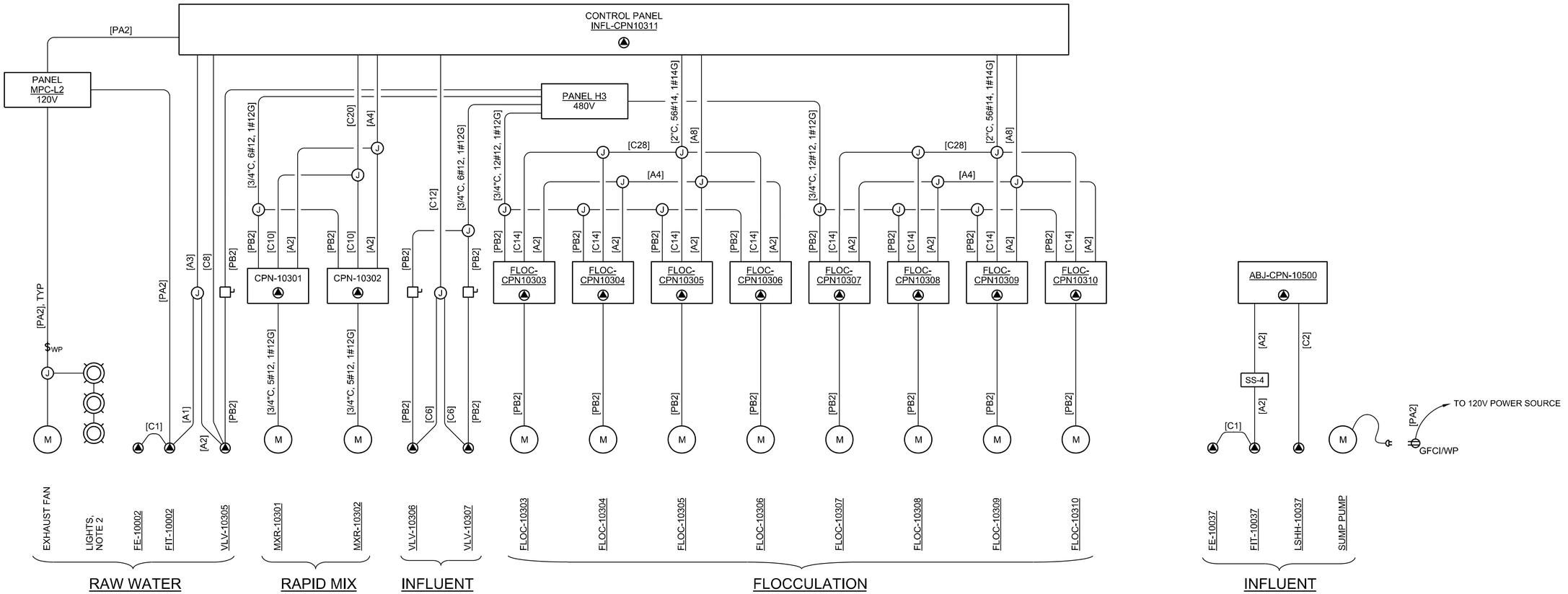
PLAN SCALE: AS NOTED ON PLANS	DRAWN CM	MAR 2022	APPROVED:
	DESIGNED BB	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 30-E-701		DATE:	MARCH 2022
ATLAS PAGE NO: 543		SHEET	59 OF 76 SHEETS

FILENAME: C3-30-E-701_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 12:47:42 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

GENERAL NOTES:

1. ALL TAGS SHOWN ON THIS DRAWING SHALL HAVE PRE-FIX "ABJ-CLAR-CLR03", UNLESS NOTED OTHERWISE.
2. INSTALL TWO VAULT LIGHTS INSIDE THE VAULT AND ANOTHER VAULT LIGHT OUTSIDE ON THE WALL AT THE BOTTOM OF THE STAIRS AT 7'-0" ABOVE THE LANDING. WIRE TO THE WEATHERPROOF SWITCH IN A NEMA 4X ENCLOSURE AT THE TOP OF THE STAIRS.



CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER
BLAIR I. BEADERSTADT
32520
OKLAHOMA
3/17/2022

NO.	REVISION	BY	DATE

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

ELECTRICAL
CLARIFIER NO. 3
CABLE BLOCK DIAGRAM

PROJECT NO. TMUA-W 18-19 C2

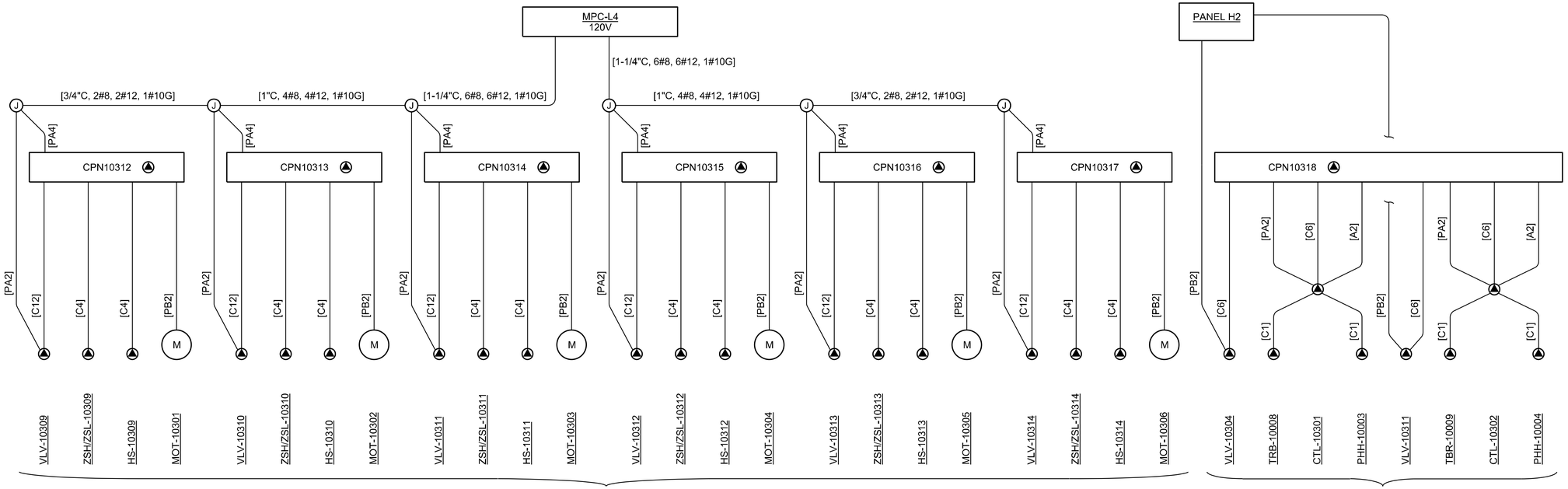
A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

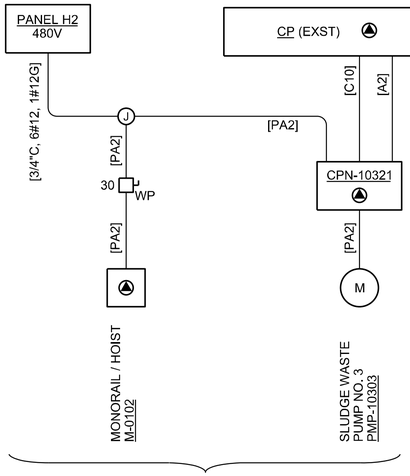
PLAN SCALE: AS NOTED ON PLANS	DRAWN CM	MAR 2022	APPROVED:
	DESIGNED BB	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 30-E-702			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 60 OF 76 SHEETS

FILENAME: C3-30-E-702_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 12:47:27 PM

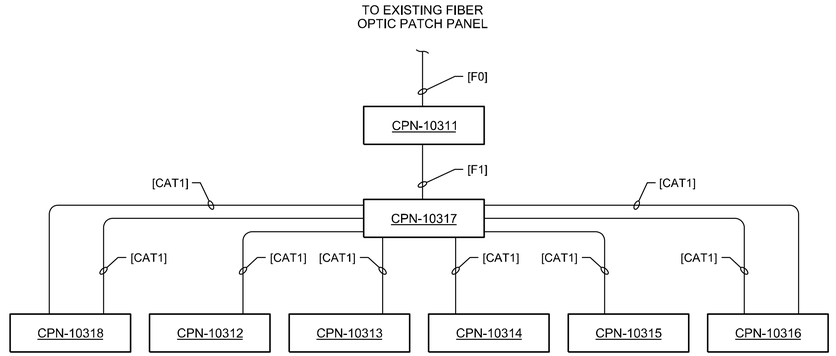


SLUDGE COLLECTION
NTS

EFFLUENT
NTS



SLUDGE PUMP STATION
NTS



NETWORK
NTS

GENERAL NOTES:

1. ALL TAGS SHOWN ON THIS DRAWING SHALL HAVE PRE-FIX "ABJ-CLAR-CLR03", UNLESS NOTED OTHERWISE.

LICENSED PROFESSIONAL ENGINEER
BLAIR I. BEADERSTADT
32520
OKLAHOMA
3/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

ELECTRICAL
CLARIFIER NO. 3
CABLE BLOCK DIAGRAMS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

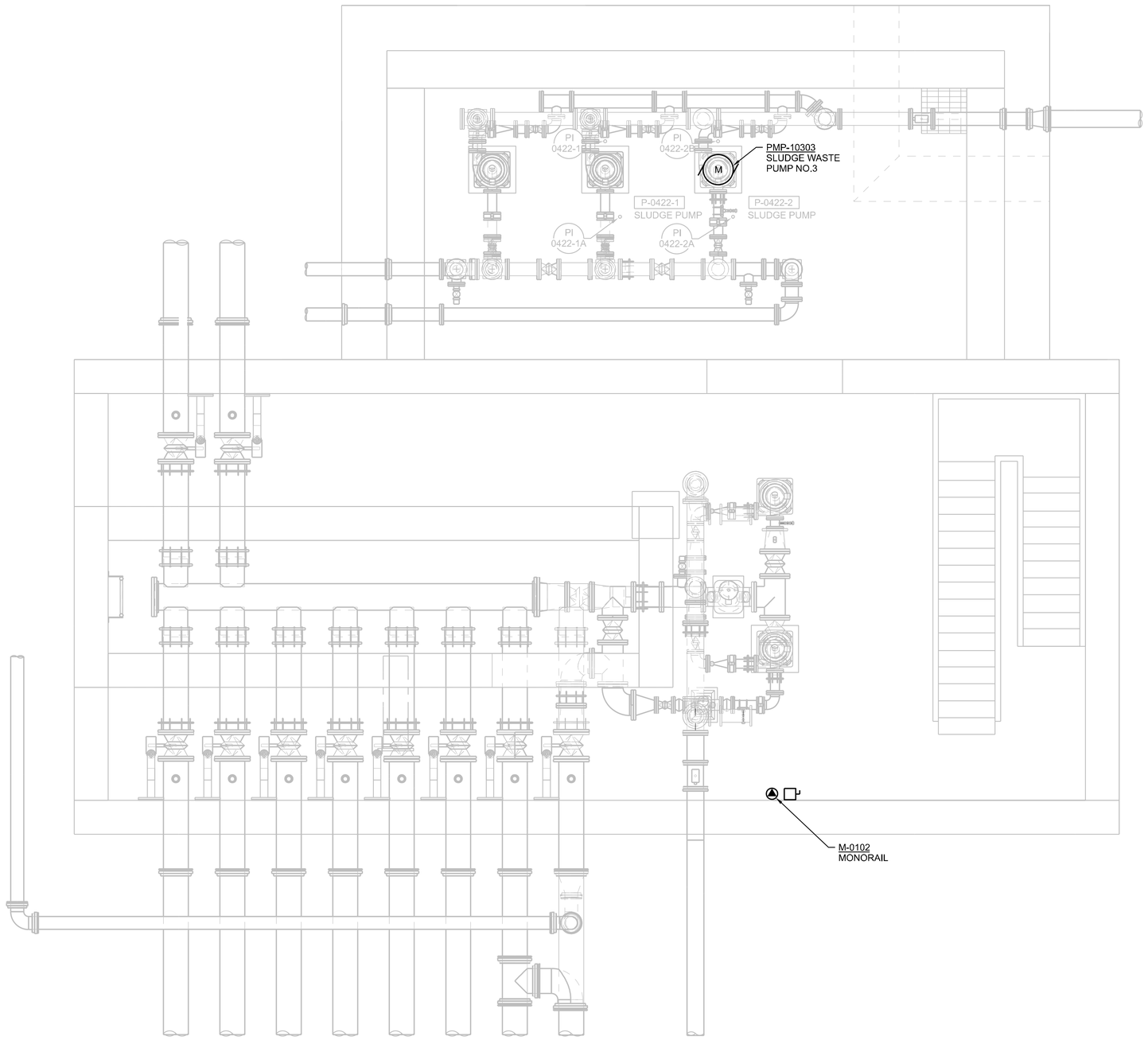
PLAN SCALE: AS NOTED ON PLANS	DRAWN	CM	MAR 2022
	DESIGNED	BB	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 30-E-703
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 61 OF 76 SHEETS

FILENAME: C3-30-E-703_WFXQ2600.dgn
PLOT DATE: 3/15/2022
PLOT TIME: 12:47:46 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



N

PLAN
3/8"=1'-0"

NOTES:

1. ALL TAGS SHOWN ON THIS DRAWING HAVE PRE-FIX "ABJ-CLAR-SLG".

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

BLAIR I. BEADERSTADT 32520 LICENSED PROFESSIONAL ENGINEER OKLAHOMA

3/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

ELECTRICAL
SLUDGE PUMP STATION NO. 2
PLAN

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

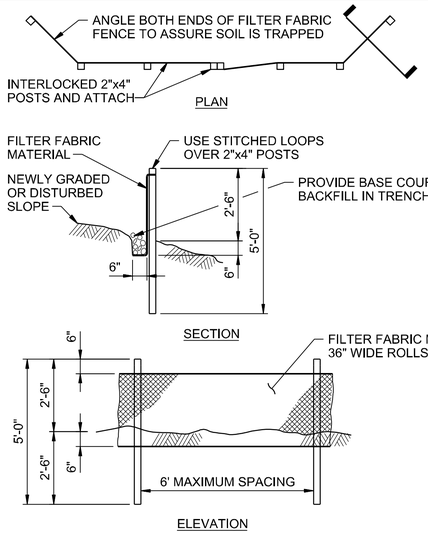
PLAN SCALE: AS NOTED ON PLANS
PROFILE SCALE:
HORIZONTAL:
VERTICAL

DRAWN	CM	MAR 2022
DESIGNED	BB	MAR 2022
SURVEY		
FIELD MGR.		
SECT. MGR.		
PROJ. MGR.		
RECOMMENDED: DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 40-E-110
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 62 OF 76 SHEETS

FILENAME: C3-40-E-110_WFXQ2600.dgn
PLOT DATE: 3/15/2022
PLOT TIME: 12:48:24 PM



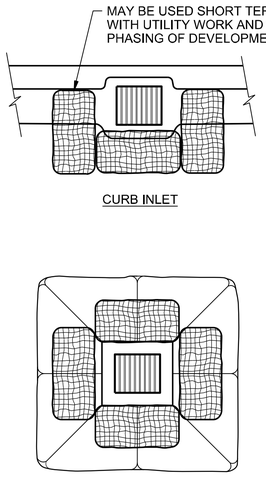
NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x4" DOUGLAS FIR OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED DOWNHILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.

