MAYOR
Kate Gallego
CITY COUNCIL

DISTRICT 1 Ann O'Brien
DISTRICT 2 Jim Waring
DISTRICT 3 Debra Stark
DISTRICT 4 Laura Pastor
DISTRICT 5 Betty Guardado
DISTRICT 6 Kevin Robinson
DISTRICT 7 Carlos Galindo-Elvira
DISTRICT 8 Kesha Hodge Washington

CITY MANAGER
Jeffrey Barton

CITY ENGINEER
Eric Froberg, PE

WATER SERVICES DIRECTOR
Troy Hayes, PE

City of Phoenix

WATER SERVICES DEPARTMENT
LIFT STATION 40 REFURBISHMENT
INDEX NO. WS90400085
RAY ROAD & I-10
AUGUST 2024
ISSUED FOR CONSTRUCTION

APPROVALS

Patty Kennedy 09/24/2024
WATER SERVICES DEPARTMENT **DATE**

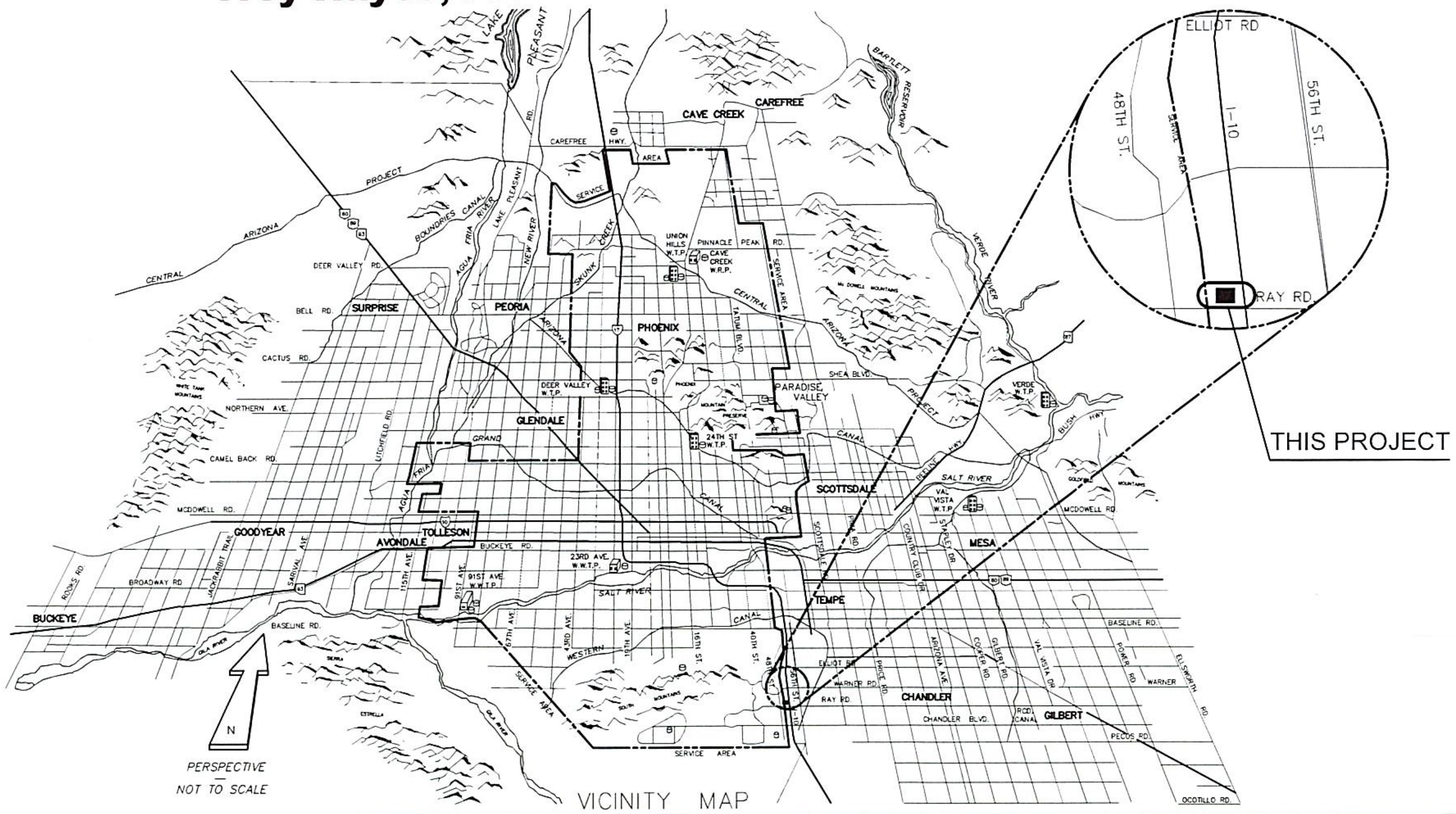
7/18/2024
MARICOPA COUNTY ENVIRONMENTAL SERVICES DEPT. **DATE**

WWR-24-00230

DEFERRED SUBMITTALS FOR REVIEW WITH THE CITY OF PHOENIX FIRE DEPT.:

1. ABOVE GROUND TANK FOR THE GENERATOR.
2. FIRE DEPARTMENT ACCESS GATES AND ACCESS ROADS DETAILS SIGNS/MARKINGS.
3. ABOVE GROUND TANKS FOR THE HAZARDOUS CHEMICALS.
4. DEMO OF EXISTING CHEMICAL TANKS AND PROCESS PIPING
5. CONTRACTOR TO INSTALL A NEW FIRE HYDRANT PER PCF 507.5.1 AS APPROVED UNDER THE OWNER'S ALLOWANCE.

11/7/2024
Eric Froberg, P.E., City Engineer 11/7/2024



PERSPECTIVE
NOT TO SCALE

VICINITY MAP

UTILITY NO CONFLICT DESIGN CONTACTS:

UTILITY COMPANY / CITY	PLANS SUBMITTED TO	DATE SENT	PLANS REVIEWED BY	NO CONFLICT RESPONSE RECIEVED	PHONE NUMBER
SRP	SRP	11/28/2023	HENERY SOLIZ	12/22/2023	(602) 236-0890
SW GAS	SOUTHWEST GAS	02/09/2024	ZACH STEVENSEN	02/27/2024	(480) 730-3855
LUMEN	TERRA TECHNOLOGIES	02/09/2024	KEVIN WAGNER	02/27/2024	(815) 245-9640
COX COMMUNICATIONS	COX COMMUNICATION	02/09/2024	JACOB HORSMAN	02/27/2024	(623) 238-2202
WATER – CITY OF PHOENIX	CITY OF PHOENIX	--	--	01/15/2024	(XXX) XXX-XXXX
SEWER – CITY OF PHOENIX	CITY OF PHOENIX	--	--	01/15/2024	(XXX) XXX-XXXX

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
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HDR

SHEET 1 OF 134
TOTAL SHEETS 134

40280
JASON R.
FORT
Jason R. Fort

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DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

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SHEET INDEX

GENERAL

SHEET NO.	INDEX NO.	TITLE
01	G-01	COVER SHEET AND VICINITY MAP
02	G-02	INDEX OF SHEETS
03	G-03	LEGEND & SYMBOLS
04	G-04	GENERAL NOTES
05	G-05	GENERAL ABBREVIATIONS

CIVIL

SHEET NO.	INDEX NO.	TITLE
06	C-01	SURVEY CONTROL
07	C-02	GENERAL DETAILS 1
08	C-03	GENERAL DETAILS 2
09	C-04	GENERAL DETAILS 3
10	C-05	GENERAL DETAILS 4
11	C-06	GENERAL DETAILS 5
12	C-07	GENERAL DETAILS 6
13	C-08	DEMOLITION PLAN 01
14	C-09	DEMOLITION PLAN 02
15	C-10	DEMOLITION PLAN 03
16	C-11	DEMOLITION PLAN 04
17	C-12	DEMOLITION PLAN 05
18	C-13	DEMOLITION PLAN 06
19	C-14	DEMOLITION PLAN 07
20	C-15	DEMOLITION PLAN 08
21	C-16	DEMOLITION PLAN 09
22	C-17	BYPASS PLAN 01
23	C-18	BYPASS PLAN 02
24	C-19	BYPASS PLAN 03
25	C-20	SITE LAYOUT - CONTROL PLAN
26	C-21	OVERALL CIVIL SITE PLAN SHEET 1 OF 2
27	C-22	OVERALL CIVIL SITE PLAN SHEET 2 OF 2
28	C-23	OVERALL UTILITY PLAN SHEET 1 OF 2
29	C-24	OVERALL UTILITY PLAN SHEET 2 OF 2
30	C-25	GRADING AND DRAINAGE PLAN 01
31	C-26	GRADING AND DRAINAGE PLAN 02
32	C-27	FERROUS CHLORIDE SYSTEM SITE PLAN
33	C-28	BIOFILTER SCHEMATIC
34	C-29	BIOFILTER ENLARGED SITE PLAN
35	C-30	BIOFILTER SECTIONS AND DETAILS
36	C-31	BIOFILTER DETAILS

MECHANICAL PROCESS

SHEET NO.	INDEX NO.	TITLE
37	M-01	MECHANICAL LEGENDS AND SYMBOLS
38	M-02	GENERAL DETAILS 1
39	M-03	GENERAL DETAILS 2
40	M-04	GENERAL DETAILS 3
41	M-05	GENERAL DETAILS 4
42	M-06	GENERAL DETAILS 6 NEW LAUNCHING STRUCTURE
43	M-07	LS YARD PIPING PLAN SHEET 1 OF 3
44	M-08	LS YARD PIPING PLAN SHEET 2 OF 3
45	M-09	LS YARD PIPING PLAN SHEET 3 OF 3
46	M-10	LS 42" SW LINE PLAN AND PROFILE STA 5+00.00 TO 7+50.00 SHEET 1 OF 2
47	M-11	LS 42" SW LINE PLAN AND PROFILE STA 7+50.00 TO 9+49.41 SHEET 2 OF 2
48	M-12	LS YARD WET WELL SECTIONS 1 & 2
49	M-13	LS YARD PIPING SECTIONS 3 & 4
50	M-14	LS YARD PIPING SECTIONS 5, & 6
51	M-15	LS YARD PIPING SECTIONS 7, 8, 9, & 10
52	M-16	24" FORCE MAIN BARREL 1 DI PIPE PLAN AND PROFILE STA 5+00.00 TO 6+71.37
53	M-17	24" FORCE MAIN BARREL 2 DI PIPE PLAN AND PROFILE STA 10+00.00 TO 11+63.21
54	M-18	24" FORCE MAIN BARREL 3 DI PIPE PLAN AND PROFILE STA 15+00.00 TO 16+63.21
55	M-19	FERROUS CHLORIDE SYSTEM SECTION
56	M-20	EQUIPMENT SCHEDULE

SHEET INDEX

STRUCTURAL

SHEET NO.	INDEX NO.	TITLE
57	S-01	GENERAL STRUCTURAL NOTES
58	S-02	SPECIAL INSPECTION SCHEDULE
59	S-03	STANDARD STRUCTURAL DETAILS 1
60	S-04	STANDARD STRUCTURAL DETAILS 2
61	S-05	STANDARD STRUCTURAL DETAILS 3
62	S-06	ELECTRICAL AND CONTROL BUILDING FOUNDATION PLAN
63	S-07	ELECTRICAL AND CONTROL BUILDING ROOF FRAMING PLAN
64	S-08	ELECTRICAL AND CONTROL BUILDING SECTIONS AND DETAILS
65	S-09	WET WELL FOUNDATION PLAN AND CHANNEL PARTIAL PLAN
66	S-10	WET WELL ROOF PLAN AND PIPING SUPPORT PAD
67	S-11	WET WELL SECTIONS AND DETAILS
68	S-12	CHEMICAL CONTAINMENT AREA FOUNDATION PLAN
69	S-13	CHEMICAL CONTAINMENT AREA ROOF FRAMING PLAN
70	S-14	CHEMICAL CONTAINMENT AREA SECTIONS AND DETAILS
71	S-15	GENERATOR & PIG LAUNCHING PAD FOUNDATION PLANS AND SECTION
72	S-16	BIOFILTER FOUNDATION PLAN, SECTIONS AND DETAILS
73	S-17	STRUCTURAL SECTIONS AND DETAILS 1
74	S-18	STRUCTURAL SECTIONS AND DETAILS 2
75	S-19	STRUCTURAL SECTIONS AND DETAILS 3

ARCHITECTURAL

SHEET NO.	INDEX NO.	TITLE
76	A-01	ELECTRICAL BUILDING LIFE SAFETY AND CODES
77	A-02	ELECTRICAL BUILDING FLOOR PLAN
78	A-03	ELECTRICAL BUILDING ROOF PLAN
79	A-04	ELECTRICAL BUILDING EXTERIOR ELEVATIONS
80	A-05	ELECTRICAL BUILDING EXTERIOR ELEVATIONS
81	A-06	ELECTRICAL BUILDING AND EXTERIOR ELEVATIONS AND BUILDING SECTION
82	A-07	ELECTRICAL BUILDING WALL SECTIONS AND DETAILS
83	A-08	ELECTRICAL BUILDING DETAILS
84	A-09	ELECTRICAL BUILDING SCHEDULES AND DETAILS

HVAC

SHEET NO.	INDEX NO.	TITLE
85	H-01	LEGEND AND SYMBOLS
86	H-02	HVAC/PLUMBING DETAILS
87	H-03	ELECTRICAL BUILDING HVAC PLAN
88	H-04	ELECTRICAL BUILDING HVAC ROOF PLAN
89	H-05	HVAC SECTIONS
90	H-06	HVAC/PLUMBING SCHEDULES

PLUMBING

SHEET NO.	INDEX NO.	TITLE
91	P-01	ELECTRICAL BUILDING PLUMBING PLAN

SHEET INDEX

ELECTRICAL

SHEET NO.	INDEX NO.	TITLE
92	E-01	ABBREVIATIONS - 1
93	E-02	ABBREVIATIONS - 2
94	E-03	SYMBOLS AND LEGEND - 1
95	E-04	SYMBOLS AND LEGEND - 2
96	E-05	OVERALL SITE PLAN
97	E-06	DEMO SITE PLAN
98	E-07	DEMO SITE PLAN DETAILS 1
99	E-08	DEMO SITE PLAN DETAILS 2
100	E-09	DEMO SITE PLAN DETAILS 3
101	E-10	DEMO SITE PLAN DETAILS 4
102	E-11	SITE PLAN POWER AND CONTROL
103	E-12	SITE PLAN LIGHTING AND GROUNDING
104	E-13	ELECTRICAL BUILDING POWER AND CONTROL
105	E-14	ELECTRICAL BUILDING LIGHTING AND GROUNDING
106	E-15	WET WELL PLAN
107	E-16	SINGLE LINE DIAGRAM
108	E-17	LOAD SUMMARY
109	E-18	POWER PANEL SCHEDULES
110	E-19	CONTROL SCHEMATIC - 1
111	E-20	CONTROL SCHEMATIC - 2
112	E-21	CONTROL SCHEMATIC - 3
113	E-22	CONTROL SCHEMATIC - 4
114	E-23	CONTROL SCHEMATIC - 5
115	E-24	CONTROL SCHEMATIC - 6
116	E-25	CONTROL SCHEMATIC - 7
117	E-26	CONDUIT BLOCK DIAGRAMS
118	E-27	CONDUIT BLOCK DIAGRAMS
119	E-28	ELECTRICAL DETAILS 1
120	E-29	ELECTRICAL DETAILS 2
121	E-30	ELECTRICAL DETAILS 3
122	E-31	ELECTRICAL DETAILS 4
123	E-32	ELECTRICAL DETAILS 5
124	E-33	ELECTRICAL DETAILS 6

INSTRUMENTATION

SHEET NO.	INDEX NO.	TITLE
125	I-01	SYMBOLS AND LEGENDS 1
126	I-02	SYMBOLS AND LEGENDS 2
127	I-03	ABBREVIATIONS
128	I-04	P&ID SHEET 1
129	I-05	P&ID SHEET 2
130	I-06	P&ID SHEET 3
131	I-07	P&ID SHEET 4
132	I-08	P&ID SHEET 5
133	I-09	P&ID SHEET 6
134	I-10	P&ID SHEET 7

FACILITY DRAWINGS
This drawing was supplied by a Consultant Engineer from a past construction project. The original constructor drawing was modified based on information provided by the Contractor to provide the Record Drawing. The City does not warranty this drawing to be a complete and accurate portrayal of facilities as they exist in the field.

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

Registered Professional Engineer
CERTIFICATE NO. 40280
JASON R. FORT
(Civil)
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	RS	10/2023	JF	30% SUBMITTAL
B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

GENERAL

INDEX OF SHEETS

CITY PROJECT NO. WS90400085
DATE: 08/2024
G-02 SHEET 2 OF 134
CAD FILE: CSCLS40A02.dwg

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411625\02_CSCLS40A02.dwg DATE: 9/04/24 TIME: 03:17pm

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
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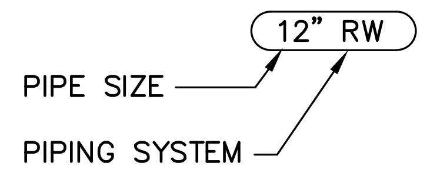
GENERAL SYMBOLS

PIPE TAG

DESIGN	EXISTING	FUTURE
12" RW	P 1001	P 1001

* PIPING SYSTEM DESIGNATIONS FOR EXISTING PIPE INDICATE TYPE OF SERVICE ONLY AND DO NOT IMPLY PIPE MATERIALS USED.

PIPING IS CALLED OUT BY SIZE FOLLOWED BY PIPING SYSTEM, ENCLOSED AS SHOWN:



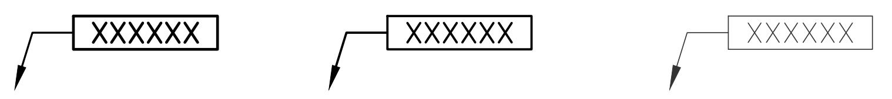
EQUIPMENT TAG

X X X X X X X

7-DIGIT SERIALIZED KEY

ASSIGNED TO
PROJECT BY CITY'S
PROJECT MANAGER

APPEARANCE

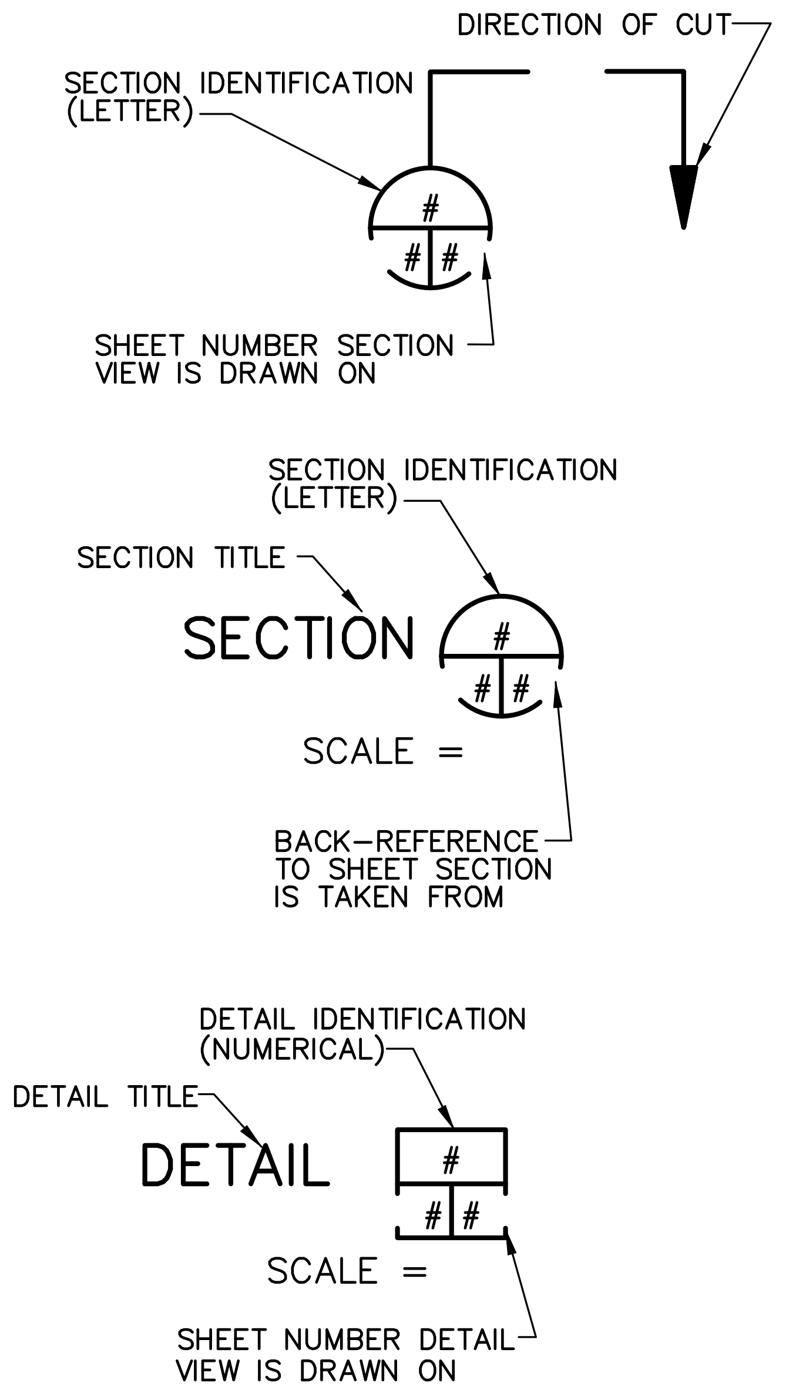


DESIGN	FUTURE	EXISTING
MEDIUM LINEWEIGHT	LIGHT LINEWEIGHT ON A FUTURE LAYER	SCREENED LINEWEIGHT ON A LAYER FOR EXISTING ITEMS

ITEMS TO HAVE EQUIPMENT TAGS:
ALL MANUAL VALVES FOUR (4) INCHES AND LARGER, ALL VALVES ELECTRICAL OPERATED.
ALL INSTRUMENTS, MOTORS, AND EQUIPMENT

WHERE THE SAME ITEM IS SHOWN IN SEVERAL DISCIPLINES, THEY SHALL REPEAT IN APPEARANCE IN ALL ELECTRICAL, INSTRUMENTATION, PROCESS MECHANICAL DRAWINGS.

SECTION/ DETAIL MARKERS


DIRECTION OF CUT
SECTION IDENTIFICATION (LETTER)
#
#|#
SHEET NUMBER SECTION VIEW IS DRAWN ON
SECTION IDENTIFICATION (LETTER)
SECTION TITLE
SECTION
#
#|#
SCALE =
BACK-REFERENCE TO SHEET SECTION IS TAKEN FROM
DETAIL IDENTIFICATION (NUMERICAL)
DETAIL TITLE
DETAIL
#
#|#
SCALE =
SHEET NUMBER DETAIL VIEW IS DRAWN ON

MATERIAL LIST

DEMOLITION:
- REMOVE AND DISPOSE

NEW CONSTRUCTION:
- FURNISH AND INSTALL

SITE PLAN SYMBOLOGY

- - - - - - -	EXISTING UNDERGROUND PIPING 12" AND GREATER (SIZE & TYPE)	////	DEMOLITION
- - - - - - -	EXISTING UNDERGROUND PIPING LESS THAN 12" (SIZE & TYPE)	▨	GRAVEL
⊗	EXISTING GATE OR BUTTERFLY VALVE	▨	PAVEMENT
—□	EXISTING SUMP	▨	CONCRETE
○	EXISTING MANHOLE	▨	CLSM
═══	NEW ABOVE GROUND PIPING 12" AND GREATER (SIZE & TYPE)	☒	EXISTING CMU
=======	NEW UNDERGROUND PIPE 12" AND GREATER (SIZE & TYPE)	// //	ABANDONMENT
- - - - - - -	NEW UNDERGROUND PIPING LESS THAN 12" (SIZE & TYPE)		

SHEET IDENTIFICATION

A	ARCHITECTURAL (ARCHITECTURAL EXTERIORS, INTERIORS, RENDERINGS)
C	CIVIL SITE (PAVING AND GRADING, YARD PIPING,)
E	ELECTRICAL (POWER DISTRIBUTION AND ELECTRICAL EQUIPMENT WITHIN STRUCTURES OR ON SITE)
F	FIRE PROTECTION
G	GENERAL (COVER, INDEX, GENERAL ABBREVIATIONS, HYDRAULIC PROCESS)
H	HVAC (HEATING, VENTILATION AND AIR CONDITIONING)
I	INSTRUMENTATION (P&ID'S)
L	LANDSCAPE (VEGETATION AND HARDSCAPE, IRRIGATION SUPPLY)
M	MECHANICAL (PROCESS PIPING & EQUIPMENT)
P	PLUMBING (EQUIPMENT DRAINS, ROOF DRAINS, SEWERS, VENTS)
Q	EQUIPMENT PURCHASED BY THE OWNER
S	STRUCTURAL (STRUCTURE WALLS, SLABS, REINFORCED BUILDING OR CONCRETE ELEMENTS)
T	TELECOMMUNICATIONS (ELECTRONIC COMMUNICATIONS EQUIPMENT, CONDUIT)
X	OTHER DISCIPLINES OR DEMOLITION
Z	CONTRACTOR/SHOP DRAWINGS

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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

40280
JASON R. FORT
Date Signed 08-30-24

Jason R. Fort

REVISIONS				
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*				
*				

DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

GENERAL

LEGEND & SYMBOLS

CITY PROJECT NO. WS90400085
DATE: 08/2024
G–03 SHEET 3 OF 134
CAD FILE: CSCLS40A03.dwg

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411625\03_CSCLS40A03.dwg DATE: 9/04/24 TIME: 03:17pm

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CITY OF PHOENIX SANITARY SEWER GENERAL NOTES

1. PLANNING & DEVELOPMENT DEPARTMENT'S CIVIL/SITE INSPECTION STAFF SHALL BE NOTIFIED 48 HOURS BEFORE ANY CONSTRUCTION BEGINS, TELEPHONE (602) 262-7811.
2. ANY SEWER MAIN 15 INCH IN SIZE OR 12 FEET IN DEPTH, OR GREATER, REQUIRES 5' MANHOLES.
3. ALL MANHOLES NEWLY CONSTRUCTED OR EXISTING THAT ARE WORKED IN FOR CONNECTIONS SHALL BE PAINTED WITH INSECTICIDE PAINT PER CITY OF PHOENIX SUPPLEMENT TO (MAG) SECTION 627.
4. MANHOLES WITH 60" DIAMETER AND PIPES GREATER THAN 12" REQUIRE COATING PER CITY OF PHOENIX SUPPLEMENT 626. ANY EXISTING MANHOLES WITH CORROSION COATING THAT ARE DISTURBED OR ADJUSTED TO NEW FINISH GRADES SHALL HAVE ANY DAMAGED COATING REPAIRED, INCLUDING ALL ADJUSTING RINGS.
5. THIS SET OF PLANS HAS BEEN INITIALLY REVIEWED BY THE CITY OF PHOENIX. SUCH REVIEW IS PART OF THE PROCESS THAT DEVELOPER(S)/CONTRACTOR(S) MUST GO THROUGH IN ORDER TO OBTAIN A CONSTRUCTION PERMIT. THE RESULTS OF SUCH INITIAL REVIEW, HOWEVER, SHALL NOT DICTATE THE CITY OF PHOENIX'S FINAL DETERMINATION AS TO THE ACCEPTABILITY OF THE PLANS, NOR SHALL IT PREVENT THE CITY OF PHOENIX FROM REQUIRING THAT ERRORS AND OMISSIONS, AS FOUND ON PLANS, BE ADDRESSED BY DEVELOPER(S)/CONTRACTOR(S), WHERE SUCH ERRORS AND OMISSIONS CAUSE THE PLANS TO BE IN VIOLATION OF OR INADEQUATE UNDER APPLICABLE FEDERAL/STATE/COUNTY/LOCAL CODES, ORDINANCES, REGULATIONS, OR OTHER LAWS. THIS REVIEWED AND STAMPED SET OF PLANS MUST BE KEPT AT THE CONSTRUCTION SITE AT ALL TIMES.
6. ALL CONSTRUCTION IN CITY OF PHOENIX RIGHT-OF-WAY, OR EASEMENT, IS TO CONFORM TO (MAG) SPECIFICATIONS AND DETAILS AND CITY OF PHOENIX SUPPLEMENT TO (MAG) SPECIFICATIONS AND DETAILS, UNLESS MODIFIED ON THE PLANS.
7. ALL SEWER MAINS MUST HAVE A T.V. INSPECTION BEFORE ACCEPTED AS COMPLETE (SEE CITY OF PHOENIX SUPPLEMENT TO (MAG) SPECIFICATION SECTION 615.11(C).
8. TRAFFIC REGULATIONS: ALL WORK MUST COMPLY WITH REQUIREMENTS OF THE CURRENT CITY OF PHOENIX "TRAFFIC BARRICADE MANUAL."
9. THE FOLLOWING (MAG) DETAILS ARE SPECIFICALLY NOT APPROVED: 425 24" ALUMINUM FRAME AND COVER.
10. NEW MANHOLES ARE TO BE BUILT WITHOUT STEPS.
11. COMPACTION SHALL COMPLY WITH (MAG) SECTION 601 & CITY OF PHOENIX SUPPLEMENTS.
12. NEW SEWER LINES ARE TO BE BUILT IN ACCORDANCE WITH CITY OF PHOENIX "STANDARD UTILITY LOCATIONS".
13. A SIX (6) FOOT MINIMUM HORIZONTAL SEPARATION FROM ANY UNDERGROUND UTILITY SHALL BE PROVIDED FOR SEWER MAINS, SEWER SERVICES, WATER MAINS, AND WATER SERVICES. THE MINIMUM HORIZONTAL SEPARATION IS MEASURED FROM OUTSIDE OF SEWER MAIN, SEWER SERVICE, WATER MAIN, OR WATER SERVICE TO OUTSIDE OF UNDERGROUND UTILITY.
14. A ONE (1) FOOT MINIMUM VERTICAL SEPARATION FROM ANY DRY UNDERGROUND UTILITY CROSSING SHALL BE PROVIDED FOR SEWER MAINS, SEWER SERVICES, WATER MAINS, AND WATER SERVICES. THE MINIMUM VERTICAL SEPARATION IS MEASURED FROM OUTSIDE OF SEWER MAIN, SEWER SERVICE, WATER MAIN, OR WATER SERVICE TO OUTSIDE OF DRY UNDERGROUND UTILITY.
15. A TWO (2) FOOT MINIMUM VERTICAL SEPARATION SHALL BE PROVIDED BETWEEN ANY SEWER MAIN OR STORM DRAIN MAIN CROSSING A WATER MAIN. THE MINIMUM VERTICAL SEPARATION IS MEASURED FROM OUTSIDE OF WATER MAIN TO OUTSIDE OF SEWER MAIN OR STORM DRAIN MAIN. SEE (MAG) STANDARD DETAIL 404 FOR ADDITIONAL INFORMATION AND/OR PROVISIONS FOR CLEARANCE.
16. EXCEPTIONS OR DEVIATIONS FROM THE ABOVE MINIMUM CLEARANCES MUST BE APPROVED AND SHOWN ON THE APPROVED WATER AND SEWER PLANS. WHEN UTILITY CONFLICTS ARE FOUND DURING CONSTRUCTION, ALL CHANGES AND REVISIONS MUST BE PRECEDED BY AN APPROVED PLAN REVISION.
17. ANY AND ALL MORE STRINGENT SEPARATION REQUIREMENTS REQUIRED BY FEDERAL, STATE, COUNTY, OR LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
18. ANY SEWER LINES THAT ARE INSTALLED WITH LESS THAN .004 FT/FT SLOPE MUST BE INSTALLED USING A LASER.
19. WHEN DIP SEWER PIPE IS USED, LINING IS REQUIRED PER CITY OF PHOENIX SUPPLEMENT TO (MAG) SEC. 750.1.
20. CONCRETE OR ASPHALT DAMAGED DURING THE COURSE OF CONSTRUCTION SHALL BE REMOVED AND REPLACED IN KIND PRIOR TO FINAL INSPECTION.
21. RECORD DRAWING SUBMITTALS MUST COMPLY WITH WATER SERVICES DEPARTMENT ENGINEERING POLICY P-69. A COPY OF THE POLICY CAN BE OBTAINED IN THE DEPARTMENT'S WEBSITE: HTTP: //PHOENIX.GOV/WATERSERVICES/DESIGN/ENGPOLICIES/INDEX.HTML
22. "PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED FOR THE CONSTRUCTION OF THE PUBLIC WORKS FACILITIES HEREON. THE PROJECT OWNER, AND THE OWNER'S LENDERS, CONSULTANTS, CONTRACTORS AND SUBCONTRACTORS ARE PROHIBITED FROM DISCLOSING THE PLANS AND SPECIFICATIONS TO ANY PERSONS OTHER THAN THOSE WHO HAVE A NEED TO KNOW THE INFORMATION FOR THE PURPOSE OF THE PROJECT."
23. A PAVEMENT CUT SURCHARGE SHALL BE ASSESSED ON THIS PROJECT FOR ANY TRENCHING OR POTHOLING IN NEW ASPHALT PAVEMENT THAT IS LESS THAN 30 MONTHS OLD. SURCHARGE FEES ASSESSED ARE IN ADDITION TO THE REGULAR PERMIT FEES AND ARE OVER AND ABOVE ANY SPECIAL BACKFILL, COMPACTION, AND PAVEMENT REPLACEMENT STIPULATIONS THAT MAY BE IMPOSED AS A CONDITION OF PERMITTING. PAVEMENT CUT SURCHARGE FEES IS ASSESSED IN ACCORDANCE WITH SECTION 31-38 OF THE PHOENIX CITY CODE.
24. LIFT STATIONS SHALL BE SECURED TO PREVENT TAMPERING AND AFFIX ON ITS EXTERIOR, OR ON THE NEAREST VERTICAL OBJECT IF THE LIFT STATION IS ENTIRELY BELOW GRADE, AT LEAST ONE WARNING SIGN THAT INCLUDES THE 24-HOUR EMERGENCY PHONE NUMBER OF THE OWNER OR OPERATOR OF THE COLLECTION SYSTEM PER AAC (R18-9-E301.D.5.a).

CITY OF PHOENIX SANITARY SEWER GENERAL NOTES (CON'T)

25. PLAN APPROVAL IS VALID FOR 180 DAYS. PRIOR TO PLAN APPROVAL EXPIRATION, ALL ASSOCIATED PERMITS SHALL BE PURCHASED OR THE PLANS SHALL BE RESUBMITTED FOR EXTENSION OF PLAN APPROVAL. THE EXPIRATION, EXTENSION, AND REINSTATEMENT OF CIVIL ENGINEERING PLANS AND PERMITS SHALL FOLLOW THE SAME GUIDELINES AS THOSE INDICATED IN THE PHOENIX BUILDING CONSTRUCTION CODE ADMINISTRATIVE PROVISIONS SECTION 105.3 FOR BUILDING PERMITS.
26. FOR LOTS FRONTING AN EXISTING SEWER MAIN, SEWER SERVICES SHALL BE CONSTRUCTED BY THE CONTRACTOR AFTER PROPER APPLICATION AND PAYMENT OF PREVAILING FEES FOR CITY FORCES TO PROVIDE THE CONNECTION OR "WYE" IN ACCORDANCE WITH WATER SERVICES DEPARTMENT POLICY P-1, SEWER ORDINANCE G-2358, SECTION D. FOR INFORMATION, CALL 602-262-6551.
27. THIS PLAN IS APPROVED SUBJECT TO COMPLETION OF SOME LINES LABELED "EXISTING" WHICH HAVE BEEN PROPOSED AS A PART OF ANOTHER DEVELOPMENT. THE DEVELOPER OF THIS PROJECT MAY BE REQUIRED TO CONSTRUCT THOSE LINES PER CITY REQUIREMENTS PRIOR TO RECEIVING SERVICE FOR THIS PROJECT.

ENGINEER'S GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CONTRACT DRAWINGS, SPECIAL PROVISIONS, TECHNICAL SPECIFICATIONS, SUPPLEMENTAL GENERAL CONDITIONS, MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (2023 EDITION OR AS NOTED), MAG UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION (2023 EDITION OR AS NOTED) AND THE CITY OF PHOENIX STANDARD DETAILS (2021 CITY SUPPLEMENT TO THE 2019 MAG STANDARD DETAILS) AND SPECIFICATIONS (2015 CITY SUPPLEMENT TO THE 2015 MAG SPECIFICATIONS).
2. NEW FORCE MAINS SHALL BE CONSTRUCTED OF MATERIALS IN ACCORDANCE WITH THE SPECIFICATIONS.
3. VALVES SHALL BE OF THE TYPE DESIGNATED ON THE DRAWINGS AND SHALL COMPLY WITH MAG STANDARD SPECIFICATION SECTION 630 WITH THE EXCEPTION THAT GATE VALVES (14-INCH THROUGH 36-INCH) SHALL BE INSTALLED FOR OPERATION IN THE VERTICAL POSITION. VALVE BOXES AND COVERS ARE REQUIRED FOR ALL GATE VALVES. VALVE BOXES SHALL BE ADJUSTED TO FINISH GRADE.
4. JOINT RESTRAINT SHALL BE PROVIDED AT LOCATIONS SHOWN ON THE DRAWINGS AND AT ALL CHANGES IN PIPELINE DIRECTION, TEES, BENDS, DEAD ENDS AND VALVES. RESTRAINED JOINT LENGTHS SHALL BE IN ACCORDANCE WITH MAG STANDARD DETAIL 303 UNLESS OTHERWISE SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER. CONNECTIONS TO EXISTING FORCE MAINS SHALL INCLUDE THRUST BLOCKS AS REQUIRED PER MAG SPECIFICATION SECTION 610 AND MAG STANDARD DETAIL 380.
5. THE CONTRACTOR SHALL CONFIRM PIPE MATERIAL AT DESIGNATED CONNECTION POINTS PRIOR TO ORDERING FITTINGS.
6. ALL NEW FORCE MAINS SHALL BE PRESSURE TESTED PRIOR TO ACCEPTANCE. UNLESS OTHERWISE NOTED IN THE SPECIFICATIONS, PRESSURE TESTING SHALL BE IN ACCORDANCE WITH ASTM F2164 UNLESS SPECIFICALLY AUTHORIZED BY THE CITY, PRESSURE TESTING AGAINST EXISTING SYSTEM COMPONENTS WILL NOT BE ALLOWED.
7. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE GOVERNING AGENCY'S REQUIREMENTS. CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLANS TO THE GOVERNING AGENCIES AS REQUIRED BY THE AGENCY.
8. CONTRACTOR'S WORK ACTIVITIES SHALL BE SCHEDULED AND PHASED SO AS NOT TO UNDULY IMPEDE OR PREVENT ACCESS TO PRIVATE RESIDENCES, PUBLIC FACILITIES, SCHOOLS, OR BUSINESS EXCEPT BY PRIOR WRITTEN AGREEMENT WITH THE IMPACTED OWNER(S) OR OPERATORS.
9. CONCRETE SIDEWALK, CURB, CURB & GUTTER SHALL BE SAWCUT, REMOVED & REPLACED TO THE NEAREST JOINT.
10. AS-BUILT DRAWINGS SHALL BE PREPARED IN ACCORDANCE WITH WATER SERVICES DEPARTMENT GENERAL NOTE 17 AND ENGINEERING POLICY P-85. ALL VALVES, HYDRANTS, FITTINGS AND SERVICE CONNECTIONS SHOWN ON CONTRACTOR'S AS-BUILT REDLINES SHALL REFERENCE PROJECT STATIONING.
11. REMOVAL OF ASBESTOS CEMENT PIPE (ACP) SHALL BE ACCOMPLISHED BY A CONTRACTOR LICENSED BY THE STATE OF ARIZONA REGISTRAR OF CONTRACTORS TO PERFORM ASBESTOS REMOVALS. ALL ASBESTOS REMOVAL, HANDLING AND DISPOSAL SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL STATE AND FEDERAL LAWS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SAFETY AND ALL NOTIFICATIONS, FEES, TAXES, PERMITS, REGISTRATIONS AND REGULATORY INSPECTIONS AS REQUIRED BY APPLICABLE LAWS.
12. EXISTING UTILITIES AND OTHER FACILITIES HAVE BEEN SHOWN ON THE CONTRACT DRAWINGS BASED ON FIELD SURVEYS, EXISTING MAPS, AND OTHER INFORMATION GATHERED BY THE ENGINEER DURING DESIGN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXACT LOCATIONS OF ALL UTILITIES IMPACTING CONSTRUCTION AND PROTECTION OF SAID UTILITIES. IF RELOCATION OF UTILITIES IS REQUIRED, THE CONTRACTOR SHALL COORDINATE THE RELOCATION WITH THE OWNER. UTILITIES DAMAGED BY CONTRACTORS ACTIVITIES SHALL BE REPAIRED WITH NEW MATERIALS AT NO COST TO THE OWNER AND TO THE OWNER'S SATISFACTION.
13. CONTRACTOR SHALL SUPPORT AND PROTECT IN-PLACE UTILITIES WITHIN THE EXCAVATION IN ACCORDANCE WITH MAG SPECIFICATIONS, UNLESS OTHERWISE APPROVED IN WRITING BY THE OWNER OF THE UTILITY.
14. EXISTING FEATURES AND FACILITIES WHICH ARE NOT SPECIFICALLY LOCATED WITH HORIZONTAL AND VERTICAL CONTROLS ARE LOCATED APPROXIMATELY WITH THE BEST AVAILABLE INFORMATION. VARIATIONS BETWEEN PLAN LOCATION AND ACTUAL DIMENSIONS WILL NOT BE A BASIS FOR A MODIFICATION OF THE CONTRACT AMOUNT.

FACILITY DRAWINGS
This drawing was supplied by a Consultant Engineer from a past construction project. The original construction drawing was modified based on information provided by the Contractor to provide the Record Drawing. The City does not warranty this drawing to be a complete and accurate portrayal of facilities as they exist in the field.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411625\04_CSCLS40A04.dwg DATE: 9/04/24 TIME: 03:17pm

HDR

40280
JASON R.
FORT
Date Signed 08-30-24

Jason R. Fort

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
A	RS	10/2023	JF	30% SUBMITTAL
B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

GENERAL

GENERAL NOTES

CITY PROJECT NO. WS90400085
DATE: 08/2024
G-04 SHEET 4 OF 134
CAD FILE: CSCLS40A04.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

STANDARD ABBREVIATIONS

SYMBOLS

@	AT
%	PERCENT
°	DEGREE
ø	DIAMETER

A

A	ARCHITECTURAL
AB	ANCHOR BOLT
ABC	AGGREGATE BASE COURSE
AC	ASPHALTIC CONCRETE
AD	ACCESS DOOR
ADM	ADMINISTRATION
AFF	ABOVE FINISHED FLOOR
AHU–#	AIR HANDLING UNIT NO. #
ALT	ALTERNATE
ALUM	ALUMINUM
AMB	AMBIENT
ANPP	ARIZONA NUCLEAR POWER PLANT
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATELY
ASE	ATM SWITCH ENCLOSURE
ASP	ASPHALT PAVEMENT
ATC	AUTOMATIC TEMPERATURE CONTROL
ATM	ASYNCHRONOUS TRANSFER MODE
AWWA	AMERICAN WATER WORKS ASSOCIATION

B

BAIE	BAY AREA INSTRUMENTATION AND ELECTRICAL
BC	BRASS CAP
BDD	BACKDRAFT DAMPER
BDG	BRIDGE
BDS	BUSINESS DATA SERVER
BE	BEAM
BFV	BUTTERFLY VALVE
BFVM	BUTTERFLY VALVE (MOTOR OPERATED)
BHP	BRAKE HORSEPOWER
BLD	BLIND
BLDG	BUILDING
BM	BENCHMARK
BOD	BOTTOM OF DUCT
BOR	BOTTOM OF REGISTER
BOT	BOTTOM
BOW/BW	BOTTOM OF WALL
BP	BYPASS
BPS	BOOSTER PUMP STATION
BUSH	BUSHING
BVC	BEGIN VERTICAL CURVE

C

C	CIVIL
CA	CONCRETE ANCHOR
CATV	CABLE TELEVISION
CC	CENTER TO CENTER
CCS	COMPUTER CONTROL SYSTEM
CD#	CEILING AIR DIFFUSER (#=TYPE A, B...)
CFH	CUBIC FEET OF STANDARD AIR PER HOUR
CFM	CUBIC FEET OF STANDARD AIR PER MINUTE
CG	CONTROL GATE
CHR	CHLORINATOR
CJ	CONSTRUCTION JOINT
CL	CENTER LINE
CLR	CLEAR OR CLEARANCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CMP	COMPUTER
CMU	CEMENT MASONRY UNIT
CODP	CLEAN OUT DECK PLATE
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS OR CONTINUATION
COP	CITY OF PHOENIX
CP	CATHODIC PROTECTION
CPLG	COUPLING
CST	CONSTRUCTION
CTJ	CONTROL JOINT
CTS	CATHODIC PROTECTION TEST STATION

D

DB	DRY BULB
DBL	DOUBLE
DCS	DISTRIBUTED CONTROL SYSTEM
DCU	DISTRIBUTED CONTROL UNIT
DMWS	DATA MANAGEMENT WORK STATION
DEGC	DEGREES CENTIGRADE
DEGF	DEGREES FAHRENHEIT
DEGREE	ANGULAR DEGREES
DG	DECOMPOSED GRANITE
DIA	DIAMETER
DIM	DIMENSION
DMH	DRAINAGE MANHOLE
DR	DRIVE
DT	DAY TANK
DTL	DETAIL
DWG	DRAWING
DWG	DRAWING WEB FORMAT
DWL	DOWEL

E

E	ELECTRICAL
EA	EACH
ECC	ECCENTRIC
EDB	ELECTRICAL DUCT BANK
EF–#	EXHAUST FAN NO. #
EF	EACH FACE
EJ	EXPANSION JOINT
EL/ELEV	ELEVATION
EMER	EMERGENCY
EMH	ELECTRICAL MANHOLE
EOP	EDGE OF PAVEMENT

E CONT

EQUIP	EQUIPMENT
ER#	EXHAUST AIR REGISTER (#=TYPE A, B...)
EVC	END VERTICAL CURVE
EW	EACH WAY
EXIST	EXISTING

F

FAD	FOUL AIR DUCT
FC	FLEXIBLE CONNECTOR
FCU	FIELD CONTROL UNIT
FCP	FIELD CONTROL PANEL
FD	FLOOR DRAIN
FDDI	FIELD DISTIBUTED DATA INTERFACE
FDN	FOUNDATION
FE	FLOW ELEMENT
FEH	FIELD ETHERNET HUB
FF	FINISHED FLOOR
FH	FIRE HYDRANT
FHC	FIELD HUB CONVERTER
FHE	FIELD HUB ENCLOSURE
FG	FINISHED GRADE
FIN	FINISHED
FN	FAN
FO	FOAM
FOC	FIBER OPTIC CONVERTER
FPM	FEET PER MINUTE
FPP	FIELD PANEL PATCH
FPS	FIRE PROTECTION SYSTEM
FT	FOOT OR FEET
FTG	FITTING OR FOOTING
FWS	FIELD WORKSTATION

G

GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRADE BREAK
GBD	GRAVITY BACKDRAFT DAMPER
GDS	GENERAL DATA SERVER
GMW	GROUNDWATER MONITORING WELL
GND	GROUND
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRINDER
GRT	GRAVITY THICKENER
GRV	GROOVED

H

H	HIGH
HCP	HORIZONTAL CONTROL POINT HIGH
HDP	DENSITY POLYETHYLENE
HDS	HISTORICAL DATA SERVER
HORIZ	HORIZONTAL
HPMP	HEAT PUMP
HPT	HIGH POINT
HP	HORSEPOWER
HSS	HOLLOW STRUCTURAL SECTION

I

IAS	INFORMATION ACCESS SYSTEM
IBC	INTERNATIONAL BUILDING CODE
ID	INNER DIAMETER
I\O	INPUT\OUTPUT
IE	INSTRUMENT ELECTRIC\INVERT
IJS	ELEVATION INFLUENT JUNCTION
IN.	STRUCTURE
INSUL	INCH\INCHES
INV	INSULATION
IPH	INVERT
IPM	INCHES PER HOUR
IPS	INCHES PER MINUTE
ITP	INCHES PER SECOND
	INTERMEDIATE TERMINAL PANEL

J

JB	JUNCTION BOX
JC	JANITOR'S
JT	CLOSET JOINT

K

KCFM	1000 CUBIC FT. PER MINUTE
KSCFM	1000 STD. CUBIC FT. PER MINUTE
KSI	KIPS PER SQUARE INCH

L

L	LANDSCAPE
LB	POUND
LB\DT	POUNDS PER DRY TON
LB\D	POUNDS PER DAY
LB\H	POUNDS PER HOUR
LCP	LOCAL CONTROL PANEL
LF	LINEAR FEET
LGTH	LENGTH
LI	LEVEL INDICATOR
LM	LOUVER MOTOR
LP	LOW POINT
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LSS	LANDSCAPING SPRINKLER SYSTEM

M

MAG	MAGNETIC
MASG	MARICOPA ASSOCIATION OF GOV.
MAX	MAXIMUM
MB	MACHINE BOLT
MCC	MOTOR CONTROL CENTER
MCS	MOTOR CONTROL STATION
MFC	MICROSCREEN FEED CHANNEL
MFR	MANUFACTURER
MG	MANUAL GATE
MGD	MILLION GALLONS PER DAY
MGL	MILLIGRAMS PER LITER
MH	MANHOLE
MIN	MINIMUM
MINS	MINUTES
MJ	MECHANICAL JOINT
ML	MILLILITER
MO	MASONRY OPENING
MPH	MILES PER HOUR
MSC	MICROSCREEN
MTD	MOUNTED
MV	MILLIVOLT
MVC	MID POINT VERTICAL CURVE
MW	MEGAWATT

N

NACE	NATIONAL ASSOCIATION OF CORROSION ENGINEERS
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NIC	NOT IN CONTRACT
NK	NECK
NO	NORMALLY OPEN
NOM	NOMINAL
NPI	NO PAY ITEM
NTS	NOT TO SCALE

O

OA	OUTSIDE AIR
OC	ON CENTER
ODR	ODOR
ODRC	ODOR CONTROL
OF	OVERFLOW
OHE	OVERHEAD ELEC. POWER LINES
OPCTY	PERCENT OPACITY
OPNG	OPENING
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OWS	OPERATOR WORK STATION

P

P	PAVEMENT
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
P–#	PUMP NO. #
PCA	PLANT COMPRESSED AIR
PCCP	PORTLAND CEMENT CONCRETE PAVEMENT
PCU	PROCESS CONTROL UNIT
PDR	PROCESS DATA ROUTER
PSB	PRIMARY SEDIMENTATION BASIN
PB	PULL BOX
PE	PLAIN END
PF	POWER FACTOR
PH	pH, HYDROGEN ION ACTIVITY
PHO	PHONE
PHYD	POST HYDRANT
PLCS	PLACES
PI	PRESSURE INDICATOR
PL ℄	PROPERTY LINE
P/L,	PLATE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PMC	PROGRAM MANAGEMENT CENTER
POSS	POSITION SWITCH
PPB	PARTS PER BILLION
PPBV	PARTS PER BILLION VOLUME
PPD	POUNDS PER DAY
PPM	PARTS PER MILLION
PPMV	PARTS PER MILLION VOLUME
PPSEG	POUNDS PER SQUARE INCH GAUGE
PRESS	PRESSURE
PRT	PRINTER
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSF	POUNDS PER SQUARE FOOT
PV	PUMP VACUUM
PVNGS	PALO VERDE NUCLEAR GENERATING STATION

Q

QTY	QUANTITY

R

R	RADIUS
RCS	REMOTE CONTROL STATION
RD	ROAD
RECT	RECTIFIER
RED	REDUCER, REDUCING
REINF	REINFORCING, REINFORCEMENT
REQ'D	REQUIRED
RF	ROOF
RGS	RIGID GALVANIZED STEEL
RH	RELATIVE HUMIDITY
RIO	REMOTE INPUT\OUTPUT
RIP	REMAIN IN PLACE
RMS	ROOT MEAN SQUARE
RO	ROOF OPENING
ROT	ROTARY VALVE
ROW	RIGHT OF WAY

R CONT

RPH	REVOLUTIONS PER HOUR
RPS	REVOLUTIONS PER SECOND
RPM	REVOLUTIONS PER MINUTE
RTU	REMOTE TERMINAL UNIT
RV–#	ROOF VENT NO. #

S

S	STRUCTURAL
SAR	SUPPLY AIR REGISTER
SC	SCREW CONVEYOR
SCFH	STANDARD CUBIC FEET PER HOUR
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SCR	SILICON CONTROLLED RECTIFIER
SD	STORM DRAIN
SEC	SECONDARY
SECS	SECONDS
SED	SEDIMENTATION
SG	SLUICE GATE
SH	SHIELDED
SF–#	SUPPLY AIR FAN NO. #
SFES	SERVER FAST ETHERNET SWITCH
SHF	SOLIDS HANDLING FACILITY
SHT	SHEET
SIM	SIMILAR
SLG	SLIDE GATE
SP IN WG	STATIC PRESSURE INCHES OF WATER GAGE
SPECS	SPECIFICATIONS
SQ	SQUARE
SRP	SALT RIVER PROJECT
SRUA	SALT RIVER VALLEY USERS ASSOCIATION
SS, SST	STAINLESS STEEL
SSPC	THE SOCIETY FOR PROTECTIVE COATINGS
STA	STATION
STD	STANDARD
STL	STEEL
SU	SURGE UNIT
SUB	SUBSTATION
SV–#	SOLENOID VALVE NO. #
SW	SIDEWALK

T

T	TELEPHONE
T/	TOP OF
T&B	TOP AND BOTTOM
TB	TERMINATION BOX
TBOC	TOP BACK OF CURB
TEMP	TEMPERATURE OR TEMPORARY
THK	THICK
TMH	TELEPHONE MANHOLE
TOC	TOP OF CONCRETE
TOD	TOP OF DUCT
TOG	TOP OF GRATING
TOR	TOP OF REGISTER
TOW/TW	TOP OF WALL
TOS	TOP OF SLAB
TPH	TONS PER HOUR
TR	TRANSDUCER
TTB	TELEPHONE TERMINATION BOARD
TYP	TYPICAL

U

UG	UNDER GROUND
UH–#	UNIT HEATER NO. #
UMHO	MICROMHO
UNO	UNLESS NOTED OTHERWISE

V

VAC	VACUUM
VACBK	VACUUM BREAKER
VB	VALVE BOX
VCP	VITRIFIED CLAY PIPE
VD	VOLUME DAMPER
VDU	VIDEO DISPLAY UNIT
VEL	VELOCITY
VERT	VERTICAL
VF	VACUUM FILTER
VFD	VARIABLE FREQUENCY DRIVE
VG	VALLEY GUTTER
VMS	VIBRATION MONITORING SYSTEM
VS	VIEW STATION
VTR	VENT THROUGH ROOF

W

W/	WITH
WB	WET BULB
WC	WATER COLUMN
WD	WIDE
WP	WEATHERPROOF
WS	WATER SURFACE

X

XP	EXPLOSION PROOF
XFER	TRANSFER
XFM	TRANSFORMER

PROCESS ABBREVIATIONS

A

ALM	ALUM
AMN	AMMONIA
AR	PROCESS AIR
AS	INSTRUMENT AIR
ASL	ALTERNATE
AW	SLUDGE ACID
AWD	WASTE
	ACID WASTE DRAIN

B

BCV	BALL CHECK VALVE
BFV	BUTTERFLY VALVE
BF	BLIND FLANGE
BP	BY–PASS
BS	BRINE SOLUTION
BV	BALL VALVE

C

CAS	CAUSTIC SODA
CD	CHLORINATOR DETECTOR
CEFF	CHLORINATED EFFLUENT
CEN	CENTRATE
CEN–EFF	CENTRATE EFFLUENT
CEN–ML	CENTRATE MIXED LIQUOR
CEN–RAS	CENTRATE RETURN ACTIVATED SLUDGE
CEN–SCUM	CENTRATE SCUM
CEN–SE	CENTRATE SECONDARY EFFLUENT
CEN–WAS	CENTRATE WASTE ACTIVATED SLUDGE
CEND	CENTRIFUGE DRAIN
CENV	CENTRATE VENT
CG	CHLORINE GAS
CGV	CHLORINE GAS VACUUM
CH2OR	COOLING WATER RETURN
CH2OS	COOLING WATER SUPPLY
CHL	CHLORINE LIQUID
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CKV	CHECK VALVE
CL2	CHLORINE
CLS	CHLORINE SOLUTION
CO	CLEAN OUT
CPVC	CHLORINATED POLYVINYL CHLORIDE
CV	CHLORINATOR VENT
CW	DOMESTIC COLD WATER
CWD	CAUSTIC WASTE DRAIN
CWR	COOLING WATER RETURN
CWS	COOLING WATER SUPPLY

D

D	DRAIN
DAF	DISSOLVED AIR
DCL	FLOATATION DIGESTER
DEC	CLEANING LINE DECANT
DEFF	DECHLORINATED EFFLUENT
DG	DIGESTER GAS
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DISCH	DISCHARGE
DL	DRAIN LINE
DP	DILUTED POLYMER
DS	DIGESTED SLUDGE
DSF	DIESEL FUEL
DV	DIAPHRAGM VALVE
DW	DEWATERING
DWS	DEWATERED SLUDGE
DWW	DOMESTIC WASTE

E

EFF	EFFLUENT
EOF	EMERGENCY OVERFLOW
EPS	EFFLUENT PUMP STATION
ES	EFFLUENT SLUDGE

F

FA	FOUL AIR
FAD	FOUL AIR DUCT
FEC	FERRIC CHLORIDE
FL	FLOW LINE
FM	FORCE MAIN
FLG\FLGD	FLANGE\FLANGED
FLW	FILTERED WASTE
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FRP	FIBERGLASS REINFORCED POLYVINYL

G

G	GAS
GC	GRIT CLEANING
GCEN	GRAVITY CENTRATE
GLDI	GLASS LINED DUCTILE IRON
GLV	GLOBE VALVE
GR	GRIT
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
GW	GROUNDWATER

H

HCL	HYDROCHLORIC ACID
HPA	HIGH PRESSURE AIR
HPO	HIGH PRESSURE OIL
HPS	HIGH PRESSURE
HSL	STREAM HEATED
HW	SLUDGE HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY

I

IMLR	INTERMEDIATE MIXED LIQUOR RECYCLE
INF	INFLUENT
IPA	INTERMEDIATE PRESSURE AIR
IR	INTERMEDIATE RECYCLE
IRG	IRRIGATION

K

KGV	KNIFE GATE VALVE

L

LO	LUBE OIL

M

M	MECHANICAL
MA	METHYL ALCOHOL (METHANOL)
MD	MOTORIZED DAMPER
MAS	METHYL ALCOHOL SOLUTION
ML	MIXED LIQUOR

N

NAOCL	SODIUM HYDROCHLORIDE
NG	NATURAL GAS
NPW	NON–POTABLE WATER
NPR	NON–POTABLE WATER RETURN
NPS	NON–POTABLE WATER SUPPLY
NSD	NON–SANITARY DRAIN
NV	NEEDLE VALVE

O

OCD	ODOR CONTROL DRAIN

P

PCA	PLANT COMPRESSED AIR
PC	PRIMARY SCUM
PD	PROCESS DRAIN
PE	PRIMARY EFFLUENT
PI	PRIMARY INFLUENT
POL	POLYMER
POLS	POLYMER SOLUTION
PSL	PRIMARY SLUDGE
PSK	PRIMARY SKIMMING
PW	POTABLE WATER

R

RAS	RETURNED ACTIVATED SLUDGE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RECIRC	RECIRCULATE\RECIRCULATION
RGR	RETURNED GRIT
ROT	ROTARY VALVE
RV	RELEASE VALVE
RW	REUSE WATER
RWW	RAW WASTE WATER

S

SAS	SCRUBBER AIR SAMPLING
SB	SODIUM BISULFATE
SBD	SCRUBBER BLOWDOWN
SBS	SODIUM BISULFATE SOLUTION
SC	SECONDARY SCUM
SCK	SLUDGE CAKE
SCR	SCREENINGS
SD	SULPHUR DIOXIDE LIQUID
SDAF	STORM DRAIN ABOVE FLOOR
SDBF	STORM DRAIN BELOW FLOOR
SDG	SULPHUR DIOXIDE GAS
SESL	SECONDARY EFFLUENT SLUDGE
SMP	SAMPLE
SNPW	SOFTENED NON–POTABLE WATER
SNPWV	SOFTENED NON–POTABLE WATER VENT
SP	SPARE PIPE OR FUTURE PIPE
SPD	SUMP PUMP DISCHARGE
SPRW	SPRAY WATER
SPW	SOFTENED POTABLE WATER
SR	SCRUBBER RECIRCULATION
SRV	SURGE RELIEF VALVE
SRW	SERVICE WATER
SSK	SECONDARY SKIMMING
SSL	SECONDARY SLUDGE
SST	STAINLESS STEEL
STM	STEAM
SU	STRUCTURAL UNDERDRAIN\FOOTING DRAIN
SUC	STRUCTURAL UNDERDRAIN COLLECTOR
SW	SANITARY WASTE
SWR	SEAL WATER

T

THK EFF	THICKENED EFFLUENT
TSL	THICKENED SLUDGE
TPS	THICKENED PRIMARY SLUDGE
TWAS	THICKENED WASTE ACTIVATED SLUDGE

U

UTPS	UNTHICKENED PRIMARY SLUDGE

V

V	VENT
VAC	VACUUM
VCP	VITRIFIED CLAY PIPE

W

W	WATER
WAS	WASTE ACTIVATED SLUDGE
WSP	WELDED STEEL PIPE
WTAAP	???????