SEDIMENT FENCE

NTS

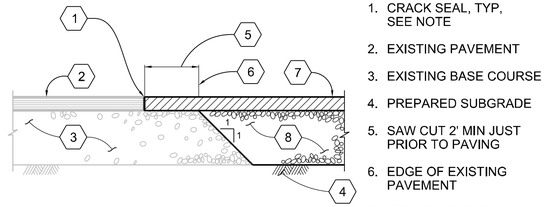
3125-165



BIOFILTER BAG INLET BARRIER

NTS

3125-186



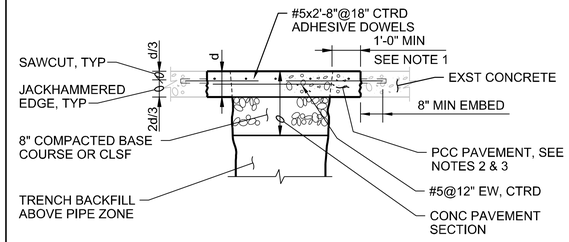
1. CRACK SEAL, TYP, SEE NOTE
2. EXISTING PAVEMENT
3. EXISTING BASE COURSE
4. PREPARED SUBGRADE
5. SAW CUT 2' MIN JUST PRIOR TO PAVING
6. EDGE OF EXISTING PAVEMENT
7. NEW PAVEMENT
8. NEW BASE COURSE

NOTE:
PAINT EDGE OF EXISTING ASPHALT WITH TACK COAT PRIOR TO PAVING. CRACK SEAL JOINT AFTER PAVING OPERATION HAS BEEN COMPLETED.

PAVEMENT CONNECTION

NTS

3212-215



PCC PAVEMENT SURFACING

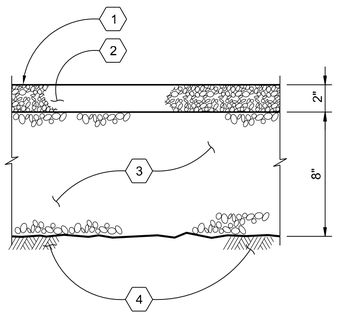
NOTES:

1. IF LOCATION OF TRENCH SAW CUT IS WITHIN 2 FEET OF AN EXISTING JOINT OR EDGE OF CONCRETE, REPLACE ENTIRE CONCRETE TO THE JOINT OR EDGE.
2. CONSTRUCT JOINTS ACROSS NEW CONCRETE TO MATCH EXISTING JOINT TYPES AND LOCATIONS.
3. PAVEMENT SHALL HAVE A COMPRESSIVE STRENGTH OF 4000 PSI AT THE AGE OF 28 DAYS. THICKNESS SHALL MATCH EXISTING.

SURFACE RESTORATION

NTS

3212-220



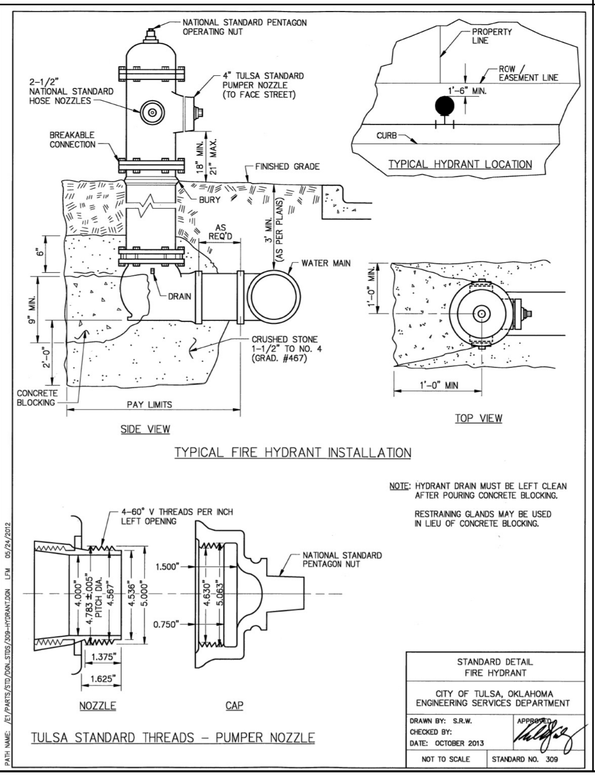
1. FINISH GRADE
2. SURFACING COURSE. 3/4" TYPE A AGGREGATE BASE PER COT SPEC 213. COMPACT TO 98% MED PROCTOR T-180
3. BASE COURSE. TYPE 1-1/2" TYPE A AGGREGATE PER COT SPEC 213. COMPACT TO MED PROCTOR T-180.
4. PREPARED SUBGRADE

NOTE:
COT = CITY OF TULSA STANDARD SPECIFICATIONS

GRAVEL SURFACING

NTS

3215-260



CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

CIVIL

STANDARD DETAILS

PROJECT NO. TMUA-W 18-19 C2

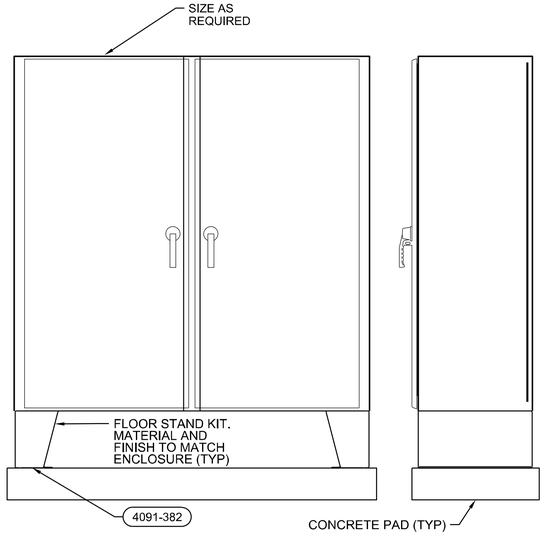
A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN JP	MAR 2022	APPROVED:
	DESIGNED SC	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 99-C-501			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 63 OF 76 SHEETS

FILENAME: C3-99-C-501_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 10:43:15 AM



FREESTANDING INSTRUMENT ENCLOSURE

NTS

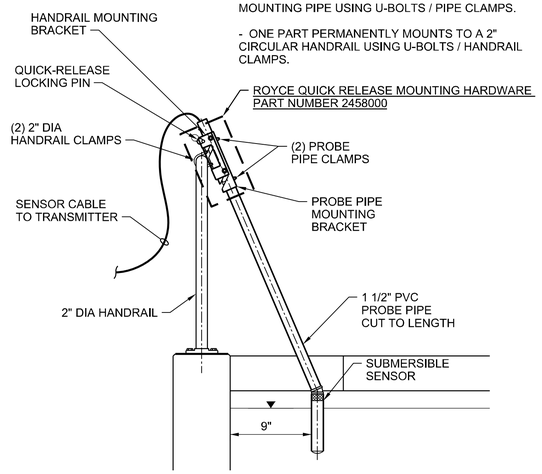
4091-139

GENERAL NOTES:

1. THE QUICK RELEASE HANDRAIL BRACKET, AS SHOWN, CONSISTS OF 2 PARTS AND ALL REQUIRED HARDWARE. BOTH PARTS EASILY INTERLOCK AND ARE HELD IN PLACE WITHOUT NEED FOR TOOLS USING A RETAINING PIN. ALL COMPONENTS ARE MANUFACTURED FROM STAINLESS STEEL.

   - ONE PART PERMANENTLY MOUNTS TO THE MOUNTING PIPE USING U-BOLTS / PIPE CLAMPS.

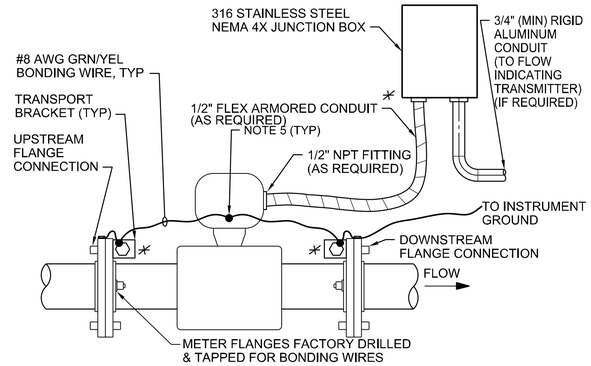
   - ONE PART PERMANENTLY MOUNTS TO A 2" CIRCULAR HANDRAIL USING U-BOLTS / HANDRAIL CLAMPS.



pH/ORP PROBE DETAIL

NTS

4091-156PD



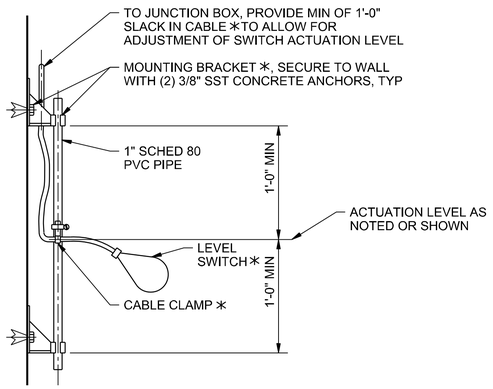
NOTES:

1. COMPONENTS DESIGNATED BY ✳ ARE SUPPLIED BY INSTRUMENT MANUFACTURER.
2. IF PIPE IS NON-CONDUCTIVE BOND MAGMETER TO ONE OF THE FOLLOWING ACCEPTABLE GROUNDS:
   A) METALLIC WATER PIPE IF BURIED PORTION IS MORE THAN 10'.
   B) STRUCTURAL STEEL.
3. FOR REMOTE TRANSMITTER MOUNTING FOR AN INDOOR/OUTDOOR INSTALLATION (RACK MOUNTED), SEE DETAIL (4091-388PD).
4. ALL GROUND CONNECTIONS SHALL BE #2/0 TINNED BARE COPPER CONDUCTORS.

MAGNETIC FLOWMETER INSTALLATION

NTS

4091-222M



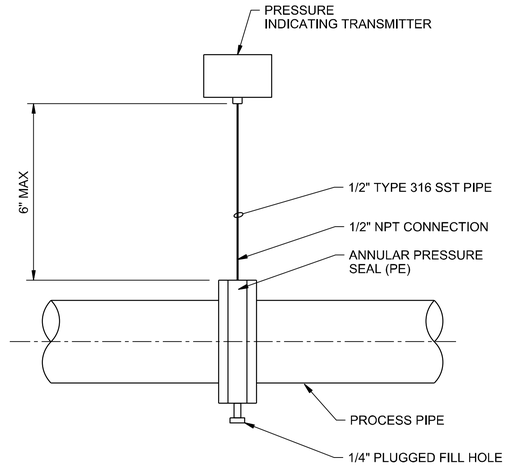
NOTES:

1. COMPONENTS DESIGNATED BY ✳ ARE SUPPLIED BY INSTRUMENT MANUFACTURER.

TYPICAL FLOAT TYPE LEVEL SWITCH INSTALLATION

NTS

4091-248



NOTES:

1. INDICATOR AND SWITCH INSTALLATION SHOWN. FOR SINGLE INSTRUMENT INSTALLATIONS, MOUNT DEVICE DIRECTLY TO SEAL.

PRESSURE INDICATING TRANSMITTER WITH ANNULAR SEAL INSTALLATION

NTS

4091-304C

LICENSED PROFESSIONAL ENGINEER
RICARDO J. VILLALOBOS
32159
OKLAHOMA

3/17/22

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

INSTRUMENTATION AND CONTROLS

STANDARD DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

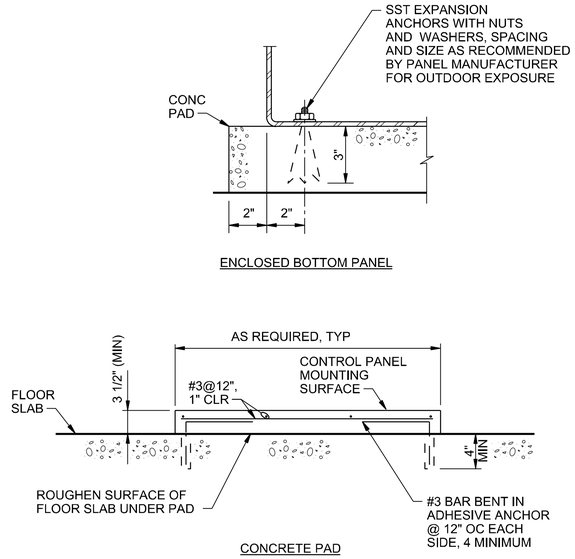
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN JB	MAR 2022	APPROVED:
	DESIGNED LG	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 99-N-501			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 64 OF 76 SHEETS

FILENAME: C3-99-N-501_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:35 PM

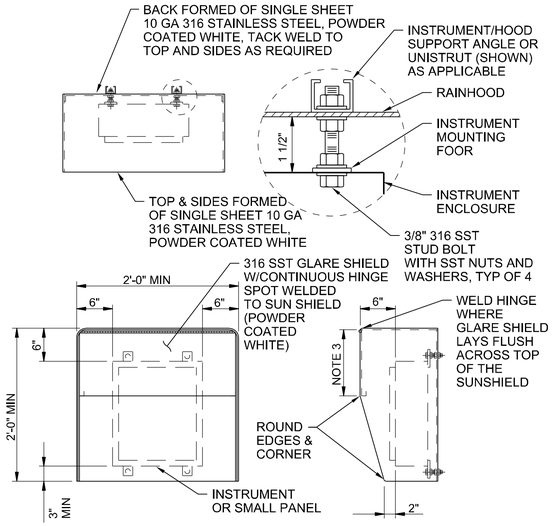
CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



STANDARD FREESTANDING PANEL MOUNTING

NTS

4091-382



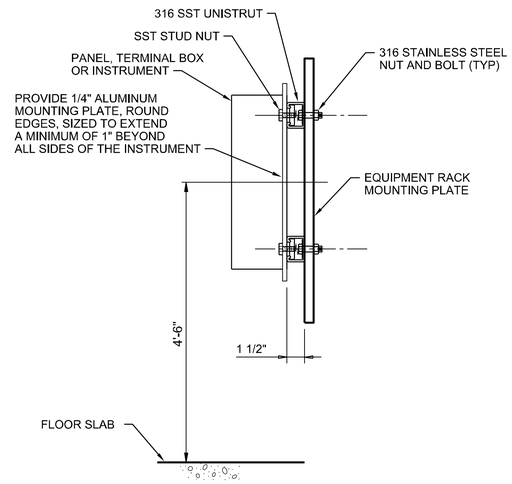
NOTES:

1. ALL EXPOSED EDGES TO BE GROUND SMOOTH AND BURR FREE.
2. MOUNT RAIN HOOD BETWEEN INSTRUMENT AND MOUNTING BRACKET. DRILL HOLES IN RAIN HOOD AS PER MOUNTING HOLES FOR INSTRUMENT.
3. MUST COVER 1/3 OF ENCLOSURE HEIGHT (MIN).

RAIN HOOD/SOLAR SHIELD INSTALLATION

NTS

4091-384



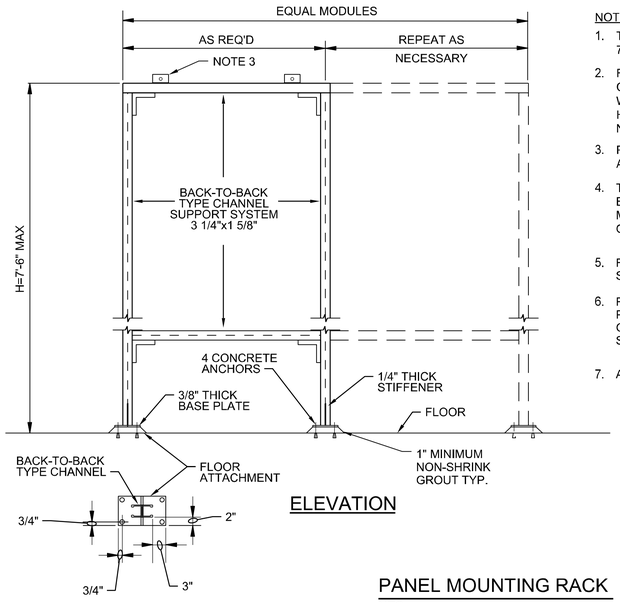
NOTES:

1. REFER TO AREA CLASSIFICATION TABLES FOR ANCHOR MATERIAL REQUIREMENTS.
2. FOR OUTDOOR INSTALLATIONS, USE SUN SHIELD AS SHOWN ON (4091-384).
3. FOR EQUIPMENT RACK, SEE DETAIL (4091-402D).

EQUIPMENT RACK MOUNTED PANEL, TERMINAL BOX OR INSTRUMENT INSTALLATION

NTS

4091-388PD



ELEVATION

NOTES:

1. TOTAL WEIGHT OF PANEL(S) SHALL NOT EXCEED 750 LB IN EACH MODULE.
2. FOR PANELS WITH "H" GREATER THAN 4'-0". ONE HORIZONTAL MEMBER MUST BE LOCATED WITHIN THE MIDDLE THIRD OF THE FRAME HEIGHT. PROVIDE ADD'L MEMBERS AS NECESSARY FOR PANEL MOUNTING.
3. PROVIDE L 2 1/2"x 2 1/2"x 1/4"x 0'-3" ANGLE TYP AT EACH PANEL MOUNT.
4. THIS DETAIL APPLIES TO NON-FREE STANDING ELECTRICAL EQUIPMENT WHICH IS NOT MOUNTED ON A FREE STANDING FRAME OR IS NOT WALL MOUNTED.
5. FOR OUTDOOR APPLICATIONS, PROVIDE RAINHOOD/ SOLAR SHIELD AS PER DETAIL (4091-384)
6. PROVIDE #6 XHHW COPPER GROUND WIRE FROM EACH PANEL AND INSTRUMENT MOUNTED ON RACK TO GROUND STUD. CONNECTION TO GROUND GRID SPECIFIED UNDER DIVISION 26.
7. ALL MATERIALS SHALL BE 316 SST.

PANEL MOUNTING RACK

NTS

4091-402D

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
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LICENSED PROFESSIONAL ENGINEER
RICARDO J. VILLALOBOS
32159
OKLAHOMA

3/17/22

VERIFY SCALE

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0 1"

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INSTRUMENTATION AND CONTROLS

STANDARD DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
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CITY OF TULSA, OKLAHOMA
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PLAN SCALE: AS NOTED ON PLANS	DRAWN JB	MAR 2022	APPROVED:
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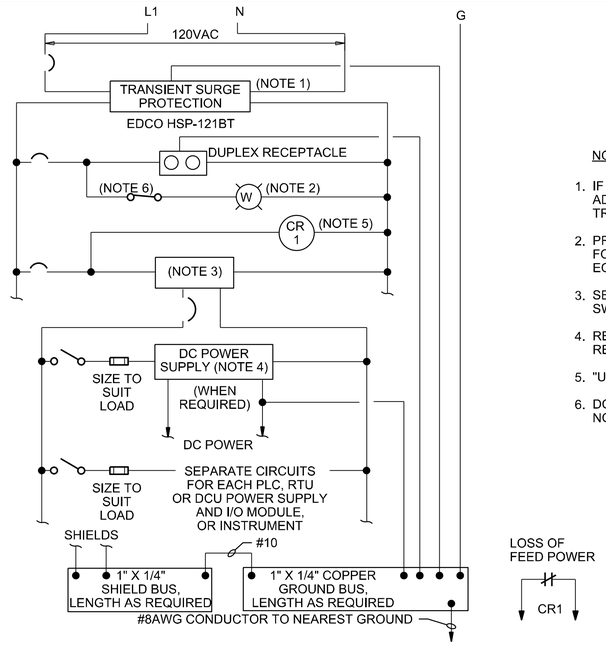
	SURVEY		
PROFILE SCALE: HORIZONTAL: VERTICAL	FIELD MGR.		
	SECT. MGR.		
	PROJ. MGR.		
	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 99-N-502			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 65 OF 76 SHEETS

FILENAME: C3-99-N-502_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:43 PM



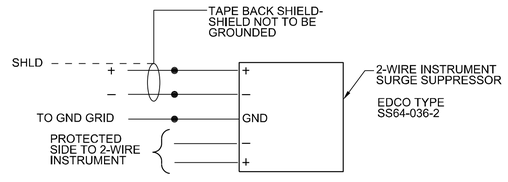
NOTES;

1. IF LOAD EXCEEDS 15 AMPS PROVIDE ADDITIONAL PARRALLEL CIRCUITS WITH TRANSIENT SURGE PROTECTION AS SHOWN.
2. PROVIDE APPROPRIATE LIGHTING PACKAGE FOR PANEL SIZE HOFFMAN BULLETIN A-80, OR EQUAL.
3. SEE DETAIL (4091-451D) FOR UPS BYPASS SWITCH DETAIL.
4. REDUNDANT POWER SUPPLIES WITH AN ACTIVE REDUNDANT MODULE. SEE DETAIL (4091-452D)
5. "UTILITY POWER OK" RELAY.
6. DOOR MOUNTED INTRUSION SWITCH, NORMALLY-CLOSED, HELD-OPEN.

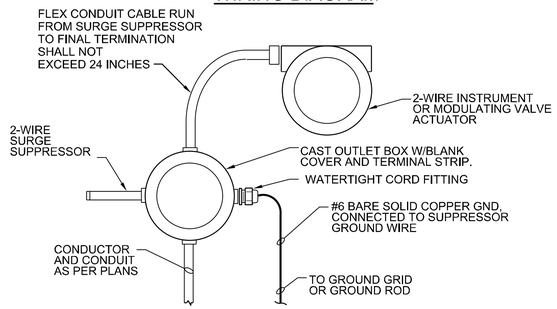
TYPICAL PANEL POWER DISTRIBUTION FOR PANELS WITH INTERNAL UPS

NTS

4091-406AG



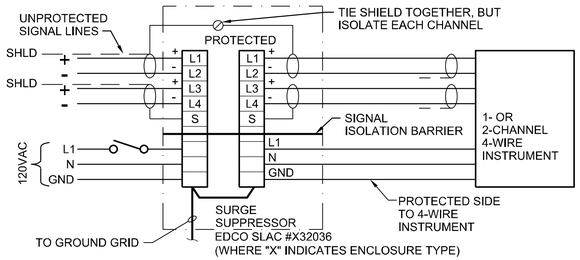
WIRING DIAGRAM



TYPE "SS-3" SURGE SUPPRESSOR INSTALLATION 2-WIRE INSTRUMENT/MODULATING VALVE ACTUATOR

NTS

4091-415AG



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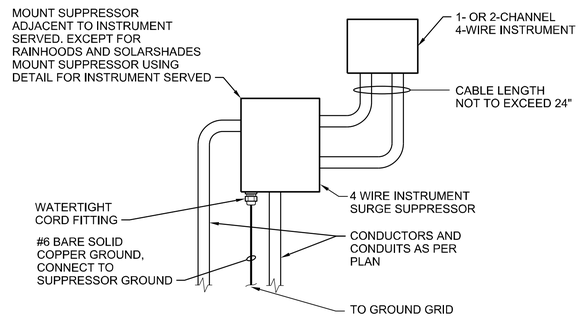

TYPE "SS-4" SURGE SUPPRESSOR INSTALLATION 4-WIRE INSTRUMENT

NTS

4091-420US

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER — RICARDO J. VILLALOBOS 32159 — OKLAHOMA

3/17/22

VERIFY SCALE

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NO.	REVISION	BY	DATE

INSTRUMENTATION AND CONTROLS

STANDARD DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		CITY ENGINEER
FILE: 99-N-503			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 66 OF 76 SHEETS

FILENAME: C3-99-N-503_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:32 PM

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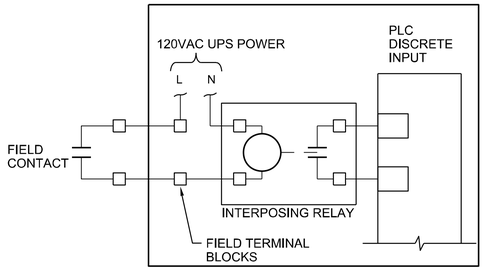
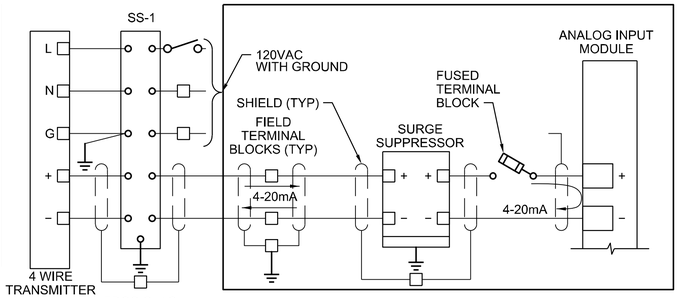


TYPICAL ANALOG INPUT - 4-WIRE TRANSMITTER



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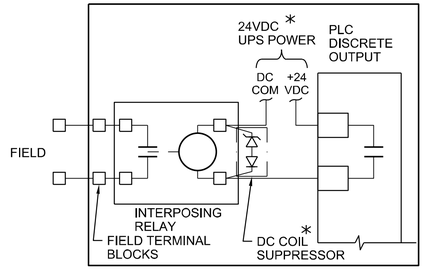

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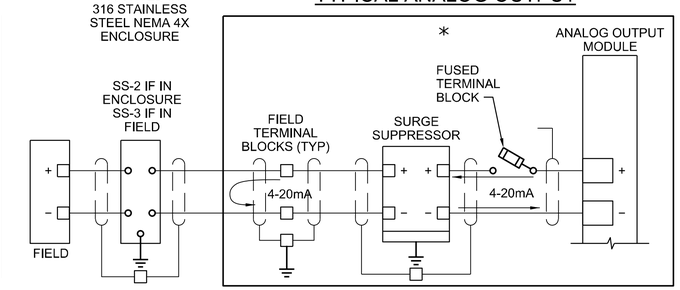
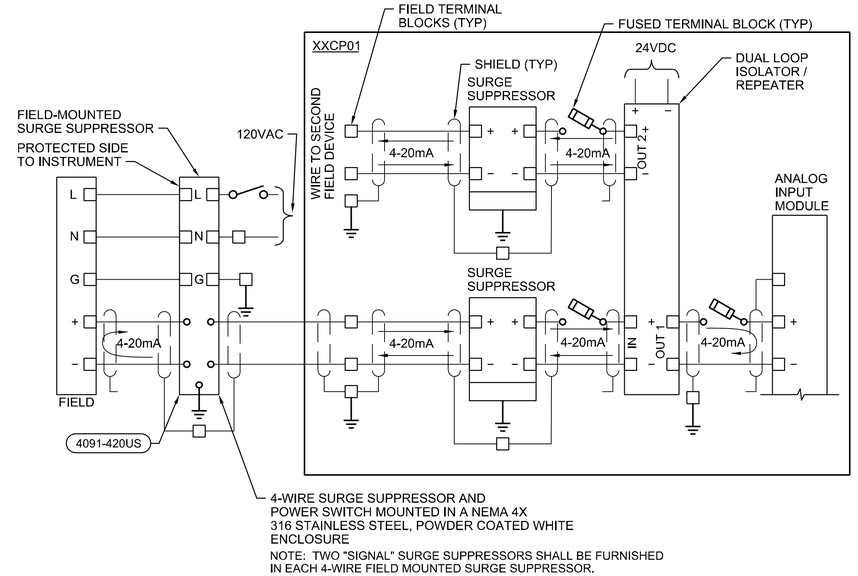


* NOTE: 24VDC UPS POWER FOR MODICON PLC AND DISCRETE I/O
120VAC UPS POWER FOR ALLEN-BRADLEY PLC DISCRETE I/O.
DC COIL SUPPRESSOR NOT REQUIRED FOR AC INTERPOSING RELAY COIL.

TYPICAL I/O WIRING DIAGRAMS

NTS

4091-441X

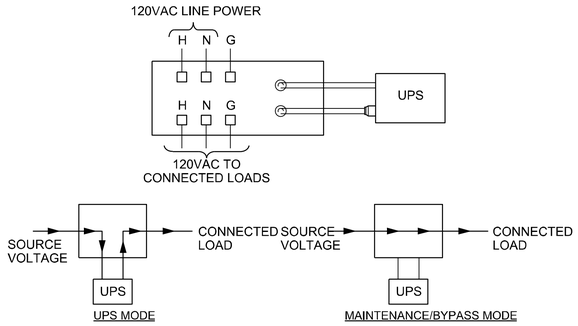


NOTE: TWO "SIGNAL" SURGE SUPPRESSORS SHALL BE FURNISHED IN EACH 4-WIRE FIELD MOUNTED SURGE SUPPRESSOR.

TYPICAL DIAGRAM WITH SURGE SUPPRESSOR/DUAL LOOP REPEATING ISOLATOR

NTS

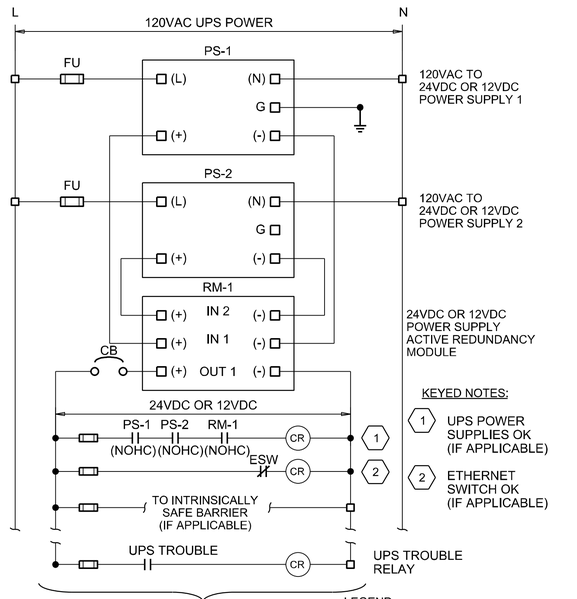
4091-442X



UPS MAINTENANCE/BYPASS WIRING DETAIL

NTS

4091-451D



NOTE: WIRE FAULT CONTACTS OF BOTH POWER SUPPLIES AND ACTIVE REDUNDANCY MODULES IN SERIES AND WIRE TO A DC RELAY FOR MONITORING THE "POWER SUPPLY OK" STATUS.

UPS 120V TO 24VDC OR 12VDC WIRING DIAGRAM

NTS

4091-452D

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER
RICARDO J. VILLALOBOS
32159
OKLAHOMA
3/17/22

INSTRUMENTATION AND CONTROLS	STANDARD DETAILS
PROJECT NO. TMUA-W 18-19 C2	
A.B. JEWELL WTP CLARIFIER NO. 3 IMPROVEMENTS	
CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT	
PLANS AND ESTIMATES PREPARED BY: JACOBS	

VERIFY SCALE
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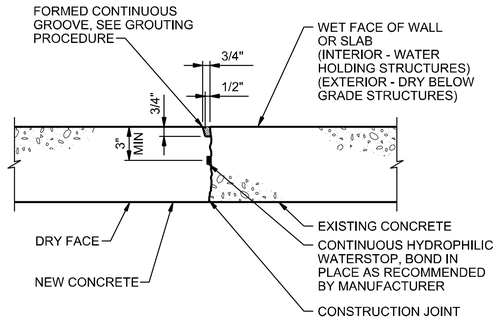
FILE: 99-N-504			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 67 OF 76 SHEETS

FILENAME: C3-99-N-504_WFXQ2600.dgn PLOT DATE: 3/15/2022 PLOT TIME: 6:02:40 PM



NOTE:

FOR USE IN NON-MOVING CONSTRUCTION JOINTS AND ONLY WHERE SPECIFICALLY INDICATED ON PLANS.