FACILITY DRAWINGS
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#	–	–	–	–	–	–	–

HDR

40280
JASON R.
FORT

REVISIONS

NO.	BY	DATE	CKD	REMARKS
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B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES	FS
DWN	RS
CKD	JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

GENERAL

GENERAL ABBREVIATIONS

CITY PROJECT NO. WS90400085
DATE: 08/2024
G-05
SHEET 5 OF 134
CAD FILE: CSCLS40A05.dwg

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411625\05_CSCLS40A05.dwg DATE: 9/04/24 TIME: 03:17pm

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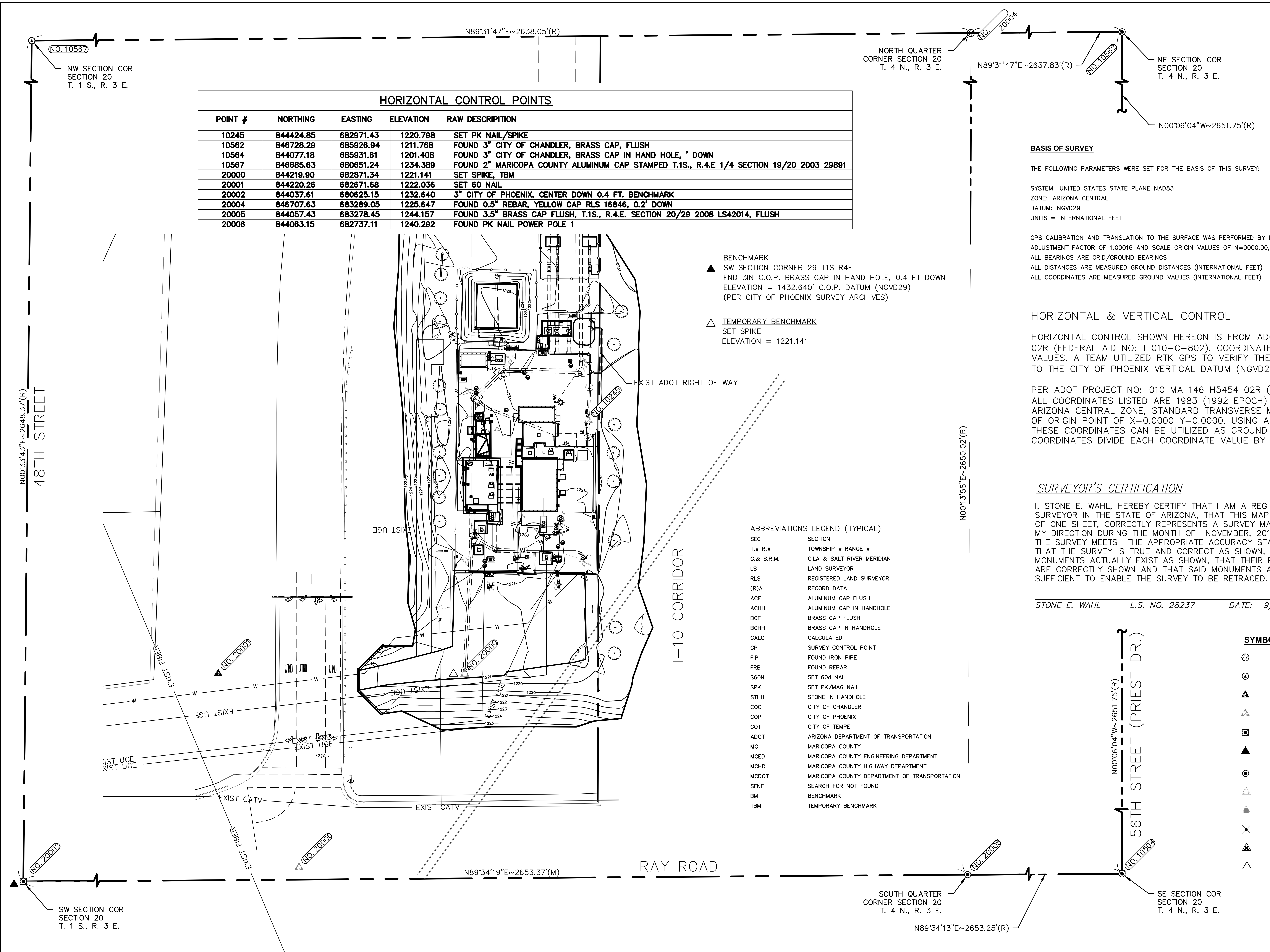

HORIZONTAL CONTROL POINTS

POINT #	NORTHING	EASTING	ELEVATION	RAW DESCRIPITION
10245	844424.85	682971.43	1220.798	SET PK NAIL/SPIKE
10562	846728.29	685926.94	1211.768	FOUND 3" CITY OF CHANDLER, BRASS CAP, FLUSH
10564	844077.18	685931.61	1201.408	FOUND 3" CITY OF CHANDLER, BRASS CAP IN HAND HOLE, ' DOWN
10567	846685.63	680651.24	1234.389	FOUND 2" MARICOPA COUNTY ALUMINUM CAP STAMPED T.1S., R.4.E 1/4 SECTION 19/20 2003 29891
20000	844219.90	682871.34	1221.141	SET SPIKE, TBM
20001	844220.26	682671.68	1222.036	SET 60 NAIL
20002	844037.61	680625.15	1232.640	3" CITY OF PHOENIX, CENTER DOWN 0.4 FT. BENCHMARK
20004	846707.63	683289.05	1225.647	FOUND 0.5" REBAR, YELLOW CAP RLS 16846, 0.2' DOWN
20005	844057.43	683278.45	1244.157	FOUND 3.5" BRASS CAP FLUSH, T.1S., R.4.E. SECTION 20/29 2008 LS42014, FLUSH
20006	844063.15	682737.11	1240.292	FOUND PK NAIL POWER POLE 1

▲ BENCHMARK
SW SECTION CORNER 29 T1S R4E
FND 3IN C.O.P. BRASS CAP IN HAND HOLE, 0.4 FT DOWN
ELEVATION = 1432.640' C.O.P. DATUM (NGVD29)
(PER CITY OF PHOENIX SURVEY ARCHIVES)

△ TEMPORARY BENCHMARK
SET SPIKE
ELEVATION = 1221.141

N.

0 20 40 80
1" = 40'

BASIS OF SURVEY

THE FOLLOWING PARAMETERS WERE SET FOR THE BASIS OF THIS SURVEY:

SYSTEM: UNITED STATES STATE PLANE NAD83
ZONE: ARIZONA CENTRAL
DATUM: NGVD29
UNITS = INTERNATIONAL FEET

GPS CALIBRATION AND TRANSLATION TO THE SURFACE WAS PERFORMED BY LAND SURVEY SOFTWARE. A GRID ADJUSTMENT FACTOR OF 1.00016 AND SCALE ORIGIN VALUES OF N=0000.00, E=0000.00.
ALL BEARINGS ARE GRID/GROUND BEARINGS
ALL DISTANCES ARE MEASURED GROUND DISTANCES (INTERNATIONAL FEET)
ALL COORDINATES ARE MEASURED GROUND VALUES (INTERNATIONAL FEET)

HORIZONTAL & VERTICAL CONTROL

HORIZONTAL CONTROL SHOWN HEREON IS FROM ADOT PROJECT NO: 010 MA 146 H5454 02R (FEDERAL AID NO: I 010-C-802). COORDINATES SHOWN ARE RECORD GROUND VALUES. A TEAM UTILIZED RTK GPS TO VERIFY THE HORIZONTAL CONTROL AND ADJUST TO THE CITY OF PHOENIX VERTICAL DATUM (NGVD29).

PER ADOT PROJECT NO: 010 MA 146 H5454 02R (FEDERAL AID NO: I 010-C-802)
ALL COORDINATES LISTED ARE 1983 (1992 EPOCH) STATE PLANE GROUND COORDINATES ARIZONA CENTRAL ZONE, STANDARD TRANSVERSE MERCATOR PROJECTION, WITH A SCALE OF ORIGIN POINT OF X=0.0000 Y=0.0000. USING A GRID ADJUSTMENT FACTOR OF I.00016. THESE COORDINATES CAN BE UTILIZED AS GROUND DATUM. TO CONVERT BACK TO GRID COORDINATES DIVIDE EACH COORDINATE VALUE BY 1.00016.

SURVEYOR'S CERTIFICATION

I, STONE E. WAHL, HEREBY CERTIFY THAT I AM A REGISTERED LAND SURVEYOR IN THE STATE OF ARIZONA, THAT THIS MAP, CONSISTING OF ONE SHEET, CORRECTLY REPRESENTS A SURVEY MADE UNDER MY DIRECTION DURING THE MONTH OF NOVEMBER, 2017 , THAT THE SURVEY MEETS THE APPROPRIATE ACCURACY STANDARDS, THAT THE SURVEY IS TRUE AND CORRECT AS SHOWN, THAT ALL MONUMENTS ACTUALLY EXIST AS SHOWN, THAT THEIR POSITIONS ARE CORRECTLY SHOWN AND THAT SAID MONUMENTS ARE SUFFICIENT TO ENABLE THE SURVEY TO BE RETRACED.

STONE E. WAHL *L.S. NO. 28237* *DATE: 9/12/18*

ABBREVIATIONS LEGEND (TYPICAL)

SEC	SECTION
T.# R.#	TOWNSHIP # RANGE #
G.& S.R.M.	GILA & SALT RIVER MERIDIAN
LS	LAND SURVEYOR
RLS	REGISTERED LAND SURVEYOR
(R)A	RECORD DATA
ACF	ALUMINUM CAP FLUSH
ACHH	ALUMINUM CAP IN HANDHOLE
BCF	BRASS CAP FLUSH
BCHH	BRASS CAP IN HANDHOLE
CALC	CALCULATED
CP	SURVEY CONTROL POINT
FIP	FOUND IRON PIPE
FRB	FOUND REBAR
S60N	SET 60d NAIL
SPK	SET PK/MAG NAIL
STHH	STONE IN HANDHOLE
COC	CITY OF CHANDLER
COP	CITY OF PHOENIX
COT	CITY OF TEMPE
ADOT	ARIZONA DEPARTMENT OF TRANSPORTATION
MC	MARICOPA COUNTY
MCED	MARICOPA COUNTY ENGINEERING DEPARTMENT
MCHD	MARICOPA COUNTY HIGHWAY DEPARTMENT
MCDOT	MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
SFNF	SEARCH FOR NOT FOUND
BM	BENCHMARK
TBM	TEMPORARY BENCHMARK

SYMBOL LEGEND (TYPICAL)

⊘	SET REBAR
⊙	FOUND ALUMINUM CAP FLUSH
▲	SET 60D NAIL
△	SET PK/MAG NAIL
▣	FOUND BRASS CAP IN HANDHOLE
▲	BENCHMARK
⊙	FOUND BRASS CAP FLUSH
△	FOUND TAGGED PK/MAG NAIL
●	SET TAGGED PK/MAG NAIL
✕	CALCULATED POINT
▲	SCRIBBED SQUARE
△	TEMPORARY BENCHMARK

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811
Call 811 or click Arizona811.com

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USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\06_CSCLS40P01.dwg DATE: 9/04/24 TIME: 03:17pm

HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

REGISTERED LAND SURVEYOR
CERTIFICATE NO. 28237
STONE E. WAHL
Date Signed 9/17/2019
ARIZONA, U.S.A.
Expires: 09/30/2021
Stone E. Wahl

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*				
*				
*				

DES RS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

SURVEY CONTROL

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CITY PROJECT NO. WS90400085
DATE: 08/2024
C–01 SHEET 6 OF 134
CAD FILE: DSCLS40P01.DWG

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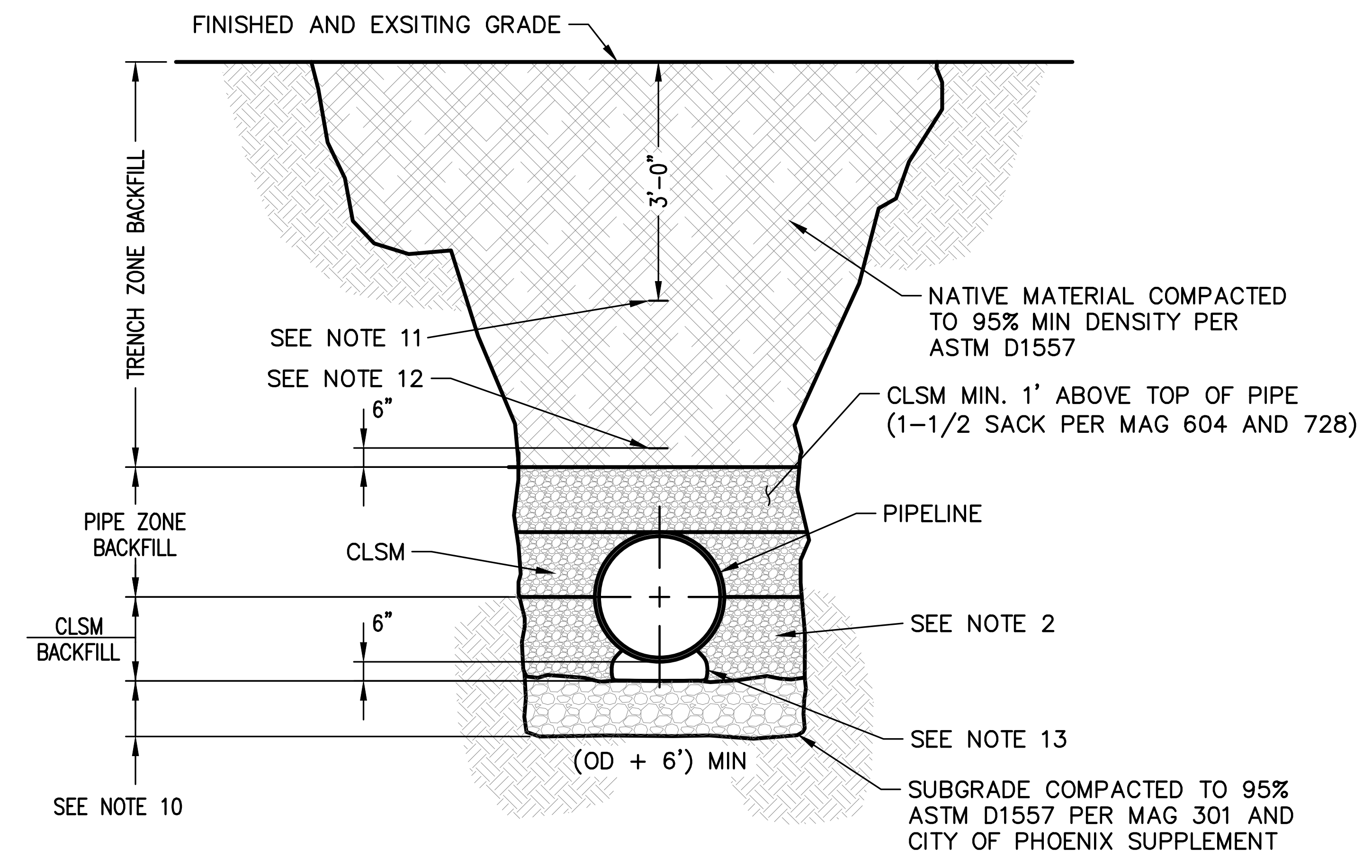

FINISHED AND EXSITING GRADE
3'-0"
TRENCH ZONE BACKFILL
NATIVE MATERIAL COMPACTED TO 95% MIN DENSITY PER ASTM D1557
SEE NOTE 11
SEE NOTE 12
6"
CLSM MIN. 1' ABOVE TOP OF PIPE (1-1/2 SACK PER MAG 604 AND 728)
PIPE ZONE BACKFILL
CLSM
PIPELINE
6"
CLSM BACKFILL
SEE NOTE 2
SEE NOTE 13
(OD + 6') MIN
SEE NOTE 10
SUBGRADE COMPACTED TO 95% ASTM D1557 PER MAG 301 AND CITY OF PHOENIX SUPPLEMENT

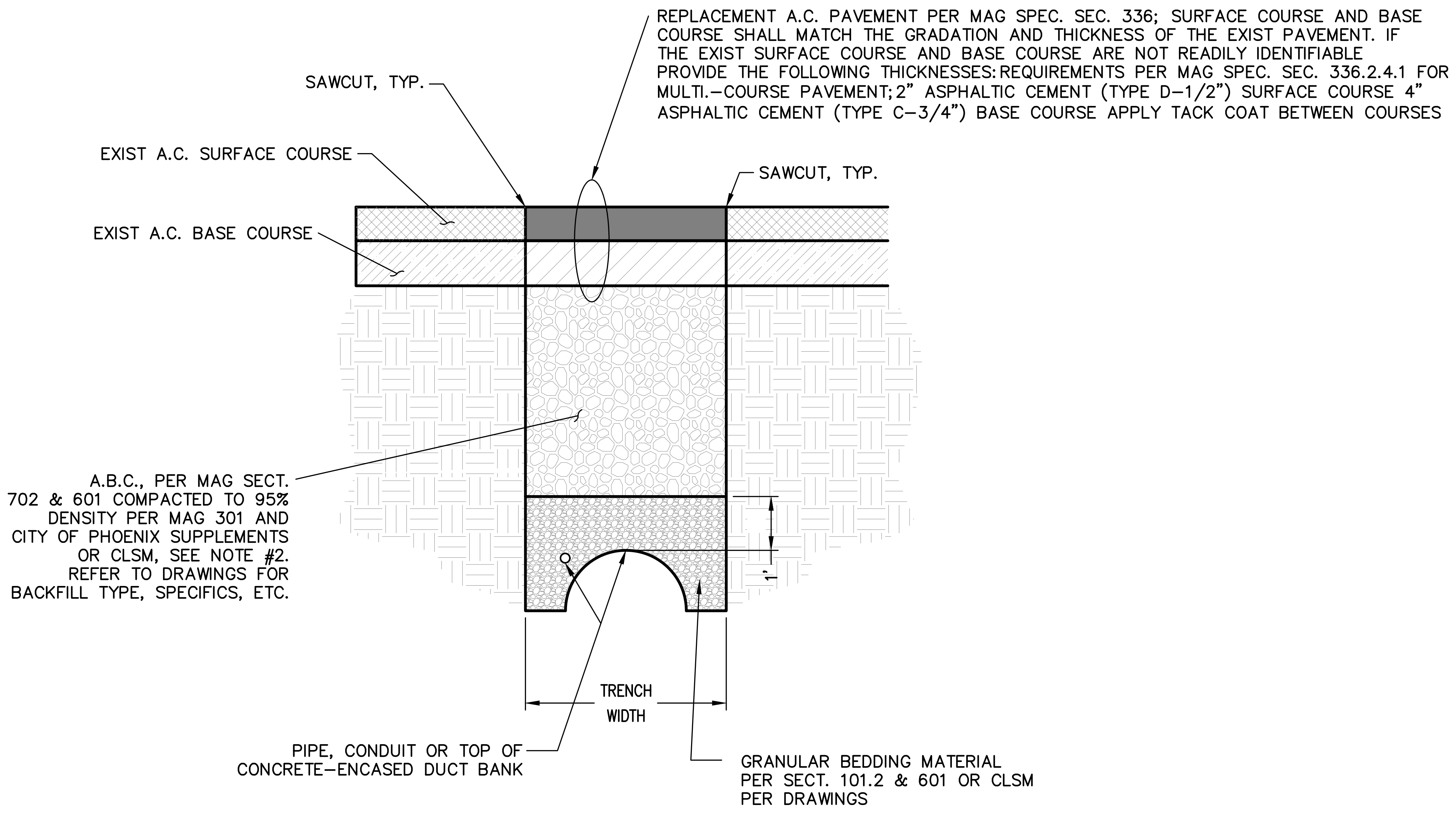
NOTES:

1. PIPE TRENCH BRACING AND SHORING SHALL CONFORM TO ARIZONA DEPARTMENT OF OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (AOSHA) AND OCCUPATIONAL SAFETY AND HEALTH (ADOSH) REQUIREMENTS.
2. CLSM ENCASEMENT SHALL BE FROM THE BOTTOM OF THE TRENCH TO TOP OF ALL PIPE. ENCASEMENT SHALL BE 1-1/2-SACK CLSM UNLESS REINFORCED CONCRETE IS SHOWN ON DRAWINGS. SEE SPEC SEC. 03 30 00.
3. ACCEPTABLE METHODS OF COMPACTION
   A. CLSM BACKFILL - VIBRATE CLSM
   B. PIPE ZONE - MECHANICAL COMPACTION
   C. TRENCH ZONE - MECHANICAL COMPACTION
4. TRENCH EXCAVATION SHALL COMPLY WITH THE CURRENT REGULATIONS AS DETERMINED BY ADOSH AND OSHA.
5. THE CONTRACTOR MAY EXPECT VARIOUS OSHA SOIL CLASSIFICATIONS TO BE ENCOUNTERED ALONG THE PROJECT AND MAY EXPECT THE TRENCH TO CONTAIN VERTICALLY VARYING OSHA SOIL CLASSIFICATIONS.
6. THE VARYING CONDITIONS MAY REQUIRE THE CONTRACTOR TO VARY TRENCH EXCAVATIONS AND STABILIZATION METHODS ALONG THE PROJECT.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINATION OF OSHA SOIL CLASSIFICATIONS AND DETERMINATION, SELECTION, AND IMPLEMENTATION OF EXCAVATIONS AND TRENCH STABILIZATION METHODS APPROPRIATE FOR THE TRENCH DEPTH AND OSHA SOIL CLASSIFICATIONS ENCOUNTERED, IN CONFORMANCE WITH ADOSH AND OSHA REQUIREMENTS.
8. IF CONTRACTOR'S SELECTED METHODS OF TRENCH EXCAVATION AND STABILIZATION REQUIRE QUANTITIES OF PIPE ZONE BACKFILL MATERIALS (CLSM OR CONCRETE ENCASEMENT) IN EXCESS OF THE MINIMUMS SHOWN, PROVIDE ADDITIONAL MATERIALS AT NO ADDITIONAL COST TO THE CITY.
9. IN UNPAVED AREAS, THE TRENCH ZONE BACKFILL SHALL EXTEND TO FINISH GRADE.
10. IN AREAS OF EXCESSIVE GROUND WATER OR POOR SUBGRADE MATERIAL AS DETERMINED BY CONSTRUCTION MANAGER, OVER EXCAVATE AND STABILIZE W/ CRUSHED ROCK BACKFILL (C08.0207 UNIFORM STANDARDS) TO A MAXIMUM DEPTH OF 18". DEPTHS OF GREATER THAN 18" SHALL BE AS DIRECTED BY THE OWNER.
11. PLASTIC MARKING TAPE - MINIMUM 6" WIDE, PER SPECIFICATION SECTION 33 14 10; 3.2A
12. METALLIC LOCATOR TAPE - MINIMUM 3" WIDE, PER SPECIFICATION SECTION 33 14 10; 3.2B
13. PIPE SUPPORT SAND BAG. CONTRACTOR TO COORDINATE ALLOWABLE SPACING WITH PIPE MANUFACTURER.

TYPICAL PIPE TRENCH WITHOUT PAVEMENT

DETAIL 1 C-02 C-02

NOT TO SCALE


REPLACEMENT A.C. PAVEMENT PER MAG SPEC. SEC. 336; SURFACE COURSE AND BASE COURSE SHALL MATCH THE GRADATION AND THICKNESS OF THE EXIST PAVEMENT. IF THE EXIST SURFACE COURSE AND BASE COURSE ARE NOT READILY IDENTIFIABLE PROVIDE THE FOLLOWING THICKNESSES: REQUIREMENTS PER MAG SPEC. SEC. 336.2.4.1 FOR MULTI.-COURSE PAVEMENT; 2" ASPHALTIC CEMENT (TYPE D-1/2") SURFACE COURSE 4" ASPHALTIC CEMENT (TYPE C-3/4") BASE COURSE APPLY TACK COAT BETWEEN COURSES
SAWCUT, TYP.
EXIST A.C. SURFACE COURSE
SAWCUT, TYP.
EXIST A.C. BASE COURSE
A.B.C., PER MAG SECT. 702 & 601 COMPACTED TO 95% DENSITY PER MAG 301 AND CITY OF PHOENIX SUPPLEMENTS OR CLSM, SEE NOTE #2. REFER TO DRAWINGS FOR BACKFILL TYPE, SPECIFICS, ETC.
1'
TRENCH WIDTH
PIPE, CONDUIT OR TOP OF CONCRETE-ENCASED DUCT BANK
GRANULAR BEDDING MATERIAL PER SECT. 101.2 & 601 OR CLSM PER DRAWINGS

NOTES:

1. BEDDING PER SECTION 601 FOR ALL TRENCH TYPES.
2. CONTROLLED LOW STRENGTH MATERIAL (CLSM) SHALL BE 1-1/2 SACK, CEMENT-ENRICHED ABC SLURRY (MAX COMPRESSIVE STRENGTH = 150 PSI @28 DAYS). (PER SPEC SEC. 03 30 00).
3. TRENCH WIDTH PER SECTION 336 & 601.
4. EXPOSED WATER SERVICE PIPE THAT CROSS TRENCHES TO BE BACKFILLED WITH CLSM SHALL BE WRAPPED WITH MIN. 3/4" THICK CLOSED CELL FOAM INSULATION PRIOR TO PLACEMENT OF CLSM.
5. FOR TRENCHES UP TO 24" WIDE, CLSM MAY BE USED UP TO THE REPLACEMENT PAVEMENT SUBGRADE LEVEL. FOR TRENCHES BETWEEN 24" AND 6' WIDE, CLSM SHALL ONLY BE PLACED IN THE TOP 24" OF TRENCH.
6. MARKING TAPE NOT SHOWN FOR CLARITY.

TRENCH BACKFILL & SURFACE REPLACEMENT CITY OF PHOENIX DETAIL NO. P1200, TYPE 'B'

DETAIL 2 C-02 C-02

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USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\07_CSCLS40D01.dwg DATE: 9/04/24 TIME: 03:17pm

HDR

Registered Professional Engineer
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(Civil)
Date Signed 08-30-24
ARIZONA, U.S.A.
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DES RS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
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GENERAL DETAILS 1

CITY PROJECT NO. WS90400085

DATE: 08/2024

C-02 SHEET 7 OF 134

CAD FILE: CSCLS40D01.DWG

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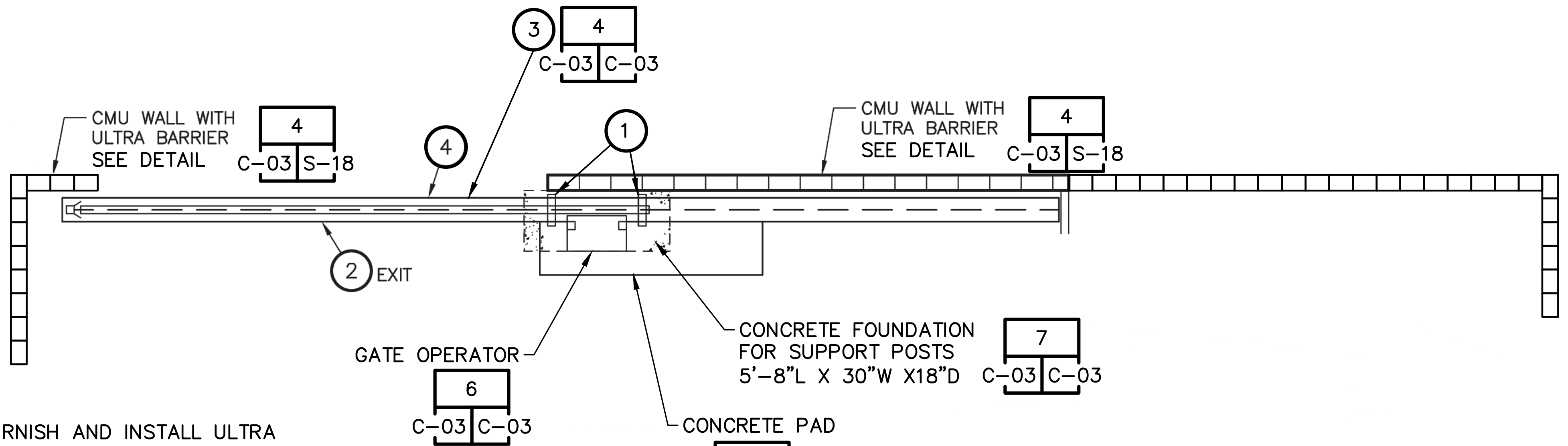
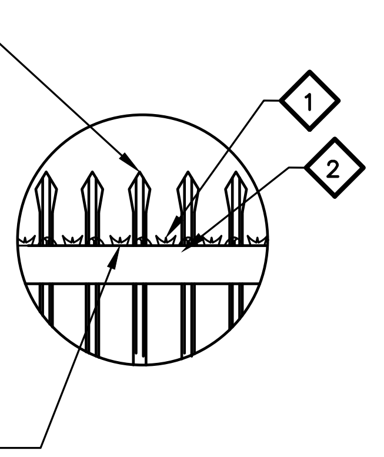

3
4
C–03 C–03
CMU WALL WITH ULTRA BARRIER SEE DETAIL
4
C–03 S–18
4
1
CMU WALL WITH ULTRA BARRIER SEE DETAIL
4
C–03 S–18
2 EXIT
GATE OPERATOR
6
C–03 C–03
CONCRETE FOUNDATION FOR SUPPORT POSTS 5'–8"L X 30"W X18"D
7
C–03 C–03
CONCRETE PAD
9
C–03 C–04

GATE OPERATOR MOUNTAIN DETAIL (PLAN VIEW)

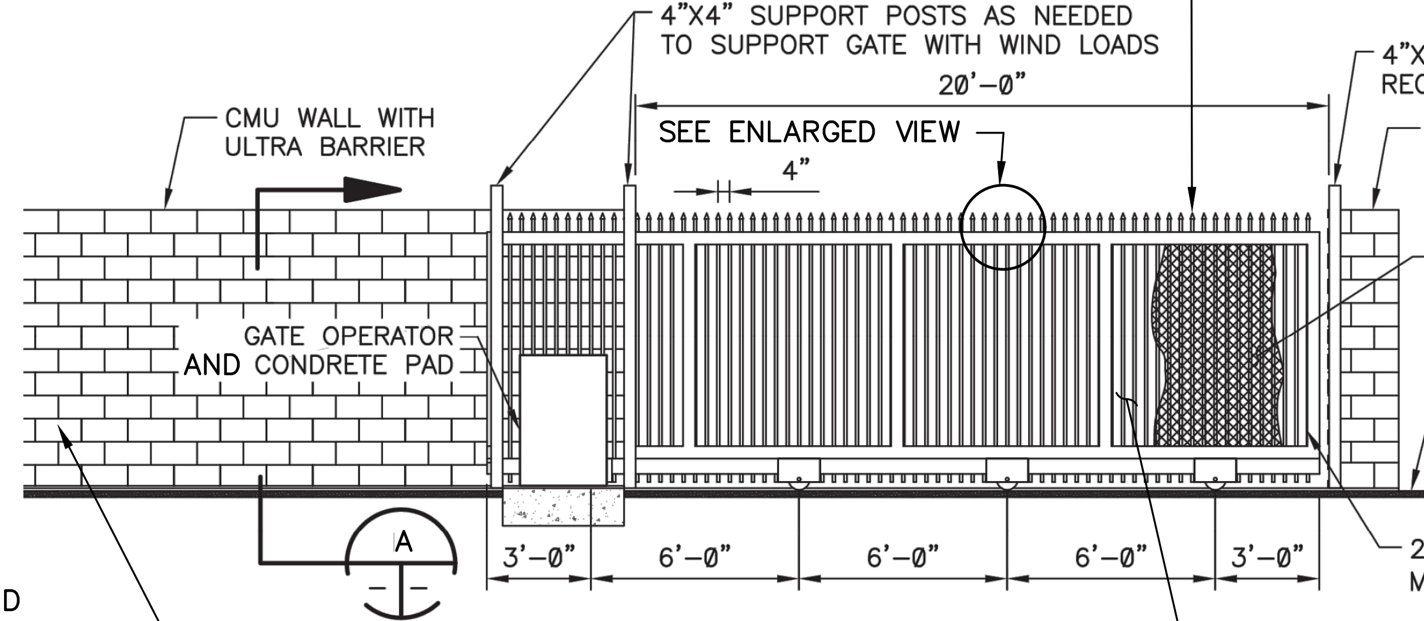
DETAIL 3 C–03 C–03

NOT TO SCALE

1. CONTRACTOR SHALL FURNISH AND INSTALL ULTRA BARRIER STRIPS ON TOP CROSS MEMBER OF ROLLING GATES. STRIPS SHELL BE INSTALLED WEAVE IN AND OUT OF AMERISTAR IMPASSE PALES AND PER MANUFACTURER'S RECOMMENDATION. ULTRA BARRIER IS MANUFACTURED BY UNISEC INC. INFORMATION CAN BE FOUND AT THE FOLLOWING WEBSITE WWW.ULTRABARRIER.COM OR PER DET. 18, SEE SHEET C–04
2. SECURE FENCE CROWN TO GATE FRAME USING A #8 BY 6, INCH SELF–TAPPING SCREW AND WASHER, PER DET. 8, THIS SHEET.


1"X1" (11 GUAGE) TUBE STEEL PICKETS WITH DIE PRESSED SPEAR POINT AR 14" ON CENTER (TYP)
1
2
ULTRA BARRIER OR EQUAL. INSTALL PER MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.

ENLARGED VIEW

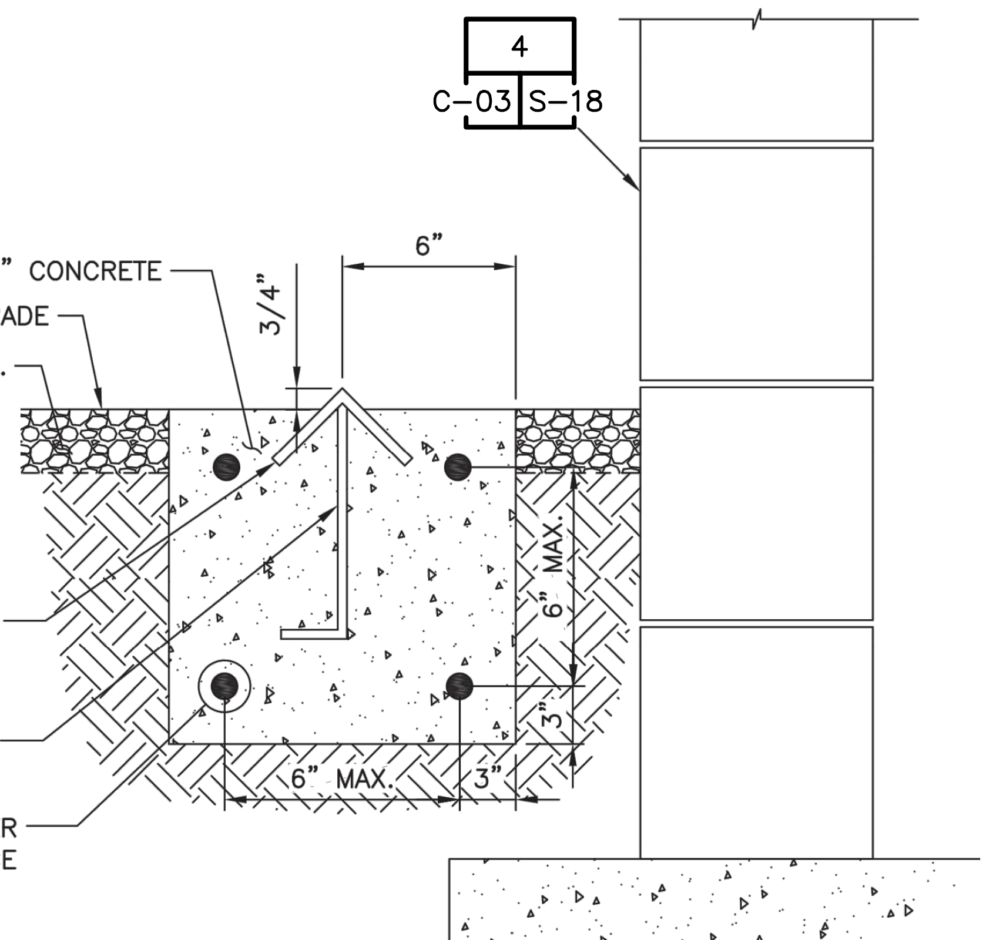

4"X4" SUPPORT POSTS AS NEEDED TO SUPPORT GATE WITH WIND LOADS
VERTICAL/STRAIGHT AMERISTAR IMPASSE TRIDENT PALES (COLOR TO MATCH WALL) BOLT TO GATE FRAME
20'–0"
SEE ENLARGED VIEW
4"
CMU WALL WITH ULTRA BARRIER
4"X4" GATE RECEIVER POST
CMU WALL WITH ULTRA BARRIER SEE DETAIL
4
C–03 S–18
OUTSIDE SURFACE OF GATE, PROVIDE 1/4" EXPANDED SAFETY METAL MESH TO PREVENT CLIMBING (TYP) (COLOR TO MATCH GATE)
GATE OPERATOR AND CONDRETE PAD
FINISH GRADE
A
3'–0"
6'–0"
6'–0"
6'–0"
3'–0"
2"X6"X1/4" TUBE FRAME WITH CROSS MEMBERS AT 6'–0" ON CENTER (TYP)
CMU WALL
WALL COLOR SHALL BE PAINTED DESERT TAN (2153–50) AS MANUFACTURED BY BENJAMIN MOORE.
ROLLING GATE COLOR SHALL BE PAINTED BLACK (2132–10) AS MANUFACTURED BY BENJAMIN MOORE.

NOTE:
1. FURNISH AND INSTALL ELECTRICAL AND OPERATOR COMPONENTS WITHIN THE FACILITY LOOKING SOUTH FROM THE GATES.

ROLLING GATE DETAIL (LOOKING SOUTH)

DETAIL 6 C–03 C–03

NOT TO SCALE


4
C–03 S–18
12"X12" CONCRETE
FINISHED GRADE
D.G.
6"
3/4"
6" MAX.
3"
3" X 3" X 3/16" ANGLE CENTERED IN CONCRETE WITH 3/4" EXPOSED
#4 HOOK ANCHORS @ 18" O.C. WELDED TO ANGLE
#4 CONTINUOUS EACH CORNER PROVIDE 3" CLEARANCE
6" MAX.
3"

NOTE:
CONCRETE DIMENSIONS APPLY TO V–TRACK NORTH OF CONCRETE PAD SUPPORTING GATE OPERATOR AND BATTERY BACKUP.

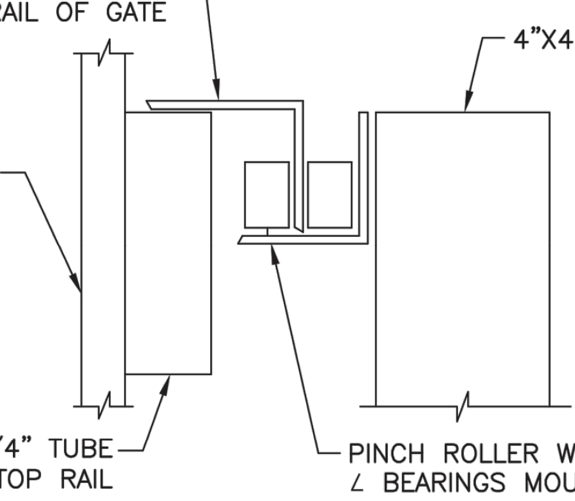
V–TRACK DETAIL

DETAIL 4 C–03 C–03

NOT TO SCALE

NOTES:

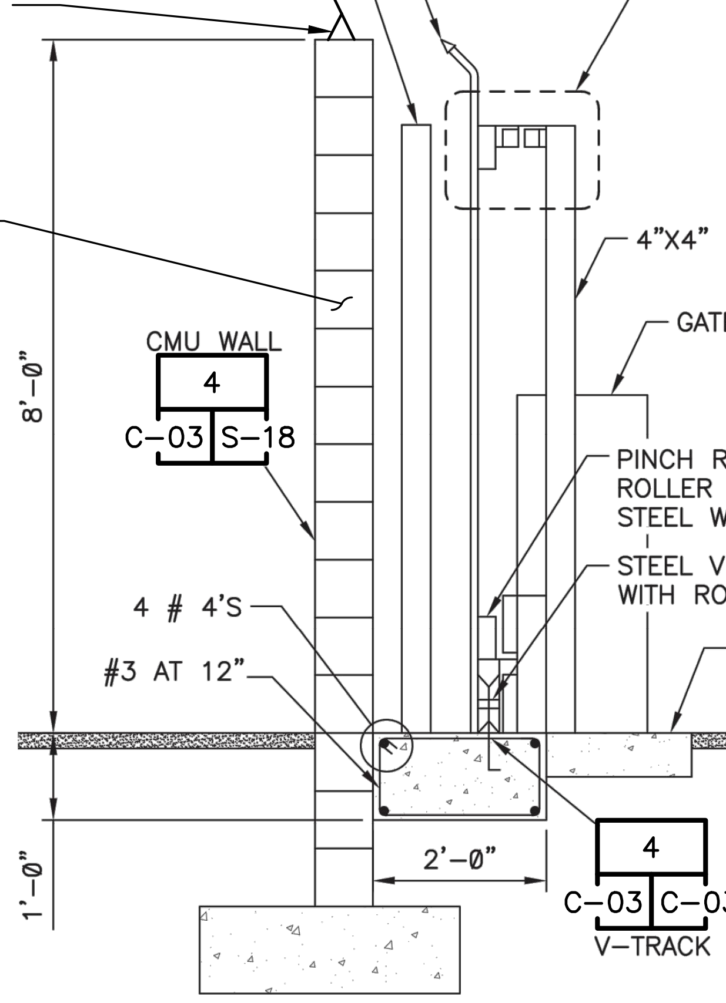
1. ROLLING GATE SUPPORT POST (SEE SECTION A THIS SHEET)
2. ROLLING GATE
3. V–TRACK
4. GATE SIGNAGE (SEE SHEET C–05)


3"X3"X1/4" ∠ CONTINUOUS WELD TO TOP RAIL OF GATE
4"X4" SUPPORT POST
1"X1" (11 GAUGE) TUBE STEEL PICKETS
2"X6"X1/4" TUBE STEEL TOP RAIL
PINCH ROLLER WHEELS WITH ROLLER ∠ BEARINGS MOUNTED ON STEEL WELDED TO SUPPORT POST

NOTE:
1. 1"X1" PICKETS AND 2"X6" AND 4"X4" GATE MEMBERS SHALL HAVE PRESSED STEEL CAPS AT EACH END.

DETAIL 5 C–03 C–03

NOT TO SCALE

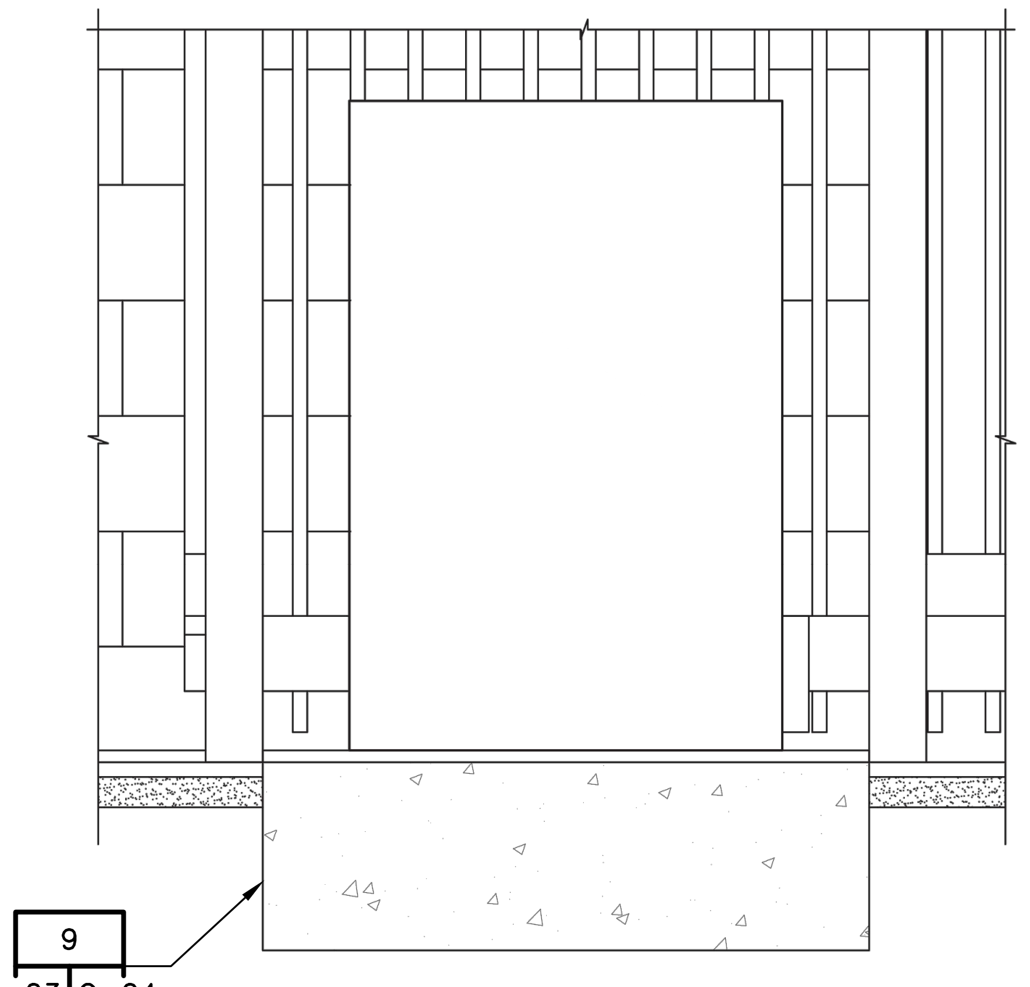

1"X1" (11 GAUGE) TUBE STEEL PICKETS AT 4" ON CENTER
4"X4" STEEL POST USED FOR BARRIER
ULTRA BARRIER OR EQUAL.
11
C–03 C–04
5
C–03 C–03
WALL COLOR SHALL BE PAINTED DESERT TAN (2153–50) AS MANUFACTURED BY BENJAMIN MOORE.
4"X4" SUPPORT POST
GATE OPERATOR
CMU WALL
4
C–03 S–18
8'–0"
PINCH ROLLER WHEELS W/ ROLLER BEARINGS, MOUNTED ON STEEL WELDED TO SUPPORT
8
C–03 C–04
STEEL V GROOVE WHEEL WITH ROLLER BEARINGS
4 # 4'S
#3 AT 12"
CONCRETE PAD
2'–0"
1'–0"
4
C–03 C–03
V–TRACK

NOTE:
FOR MAXIMUM SPACING BETWEEN GATE AND WALL (2-1/2")

ROLLING GATE SECTION

SECTION A

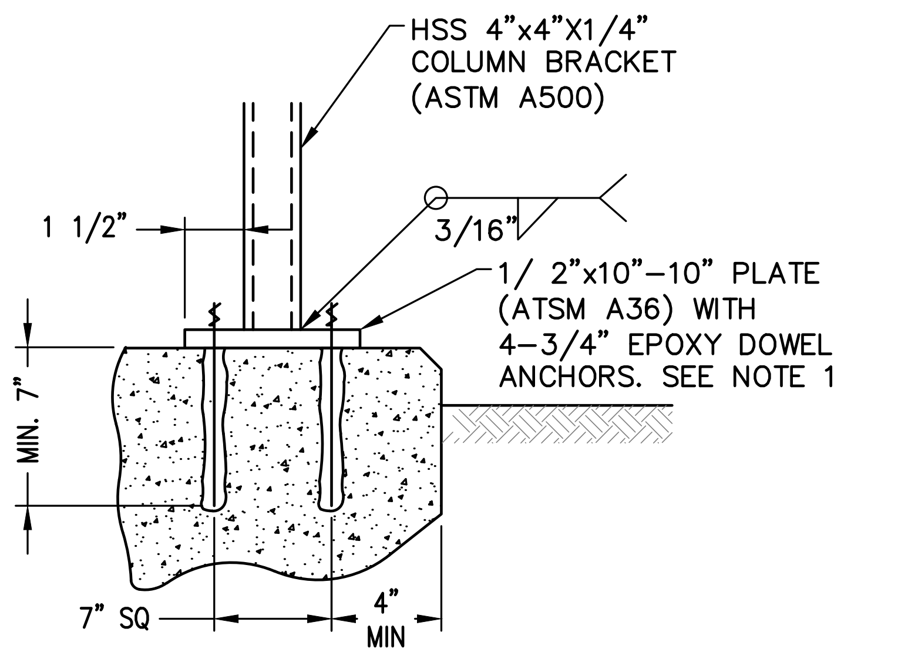
NOT TO SCALE



GATE OPERATOR DETAIL

DETAIL 6 C–03 C–03

NOT TO SCALE


HSS 4"x4"X1/4" COLUMN BRACKET (ASTM A500)
1 1/2"
3/16"
1/ 2"x10"–10" PLATE (ATSM A36) WITH 4–3/4" EPOXY DOWEL ANCHORS. SEE NOTE 1
MIN. 7"
7" SQ
4" MIN

SUPPORT POST PLATE

DETAIL 7 C–03 C–03

NOT TO SCALE

NOTE:
1. INSTALL USING HILTI HIT–RE 500–SD EPOXY ANCHORING SYSTEM (OR APPROVED EQUAL) AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. DOWEL SHALL BE ASTM F593 CW2 (316) STAINLESS STEEL ALL–THREAD.ISOLATE DISSIMILAR METALS W/ SLEEVES AND WASHERS.

FACILITY DRAWINGS
This drawing was supplied by a Consultant Engineer from a past construction project. The original construction drawing was modified based on information provided by the Contractor to provide the Record Drawing. The City does not warranty this drawing to be a complete and accurate portrayal of facilities as they exist in the field.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\08_CSCLS40D02.dwg DATE: 9/04/24 TIME: 03:17pm

FDR

Registered Professional Engineer
CERTIFICATE NO. 40280
JASON R. FORT
(Civil)

Jason R. Fort

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
A	RS	10/2023	JF	30% SUBMITTAL
B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES RS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

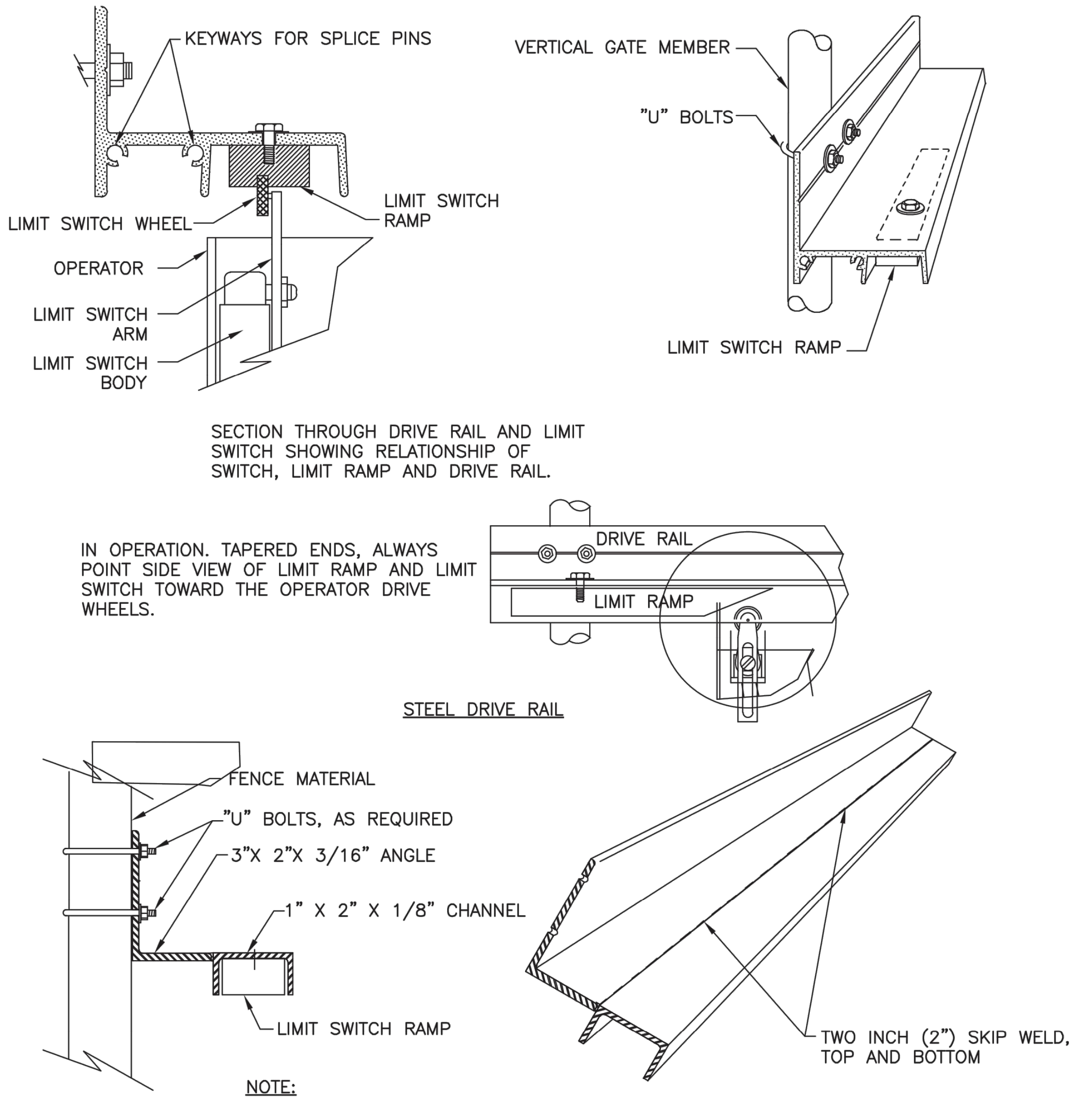
GENERAL DETAILS 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
C–03 SHEET 8 OF 134
CAD FILE: CSCLS40D02.DWG

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

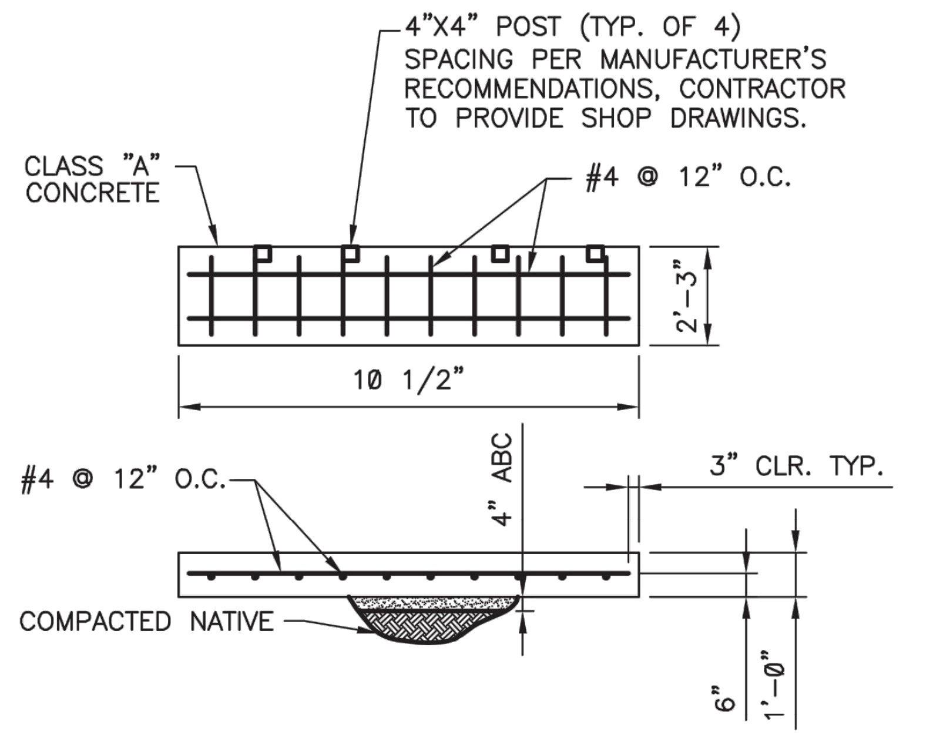
"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.


KEYWAYS FOR SPLICE PINS
LIMIT SWITCH WHEEL
OPERATOR
LIMIT SWITCH ARM
LIMIT SWITCH BODY
LIMIT SWITCH RAMP
VERTICAL GATE MEMBER
"U" BOLTS
LIMIT SWITCH RAMP
SECTION THROUGH DRIVE RAIL AND LIMIT SWITCH SHOWING RELATIONSHIP OF SWITCH, LIMIT RAMP AND DRIVE RAIL.
IN OPERATION. TAPERED ENDS, ALWAYS POINT SIDE VIEW OF LIMIT RAMP AND LIMIT SWITCH TOWARD THE OPERATOR DRIVE WHEELS.
DRIVE RAIL
LIMIT RAMP
STEEL DRIVE RAIL
FENCE MATERIAL
"U" BOLTS, AS REQUIRED
3"X 2"X 3/16" ANGLE
1" X 2" X 1/8" CHANNEL
LIMIT SWITCH RAMP
TWO INCH (2") SKIP WELD, TOP AND BOTTOM

NOTE:
SEE SPECIFICATIONS SECTION 02825 FOR ADDITIONAL REQUIREMENTS.

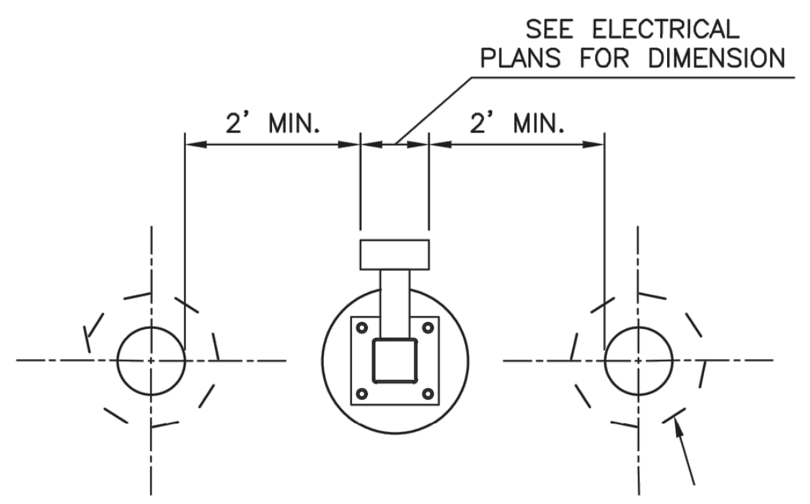
DRIVE RAIL FOR SIDE GATE OPERATOR

DETAIL 8
C-03 | C-04
NOT TO SCALE


4"X4" POST (TYP. OF 4) SPACING PER MANUFACTURER'S RECOMMENDATIONS, CONTRACTOR TO PROVIDE SHOP DRAWINGS.
CLASS "A" CONCRETE
#4 @ 12" O.C.
2'-3"
10 1/2"
#4 @ 12" O.C.
4" ABC
3" CLR. TYP.
COMPACTED NATIVE
6"
1'-0"

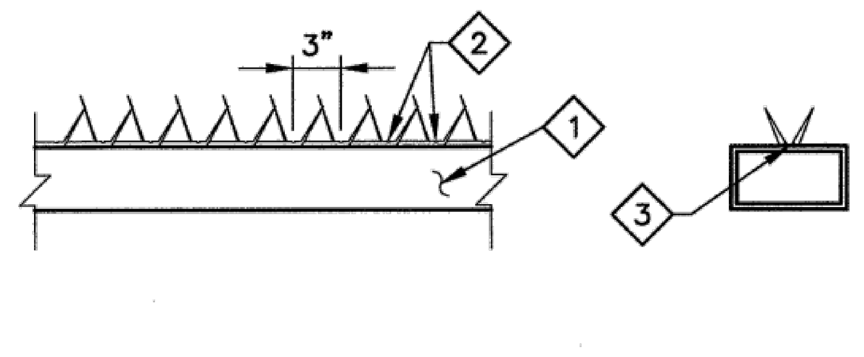
GATE OPERATOR PAD

DETAIL 9
C-03 | C-04
SCALE = 1/4"=1'-0"


SEE ELECTRICAL PLANS FOR DIMENSION
2' MIN.
2' MIN.

BOLLARD LOCATION AND CARD READER

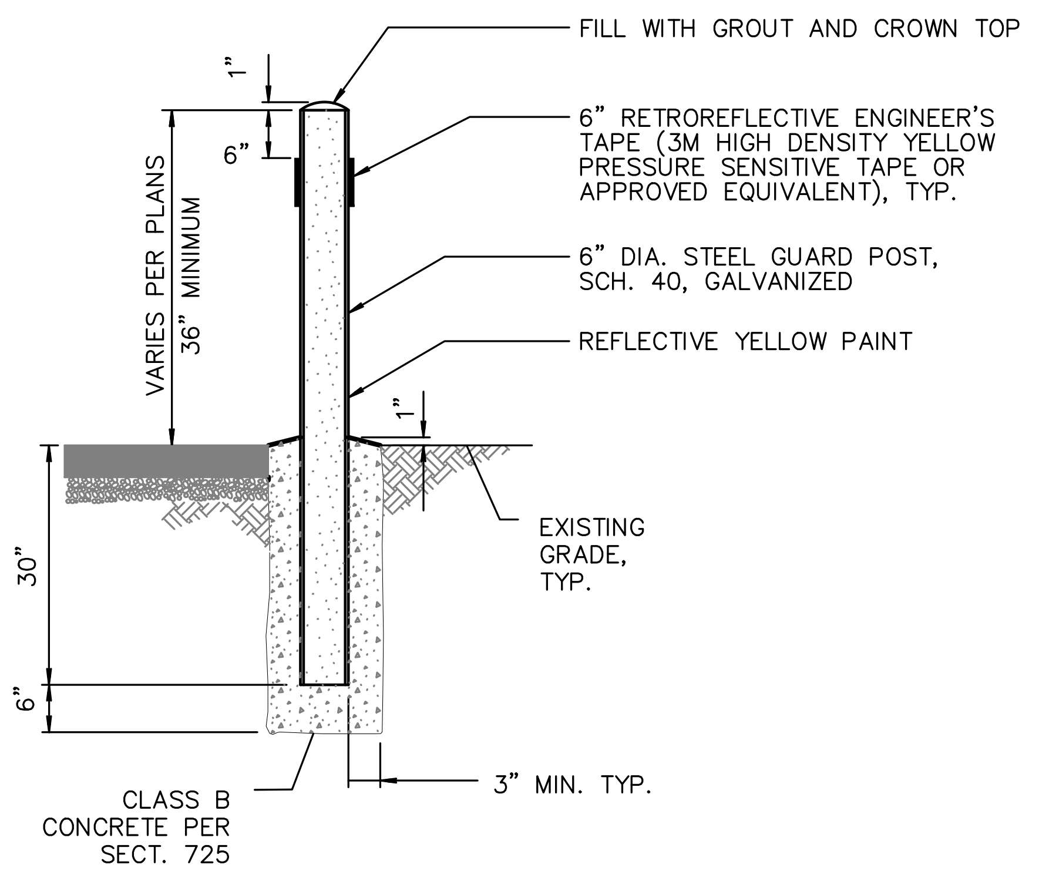
DETAIL 10
C-03 | C-04
SCALE = 1/4"=1'-0"



NOTES
1. GATE FRAME.
2. MOUNTING SLOTS EVERY 3".
3. OVERLAP ULTRA-BARRIER STRIPS AND SECURELY FASTEN, APPROXIMATELY EVERY 12" USING A ZINC CHROMATE SHEET METAL SCREW AND WASHER. (PAN HEAD #8 BY 1 INCH)

ULTRA-BARRIER MOUNTING DETAILS FOR GATE FRAME

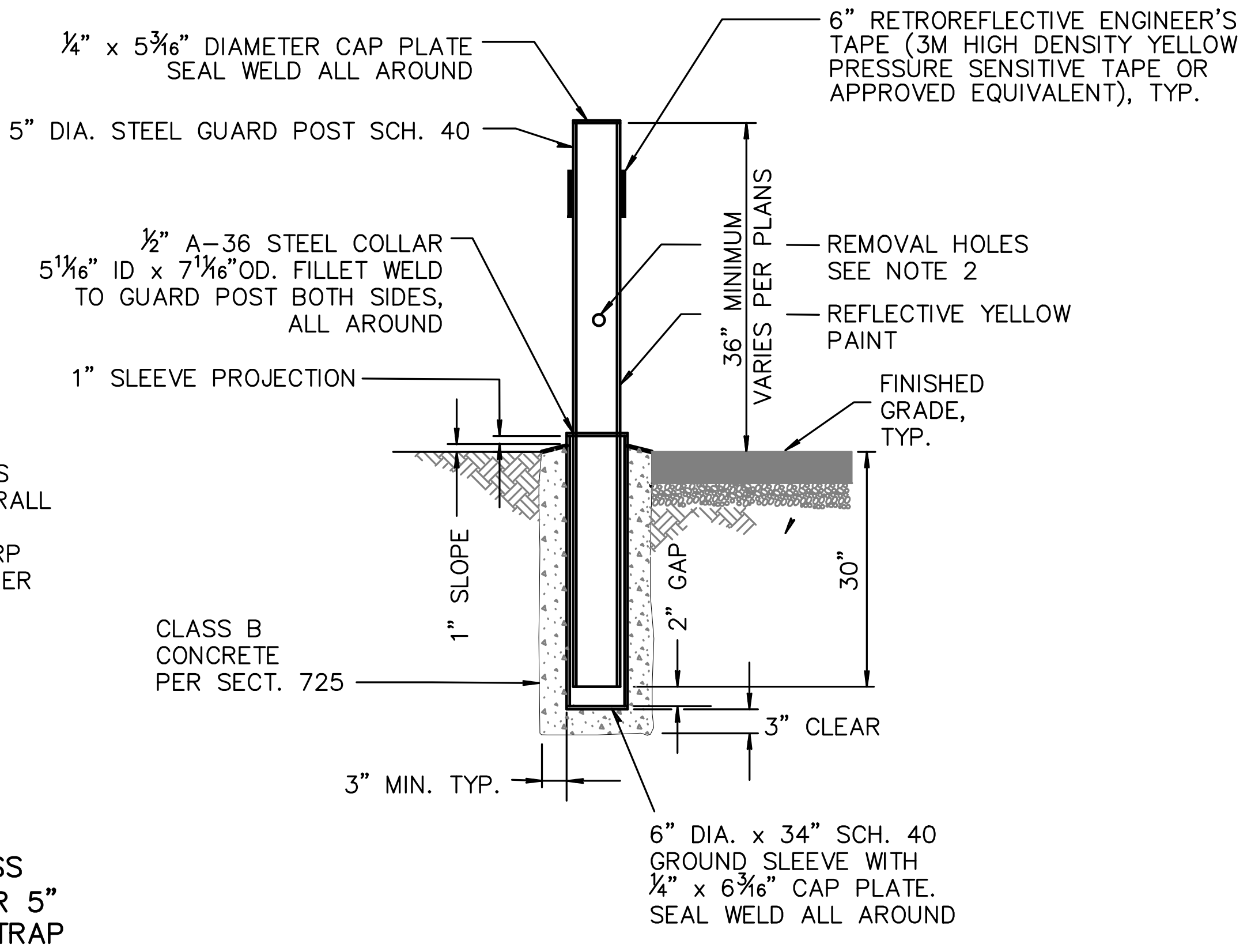
DETAIL 11
C-03 | C-04
NOT TO SCALE


FILL WITH GROUT AND CROWN TOP
6" RETROREFLECTIVE ENGINEER'S TAPE (3M HIGH DENSITY YELLOW PRESSURE SENSITIVE TAPE OR APPROVED EQUIVALENT), TYP.
6" DIA. STEEL GUARD POST, SCH. 40, GALVANIZED
REFLECTIVE YELLOW PAINT
EXISTING GRADE, TYP.
1"
6"
VARIES PER PLANS
36" MINIMUM
1"
30"
6"
CLASS B CONCRETE PER SECT. 725
3" MIN. TYP.