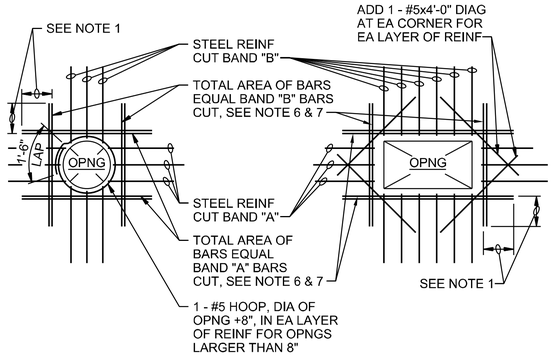
GROUTING PROCEDURE:

1. WAIT UNTIL NEW CONCRETE MINIMUM 28 DAYS OLD PRIOR TO GROUTING GROOVE.
2. ROUGHEN AND CLEAN SURFACES OF GROOVE WITH POWER WIRE BRUSH OR SANDBLASTING.
3. SATURATE AREA FOR 24 HOURS PRIOR TO GROUTING.
4. DRY PACK WITH TYPE II NON-SHRINK GROUT.
5. USE STEEL HAMMER AND STEEL TOOL TO DENSELY PACK GROUT INTO GROOVE.
6. WATER CURE GROUT FOR 4 DAYS MINIMUM.

HYDROPHILIC/GROOVE WATERSTOP

NTS

0315-003



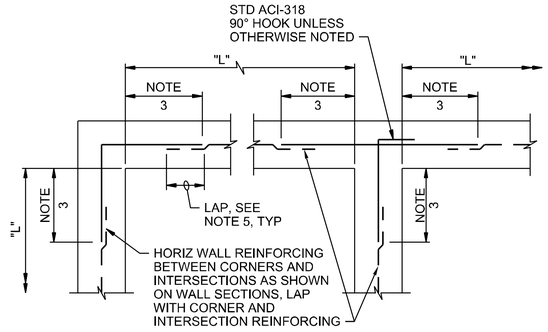
NOTES:

1. PROVIDE MINIMUM LAP, SEE GENERAL STRUCTURAL NOTES.
2. TYPICAL FOR ALL OPENINGS IN CONCRETE WALLS OF BELOW GRADE AND HYDRAULIC STRUCTURES AND ALL STRUCTURAL CONCRETE SLABS UNLESS INDICATED OTHERWISE ON PLANS.
3. DO NOT WELD REINFORCEMENT TO PIPE SLEEVES AND INSERTS.
4. PROVIDE A MINIMUM OF 2 "A" BARS AND 2 "B" BARS EACH SIDE OF OPENING (1 EACH FACE), INCLUDING DOWELS AND CORNER BARS, TYPICAL.
5. FOR OPENINGS LARGER THAN 8'-0", REINFORCE SAME AS FOR 8'-0" OPENINGS.
6. SPACE AT 3 BAR DIAMETERS (OR 3" MINIMUM) ON CENTER. LOCATE HALF OF TOTAL AREA ON EACH SIDE OF OPENING.
7. AT OPENINGS WITHIN 12" OF AN INTERSECTING WALL OR SLAB, PROVIDE ONLY THE EXTRA REINFORCEMENT WHICH WILL FIT, AT THE BAR SPACING IN NOTE 6.

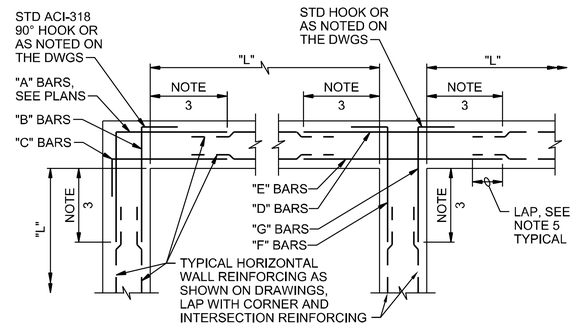
OPENING REINFORCING

NTS

0330-001



SINGLE REINFORCING MAT



DOUBLE REINFORCING MAT

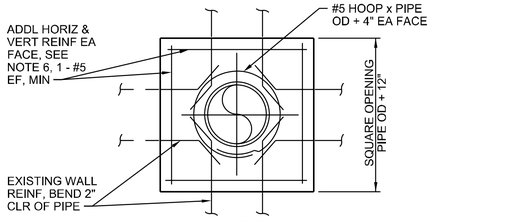
NOTES:

1. 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.
2. 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.
3. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 3" SHALL BE THE LESSER OF L/4, 10 FEET, OR 1.0 TIMES THE HEIGHT OF THE WALL, EXCEPT THAT IN NO CASE SHALL IT BE LESS THAN 2 FEET.
4. L = LENGTH OF WALL PARALLEL TO THE BAR LENGTH IN QUESTION.
5. 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.
6. UNLESS OTHERWISE NOTED, "B" AND "C" BARS ARE THE SAME SIZE AND SPACING AND "F" AND "G" BARS ARE THE SAME SIZE AND SPACING.

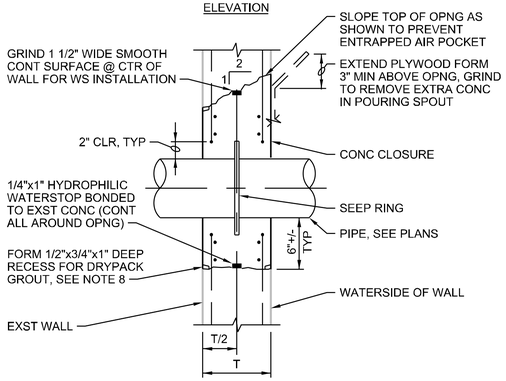
TYPICAL WALL CORNER AND INTERSECTION REINFORCING

NTS

0330-003



ELEVATION



SECTION

TYPE 'A' - WITHOUT CLOSURE COLLAR

NOTES:

1. SAW-CUT 1-INCH DEEP x PIPE OD + 12" SQUARE SCORE LINE ON EACH FACE OF WALL. (VERIFY DEPTH OF CUT TO CLEAR REINFORCING.) (INCREASE HEIGHT AS NOTED AT TOP ON WATERSIDE FACE FOR POURING.)
2. CHIP TO REMOVE THE CONCRETE WITHIN THE SCORE LINE, WHILE PRESERVING THE EXISTING WALL REINFORCING.
3. CUT EXISTING REINFORCING AT CENTER OF OPENING AND BEND TO CLEAR PIPE.
4. GRIND 1 1/2" WIDE x CONT SMOOTH SURFACE ALL AROUND THE OPENING AT CENTER OF WALL. CLEAN SURFACES AND BOND CONTINUOUS HYDROPHILIC WATERSTOP IN PLACE.
5. INSTALL WALL PIPE. (COAT CONCRETE ENCASED PORTION OF PIPE WITH SPECIFIED COATING SYSTEM.)
6. INSTALL ADDITIONAL REINFORCING EACH FACE, EACH SIDE, ABOVE AND BELOW PIPE. HORIZONTAL REINFORCING TO HAVE COMBINED AREA EQUAL TO AREA OF HORIZONTAL REINFORCING CUT. VERTICAL REINFORCING TO HAVE COMBINED AREA EQUAL TO AREA OF VERTICAL REINFORCING CUT.
7. SOAK CONCRETE SURFACES AND WITHIN 15-MINUTES CAST CONCRETE CLOSURE. (CONCRETE CLOSURE MUST BE CAST BEFORE HYDROPHILIC WATERSTOP EXPANDS). FORM GROOVE ON ALL SIDES OF OPENING EXCEPT AT TOP ON THE POUR SIDE.
8. CLEAN SURFACES OF FORMED GROOVE WITH POWER WIRE BRUSH OR SANDBLASTING AND DRY-PACK WITH NON-SHRINK GROUT AFTER NEW CONCRETE MINIMUM 28-DAYS OLD.

PIPE PENETRATION - EXISTING WALL

NTS

0330-022

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

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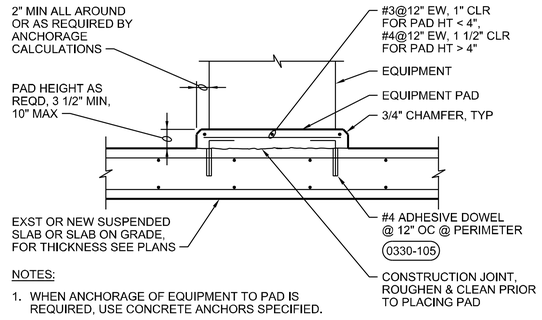
PROFILE SCALE:	FIELD MGR.		
	SECT. MGR.		
HORIZONTAL:	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 99-S-501
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 68 OF 76 SHEETS

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

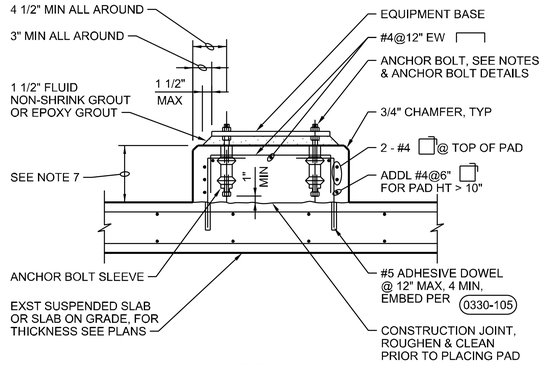
FILENAME: C3-99-S-501_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 5:17:34 PM



NOTES:

1. WHEN ANCHORAGE OF EQUIPMENT TO PAD IS REQUIRED, USE CONCRETE ANCHORS SPECIFIED.
2. CONCRETE PADS FOR ELECTRICAL EQUIPMENT SHALL BE 3 1/2" HIGH, UNLESS NOTED OTHERWISE.

TYPE 'E'



TYPE 'F'

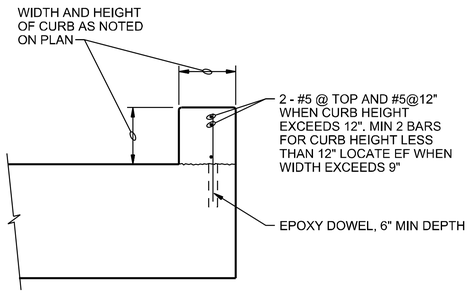
NOTES:

1. PAD SIZE SHALL BE MINIMUM INDICATED OR AS SHOWN ON THE PLANS OR AS INDICATED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
2. THE SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER AND AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE OR OTHER ACCEPTABLE MEANS, MATCHING THE BASE PLATE, WHILE PAD IS BEING PLACED.
3. ANCHOR BOLT SLEEVES SHALL BE USED TO PROVIDE MINIMUM ANCHOR BOLT MOVEMENT OF 1/2" IN ALL HORIZONTAL DIRECTIONS. THE MINIMUM SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER.
4. ANCHOR BOLT SLEEVES SHALL HAVE A MINIMUM INTERNAL DIAMETER 1" GREATER THAN BOLT DIAMETER AND A MAXIMUM INTERNAL DIAMETER 3" GREATER THAN ANCHOR BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT AFTER BOLTS ARE ALIGNED.
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS INDICATED OTHERWISE.
6. WEDGES, SHIMS, OR LEVELING NUTS SHALL BE USED TO SUPPORT THE BASE WHILE THE GROUT IS PLACED. WEDGES OR SHIMS SHALL BE REMOVED AFTER GROUT IS SET AND PACK VOID WITH GROUT.
7. HEIGHT OF PADS SHALL BE MINIMUM REQUIRED FOR ANCHOR BOLT CLEARANCE TO KEEP ANCHOR BOLT ABOVE SUPPORTING SLAB (SEE TABLE BELOW). WHERE EQUIPMENT OR PIPING ELEVATION REQUIRE A PAD HEIGHT LESS THAN THE MINIMUM SHOWN, USE TYPE "B" EQUIPMENT PAD WITH BLOCKOUT.

CONCRETE EQUIPMENT PAD - TYPE 'F'

NTS

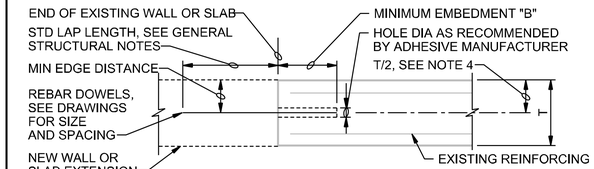
0330-056



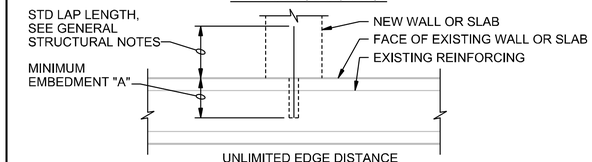
CONCRETE CURB

NTS

0330-080



LIMITED EDGE DISTANCE



UNLIMITED EDGE DISTANCE

DOWEL SIZE	MINIMUM EDGE DIST	MINIMUM EMBEDMENT A	MINIMUM EMBEDMENT B
#3	2 1/2"	5"	8"
#4	3 1/2"	7"	11"
#5	4"	8"	13"
#6	5"	10 1/2"	16"
#7	6"	12 1/2"	20"
#8	7"	14"	22"
#9	7 1/2"	15"	24"

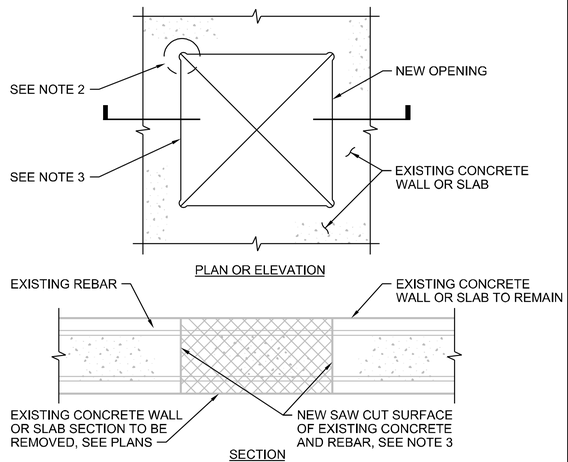
NOTES:

1. CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 03 63 00, CONCRETE DOWELING.
2. FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
3. USE MINIMUM EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S MINIMUM RECOMMENDED EMBEDMENT IF GREATER.
4. LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE 2 ROWS OF DOWELS INDICATED, STAGGER SPACING & LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.

ADHESIVE DOWEL

NTS

0330-105



PLAN OR ELEVATION

SECTION

NEW OPENING IN EXISTING WALL OR SLAB

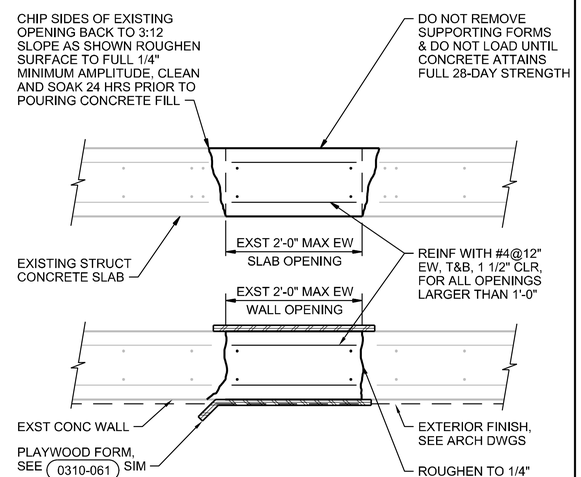
NOTES:

1. SUPPORT ADJACENT ELEVATED SLABS AND CUT SLAB SECTION UNTIL CUTTING OPERATION IS COMPLETE.
2. CORE DRILL CORNERS TO DIAMETER REQUIRED TO PREVENT OVER CUTTING OF REBAR AND CONCRETE BEYOND OPENING.
3. IN NON-SUBMERGED AREA, COAT MINIMUM 2" DIAMETER OVER AND AROUND CUT PER SPECIFICATION SECTION 09 90 00. THE ENTIRE CUT REBAR WITH SYSTEM 2A SURFACE MAY BE COATED. IN SUBMERGED AREA, CHIP OUT AROUND ANY EXPOSED REINFORCING STEEL AND REMOVE TO A MINIMUM DEPTH OF 1 1/2" BELOW CONCRETE SURFACE. PATCH HOLES WITH NON-SHRINK GROUT.

SURFACE TREATMENT OF NEW OPENINGS IN EXISTING CONCRETE

NTS

0330-106



PLAN

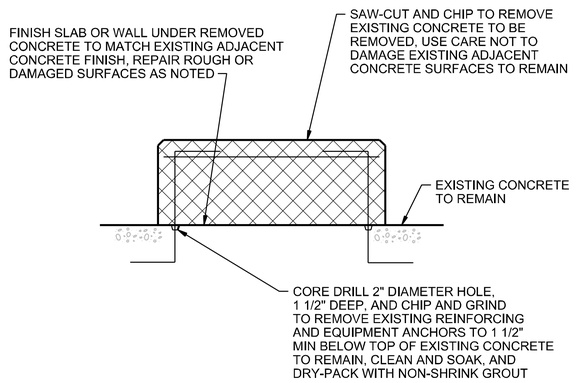
NOTES:

1. CURE PATCH BY APPLYING CURING COMPOUND.
2. NOT FOR LIQUID HOLDING SLAB OR WALL.

EXISTING SLAB AND WALL OPENING REPAIR

NTS

0330-142



NOTES:

1. REMOVE CONCRETE OUT TO SOUND CONCRETE.
2. IF CHIPPING INTO THE SURFACE OF THE EXISTING SLAB OR WALL TO REMAIN IS REQUIRED, MAKE EDGES PERPENDICULAR TO THE SURFACE. DO NOT FEATHER EDGES.
3. FILL DEFECTIVE AREA WITH NON-SHRINK GROUT OR AN APPROVED PREPACKAGED PATCHING MATERIAL TO MATCH APPREARANCE OF ADJACENT CONCRETE SURFACES.
4. USE APPROVED BONDING AGENT ON SURFACES TO BE PATCHED PRIOR TO PLACING NON-SHRINK GROUT.
5. DEMONSTRATE METHODS FOR REPAIR USING ACTUAL MATERIALS, METHODS, AND CURING PROCEDURES REQUIRED BY MATERIAL MANUFACTURERS. CONSULT WITH BONDING AGENT MANUFACTURER AND NON-SHRINK GROUT MANUFACTURER ON TECHNIQUES.

CONCRETE DEMOLITION

NTS

0330-143

DIGITALLY SIGNED 03/15/2022

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

STRUCTURAL

STANDARD DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

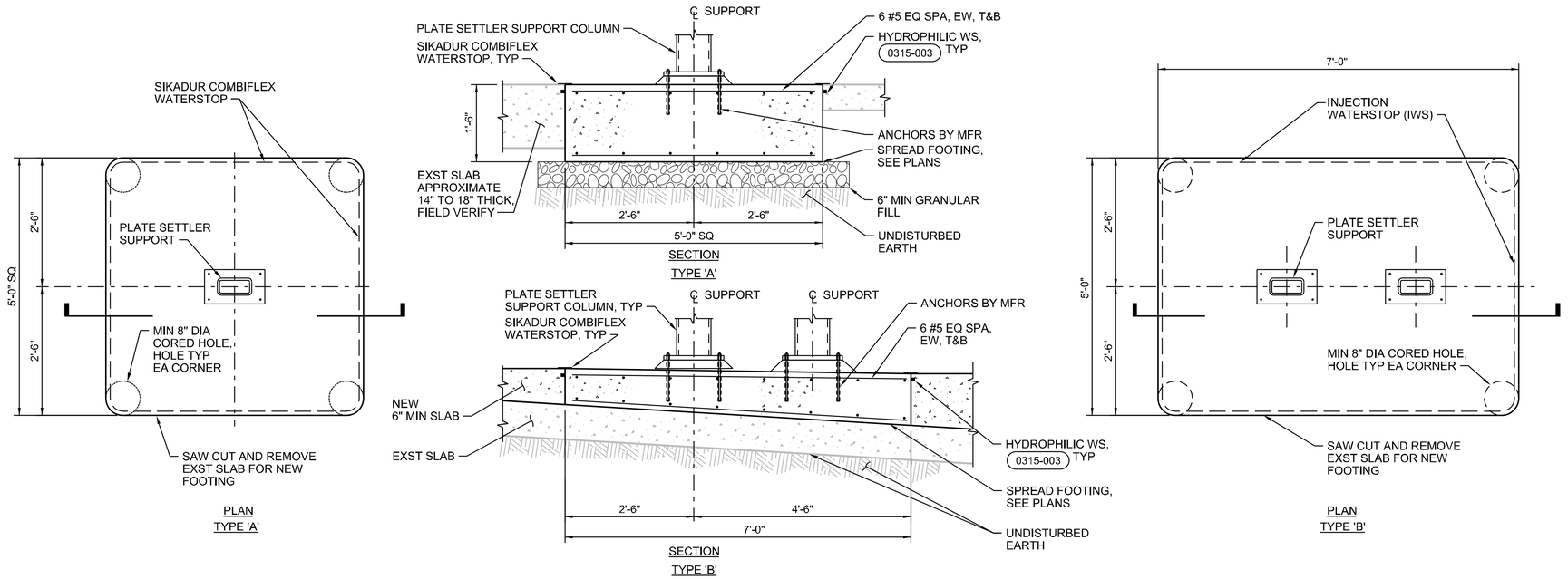
PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
	DESIGNED	LY	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE:	99-S-502	DATE:	MARCH 2022
ATLAS PAGE NO:	543	SHEET	69 OF 76 SHEETS

FILENAME: C3-99-S-502_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 4:02:49 PM

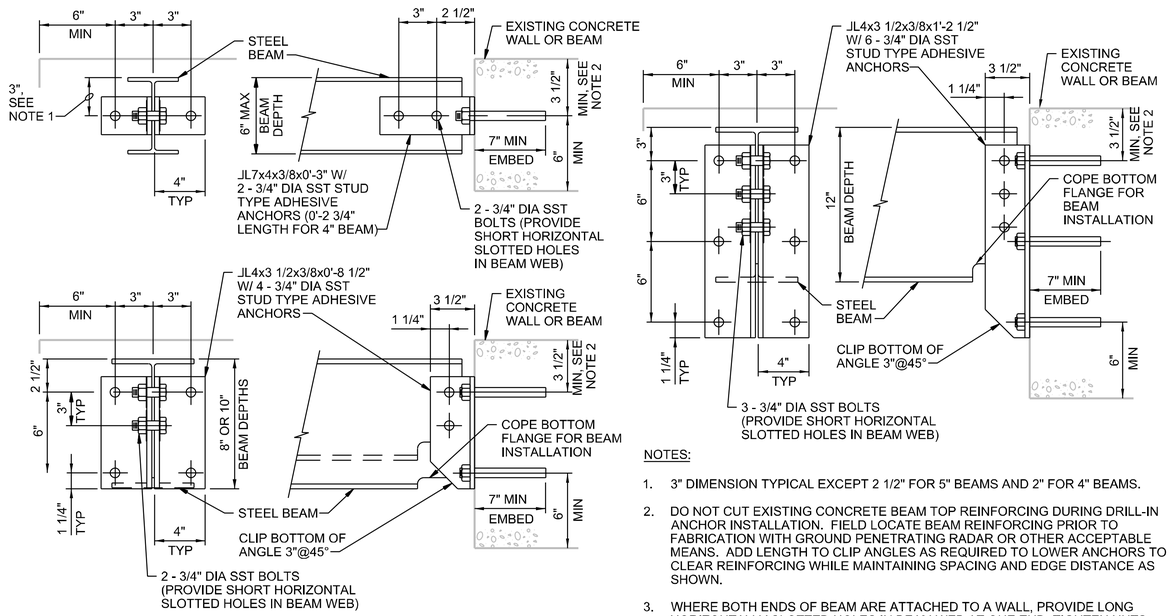
CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



SUPPORT COLUMN FOUNDATION DETAIL

NTS

0512-011



NOTES:

1. 3" DIMENSION TYPICAL EXCEPT 2 1/2" FOR 5" BEAMS AND 2" FOR 4" BEAMS.
2. DO NOT CUT EXISTING CONCRETE BEAM TOP REINFORCING DURING DRILL-IN ANCHOR INSTALLATION. FIELD LOCATE BEAM REINFORCING PRIOR TO FABRICATION WITH GROUND PENETRATING RADAR OR OTHER ACCEPTABLE MEANS. ADD LENGTH TO CLIP ANGLES AS REQUIRED TO LOWER ANCHORS TO CLEAR REINFORCING WHILE MAINTAINING SPACING AND EDGE DISTANCE AS SHOWN.
3. WHERE BOTH ENDS OF BEAM ARE ATTACHED TO A WALL, PROVIDE LONG HORIZONTALLY SLOTTED HOLES IN BEAM WEB AT ONE END. TIGHTEN NUTS SNUG TIGHT, BACK OFF 1/2 TURN, AND LOCK WITH DOUBLE NUT INSTALLATION. FIELD LOCATE BEAM REINFORCING PRIOR

BEAM/WALL CONNECTION

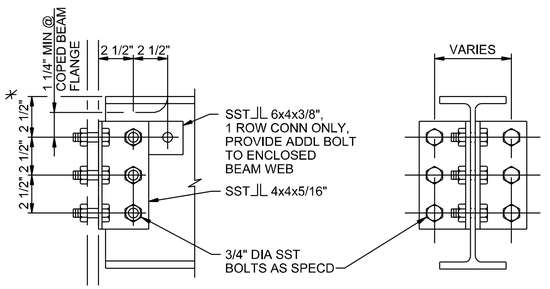
NTS

0512-056

NOMINAL BEAM DEPTH, INCHES	ROWS OF BOLTS	LENGTH OF ANGLE
10	3	7 1/2"

NOTES:

1. NUMBER OF ROWS IS EQUAL TO NUMBER OF BOLTS TO ENCLOSED WEB.
2. ALL FRAMING CONNECTIONS SHALL CONFORM TO SCHEDULE UNLESS DETAILED OTHERWISE ON FRAMING PLANS.



NOTE:

* 2 1/2" DIMENSION TYPICAL EXCEPT 2" FOR 4" BEAM.

TYPICAL BEAM CONNECTION - STAINLESS STEEL

NTS

0512-057

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

STRUCTURAL
STANDARD DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

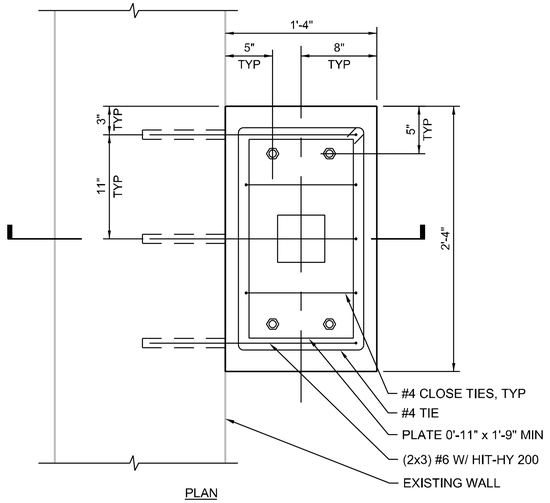
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

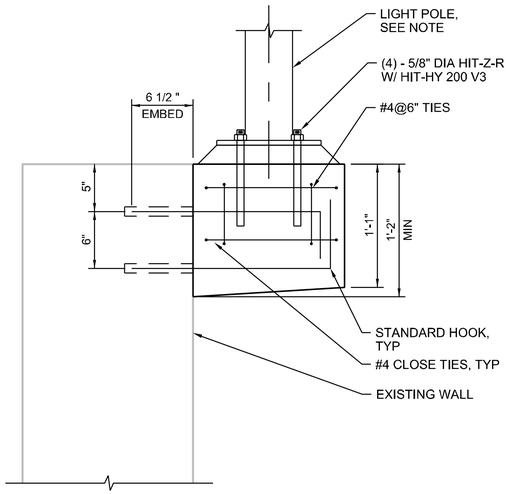
PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
	DESIGNED	LY	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		
FILE: 99-S-503			
ATLAS PAGE NO: 543			

APPROVED:
CITY ENGINEER
DATE: MARCH 2022
SHEET 70 OF 76 SHEETS

FILENAME: C3-99-S-503_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 4:05:53 PM



PLAN



SECTION

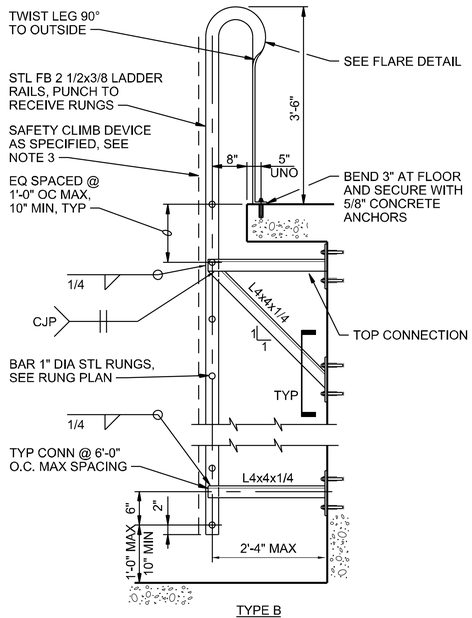
NOTE;

LIGHT POLE IS 20 FEET TALL WITH TWO FIXTURES TOTALING APPROXIMATELY 4 SQUARE FEET.