PERMANENT BOLLARD

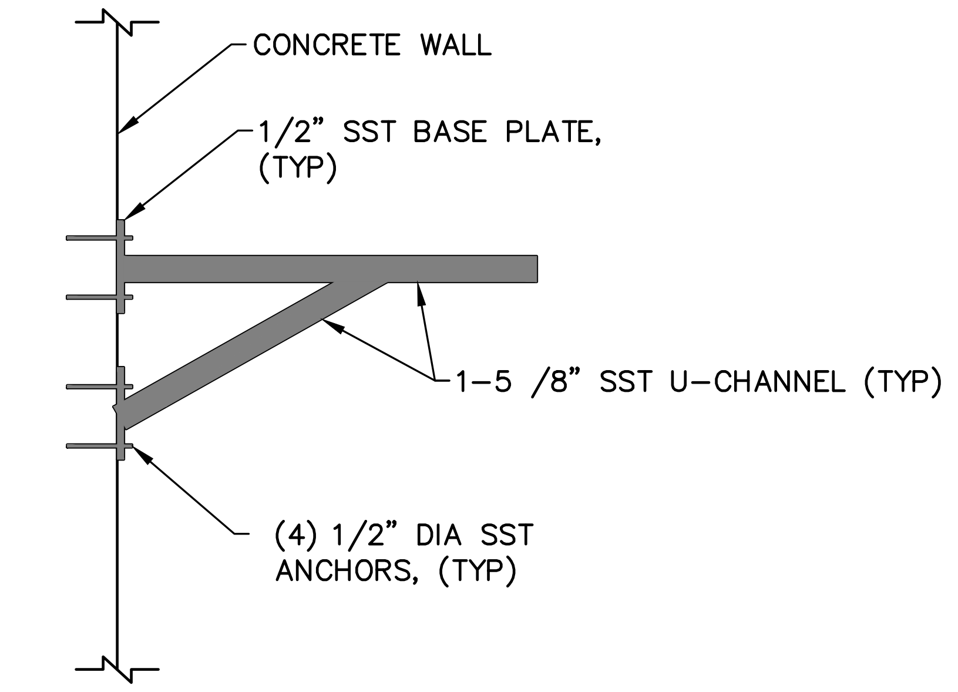
DETAIL 14
C-03 | C-04
NOT TO SCALE

NOTES
1. BOLLARDS SHALL HAVE A HEIGHT OF 3 FEET POSTS SHALL BE PLACED A MINIMUM OF 4" FROM THE WALL.
2. REMOVABLE POSTS SHALL HAVE 1" DIA. HOLES DRILLED THROUGH AT A DISTANCE ⅓ THE OVERALL POST LENGTH FROM TOP.
3. REMOVABLE POST – GRIND SMOOTH ALL SHARP EDGES PRIOR TO GALVANIZATION. GALVANIZE PER ASTM A54 AFTER FABRICATION.


¼" x 5³⁄₁₆" DIAMETER CAP PLATE SEAL WELD ALL AROUND
5" DIA. STEEL GUARD POST SCH. 40
½" A-36 STEEL COLLAR 5¹¹⁄₁₆" ID x 7¹¹⁄₁₆"OD. FILLET WELD TO GUARD POST BOTH SIDES, ALL AROUND
1" SLEEVE PROJECTION
CLASS B CONCRETE PER SECT. 725
3" MIN. TYP.
6" RETROREFLECTIVE ENGINEER'S TAPE (3M HIGH DENSITY YELLOW PRESSURE SENSITIVE TAPE OR APPROVED EQUIVALENT), TYP.
REMOVAL HOLES SEE NOTE 2
REFLECTIVE YELLOW PAINT
FINISHED GRADE, TYP.
36" MINIMUM
VARIES PER PLANS
1" SLOPE
2" GAP
30"
3" CLEAR
6" DIA. x 34" SCH. 40 GROUND SLEEVE WITH ¼" x 6³⁄₁₆" CAP PLATE. SEAL WELD ALL AROUND

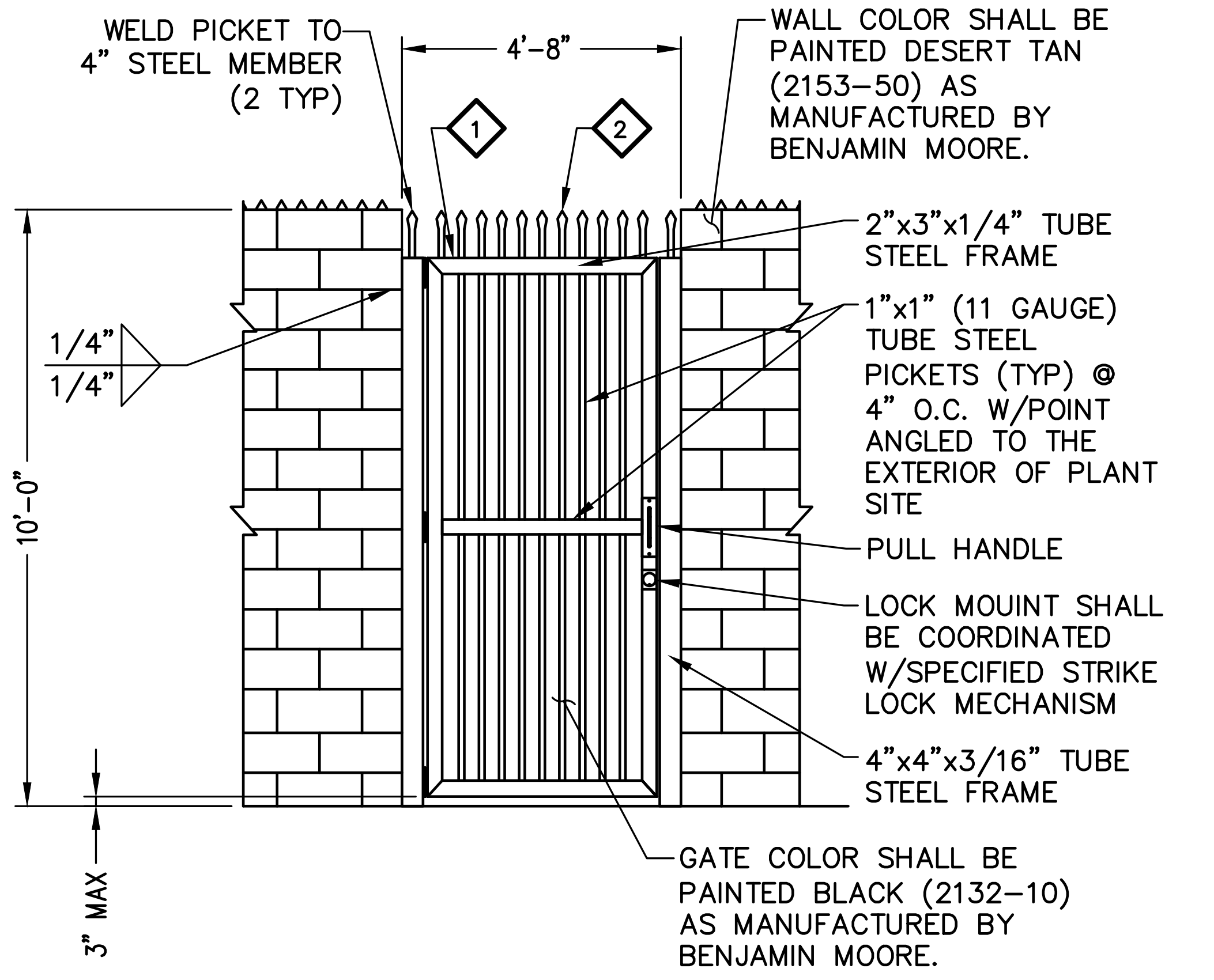
REMOVABLE BOLLARD

DETAIL 15
C-03 | C-04
NOT TO SCALE


CONCRETE WALL
1/2" SST BASE PLATE, (TYP)
1-5 /8" SST U-CHANNEL (TYP)
(4) 1/2" DIA SST ANCHORS, (TYP)

WET-WELL LEVEL SENSOR SUPPORT DETAIL

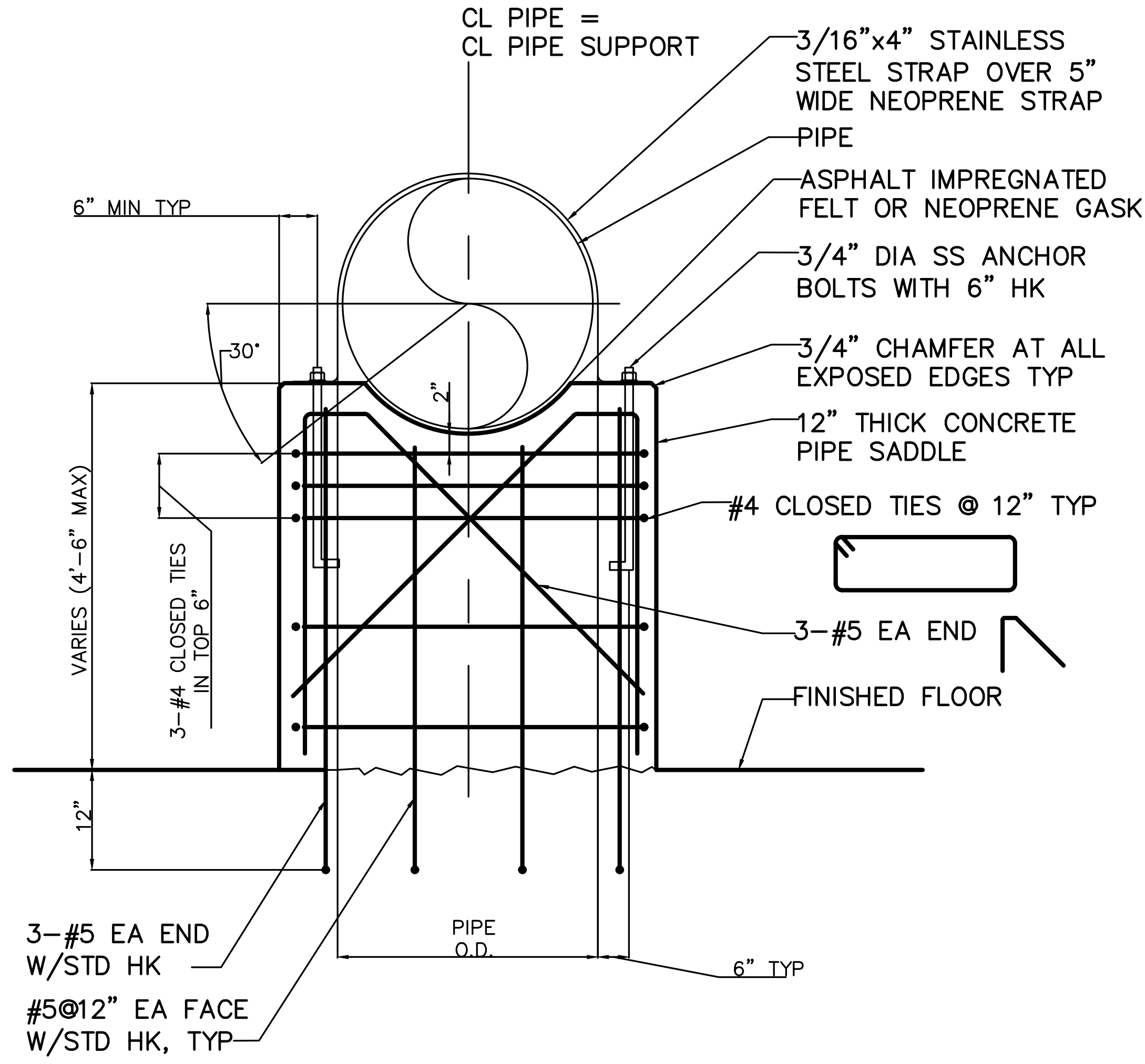
DETAIL 12
C-04 | C-04
NOT TO SCALE


WELD PICKET TO 4" STEEL MEMBER (2 TYP)
4'-8"
1
2
WALL COLOR SHALL BE PAINTED DESERT TAN (2153-50) AS MANUFACTURED BY BENJAMIN MOORE.
1/4"
1/4"
10'-0"
3" MAX
2"x3"x1/4" TUBE STEEL FRAME
1"x1" (11 GAUGE) TUBE STEEL PICKETS (TYP) @ 4" O.C. W/POINT ANGLED TO THE EXTERIOR OF PLANT SITE
PULL HANDLE
LOCK MOUINT SHALL BE COORDINATED W/SPECIFIED STRIKE LOCK MECHANISM
4"x4"x3/16" TUBE STEEL FRAME
GATE COLOR SHALL BE PAINTED BLACK (2132-10) AS MANUFACTURED BY BENJAMIN MOORE.

NOTES
1. 1/4" EXPANDED METAL SAFETY MESH (COLOR TO MATCH GATE FRAME AND PALES, 16 GAUGE MESH SHALL COVER ENTIRE GATE LENGTH
2. AMERISTAR IMPASSE TRIDENT PALES AT 4 INCHES

MAN GATE DETAIL

DETAIL 13
C-04 | C-04
NOT TO SCALE


CL PIPE = CL PIPE SUPPORT
3/16"x4" STAINLESS STEEL STRAP OVER 5" WIDE NEOPRENE STRAP
PIPE
ASPHALT IMPREGNATED FELT OR NEOPRENE GASKET
3/4" DIA SS ANCHOR BOLTS WITH 6" HK
3/4" CHAMFER AT ALL EXPOSED EDGES TYP
12" THICK CONCRETE PIPE SADDLE
#4 CLOSED TIES @ 12" TYP
3-#5 EA END
FINISHED FLOOR
6" MIN TYP
30°
2"
VARIES (4'-6" MAX)
3-#4 CLOSED TIES IN TOP 6"
12"
3-#5 EA END W/STD HK
#5@12" EA FACE W/STD HK, TYP
PIPE O.D.
6" TYP

CONCRETE PEDESTAL SUPPORT

DETAIL 16
C-04 | C-04
NOT TO SCALE

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
A	RS	10/2023	JF	30% SUBMITTAL
B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES RS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

GENERAL DETAILS 3

CITY PROJECT NO. WS90400085
DATE: 08/2024
C-04 SHEET 9 OF 134
CAD FILE: CSCLS40D03.DWG

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\09_CSCLS40D03.dwg DATE: 9/04/24 TIME: 03:17pm

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
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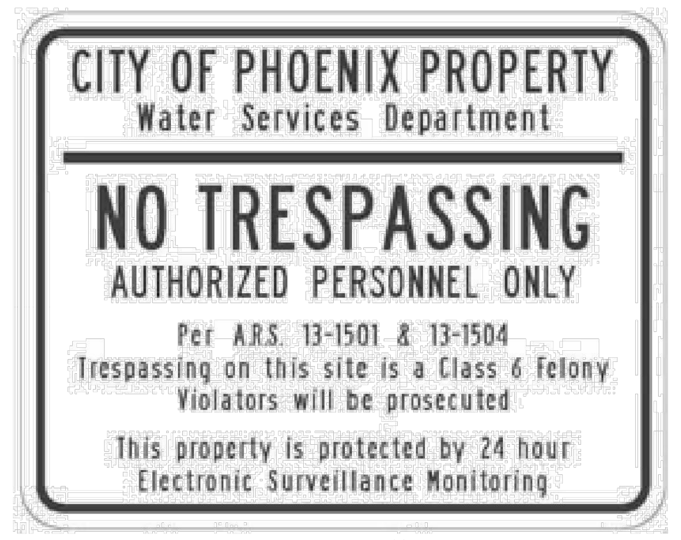
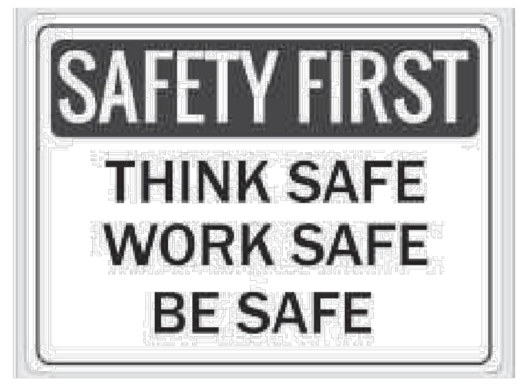

CITY OF PHOENIX PROPERTY
Water Services Department
NO TRESPASSING
AUTHORIZED PERSONNEL ONLY
Per A.R.S. 13-1501 & 13-1504
Trespassing on this site is a Class 6 Felony
Violators will be prosecuted
This property is protected by 24 hour
Electronic Surveillance Monitoring

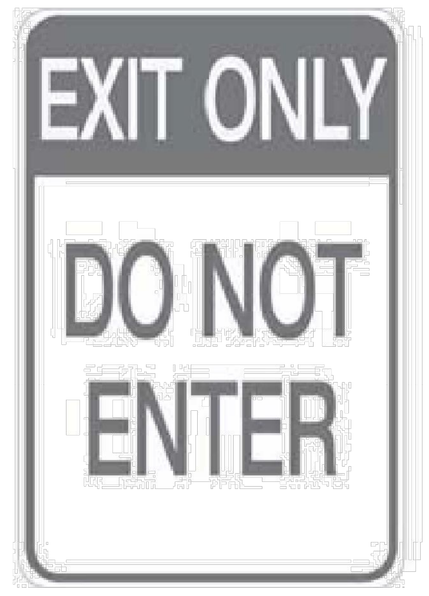
"NO TRESPASSING" SIGN LAYOUT

DETAIL 19 C–03 | C–04
NOT TO SCALE


SAFETY FIRST
THINK SAFE
WORK SAFE
BE SAFE

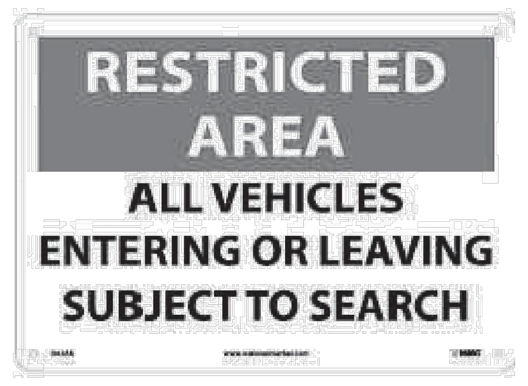
SAFETY FIRST SIGN

DETAIL 20 C–03 | C–04
NOT TO SCALE


EXIT ONLY
DO NOT
ENTER

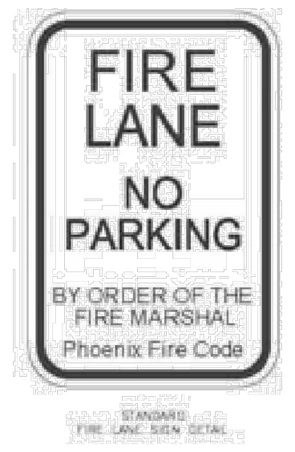
EXIT ONLY SIGN

DETAIL 21 C–03 | C–04
NOT TO SCALE


RESTRICTED
AREA
ALL VEHICLES
ENTERING OR LEAVING
SUBJECT TO SEARCH

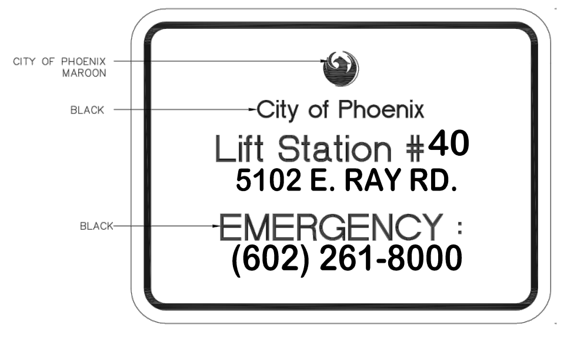
EXIT ONLY SIGN

DETAIL 22 C–03 | C–04
NOT TO SCALE

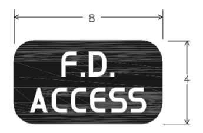

FIRE
LANE
NO
PARKING
BY ORDER OF THE
FIRE MARSHAL
Phoenix Fire Code
STANDARD
FIRE LANE SIGN DETAIL

FIRE LANE SIGN

DETAIL 23 C–03 | C–04
NOT TO SCALE


CITY OF PHOENIX
MAROON
BLACK
BLACK
City of Phoenix
Lift Station #40
5102 E. RAY RD.
EMERGENCY :
(602) 261-8000

FACILITY IDENTIFICATION SIGN


8
4
F.D.
ACCESS

NOTES:

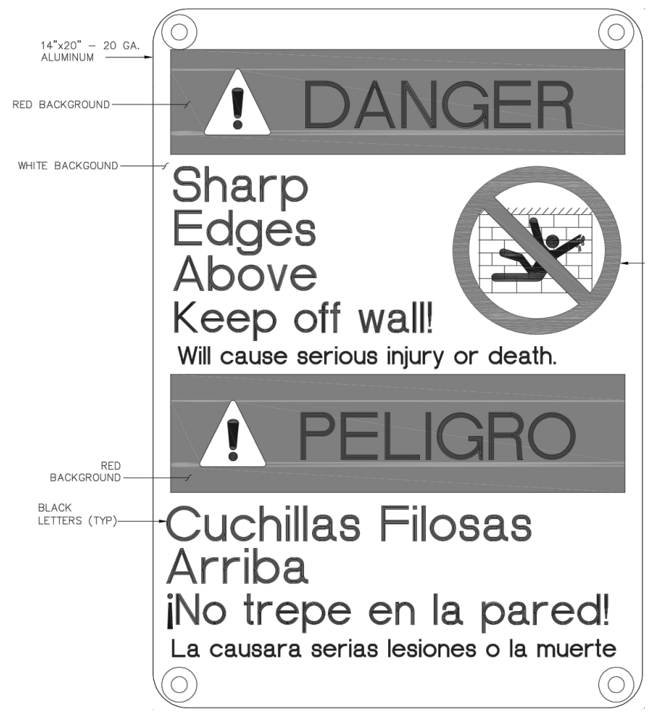
1. THE SIGN FACE SHALL BE 8"x 4" AND FABRICATED FROM .080 THICKNESS. ALUMINUM SHEET WITH 1/2" RADIUS CORNERS.
2. LETTERS 1 1/4" x 1/4" STROKE. FONT STYLE USED IS HANDEL GOTHIC CAPITAL FONTS.
3. THE SIGN FACE SHALL HAVE A WHITE WHITE 3M DIAMOND GRADE REFLECTIVE SHEETING (DG 4090 SERIES OR EQUIVALENT) APPLIED AS A BACKGROUND TO ALUMINUM PLATES.
4. LETTERING/GRAPHICS SHALL BE DONE ONE OF THE FOLLOWING WAYS:
   A. 3M SCOTCH LITE ACRYLIC, TRANSPARENT, ELECTRONIC CUTTABLE FILM(RED 1172 SERIES) INVERSE CUT TO ALLOW WHITE REFLECTIVE BACKGROUND TO SHOW THROUGH
   B. SCREEN PRINTED USING 3M 880I OR 880–00 SERIES TRAFFIC SIGN RED TRANSLUCENT INK.

   BOTH PROCESSES (A OR B) WILL ACCOMPLISH A RED FIELD WHITE COPY.
5. ALL SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURERS MATCH COMPONENT SYSTEM.
6. REQUIRES PRE–APPROVAL BY FIRE PREVENTION EMERGENCY ACCESS OFFICER.

PHOENIX FIRE DEPARTMENT ACCESS SIGN

FACILITY IDENTIFICATION SIGN

DETAIL 24 C–03 | C–04
NOT TO SCALE


14"x20" – 20 GA. ALUMINUM
RED BACKGROUND
WHITE BACKGOUND
RED BACKGROUND
BLACK LETTERS (TYP)
DANGER
Sharp
Edges
Above
Keep off wall!
Will cause serious injury or death.
PELIGRO
Cuchillas Filosas
Arriba
¡No trepe en la pared!
La causara serias lesiones o la muerte

NOTES:
1.0" RADIUS, 0.0" BORDER, WHITE ON WHITE;
RECTANGLE RED;
[SHARP] BLACK C 50% SPACING; [EDGES] BLACK C 50% SPACING; [ABOVE] BLACK C 50% SPACING;
[KEEP OFF WALL!] BLACK C 50% SPACING;
[WILL CAUSE SERIOUS INJURY OR DEATH.] BLACK D;
RECTANGLE RED;
[CUCHILLAS FILOSAS] BLACK C 50% SPACING; [ARRIBA] BLACK C 50% SPACING;
[!NO TREPE EN LA PARED!] BLACK C 50% SPACING; [LA CAUSARA SERIAS LESIONES O LA MUERTE] BLACK C;

DANGER SIGN LAYOUT

DANGER LAYOUT SIGN

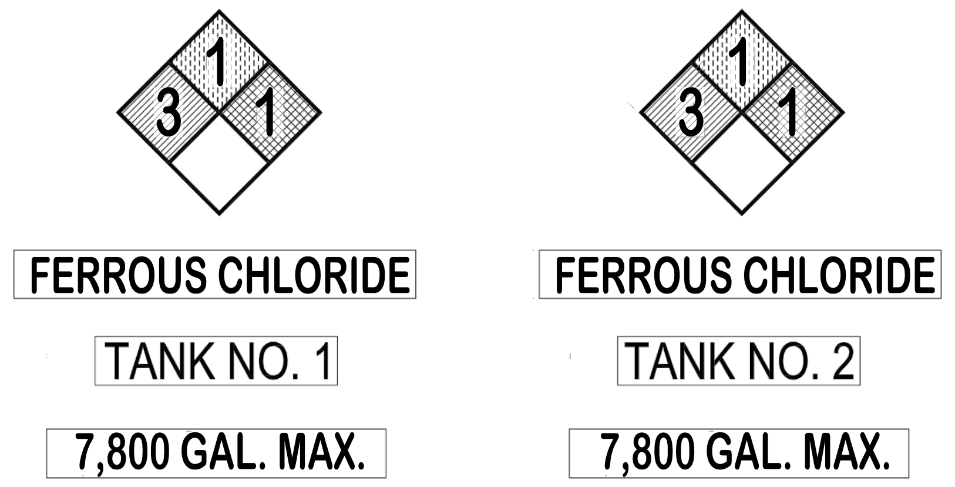
DETAIL 25 C–03 | C–04
NOT TO SCALE

KEY NOTES

1. INSTALL REQUIRED SIGNS PER CITY OF PHOENIX FIRE DEPARTMENT EMERGENCY APPROVED DETAILS (TYP).
2. SIGNS SHOWN ON ENTRANCE GATE ARE APPROXIMATE LOCATION (TO BE VERIFIED) (TYP).
3. SEE THIS SHEET AND C–06 FOR SIGN DETAILS.
4. THE SOUTH 2 GATES ARE MOTOR OPERATED ROLLING GATE WITH KEY PAD.

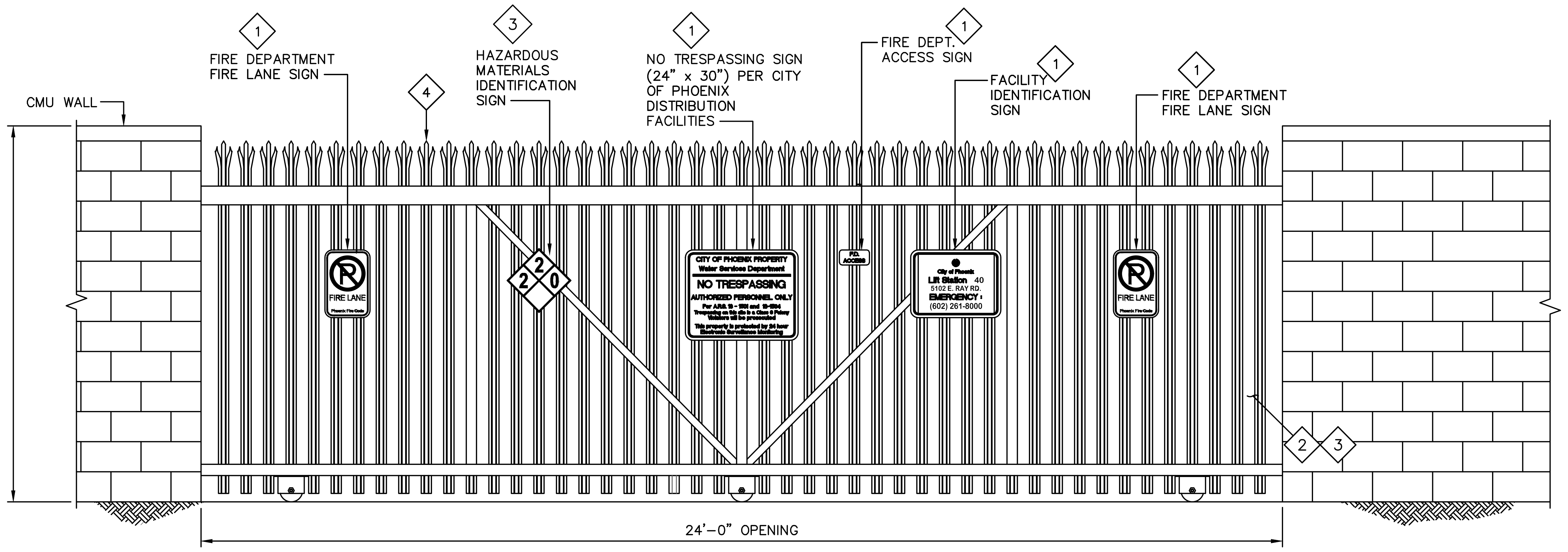
CONSTRUCTION NOTE:

CONTRACTOR SHALL SUBMIT ALL FIRE ITEMS (ACCESS GATES AND FIRE DEPARTMENT ACCESS) TO PROOF OF DELIVERY AS A DEFERRED SUBMITTAL FOR APPROVAL PRIOR TO FABRICATION AND INSTALLATION.

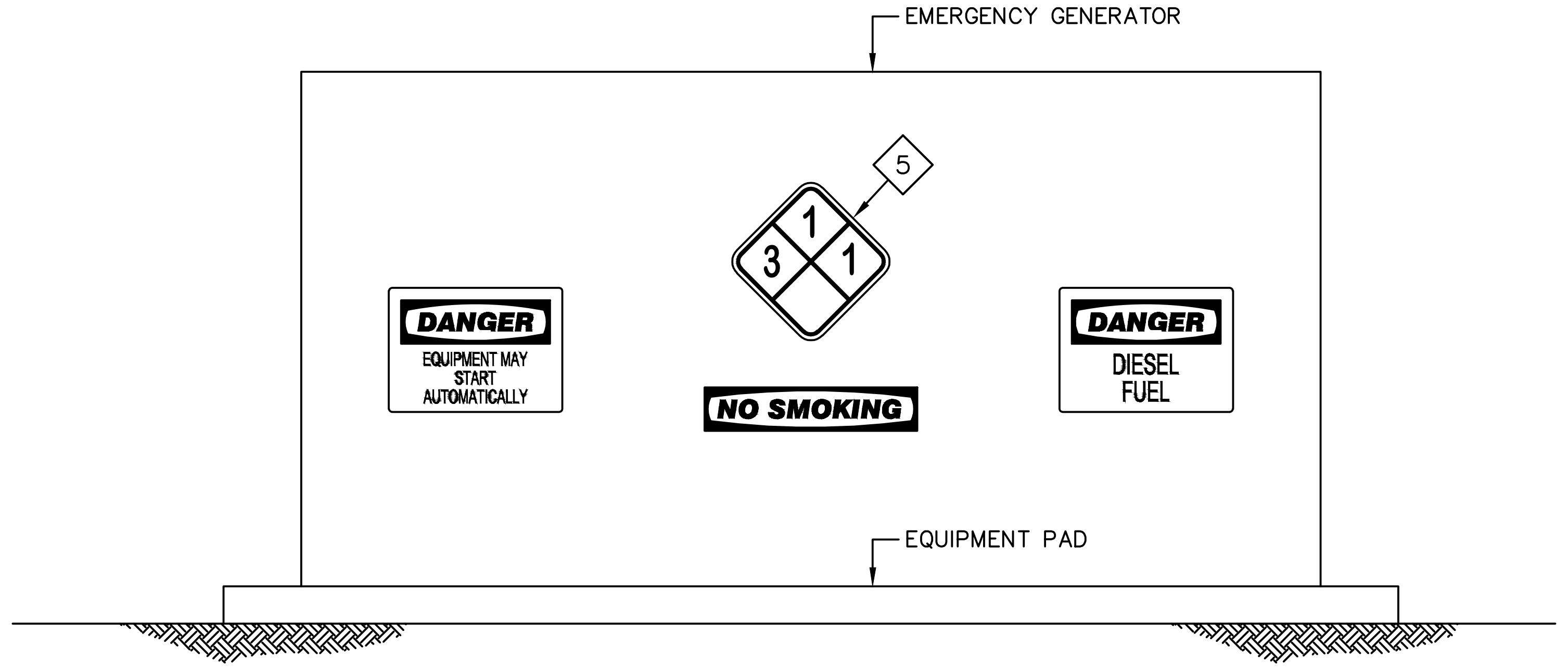

1
3
1
1
3
1
FERROUS CHLORIDE
TANK NO. 1
7,800 GAL. MAX.
FERROUS CHLORIDE
TANK NO. 2
7,800 GAL. MAX.

3" TALL BLACK COPY ON WHITE ADHESIVE POLYESTER BACKGROUND APPLIED TO HDPE TANKS

DETAIL 26 C–03 | C–04
NOT TO SCALE


1
FIRE DEPARTMENT FIRE LANE SIGN
3
HAZARDOUS MATERIALS IDENTIFICATION SIGN
1
NO TRESPASSING SIGN (24" x 30") PER CITY OF PHOENIX DISTRIBUTION FACILITIES
FIRE DEPT. ACCESS SIGN
1
1
FACILITY IDENTIFICATION SIGN
1
FIRE DEPARTMENT FIRE LANE SIGN
CMU WALL
4
FIRE LANE
2
2
0
NO TRESPASSING
F.D. ACCESS
Lift Station 40
5102 E. RAY RD.
EMERGENCY :
(602) 261-8000
FIRE LANE
2
3
24'–0" OPENING

GATE SIGN ELEVATION
STREET SIDE (LOOKING NORTH)


EMERGENCY GENERATOR
5
3
1
1
DANGER
EQUIPMENT MAY START AUTOMATICALLY
NO SMOKING
DANGER
DIESEL FUEL
EQUIPMENT PAD

EMERGENCY GENERATOR ELEVATION
N.T.S.

FACILITY DRAWINGS
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FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\10_CSCLS40D04.dwg DATE: 9/04/24 TIME: 03:17pm

HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	RS	10/2023	JF	30% SUBMITTAL
B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES RS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

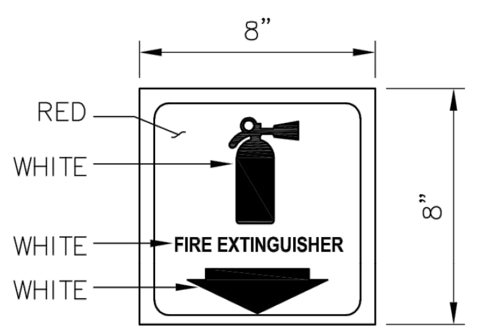
GENERAL DETAILS 4

CITY PROJECT NO. WS90400085
DATE: 08/2024
C–05 SHEET 10 OF 134
CAD FILE: CSCLS40D04.DWG

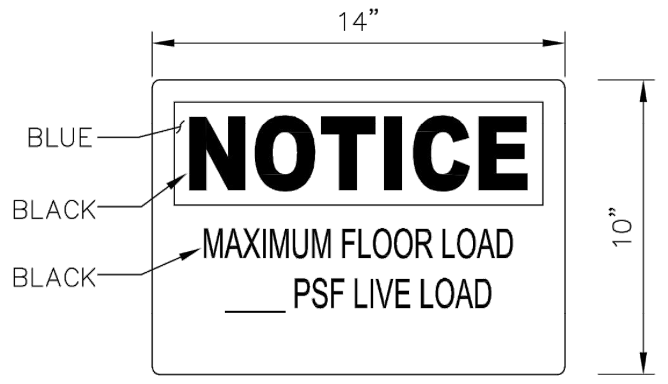
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

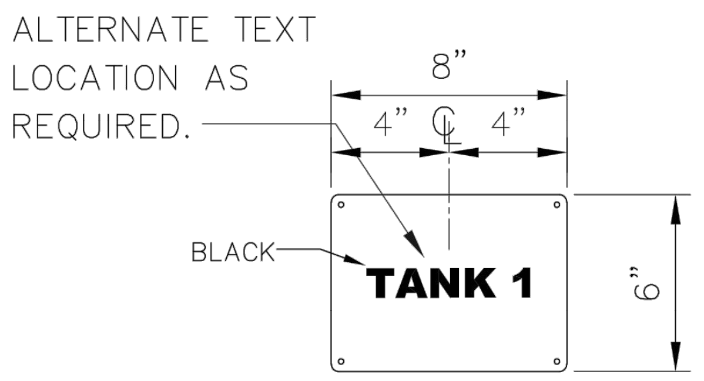
"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.


8"
8"
RED
WHITE
WHITE
WHITE
FIRE EXTINGUISHER

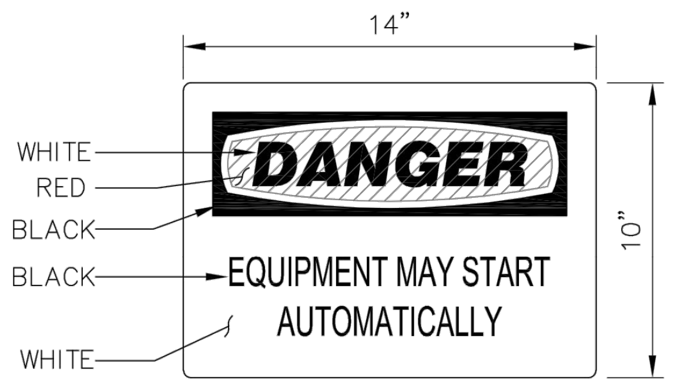
TYPE B:
FIRE EQUIPMENT
2–WAY SIGN
SCALE: 2" = 1'–0"


14"
10"
BLUE
BLACK
BLACK
NOTICE
MAXIMUM FLOOR LOAD
___ PSF LIVE LOAD

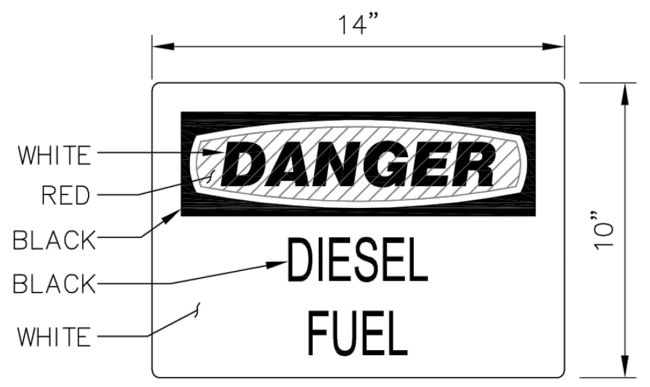
TYPE D–1:
NOTICE
SCALE: 2" = 1'–0"


ALTERNATE TEXT LOCATION AS REQUIRED.
8"
4"
4"
6"
BLACK
TANK 1

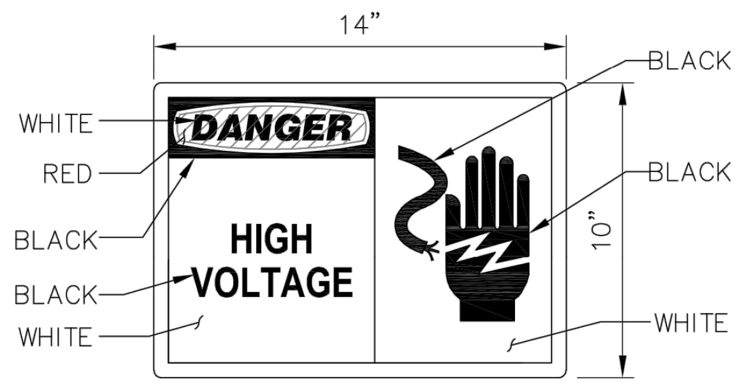
TYPE D–2:
AREA NAME
SCALE: 2" = 1'–0"


14"
10"
WHITE
RED
BLACK
BLACK
WHITE
DANGER
EQUIPMENT MAY START AUTOMATICALLY

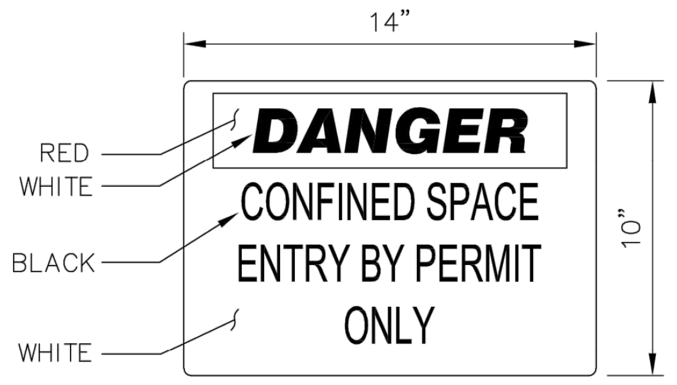
TYPE F–1:
DANGER
SCALE: 2" = 1'–0"


14"
10"
WHITE
RED
BLACK
BLACK
WHITE
DANGER
DIESEL
FUEL

TYPE F–2:
DANGER
SCALE: 2" = 1'–0"

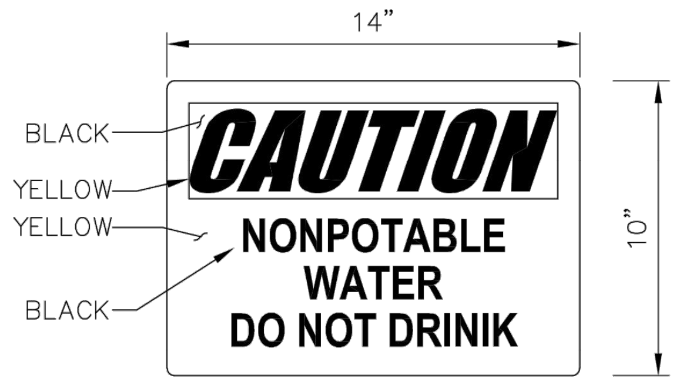

14"
10"
WHITE
RED
BLACK
BLACK
WHITE
BLACK
BLACK
WHITE
DANGER
HIGH VOLTAGE

TYPE F–3
DANGER
SCALE: 2" = 1'–0"

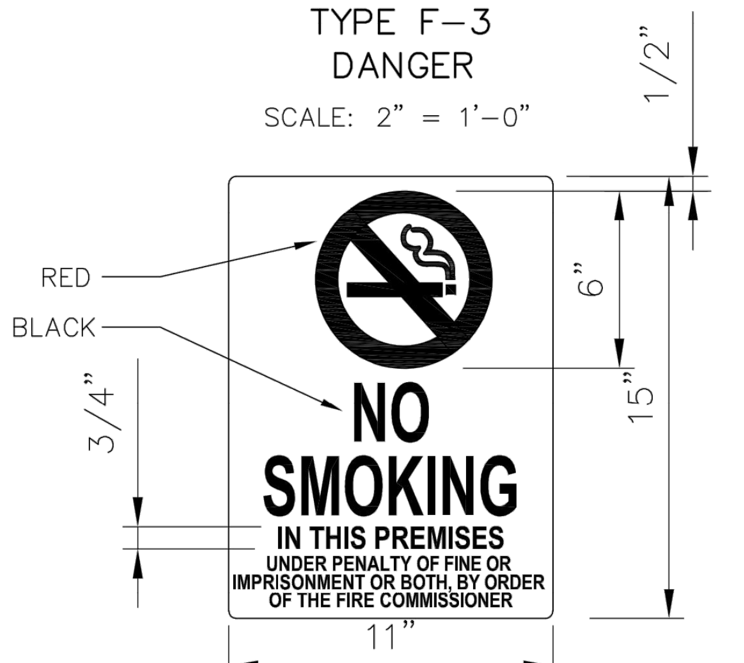

14"
10"
RED
WHITE
BLACK
WHITE
DANGER
CONFINED SPACE
ENTRY BY PERMIT
ONLY

TYPE F–4:
DANGER

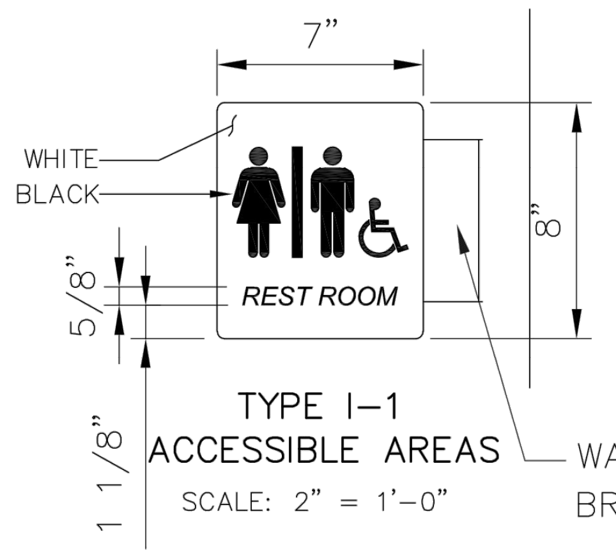
SCALE: 2" = 1'–0"


14"
10"
BLACK
YELLOW
YELLOW
BLACK
CAUTION
NONPOTABLE
WATER
DO NOT DRINIK

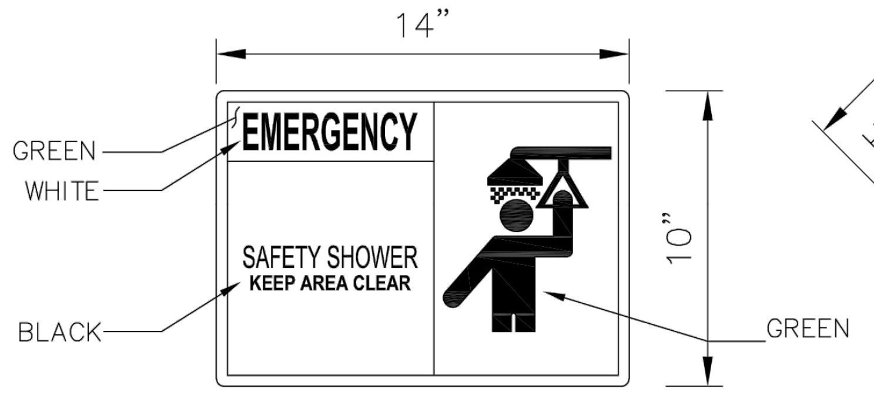
TYPE G–1:
CAUTION
SCALE: 2" = 1'–0"


1/2"
6"
15"
10"
3/4"
11"
RED
BLACK
NO
SMOKING
IN THIS PREMISES
UNDER PENALTY OF FINE OR IMPRISONMENT OR BOTH, BY ORDER OF THE FIRE COMMISSIONER

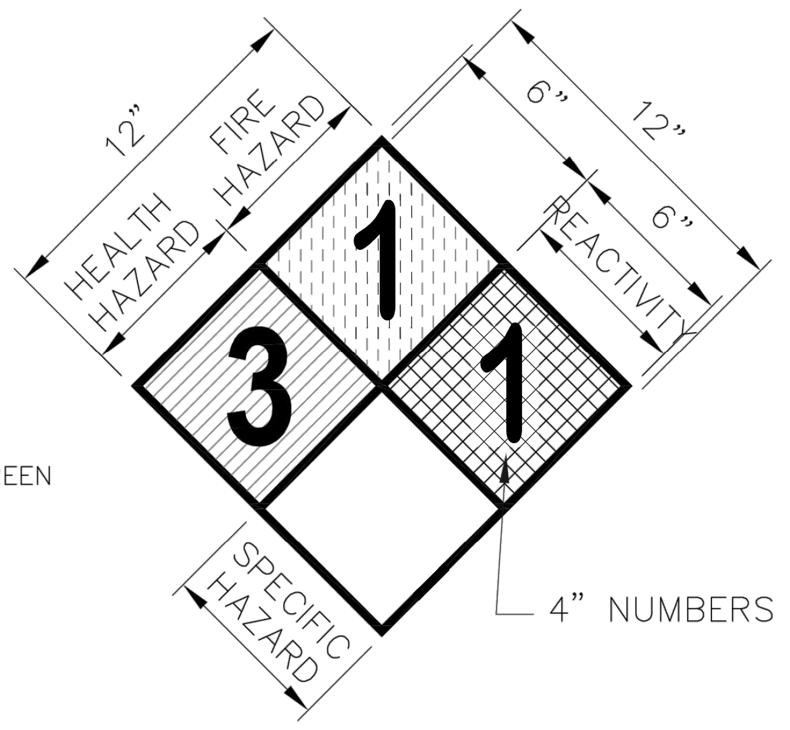
TYPE H–1:
EXIT / FIRE PREVENTION
SCALE: 2" = 1'–0"


7"
8"
5/8"
1 1/8"
WHITE
BLACK
REST ROOM
WALL MOUNTING BRACKET

TYPE I–1
ACCESSIBLE AREAS
SCALE: 2" = 1'–0"


14"
10"
GREEN
WHITE
BLACK
GREEN
EMERGENCY
SAFETY SHOWER
KEEP AREA CLEAR

TYPE O–1:
GENERAL SAFETY
SCALE: 2" = 1'–0"


12"
12"
6"
6"
HEALTH HAZARD
FIRE HAZARD
REACTIVITY
SPECIFIC HAZARD
1
3
1
4" NUMBERS

TYPE R–1:
HAZARD RATING SIGN
SCALE: 2" = 1'–0"

SIGNAGE NOTES:

1. PROVIDE HAZARD RATING SIGNS / RIGHT–TO–KNOW SIGNS, LABELS AND TAGS TO COMPLY WITH NFPA 704, OSHA 1910.1200, AND OSHA SUBPART Z, FOR PROPER IDENTIFICATION OF ALL THE CHEMICALS AND MATERIALS PRESENT. THE HAZARDS ASSOCIATED WITH THESE CHEMICALS AND MATERIALS, AND WHERE THEY ARE LOCATED. VERIFY EXACT INFORMATION FOR SIGNS AND LOCATION OF SIGNS IN THE FIELD WITH OWNER AND ENGINEER.
2. PROVIDE ALL ACCIDENT PREVENTION, HEALTH, SAFETY AND WARNING SIGNS IN COMPLIANCE WITH ANSI Z525.1, ANSI Z636.2, AND Z535.3 AND OSHA 1910.44 AND 1910.145. FIELD VERIFY EXACT LOCATION OF SIGNS WITH OWNER AND ENGINEER.
3. FIELD VERIFY WHICH SIGNS REQUIRE BEING SUSPENDED, AND WHAT THEY WILL BE SUSPENDED FROM. PROVIDE ENGINEER APPROVED MATERIALS AND FASTENERS TO SECURELY ATTACH AND SUSPEND THESE SIGNS.
4. SUSPEND DOUBLE SIDED SIGN – INDICATES SIGNS THAT WILL IN SOME CASES NEED TO BE SUSPENDED. THOSE THAT ARE SUSPENDED WILL BE A CUSTOM DOUBLE SIDED SIGN, FIELD VERIFY EXACT LOCATION.
5. FIELD VERIFY DIRECTION ARROW HEADS SHOULD BE POINTING ON ALL DIRECTION SIGNS, VERIFY EXACT LOCATION OF SIGNS WITH OWNER AND ENGINEER.
6. ALL SIGNS SHALL BE PLACED SO THAT THEY ARE READILY VISIBLE ABD READABLE. DOORS SHALL NOT BLOCK SIGNS WHEN IN THE OPEN POSITION. VERIFY EXACT ARRANGEMENT AND PLACEMENT OF SIGNS WITH OWNER AND ENGINEER.

DETAIL 26 C–06 C–06
NOT TO SCALE

SIGNAGE SCHEDULE

QUAN.	SIGN TYPE	MESSAGE	FORMS OF MESSAGE/ SYMBOL TYPE (AS REQUIRED)	MATERIAL/ SPECIAL INSTRUCTIONS	LOCATION	OPTIONS/REMARKS
2	B	FIRE EXTINGUISHER	TEXT, SYMBOL, ARROW	ACRYLIC	ELECTRICAL BUILDING	
2	D–1	NOTICE NO FIRE SUPPRESSION PRESENT	TEXT	ALUMINUM	ELECTRICAL BUILDING	
4	D–1	NOTICE MAXIMUM FLOOR LOAD 300 PSF LIVE LOAD	TEXT	ALUMINUM	PUMP ACCESS HATCHES	AFFIX ADJACENT TO PUMP ACCESS HATCHES
1	D–2	TANK 1	TEXT	ALUMINUM	FILL STATION	
1	D–2	TANK 1	TEXT	VINYL LABEL	CHEMICAL TANK 1	
1	D–2	TANK 2	TEXT	ALUMINUM	FILL STATION	
1	D–2	TANK 2	TEXT	VINYL LABEL	CHEMICAL TANK 2	
1	D–2	DO NOT POUR DRIP BUCKET INTO SUMP	TEXT	ALUMINUM	FILL STATION	
6	F–1	DANGER EQUIPMENT MAY START AUTOMATICALLY	TEXT	ALUMINUM	STANDBY GENERATOR MOTORIZED PLUG VALVES	
1	F–2	DANGER DIESEL FUEL	TEXT	ALUMINUM	STANDBY GENERATOR	
2	F–3	DANGER HIGH VOLTAGE	TEXT	ALUMINUM	ELECTRICAL BUILDING	
4	F–4	DANGER CONFINED SPACE ENTRY BY PERMIT ONLY	TEXT		CHEMICAL TANKS	
3	G–1	CAUTION NONPOTABLE WATER DO NOT DRINK	TEXT	ALUMINUM	AT ALL HOSEBIBS	
1	H–1		TEXT, SYMBOLS	ALUMINUM	FILL STATION	FIRE PREVENTATION/NO SMOKING SIGN FOR MESSAGE SEE TYPE H–1
1	I–1	RESTROOM	TEX, T/B, SYMBOL	ALUMINUM		
3	O–1	EMERGENCY SAFETY SHOWER KEEP AREA CLEAR	TEXT, SYMBOLS	ALUMINUM	SAFETY SHOWER/ EYEWASH	
2	R–1		TEXT, SYMBOLS	VINYL LABEL	CHEMICAL TANKS	FIRE PREVENTATION/NO SMOKING SIGN FOR MESSAGE SEE TYPE H–1
3	R–1		TEXT, SYMBOLS	ALUMINUM	SITE ENTRANCES	HAZAED RATING SEE NOTE 1
1	R–1		TEXT, SYMBOLS	ALUMINUM	STANDBY GENERATOR	HAZAED RATING SEE NOTE 1

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FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

USER:FDERASFRAIJO FILE:C:\pwworking\west01\d3411640\11_CSCLS40D05.dwg DATE:9/04/24 TIME:03:17pm

HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO.
40280
JASON R.
FORT
Date Signed 08-30-24
ARIZONA, U.S.A.