LIGHT POLE ANCHORAGE

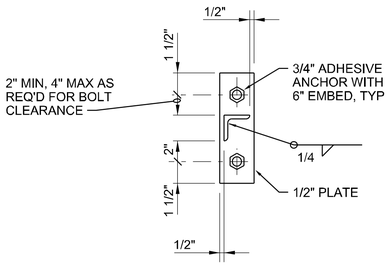
NTS

0512-122

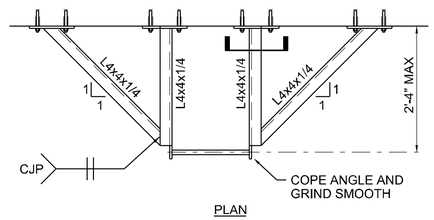


TYPE B

FLAT BAR LADDER WITH EXTENSION



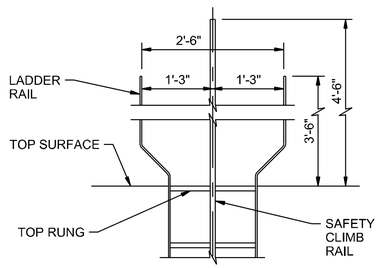
SECTION



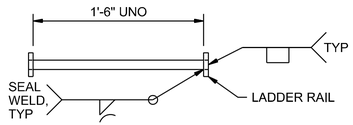
PLAN

NOTES:

1. ALL FASTENERS AND ANCHORS SHALL BE 316 SST.
2. PROVIDE SAFETY CLIMB DEVICE FOR LADDERS 20' OR GREATER.



TYPE B FLARE DETAIL



RUNG PLAN

FLAT BAR LADDER - STAINLESS STEEL 316L

NTS

0551-141

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER 30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

STRUCTURAL
STANDARD DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

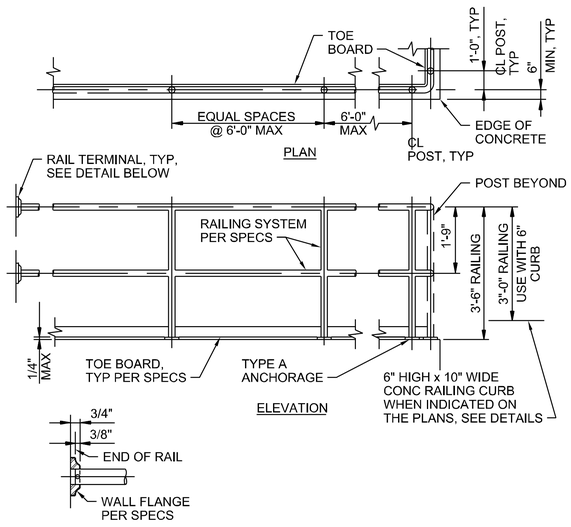
PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	ILT	MAR 2022
	DESIGNED	LY	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
	SECT. MGR.		
HORIZONTAL:	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: 99-S-504
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 71 OF 76 SHEETS

FILENAME: C3-99-S-504_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 4:08:41 PM



NOTES:

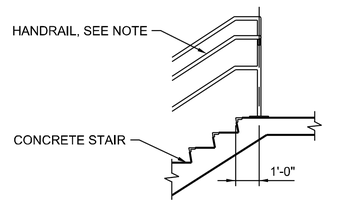
1. FASTEN RAIL TO WALL FLANGE PER MANUFACTURER'S RECOMMENDATIONS.
2. WALL FLANGE TO BE MOUNTED TO WALL WITH (2) 3/8" DIA SST WEDGE ANCHORS.

RAILING - 2 RAIL - ALUMINUM

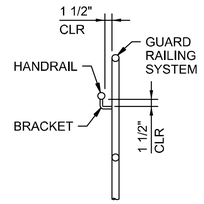
NTS

DETAIL 1 OF 3

0552-001



RAILING DETAIL AT CONCRETE STAIR



RAILING SECTION

NOTE:

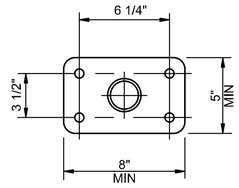
RETURN ENDS OF HANDRAIL TO GUARD AT BOTH ENDS.

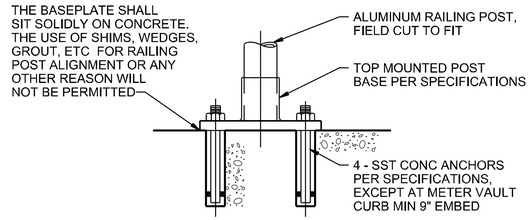
RAILING - 2 RAIL AT CONCRETE STAIR - ALUMINUM

NTS

DETAIL 2 OF 3

0552-001





NOTE:

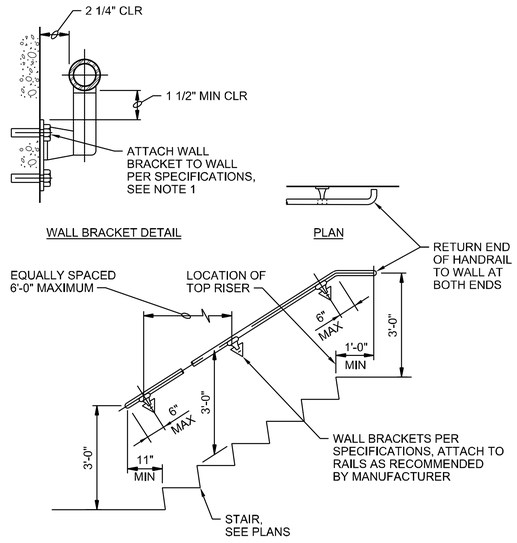
PROVIDE PROTECTION FOR DISSIMILAR METALS AND FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.

RAILING POST ANCHORAGE TYPE A - ALUMINUM

NTS

DETAIL 3 OF 3

0552-001



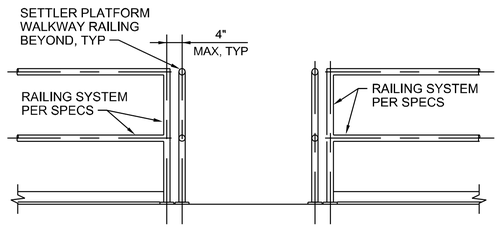
NOTE:

PROVIDE PROTECTION FOR DISSIMILAR METALS AND FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.

WALL HANDRAIL - ALUMINUM

NTS

0552-002



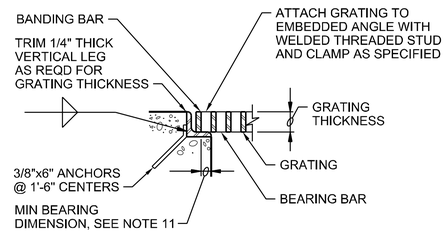
NOTE:

FOR NEW RAILING INFORMATION NOT SHOW, SEE DETAIL 0552-001

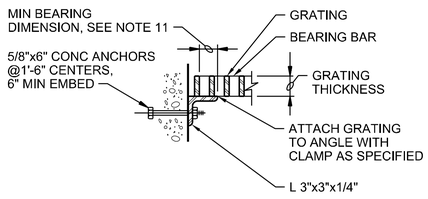
RAILING - 2 RAIL - ALUMINUM AT SETTLER WALKWAY ACCESS

NTS

0552-010



GS-1



NOTE:
USE GS-3 ONLY FOR LIGHT DUTY GRATING, TYPE 'A'.

GS-3

STANDARD GRATING

NTS

LIGHT DUTY GRATING
TYPE 'A' (100 PSF)

GRATING THICKNESS TABLE

MAX SPAN	STEEL	ALUMINUM
3'-6"	1"	1 1/4"
4'-0"	1"	1 1/2"
4'-6"	1"	1 3/4"
5'-0"	1 1/4"	1 3/4"
5'-6"	1 1/4"	2"
6'-0"	1 1/2"	2 1/4"
6'-6"	1 1/2"	2 1/4"
7'-0"	1 3/4"	2 1/2"

GENERAL NOTES:

1. GRATING SHALL BE LIGHT DUTY GRATING UNLESS OTHERWISE NOTED ON DRAWINGS.
2. GRATING SPAN ←→ SEE PLAN.
3. INDIVIDUAL GRATING SECTIONS SHALL NOT EXCEED 3'-0" IN WIDTH OR WEIGH MORE THAN 150 POUNDS, UNLESS INDICATED OTHERWISE.
4. SHOP DRAWINGS BASED ON FIELD DIMENSIONS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO FABRICATION.
5. MATERIAL FOR SUPPORTS OF STEEL AND ALUMINUM GRATING TO BE SAME AS GRATING, EXCEPT METAL SUPPORTS THAT ARE TO BE EMBEDDED IN CONCRETE SHALL BE TYPE 316 STAINLESS STEEL.
6. UNLESS NOTED OTHERWISE ON PLANS, GRATING THICKNESS SHALL BE AS TABULATED IN "GRATING THICKNESS TABLE" FOR APPLICABLE GRATING TYPE.
7. BEARING BAR THICKNESS FOR GRATING TO BE 3/16" MINIMUM. SEE SPECIFICATIONS FOR SPACING OF BEARING AND CROSS BARS.
8. BAND ALL EDGES. MATCH DEPTH OF BEARING BAR.
9. TYPE OF MATERIAL USED SHALL BE AS SHOWN ON PLANS OR AS SPECIFIED. THIS STANDARD DETAIL INCLUDES 2 TYPES, ALTHOUGH BOTH MAY NOT BE INCLUDED IN PROJECT.
10. THE HORIZONTAL CLEARANCE BETWEEN THE GRATING AND GRATING SUPPORTS SHALL NOT BE LESS THAN 1/4" NOR GREATER THAN 1/2" AND AS SPECIFIED.
11. FOR TYPE A MIN BEARING HORIZONTAL DIMENSION = 1" FOR GRATING DEPTH 2 1/4" OR LESS, MIN BEARING HORIZONTAL = 2" FOR GRATING DEPTH GREATER THAN 2 1/4"

0553-001

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

STRUCTURAL
STANDARD DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN ILT	MAR 2022	APPROVED:
	DESIGNED LY	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 99-S-505			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 72 OF 76 SHEETS

FILENAME: C3-99-S-505_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 4:12:27 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

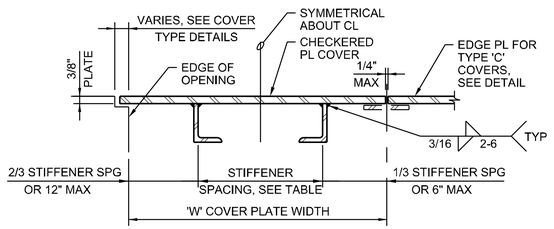


TABLE			
OPENING SPAN LENGTH 'L'	STIFFENER SIZE	MAX STIFFENER SPACING	MAX PLATE WIDTH 'W'
L<2'-6"	NONE	-	5'-0"
2'-6"<L<3'-6"	L2x1 1/2x1/4	1'-6"	4'-0"
3'-6"<L<4'-0"	L2 1/2x1 1/2x1/4	1'-6"	4'-0"
4'-0"<L<4'-6"	L2 1/2x1 1/2x1/4	1'-3"	4'-0"
4'-6"<L<5'-0"	L3x2x1/4	1'-6"	4'-0"
5'-0"<L<5'-6"	L3x2x1/4	1'-3"	3'-0"
5'-6"<L<6'-0"	L3 1/2x2 1/2x1/4	1'-6"	3'-0"
6'-0"<L<6'-6"	L3 1/2x2 1/2x1/4	1'-3"	2'-6"
6'-6"<L<7'-0"	L4x3x1/4	1'-3"	2'-6"
7'-0"<L<7'-6"	L4x3x1/4	1'-0"	2'-0"

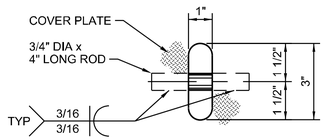
NOTES:
1. STIFFENERS TO BE PLACED LONG LEG VERTICAL.
2. SPAN DIRECTION OF PLATE TO BE PARALLEL TO STIFFENERS, AND SHALL BE SHORT DIMENSION OF OPENING UNLESS NOTED OTHERWISE ON PLANS.
3. MAXIMUM ALLOWABLE UNIFORM DESIGN LOAD = 300psf.
4. MAXIMUM WEIGHT OF COVER PLATE TO BE 125 POUNDS.
5. COVER PLATES AND STIFFENERS ARE ALUMINUM PLATES AND ANGLES.
6. ALL COVER PLATES TO HAVE A MINIMUM OF TWO EYES AS SHOWN IN LIFTING EYE DETAILS.

COVER STIFFENERS

CHECKERED FLOOR PLATE - ALUMINUM

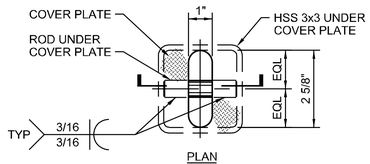
NTS

0554-001



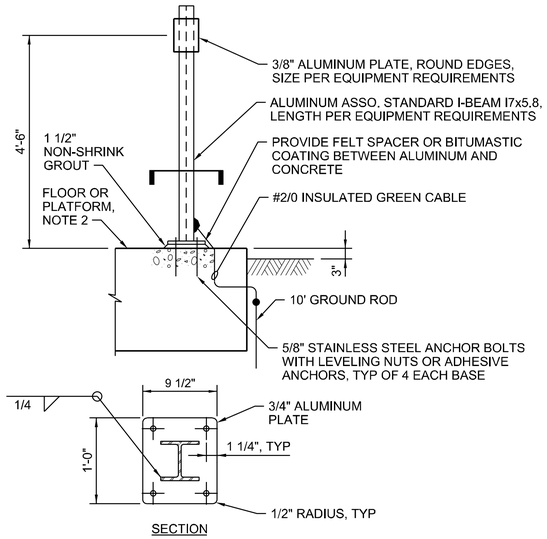
NOTE:
THIS DETAIL IS APPLICABLE TO TYPES 'A' AND 'B' COVERS AND OTHER COVERS NOT INTENDED TO BE AIRTIGHT.

LIFTING EYE TYPE 'A'



NOTE:
THIS DETAIL IS APPLICABLE TO TYPE 'C' COVERS AND OTHER AIR TIGHT COVERS.

LIFTING EYE TYPE 'B'

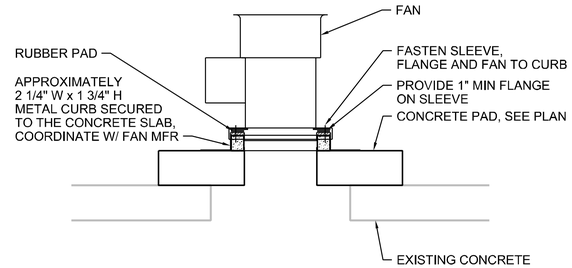


NOTES:
1. USE STAINLESS STEEL MOUNTING HARDWARE. USE WASHER AND SPLIT LOCK WASHER UNDER ALL NUTS.
2. FOR YARD LOCATIONS PROVIDE A 12 INCH THICK CONCRETE PAD AT GRADE WITH #5 BAR @ 12" ON CENTER EACH WAY, TOP AND BOTTOM. THE PAD SHALL BE 24 INCHES LONGER THAN THE MOUNTING PLATE. MINIMUM WIDTH 60 INCHES.

DEVICE MOUNTING, EQUIPMENT PEDESTAL

NTS

0559-077



NOTE:
REFER TO STRUCTURAL DRAWINGS FOR ROOF OPENING DETAILS.