Jason R. Fort

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*				
*				
*				

DES RS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

GENERAL DETAILS 5

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CITY PROJECT NO. WS90400085
DATE: 08/2024
C–06 SHEET 11 OF 134
CAD FILE: CSCLS40D05.DWG

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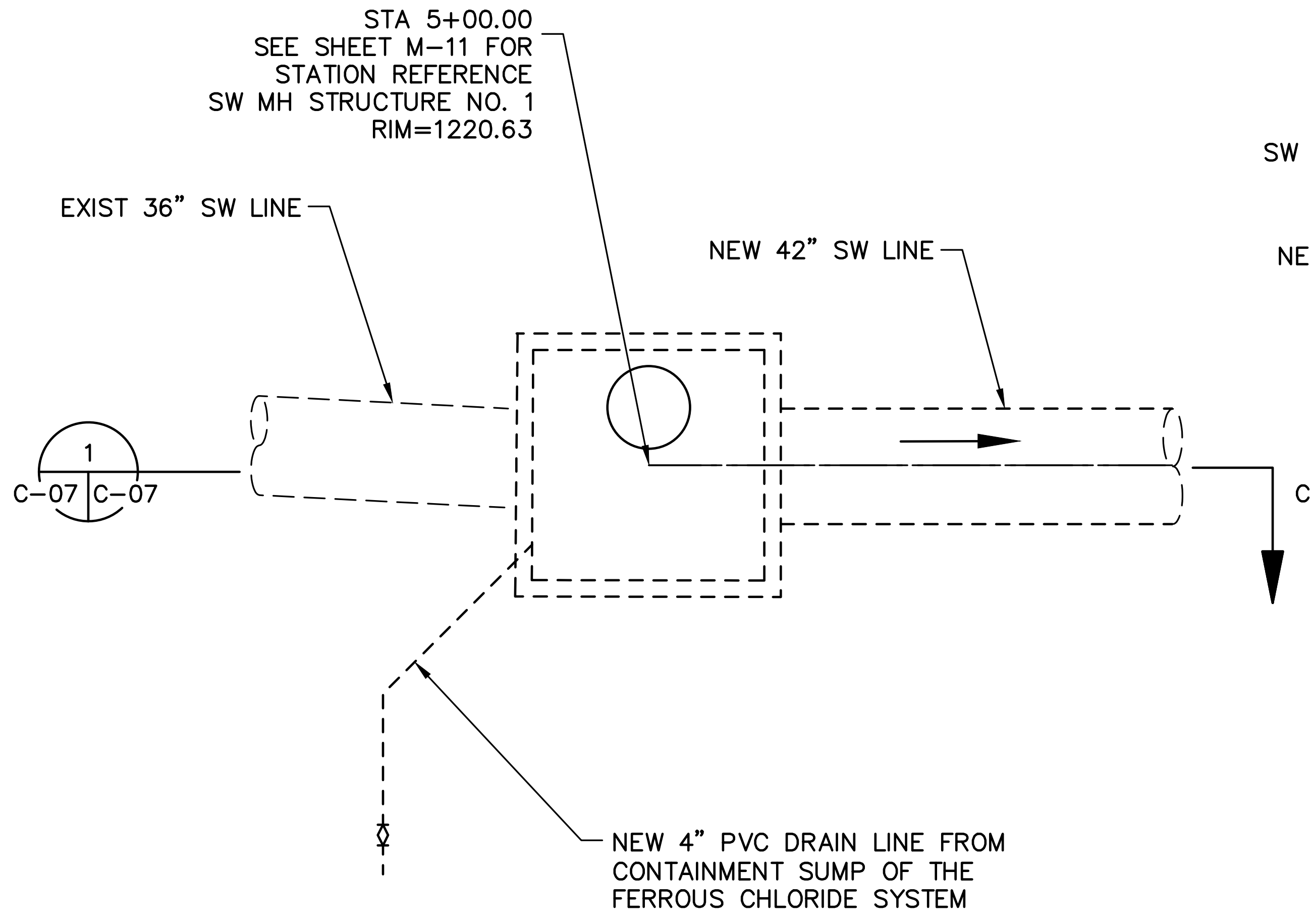
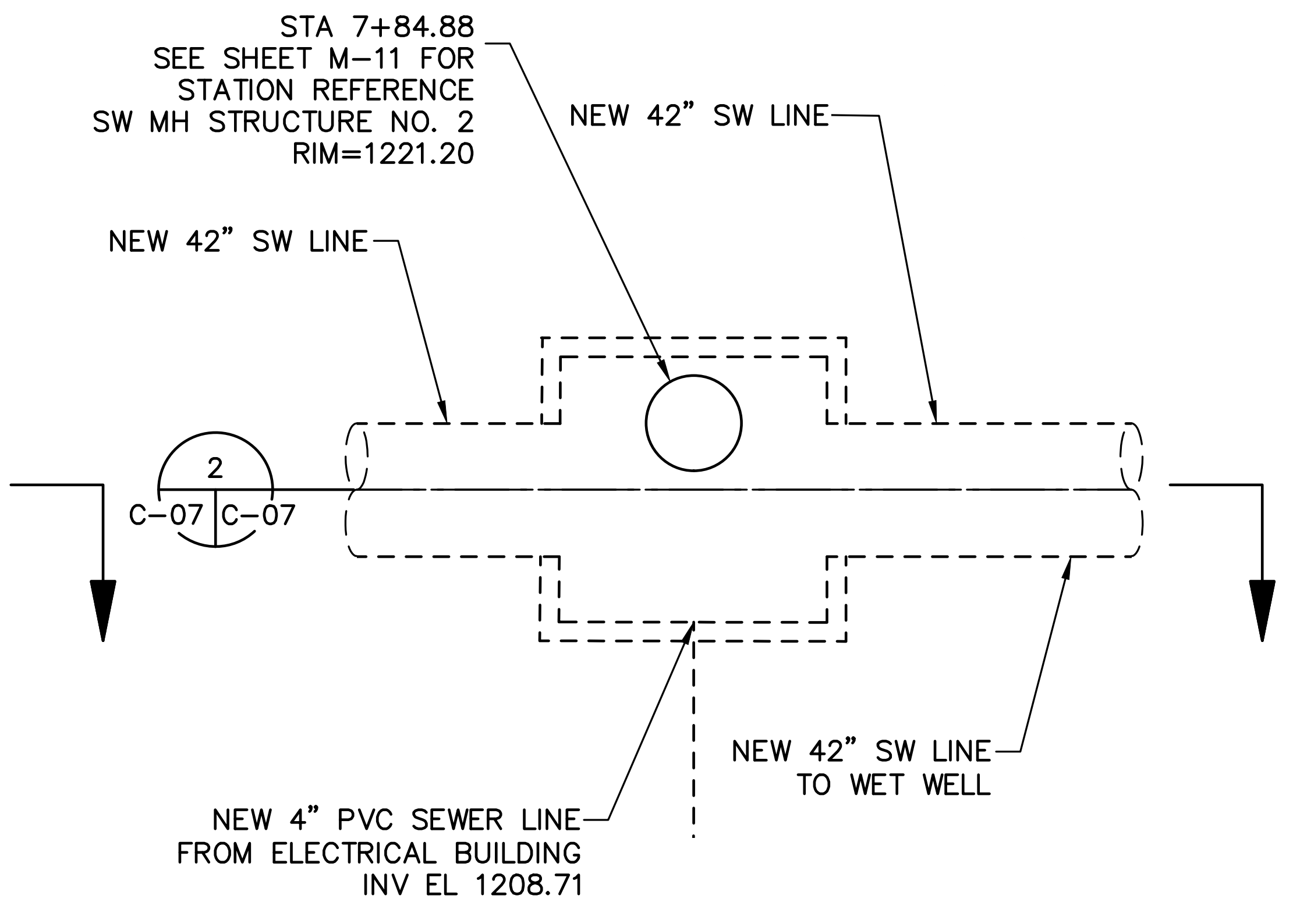
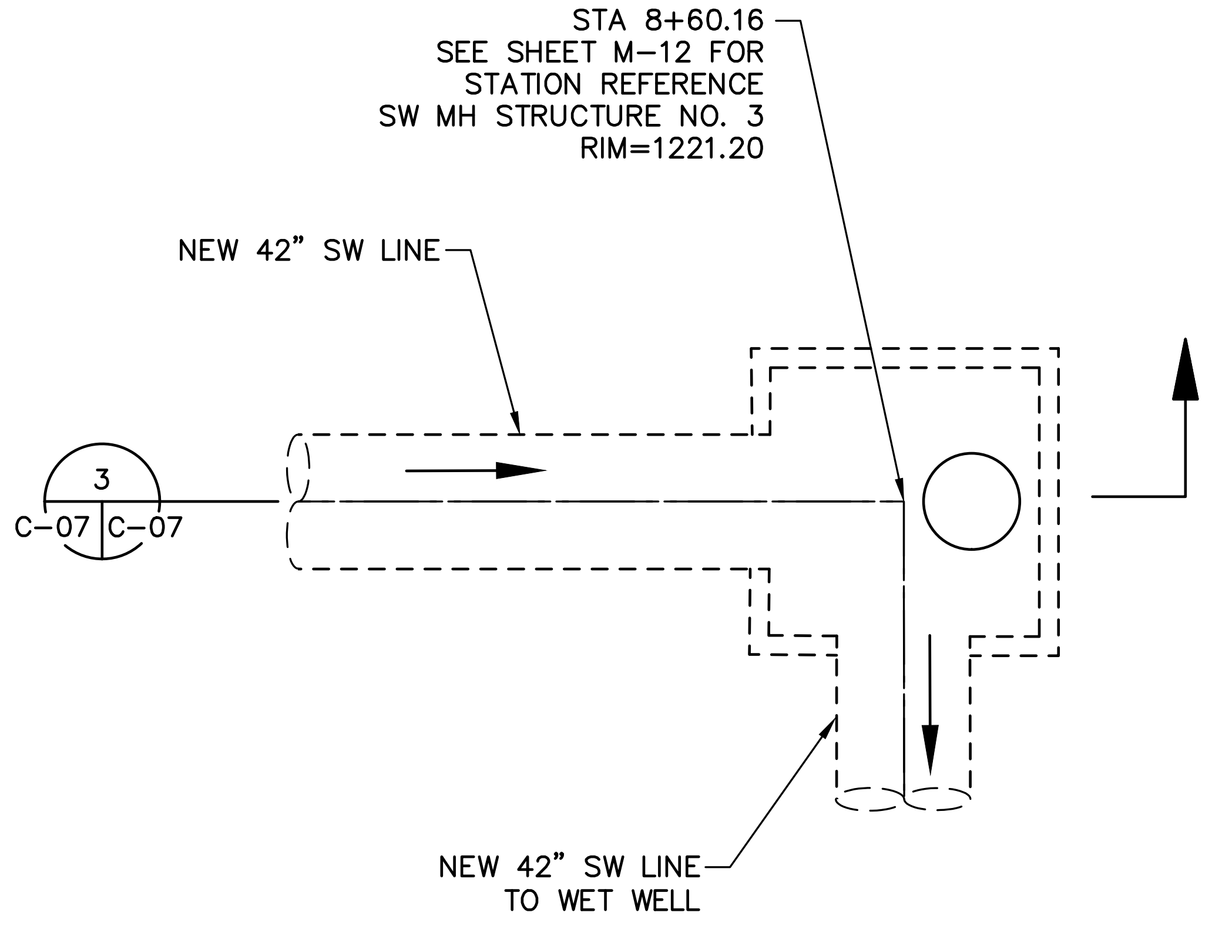

STA 5+00.00
SEE SHEET M–11 FOR
STATION REFERENCE
SW MH STRUCTURE NO. 1
RIM=1220.63
EXIST 36" SW LINE
NEW 42" SW LINE
1
C–07 C–07
NEW 4" PVC DRAIN LINE FROM
CONTAINMENT SUMP OF THE
FERROUS CHLORIDE SYSTEM

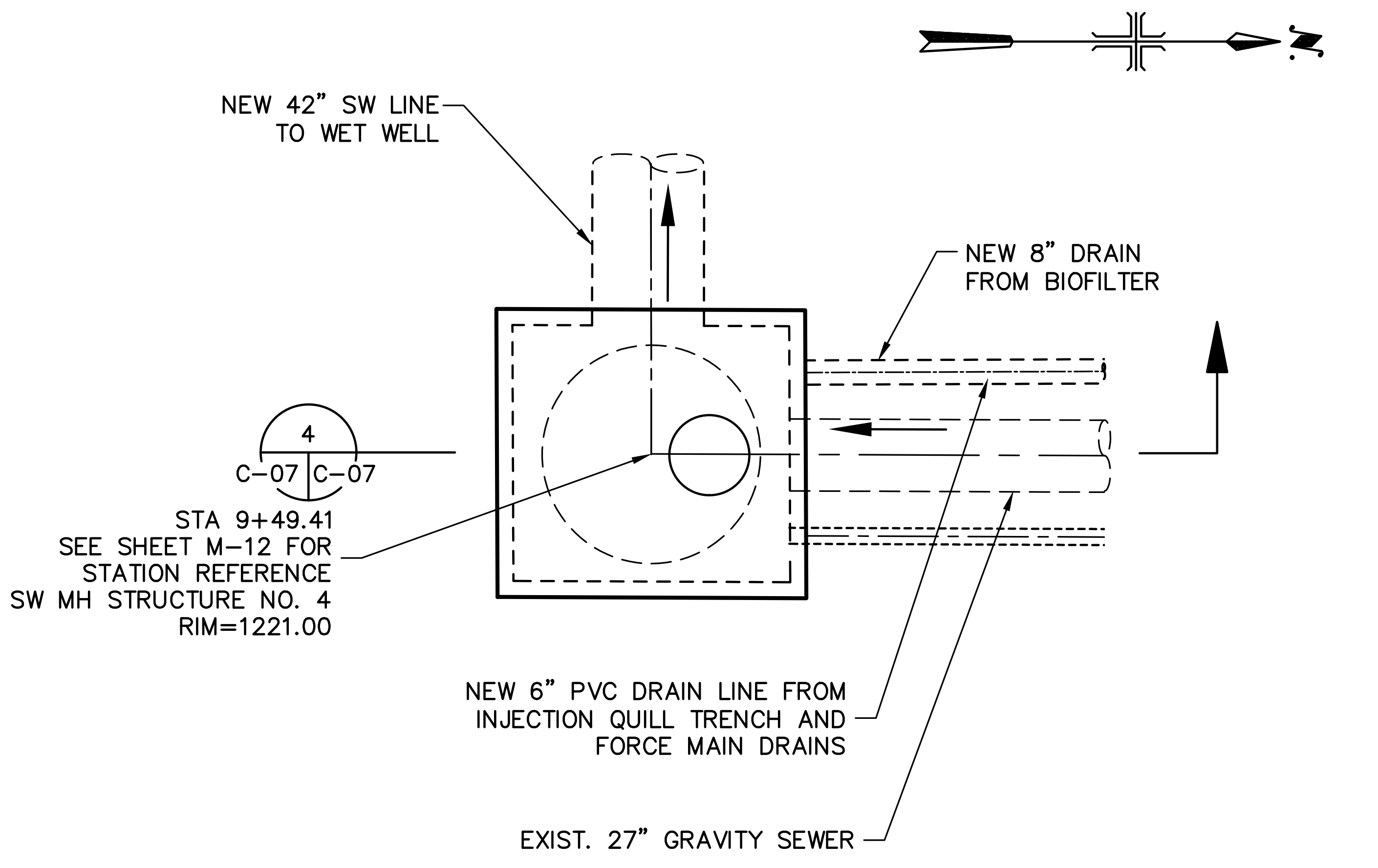
SW MH STRUCTURE NO. 1


STA 7+84.88
SEE SHEET M–11 FOR
STATION REFERENCE
SW MH STRUCTURE NO. 2
RIM=1221.20
NEW 42" SW LINE
NEW 42" SW LINE
2
C–07 C–07
NEW 42" SW LINE
TO WET WELL
NEW 4" PVC SEWER LINE
FROM ELECTRICAL BUILDING
INV EL 1208.71

SW MH STRUCTURE NO. 2


STA 8+60.16
SEE SHEET M–12 FOR
STATION REFERENCE
SW MH STRUCTURE NO. 3
RIM=1221.20
NEW 42" SW LINE
3
C–07 C–07
NEW 42" SW LINE
TO WET WELL

SW MH STRUCTURE NO. 3


NEW 42" SW LINE
TO WET WELL
NEW 8" DRAIN
FROM BIOFILTER
4
C–07 C–07
STA 9+49.41
SEE SHEET M–12 FOR
STATION REFERENCE
SW MH STRUCTURE NO. 4
RIM=1221.00
NEW 6" PVC DRAIN LINE FROM
INJECTION QUILL TRENCH AND
FORCE MAIN DRAINS
EXIST. 27" GRAVITY SEWER

SW MH STRUCTURE NO. 4

GENERAL NOTES:

1. APPLY 2 COATS OF EPOXYTEC ON ALL EXPOSED CONCRETE IN MANHOLE, AT OPENINGS, AT BENCH, ON ADJUSTING RINGS, AND ON THE INTERNAL EXPOSED SURFACES OF MANHOLE FRAMES AND COVERS. FIRST COAT TO DRY PRIOR TO APPLICATION OF SECOND COAT.

2. A 2" DEEP IMPRESSION SHALL BE MADE IN THE CONCRETE MANHOLE BASE USING A FIBERGLASS IMPRESSION RING. MANHOLE RISER SHALL NOT BE PLACED IN THE IMPRESSION IN THE CONCRETE MANHOLE BASE LESS THAN 24 HOURS AFTER THE CONCRETE MANHOLE BASE HAS BEEN PLACED.

3. ALL MANHOLE RISERS AND ECCENTRIC CONES SHALL BE LINED WITH PVC LINER PLATE. PVC LINER SHALL BE TURNED BACK AT THE TOP OF THE ECCENTRIC CONE AND AT THE BOTTOM OF THE MANHOLE RISER SECTION USING 2–1/2" X 2–1/2" PVC LINER ANGLE STRIPS. AT MANHOLE RISER JOINTS AND AT JOINTS BETWEEN MANHOLE RISERS ECCENTRIC CONES, 4" PVC LINER WELD STRIPS SHALL BE WELDED TO PVC LINER ON ADJACENT RISERS OR CONES WITH A MIN. 1" LAP OVER EACH LINER PLATE.

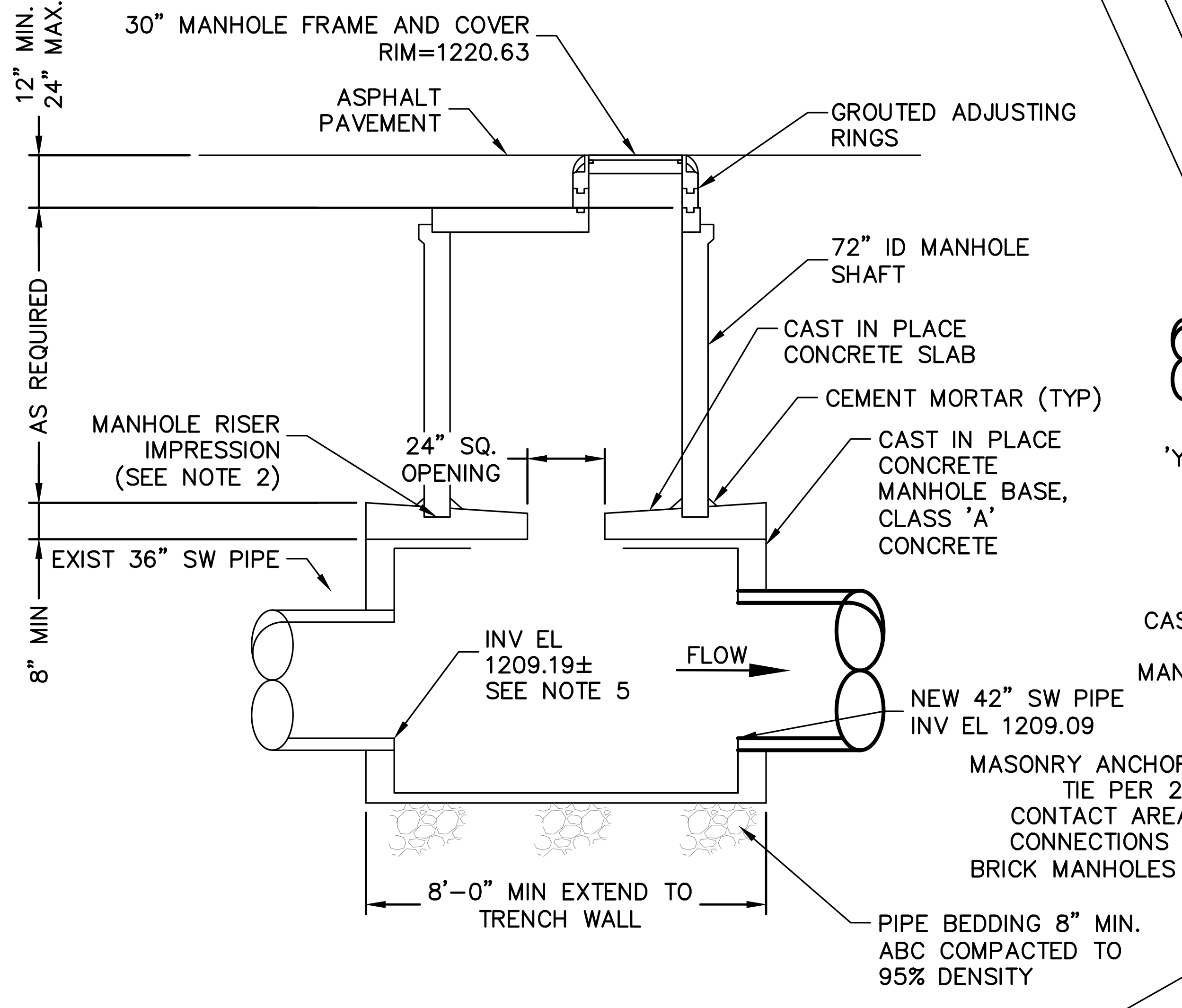
GENERAL NOTES CON'T:

4. SEE DRAWING C–20 FOR ORIENTATION.

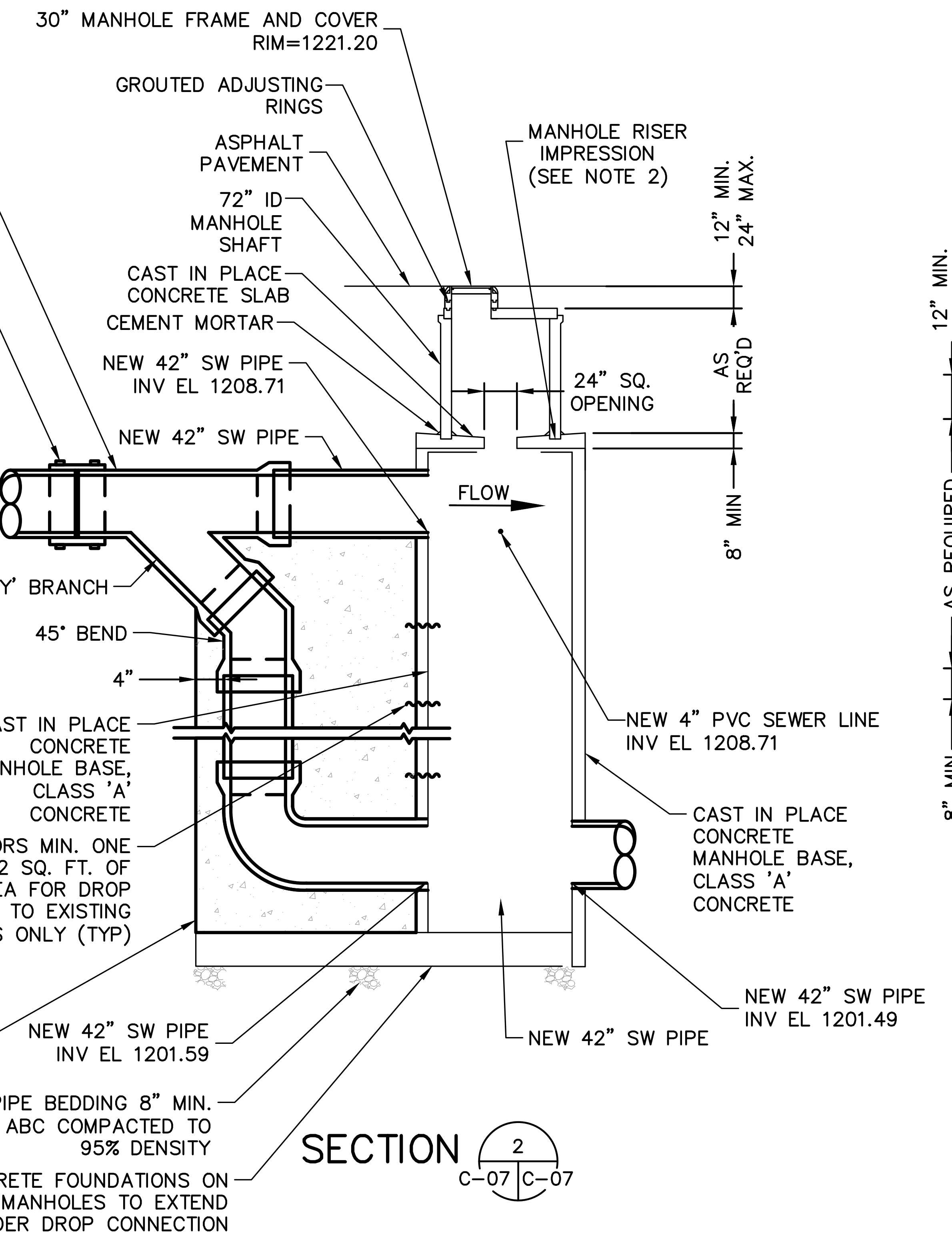
5. CONTRACTOR SHALL UNCOVER AND FIELD VERIFY INVERT ELEVATIONS OF EXIST 27" AND 42" SW LINE PRIOR TO ANY TRENCHING OR SETTING OF GRADES FOR THE NEW 42" SW AND THE 8" SW LINES AND MANHOLES 1, 2 AND 3.

6. SEWER PIPE SHALL BE PER CITY OF PHOENIX STANDARDS.

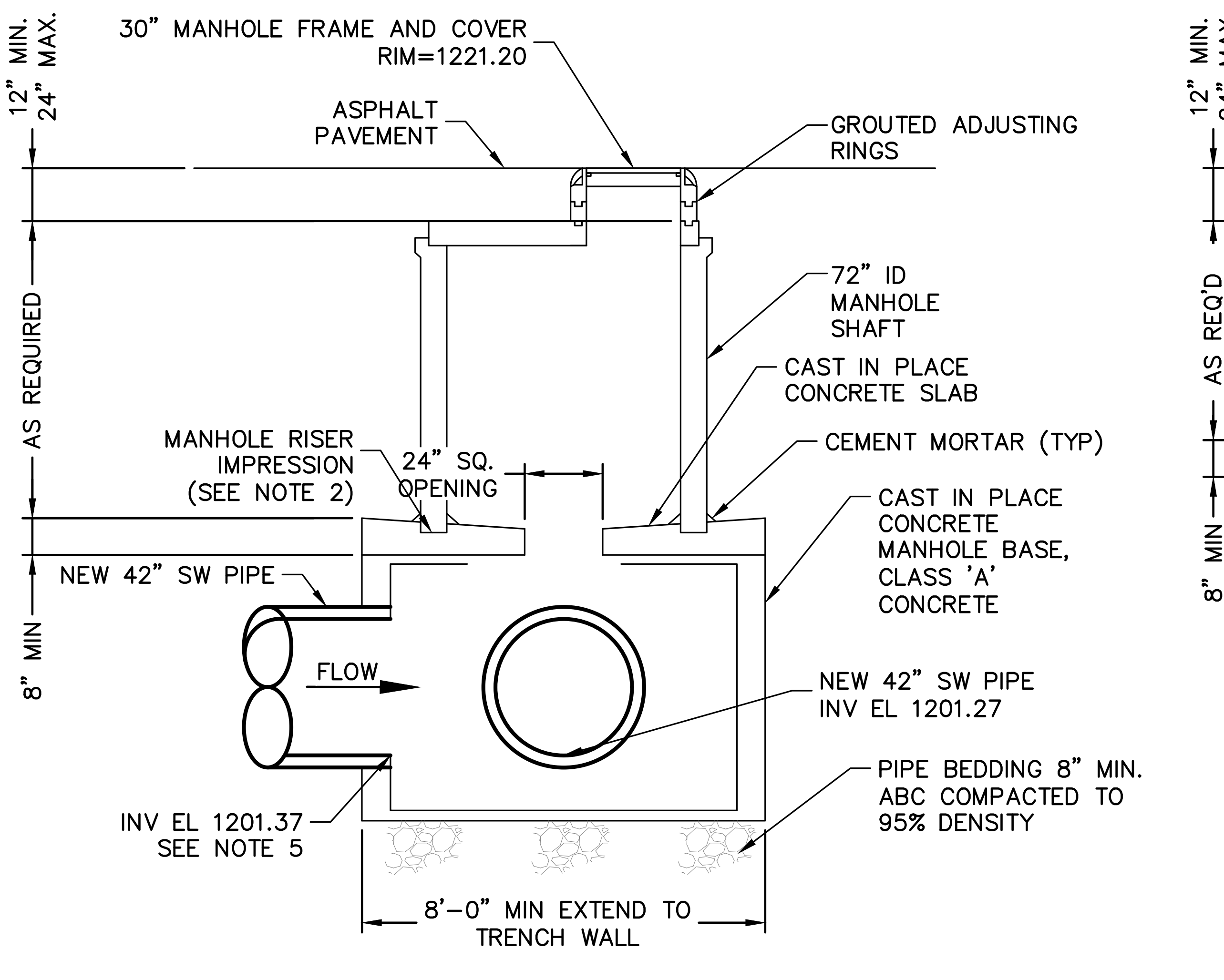
7. SANITARY SEWER MANHOLES SHALL BE COATED PER SPEC SECTION 09 96 22.


12" MIN.
24" MAX.
30" MANHOLE FRAME AND COVER
RIM=1220.63
ASPHALT
PAVEMENT
GROUTED ADJUSTING
RINGS
72" ID MANHOLE
SHAFT
CAST IN PLACE
CONCRETE SLAB
CEMENT MORTAR (TYP)
CAST IN PLACE
CONCRETE
MANHOLE BASE,
CLASS 'A'
CONCRETE
AS REQUIRED
MANHOLE RISER
IMPRESSION
(SEE NOTE 2)
24" SQ.
OPENING
8" MIN
EXIST 36" SW PIPE
INV EL
1209.19±
SEE NOTE 5
FLOW
NEW 42" SW PIPE
INV EL 1209.09
8'–0" MIN EXTEND TO
TRENCH WALL
PIPE BEDDING 8" MIN.
ABC COMPACTED TO
95% DENSITY

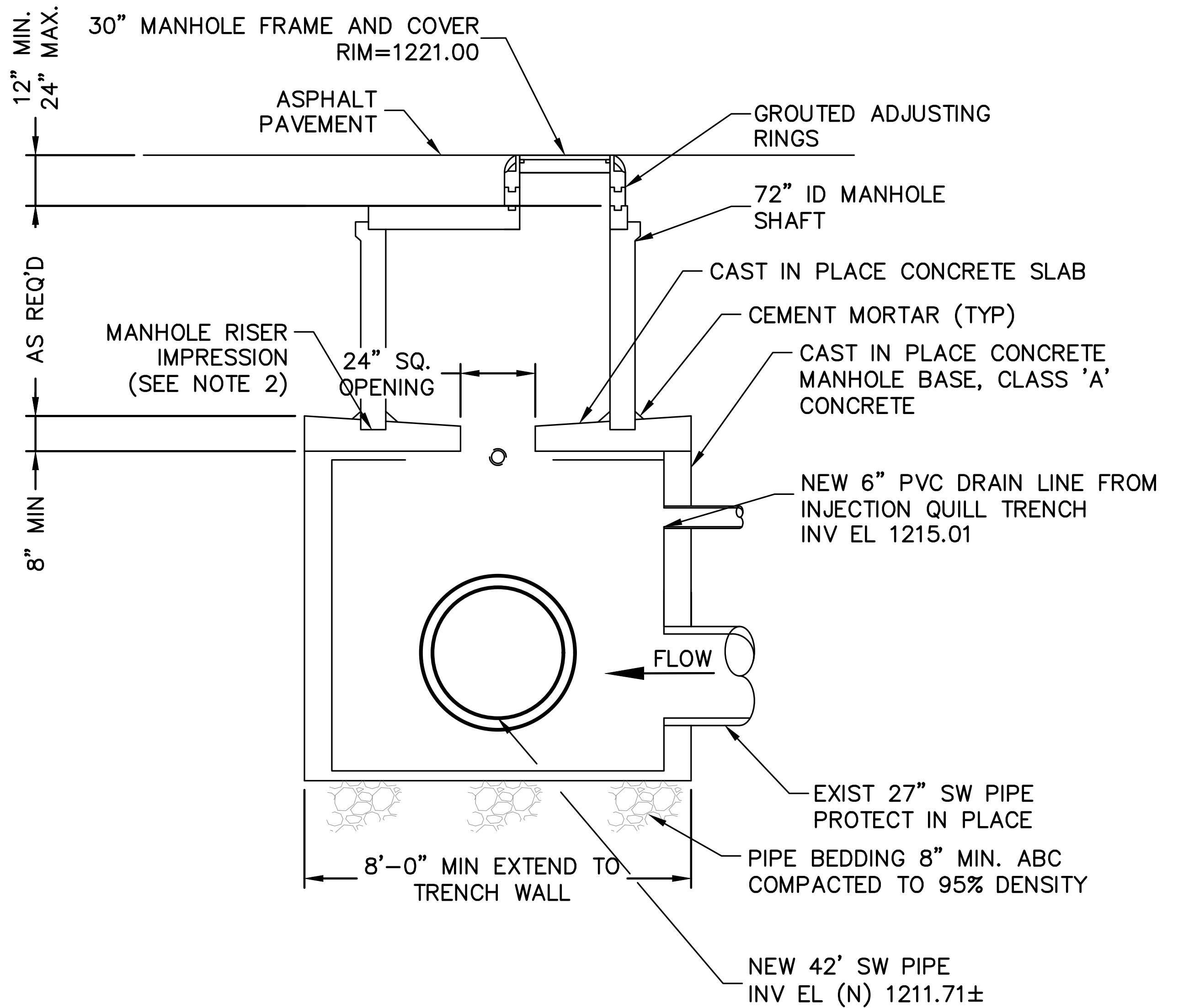
SECTION 1 C–07 C–07


30" MANHOLE FRAME AND COVER
RIM=1221.20
PIPE MATERIAL OF DROP
CONNECTION TO MATCH
NEW CONSTRUCTION
CONNECTION AS REQUIRED
GROUTED ADJUSTING
RINGS
ASPHALT
PAVEMENT
72" ID
MANHOLE
SHAFT
CAST IN PLACE
CONCRETE SLAB
CEMENT MORTAR
NEW 4" SW PIPE
INV EL 1208.71
NEW 42" SW PIPE
MANHOLE RISER
IMPRESSION
(SEE NOTE 2)
12" MIN.
24" MAX.
24" SQ.
OPENING
AS
REQ'D
8" MIN
FLOW
'Y' BRANCH
45° BEND
4"
CAST IN PLACE
CONCRETE
MANHOLE BASE,
CLASS 'A'
CONCRETE
MASONRY ANCHORS MIN. ONE
TIE PER 2 SQ. FT. OF
CONTACT AREA FOR DROP
CONNECTIONS TO EXISTING
BRICK MANHOLES ONLY (TYP)
NEW 4" PVC SEWER LINE
INV EL 1208.71
CAST IN PLACE
CONCRETE
MANHOLE BASE,
CLASS 'A'
CONCRETE
SQUARE, CONCRETE
ENCASEMENT CLASS 'C'
SECT. 725 OR MASONRY
ENCASEMENT GROUTED SOLID.
PER MAG STD DTL 426.
NEW 42" SW PIPE
INV EL 1201.59
PIPE BEDDING 8" MIN.
ABC COMPACTED TO
95% DENSITY
CONCRETE FOUNDATIONS ON
NEW MANHOLES TO EXTEND
UNDER DROP CONNECTION
NEW 42" SW PIPE
NEW 42" SW PIPE
INV EL 1201.49

SECTION 2 C–07 C–07


12" MIN.
24" MAX.
30" MANHOLE FRAME AND COVER
RIM=1221.20
ASPHALT
PAVEMENT
GROUTED ADJUSTING
RINGS
72" ID
MANHOLE
SHAFT
CAST IN PLACE
CONCRETE SLAB
CEMENT MORTAR (TYP)
AS REQUIRED
MANHOLE RISER
IMPRESSION
(SEE NOTE 2)
24" SQ.
OPENING
CAST IN PLACE
CONCRETE
MANHOLE BASE,
CLASS 'A'
CONCRETE
8" MIN
NEW 42" SW PIPE
FLOW
NEW 42" SW PIPE
INV EL 1201.27
INV EL 1201.37
SEE NOTE 5
PIPE BEDDING 8" MIN.
ABC COMPACTED TO
95% DENSITY
8'–0" MIN EXTEND TO
TRENCH WALL

SECTION 3 C–07 C–07


12" MIN.
24" MAX.
30" MANHOLE FRAME AND COVER
RIM=1221.00
ASPHALT
PAVEMENT
GROUTED ADJUSTING
RINGS
72" ID MANHOLE
SHAFT
CAST IN PLACE CONCRETE SLAB
CEMENT MORTAR (TYP)
AS REQ'D
MANHOLE RISER
IMPRESSION
(SEE NOTE 2)
24" SQ.
OPENING
CAST IN PLACE CONCRETE
MANHOLE BASE, CLASS 'A'
CONCRETE
8" MIN
NEW 6" PVC DRAIN LINE FROM
INJECTION QUILL TRENCH
INV EL 1215.01
FLOW
EXIST 27" SW PIPE
PROTECT IN PLACE
PIPE BEDDING 8" MIN. ABC
COMPACTED TO 95% DENSITY
8'–0" MIN EXTEND TO
TRENCH WALL
NEW 42' SW PIPE
INV EL (N) 1211.71±
INV EL (W) 12011.61

SECTION 4 C–07 C–07

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#	–	–	–	–	–	–	–

HDR

40280
JASON R.
FORT
Date Signed 08-30-24

Jason R. Fort

REVISIONS

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C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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DES
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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

GENERAL DETAILS 6

CITY PROJECT NO. WS90400085
DATE: 08/2024
C–07 SHEET 12 OF 134
CAD FILE: CSCLS40D06.DWG

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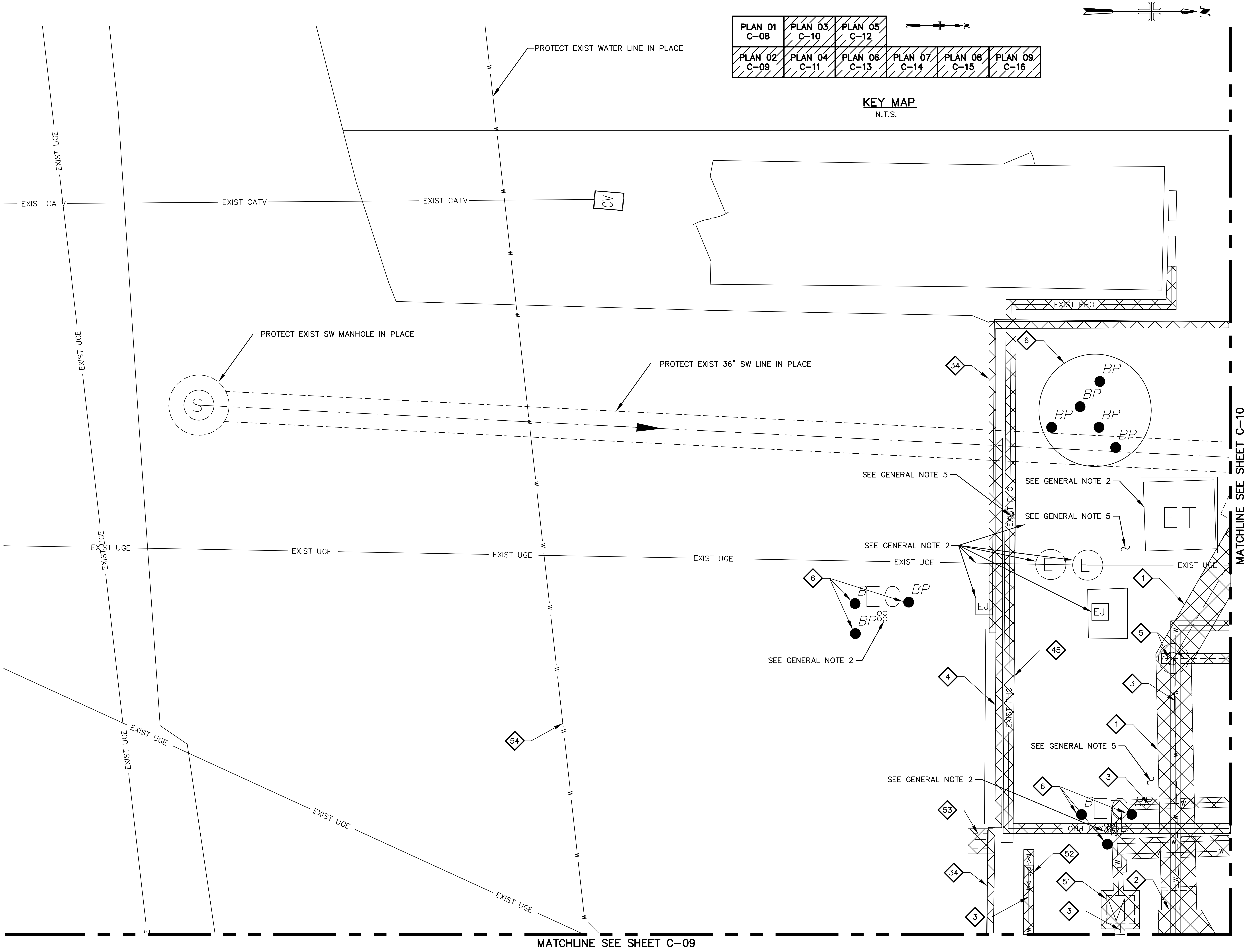
PLAN 01 C–08
PLAN 03 C–10
PLAN 05 C–12
PLAN 02 C–09
PLAN 04 C–11
PLAN 06 C–13
PLAN 07 C–14
PLAN 08 C–15
PLAN 09 C–16
KEY MAP
N.T.S.
PROTECT EXIST WATER LINE IN PLACE
EXIST CATV
CV
EXIST UGE
PROTECT EXIST SW MANHOLE IN PLACE
PROTECT EXIST 36" SW LINE IN PLACE
S
EXIST PHO
6
34
BP
MATCHLINE SEE SHEET C–10
SEE GENERAL NOTE 5
SEE GENERAL NOTE 2
ET
E
EJ
BEC
1
5
45
4
3
53
52
51
2
54
W
MATCHLINE SEE SHEET C–09

KEY NOTES

- ⟨1⟩ REMOVE EXIST 42" SW LINE.
- ⟨2⟩ REMOVE EXIST SW STRUCTURE.
- ⟨3⟩ REMOVE EXIST 3" WATER LINE.
- ⟨4⟩ REMOVE EXIST 20' VEHICULAR SLIDE GATE.
- ⟨5⟩ REMOVE EXIST 6" PVC SW LINE.
- ⟨6⟩ REMOVE EXIST BOLLARD.
- ⟨34⟩ REMOVE EXIST 8" CMU WALL.
- ⟨45⟩ REMOVE EXIST TELEPHONE LINE.
- ⟨51⟩ REMOVE EXIST WATER METER.
- ⟨52⟩ REMOVE EXIST BACKFLOW PREVENTOR.
- ⟨53⟩ REMOVE EXIST IRRIGATION BOX.
- ⟨54⟩ PROTECT EXIST 3" WATER LINE IN PLACE.

LEGEND

▩	DEMOLITION OF EXIST UTILITIES AND EXIST STRUCTURES WITH ALL APPURTENANCES AND CONCRETE SLABS. SEE GENERAL NOTE 4 AND 7.
▨	ABANDONMENT OF EXIST UTILITIES. SEE GENERAL NOTE 6.

GENERAL NOTE

1. CONTRACTOR TO VERIFY SIZE AND LOCATION OF THE EXIST UTILITY LINES, VALVES, AND METERS PRIOR TO RELOCATION AND ABANDONMENT.
2. ALL EXIST ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES ARE SHOWN AS PART OF THE SURVEY AND THE OWNER'S UTILITY MAP. FOR ALL ELECTRICAL DEMOLITION, RELOCATION AND ABANDONMENT OF ANY AND ALL ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES SEE ELECTRICAL PLANS.
3. FOR CONTINUATION OF DEMOLITION SEE SHEET C–09, SHEET C–10 AND SHEET C–11.
4. FOR ALL EXIST STRUCTURES THE CONTRACTOR SHALL REFER TO SPECIFICATION 01 11 00 – SUMMARY OF WORK FOR SEQUENCE OF DEMOLITION AND CONSTRUCTION. COORDINATE WITH THE CITY OF PHOENIX FOR SALVAGING ANY ITEMS AND FOR SPECIAL INSTRUCTIONS. COMPACT VOIDED AREA TO 95% DENSITY.
5. CONTRACTOR TO REMOVE EXIST AC PAVEMENT AND CONCRETE AND REPLACE IN–KIND. BEFORE REPLACING ANY NEW AC PAVEMENT AND NEW CONCRETE REFER TO THE CIVIL SHEETS FOR ALL NEW BURIED UTILITY CONSTRUCTION.
6. ITEMS CALLED OUT TO BE ABANDONED CAN BE REMOVED FOR CONTRACTOR'S CONVENIENCE AT NO ADDITIONAL COST TO THE CITY.
7. ITEMS CALLED OUT TO BE REMOVED SHALL BE REMOVED A MINIMUM OF 2' VERTICALLY AND 6' HORIZONTALLY FROM NEW WORK TO BE INSTALLED.

0 5 10
1" = 5'

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
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USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\13_CSCLS40M01.dwg DATE: 9/04/24 TIME: 03:18pm

HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	RS	10/2023	JF	30% SUBMITTAL
B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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DES FA
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CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

DEMOLITION PLAN 01

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CITY PROJECT NO. WS90400085
DATE: 08/2024
C–08 SHEET 13 OF 134
CAD FILE: CSCLS40M01.dwg

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FOR CONSTRUCTION

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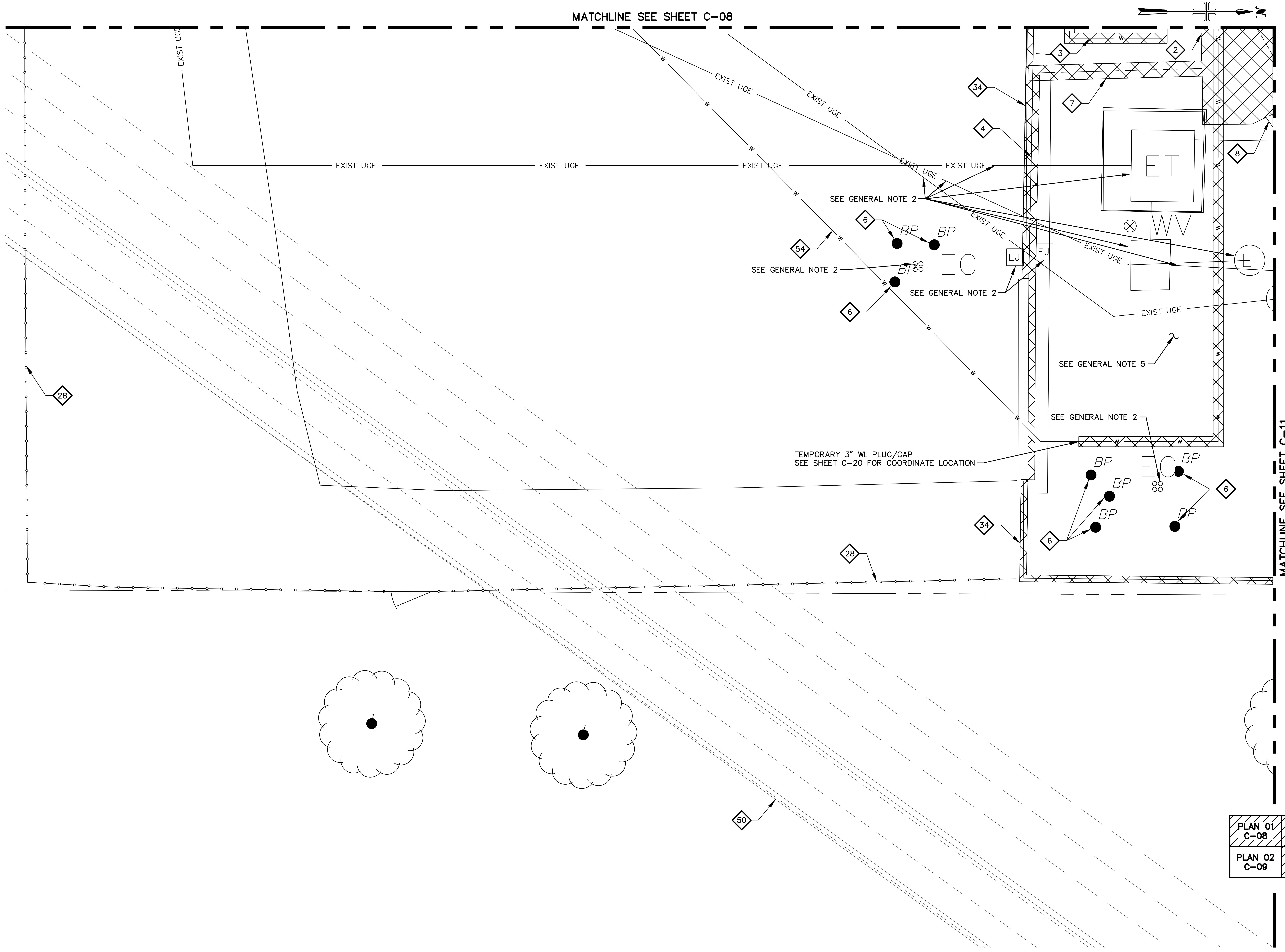
MATCHLINE SEE SHEET C-08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WV
EC
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BP
SEE GENERAL NOTE 2
SEE GENERAL NOTE 2
SEE GENERAL NOTE 2
SEE GENERAL NOTE 2
SEE GENERAL NOTE 5
TEMPORARY 3" WL PLUG/CAP
SEE SHEET C-20 FOR COORDINATE LOCATION

MATCHLINE SEE SHEET C-11

KEY NOTES

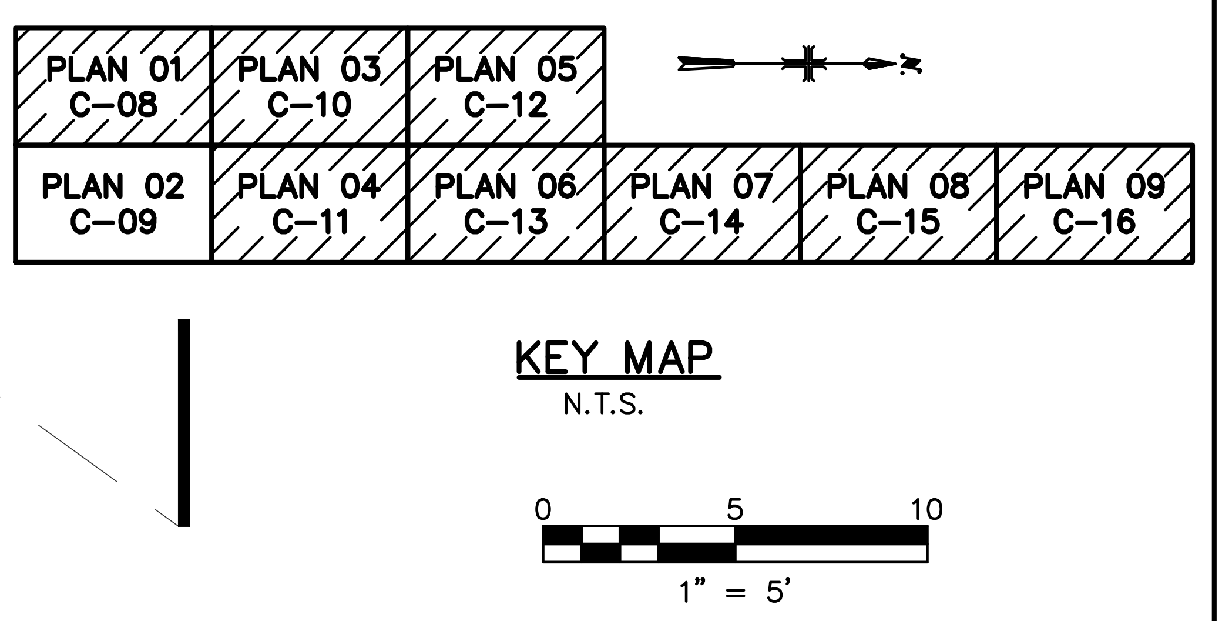
- ② REMOVE EXIST SW STRUCTURE.
- ③ REMOVE EXIST 3" WATER LINE.
- ④ REMOVE EXIST 20' VEHICULAR SLIDE GATE.
- ⑥ REMOVE EXIST BOLLARD.
- ⑦ REMOVE EXIST 18" SW LINE.
- ⑧ REMOVE EXIST 30" SW LINE.
- ㉘ PROTECT CHAIN LINK FENCE IN PLACE.
- ㉞ REMOVE EXIST 8" CMU WALL.
- ㊿ PROTECT EXIST 72" SRP IRRIGATION LINE IN PLACE.
- (54) PROTECT EXIST 3" WATER LINE IN PLACE.

LEGEND

▨	DEMOLITION OF EXIST UTILITIES AND EXIST STRUCTURES WITH ALL APPURTENANCES AND CONCRETE SLABS. SEE GENERAL NOTE 4 AND 7.
▨	ABANDONMENT OF EXIST UTILITIES. SEE GENERAL NOTE 6.

GENERAL NOTE

1. CONTRACTOR TO VERIFY SIZE AND LOCATION OF THE EXIST UTILITY LINES, VALVES, AND METERS PRIOR TO RELOCATION AND ABANDONMENT.
2. ALL EXIST ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES ARE SHOWN AS PART OF THE SURVEY AND THE OWNER'S UTILITY MAP. FOR ALL ELECTRICAL DEMOLITION, RELOCATION AND ABANDONMENT OF ANY AND ALL ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES SEE ELECTRICAL PLANS.
3. FOR CONTINUATION OF DEMOLITION SEE SHEET C-08, SHEET C-10 AND SHEET C-11.
4. FOR ALL EXIST STRUCTURES THE CONTRACTOR SHALL REFER TO SPECIFICATION 01 11 00 – SUMMARY OF WORK FOR SEQUENCE OF DEMOLITION AND CONSTRUCTION. COORDINATE WITH THE CITY OF PHOENIX FOR SALVAGING ANY ITEMS AND FOR SPECIAL INSTRUCTIONS. COMPACT VOIDED AREA TO 95% DENSITY.
5. CONTRACTOR TO REMOVE EXIST AC PAVEMENT AND CONCRETE AND REPLACE IN-KIND. BEFORE REPLACING ANY NEW AC PAVEMENT AND NEW CONCRETE REFER TO THE CIVIL SHEETS FOR ALL NEW BURIED UTILITY CONSTRUCTION.
6. ITEMS CALLED OUT TO BE ABANDONED CAN BE REMOVED FOR CONTRACTOR'S CONVENIENCE AT NO ADDITIONAL COST TO THE CITY.
7. ITEMS CALLED OUT TO BE REMOVED SHALL BE REMOVED A MINIMUM OF 2' VERTICALLY AND 6' HORIZONTALLY FROM NEW WORK TO BE INSTALLED.


PLAN 01 C-08
PLAN 03 C-10
PLAN 05 C-12
PLAN 02 C-09
PLAN 04 C-11
PLAN 06 C-13
PLAN 07 C-14
PLAN 08 C-15
PLAN 09 C-16
0
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1" = 5'

KEY MAP

N.T.S.

FACILITY DRAWINGS
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USER:FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\14_CSCLS40M02.dwg DATE:9/04/24 TIME:03:18pm

HDR

40280
JASON R.
FORT
Date Signed 08-30-24

Jason R. Fort

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
A	RS	10/2023	JF	30% SUBMITTAL
B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

DEMOLITION PLAN 02

CITY PROJECT NO. WS90400085

DATE: 08/2024

C-09 SHEET 14 OF 134

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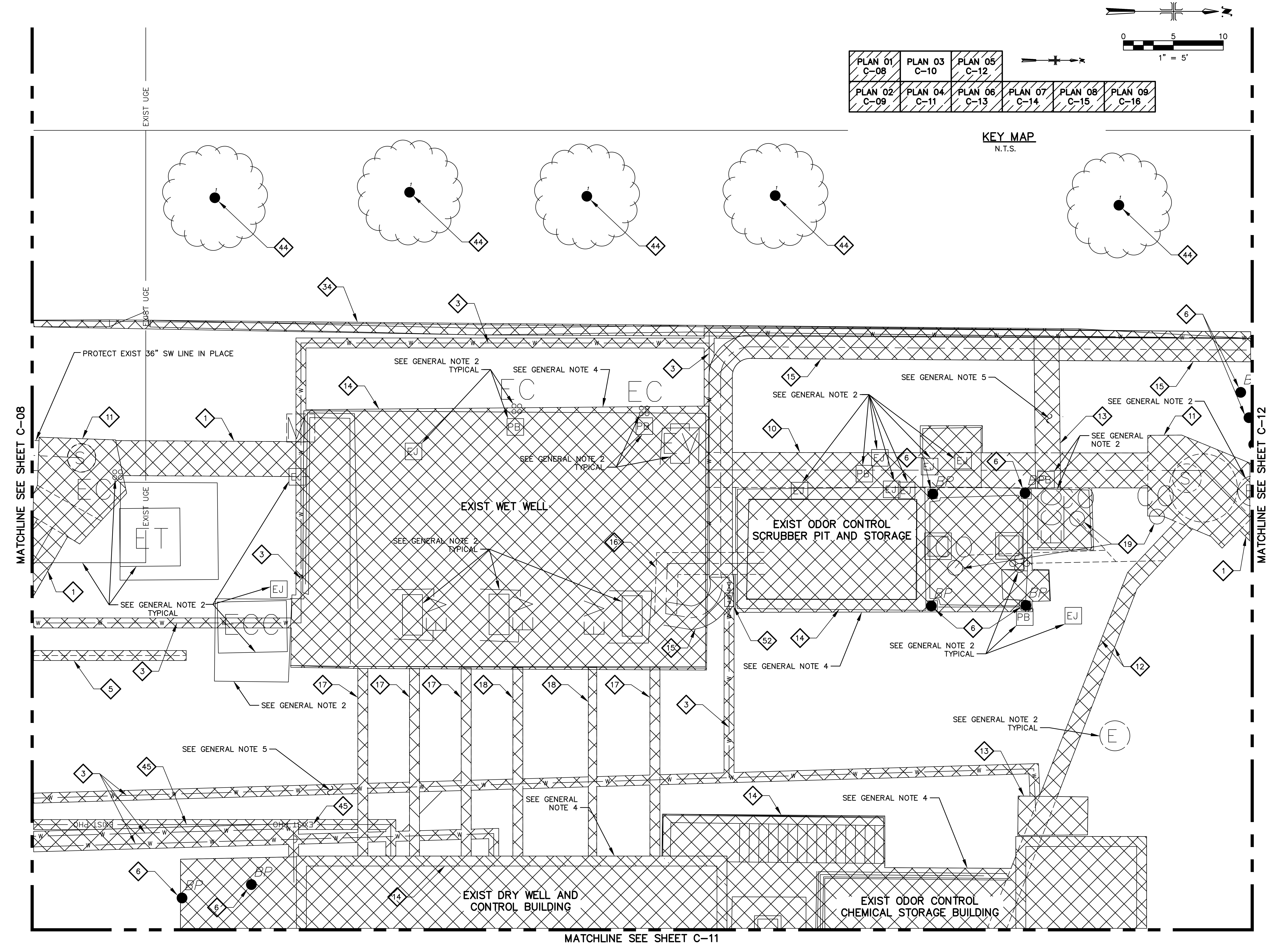
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1" = 5'
PLAN 01 C-08
PLAN 03 C-10
PLAN 05 C-12
PLAN 02 C-09
PLAN 04 C-11
PLAN 06 C-13
PLAN 07 C-14
PLAN 08 C-15
PLAN 09 C-16
KEY MAP
N.T.S.
EXIST UGE
44
34
3
6
1
11
14
15
10
13
12
16
17
18
19
45
52
PROTECT EXIST 36" SW LINE IN PLACE
SEE GENERAL NOTE 2 TYPICAL
SEE GENERAL NOTE 4
SEE GENERAL NOTE 5
SEE GENERAL NOTE 2
SEE GENERAL NOTE 2
EC
PB
EJ
ET
ECC
EJ
S
BP
E
MATCHLINE SEE SHEET C-08
MATCHLINE SEE SHEET C-12
MATCHLINE SEE SHEET C-11
EXIST WET WELL
EXIST ODOR CONTROL SCRUBBER PIT AND STORAGE
EXIST DRY WELL AND CONTROL BUILDING
EXIST ODOR CONTROL CHEMICAL STORAGE BUILDING
SEE GENERAL NOTE 4

KEY NOTES

- ① REMOVE EXIST 42" SW LINE.
- ③ REMOVE EXIST 3" WATER LINE.
- ⑤ REMOVE EXIST 6" PVC SW LINE.
- ⑥ REMOVE EXIST BOLLARD.
- ⑩ REMOVE EXIST 42" SW LINE.
- ⑪ REMOVE EXIST SW STRUCTURE.
- ⑫ REMOVE EXIST 3" AND 4" DRAIN LINES FROM THE EXIST BUILDING SUMP AND DRY WELL.
- ⑬ REMOVE EXIST CONCRETE SLAB.
- ⑭ REMOVE EXIST STRUCTURE AND ALL APPURTENANCES ASSOCIATED WITH THE STRUCTURE. COORDINATE WITH THE CITY OF PHOENIX TO MOVE TO A DESIGNATED LOCATION.
- ⑮ REMOVE EXIST 28" FOUL AIR DUCT.
- ⑯ REMOVE EXIST 30" FOUL AIR DUCT.
- ⑰ REMOVE EXIST 12" SW LINE.
- ⑱ REMOVE EXIST 10" SW LINE.
- ⑲ REMOVE EXIST SW CLEANOUT.
- ㉞ REMOVE EXIST 8" CMU WALL.
- ㊹ REMOVE EXIST TREE. CUT AND CAP IRRIGATION LINE.
- ㊺ REMOVE EXIST TELEPHONE LINE.
- (52) REMOVE EXIST BACKFLOW PREVENTER.

LEGEND

▩	DEMOLITION OF EXIST UTILITIES AND EXIST STRUCTURES WITH ALL APPURTENANCES AND CONCRETE SLABS. SEE GENERAL NOTE 4 AND 7.
▨	ABANDONMENT OF EXIST UTILITIES. SEE GENERAL NOTE 6.

GENERAL NOTE

1. CONTRACTOR TO VERIFY SIZE AND LOCATION OF THE EXIST UTILITY LINES, VALVES, AND METERS PRIOR TO RELOCATION AND ABANDONMENT.
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6. ITEMS CALLED OUT TO BE ABANDONED CAN BE REMOVED FOR CONTRACTOR'S CONVENIENCE AT NO ADDITIONAL COST TO THE CITY.
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HDR

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JASON R.
FORT

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
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C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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DES FA
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

DEMOLITION PLAN 03

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C-10 SHEET 15 OF 134
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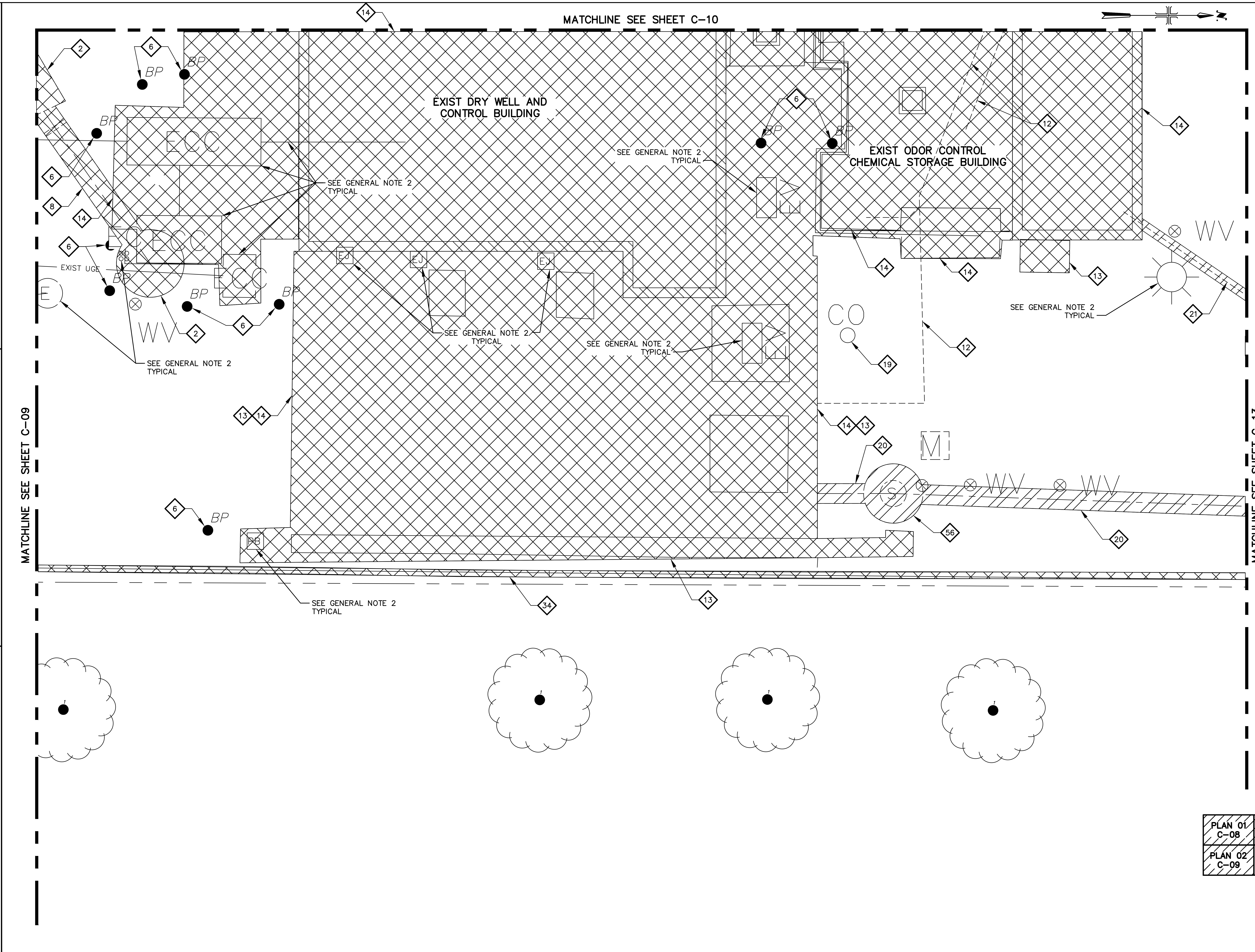

KEY NOTES

- ② REMOVE EXIST SW STRUCTURE.
- ⑥ REMOVE EXIST BOLLARD.
- ⑧ REMOVE EXIST 30" SW LINE.
- ⑪ REMOVE EXIST SW STRUCTURE.
- ⑫ REMOVE EXIST 3" AND 4" DRAIN LINES FROM THE EXIST BUILDING SUMP AND DRY WELL.
- ⑬ REMOVE EXIST CONCRETE SLAB.
- ⑭ REMOVE EXIST STRUCTURE AND ALL APPURTENANCES ASSOCIATED WITH THE STRUCTURE. COORDINATE WITH THE CITY OF PHOENIX TO MOVE TO A DESIGNATED LOCATION.
- ⑲ REMOVE EXIST SW CLEANOUT.
- ⑳ ABANDON EXIST 36" SW LINE IN PLACE.
- ㉑ ABANDON 2" CHEMICAL FEED INSIDE 4" PVC CONTAINMENT PIPE IN PLACE.
- ㉞ REMOVE EXIST CMU WALL.
- (56) ABANDON EXIST SW STRUCTURE IN PLACE AND FILL WITH CLSM.

LEGEND

▨	DEMOLITION OF EXIST UTILITIES AND EXIST STRUCTURES WITH ALL APPURTENANCES AND CONCRETE SLABS. SEE GENERAL NOTE 4 AND 7.
▧	ABANDONMENT OF EXIST UTILITIES. SEE GENERAL NOTE 6.

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3. FOR CONTINUATION OF DEMOLITION SEE SHEET C–08, SHEET C–09, SHEET C–10, SHEET C–12 AND SHEET C–13.
4. FOR ALL EXIST STRUCTURES THE CONTRACTOR SHALL REFER TO SPECIFICATION 01 11 00 – SUMMARY OF WORK FOR SEQUENCE OF DEMOLITION AND CONSTRUCTION. COORDINATE WITH THE CITY OF PHOENIX FOR SALVAGING ANY ITEMS AND FOR SPECIAL INSTRUCTIONS. COMPACT VOIDED AREA TO 95% DENSITY.
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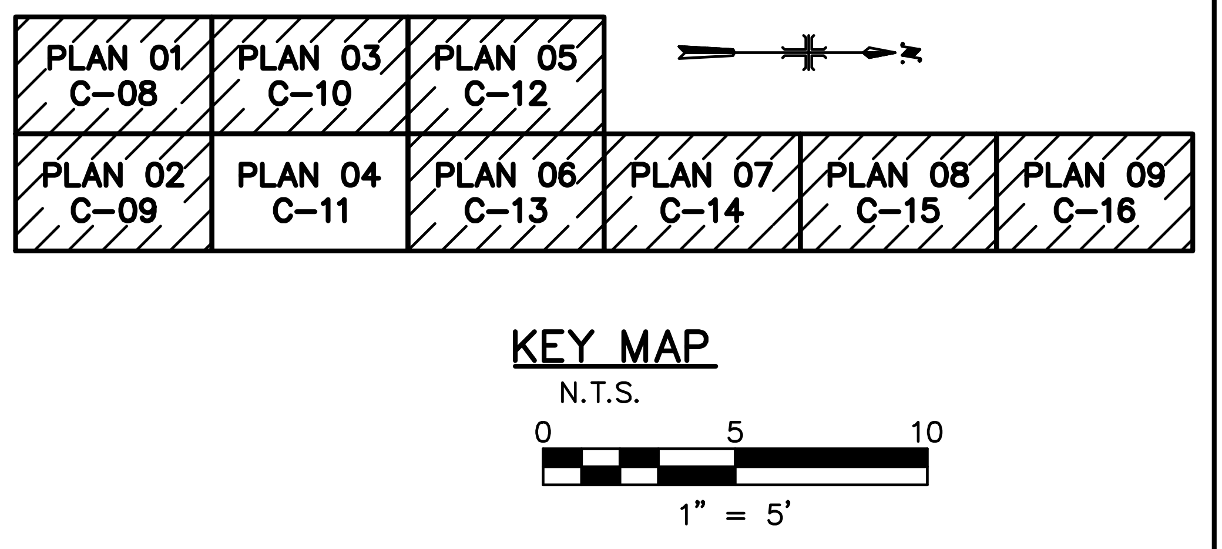

KEY MAP
N.T.S.