ROOF MOUNTED FAN

NTS

2334-834

PROFESSIONAL STRUCTURAL ENGINEER
CARL C. KOESTER
30229
OKLAHOMA
DIGITALLY SIGNED 03/16/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

STRUCTURAL
STANDARD DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

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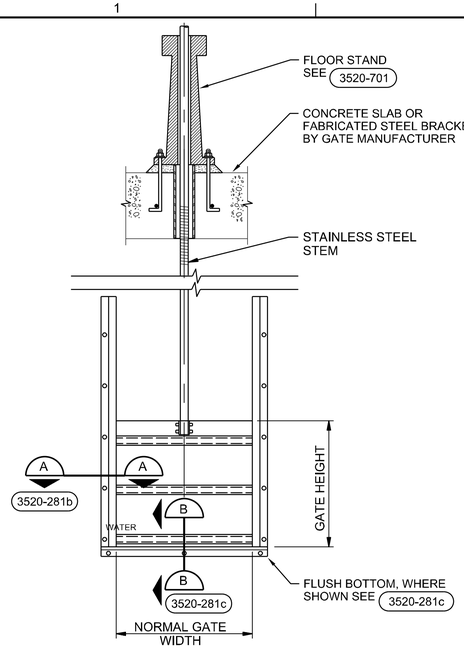
	DESIGNED	LY	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
	SECT. MGR.		
HORIZONTAL:	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED: CITY ENGINEER

FILE: 99-S-506
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 73 OF 76 SHEETS

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

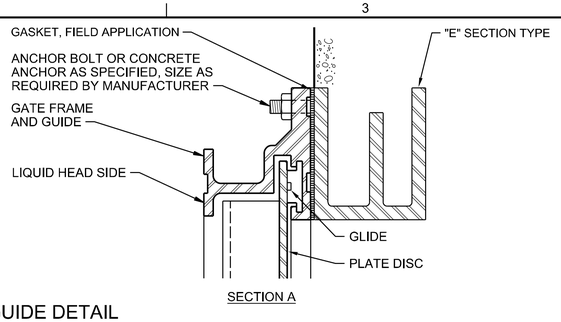
FILENAME: C3-99-S-506_WFXQ2600.dgn PLOT DATE: 2022\03\15 PLOT TIME: 4:15:19 PM



FABRICATED SLIDE GATE

NTS

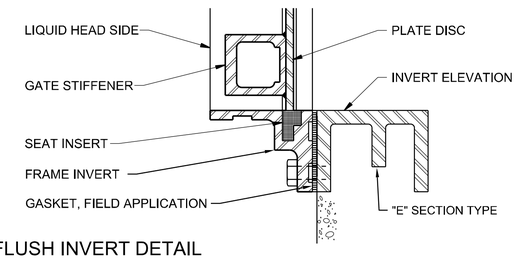
3520-281



GUIDE DETAIL

NTS

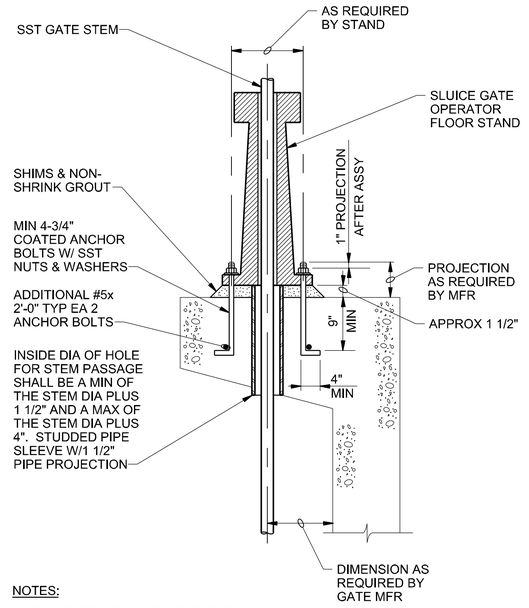
3520-281b



FLUSH INVERT DETAIL

NTS

3520-281c



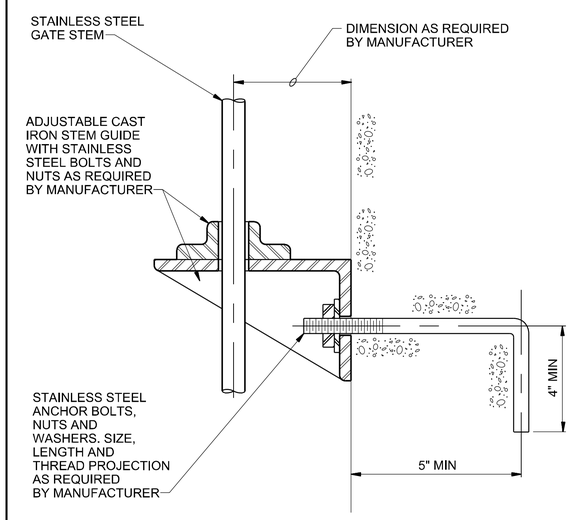
NOTES:

1. FLOOR STAND IS REPRESENTATIVE ONLY.

FLOOR STAND INSTALLATION

NTS

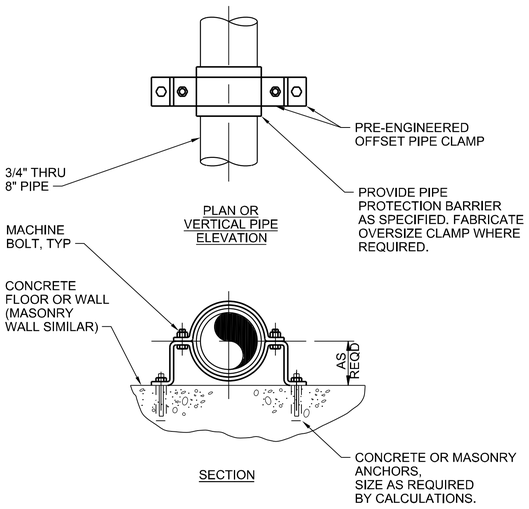
3520-701



STEM GUIDE INSTALLATION

NTS

3520-702



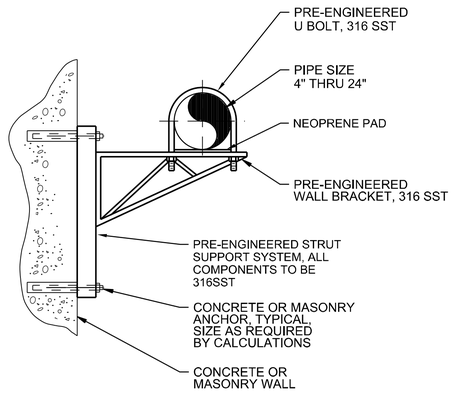
NOTES:

1. FOR 4" PIPE, STRAP SHALL BE MINIMUM 2" WIDE x 3/8" THICK. FASTEN TO WALL WITH 1/2" HITTI KWIK BOLT TZ WITH 3/4" MIN EMBED. REFER TO SPECIFICATION SECTION 40 05 15 FOR ADDITIONAL INFORMATION.
2. REFER TO SPECIFICATION 40 05 15 FOR ADDITIONAL INFORMATION.

PIPE SUPPORT - WALL MOUNTED

NTS

4005-505



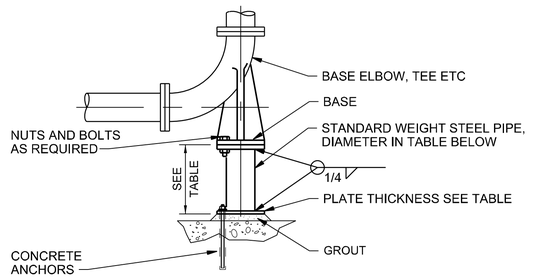
NOTES:

1. WALL BRACKET SHALL BE MEDIUM HEAVY DUTY AS REQUIRED BY CALCULATIONS.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

PIPE SUPPORT - WALL MOUNTED MEDIUM

NTS

4005-508



DIMENSION TABLE				
PIPE SIZE	SUPPORT DIAMETER	PLATE		ANCHOR BOLT DIAMETER
		DIAMETER	THICKNESS	
3"	1 1/2"	5"	3/8"	3/8"
4"	2"	6"	3/8"	3/8"
6"	3"	7"	3/8"	3/8"
8" and 10"	4"	9"	1/2"	1/2"

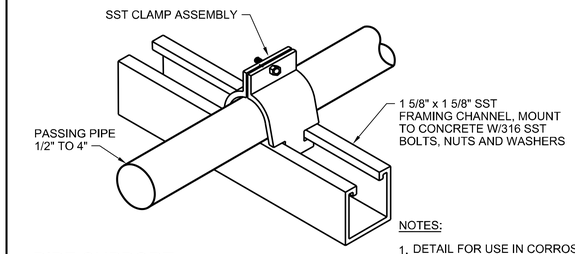
NOTES:

1. ALSO USE FOR SUPPORT OF HORIZONTALTEE OR CROSS.

BASE BEND

NTS

4005-518



NOTES:

1. DETAIL FOR USE IN CORROSIVE ENVIRONMENTS.

PIPE SUPPORT

NTS

4005-519

BRYAN A. YOUKER
2991
LICENSED PROFESSIONAL ENGINEER
OKLAHOMA

Digitally Signed: 03/17/2022

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

NO.	REVISION	BY	DATE

PROCESS MECHANICAL

STANDARD DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

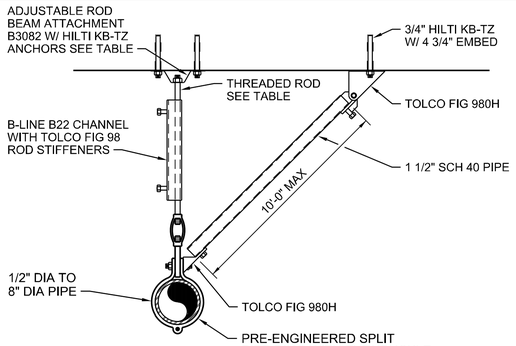
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN CB	MAR 2022	APPROVED:
	DESIGNED LM	MAR 2022	
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 99-M-501			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 74 OF 76 SHEETS

FILENAME: C3-99-M-501_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 5:10:01 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



DIMENSION TABLE			
PIPE SIZE	ROD DIA	ANCHOR DIA	EMBED
4"	5/8"	1/2"	3 1/4"
6"	3/4"	5/8"	4"
8	3/4"	5/8"	4"

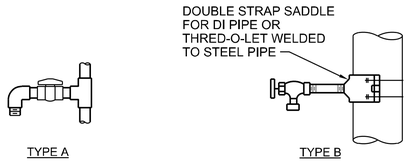
NOTES:

1. MAXIMUM SPACING OF SUPPORTS:
   CLEXIS ONLY - 20 FEET
   CLEVIS WITH LATERAL BRACE - 40 FEET
   CLEVIS WITH LONGITUDINAL BRACE - 60 FEET
2. LONGITUDINAL BRACE AND LATERAL BRACE MAY BE INSTALLED ON THE SAME CLEVIS.
3. PROVIDE MINIMUM OF TWO LATERAL BRACES AND ONE LONGITUDINAL BRACE PER RUN.
4. FOR PLASTIC PIPE PROVIDE PIPE PROTECTION BARRIER.
5. REFER TO SPECIFICATION 40 05 15 FOR ADDITIONAL INFORMATION.

OVERHEAD PIPE HANGER

NTS

4005-550



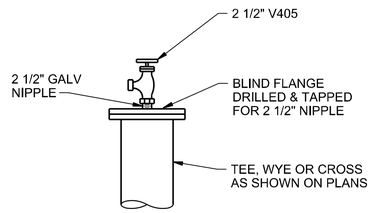
NOTES:

1. POINT HOSE CONNECTION TOWARDS FLOOR, AWAY FROM OPERATOR.
2. FOR VALVES SPECIFIC TO PROCESS SERVICE, REFER TO PIPING SCHEDULE AND SPEC SECTION 40 27 02.

TYPE 3 FLUSHING/DRAIN CONNECTION

NTS

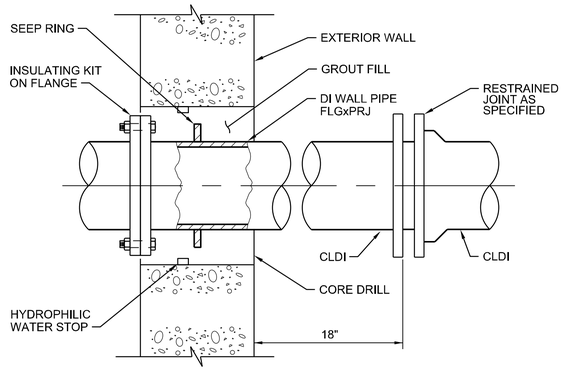
4027-183



TYPE 2 FLUSHING CONNECTION

NTS

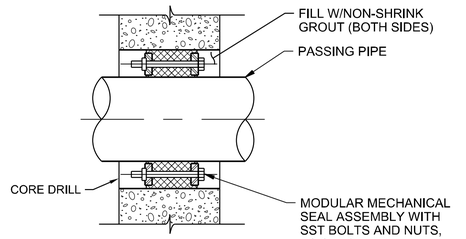
4027-182



WALL PIPE PENETRATION TYPE A

NTS

4027-600A



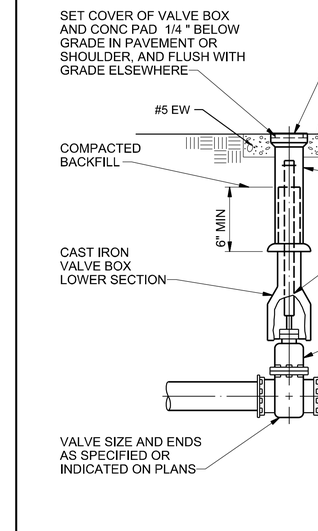
NOTES:

1. SIZE CORE DRILL TO MINIMUM SIZE REQUIRED BY SEAL MANUFACTURER. LOCATE REINFORCING IN WALL PRIOR TO CORE DRILL. PROVIDE ENGINEER WITH LOCATION OF REINFORCING AND EXSPECTED BARS TO BE DISTURBED DURING INSTALLATION. COORDINATE FINAL LOCATION AND PENETRATION DETAIL WITH ENGINEER.
2. FOR BURIED DUCTILE IRON PIPE, JOINTS OUTSIDE AND INSIDE OF WALL TO FOLLOW (4027-600A).

WALL PIPE PENETRATION DETAIL

NTS

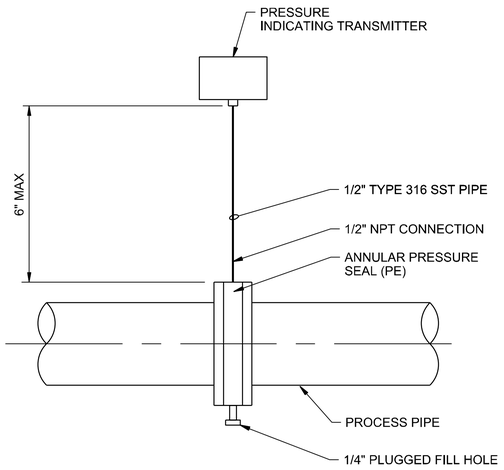
4027-607



BURIED VALVE BOX

NTS

4027-640



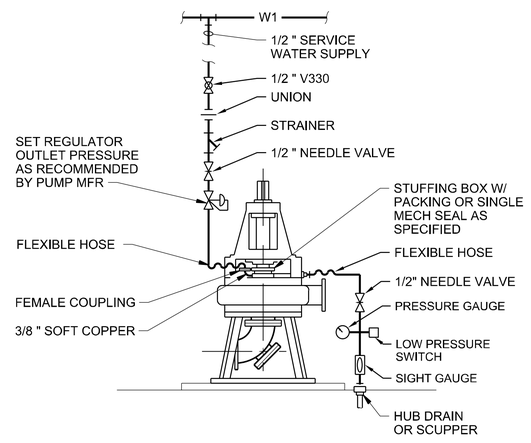
NOTES:

1. INDICATOR AND SWITCH INSTALLATION SHOWN. FOR SINGLE INSTRUMENT INSTALLATIONS, MOUNT DEVICE DIRECTLY TO SEAL.

PRESSURE INDICATING TRANSMITTER WITH ANNULAR SEAL INSTALLATION

NTS

4091-304C



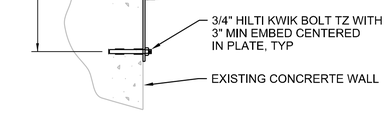
NOTES:

1. REFER TO SPECIFICATION SECTION 40 27 01. PROCESS PIPING SPECIALITIES FOR SEAL WATER SET COMPONENTS.

VERTICAL CENTRIFUGAL PUMP SEAL WATER PIPING

NTS

4442-661



NOTES:

1. PROVIDE PIPE PROTECTION BARRIER.

PIPE SUPPORT - WALL MOUNTED MEDIUM

NTS

4005-508

LICENSED PROFESSIONAL ENGINEER
BRYAN A. YOUKER
29914
OKLAHOMA
Digitally Signed: 03/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