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40280
JASON R. FORT
Date Signed 08-30-24

Jason R. Fort

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D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

DEMOLITION PLAN 04

CITY PROJECT NO. WS90400085
DATE: 08/2024
C–11 SHEET 16 OF 134
CAD FILE: CSCLS40M04.dwg

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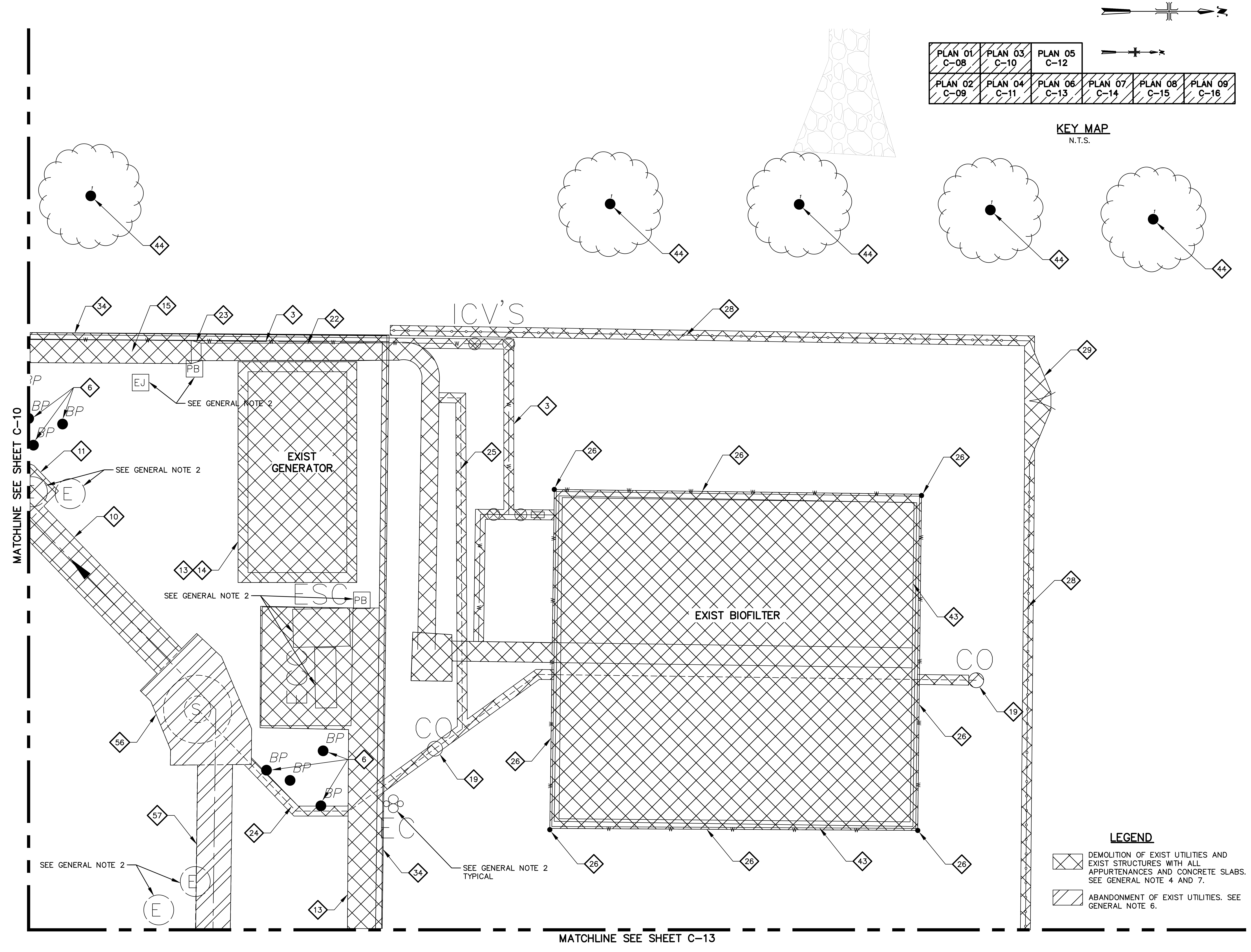

KEY NOTES

3	REMOVE EXIST 3" WATER LINE.
6	REMOVE EXIST BOLLARD.
10	REMOVE EXIST 42" SW LINE.
11	REMOVE EXIST SW STRUCTURE.
13	REMOVE EXIST CONCRETE SLAB.
14	REMOVE EXIST STRUCTURE AND ALL APPURTENANCES ASSOCIATED WITH THE STRUCTURE. COORDINATE WITH THE CITY OF PHOENIX TO MOVE TO A DESIGNATED LOCATION.
15	REMOVE EXIST 28" FAD.
19	REMOVE EXIST SW CLEANOUT.
22	REMOVE EXIST 24" FAD.
23	REMOVE FAD 28"X21" REDUCER.
24	REMOVE EXIST 8" DRAIN LINE.
25	REMOVE EXIST 1" DRAIN LINE.
26	REMOVE EXIST 1" SERVICE WATER LINE AND SPRINKLER HEADS.
28	REMOVE EXIST CHAIN LINK FENCE.
29	REMOVE EXIST 20' VEHICULAR SWING GATE.
34	REMOVE EXIST 8" CMU WALL.
43	REMOVE EXIST BIOFILTER MEDIA, AIR DISTRIBUTION PIPING, BIOFILTER CONCRETE STRUCTURE.
44	REMOVE EXIST TREE. CUT AND CAP IRRIGATION LINE.
56	ABANDON EXIST SW STRUCTURE IN PLACE AND FILL WITH CLSM.
57	ABANDON EXIST 42" SW LINE IN PLACE.

GENERAL NOTE

1. CONTRACTOR TO VERIFY SIZE AND LOCATION OF THE EXIST UTILITY LINES, VALVES, AND METERS PRIOR TO RELOCATION AND ABANDONMENT.
2. ALL EXIST ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES ARE SHOWN AS PART OF THE SURVEY AND THE OWNER'S UTILITY MAP. FOR ALL ELECTRICAL DEMOLITION, RELOCATION AND ABANDONMENT OF ANY AND ALL ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES SEE ELECTRICAL PLANS.
3. FOR CONTINUATION OF DEMOLITION SEE SHEET C-10, SHEET C-11 AND SHEET C-13.
4. FOR ALL EXIST STRUCTURES THE CONTRACTOR SHALL REFER TO SPECIFICATION 01 11 00 – SUMMARY OF WORK FOR SEQUENCE OF DEMOLITION AND CONSTRUCTION. COORDINATE WITH THE CITY OF PHOENIX FOR SALVAGING ANY ITEMS AND FOR SPECIAL INSTRUCTIONS. COMPACT VOIDED AREA TO 95% DENSITY.
5. CONTRACTOR TO REMOVE EXIST AC PAVEMENT AND CONCRETE AND REPLACE IN-KIND. BEFORE REPLACING ANY NEW AC PAVEMENT AND NEW CONCRETE REFER TO THE CIVIL SHEETS FOR ALL NEW BURIED UTILITY CONSTRUCTION.
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LEGEND

▩	DEMOLITION OF EXIST UTILITIES AND EXIST STRUCTURES WITH ALL APPURTENANCES AND CONCRETE SLABS. SEE GENERAL NOTE 4 AND 7.
▨	ABANDONMENT OF EXIST UTILITIES. SEE GENERAL NOTE 6.

0 5 10
1" = 5'

FACILITY DRAWINGS
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USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\17_CSCLS40M05.dwg DATE: 9/04/24 TIME: 03:19pm

HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

REVISIONS				
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D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
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*				

DES FA
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

DEMOLITION PLAN 05

CITY PROJECT NO. WS90400085
DATE: 08/2024
C-12

CAD FILE: CSCLS40M05.dwg

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FOR CONSTRUCTION

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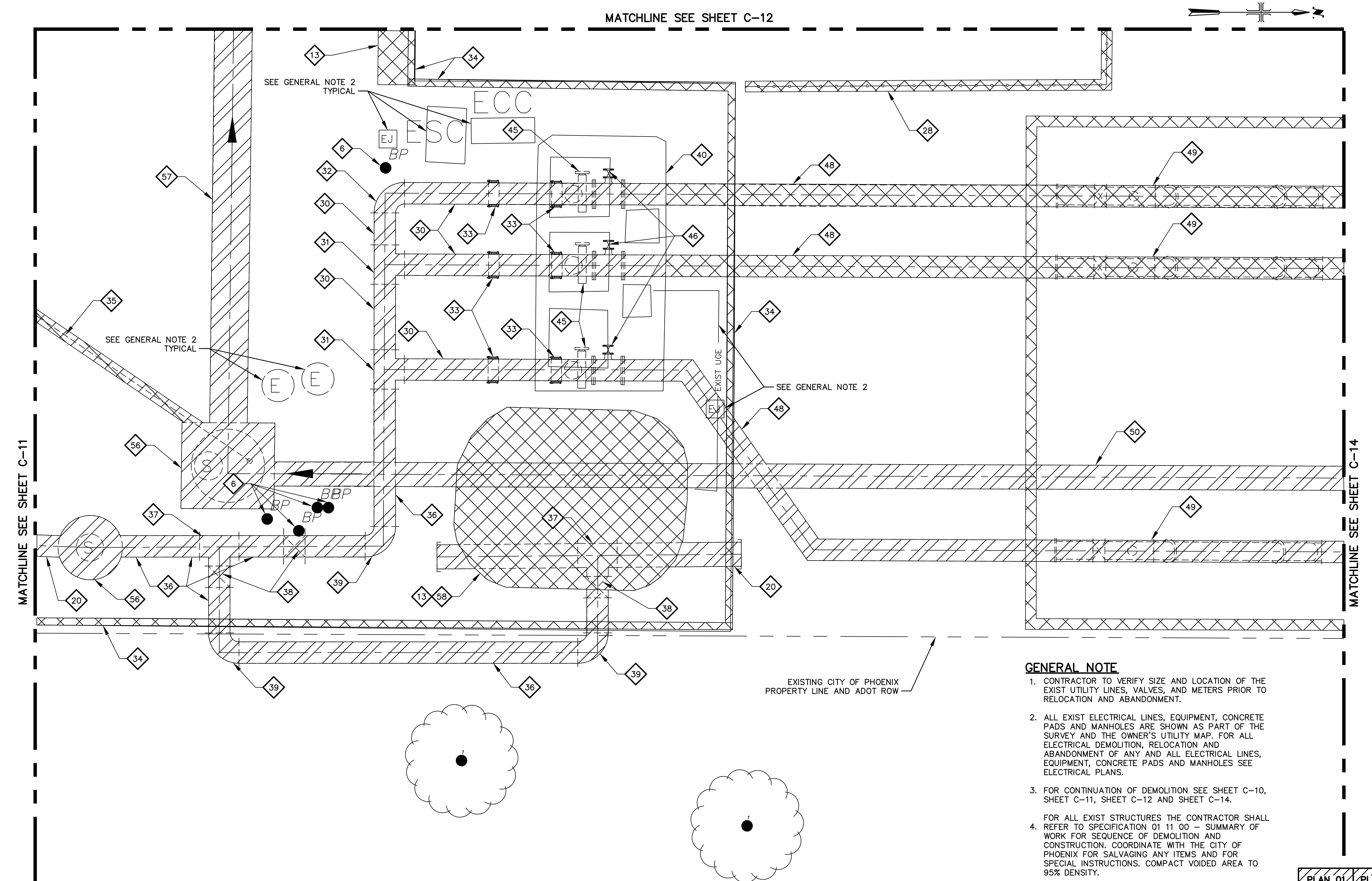

KEY NOTES

- 6 REMOVE EXIST BOLLARD.
- 10 REMOVE EXIST 42" SW LINE IN PLACE.
- 11 REMOVE EXIST SW STRUCTURE IN PLACE AND FILL WITH LOW STRENGTH GROUT.
- 13 REMOVE EXIST CONCRETE SLAB.
- 20 ABANDON EXIST 24" SW LINE IN PLACE.
- 28 REMOVE EXIST CHAIN LINK FENCE IN PLACE.
- 30 ABANDON EXIST 24" SW LINE IN PLACE.
- 31 ABANDON EXIST 24"X24"X24" SW TEE.
- 32 ABANDON EXIST 24" 90° SW BEND.
- 33 REMOVE EXIST 24" FLEX COUPLING.
- 34 REMOVE EXIST 8" CMU WALL.
- 35 REMOVE EXIST SW DRAIN.
- 36 ABANDON 24" SW LINE IN PLACE.
- 37 ABANDON 24" SW TEE IN PLACE.
- 38 ABANDON 24" SW VALVE IN PLACE.
- 39 ABANDON 24" 90° BEND IN PLACE.
- 40 ABANDON EXIST FORCE MAIN WASTE VAULT.
- 45 REMOVE EXIST 24" PLUG VALVE.
- 46 REMOVE EXIST 6" GATE VALVE.
- 48 REMOVE EXIST 24" FORCE MAIN.
- 49 REMOVE EXIST PIG LAUNCHING STATION.
- 50 ABANDON EXIST 27" SW PIPE IN PLACE.
- 56 ABANDON EXIST SW STRUCTURE IN PLACE AND FILL WITH CLSM.
- 57 ABANDON EXIST 42" SW LINE IN PLACE.
- 58 REMOVE EXIST FERROUS CHLORIDE SYSTEM. CONTRACTOR TO DRAIN RESIDUAL CHEMICALS. FLUSH AND DISPOSE OF RINSATE FOR TANKS, PIPING, PUMPS, ETC.

GENERAL NOTE

1. CONTRACTOR TO VERIFY SIZE AND LOCATION OF THE EXIST UTILITY LINES, VALVES, AND METERS PRIOR TO RELOCATION AND ABANDONMENT.
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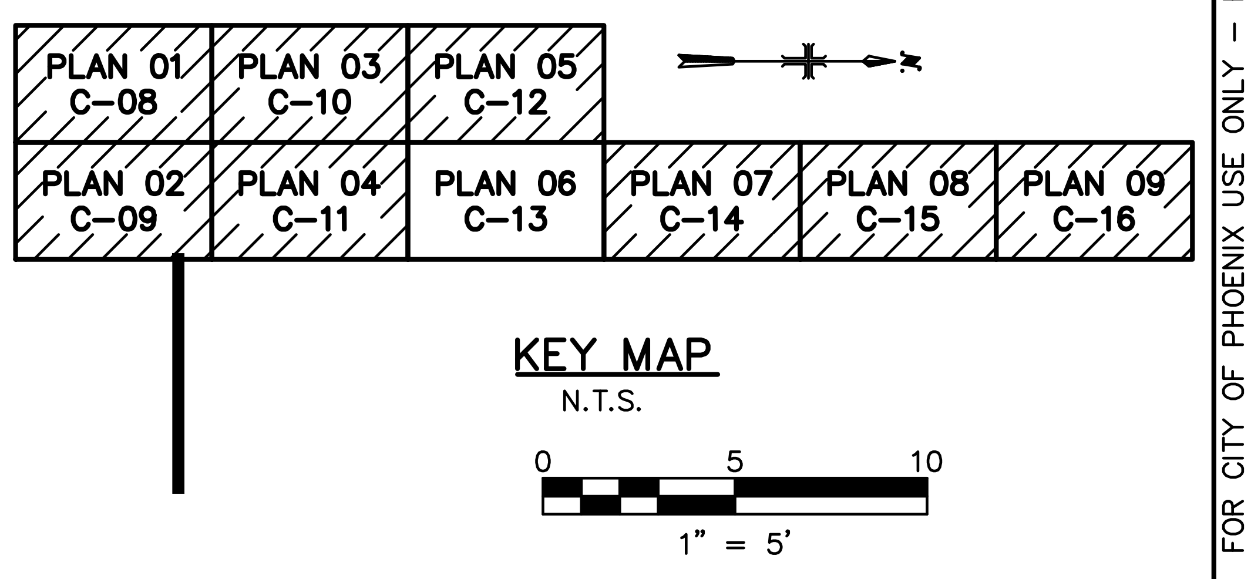
LEGEND

☒	DEMOLITION OF EXIST UTILITIES AND EXIST STRUCTURES WITH ALL APPURTENANCES AND CONCRETE SLABS. SEE GENERAL NOTE 4 AND 7.
▨	ABANDONMENT OF EXIST UTILITIES. SEE GENERAL NOTE 6.



KEY MAP
N.T.S.

FACILITY DRAWINGS
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HDR

40280
JASON R.
FORT
Date Signed 08-30-24
Jason R. Fort

REVISIONS

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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

DEMOLITION PLAN 06

CITY PROJECT NO. WS90400085
DATE: 08/2024
C-13
SHEET 18 OF 134
CAD FILE: CSCLS40M06.dwg

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\18_CSCLS40M06.dwg DATE: 9/04/24 TIME: 03:19pm

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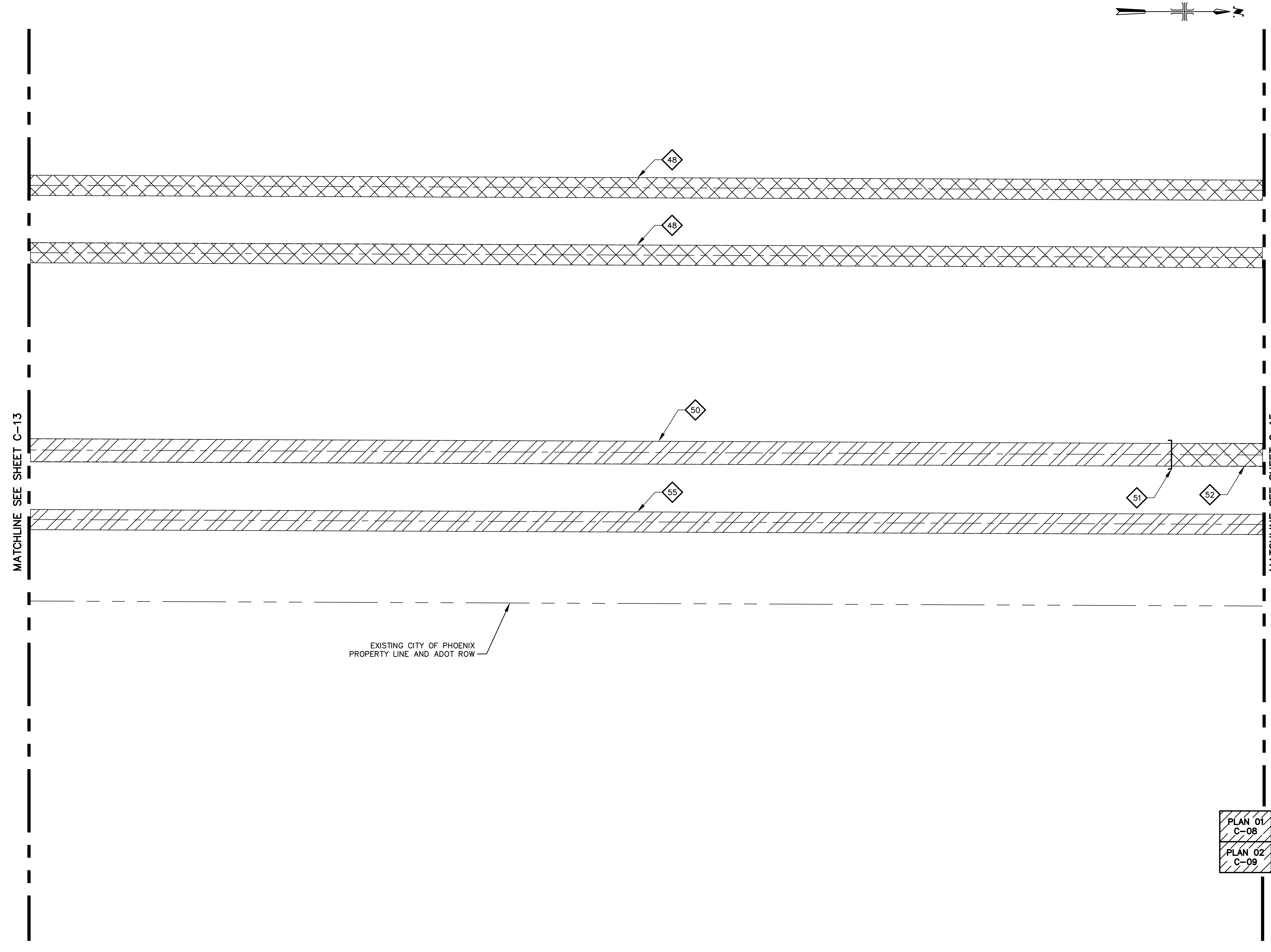

KEY NOTES

- ⟨48⟩ REMOVE EXIST 24" FORCE MAIN.
- ⟨50⟩ ABANDON EXIST 27" SW PIPE IN PLACE.
- ⟨51⟩ CUT AND PLUG EXIST 27" SW PIPE.
- ⟨52⟩ REMOVE EXIST 27" SW PIPE.
- ⟨55⟩ ABANDON EXIST 24" FORCE MAIN IN PLACE.

LEGEND

☒	DEMOLITION OF EXIST UTILITIES AND EXIST STRUCTURES WITH ALL APPURTENANCES AND CONCRETE SLABS. SEE GENERAL NOTE 4 AND 7.
▨	ABANDONMENT OF EXIST UTILITIES. SEE GENERAL NOTE 6.

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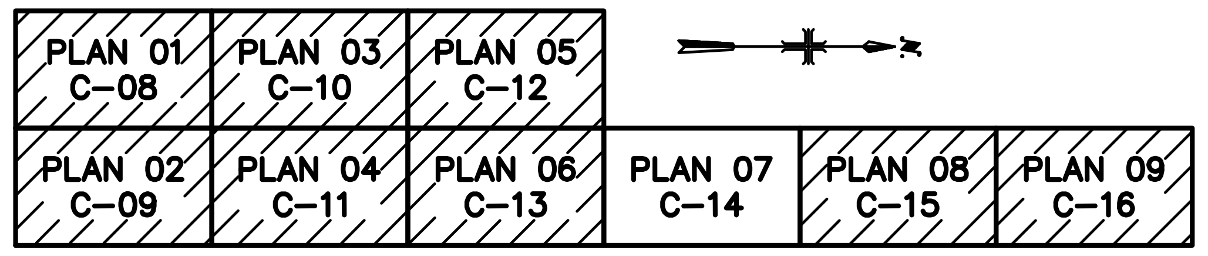

KEY MAP
N.T.S.

0 5 10
1" = 5'

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HDR

40280
JASON R.
FORT
Jason R. Fort

REVISIONS				
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JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

DEMOLITION PLAN 07

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CITY PROJECT NO. WS90400085

DATE: 08/2024

C-14 SHEET 19 OF 134

CAD FILE: CSCLS40M07.dwg

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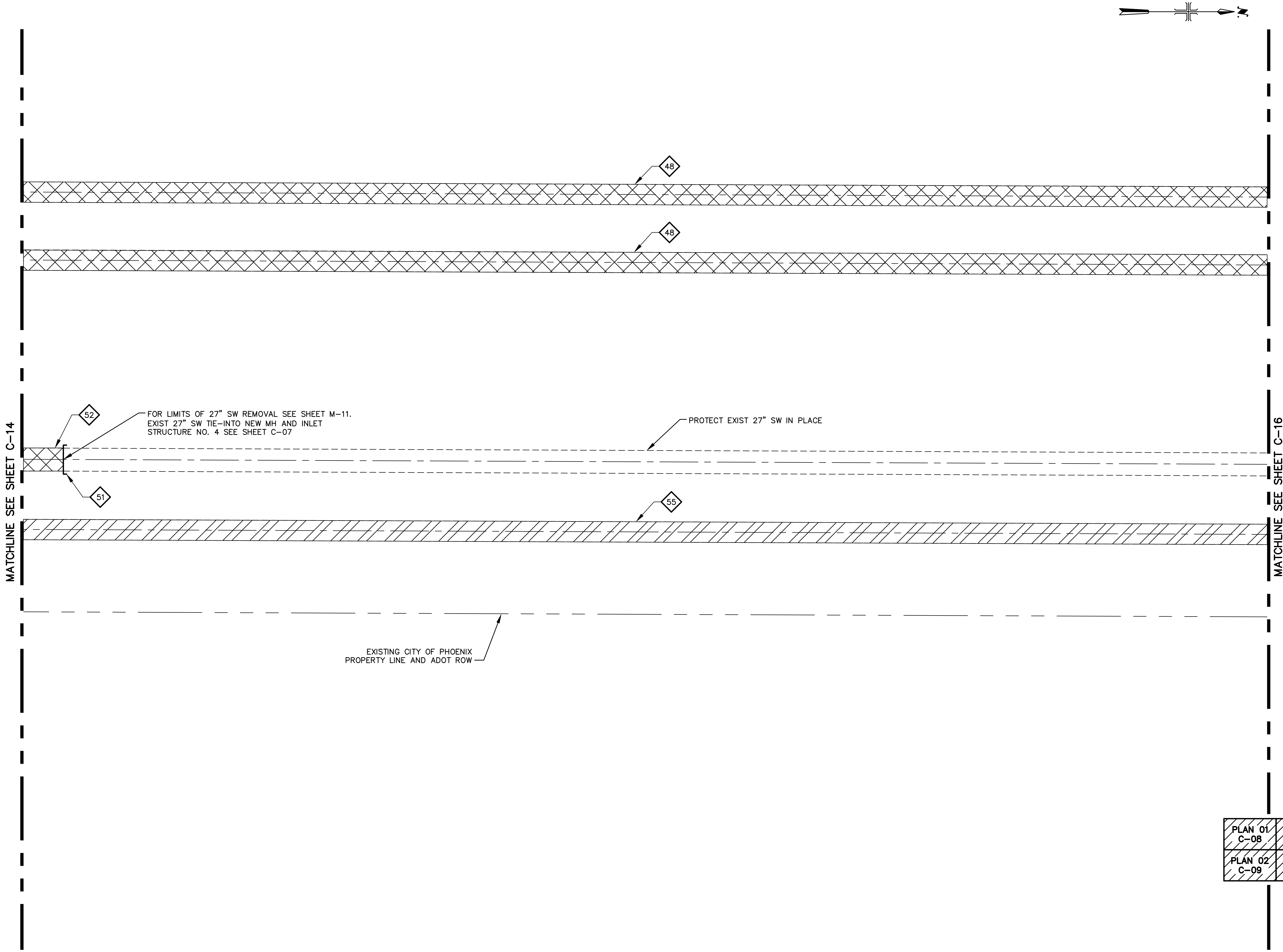
48
48
52
FOR LIMITS OF 27" SW REMOVAL SEE SHEET M–11.
EXIST 27" SW TIE–INTO NEW MH AND INLET
STRUCTURE NO. 4 SEE SHEET C–07
PROTECT EXIST 27" SW IN PLACE
51
55
MATCHLINE SEE SHEET C–14
MATCHLINE SEE SHEET C–16
EXISTING CITY OF PHOENIX
PROPERTY LINE AND ADOT ROW

KEY NOTES

- ◇48 REMOVE EXIST 24" FORCE MAIN.
- ◇51 CUT AND PLUG EXIST 27" SW PIPE.
- ◇52 REMOVE EXIST 27" SW PIPE.
- ◇55 ABANDON EXIST 24" FORCE MAIN IN PLACE.

LEGEND

☒	DEMOLITION OF EXIST UTILITIES AND EXIST STRUCTURES WITH ALL APPURTENANCES AND CONCRETE SLABS. SEE GENERAL NOTE 4 AND 7.
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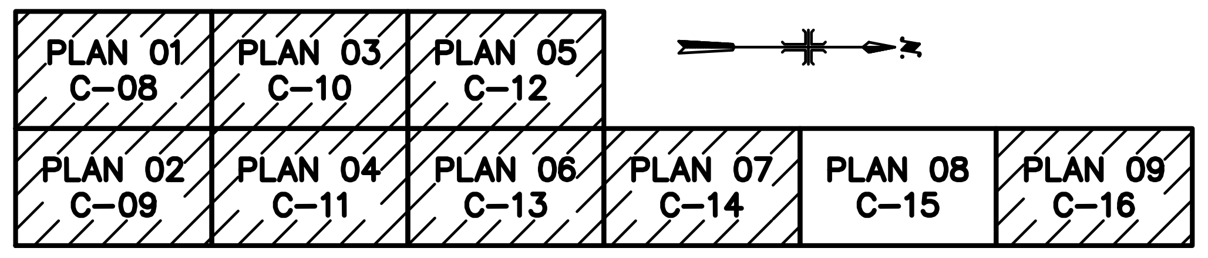
PLAN 01
C–08
PLAN 03
C–10
PLAN 05
C–12
PLAN 02
C–09
PLAN 04
C–11
PLAN 06
C–13
PLAN 07
C–14
PLAN 08
C–15
PLAN 09
C–16

KEY MAP

N.T.S.

0 5 10
1" = 5'

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40280
JASON R.
FORT
Date Signed 08-30-24

Jason R. Fort

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DES FA
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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

DEMOLITION PLAN 08

CITY PROJECT NO. WS90400085
DATE: 08/2024
C–15 SHEET 20 OF 134
CAD FILE: CSCLS40M08.dwg

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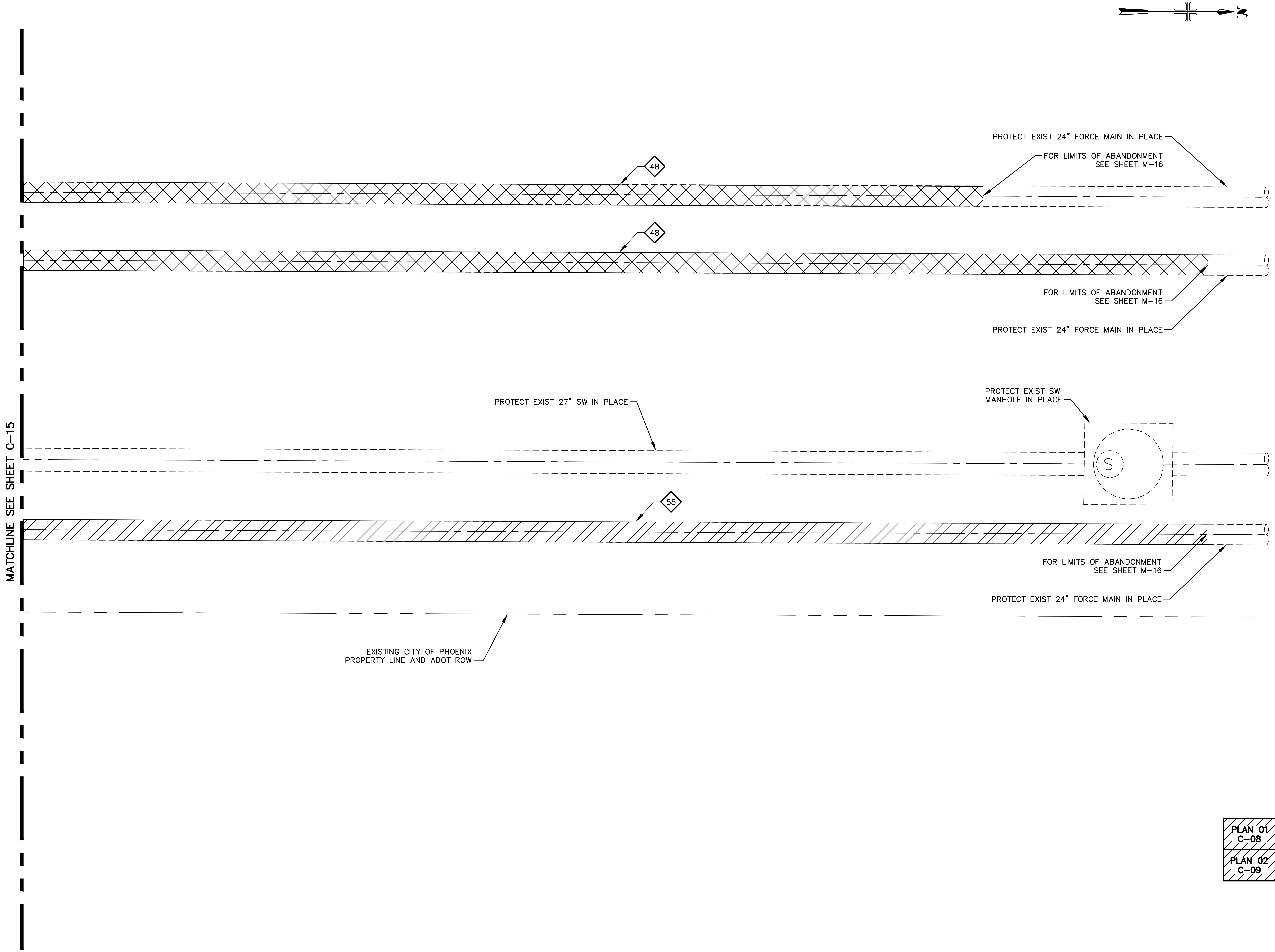
MATCHLINE SEE SHEET C–15
48
PROTECT EXIST 24" FORCE MAIN IN PLACE
FOR LIMITS OF ABANDONMENT SEE SHEET M–16
48
FOR LIMITS OF ABANDONMENT SEE SHEET M–16
PROTECT EXIST 24" FORCE MAIN IN PLACE
PROTECT EXIST 27" SW IN PLACE
PROTECT EXIST SW MANHOLE IN PLACE
S
55
FOR LIMITS OF ABANDONMENT SEE SHEET M–16
PROTECT EXIST 24" FORCE MAIN IN PLACE
EXISTING CITY OF PHOENIX PROPERTY LINE AND ADOT ROW

KEY NOTES

- ◇48 REMOVE EXIST 24" FORCE MAIN.
- ◇55 ABANDON EXIST 24" FORCE MAIN IN PLACE.

LEGEND

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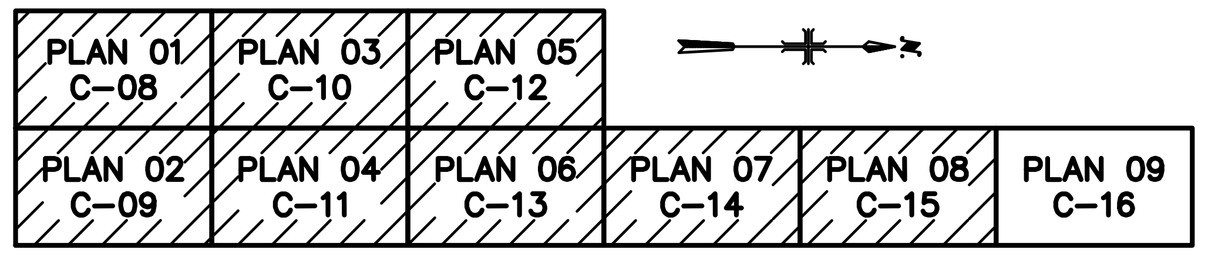
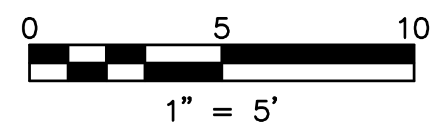

PLAN 01 C–08
PLAN 03 C–10
PLAN 05 C–12
PLAN 02 C–09
PLAN 04 C–11
PLAN 06 C–13
PLAN 07 C–14
PLAN 08 C–15
PLAN 09 C–16

KEY MAP

N.T.S.



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HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

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DES FA
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

DEMOLITION PLAN 09

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CITY PROJECT NO. WS90400085
DATE: 08/2024
C–16 SHEET 21 OF 134
CAD FILE: CSCLS40M09.dwg

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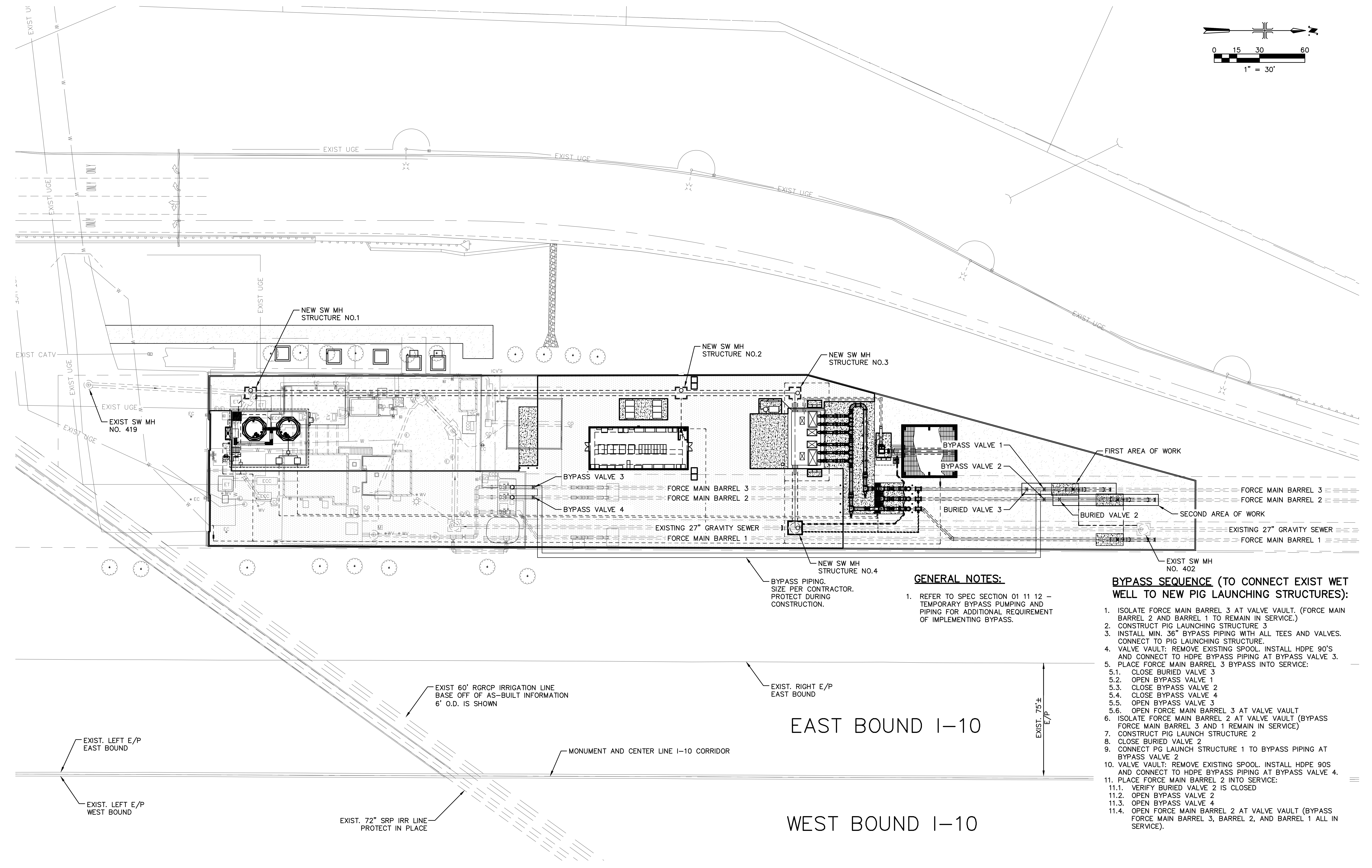
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1" = 30'
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EXIST UGE
EXIST CATV
EXIST UGE
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ONLY
ONLY
NEW SW MH
STRUCTURE NO.1
NEW SW MH
STRUCTURE NO.2
NEW SW MH
STRUCTURE NO.3
EXIST SW MH
NO. 419
ICV'S
BYPASS VALVE 3
BYPASS VALVE 4
FORCE MAIN BARREL 3
FORCE MAIN BARREL 2
EXISTING 27" GRAVITY SEWER
FORCE MAIN BARREL 1
BYPASS VALVE 1
BYPASS VALVE 2
FIRST AREA OF WORK
BURIED VALVE 3
BURIED VALVE 2
SECOND AREA OF WORK
FORCE MAIN BARREL 3
FORCE MAIN BARREL 2
EXISTING 27" GRAVITY SEWER
FORCE MAIN BARREL 1
EXIST SW MH
NO. 402
NEW SW MH
STRUCTURE NO.4
BYPASS PIPING.
SIZE PER CONTRACTOR.
PROTECT DURING
CONSTRUCTION.
EXIST 60' RGRCP IRRIGATION LINE
BASE OFF OF AS-BUILT INFORMATION
6' O.D. IS SHOWN
EXIST. RIGHT E/P
EAST BOUND
EXIST. 75'±
E/P
EAST BOUND I-10
EXIST. LEFT E/P
EAST BOUND
MONUMENT AND CENTER LINE I-10 CORRIDOR
EXIST. LEFT E/P
WEST BOUND
EXIST. 72" SRP IRR LINE
PROTECT IN PLACE
WEST BOUND I-10

GENERAL NOTES:

1. REFER TO SPEC SECTION 01 11 12 – TEMPORARY BYPASS PUMPING AND PIPING FOR ADDITIONAL REQUIREMENT OF IMPLEMENTING BYPASS.

BYPASS SEQUENCE (TO CONNECT EXIST WET WELL TO NEW PIG LAUNCHING STRUCTURES):

1. ISOLATE FORCE MAIN BARREL 3 AT VALVE VAULT. (FORCE MAIN BARREL 2 AND BARREL 1 TO REMAIN IN SERVICE.)
2. CONSTRUCT PIG LAUNCHING STRUCTURE 3
3. INSTALL MIN. 36" BYPASS PIPING WITH ALL TEES AND VALVES. CONNECT TO PIG LAUNCHING STRUCTURE.
4. VALVE VAULT: REMOVE EXISTING SPOOL. INSTALL HDPE 90'S AND CONNECT TO HDPE BYPASS PIPING AT BYPASS VALVE 3.
5. PLACE FORCE MAIN BARREL 3 BYPASS INTO SERVICE:
   - 5.1. CLOSE BURIED VALVE 3
   - 5.2. OPEN BYPASS VALVE 1
   - 5.3. CLOSE BYPASS VALVE 2
   - 5.4. CLOSE BYPASS VALVE 4
   - 5.5. OPEN BYPASS VALVE 3
   - 5.6. OPEN FORCE MAIN BARREL 3 AT VALVE VAULT
6. ISOLATE FORCE MAIN BARREL 2 AT VALVE VAULT (BYPASS FORCE MAIN BARREL 3 AND 1 REMAIN IN SERVICE)
7. CONSTRUCT PG LAUNCH STRUCTURE 2
8. CLOSE BURIED VALVE 2
9. CONNECT PG LAUNCH STRUCTURE 1 TO BYPASS PIPING AT BYPASS VALVE 2
10. VALVE VAULT: REMOVE EXISTING SPOOL. INSTALL HDPE 90S AND CONNECT TO HDPE BYPASS PIPING AT BYPASS VALVE 4.
11. PLACE FORCE MAIN BARREL 2 INTO SERVICE:
   - 11.1. VERIFY BURIED VALVE 2 IS CLOSED
   - 11.2. OPEN BYPASS VALVE 2
   - 11.3. OPEN BYPASS VALVE 4
   - 11.4. OPEN FORCE MAIN BARREL 2 AT VALVE VAULT (BYPASS FORCE MAIN BARREL 3, BARREL 2, AND BARREL 1 ALL IN SERVICE).

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
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HDR

CERTIFICATE NO.
40280
JASON R.
FORT
Date Signed 08-30-24

Jason R. Fort

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	RS	10/2023	JF	30% SUBMITTAL
B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

BYPASS PLAN 01

CITY PROJECT NO. WS90400085
DATE: 08/2024
C-17

CAD FILE: CSCLS40P02.dwg

USER:FDERASFRAIJO FILE:C:\pwworking\west01\d3411640\22_CSCLS40P02.dwg DATE:9/04/24 TIME:03:19pm

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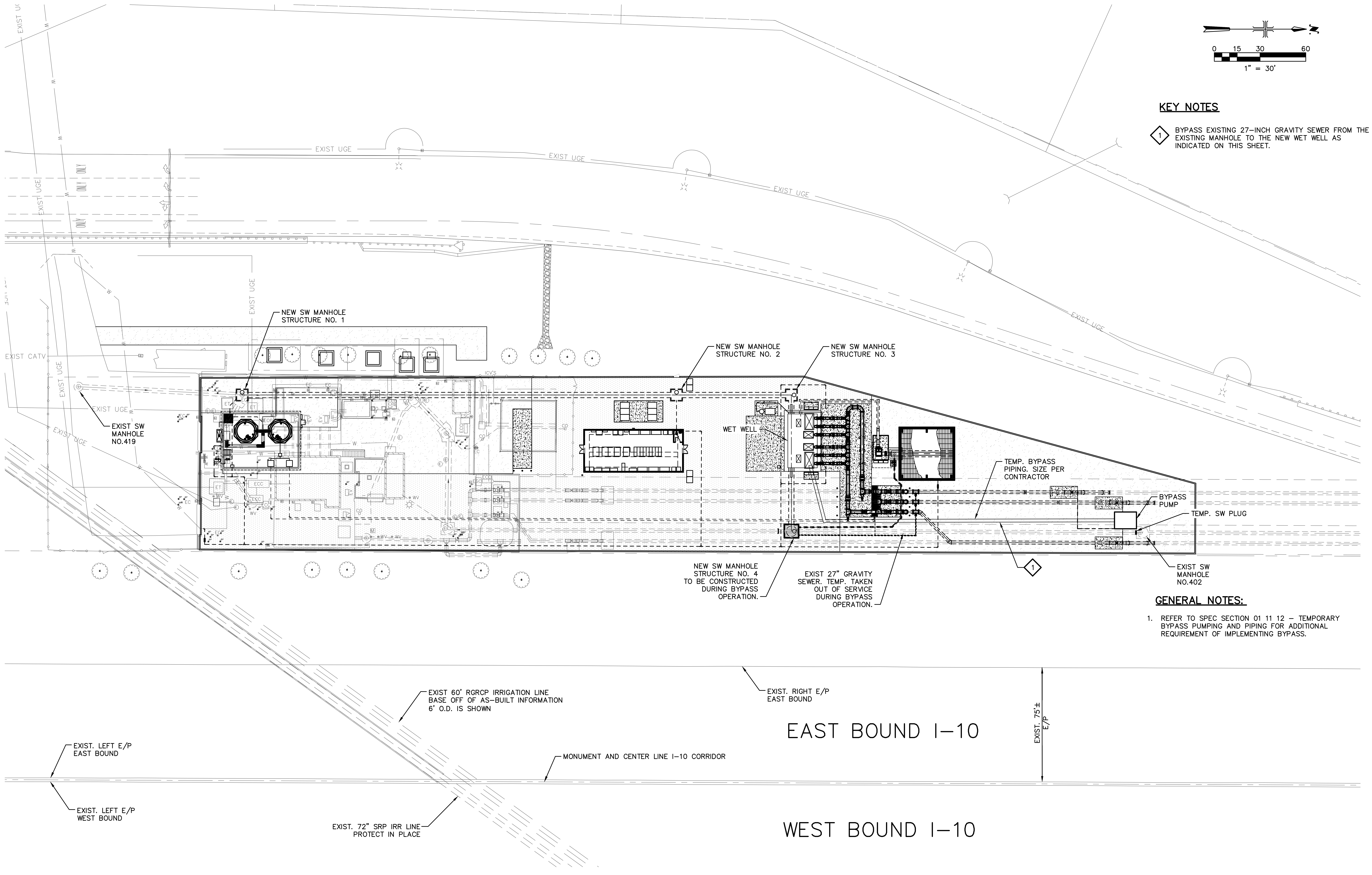
0 15 30 60
1" = 30'
EXIST UGE
EXIST CATV
ONLY
NEW SW MANHOLE STRUCTURE NO. 1
NEW SW MANHOLE STRUCTURE NO. 2
NEW SW MANHOLE STRUCTURE NO. 3
EXIST SW MANHOLE NO.419
WET WELL
TEMP. BYPASS PIPING. SIZE PER CONTRACTOR
BYPASS PUMP
TEMP. SW PLUG
EXIST SW MANHOLE NO.402
NEW SW MANHOLE STRUCTURE NO. 4 TO BE CONSTRUCTED DURING BYPASS OPERATION.
EXIST 27" GRAVITY SEWER. TEMP. TAKEN OUT OF SERVICE DURING BYPASS OPERATION.
1
ECC
WV
EXIST 60' RGRCP IRRIGATION LINE BASE OFF OF AS–BUILT INFORMATION 6' O.D. IS SHOWN
EXIST. RIGHT E/P EAST BOUND
EAST BOUND I–10
EXIST. 75'± E/P
EXIST. LEFT E/P EAST BOUND
MONUMENT AND CENTER LINE I–10 CORRIDOR
EXIST. LEFT E/P WEST BOUND
EXIST. 72" SRP IRR LINE PROTECT IN PLACE
WEST BOUND I–10

KEY NOTES

1. BYPASS EXISTING 27–INCH GRAVITY SEWER FROM THE EXISTING MANHOLE TO THE NEW WET WELL AS INDICATED ON THIS SHEET.

GENERAL NOTES:

1. REFER TO SPEC SECTION 01 11 12 – TEMPORARY BYPASS PUMPING AND PIPING FOR ADDITIONAL REQUIREMENT OF IMPLEMENTING BYPASS.

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HDR

40280
JASON R.
FORT
Jason R. Fort

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
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B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

BYPASS PLAN 02

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CITY PROJECT NO. WS90400085
DATE: 08/2024
C–18
SHEET 23 OF 134
CAD FILE: CSCLS40P03.dwg

USER:FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\23_CSCLS40P03.dwg DATE: 9/04/24 TIME: 03:19pm

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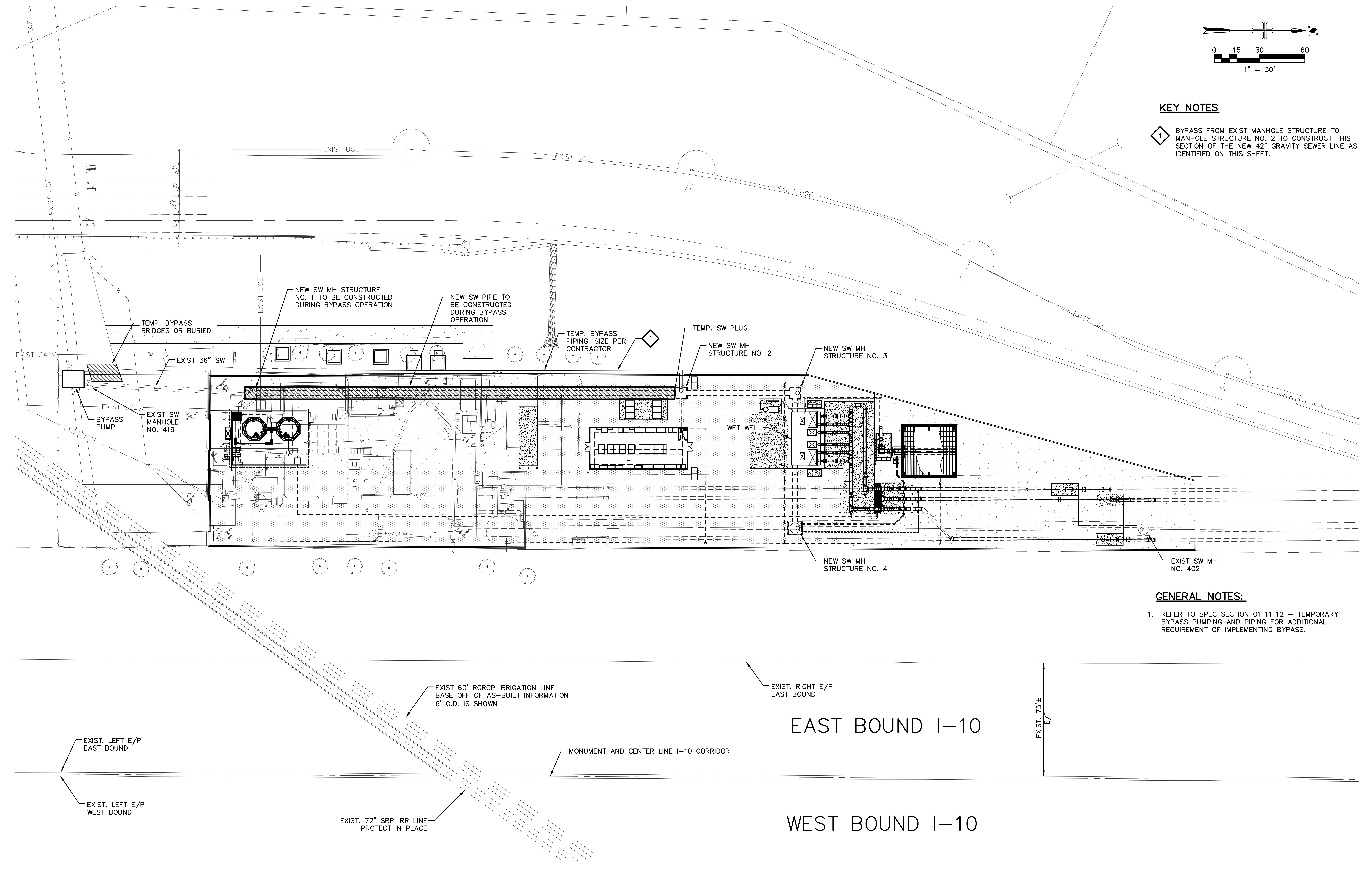
0 15 30 60
1" = 30'
EXIST UGE
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ONLY
ONLY
ONLY
NEW SW MH STRUCTURE NO. 1 TO BE CONSTRUCTED DURING BYPASS OPERATION
NEW SW PIPE TO BE CONSTRUCTED DURING BYPASS OPERATION
TEMP. BYPASS BRIDGES OR BURIED
TEMP. BYPASS PIPING. SIZE PER CONTRACTOR
1
TEMP. SW PLUG
NEW SW MH STRUCTURE NO. 2
NEW SW MH STRUCTURE NO. 3
EXIST 36" SW
BYPASS PUMP
EXIST SW MANHOLE NO. 419
WET WELL
NEW SW MH STRUCTURE NO. 4
EXIST SW MH NO. 402
EXIST 60' RGRCP IRRIGATION LINE BASE OFF OF AS-BUILT INFORMATION 6' O.D. IS SHOWN
EXIST. RIGHT E/P EAST BOUND
EAST BOUND I-10
EXIST. 75'± E/P
EXIST. LEFT E/P EAST BOUND
MONUMENT AND CENTER LINE I-10 CORRIDOR
EXIST. LEFT E/P WEST BOUND
EXIST. 72" SRP IRR LINE PROTECT IN PLACE
WEST BOUND I-10

KEY NOTES

1. BYPASS FROM EXIST MANHOLE STRUCTURE TO MANHOLE STRUCTURE NO. 2 TO CONSTRUCT THIS SECTION OF THE NEW 42" GRAVITY SEWER LINE AS IDENTIFIED ON THIS SHEET.

GENERAL NOTES:

1. REFER TO SPEC SECTION 01 11 12 – TEMPORARY BYPASS PUMPING AND PIPING FOR ADDITIONAL REQUIREMENT OF IMPLEMENTING BYPASS.

FACILITY DRAWINGS
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HDR

40280
JASON R.
FORT

Jason R. Fort

REVISIONS

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CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

BYPASS PLAN 03

CITY PROJECT NO. WS90400085
DATE: 08/2024
C–19
SHEET 24 OF 134
CAD FILE: CSCLS40P04.dwg

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\24_CSCLS40P04.dwg DATE: 9/04/24 TIME: 03:20pm

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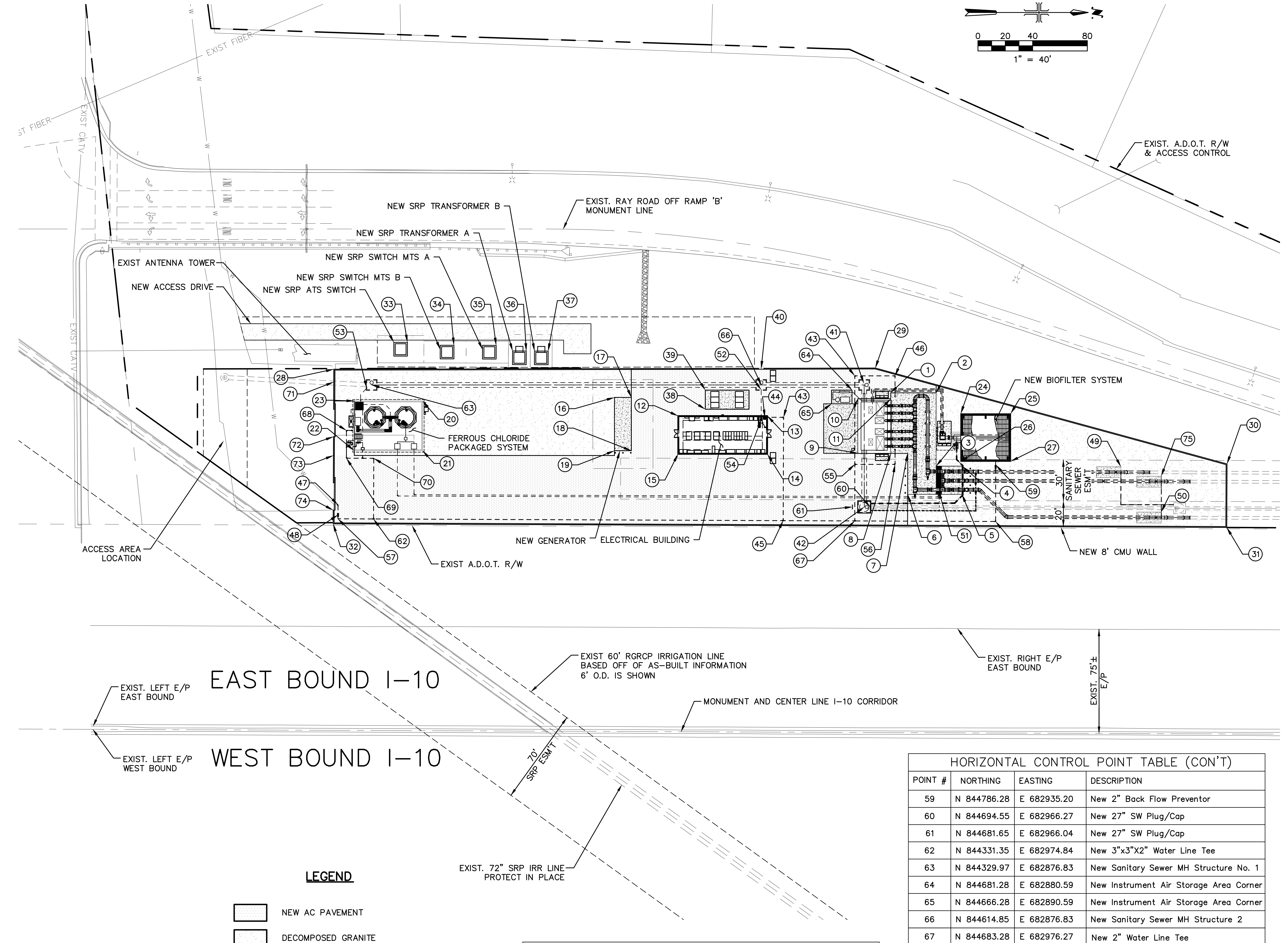
0 20 40 80
1" = 40'
EXIST FIBER
EXIST CATV
EXIST. A.D.O.T. R/W & ACCESS CONTROL
EXIST. RAY ROAD OFF RAMP 'B' MONUMENT LINE
NEW SRP TRANSFORMER B
NEW SRP TRANSFORMER A
NEW SRP SWITCH MTS A
NEW SRP SWITCH MTS B
NEW SRP ATS SWITCH
EXIST ANTENNA TOWER
NEW ACCESS DRIVE
FERROUS CHLORIDE PACKAGED SYSTEM
NEW BIOFILTER SYSTEM
30' SANITARY SEWER ESM'T
20'
NEW 8' CMU WALL
NEW GENERATOR
ELECTRICAL BUILDING
EXIST A.D.O.T. R/W
ACCESS AREA LOCATION
EXIST 60' RGRCP IRRIGATION LINE BASED OFF OF AS-BUILT INFORMATION 6' O.D. IS SHOWN
EXIST. RIGHT E/P EAST BOUND
EXIST. 75'± E/P
EAST BOUND I-10
WEST BOUND I-10
EXIST. LEFT E/P EAST BOUND
EXIST. LEFT E/P WEST BOUND
MONUMENT AND CENTER LINE I-10 CORRIDOR
70' SRP ESM'T
EXIST. 72" SRP IRR LINE PROTECT IN PLACE
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75

LEGEND

▭	NEW AC PAVEMENT
▨	DECOMPOSED GRANITE
━ ━	EXISTING ADOT RIGHT OF WAY
- - -	EXISTING CITY OF PHOENIX SANITARY SEWER EASEMENT

HORIZONTAL CONTROL POINT TABLE

POINT #	NORTHING	EASTING	DESCRIPTION
1	N 844709.66	E 682882.56	New Piping Pad Corner
2	N 844742.77	E 682882.56	New Piping Pad Corner
3	N 844742.77	E 682936.19	New Piping Pad Corner
4	N 844761.67	E 682936.19	New Piping Pad Corner
5	N 844761.67	E 682956.84	New Piping Pad Corner
6	N 844722.00	E 682956.84	New Piping Pad Corner
7	N 844722.00	E 682926.76	New Piping Pad Corner
8	N 844709.65	E 682926.76	New Wet Well Corner/Piping Pad Corner
9	N 844685.50	E 682926.76	New Wet Well Corner
10	N 844685.50	E 682887.00	New Wet Well Corner
11	N 844709.66	E 682887.00	New Wet Well Corner/Piping Pad Corner
12	N 844554.00	E 682899.40	New Electrical Building Corner
13	N 844619.34	E 682899.40	New Electrical Building Corner
14	N 844619.34	E 682927.40	New Electrical Building Corner
15	N 844554.00	E 682927.40	New Electrical Building Corner
16	N 844507.53	E 682885.94	New Generator Slab Corner
17	N 844519.88	E 682885.94	New Generator Slab Corner
18	N 844519.88	E 682924.94	New Generator Slab Corner
19	N 844507.53	E 682924.94	New Generator Slab Corner
20	N 844367.25	E 682888.55	New $FeCl_2$ Storage Area Wall Corner
21	N 844367.25	E 682924.88	New $FeCl_2$ Storage Area Wall Corner
22	N 844317.25	E 682924.88	New $FeCl_2$ Storage Area Wall Corner
23	N 844317.25	E 682888.55	New $FeCl_2$ Storage Area Wall Corner
24	N 844760.77	E 682897.89	New Biofilter Corner
25	N 8444797.27	E 682897.89	New Biofilter Corner
26	N 844760.77	E 682932.72	New Biofilter Corner
27	N 844797.27	E 682932.72	New Biofilter Corner
28	N 844302.27	E 682865.29	New 8" CMU Wall
29	N 844698.12	E 682863.97	New 8" CMU Wall
30	N 844955.49	E 682934.60	New 8" CMU Wall
31	N 844955.31	E 682981.05	New 8" CMU Wall
32	N 844301.81	E 682978.39	New 8" CMU Wall
33	N 844356.15	E 682845.66	New SRP ATS Switch
34	N 844390.13	E 682847.78	New SRP Switch MTS B
35	N 844421.05	E 682847.88	New SRP Switch MTS A
36	N 844443.01	E 682851.98	New SRP Transformer A
37	N 844459.04	E 682852.05	New SRP Transformer B
38	N 844605.92	E 682894.57	New Service Entrance Corner
39	N 844573.94	E 682880.59	New Service Entrance Corner
40	N 844334.48	E 682865.186	New 3' Wide Man Gate
41	N 844690.13	E 682876.83	New Sanitary Sewer MH Structure No. 3
42	N 844690.22	E 682966.08	New Sanitary Sewer MH Structure No. 4
43	N 844631.22	E 682900.49	New 2" Water Line 90° Bend
44	N 844617.27	E 682900.49	New 2" Water Line Service Elect. Bldg.
45	N 844630.92	E 682976.06	New 2" Water Line Tee
46	N 844612.71	E 682870.16	New 2" Water Line Tee
47	N 844305.39	E 682864.44	New 3" Water Line 90° Bend
48	N 844305.36	E 682971.89	New 3" Back Flow Preventor
49	N 844877.88	E 682936.63	New Launch Conc. Structure
50	N 844907.36	E 682969.77	New Launch Conc. Structure
51	N 844744.77	E 682954.43	$FeCl_2$ Injection Tap
52	N 844614.85	E 682878.59	New 4" Gravity Sanitary Sewer Line
53	N 844321.92	E 682877.92	New 4" Gravity Sanitary Sewer Line
54	N 844614.84	E 682902.42	New 2" Water Line Tie in
55	N 844683.28	E 682934.93	New 2" Water Line Tee
56	N 844712.74	E 682934.93	New 2" Water Line 90° Bend
57	N 844305.35	E 682974.73	New 3" Water Line 90° Bend
58	N 844786.29	E 682976.69	New 2" Water Line 90° Bend

HORIZONTAL CONTROL POINT TABLE (CON'T)

POINT #	NORTHING	EASTING	DESCRIPTION
59	N 844786.28	E 682935.20	New 2" Back Flow Preventor
60	N 844694.55	E 682966.27	New 27" SW Plug/Cap
61	N 844681.65	E 682966.04	New 27" SW Plug/Cap
62	N 844331.35	E 682974.84	New 3"x3"X2" Water Line Tee
63	N 844329.97	E 682876.83	New Sanitary Sewer MH Structure No. 1
64	N 844681.28	E 682880.59	New Instrument Air Storage Area Corner
65	N 844666.28	E 682890.59	New Instrument Air Storage Area Corner
66	N 844614.85	E 682876.83	New Sanitary Sewer MH Structure 2
67	N 844683.28	E 682976.27	New 2" Water Line Tee
68	N 844311.54	E 682910.10	New 2" Water Line 90° Bend
69	N 844311.53	E 682930.39	New 2" Water Line Tee
70	N 844331.53	E 682930.47	New 2" Water Line 90° Bend
71	N 844302.34	E 682874.66	End New 8" CMU Wall
72	N 844302.07	E 682914.66	Begin New 8" CMU Wall

HORIZONTAL CONTROL POINT TABLE (CON'T)

POINT #	NORTHING	EASTING	DESCRIPTION
73	N 844302.02	E 682928.37	End New 8" CMU Wall
74	N 844301.85	E 682968.37	Begin New 8" CMU Wall
75	N 844907.36	E 682943.55	New Launch Conc. Structure

FACILITY DRAWINGS
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#	–	–	–	–		–	–

Registered Professional Engineer (Civil)
CERTIFICATE NO.
40280
JASON R.
FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

REVISIONS				
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CITY OF PHOENIX
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LIFT STATION 40
REFURBISHMENT

CIVIL

SITE LAYOUT – CONTROL PLAN

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CITY PROJECT NO. WS90400085
DATE: 08/2024
C-20 SHEET 25 OF 134
CAD FILE: CSCLS40P05.dwg

USER:FDERASFRAIJO FILE:C:\pwworking\west01\d3411640\25_CSCLS40P05.dwg DATE:9/04/24 TIME:03:20pm

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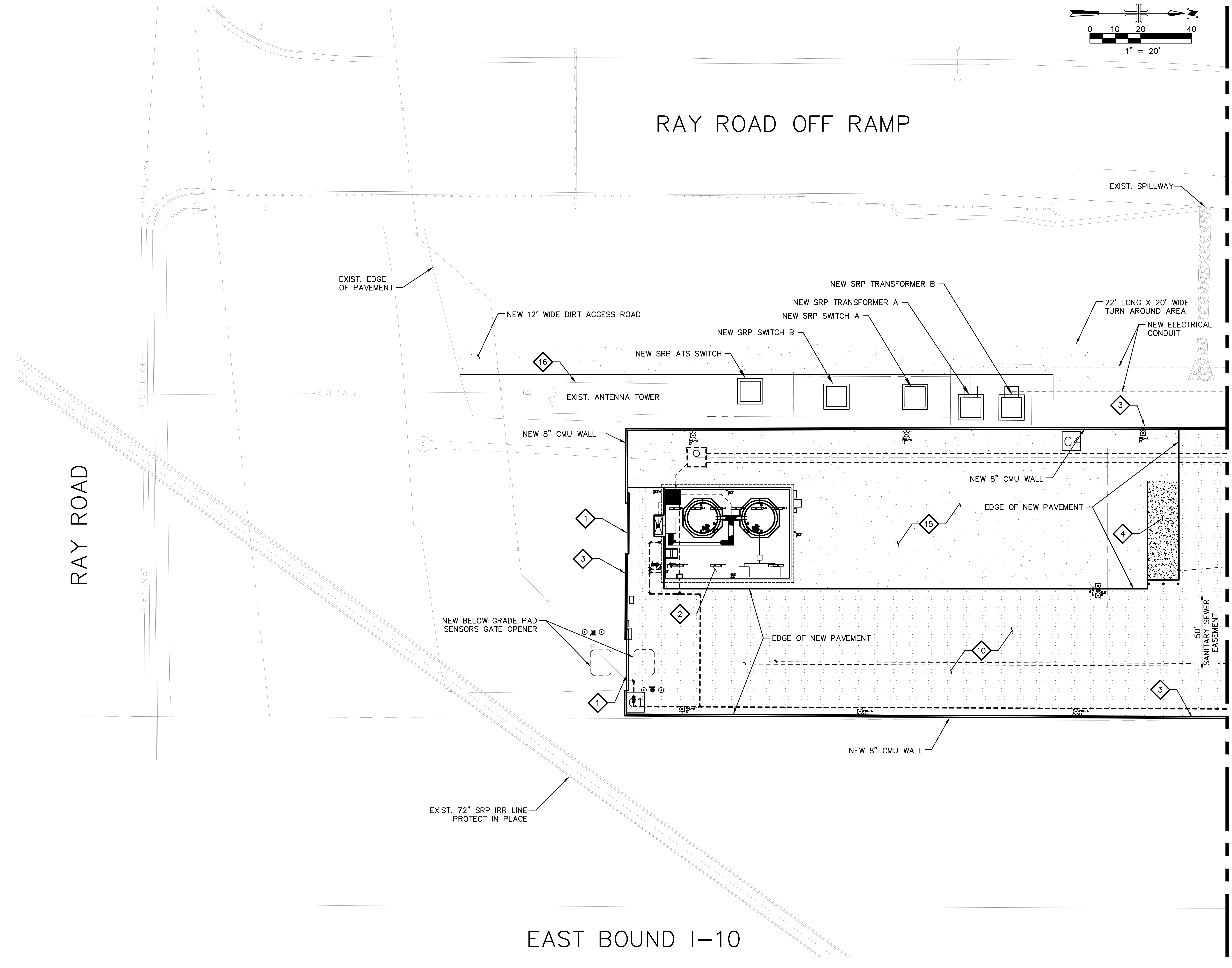
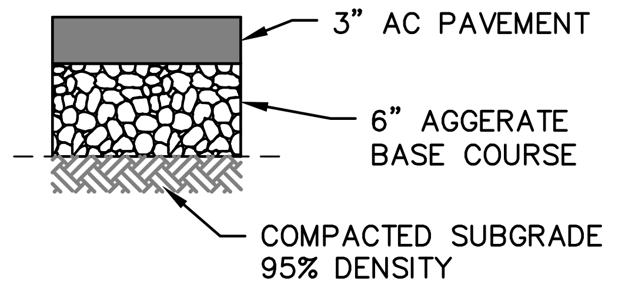

N
0 10 20 40
1" = 20'
RAY ROAD OFF RAMP
RAY ROAD
EAST BOUND I–10
EXIST. SPILLWAY
EXIST. EDGE OF PAVEMENT
NEW 12' WIDE DIRT ACCESS ROAD
NEW SRP TRANSFORMER B
NEW SRP TRANSFORMER A
NEW SRP SWITCH A
NEW SRP SWITCH B
NEW SRP ATS SWITCH
22' LONG X 20' WIDE TURN AROUND AREA
NEW ELECTRICAL CONDUIT
16
EXIST. ANTENNA TOWER
EXIST CATV
3
NEW 8" CMU WALL
C4
NEW 8" CMU WALL
EDGE OF NEW PAVEMENT
15
4
1
3
2
NEW BELOW GRADE PAD SENSORS GATE OPENER
EDGE OF NEW PAVEMENT
10
50' SANITARY SEWER EASEMENT
3
1
C1
NEW 8" CMU WALL
EXIST. 72" SRP IRR LINE PROTECT IN PLACE
MATCHLINE SEE SHEET C–22

KEY NOTES

1. INSTALL NEW 20 FOOT WIDE VEHICULAR SLIDE GATE.
   SEE DETAIL 3–6 C–21 C–03.
2. CONSTRUCT NEW FERROUS CHLORIDE STORAGE TANK AND CONTAINMENT. SEE FERROUS CHLORIDE SYSTEM PLAN C–23.
3. CONSTRUCT NEW CMU WALL SEE DETAIL 4 C–21 S–18.
4. NEW GENERATOR PAD. SEE ELECTRICAL PLANS. EQUIPMENT
   SEE DETAIL 1 C–21 S–15.
10. NEW AC PAVEMENT PER STRUCTURAL SECTION NO. 1 ON THIS SHEET.
15. INSTALL DECOMPOSED GRANITE.
16. PROTECT IN PLACE EXISTING ANTENNA TOWER. DO NOT INTERRUPT SERVICE.