PROCESS MECHANICAL
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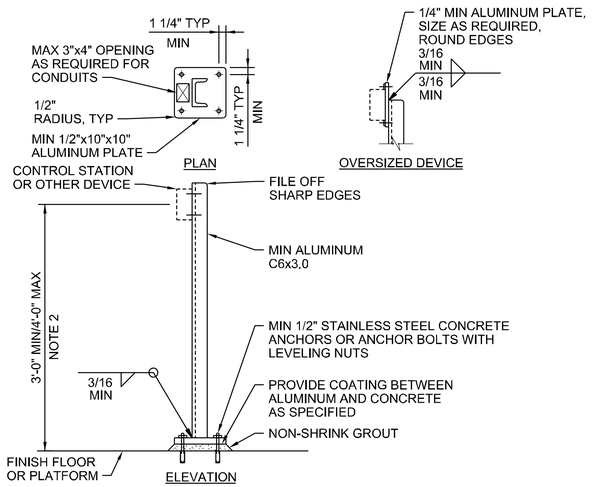
VERTICAL	RECOMMENDED:		
	DESIGN MANAGER		CITY ENGINEER
FILE: 99-M-502			DATE: MARCH 2022
ATLAS PAGE NO: 543			SHEET 75 OF 76 SHEETS

FILENAME: C3-99-M-502_WFXQ2600.dgn PLOT DATE: 3/14/2022 PLOT TIME: 5:10:16 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION



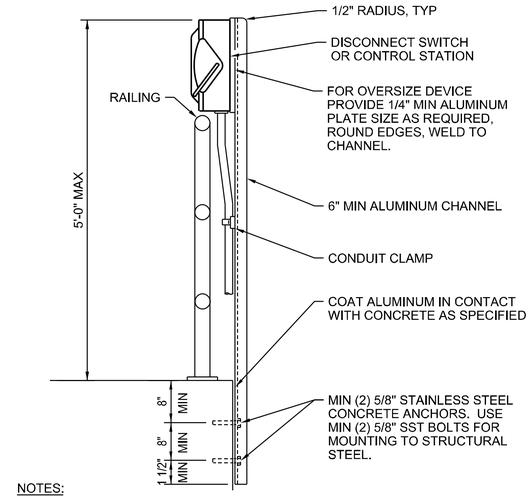
NOTES:

1. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL. USE WASHERS AND LOCK WASHERS UNDER ALL NUTS AND BOLTS.
2. EXTEND POSTS TO STRUCTURE ABOVE WHERE REQUIRED BY CALCULATION. EXTENSION SHALL ACCOMODATE DEFLECTION OF THE SUPPORTING STRUCTURE.
3. MINIMUM COMPONENT AND CONNECTION SIZES SHOWN. FURNISH LARGER SIZES AS REQUIRED BY CALCULATIONS.
4. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

DEVICE MOUNTING, PEDESTAL

NTS

2605-011b



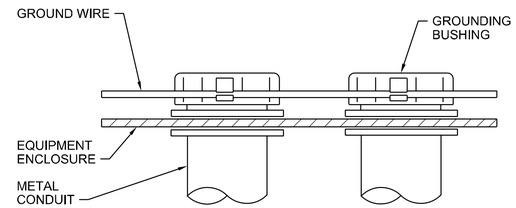
NOTES:

1. EQUIPMENT HAVING A FRONTAL AREA GREATER THAN 3 SQUARE FEET OR WIDER THAN 18 INCHES SHALL BE SUPPORTED BY MIN 2 CHANNELS.
2. MINIMUM COMPONENT AND CONNECTION SIZES SHOWN. FURNISH LARGER SIZES AS REQUIRED BY CALCULATIONS.
3. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED .
4. USE STAINLESS STEEL MOUNTING HARDWARE. USE WASHER AND LOCK WASHERS UNDER ALL NUTS AND BOLTS.

DEVICE MOUNTING, AT RAILING

NTS

2605-013



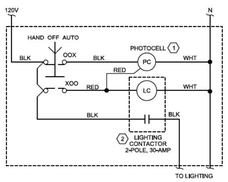
NOTES:

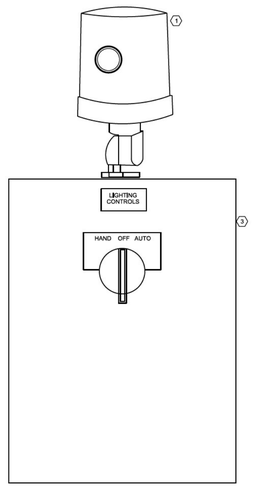
1. THE ENDS OF ALL CONDUITS REQUIRED TO BE GROUNDED BY THE SPECIFICATIONS SHALL BE GROUNDED IN ACCORDANCE WITH THIS DETAIL.

CONDUIT GROUNDING

NTS

2605-203





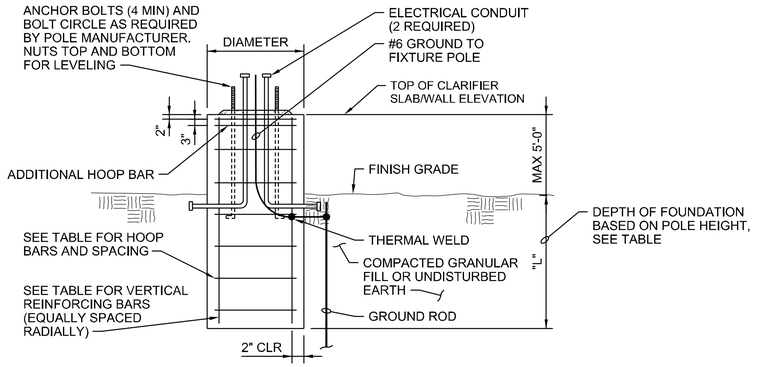
(X) KEYED NOTES:

1. PHOTOCELL SHALL BE INTERMATIC K4236C OR EQUAL. FACE PHOTOCELL NORTH AND DOWNWARD SO CONTROLLED LIGHTING DOES NOT TRIGGER PHOTOCELL.
2. LIGHTING CONTACTOR SHALL BE EATON/CUTLER HAMMER C25BNB230A OR EQUAL. PROVIDE ADDITIONAL CONTACTOR FOR ADDITIONAL POWER CIRCUIT.
3. LIGHTING CONTROL ENCLOSURE SHALL BE 6" X 8" X 4" NEMA 4X STAINLESS STEEL WITH 30-MM THREE POSITION SELECTOR SWITCH MOUNTED TO COVER.

LIGHTING CONTROLS

NTS

2605-901



MAX POLE HEIGHT	DIAMETER	"L"	VERTICAL BARS	HOOP BARS
25'-0"	3'-0"	7'-0"	12 - #7	#4 @ 12"

NOTES:

1. USE STAINLESS STEEL NUTS AND LOCKWASHERS.
2. INSTALL TWO CONDUITS (MINIMUM) PER POLE.
3. INSTALL CENTERLINE OF POLE 3'-0" BEHIND THE FACE OF THE CURB.
4. CONDUITS SHALL BE STUBBED UP TO WITHIN SIX INCHES OF THE POLE HANDHOLE.
5. COORDINATE WITH SITE PLANS FOR PROPER ORIENTATION OF POLE.

SITE AREA LIGHT POLE FOOTING

NTS

2656-216

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
ISSUED FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER
BLAIR I. BEADERSTADT
32520
OKLAHOMA
3/17/2022

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

NO.	REVISION	BY	DATE

ELECTRICAL
STANDARD DETAILS

PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 3
IMPROVEMENTS

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES
DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: JACOBS

PLAN SCALE: AS NOTED ON PLANS	DRAWN	CM	MAR 2022
	DESIGNED	BB	MAR 2022
	SURVEY		
PROFILE SCALE:	FIELD MGR.		
HORIZONTAL:	SECT. MGR.		
	PROJ. MGR.		
VERTICAL	RECOMMENDED: DESIGN MANAGER		

APPROVED:
CITY ENGINEER

FILE: 99-E-501
DATE: MARCH 2022
ATLAS PAGE NO: 543
SHEET 76 OF 76 SHEETS

FILENAME: C3-99-E-501_WFXQ2600.dgn
PLOT DATE: 2022\03\15
PLOT TIME: 11:58:53 AM

CONTROL PANEL CP-FK-2003

PLC-FK-2003

MULTI-MODE FIBER FROM CLARIFIER NO. 1 CONTROL PANEL CP-FK-2001 — FO — FIBER OPTIC INTERFACE MODULE — CAT 6 CABLE

120V

PS-1 LEVEL

SLUDGE PUMP STATION NO. 1 WASTE VALVE "FULLY CLOSED" (4)

SLUDGE PUMP STATION NO. 1 WASTE VALVE "FULLY OPENED" (4)

SLUDGE PUMP STATION NO. 1 WASTE VALVE "IN REMOTE" (4)

SLUDGE PUMP STATION NO. 1 WASTE VALVE "OPEN" (4)

SLUDGE PUMP STATION NO. 1 WASTE VALVE "CLOSE" (4)

SLUDGE PUMP STATION NO. 1 WASTE SLUDGE PUMP SUCTION PRESSURE (2)

PUMP "IN REMOTE" STATUS (2)

PUMP "REMOTE START" COMMAND (2)

PUMP "RUNNING" STATUS (2)

PUMP FAULT (2)

PUMP REMOTE SETPOINT (2)

PUMP SPEED FEEDBACK (2)

SLUDGE PUMP STATION NO. 1 FLOW

CLARIFIER SLUDGE PUMP STATION NO. 1 SUMP PIT LEVEL ALARM

LINE VOLTAGE FAILURE — JA FK-2003-1

UPS TROUBLE — JA FK-2003-1-UPS

CONTINUED ON I-5

AFD (2)** (NOTE 1)

480V (2)

(2)

120V — P

P

P

SLUDGE PUMP STATION NO. 1 WASTE SLUDGE PUMP DISCHARGE PRESSURE

FROM CLARIFIER NO. 1 SLUDGE COLLECTION SYSTEM DISCHARGE

ZSC 0421-01 — ZSO 0421-01 — QL 0421-01 — M — FV 0421-01

ZSC 0421-02 — ZSO 0421-02 — QL 0421-02 — M — FV 0421-02

ZSC 0421-03 — ZSO 0421-03 — QL 0421-03 — M — FV 0421-03

ZSC 0421-04 — ZSO 0421-04 — QL 0421-04 — M — FV 0421-04

LIT 0415-01

PIT 0470-01

PIT 0470-02

SLUDGE WASTE PUMP P-04-71-1-1 (NOTE 1)

SLUDGE WASTE PUMP P-04-71-1-2 (NOTE 1)

FIT 0472-01

FE 0472-01

PIT 0473-01

M

SLUDGE TO SLUDGE PUMP STATION NO. 1

LAH 0479-01

NOTES:

1. SLUDGE PUMP AFD AND CONTROLS TO BE HOUSED IN INDIVIDUAL CONTROL PANELS TAGGED AS FOLLOWS:

SLUDGE PUMP	CONTROL PANEL
P-04-71-1-1	FP-04-71-1-1
P-04-71-1-2	FP-04-71-1-2

SLUDGE PUMP STATION NO. 1

FOR REFERENCE ONLY

RECORD DRAWING

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REGISTERED PROFESSIONAL ENGINEER — LARS B. OSTERVELD JR. — 23500 — OKLAHOMA

DATE SIGNED: 29 JAN 13

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 — 1"

REVISION	BY	DATE

SLUDGE PUMP STATION NO. 1 P&ID
PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 1 IMPROVEMENTS
TMUA PROJECT NO. W 06-08, CONTRACT 5

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: CH2MHILL

PLAN SCALE: AS NOTED ON PLANS	DRAWN	gm	01/2013
	DESIGNED	TH	01/2013
	SURVEY		
PROFILE SCALE:	FIELD MGR.		2/13
HORIZONTAL: N/A	SECT. MGR.		
	PROJ. MGR.		2/13
VERTICAL N/A	RECOMMENDED: DESIGN MANAGER		2/13
FILE:	DRAWING: I-4		
ATLAS PAGE NO:	x		

APPROVED: CITY ENGINEER

DATE: JANUARY 2013

SHEET 39 OF 47 SHEETS

FILENAME: DN30I604_353381.dgn PLOT DATE: 2014\09\17 PLOT TIME: 6:38:09 PM

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
TMUA PROJECT NO. W 06-08, CONTRACT 5

CONTROL PANEL FK-2003

PLC-FK-2003

CONTINUED ON I-4

120V

PAC SLURRY TANK MIXER "IN REMOTE"
PAC SLURRY TANK MIXER "REMOTE START"
PAC SLURRY TANK MIXER "REMOTE STOP"
PAC SLURRY TANK MIXER "RUNNING"
QL 0615-01-1
HS 0615-01-1
HS 0615-01-2
QL 0615-01-2

PAC SLURRY TANK MIXER "IN REMOTE"
PAC SLURRY TANK MIXER "REMOTE START"
PAC SLURRY TANK MIXER "REMOTE STOP"
PAC SLURRY TANK MIXER "RUNNING"
QL 0615-02-1
HS 0615-02-1
HS 0615-02-2
QL 0615-02-2

PAC SLURRY TANK MIXER "IN REMOTE"
PAC SLURRY TANK MIXER "REMOTE START"
PAC SLURRY TANK MIXER "REMOTE STOP"
PAC SLURRY TANK MIXER "RUNNING"
QL 0615-03-1
HS 0615-03-1
HS 0615-03-2
QL 0615-03-2

PAC FEED SYSTEM SLURRY TANK LEVEL
PAC FEED SYSTEM SLURRY TANK LEVEL
PAC FEED SYSTEM SLURRY TANK LEVEL

PAC SLURRY LINE PRESSURE
PAC SLURRY LINE PRESSURE

PAC TRANSFER PUMP "IN REMOTE"
PAC TRANSFER PUMP "RUN" COMMAND
PAC TRANSFER PUMP "RUNNING"
QL 0671-01-1
HS 0671-01-1
QL 0671-01-2

PAC TRANSFER PUMP "IN REMOTE"
PAC TRANSFER PUMP "RUN" COMMAND
PAC TRANSFER PUMP "RUNNING"
QL 0671-02-1
HS 0671-02-1
QL 0671-02-2

PAC TRANSFER PUMP "IN REMOTE"
PAC TRANSFER PUMP "RUN" COMMAND
PAC TRANSFER PUMP "RUNNING"
QL 0671-03-1
HS 0671-03-1
QL 0671-03-2

LIT 0616-01
LIT 0616-02
LIT 0616-03

LIT 0616-01
LIT 0616-02

PAC FEED SYSTEM SLURRY TANK MIXER

PAC FEED SYSTEM SLURRY TANK MIXER

PAC FEED SYSTEM SLURRY TANK MIXER

PAC TRANSFER PUMP

PAC TRANSFER PUMP

PAC TRANSFER PUMP

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PAC TRANSFER PUMP

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REGISTERED PROFESSIONAL ENGINEER
LARS B. OSTERVOLD, P.E.
23500
OKLAHOMA

DATE SIGNED: 29 JAN 13

VERIFY SCALE

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0 1"

REVISION	BY	DATE

SLUDGE PUMP STATION NO. 1 P&ID
PROJECT NO. TMUA-W 18-19 C2

A.B. JEWELL WTP
CLARIFIER NO. 1 IMPROVEMENTS
TMUA PROJECT NO. W 06-08, CONTRACT 5

CITY OF TULSA, OKLAHOMA
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PLANS AND ESTIMATES PREPARED BY:
CH2MHILL

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FILE:	DRAWING: I-5		
ATLAS PAGE NO:	X		

APPROVED:

CITY ENGINEER

DATE: JANUARY 2013

SHEET 40 OF 47 SHEETS

FOR REFERENCE ONLY

CITY OF TULSA PROJECT TMUA-W 18-19 C2 AB JEWELL WTP
TMUA PROJECT NO. W 06-08, CONTRACT 5

FILENAME: DN30I605_353381.dgn PLOT DATE: 2014\09\17 PLOT TIME: 6:38:49 PM