3" AC PAVEMENT
6" AGGERATE BASE COURSE
COMPACTED SUBGRADE 95% DENSITY

STRUCTURAL SECTION NO. 1

TOTAL THICKNESS = 9"

LEGEND

– – – –	EQUIPMENT CLEARANCE LINES
▨	NEW AC PAVEMENT
☐	DECOMPOSED GRANITE
— — —	NEW ELECTRICAL CONDUIT

GENERAL NOTES

1. ALL EXIST ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES ARE SHOWN AS PART OF THE SURVEY AND THE OWNER'S UTILITY MAP. FOR ALL ELECTRICAL DEMOLITION, RELOCATION AND ABANDONMENT OF ANY AND ALL ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES SEE ELECTRICAL PLANS.
2. FOR ALL NEW IMPROVEMENTS IN THE BIOFILTER AREA SEE SHEET C–29.
3. CONTRACTOR SHALL FIELD ROUTE 2" AND 3" WATER LINES. A MINIMUM 3' COVER IS REQUIRED. PROVIDED FITTINGS, AND APPURTENANCES AS REQUIRED.
4. FOR NEW UTILITIES SEE SHEET C–23 and C–24.
5. CONTRACTOR SHALL ENSURE THAT CONCRETE PADS ARE ADEQUATELY SIZED FOR EQUIPMENT.
6. CHEMICAL CONTAINMENT AREA TO BE COATED PER SPEC SECTION 09 96 17.
7. CHEMICAL UNLOADING AREA INCLUDING TRENCH DRAINS, SUMPS, AND HORIZONTAL PIPE CHASES TO BE COATED PER SPEC SECTION 09 96 16.

FACILITY DRAWINGS
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#	-	-	-	-	-	-	-

HDR

40280
JASON R.
FORT
Jason R. Fort

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	RS	10/2023	JF	30% SUBMITTAL
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D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
•				
•				
•				

DES FA
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

OVERALL CIVIL SITE PLAN
SHEET 1 OF 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
C–21 SHEET 26 OF 134
CAD FILE: CSCLS40P06.dwg

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\26_CSCLS40P06.dwg DATE: 9/04/24 TIME: 03:20pm

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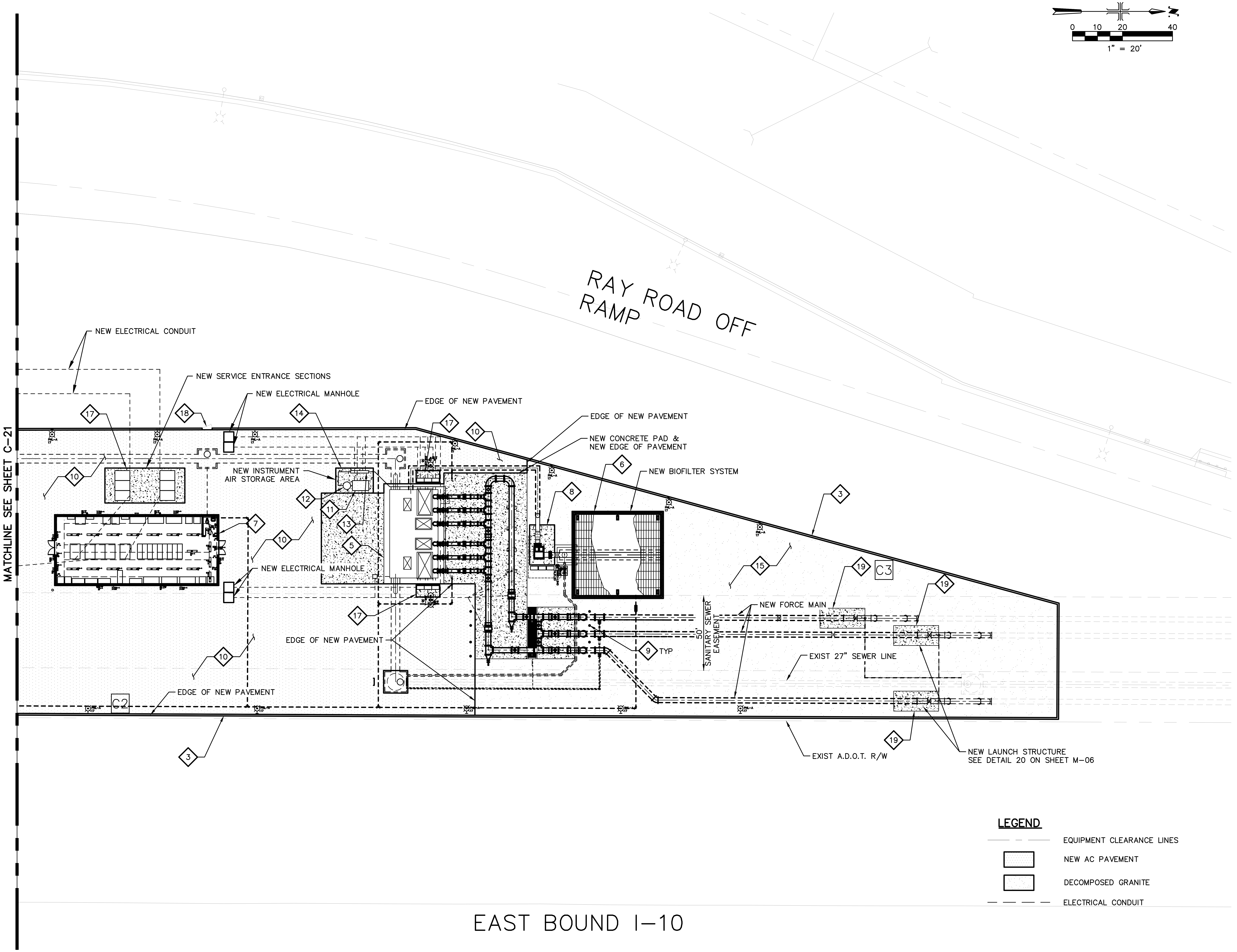
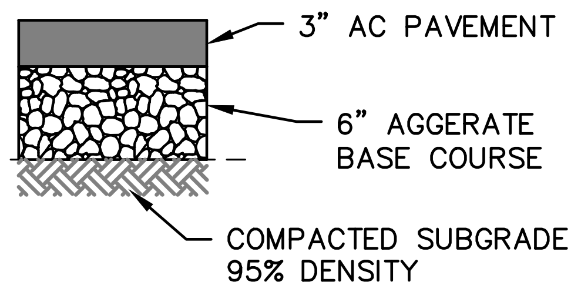

0 10 20 40
1" = 20'
RAY ROAD OFF RAMP
EAST BOUND I–10
MATCHLINE SEE SHEET C–21
NEW ELECTRICAL CONDUIT
NEW SERVICE ENTRANCE SECTIONS
NEW ELECTRICAL MANHOLE
EDGE OF NEW PAVEMENT
EDGE OF NEW PAVEMENT
NEW CONCRETE PAD & NEW EDGE OF PAVEMENT
NEW BIOFILTER SYSTEM
NEW INSTRUMENT AIR STORAGE AREA
NEW ELECTRICAL MANHOLE
EDGE OF NEW PAVEMENT
EDGE OF NEW PAVEMENT
NEW FORCE MAIN
50' SANITARY SEWER EASEMENT
EXIST 27" SEWER LINE
9 TYP
EXIST A.D.O.T. R/W
NEW LAUNCH STRUCTURE SEE DETAIL 20 ON SHEET M–06
C2
C3
3
5
6
7
8
10
11
12
13
14
15
17
18
19

KEY NOTES

- ③ CONSTRUCT NEW CMU WALL SEE DETAIL 4 / C–22 S–18 .
- ⑤ CONSTRUCT NEW WET WELL AND YARD PIPING. SEE YARD PIPING PLAN SHEET M–8 AND WET WELL SECTION SHEET M–13 FOR DETAILS.
- ⑥ CONSTRUCT NEW BIOFILTER. SEE BIOFILTER ENLARGED PLANS AND SECTIONS. SEE CIVIL SHEET C–29.
- ⑦ CONSTRUCT NEW ELECTRICAL BUILDING. SEE ARCHITECTURAL AND STRUCTURAL PLANS.
- ⑧ CONSTRUCT NEW FAD SUPPORT PAD

  SEE DETAIL 1 / C–22 S–16 .
- ⑨ INSTALL BOLLARD PER MAG STD DET 140.
- ⑩ NEW AC PAVEMENT PER STRUCTURAL SECTION NO. 1 ON SHEET C–21.
- ⑪ INSTALL AIR COMPRESSOR SYSTEM PER SPEC SECTION 40 05 62.
- ⑫ INSTALL VERTICAL AIR STORAGE TANK WITH CAPACITY OF 120 GALLONS AND MAXIMUM WORKING PRESSURE OF 200 PSI. SEE SPEC SECTION 40 05 62 FOR DETAILS.
- ⑬ INSTALL INSTRUMENT AIR SOLENOID CABINET.

  SEE DETAIL 20 / C–22 M–05 .
- ⑭ INSTALL SHADE CANOPY STRUCTURE FOR AIR INSTRUMENT STORAGE AREA.
- ⑮ INSTALL DECOMPOSED GRANITE.
- ⑰ INSTALL EQUIPMENT PAD. SEE DETAIL 6 ON SHEET S–04
- ⑱ INSTALL MAN GATE. SEE DETAIL 13 ON SHEET C–04.
- ⑲ INSTALL PIG LAUNCHING PAD FOUNDATION. SEE SHEETS S–15 FOR DETAILS.


3" AC PAVEMENT
6" AGGERATE BASE COURSE
COMPACTED SUBGRADE 95% DENSITY

STRUCTURAL SECTION NO. 1

TOTAL THICKNESS = 9"

GENERAL NOTES

1. ALL EXIST ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES ARE SHOWN AS PART OF THE SURVEY AND THE OWNER'S UTILITY MAP. FOR ALL ELECTRICAL DEMOLITION, RELOCATION AND ABANDONMENT OF ANY AND ALL ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES SEE ELECTRICAL PLANS.
2. FOR ALL NEW IMPROVEMENTS IN THE BIOFILTER AREA SEE SHEET C–29.
3. CONTRACTOR SHALL FIELD ROUTE 2" AND 3" WATER LINES. A MINIMUM 3' COVER IS REQUIRED. PROVIDED FITTINGS, AND APPURTENANCES AS REQUIRED.
4. FOR NEW UTILITIES SEE SHEETS C–23 AND C–24.
5. CONTRACTOR SHALL ENSURE THAT CONCRETE PADS ARE ADEQUATELY SIZED FOR EQUIPMENT.

LEGEND

— - — - —	EQUIPMENT CLEARANCE LINES
▭	NEW AC PAVEMENT
▨	DECOMPOSED GRANITE
— — — —	ELECTRICAL CONDUIT

FACILITY DRAWINGS
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HDR

40280
JASON R. FORT
Jason R. Fort

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D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
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DES
FA
DWN
RS
CKD
JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

OVERALL CIVIL SITE PLAN
SHEET 2 OF 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
C–22 SHEET 27 OF 134
CAD FILE: CSCLS40P07.dwg

USER:FDERASFRAIJO FILE:C:\pwworking\west01\d3411640\27_CSCLS40P07.dwg DATE:9/04/24 TIME:03:20pm

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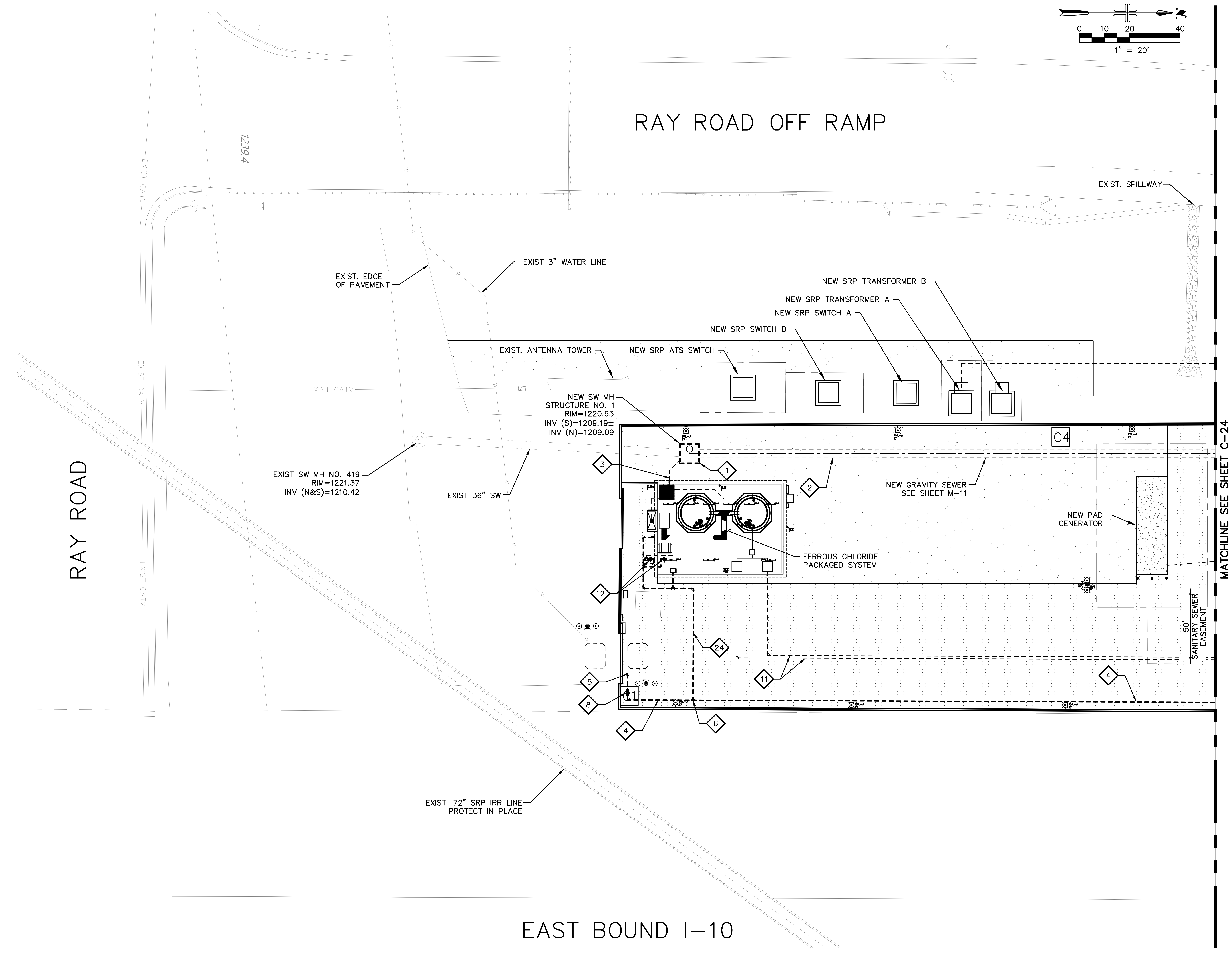
0 10 20 40
1" = 20'
RAY ROAD OFF RAMP
1239.4
EXIST. SPILLWAY
EXIST. EDGE OF PAVEMENT
EXIST 3" WATER LINE
NEW SRP TRANSFORMER B
NEW SRP TRANSFORMER A
NEW SRP SWITCH A
NEW SRP SWITCH B
EXIST. ANTENNA TOWER
NEW SRP ATS SWITCH
EXIST CATV
NEW SW MH STRUCTURE NO. 1 RIM=1220.63 INV (S)=1209.19± INV (N)=1209.09
C4
EXIST SW MH NO. 419 RIM=1221.37 INV (N&S)=1210.42
EXIST 36" SW
NEW GRAVITY SEWER SEE SHEET M-11
NEW PAD GENERATOR
FERROUS CHLORIDE PACKAGED SYSTEM
MATCHLINE SEE SHEET C-24
50' SANITARY SEWER EASEMENT
RAY ROAD
1
2
3
4
5
6
8
11
12
24
EXIST. 72" SRP IRR LINE PROTECT IN PLACE
EAST BOUND I-10

KEY NOTES

- ◇1 INSTALL NEW SW MANHOLE PER PLAN VIEW AND DETAIL SECTION 1 SEE SHEET C-05.
- ◇2 INSTALL NEW 42" VCP GRAVITY SW LINE. SEE ENLARGED PLAN AND PROFILES. SEE SHEET M-11.
- ◇3 INSTALL NEW 4" PVC GRAVITY SW LINE. SEE PLAN AND PROFILES ON SEE SHEET M-11.
- ◇4 INSTALL NEW 3" TYPE K COPPER WATER LINE AND FITTINGS. SEE GENERAL NOTE 5.
- ◇5 SAWCUT AND INSTALL NEW 3" TYPE K COPPER 90° BEND.
- ◇6 INSTALL NEW 3"X3"X2" WATER TEE.
- ◇8 INSTALL DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY PER COP STD DET. P1353.
- ◇11 INSTALL NEW 1" DOUBLE CONTAINED SCHEDULE 80 CPVC PIPING AND FITTINGS.
- ◇12 INSTALL NEW EMERGENCY EYEWASH/SHOWER SEE DETAIL 9 / C-23 M-04 .
- ◇24 INSTALL NEW 2" TYPE K COPPER WATER LINE. SEE GENERAL NOTE 5.

LEGEND

– – – –	EQUIPMENT CLEARANCE LINES
▭	NEW AC PAVEMENT
▨	DECOMPOSED GRANITE

GENERAL NOTES

1. ALL EXIST ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES ARE SHOWN AS PART OF THE SURVEY AND THE OWNER'S UTILITY MAP. FOR ALL ELECTRICAL DEMOLITION, RELOCATION AND ABANDONMENT OF ANY AND ALL ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES SEE ELECTRICAL PLANS.
2. CONTRACTOR TO FIELD VERIFY THE LOCATION OF THE STORM DRAIN AND MOVE THE SRP EQUIPMENT ACCORDINGLY WITHOUT REDUCING THE CLEARANCE REQUIRED AS SHOWN BY THE DASHED LINE.
3. ANY DAMAGE TO SRP IRRIGATION PIPE WILL REQUIRE REPLACEMENT AT THE CONTRACTOR'S EXPENSE. FOR SRP UTILITY CROSSING OR PARALLEL TO SRP IRRIGATION PIPE.
4. FOR ALL NEW IMPROVEMENTS IN THE BIOFILTER AREA PLEASE SEE SHEET C-29.
5. CONTRACTOR SHALL FIELD ROUTE 2" AND 3" WATER LINES. A MINIMUM 3' COVER IS REQUIRED. PROVIDED FITTINGS, AND APPURTENANCES AS REQUIRED.
6. IF UNIDENTIFIED COATED/WRAPPED GAS PIPE IS LOCATED, CONTRACTOR SHALL NOTIFY SOUTHWEST GAS AND TREAT AS ASBESTOS PIPE. ALL STEEL GAS PIPE WITH UNIDENTIFIED COATING/WRAPPING MATERIALS ARE CONSIDERED AS POTENTIALLY CONTAINING ASBESTOS.
7. WET WELL AND SANITARY SEWER MANHOLES SHALL BE COATED PER SPEC SECTION 09 96 22.

FACILITY DRAWINGS
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#	-	-	-	-	-	-	-
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USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\28_CSCLS40P08.dwg DATE: 9/04/24 TIME: 03:21pm

HDR

Registered Professional Engineer
CERTIFICATE NO. 40280
JASON R. FORT
(Civil)
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

REVISIONS				
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DES FA
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

OVERALL UTILITY PLAN
SHEET 1 OF 2

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CITY PROJECT NO. WS90400085
DATE: 08/2024
C-23 SHEET 28 OF 134
CAD FILE: CSCLS40P08.DWG

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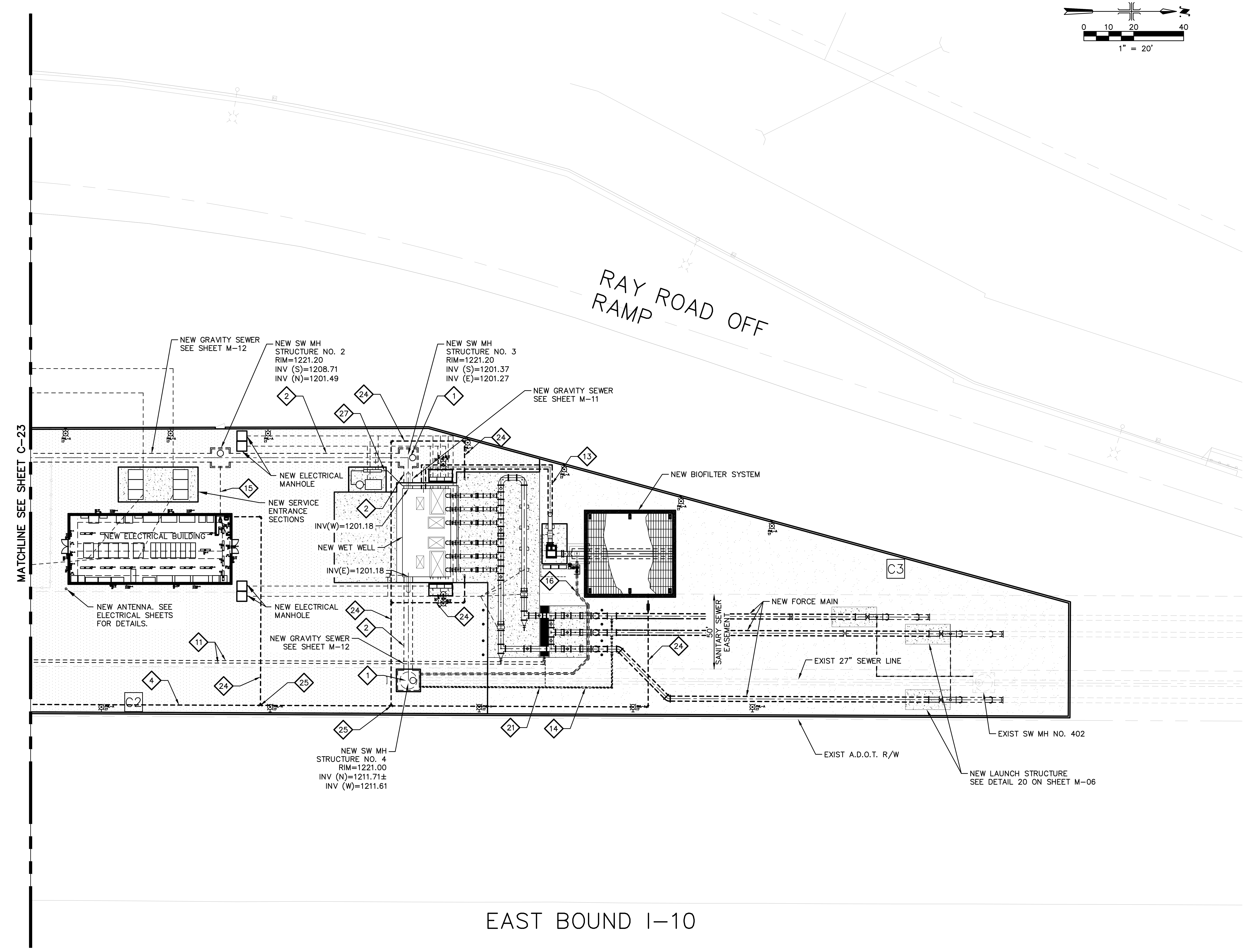
0 10 20 40
1" = 20'
RAY ROAD OFF RAMP
MATCHLINE SEE SHEET C-23
NEW GRAVITY SEWER SEE SHEET M-12
NEW SW MH STRUCTURE NO. 2 RIM=1221.20 INV (S)=1208.71 INV (N)=1201.49
NEW SW MH STRUCTURE NO. 3 RIM=1221.20 INV (S)=1201.37 INV (E)=1201.27
NEW GRAVITY SEWER SEE SHEET M-11
NEW ELECTRICAL MANHOLE
NEW SERVICE ENTRANCE SECTIONS
NEW ELECTRICAL BUILDING
INV(W)=1201.18
NEW WET WELL
INV(E)=1201.18
NEW BIOFILTER SYSTEM
NEW ANTENNA. SEE ELECTRICAL SHEETS FOR DETAILS.
NEW ELECTRICAL MANHOLE
NEW GRAVITY SEWER SEE SHEET M-12
NEW FORCE MAIN
50' SANITARY SEWER EASEMENT
EXIST 27" SEWER LINE
C2
C3
NEW SW MH STRUCTURE NO. 4 RIM=1221.00 INV (N)=1211.71± INV (W)=1211.61
EXIST SW MH NO. 402
EXIST A.D.O.T. R/W
NEW LAUNCH STRUCTURE SEE DETAIL 20 ON SHEET M-06
1
2
4
11
13
14
15
16
21
24
25
27
PNL-A 17
EAST BOUND I-10

KEY NOTES

1. INSTALL NEW SW MANHOLE PER PLAN VIEW AND DETAIL SECTION 1 SEE SHEET C-07.
2. INSTALL NEW 42" VCP GRAVITY SW LINE. SEE ENLARGED PLAN AND PROFILES. SEE SHEET M-11.
4. INSTALL NEW 3" TYPE K COPPER WATER LINE AND FITTINGS. SEE GENERAL NOTE 5.
11. INSTALL NEW 1" DOUBLE CONTAINED SCHEDULE 80 CPVC PIPING AND FITTINGS.
13. INSTALL NEW 20" FRP FAD TO WET WELL.
14. INSTALL NEW 6" DIP DRAIN LINE FROM FORCE MAINS TO SW MANHOLE.
15. INSTALL NEW 4" PVC SANITARY SEWER LINE.
16. INSTALL NEW 8" CPVC DRAIN LINE TO SW MANHOLE.
21. INSTALL 6" DIP SW PIPE FROM INJECTION QUILL TRENCH TO MANHOLE STRUCTURE NO. 4.
24. INSTALL NEW 2" TYPE K COPPER WATER LINE. SEE GENERAL NOTE 5.
25. INSTALL NEW 3"X3"X2" WATER TEE.
27. INSTALL 3/4" TYPE K COPPER AIR SUPPLY LINE. CONTRACTOR TO COORDINATE WITH AIR COMPRESSOR AND AIR ACTUATOR MANUFACTURERS TO INSTALL VALVES AND APPURTENANCES.

LEGEND

— — —	EQUIPMENT CLEARANCE LINES
▭	NEW AC PAVEMENT
▭	DECOMPOSED GRANITE

GENERAL NOTES

1. ALL EXIST ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES ARE SHOWN AS PART OF THE SURVEY AND THE OWNER'S UTILITY MAP. FOR ALL ELECTRICAL DEMOLITION, RELOCATION AND ABANDONMENT OF ANY AND ALL ELECTRICAL LINES, EQUIPMENT, CONCRETE PADS AND MANHOLES SEE ELECTRICAL PLANS.
2. CONTRACTOR TO FIELD VERIFY THE LOCATION OF THE STORM DRAIN AND MOVE THE SRP EQUIPMENT ACCORDINGLY WITHOUT REDUCING THE CLEARANCE REQUIRED AS SHOWN BY THE DASHED LINE.
3. ANY DAMAGE TO SRP IRRIGATION PIPE WILL REQUIRE REPLACEMENT AT THE CONTRACTOR'S EXPENSE. FOR SRP UTILITY CROSSING OR PARALLEL TO SRP IRRIGATION PIPE.
4. FOR ALL NEW IMPROVEMENTS IN THE BIOFILTER AREA PLEASE SEE SHEET C-29.
5. CONTRACTOR SHALL FIELD ROUTE 2" AND 3" WATER LINES. A MINIMUM 3' COVER IS REQUIRED. PROVIDED FITTINGS, AND APPURTENANCES AS REQUIRED.
6. IF UNIDENTIFIED COATED/WRAPPED GAS PIPE IS LOCATED, CONTRACTOR SHALL NOTIFY SOUTHWEST GAS AND TREAT AS ASBESTOS PIPE. ALL STEEL GAS PIPE WITH UNIDENTIFIED COATING/WRAPPING MATERIALS ARE CONSIDERED AS POTENTIALLY CONTAINING ASBESTOS.
7. WET WELL AND SANITARY SEWER MANHOLES SHALL BE COATED PER SPEC SECTION 09 96 22.

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HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

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DES FA
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

OVERALL UTILITY PLAN
SHEET 2 OF 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
C-24
SHEET 29 OF 134
CAD FILE: CSCLS40P09.dwg

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\29_CSCLS40P09.dwg DATE: 9/04/24 TIME: 03:21pm

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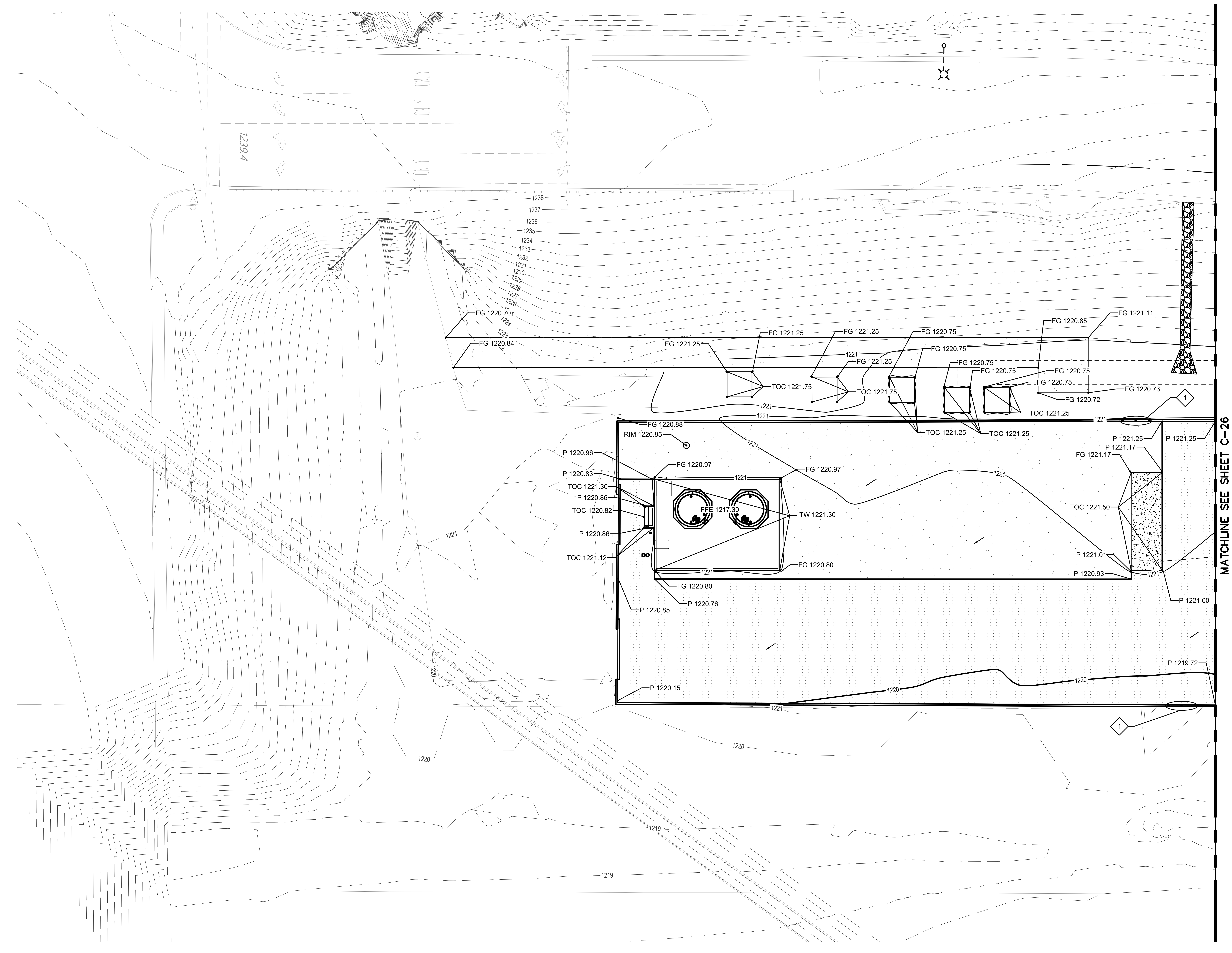
1239.4
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1224
1223
FG 1220.70
FG 1220.84
FG 1221.25
FG 1221.25
FG 1221.25
FG 1220.75
FG 1220.75
FG 1220.85
FG 1221.11
1221
FG 1221.25
FG 1220.75
FG 1220.75
FG 1220.75
FG 1220.75
FG 1220.72
FG 1220.73
TOC 1221.75
TOC 1221.75
TOC 1221.25
TOC 1221.25
TOC 1221.25
1221
1221
1221
FG 1220.88
RIM 1220.85
1221
P 1221.25
P 1221.17
FG 1221.17
P 1221.25
P 1220.96
FG 1220.97
FG 1220.97
P 1220.83
1221
TOC 1221.30
P 1220.86
FFE 1217.30
TW 1221.30
TOC 1220.82
1221
TOC 1221.50
P 1220.86
1221
TOC 1221.12
P 1221.01
FG 1220.80
P 1220.93
1221
1221
FG 1220.80
P 1220.76
P 1221.00
P 1220.85
MATCHLINE SEE SHEET C-26
1220
P 1219.72
P 1220.15
1220
1220
1221
1
1
1220
1220
1219
1219

0 10 20 40
1" = 20'

KEY NOTES

1. INSTALL DRAIN HOLES 5'-4" ± OC ALONG ENTIRE EAST AND WEST SIDE OF CMU WALL PER DETAIL 4 C-25 S-18

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HDR

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(Civil)
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DWN HDR
CKD JF

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WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

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GRADING AND DRAINAGE PLAN 01

CITY PROJECT NO. WS90400085
DATE: 08/2024
C-25 SHEET 30 OF 134
CAD FILE: CSCLS40V01.dwg

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\30_CSCLS40V01.dwg DATE: 9/04/24 TIME: 03:21pm

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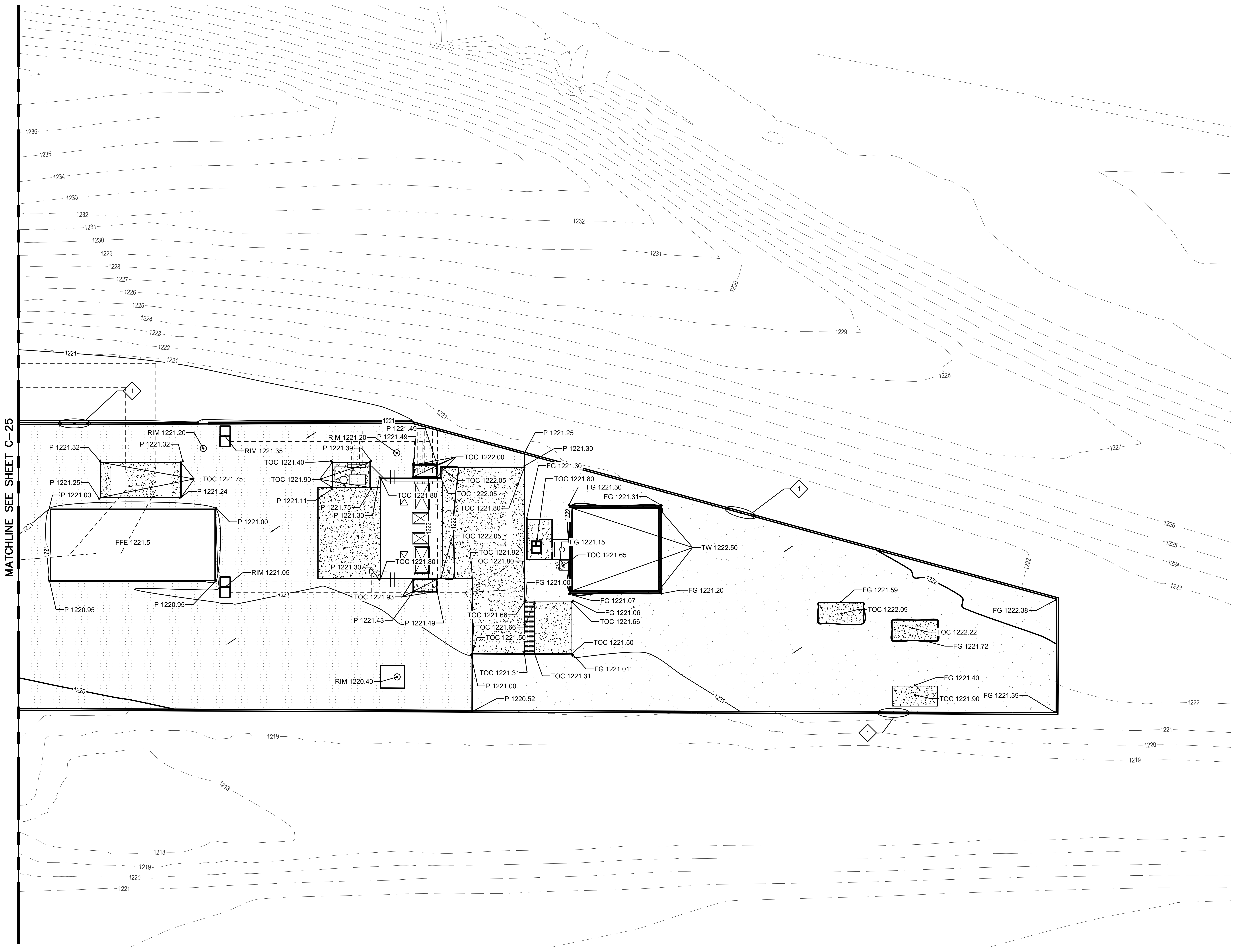
MATCHLINE SEE SHEET C-25
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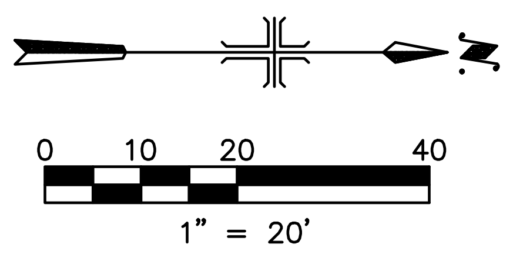
RIM 1221.20
P 1221.32
RIM 1221.35
P 1221.32
TOC 1221.75
P 1221.25
P 1221.24
P 1221.00
P 1221.00
FFE 1221.5
RIM 1221.05
P 1220.95
P 1220.95
RIM 1220.40
P 1221.49
RIM 1221.20
P 1221.49
P 1221.39
TOC 1221.40
TOC 1221.90
P 1221.11
P 1221.75
P 1221.30
TOC 1221.80
TOC 1221.80
P 1221.30
TOC 1221.93
P 1221.43
P 1221.49
TOC 1222.00
TOC 1222.05
TOC 1222.05
TOC 1221.80
TOC 1222.05
TOC 1221.92
TOC 1221.80
TOC 1221.66
TOC 1221.66
TOC 1221.50
TOC 1221.31
P 1221.00
P 1220.52
TOC 1221.31
P 1221.25
P 1221.30
FG 1221.30
TOC 1221.80
FG 1221.30
FG 1221.31
FG 1221.15
TOC 1221.65
FG 1221.00
FG 1221.07
FG 1221.06
TOC 1221.66
TOC 1221.50
FG 1221.01
TW 1222.50
FG 1221.20
FG 1221.59
TOC 1222.09
TOC 1222.22
FG 1221.72
FG 1222.38
FG 1221.40
TOC 1221.90
FG 1221.39


0
10
20
40
1" = 20'

KEY NOTES

1. INSTALL DRAIN HOLES 5'–4" ± OC ALONG ENTIRE EAST AND WEST SIDE OF CMU WALL PER DETAIL 4 / C-26 | S-18 .

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USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\31_CSCLS40V02.dwg DATE: 9/04/24 TIME: 03:22pm

HDR

40280
JASON R.
FORT
Date Signed 08-30-24

Jason R. Fort

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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

GRADING AND DRAINAGE PLAN 02

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CITY PROJECT NO. WS90400085
DATE: 08/2024
C–26 SHEET 31 OF 134
CAD FILE: CSCLS40V02.dwg

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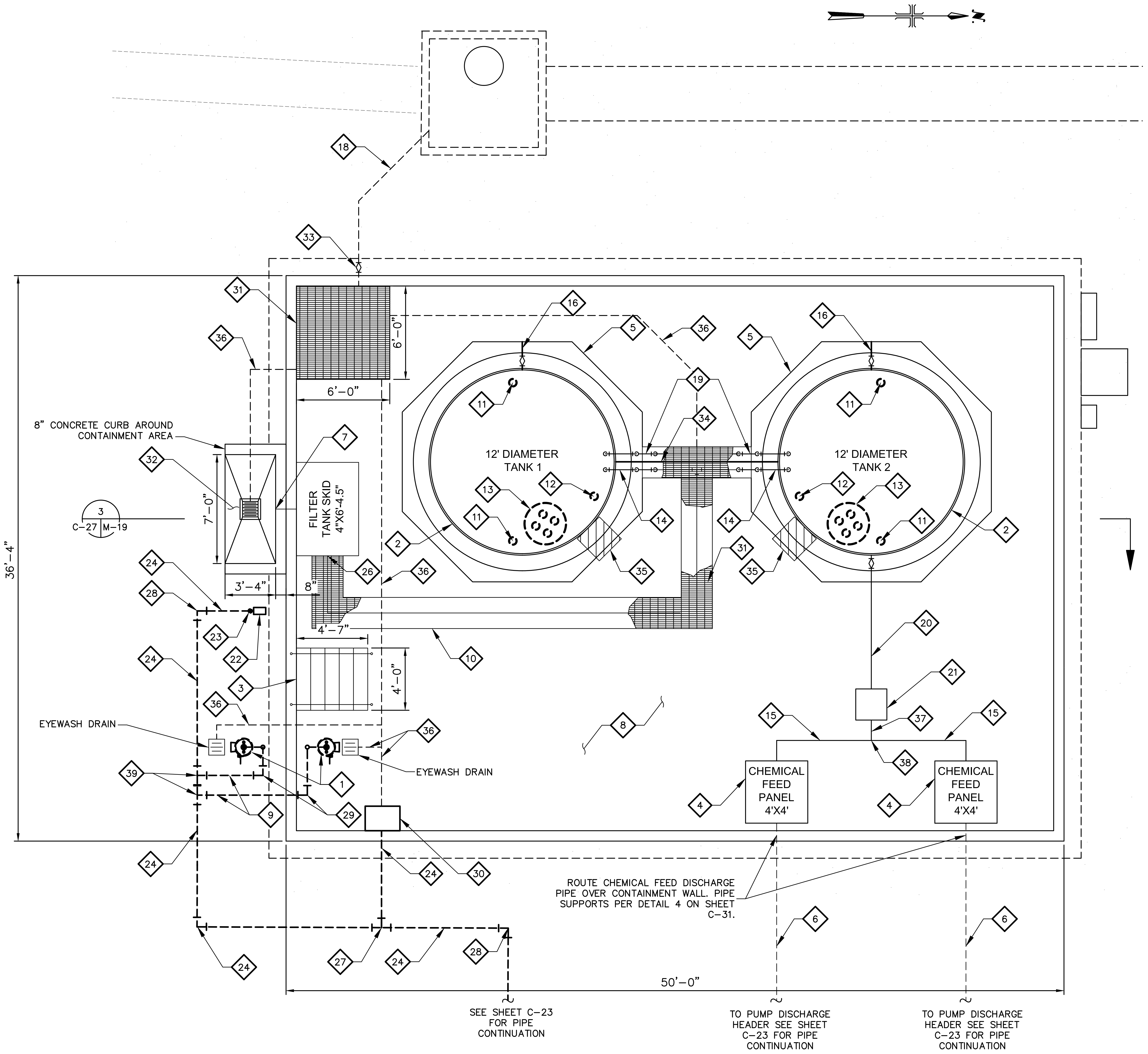

18
33
31
36
8" CONCRETE CURB AROUND CONTAINMENT AREA
32
3
C-27 M-19
7'-0"
3'-4"
8"
36'-4"
6'-0"
6'-0"
7
FILTER TANK SKID 4"X6'-4.5"
16
5
36
5
16
19
34
11
11
12' DIAMETER TANK 1
12' DIAMETER TANK 2
13
12
12
13
11
11
2
14
14
2
35
31
35
26
36
24
28
23
22
4'-7"
10
24
3
4'-0"
36
8
20
21
EYEWASH DRAIN
36
EYEWASH DRAIN
15
37
15
38
39
9
1
29
CHEMICAL FEED PANEL 4'X4'
CHEMICAL FEED PANEL 4'X4'
4
4
24
24
30
ROUTE CHEMICAL FEED DISCHARGE PIPE OVER CONTAINMENT WALL. PIPE SUPPORTS PER DETAIL 4 ON SHEET C-31.
6
6
24
27
24
28
50'-0"
SEE SHEET C-23 FOR PIPE CONTINUATION
TO PUMP DISCHARGE HEADER SEE SHEET C-23 FOR PIPE CONTINUATION
TO PUMP DISCHARGE HEADER SEE SHEET C-23 FOR PIPE CONTINUATION

KEY NOTES CON'T.

31 CONTAINMENT SUMP WITH FRP GRATING.
32 FILL STATION SPILL CONTAINMENT AREA (WITH FRP GRATING).
33 INSTALL 4" TYPE K COPPER ISOLATION BALL VALVE.
34 INSTALL 2" TANK EQUALIZER PIPE.
35 TANK ACCESS LADDER.
36 INSTALL 2" DRAIN LINE. ROUTE TO CONTAINMENT SUMP.
37 INSTALL NEW 2" SCHEDULE 80 PVC LINE.
38 INSTALL 2"X1"X1" TYPE K COPPER TEE.
39 INSTALL 2"X2"X1-1/2" TYPE K COPPER TEE.

KEY NOTES

1 INSTALL EMERGENCY EYEWASH/SHOWER
SEE DETAIL 9 C-27 M-04.
2 INSTALL NEW 7800 GALLON HDPE FERROUS CHLORIDE STORAGE TANKS.
3 INSTALL NEW CONCRETE STAIRS. SEE STRUCTURAL SHEETS FOR DETAILS.
4 INSTALL VENDOR PUMP SKID AND CONTROL PANEL.
5 INSTALL NEW CHEMICAL STORAGE TANK PAD. SEE STRUCTURAL SHEETS FOR DETAILS.
6 INSTALL NEW 1" DOUBLE CONTAINED SCHEDULE 80 PVC PIPING AND FITTINGS.
7 INSTALL NEW 3" CAMLOCK MALE END QUICK COUPLING WITH DUST CAP.
8 EPOXY COAT CONTAINMENT AREA INTERIOR PER SPECIFICATION 09 96 17.
9 INSTALL NEW 1-1/2" WATER LINE.
10 CHEMICAL PIPE TRENCH. PLACE NEW CHEMICAL PIPING IN SHALLOW TRENCH PER STRUCTURAL DRAWINGS.
11 INSTALL NEW 2" VENT CAP.
12 INSTALL NEW 2" LEVEL SENSOR HALF COUPLING WITH PLUG.
13 INSTALL NEW 24" MANWAY WITH PRESSURE RELIEF VENT.
14 INSTALL NEW 2" SCHEDULE 80 PVC FILL TANK LINE.
15 INSTALL NEW 1" SCHEDULE 80 PVC LINE.
16 INSTALL NEW 2" TANK DRAIN LINE AND BALL VALVE WITH CAM LOCK.
18 INSTALL NEW 4" PVC DRAIN LINE. ROUTE TO SEWER JUNCTION STRUCTURE.
19
INSTALL NEW 3" SCHEDULE 80 PVC TANK OVERFLOW LINE.
20
INSTALL NEW 2" SCHEDULE 80 PVC OUTLET WITH BALL VALVE. CONTRACTOR TO ROUTE TO VENDOR PUMP SKID.
21
22 INSTALL VENDOR FILTER ASSEMBLY FOR TANK DISCHARGE LINE.
INSTALL HEAVY DUTY HOSE RACK SEE DETAIL 14 C-27 M-04.
23
INSTALL HOSE BIB. SEE DETAIL 13 C-27 M-04
24
INSTALL 2" TYPE K COPPER WATER LINE.
26
INSTALL VENDOR INLET FILTER TANK SKID.
27
INSTALL 2"x 2"x 2" TYPE K COPPER TEE.
28
INSTALL 2" TYPE K COPPER 90° BEND.
29
INSTALL 1-1/2" TYPE K COPPER 90° BEND.
30
INSTALL PLASTIC SINK.

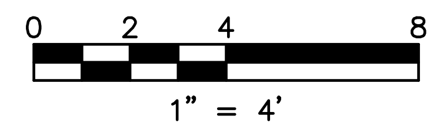
GENERAL NOTES

1. THE FERROUS CHLORIDE TANKS, ACCESSORIES, FEED SYSTEM INCLUDING PUMPS, VALVES, ETC. SHALL BE PROVIDED AS A PACKAGED SYSTEM AND BY A SINGLE VENDOR (USP TECHNOLOGIES OR APPROVED EQUAL).
2. CONTRACTOR TO COORDINATE ALL REQUIRED SUPPORTS FOR CONDUITS AND PIPING.
3. TANK ANCHORING SYSTEM SHALL BE PER MANUFACTURER.
4. NOT ALL VALVES AND ACCESORIES ARE SHOWN. CONTRACTOR SHALL REFER TO P&ID PLANS FOR IDENTIFICATION.
5. CHEMICAL CONTAINMENT AREA TO BE COATED PER SPEC SECTION 09 96 17.
6. CHEMICAL UNLOADING AREA INCLUDING TRENCH DRAINS, SUMPS, AND HORIZONTAL PIPE CHASES TO BE COATED PER SPEC SECTION 09 96 16.

CONTAINMENT AREA CALCULATIONS:

LENGTH OF CONTAINMENT AREA	50 FT
WIDTH OF CONTAINMENT AREA	35 FT
HEIGHT OF CONTAINMENT AREA	3.5 FT
VOLUME OF CONTAINMENT AREA	6125 FT^3
VOLUME OF SUMP	72 FT^3
VOLUME OF CONCRETE STAIRS	27 FT^3
VOLUME OF CONCRETE PAD	348 FT^3
VOLUME OF CHEMICAL FEED PANELS	192 FT^3
VOLUME AVAILABLE	5630 FT^3

CHEMICAL STORAGE TANK VOLUME	2086 FT^3
INCHES OF RAIN (100-YEAR. 24-HOUR STORM EVENT)	3.83 IN
VOLUME OF RAIN	184 FT^3
REQUIRED CONTAINMENT VOLUME	2274 FT^3



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JASON R.
FORT
Date Signed 08-30-24
Jason R. Fort

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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

FERROUS CHLORIDE SYSTEM
SITE PLAN

CITY PROJECT NO. WS90400085
DATE: 08/2024
C-27 SHEET 32 OF 134
CAD FILE: CSCLS40P10.dwg

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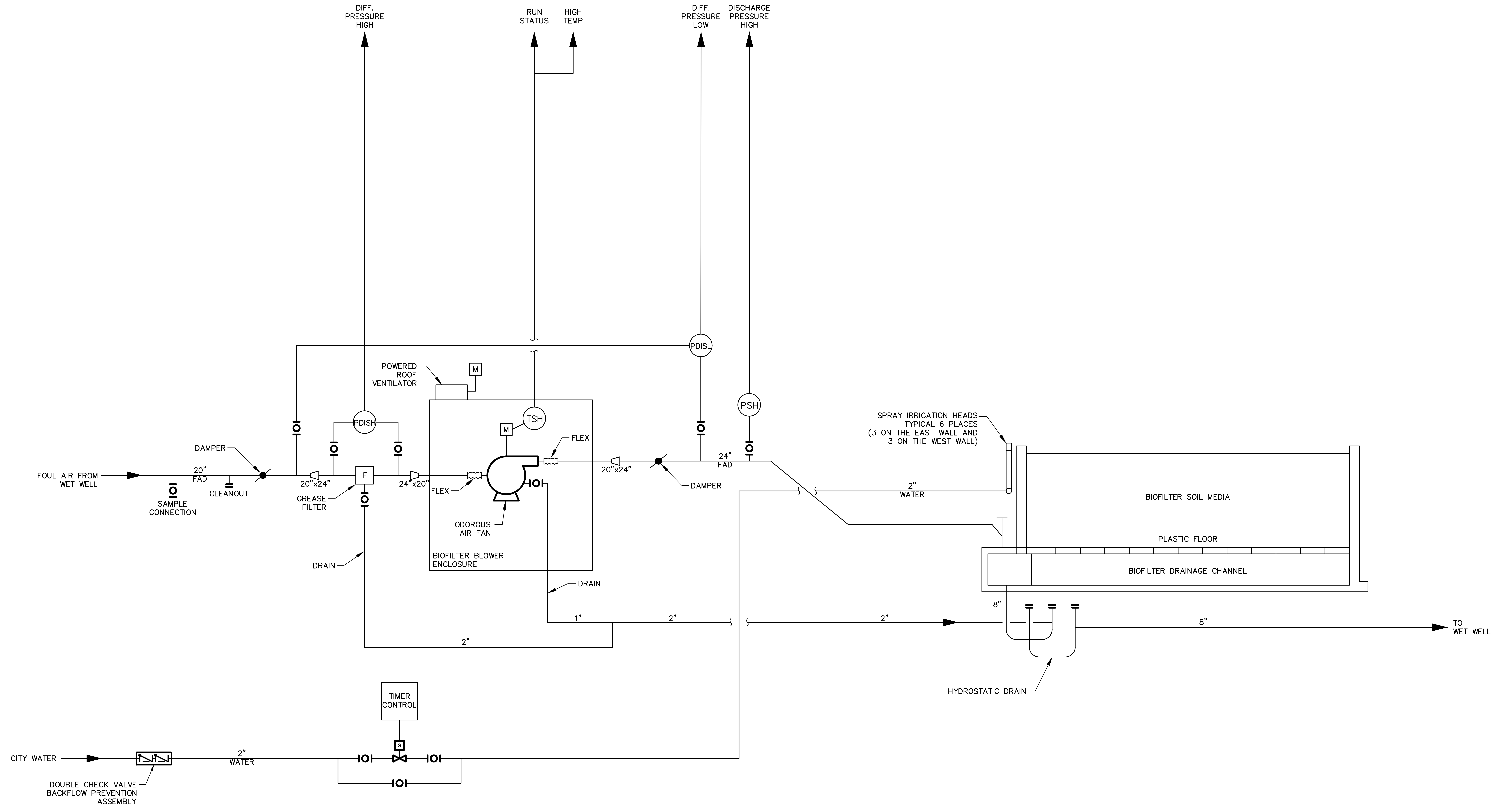
DIFF. PRESSURE HIGH
RUN STATUS
HIGH TEMP
DIFF. PRESSURE LOW
DISCHARGE PRESSURE HIGH
PDISL
POWERED ROOF VENTILATOR
M
PSH
TSH
M
PDISH
DAMPER
FLEX
SPRAY IRRIGATION HEADS TYPICAL 6 PLACES (3 ON THE EAST WALL AND 3 ON THE WEST WALL)
24" FAD
FOUL AIR FROM WET WELL
20" FAD
20"x24"
F
24"x20"
20"x24"
DAMPER
2" WATER
SAMPLE CONNECTION
CLEANOUT
GREASE FILTER
FLEX
BIOFILTER SOIL MEDIA
ODOROUS AIR FAN
PLASTIC FLOOR
DRAIN
BIOFILTER BLOWER ENCLOSURE
BIOFILTER DRAINAGE CHANNEL
DRAIN
8"
1"
2"
2"
8"
TO WET WELL
2"
HYDROSTATIC DRAIN
TIMER CONTROL
S
CITY WATER
2" WATER
DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY

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HDR

JASON R. FORT
40280

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WATER SERVICES DEPARTMENT

LIFT STATION 40
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BIOFILTER SCHEMATIC

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DATE: 08/2024
C–28 SHEET 33 OF 134
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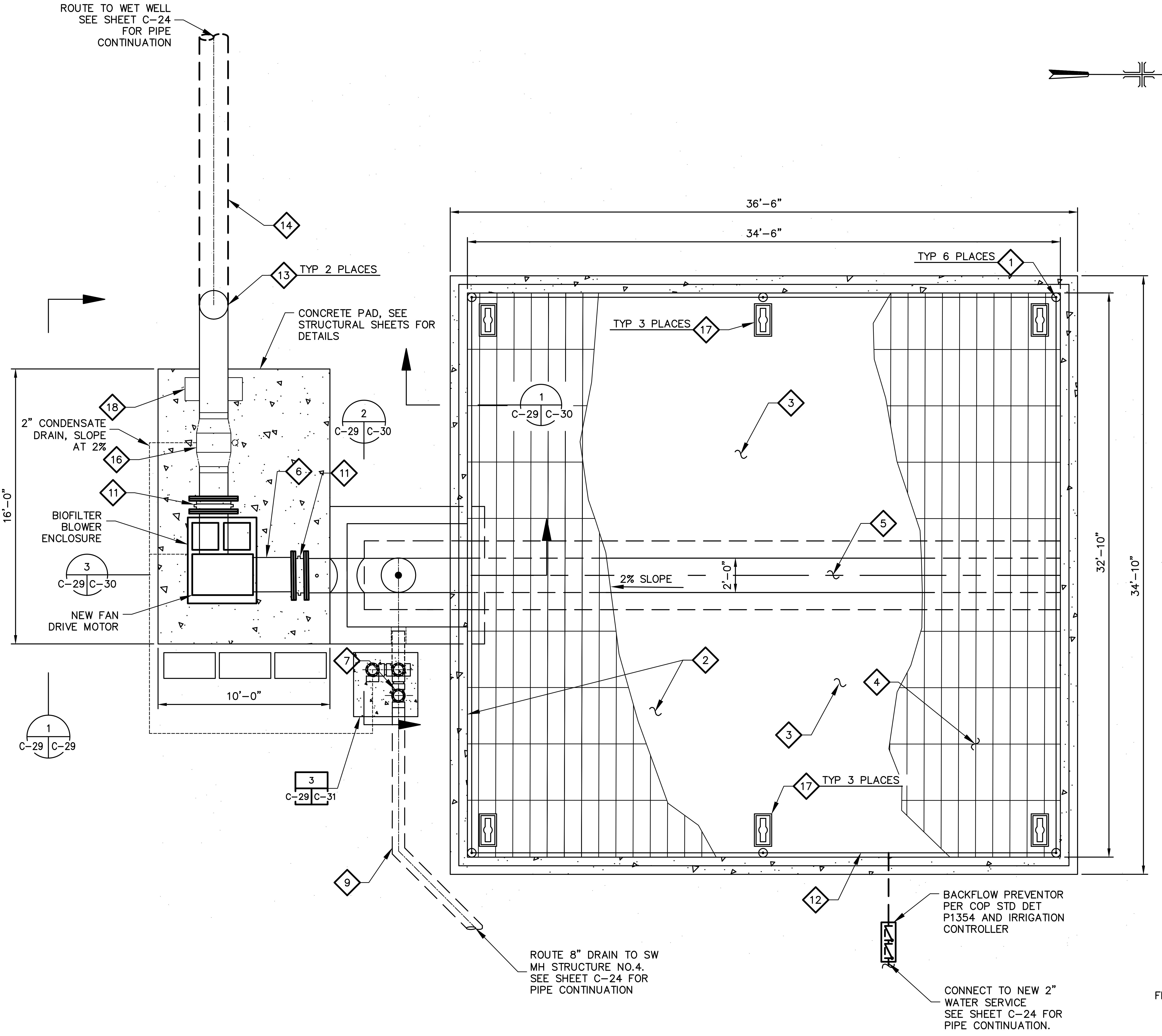

ROUTE TO WET WELL SEE SHEET C–24 FOR PIPE CONTINUATION
14
13 TYP 2 PLACES
CONCRETE PAD, SEE STRUCTURAL SHEETS FOR DETAILS
18
2" CONDENSATE DRAIN, SLOPE AT 2%
16
11
6
11
BIOFILTER BLOWER ENCLOSURE
3 C–29 C–30
NEW FAN DRIVE MOTOR
2 C–29 C–30
16'–0"
10'–0"
7
1 C–29 C–29
3 C–29 C–31
9
ROUTE 8" DRAIN TO SW MH STRUCTURE NO.4. SEE SHEET C–24 FOR PIPE CONTINUATION
36'–6"
34'–6"
TYP 6 PLACES 1
TYP 3 PLACES 17
1 C–29 C–30
3
5
2% SLOPE
2'–0"
2
4
3
TYP 3 PLACES 17
12
32'–10"
34'–10"
BACKFLOW PREVENTOR PER COP STD DET P1354 AND IRRIGATION CONTROLLER
CONNECT TO NEW 2" WATER SERVICE SEE SHEET C–24 FOR PIPE CONTINUATION.

ENLARGED SITE PLAN

0 2 4 8
1" = 4'

KEY NOTES (CON'T)

16 INSTALL 2" CPVC GREASE FILTER DRAIN LINE WITH BALL VALVE. ROUTE TO 8" DRAIN LINE

17 INSTALL BIOFILTER CLEANOUT ASSEMBLY SEE DETAIL 1 C–29 C–30 .

18 INSTALL ADJUSTABLE PIPE SUPPORT. SEE DETAIL 1 C–29 M–02 .

GENERAL NOTE:

1. BIOFILTER SUPPLIER TO PROVIDE SOIL MEDIA, FOUL AIR FAN, CONCRETE VAULT LINER, RAISED FLOORING AIR DISTRIBUTION SYSTEM, GRAVEL AND BEDDING MATERIAL AND AUTOMATED SPRINKLER–TYPE IRRIGATION SYSTEM.

KEY NOTES

1 INSTALL SPRINKLER HEADS AND ASSOCIATED PIPING. REPLACE IRRIGATION CONTROL BOX IN–KIND. TIE–IN IRRIGATION PIPING TO THE CONTROLLER.

2 BIOFILTER CONCRETE FLOOR AND WALL. SEE STRUCTURAL SHEETS FOR DETAILS.

3 CONCRETE SURFACES SHALL BE PROTECTED PER SPECIFICATION SECTION 44 31 21.23.

4 HAHN RAISED FLOORING SYSTEM. CONTRACTOR TO SUBMIT DRAWINGS TO SHOW HOW THE PROPOSED FLOORING SYSTEM WILL FIT THE CONCRETE STRUCTURE. SEE SPECIFICATION SECTION 44 31 21.23 FOR ADDITIONAL DETAILS.

5 24" DRAINAGE CHANNEL.

6 24" FRP FOUL AIR DUCT.

7 8" HYDROSTATIC LOCK DRAIN. SEE DETAIL 3 C–29 C–31 .

8 FAN CONTROL PANEL AND DISCONNECT SWITCH. SEE ELECTRICAL PLANS FOR ADDITIONAL DETAILS.

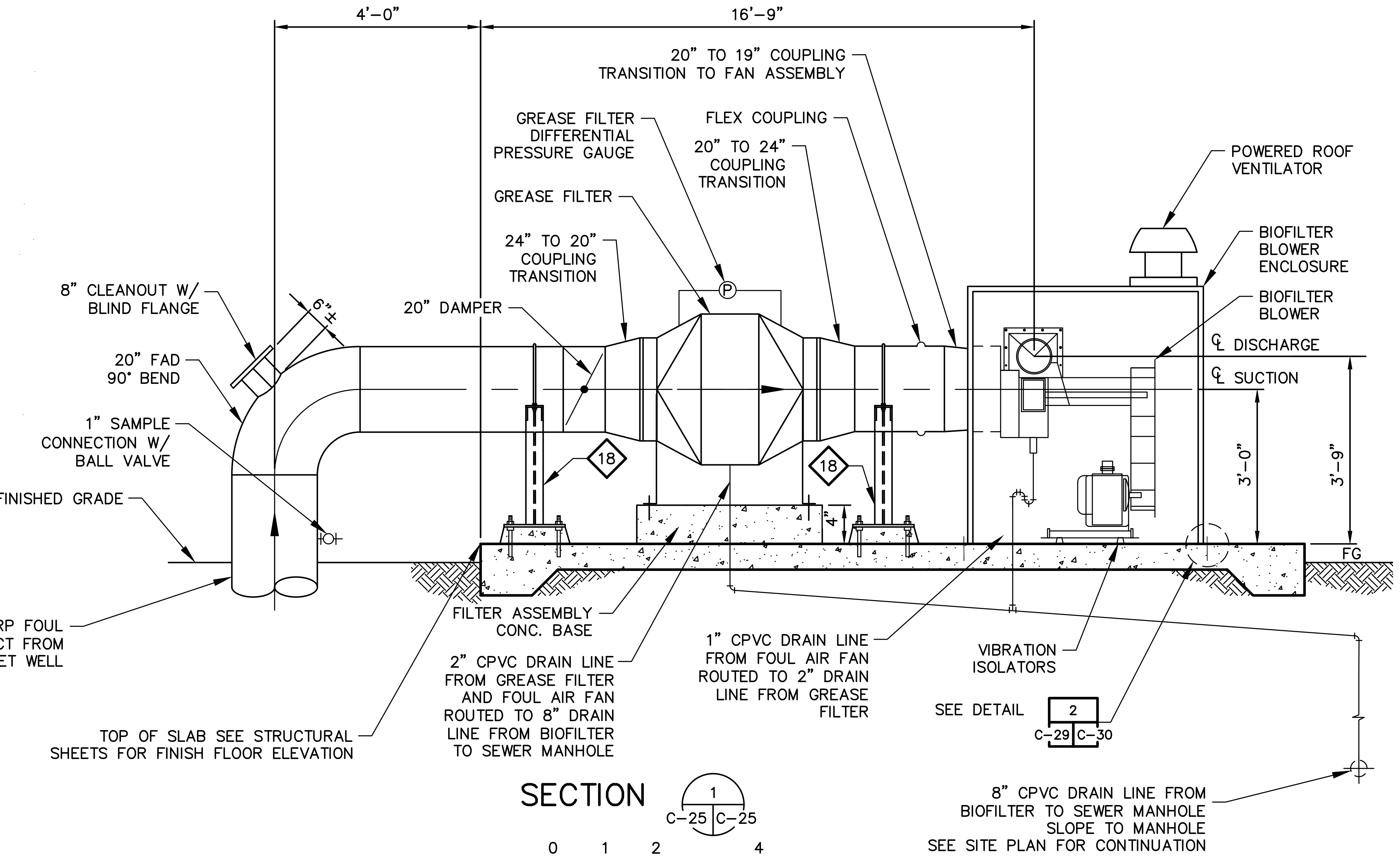
9 8" CPVC OR C900 DRAIN ROUTED TO SW MANHOLE STRUCTURE NO. 4. SEE SHEET C–24 FOR CONTINUATION.

11 FLEX COUPLING SEE SPECIFICATIONS SECTION 40 10 15 FOR DETAILS.

12 2" PVC WATER SUPPLY FOR SPRINKLER HEADER LINE.

13 90° FRP BEND WITH 8" CLEANOUT AND BLIND FLANGE.

14 20" FRP FOUL AIR DUCT. SEE SHEET C–24 FOR FAD CONTINUATION.


4'–0"
16'–9"
20" TO 19" COUPLING TRANSITION TO FAN ASSEMBLY
GREASE FILTER DIFFERENTIAL PRESSURE GAUGE
FLEX COUPLING
20" TO 24" COUPLING TRANSITION
POWERED ROOF VENTILATOR
GREASE FILTER
24" TO 20" COUPLING TRANSITION
BIOFILTER BLOWER ENCLOSURE
BIOFILTER BLOWER
8" CLEANOUT W/ BLIND FLANGE
6"
20" DAMPER
℄ DISCHARGE
℄ SUCTION
20" FAD 90° BEND
1" SAMPLE CONNECTION W/ BALL VALVE
18
18
3'–0"
3'–9"
4"
FINISHED GRADE
FG
20" FRP FOUL AIR DUCT FROM NEW WET WELL
FILTER ASSEMBLY CONC. BASE
2" CPVC DRAIN LINE FROM GREASE FILTER AND FOUL AIR FAN ROUTED TO 8" DRAIN LINE FROM BIOFILTER TO SEWER MANHOLE
1" CPVC DRAIN LINE FROM FOUL AIR FAN ROUTED TO 2" DRAIN LINE FROM GREASE FILTER
VIBRATION ISOLATORS
SEE DETAIL 2 C–29 C–30
TOP OF SLAB SEE STRUCTURAL SHEETS FOR FINISH FLOOR ELEVATION
8" CPVC DRAIN LINE FROM BIOFILTER TO SEWER MANHOLE SLOPE TO MANHOLE SEE SITE PLAN FOR CONTINUATION

SECTION 1 C–25 C–25

0 1 2 4
1/2" = 1'–0"

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HDR

Registered Professional Engineer
CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
(Civil)

Jason R. Fort

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WATER SERVICES DEPARTMENT

LIFT STATION 40
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BIOFILTER ENLARGED SITE PLAN

CITY PROJECT NO. WS90400085
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C–29

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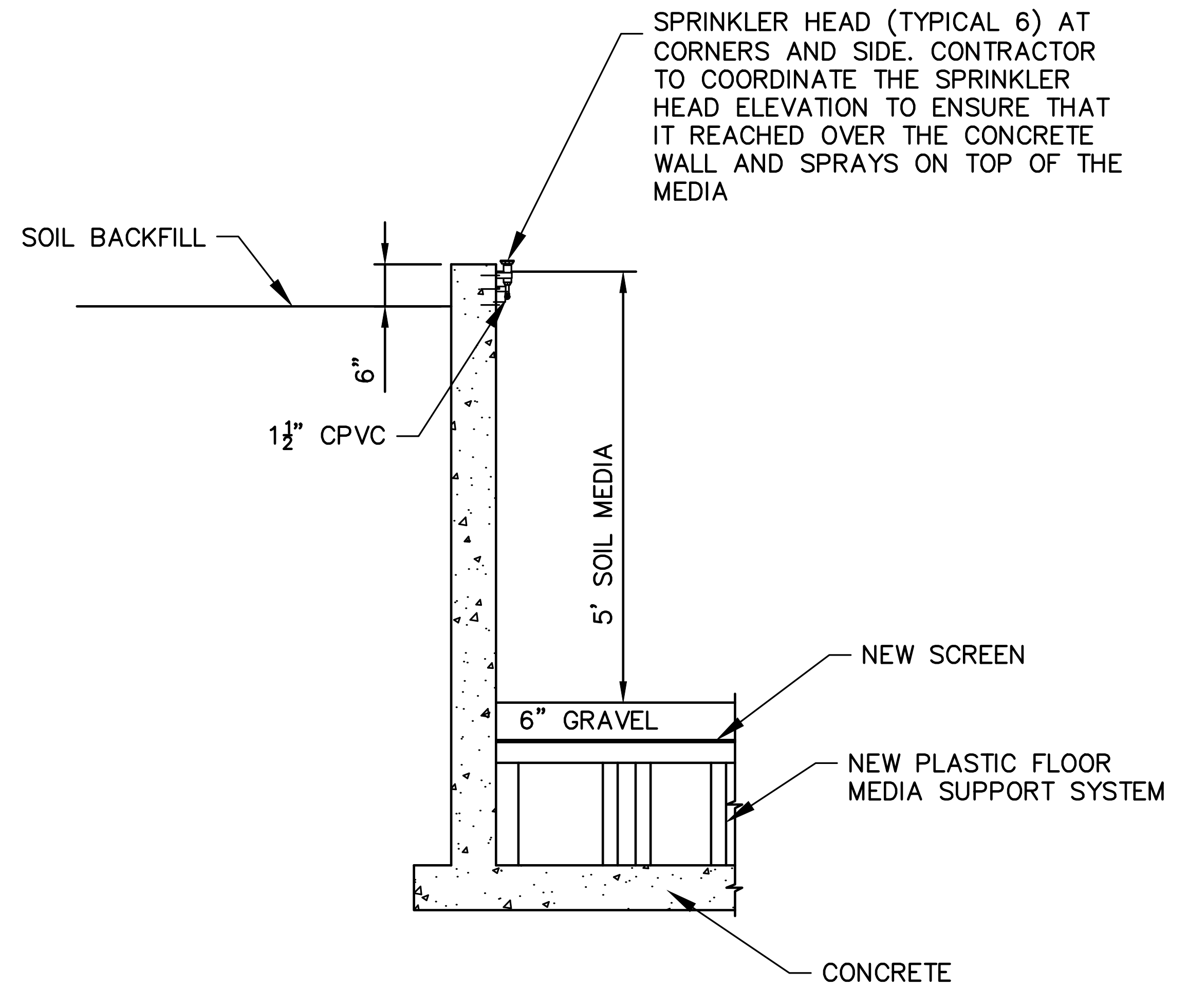
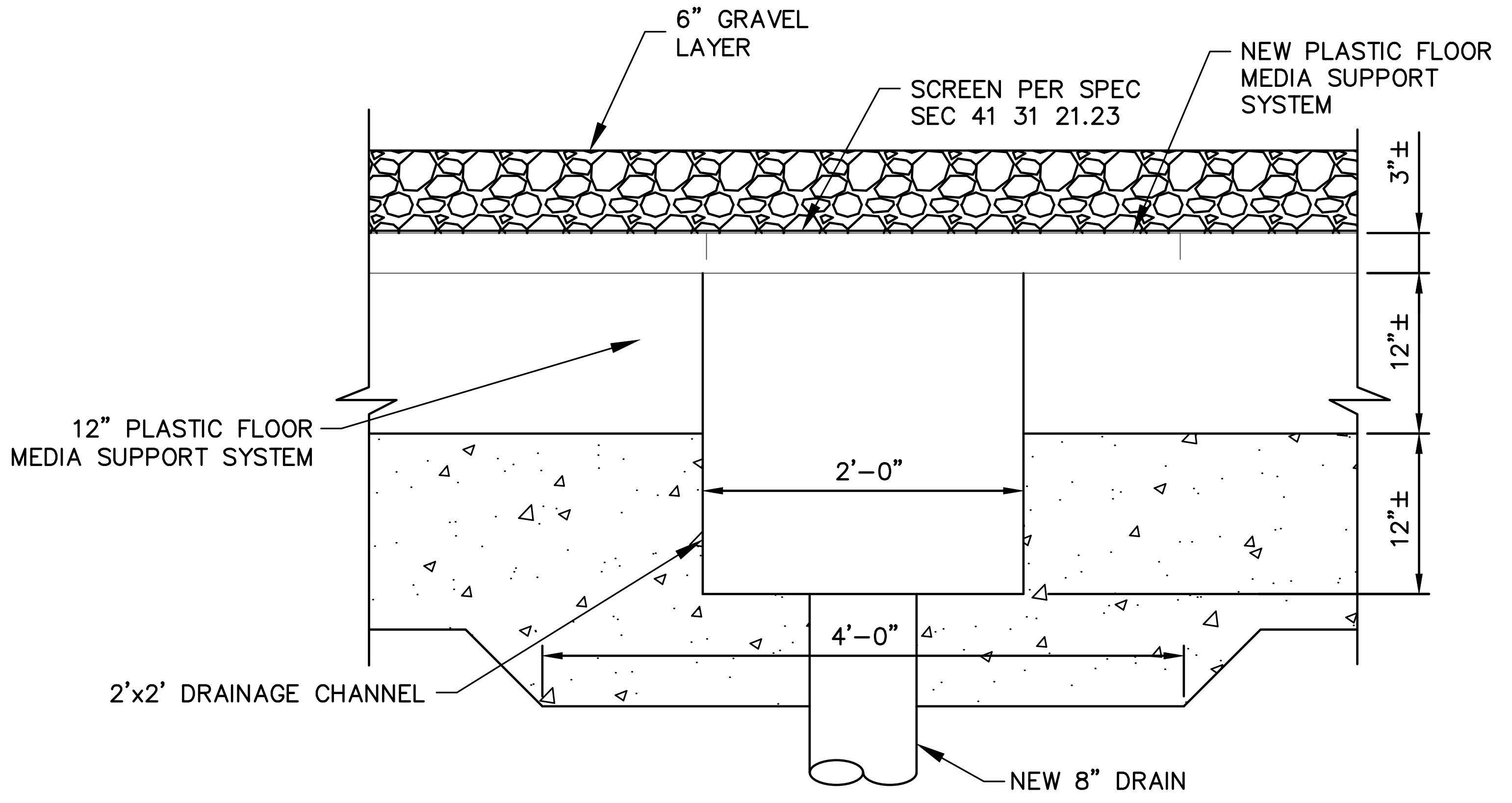

SPRINKLER HEAD (TYPICAL 6) AT CORNERS AND SIDE. CONTRACTOR TO COORDINATE THE SPRINKLER HEAD ELEVATION TO ENSURE THAT IT REACHED OVER THE CONCRETE WALL AND SPRAYS ON TOP OF THE MEDIA
SOIL BACKFILL
6"
1½" CPVC
5' SOIL MEDIA
NEW SCREEN
6" GRAVEL
NEW PLASTIC FLOOR MEDIA SUPPORT SYSTEM
CONCRETE

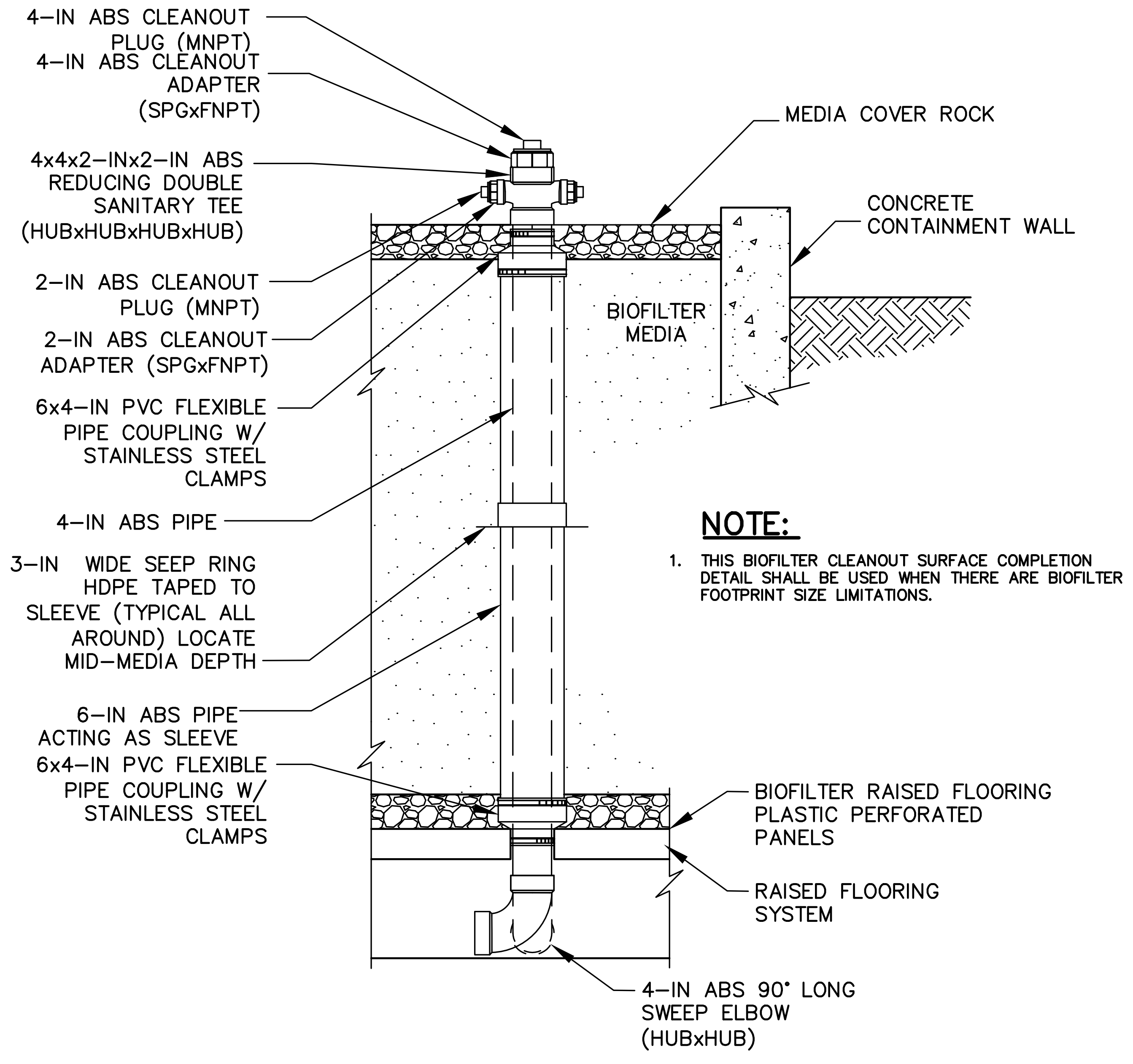
SECTION 1 C-29 C-30

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


6" GRAVEL LAYER
SCREEN PER SPEC SEC 41 31 21.23
NEW PLASTIC FLOOR MEDIA SUPPORT SYSTEM
3"±
12"±
12"±
12" PLASTIC FLOOR MEDIA SUPPORT SYSTEM
2'-0"
4'-0"
2'x2' DRAINAGE CHANNEL
NEW 8" DRAIN

SECTION 2 C-29 C-30

0 1 2
1" = 1'-0"


4-IN ABS CLEANOUT PLUG (MNPT)
4-IN ABS CLEANOUT ADAPTER (SPGxFNPT)
4x4x2-INx2-IN ABS REDUCING DOUBLE SANITARY TEE (HUBxHUBxHUBxHUB)
2-IN ABS CLEANOUT PLUG (MNPT)
2-IN ABS CLEANOUT ADAPTER (SPGxFNPT)
6x4-IN PVC FLEXIBLE PIPE COUPLING W/ STAINLESS STEEL CLAMPS
4-IN ABS PIPE
3-IN WIDE SEEP RING HDPE TAPED TO SLEEVE (TYPICAL ALL AROUND) LOCATE MID-MEDIA DEPTH
6-IN ABS PIPE ACTING AS SLEEVE
6x4-IN PVC FLEXIBLE PIPE COUPLING W/ STAINLESS STEEL CLAMPS
MEDIA COVER ROCK
CONCRETE CONTAINMENT WALL
BIOFILTER MEDIA
BIOFILTER RAISED FLOORING PLASTIC PERFORATED PANELS
RAISED FLOORING SYSTEM
4-IN ABS 90° LONG SWEEP ELBOW (HUBxHUB)

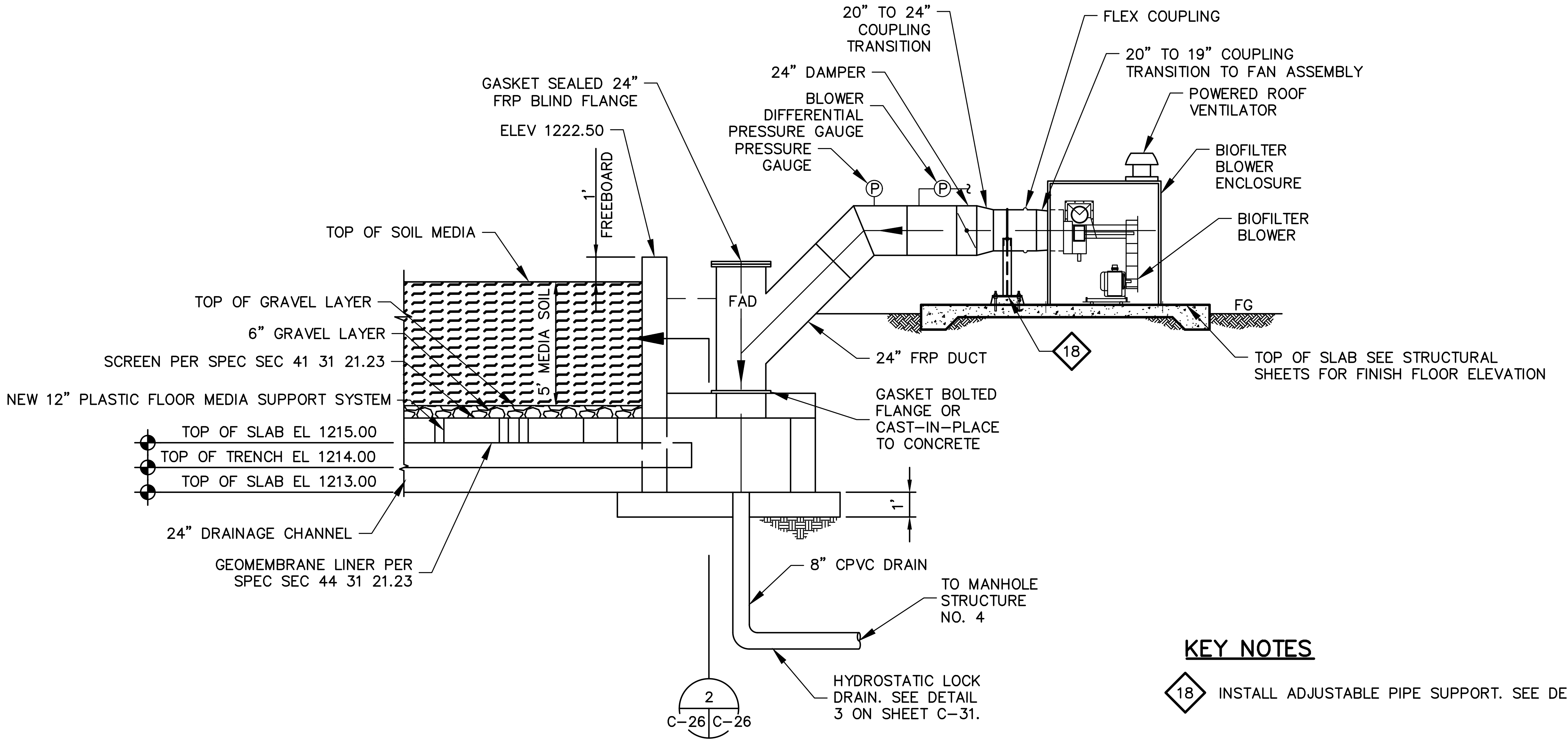
NOTE:

1. THIS BIOFILTER CLEANOUT SURFACE COMPLETION DETAIL SHALL BE USED WHEN THERE ARE BIOFILTER FOOTPRINT SIZE LIMITATIONS.

BIOFILTER CLEANOUT DETAIL

DETAIL 1 C-29 C-30

NOT TO SCALE

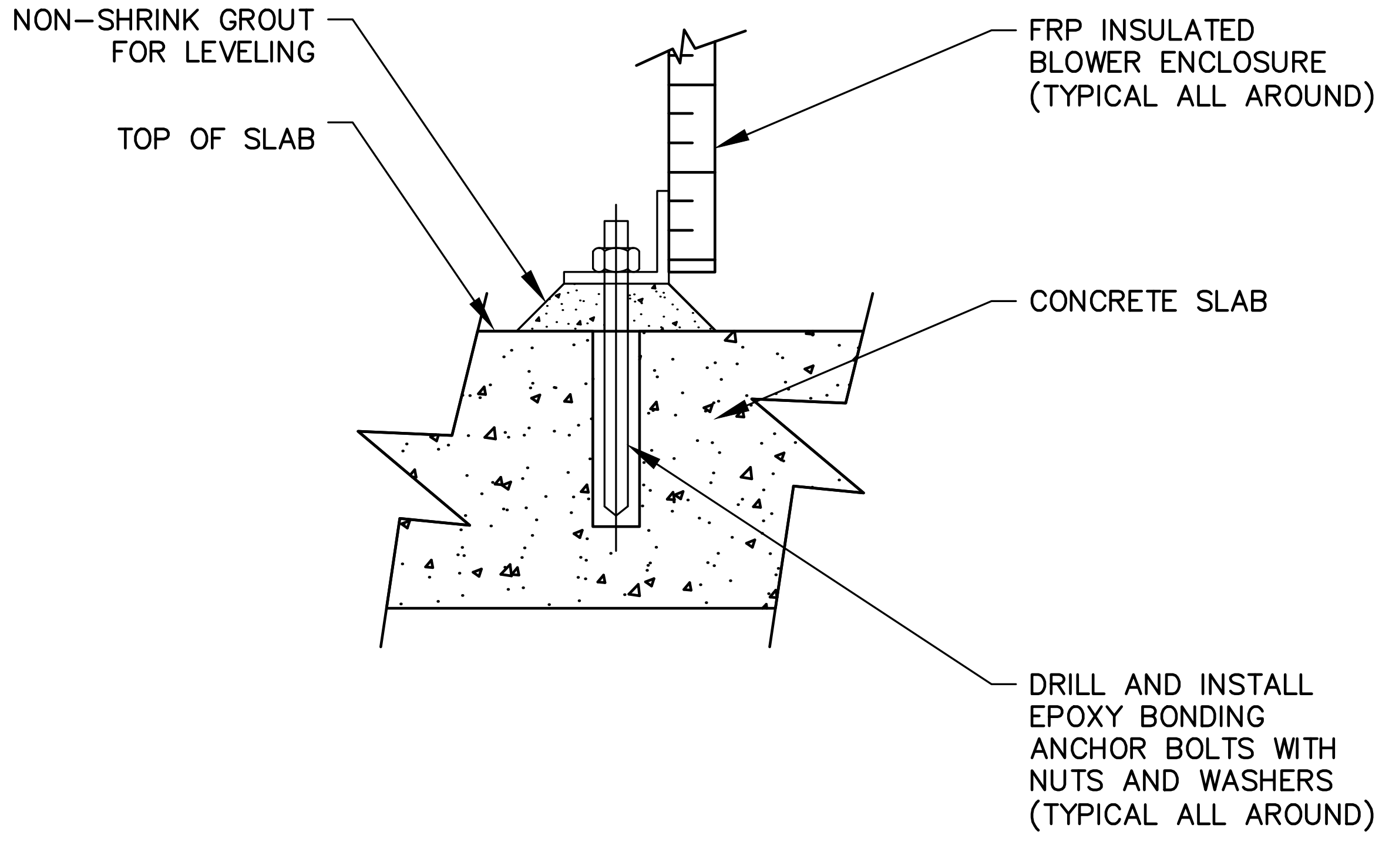

20" TO 24" COUPLING TRANSITION
FLEX COUPLING
20" TO 19" COUPLING TRANSITION TO FAN ASSEMBLY
GASKET SEALED 24" FRP BLIND FLANGE
24" DAMPER
POWERED ROOF VENTILATOR
BLOWER DIFFERENTIAL PRESSURE GAUGE
ELEV 1222.50
PRESSURE GAUGE
BIOFILTER BLOWER ENCLOSURE
BIOFILTER BLOWER
1'
FREEBOARD
P
P
TOP OF SOIL MEDIA
FAD
FG
TOP OF GRAVEL LAYER
6" GRAVEL LAYER
SCREEN PER SPEC SEC 41 31 21.23
NEW 12" PLASTIC FLOOR MEDIA SUPPORT SYSTEM
5' MEDIA SOIL
24" FRP DUCT
18
TOP OF SLAB SEE STRUCTURAL SHEETS FOR FINISH FLOOR ELEVATION
GASKET BOLTED FLANGE OR CAST-IN-PLACE TO CONCRETE
TOP OF SLAB EL 1215.00
TOP OF TRENCH EL 1214.00
TOP OF SLAB EL 1213.00
1'
24" DRAINAGE CHANNEL
GEOMEMBRANE LINER PER SPEC SEC 44 31 21.23
8" CPVC DRAIN
TO MANHOLE STRUCTURE NO. 4
HYDROSTATIC LOCK DRAIN. SEE DETAIL 3 ON SHEET C-31.
2 C-26 C-26

SECTION 3 C-29 C-30

0 2 4 8
1/4" = 1'-0"

KEY NOTES

18 INSTALL ADJUSTABLE PIPE SUPPORT. SEE DETAIL 1 C-30 M-02 .


NON-SHRINK GROUT FOR LEVELING
TOP OF SLAB
FRP INSULATED BLOWER ENCLOSURE (TYPICAL ALL AROUND)
CONCRETE SLAB
DRILL AND INSTALL EPOXY BONDING ANCHOR BOLTS WITH NUTS AND WASHERS (TYPICAL ALL AROUND)

ENCLOSURE ANCHORING DETAIL

DETAIL 2 C-29 C-30

3"=1'-0"

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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\35_CSCLS40P13.dwg DATE: 9/04/24 TIME: 03:23pm

HDR

Registered Professional Engineer
CERTIFICATE NO. 40280
JASON R. FORT
(Civil)
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

REVISIONS

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B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
•				
•				
•				

DES CE
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

BIOFILTER SECTIONS AND DETAILS

CITY PROJECT NO. WS90400085
DATE: 08/2024
C-30 SHEET 35 OF 134
CAD FILE: CSCLS40P13.dwg

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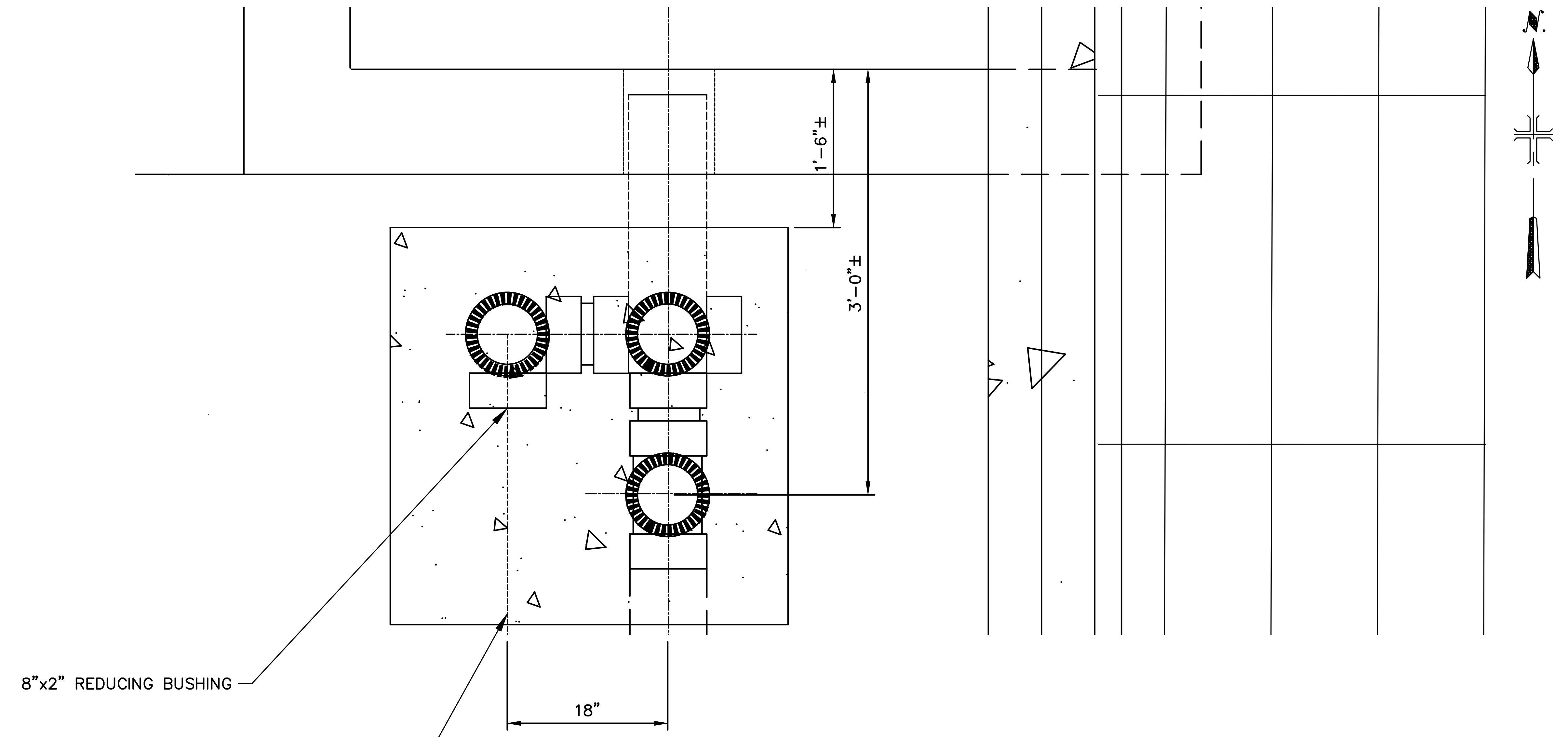
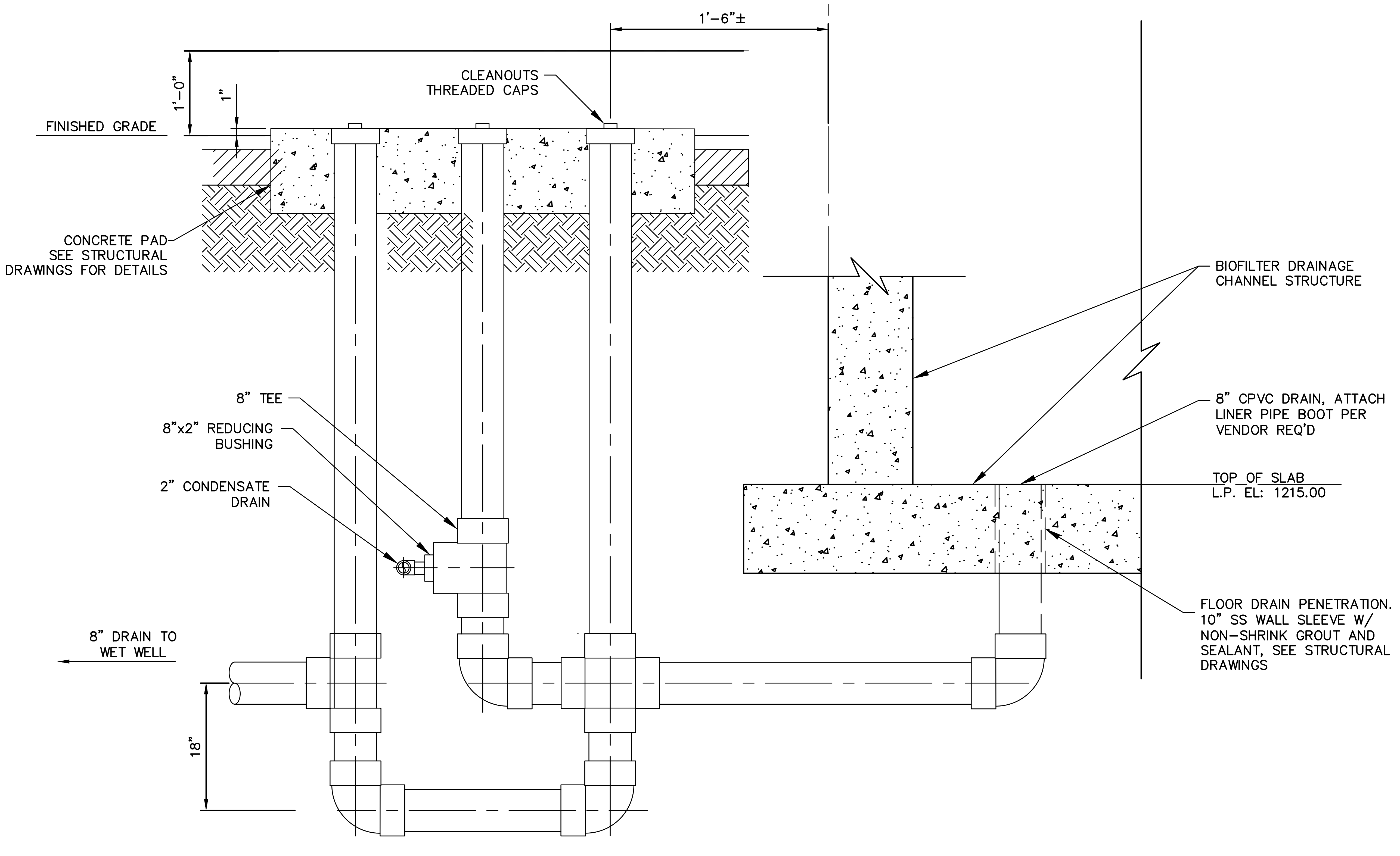


1'–6"±
3'–0"±
18"
8"x2" REDUCING BUSHING
2" CONDENSATION DRAIN FROM BIOFILTER INLET DUCT, SEE SHEET C–29 FOR CONTINUATION
N

PLAN
1"=1'–0"

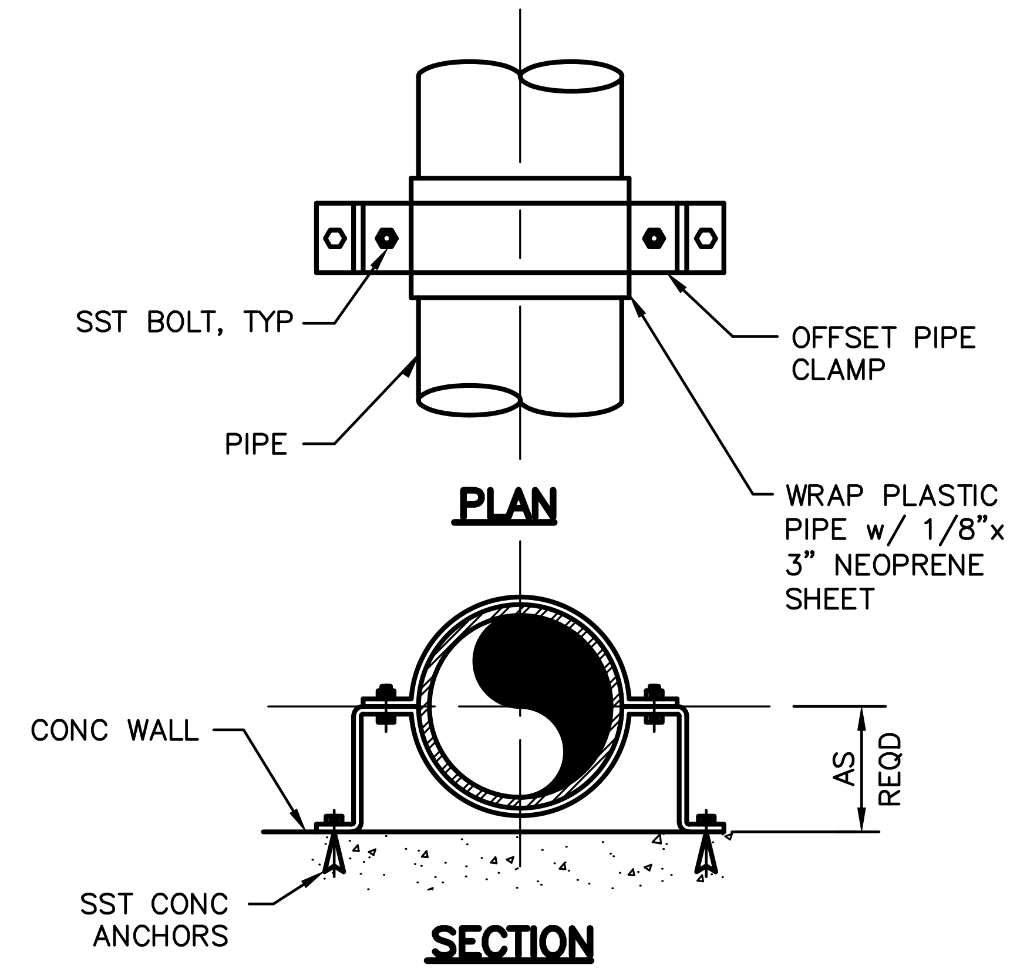


1'–6"±
1'–0"
1"
18"
CLEANOUTS THREADED CAPS
FINISHED GRADE
CONCRETE PAD SEE STRUCTURAL DRAWINGS FOR DETAILS
8" TEE
8"x2" REDUCING BUSHING
2" CONDENSATE DRAIN
8" DRAIN TO WET WELL
BIOFILTER DRAINAGE CHANNEL STRUCTURE
8" CPVC DRAIN, ATTACH LINER PIPE BOOT PER VENDOR REQ'D
TOP OF SLAB
L.P. EL: 1215.00
FLOOR DRAIN PENETRATION. 10" SS WALL SLEEVE W/ NON–SHRINK GROUT AND SEALANT, SEE STRUCTURAL DRAWINGS

SECTION
HYDROSTATIC LOCK DRAIN DETAIL

DETAIL 3 C–29 | C–31
1"=1'–0"

NOTE:
THE CLEANOUTS SHOWN OUT OF SECTION, SEE PLAN VIEW ON SHEET C–25 FOR CORRECT ORIENTATION



SST BOLT, TYP
PIPE
OFFSET PIPE CLAMP
WRAP PLASTIC PIPE w/ 1/8"x 3" NEOPRENE SHEET
PLAN
CONC WALL
SST CONC ANCHORS
AS REQD
SECTION

SPRINKLER PIPE SUPPORT

DETAIL 4 C–31 | C–31
NOT TO SCALE

NOTE:

1. MATERIAL FOR ALL COMPONENTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION UNLESS NOTED OTHERWISE.
2. MATERIAL FOR ALL COMPONENTS OF THE PIPE SUPPORT USED FOR SUPPORTING CPVC CHEMICAL PIPING SHALL BE FRP.

FACILITY DRAWINGS
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HDR

CERTIFICATE NO. 40280
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Date Signed 08-30-24
Jason R. Fort

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*				
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DES CE
DWN RS
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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

CIVIL

BIOFILTER DETAILS

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CITY PROJECT NO. WS90400085
DATE: 08/2024
C–31 SHEET 36 OF 134
CAD FILE: CSCLS40P14.dwg

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411640\36_CSCLS40P14.dwg DATE: 9/04/24 TIME: 03:23pm

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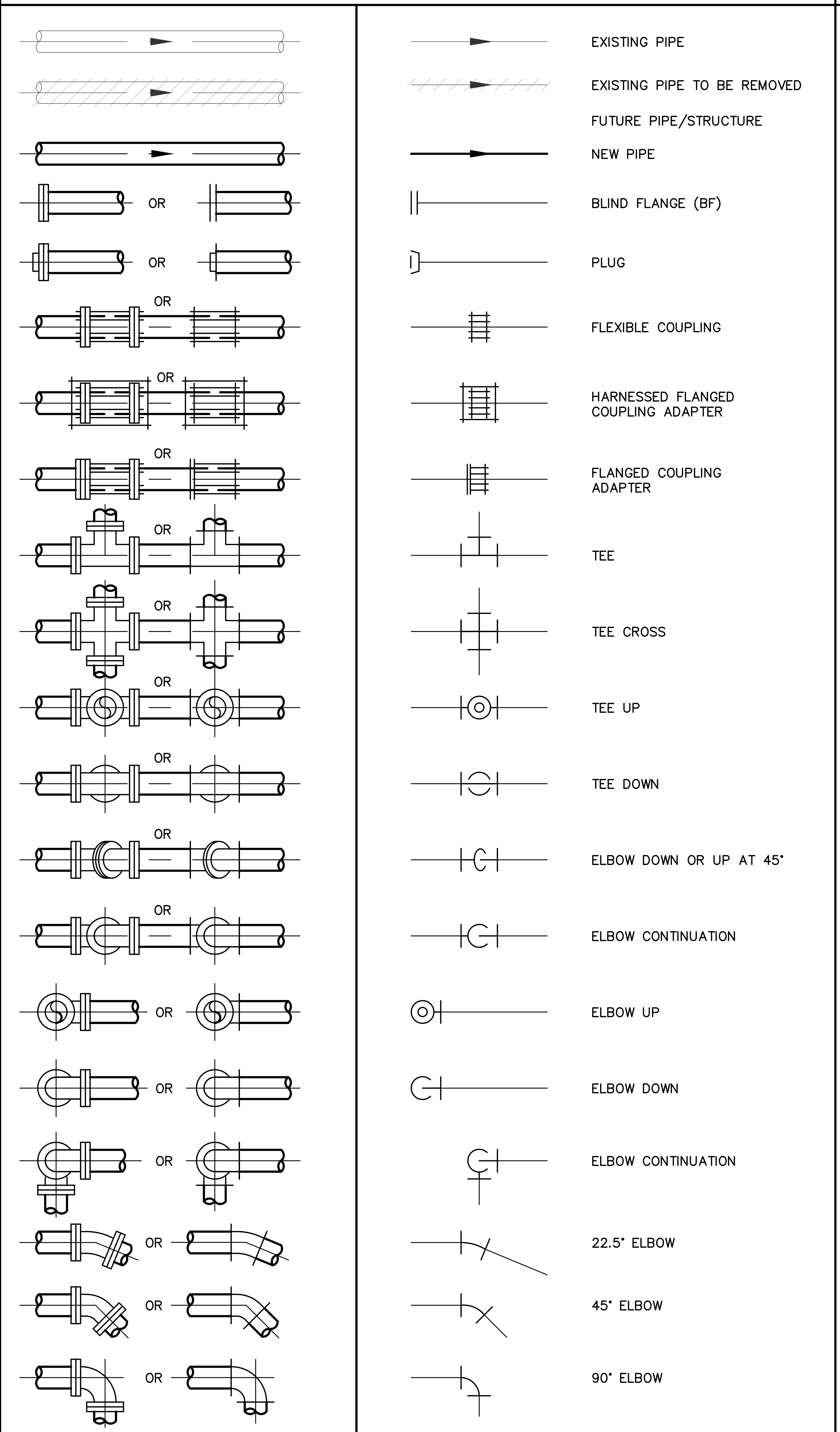
PIPE FITTING SYMBOLS

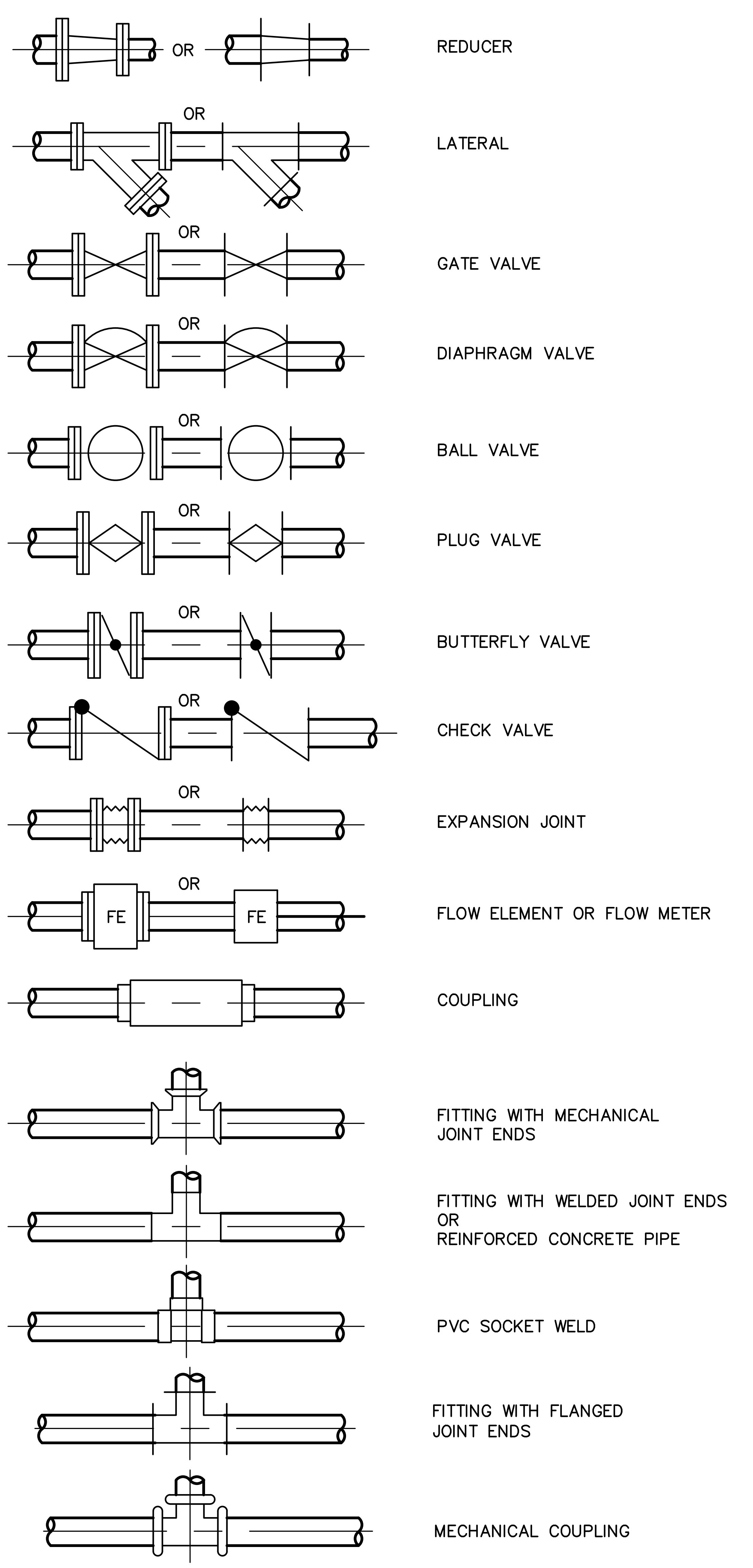
DOUBLE LINE SINGLE LINE



EXISTING PIPE
EXISTING PIPE TO BE REMOVED
FUTURE PIPE/STRUCTURE
NEW PIPE
OR
BLIND FLANGE (BF)
PLUG
FLEXIBLE COUPLING
HARNESSED FLANGED COUPLING ADAPTER
FLANGED COUPLING ADAPTER
TEE
TEE CROSS
TEE UP
TEE DOWN
ELBOW DOWN OR UP AT 45°
ELBOW CONTINUATION
ELBOW UP
ELBOW DOWN
ELBOW CONTINUATION
22.5° ELBOW
45° ELBOW
90° ELBOW

PIPE VALVE SYMBOLS

DOUBLE LINE



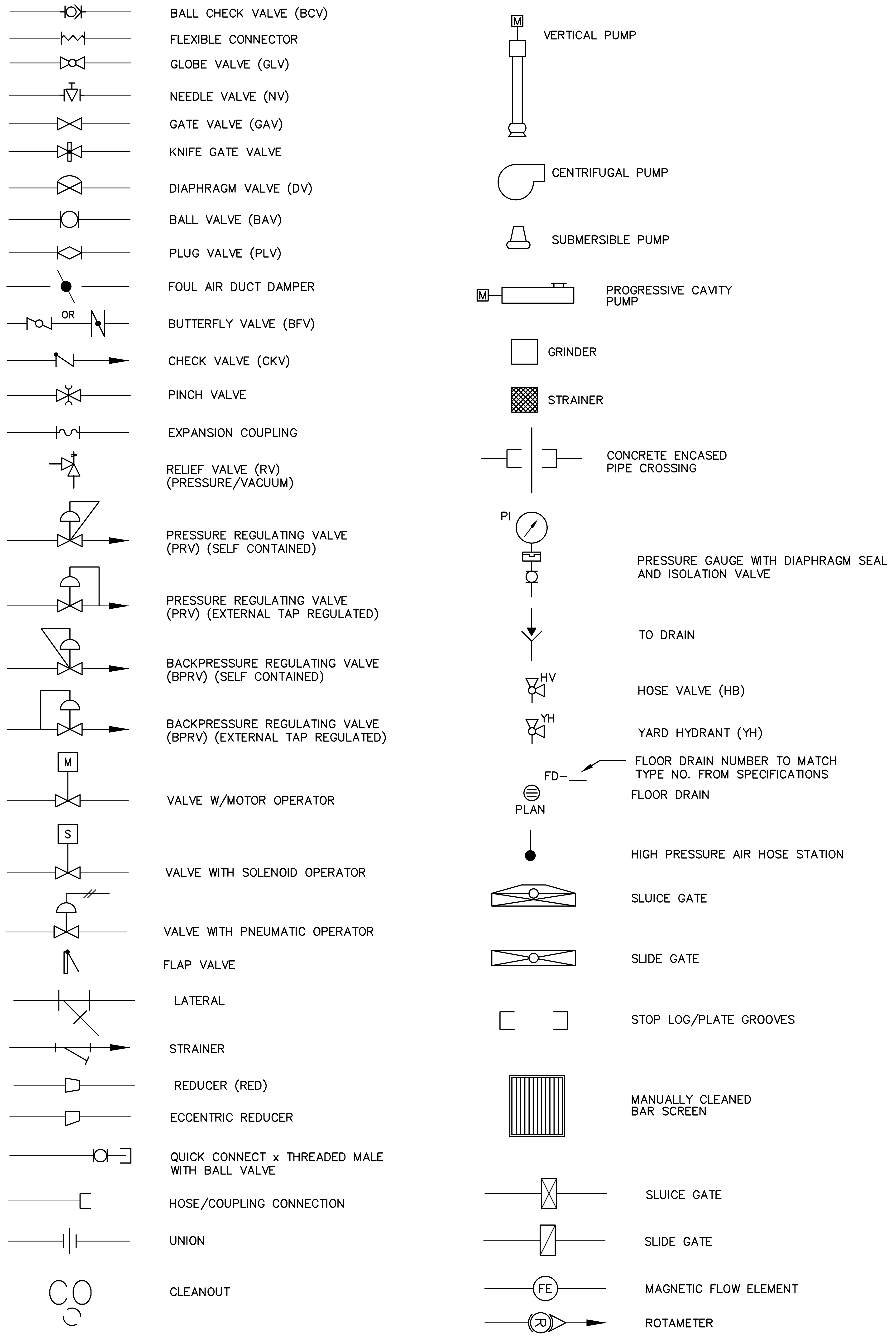
REDUCER
OR
LATERAL
GATE VALVE
DIAPHRAGM VALVE
BALL VALVE
PLUG VALVE
BUTTERFLY VALVE
CHECK VALVE
EXPANSION JOINT
FE
FLOW ELEMENT OR FLOW METER
COUPLING
FITTING WITH MECHANICAL JOINT ENDS
FITTING WITH WELDED JOINT ENDS OR REINFORCED CONCRETE PIPE
PVC SOCKET WELD
FITTING WITH FLANGED JOINT ENDS
MECHANICAL COUPLING

NOTES:

1. SOLID FILLED VALVES INDICATE NORMALLY CLOSED (NC) POSITION.
2. SINGLE LINE PIPE SHOWN DOES NOT DEPICT FITTING TYPES. SEE SPECIFICATIONS FOR MATERIALS AND FITTINGS TO BE USED.

PIPE FITTINGS, VALVE SYMBOLS AND EQUIPMENT

SINGLE LINE



BALL CHECK VALVE (BCV)
FLEXIBLE CONNECTOR
GLOBE VALVE (GLV)
NEEDLE VALVE (NV)
GATE VALVE (GAV)
KNIFE GATE VALVE
DIAPHRAGM VALVE (DV)
BALL VALVE (BAV)
PLUG VALVE (PLV)
FOUL AIR DUCT DAMPER
OR
BUTTERFLY VALVE (BFV)
CHECK VALVE (CKV)
PINCH VALVE
EXPANSION COUPLING
RELIEF VALVE (RV) (PRESSURE/VACUUM)
PRESSURE REGULATING VALVE (PRV) (SELF CONTAINED)
PRESSURE REGULATING VALVE (PRV) (EXTERNAL TAP REGULATED)
BACKPRESSURE REGULATING VALVE (BPRV) (SELF CONTAINED)
BACKPRESSURE REGULATING VALVE (BPRV) (EXTERNAL TAP REGULATED)
M
VALVE W/MOTOR OPERATOR
S
VALVE WITH SOLENOID OPERATOR
VALVE WITH PNEUMATIC OPERATOR
FLAP VALVE
LATERAL
STRAINER
REDUCER (RED)
ECCENTRIC REDUCER
QUICK CONNECT x THREADED MALE WITH BALL VALVE
HOSE/COUPLING CONNECTION
UNION
CO
CLEANOUT
M
VERTICAL PUMP
CENTRIFUGAL PUMP
SUBMERSIBLE PUMP
M
PROGRESSIVE CAVITY PUMP
GRINDER
STRAINER
CONCRETE ENCASED PIPE CROSSING
PI
PRESSURE GAUGE WITH DIAPHRAGM SEAL AND ISOLATION VALVE
TO DRAIN
HV
HOSE VALVE (HB)
YH
YARD HYDRANT (YH)
FD
FLOOR DRAIN NUMBER TO MATCH TYPE NO. FROM SPECIFICATIONS
PLAN
FLOOR DRAIN
HIGH PRESSURE AIR HOSE STATION
SLUICE GATE
SLIDE GATE
STOP LOG/PLATE GROOVES
MANUALLY CLEANED BAR SCREEN
SLUICE GATE
SLIDE GATE
FE
MAGNETIC FLOW ELEMENT
R
ROTAMETER

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ARIZONA

Jason R. Fort

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DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

MECHANICAL LEGEND & SYMBOLS

CITY PROJECT NO. WS90400085
DATE: 08/2024
M–01 SHEET 37 OF 134
CAD FILE: CSMLS40A01.DWG

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\37_CSMLS40A01.dwg DATE: 9/04/24 TIME: 03:23pm

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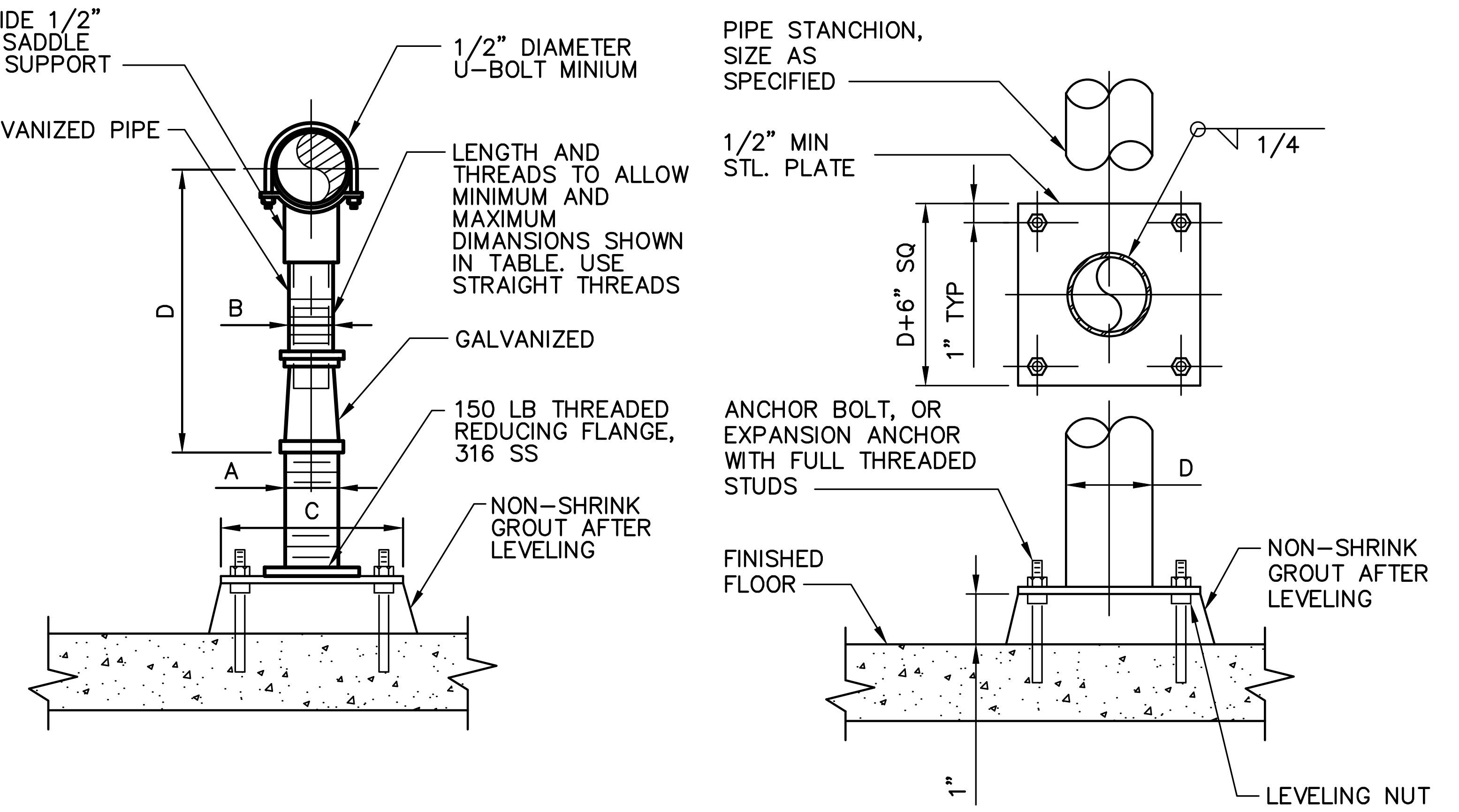

PROVIDE 1/2" PIPE SADDLE WITH SUPPORT
1/2" DIAMETER U–BOLT MINIUM
GALVANIZED PIPE
LENGTH AND THREADS TO ALLOW MINIMUM AND MAXIMUM DIMANSIONS SHOWN IN TABLE. USE STRAIGHT THREADS
D
B
GALVANIZED
150 LB THREADED REDUCING FLANGE, 316 SS
A
C
NON–SHRINK GROUT AFTER LEVELING
PIPE STANCHION, SIZE AS SPECIFIED
1/2" MIN STL. PLATE
1/4
D+6" SQ
1" TYP
ANCHOR BOLT, OR EXPANSION ANCHOR WITH FULL THREADED STUDS
D
FINISHED FLOOR
NON–SHRINK GROUT AFTER LEVELING
1"
LEVELING NUT

NOTE:

1. REFER TO ADJUSTABLE PIPE SUPPORT TABLE FOR DIMENSIONS.

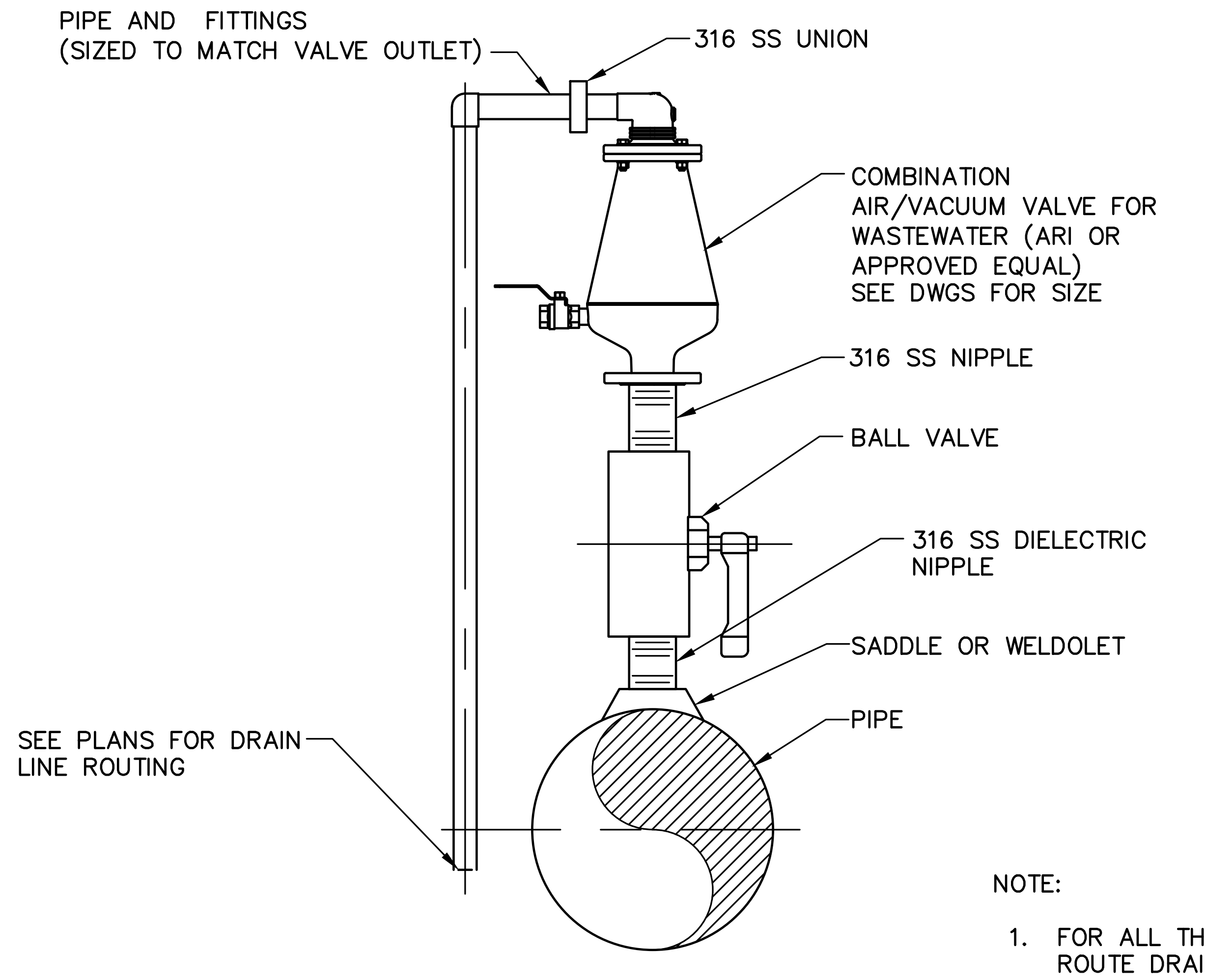
ADJUSTABLE PIPE SUPPORT

DETAIL 1 M–02 M–02

NOT TO SCALE

ADJUSTABLE PIPE SUPPORT
(DIMENSIONS IN INCHES)

PIPE SIZE	A	B	C	D MINIMUM	D MAXIMUM	ANCHORS (DIA)	ANCHORS (EMBED)
2 1/2	2 1/2	1 1/2	9	8	11 1/2	1/2	5
3	2 1/2	1 1/2	9	8 1/4	11 3/4	1/2	5
3 1/2	2 1/2	1 1/2	9	8 1/2	12	1/2	5
4	3	2 1/2	9	10 1/4	14	1/2	5
6	3	2 1/2	9	11 5/8	15 1/4	1/2	5
8	3	2 1/2	9	13 5/8	16 1/2	1/2	5
10	4	3	11	14 5/8	18 1/4	1/2	5
12	4	3	11	15 5/8	19 3/4	1/2	5
14	4	3	11	18 7/8	20 3/4	5/8	6 5/8
16	4	3	11	19 7/8	22 1/4	5/8	6 5/8
18	6	3 1/2	13 1/2	21 1/4	24	5/8	6 5/8
20	6	3 1/2	13 1/2	23 1/4	25 1/2	5/8	6 5/8
24	6	4	13 1/2	26 1/2	28 1/4	5/8	6 5/8
30	6	4	13 1/2	29 5/8	31 1/2	5/8	6 5/8
32	6	4	13 1/2	30 5/8	32 3/4	5/8	6 5/8
36	6	4	13 1/2	32 5/8	34 3/4	5/8	6 5/8


PIPE AND FITTINGS (SIZED TO MATCH VALVE OUTLET)
316 SS UNION
COMBINATION AIR/VACUUM VALVE FOR WASTEWATER (ARI OR APPROVED EQUAL) SEE DWGS FOR SIZE
316 SS NIPPLE
BALL VALVE
316 SS DIELECTRIC NIPPLE
SADDLE OR WELDOLET
PIPE
SEE PLANS FOR DRAIN LINE ROUTING

NOTES:

1. USE FLANGED PIPES AND GATE VALVE FOR 3" AND LARGER AIR VALVES.
2. ALL FITTINGS SHALL BE STAINLESS STEEL.
3. PROVIDE SUPPORT FOR THE DRAIN LINES.
4. VENT DRAIN PIPE SHALL BE STAINLESS STEEL ABOVE GRADE OR CPVC BELOW GRADE.
5. PROVIDE A DIELECTRIC NIPPLE AT THE CONNECTION OF THE STEEL PIPE AND VALVE ASSEMBLY.
6. FOR AIR/ARVS 2" AND SMALLER, DIELECTRIC COUPLINGS, STAINLESS STEEL NIPPLES, AND BALL VALVE SHALL BE THREADED

NOTE:

1. FOR ALL THE ARVS ON DISCHARGE LINE, ROUTE DRAIN LINES TO WET WELL. FOR ARVS ON FORCE MAINS, ROUTE DRAIN LINE TO THE NEAREST MANHOLE.

COMBINATION AIR AND VACUUM RELEASE VALVE

DETAIL 2 M–02 M–02

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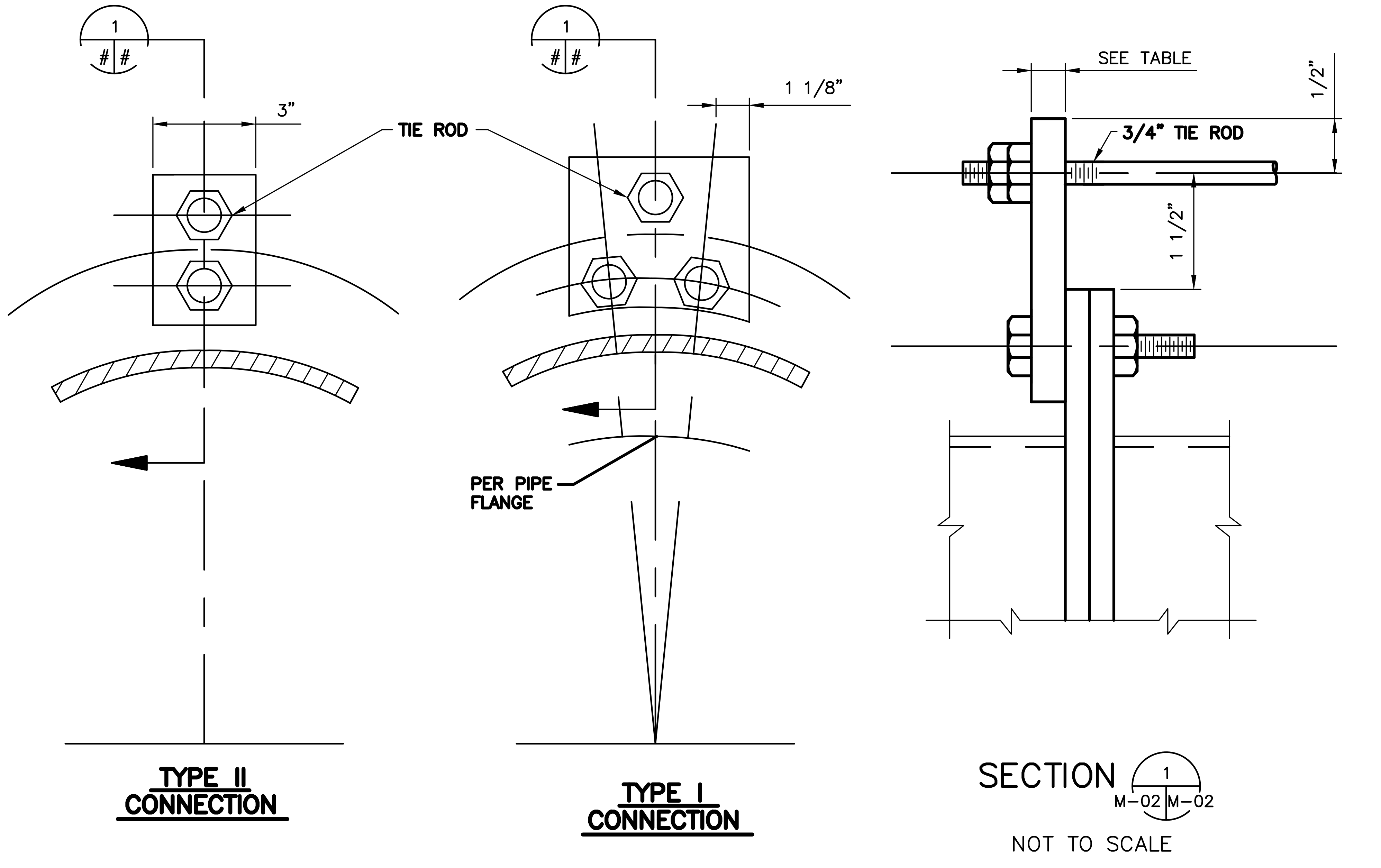

1
# #
3"
TIE ROD
TYPE II CONNECTION
1
# #
1 1/8"
PER PIPE FLANGE
TYPE I CONNECTION
SEE TABLE
1/2"
3/4" TIE ROD
1 1/2"
SECTION 1 M–02 M–02
NOT TO SCALE

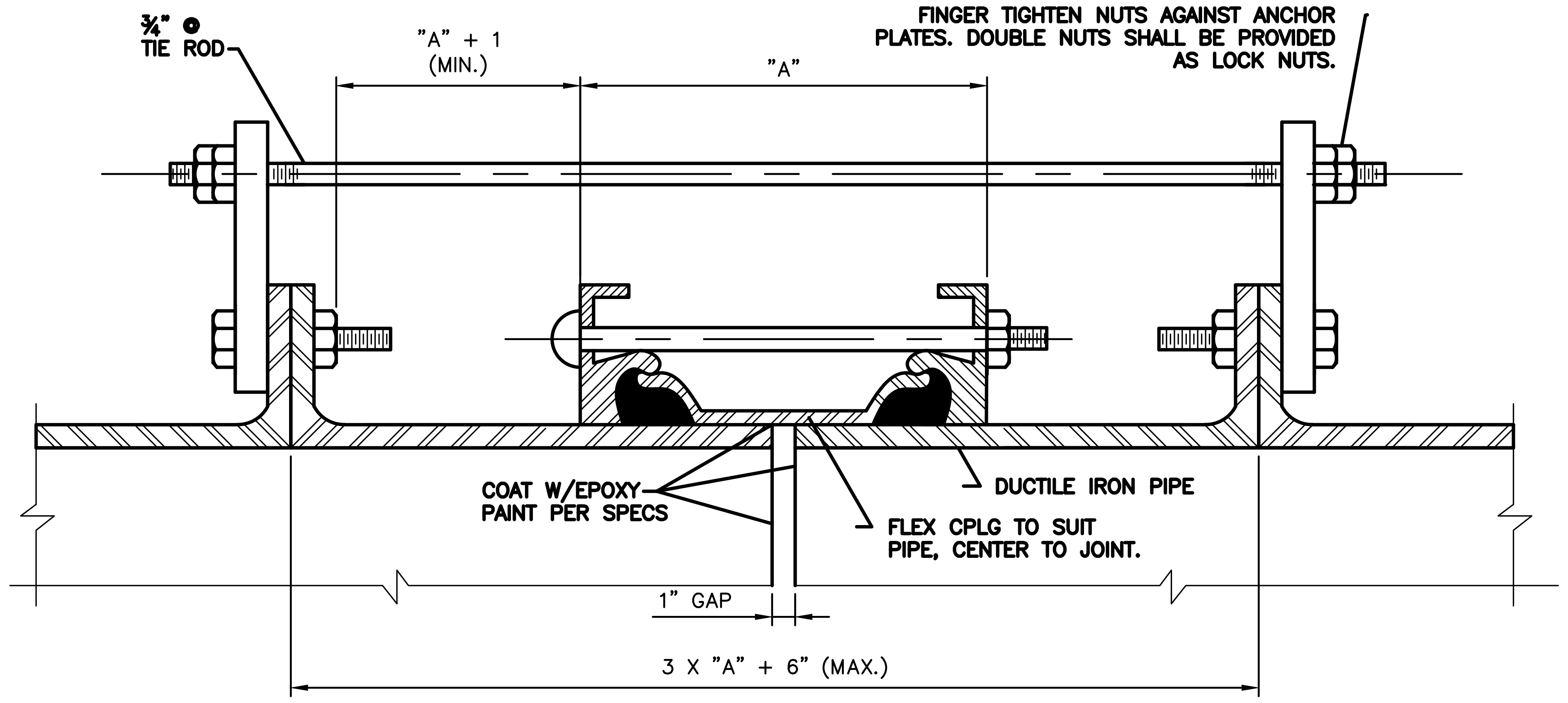
NOTES:

1. ALL EXPOSED FLEXIBLE COUPLINGS SHALL HAVE TIE RODS UNLESS SPECIFICALLY INDICATED OTHERWISE ON THE DRAWINGS.
2. PIPE THRUST SHALL BE BASED ON TEST PRESSURE.
3. PIPE THRUST = 0.7854 X D^2 X TEST PRESSURE, WHERE D IS PIPE OD.
4. CONTRACTOR MAY USE ONE INCH DIAMETER ROD FOR THRUSTS GREATER THAN 30,000 POUNDS. NUMBER OF 1" RODS = NUMBER OF 3/4" RODS X 0.5625. ROUND UP TO THE NEXT LARGER NUMBER.
5. ALL ROD CONNECTIONS SHALL BE TYPE I FOR THRUSTS GREATER THAN 6,000 POUNDS.
6. TIE RODS SHALL CONFORM TO ASTM A193, GRADE B7.
7. NUTS SHALL CONFORM TO ASTM A194, GRADE 2H.
8. LUG PLATE SHALL CONFORM TO ASTM A283, GRADE D OR ASTM A36.
9. GRIND ALL CORNERS SMOOTH.

FLEXIBLE COUPLING – TIE DOWN CONNECTION

DETAIL 3 M–02 M–02

NOT TO SCALE


¾" ⊙ TIE ROD
"A" + 1 (MIN.)
"A"
FINGER TIGHTEN NUTS AGAINST ANCHOR PLATES. DOUBLE NUTS SHALL BE PROVIDED AS LOCK NUTS.
COAT W/EPOXY PAINT PER SPECS
DUCTILE IRON PIPE
FLEX CPLG TO SUIT PIPE, CENTER TO JOINT.
1" GAP
3 X "A" + 6" (MAX.)

ROD SCHEDULE FOR DIP

PIPE THRUST *	TYPE OF CONNECTION *	NO. OF 3/4" TIE RODS
0–6,000#	II	2
6,000 – 12,000#	I	2
12,001 – 18,000#	I	3
18,001 – 24,000#	I	4
24,001 – 30,000#	I	5

TYPICAL HARNESSED FLEXIBLE RESTRAINED COUPLING FOR DIP PIPE

DETAIL 4 M–02 M–02

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HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO.
40280
JASON R.
FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

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*				
*				

DES
FS

DWN
RS

CKD
JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

GENERAL DETAILS 1

CITY PROJECT NO. WS90400085

DATE: 08/2024

M–02 SHEET 38 OF 134

CAD FILE: CSMLS40D01.DWG

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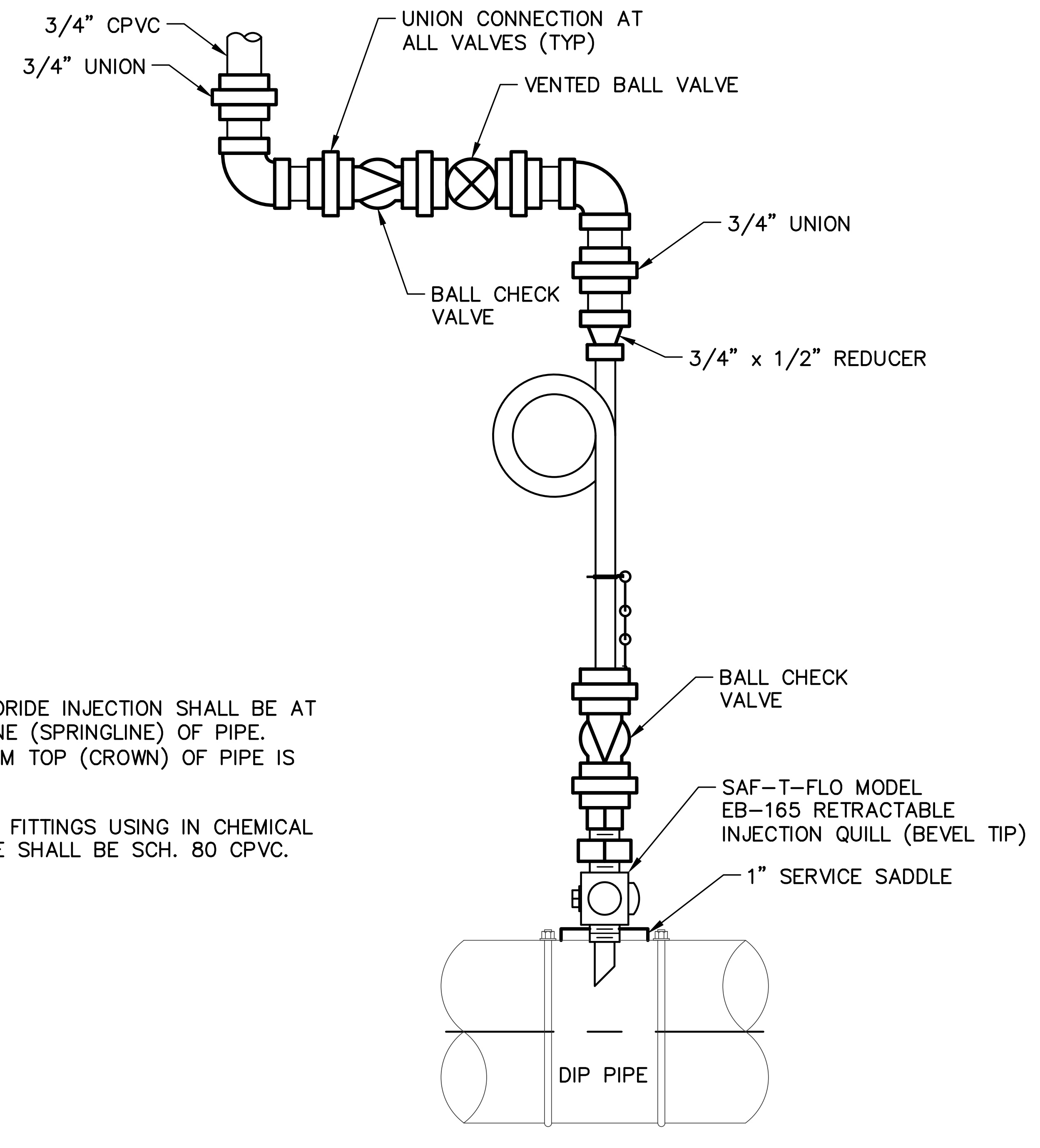

3/4" CPVC
3/4" UNION
UNION CONNECTION AT ALL VALVES (TYP)
VENTED BALL VALVE
3/4" UNION
BALL CHECK VALVE
3/4" x 1/2" REDUCER
BALL CHECK VALVE
SAF–T–FLO MODEL EB–165 RETRACTABLE INJECTION QUILL (BEVEL TIP)
1" SERVICE SADDLE
DIP PIPE

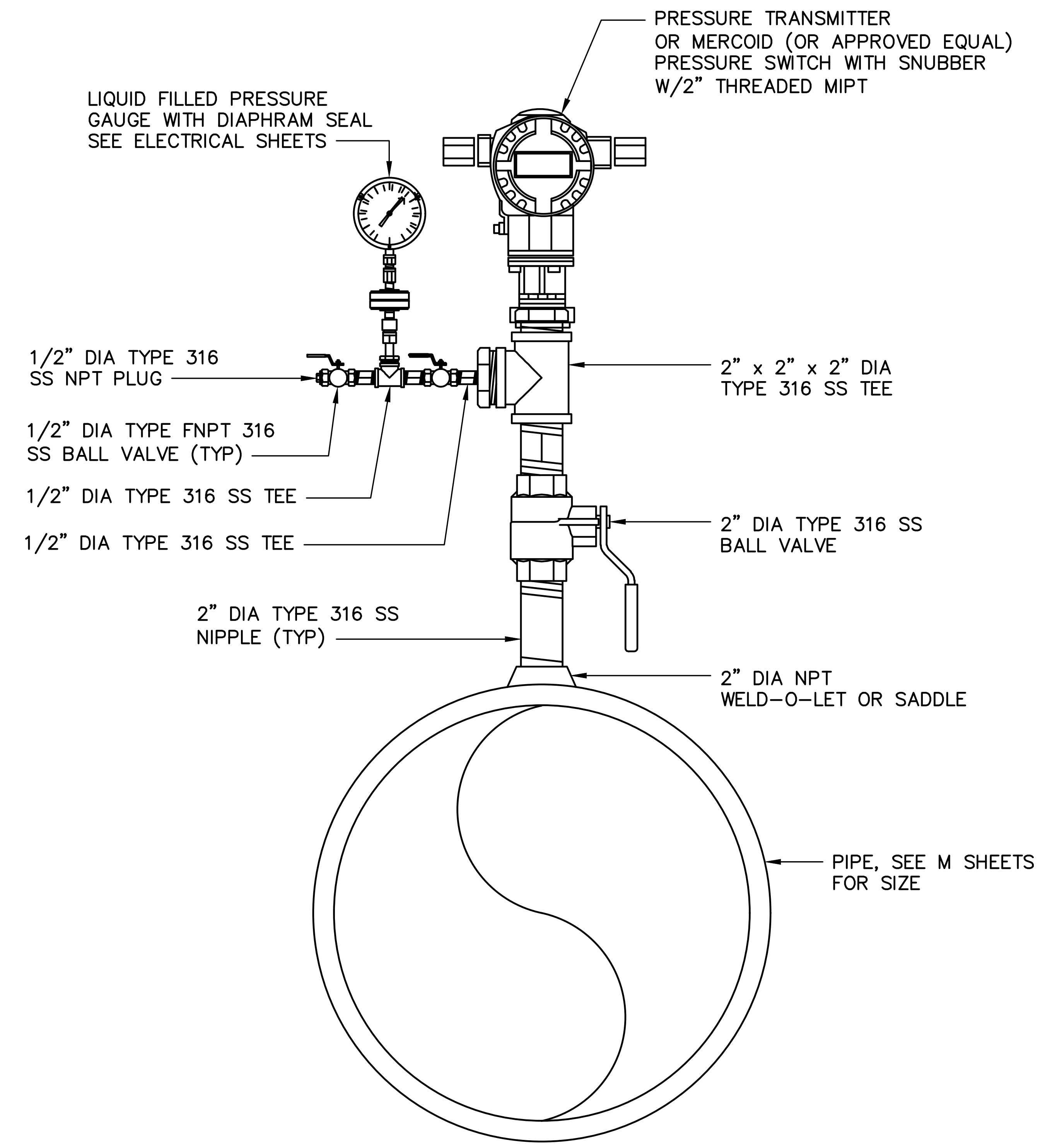
PLAN VIEW

NOTE:

1. FERROUS CHLORIDE INJECTION SHALL BE AT THE CENTERLINE (SPRINGLINE) OF PIPE. INJECTION FROM TOP (CROWN) OF PIPE IS NOT ALLOWED.
2. ALL PIPE AND FITTINGS USING IN CHEMICAL INJECTION PIPE SHALL BE SCH. 80 CPVC.

FERROUS CHLORIDE INJECTION SCHEMATIC DETAIL

DETAIL 5
M–03 | M–03
NOT TO SCALE

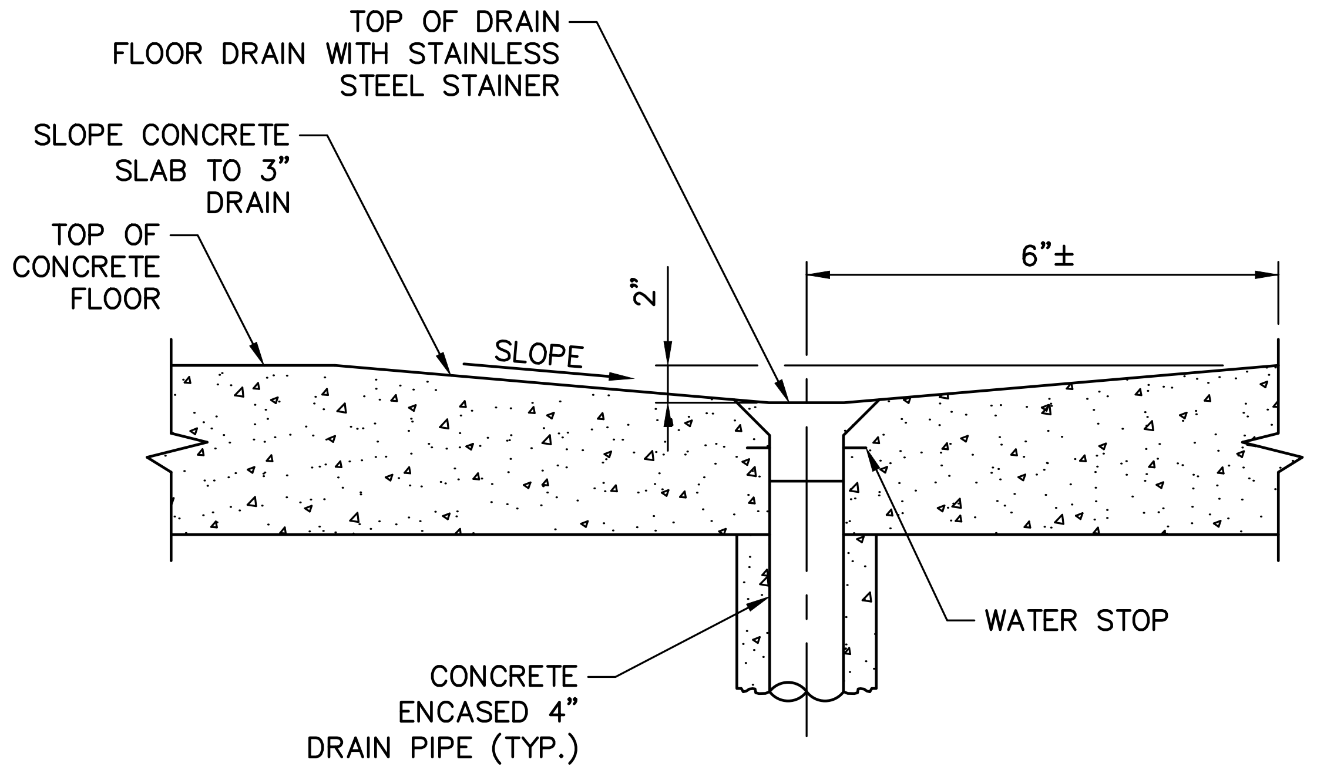

PRESSURE TRANSMITTER OR MERCOID (OR APPROVED EQUAL) PRESSURE SWITCH WITH SNUBBER W/2" THREADED MIPT
LIQUID FILLED PRESSURE GAUGE WITH DIAPHRAM SEAL SEE ELECTRICAL SHEETS
1/2" DIA TYPE 316 SS NPT PLUG
1/2" DIA TYPE FNPT 316 SS BALL VALVE (TYP)
1/2" DIA TYPE 316 SS TEE
1/2" DIA TYPE 316 SS TEE
2" x 2" x 2" DIA TYPE 316 SS TEE
2" DIA TYPE 316 SS BALL VALVE
2" DIA TYPE 316 SS NIPPLE (TYP)
2" DIA NPT WELD–O–LET OR SADDLE
PIPE, SEE M SHEETS FOR SIZE

NOTES:

1. VALVE SIZE SHALL BE AS INDICATED ON THE PLANS.
2. NPT SIZE SHALL MATCH VALVE INLET SIZE, SEE PLANS.
3. NIPPLE(S), FITTINGS AND VALVES SHALL BE TYPE 316 SS.
4. ISOLATE DISSIMILAR METALS.

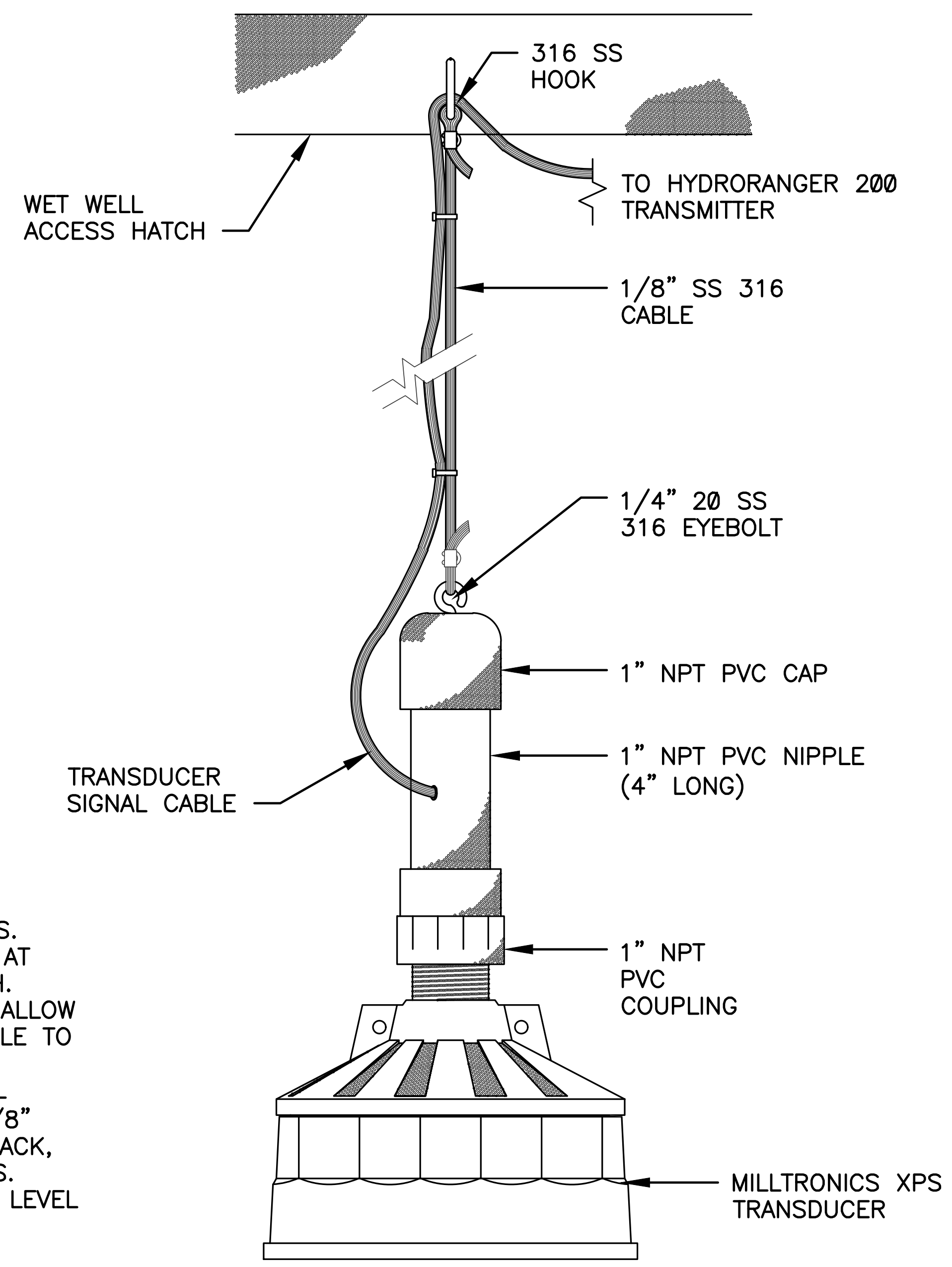
PRESSURE GAUGE & TRANSMITTER DETAIL

DETAIL 6
M–03 | M–03
NOT TO SCALE


TOP OF DRAIN
FLOOR DRAIN WITH STAINLESS STEEL STAINER
SLOPE CONCRETE SLAB TO 3" DRAIN
TOP OF CONCRETE FLOOR
SLOPE
2"
6"±
CONCRETE ENCASED 4" DRAIN PIPE (TYP.)
WATER STOP

FLOOR DRAIN

DETAIL 7
M–03 | M–03
NOT TO SCALE


316 SS HOOK
WET WELL ACCESS HATCH
TO HYDRORANGER 200 TRANSMITTER
1/8" SS 316 CABLE
1/4" 20 SS 316 EYEBOLT
1" NPT PVC CAP
1" NPT PVC NIPPLE (4" LONG)
TRANSDUCER SIGNAL CABLE
1" NPT PVC COUPLING
MILLTRONICS XPS TRANSDUCER

NOTES:

1. CABLE AND MOUNTING HARDWARE TO BE 316 SS.
2. 316 SS HOOK MOUNTED AT WET WELL ACCESS HATCH.
3. PVC NIPPLE DRILLED TO ALLOW TRANSDUCER SIGNAL CABLE TO PASS THROUGH.
4. BIND TRANSDUCER SIGNAL CABLE TO LENGTH OF 1/8" 316 SS CABLE USING BLACK, UV RESISTANT CABLE TIES.
5. DETAIL TYPICAL FOR TWO LEVEL TRANSDUCERS.

LEVEL ELEMENT INSTALLATION DETAIL

DETAIL 8
M–03 | M–03
NOT TO SCALE

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
Jason R. Fort

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	RS	10/2023	JF	30% SUBMITTAL
B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
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*				

DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

GENERAL DETAILS 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
M–03 SHEET 39 OF 134
CAD FILE: DSM4AB9D02.DWG

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\39_CSMLS40D02.dwg DATE: 9/04/24 TIME: 03:23pm

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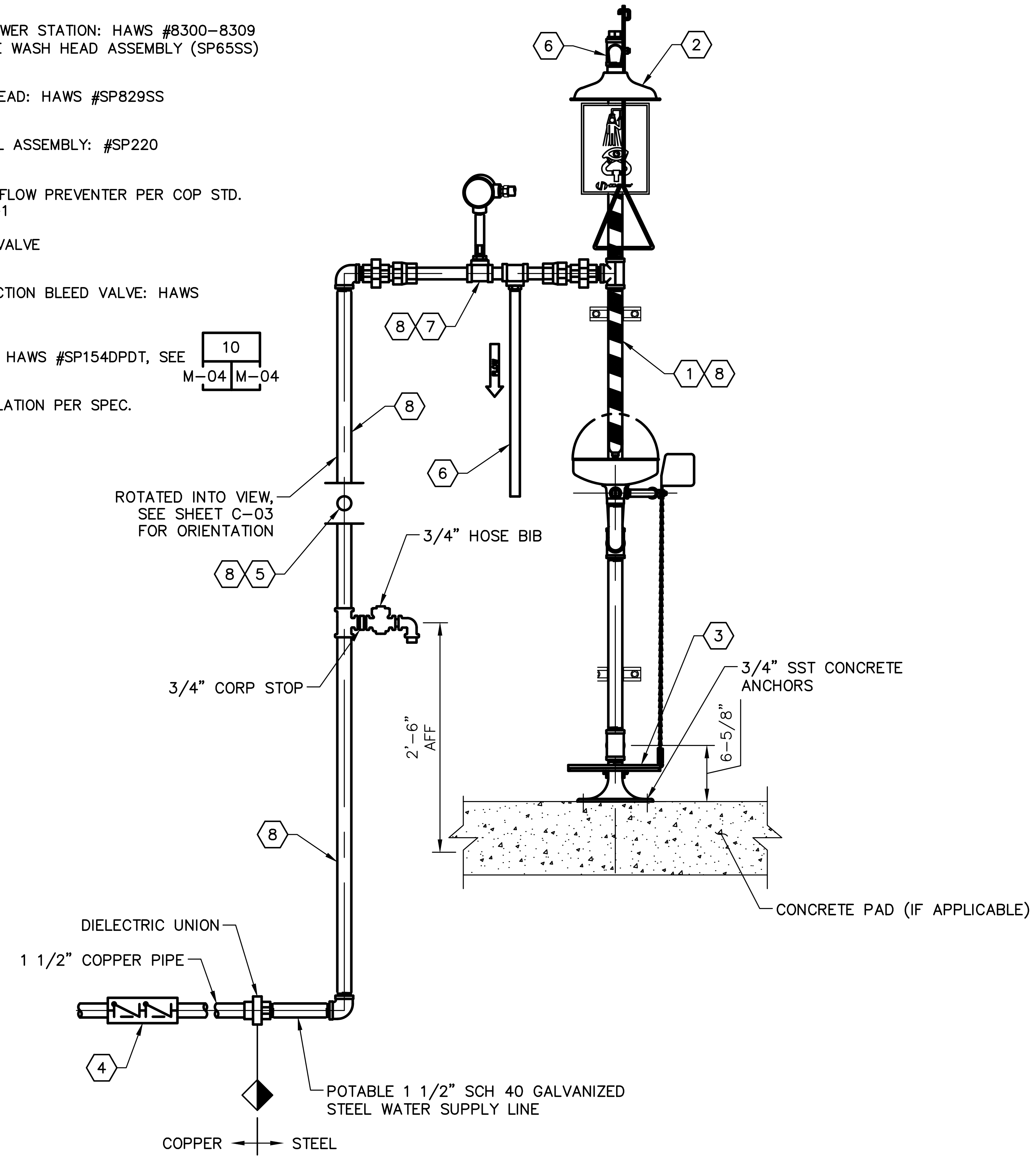
FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

KEY NOTES

1. EYEWASH/SHOWER STATION: HAWS #8300-8309 THE EYE/FACE WASH HEAD ASSEMBLY (SP65SS)
2. SS SHOWER HEAD: HAWS #SP829SS
3. FOOT CONTROL ASSEMBLY: #SP220
4. 1 1/2" BACK FLOW PREVENTER PER COP STD. DTL. PE-352-1
5. 1 1/2" BALL VALVE
6. SCALD PROTECTION BLEED VALVE: HAWS #SP157A
7. FLOW SWITCH: HAWS #SP154DPDT, SEE 10 M-04 M-04 FOR DETAILS.
8. PROVIDE INSULATION PER SPEC.

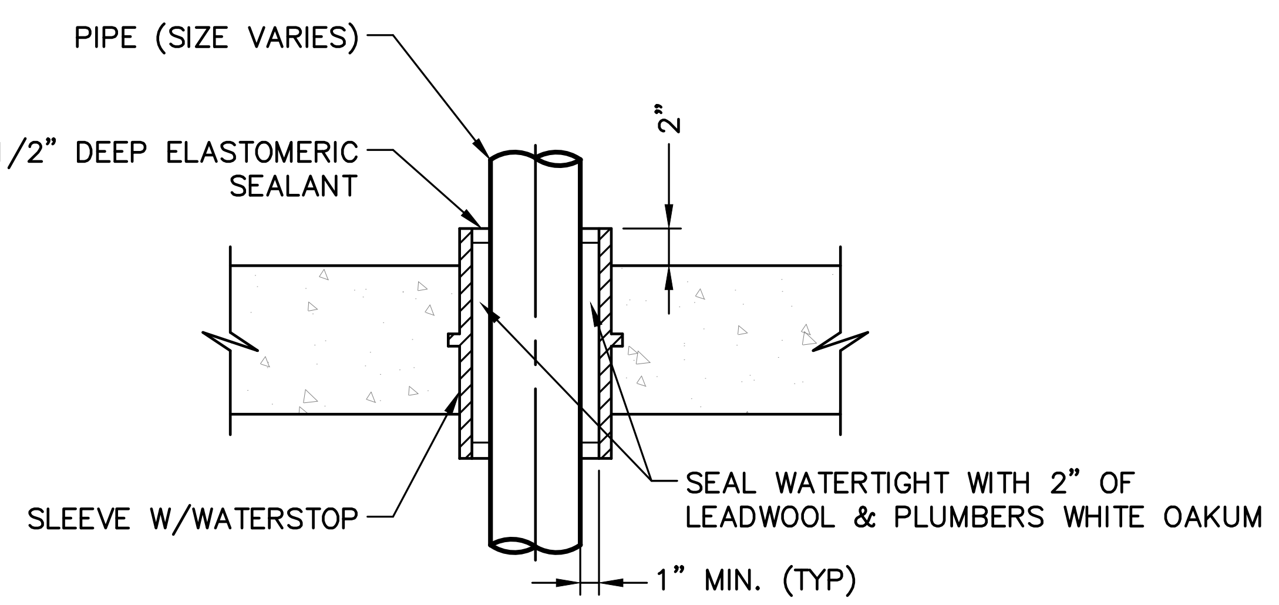


6
2
8 7
1 8
8
6
ROTATED INTO VIEW, SEE SHEET C-03 FOR ORIENTATION
8 5
3/4" HOSE BIB
3/4" CORP STOP
3
3/4" SST CONCRETE ANCHORS
2'-6" AFF
6-5/8"
8
CONCRETE PAD (IF APPLICABLE)
DIELECTRIC UNION
1 1/2" COPPER PIPE
4
POTABLE 1 1/2" SCH 40 GALVANIZED STEEL WATER SUPPLY LINE
COPPER
STEEL

EYEWASH/SHOWER

DETAIL 9 M-04 M-04

NOT TO SCALE



PIPE (SIZE VARIES)
1/2" DEEP ELASTOMERIC SEALANT
2"
SLEEVE W/WATERSTOP
SEAL WATERTIGHT WITH 2" OF LEADWOOL & PLUMBERS WHITE OAKUM
1" MIN. (TYP)

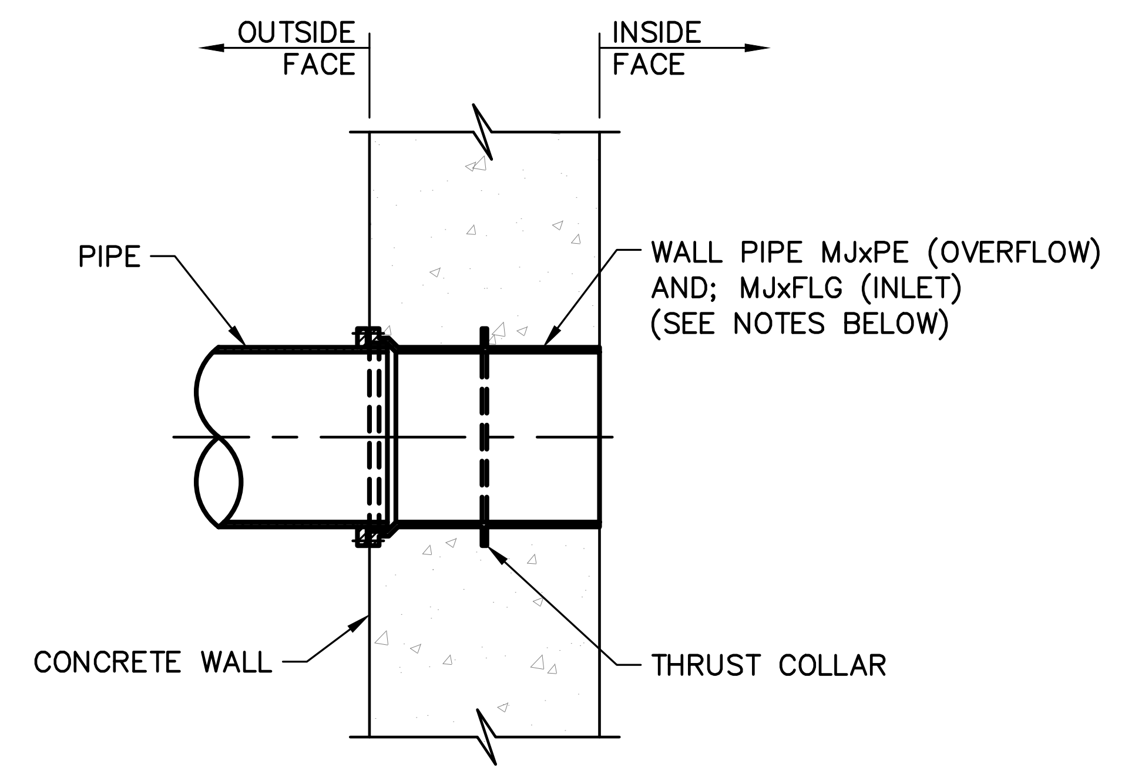
NOTES:

1. SLEEVES SHALL BE CAST INTO WALL. KNOCKOUTS AND SUBSEQUENT GROUTING IN SLEEVES WILL NOT BE PERMITTED UNLESS A KEYED WATERSTOP JOINT IS PROVIDED.
2. 6"ø SLEEVES AND SMALLER SHALL BE SCH 40 STL PIPE.
3. SLEEVES LARGER THAN 6" ø SHALL BE 1/4" THICK STEEL PIPE.
4. LINK SEAL SHALL BE INSTALLED AT BOTH ENDS OF WALL SLEEVE. SLEEVE DIAMETER SHALL BE PER LINK SEAL MANUFACTURER'S RECOMMENDATION.
5. SLEEVE SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
6. PROVIDE 6" STUBOUT MIN WITH CAP ON BOTH SIDES OF WALL FOR ALL FUTURE PIPING.
7. PIPE SHALL BE FULLY SUPPORTED PRIOR TO MODULAR SEAL INSTALLATION AND FINAL TIGHTENING.

SLEEVE INSTALLATION THROUGH FLOOR SLABS

DETAIL 11 M-04 M-04

NOT TO SCALE



OUTSIDE FACE
INSIDE FACE
PIPE
WALL PIPE MJxPE (OVERFLOW) AND; MJxFLG (INLET) (SEE NOTES BELOW)
CONCRETE WALL
THRUST COLLAR

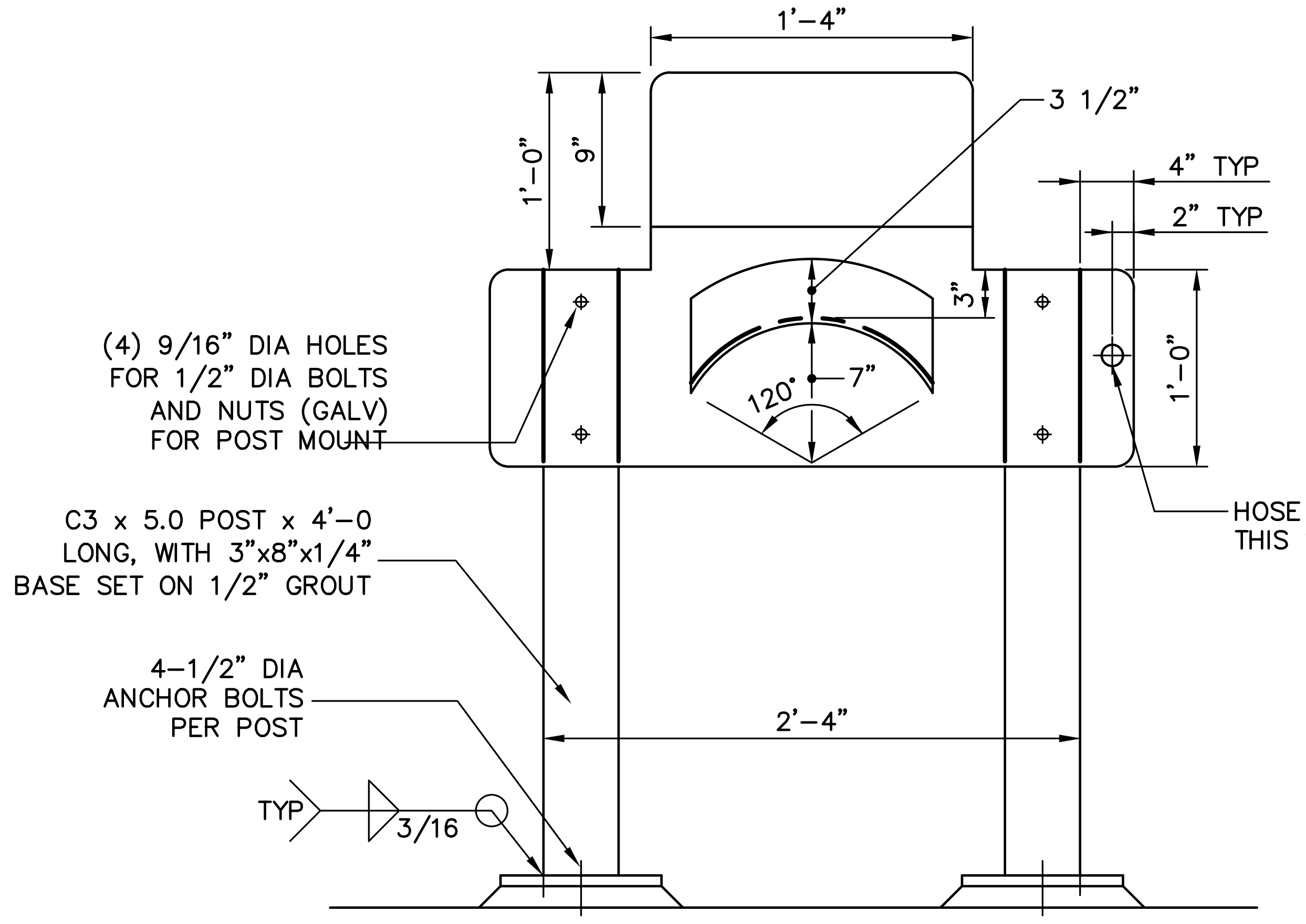
NOTES:

1. WALL PIPE CAN BE MJxFLG, FLGxFLG, MJxPE (SHOWN ABOVE).
2. WALL PIPE IS TO SET FLUSH WITH WALL UNLESS OTHERWISE NOTED.
3. FLANGES AND MJ SHOULD BE DRILLED AND TAPPED FOR STUDS.
4. WALL PIPE SHALL BE THRUST COLLAR WALL PIPE FABRICATED FROM CENTRIFUGALLY CAST DUCTILE IRON AS MANUFACTURED BY AMERICAN DUCTILE IRON PIPE COMPANY, OR EQUAL.
5. FOR STRUCTURAL REINFORCEMENT AROUND PIPING SEE STRUCTURAL SHEETS.
6. MAKE ALL PIPING RESTRAINED JOINTS.

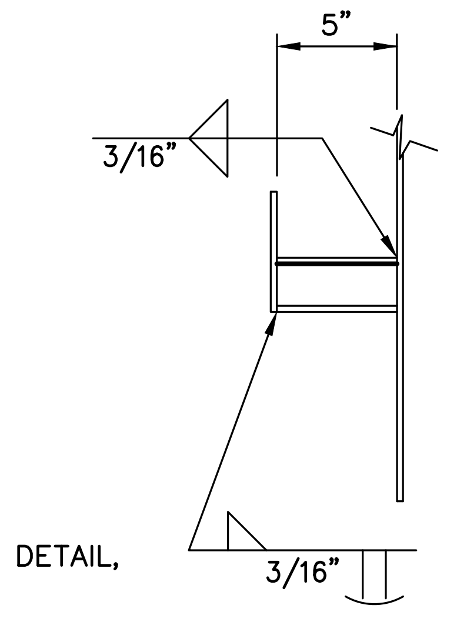
PIPE PENETRATION THROUGH WALL OR ROOF

DETAIL 12 M-04 M-04

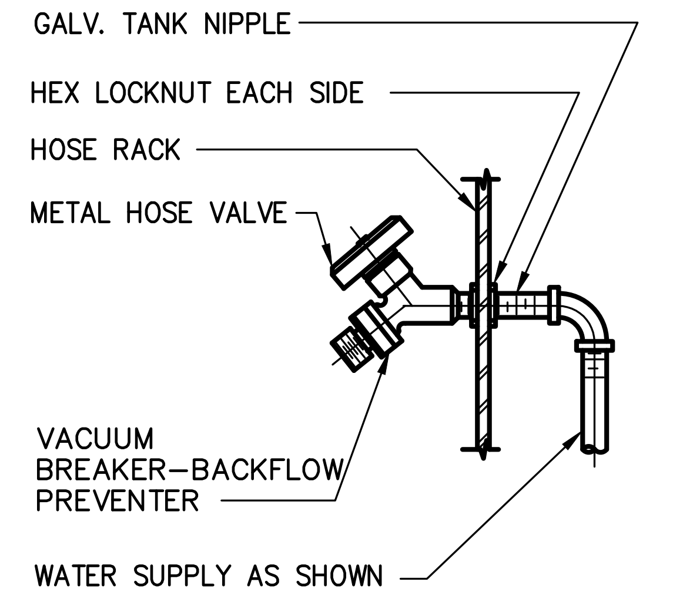
NOT TO SCALE



1'-4"
3 1/2"
4" TYP
2" TYP
1'-0"
9"
3"
7"
120°
1'-0"
(4) 9/16" DIA HOLES FOR 1/2" DIA BOLTS AND NUTS (GALV) FOR POST MOUNT
HOSE VALVE DETAIL, THIS SHEET
C3 x 5.0 POST x 4'-0 LONG, WITH 3"x8"x1/4" BASE SET ON 1/2" GROUT
4-1/2" DIA ANCHOR BOLTS PER POST
2'-4"
TYP
3/16



HOSE RACK



GALV. TANK NIPPLE
HEX LOCKNUT EACH SIDE
HOSE RACK
METAL HOSE VALVE
VACUUM BREAKER-BACKFLOW PREVENTER
WATER SUPPLY AS SHOWN

HOSE VALVE

NOTES:

1. HOSE RACK AND MOUNTING SHALL BE WELDED CONSTRUCTION. MATERIAL MIN 3/16" STEEL PLATE HOT DIP GALVANIZED AFTER FABRICATION. ALL BOLTS AND NUTS SHALL BE GALVANIZED.
2. ROUND ALL CORNERS (3/4" RADIUS).

NOTES:

1. ALL HOSE VALVES TO BE CONTROLLED BY INDIVIDUAL SHUT-OFF VALVES (BALL VALVES), EXCEPT WHERE INDIVIDUALLY CONTROLLED BRANCH MAIN SERVES HOSE VALVES ONLY.
2. FOR LOCATION SEE DRAWINGS.
3. LOCATE HOSE BIBS 3'-6" ABOVE FINISHED FLOOR OR GRADE.

POST MOUNTED UTILITY STATION AND HOSE VALVE

DETAIL 13 M-04 M-04

NOT TO SCALE

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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

Registered Professional Engineer
CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24

Jason R. Fort

REVISIONS

NO.	BY	DATE	CKD	REMARKS
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C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

GENERAL DETAILS 3

CITY PROJECT NO. WS90400085
DATE: 08/2024
M-04 SHEET 40 OF 134
CAD FILE: CSMLS40D03.DWG

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\40_CSMLS40D03.dwg DATE: 9/04/24 TIME: 03:23pm

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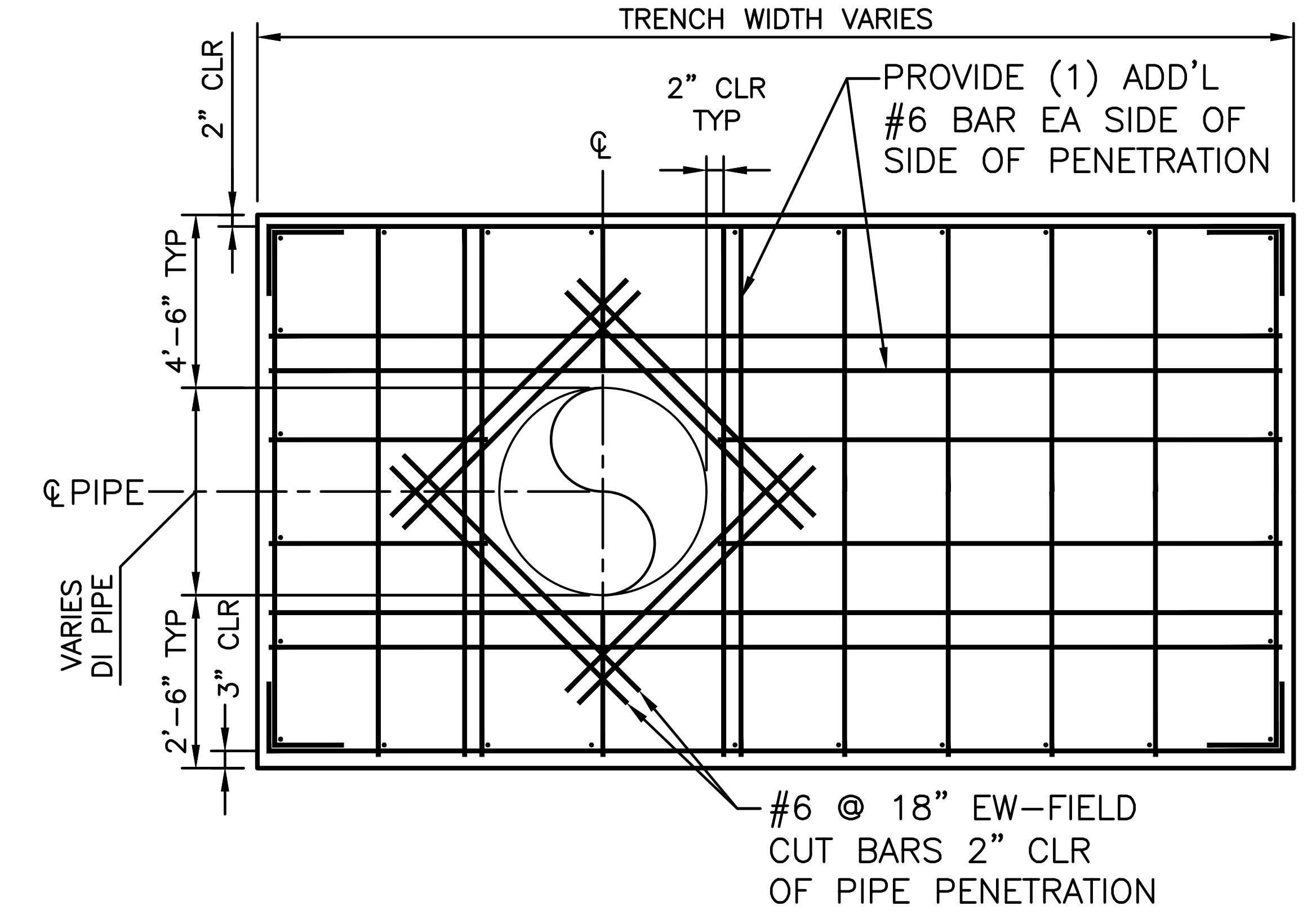
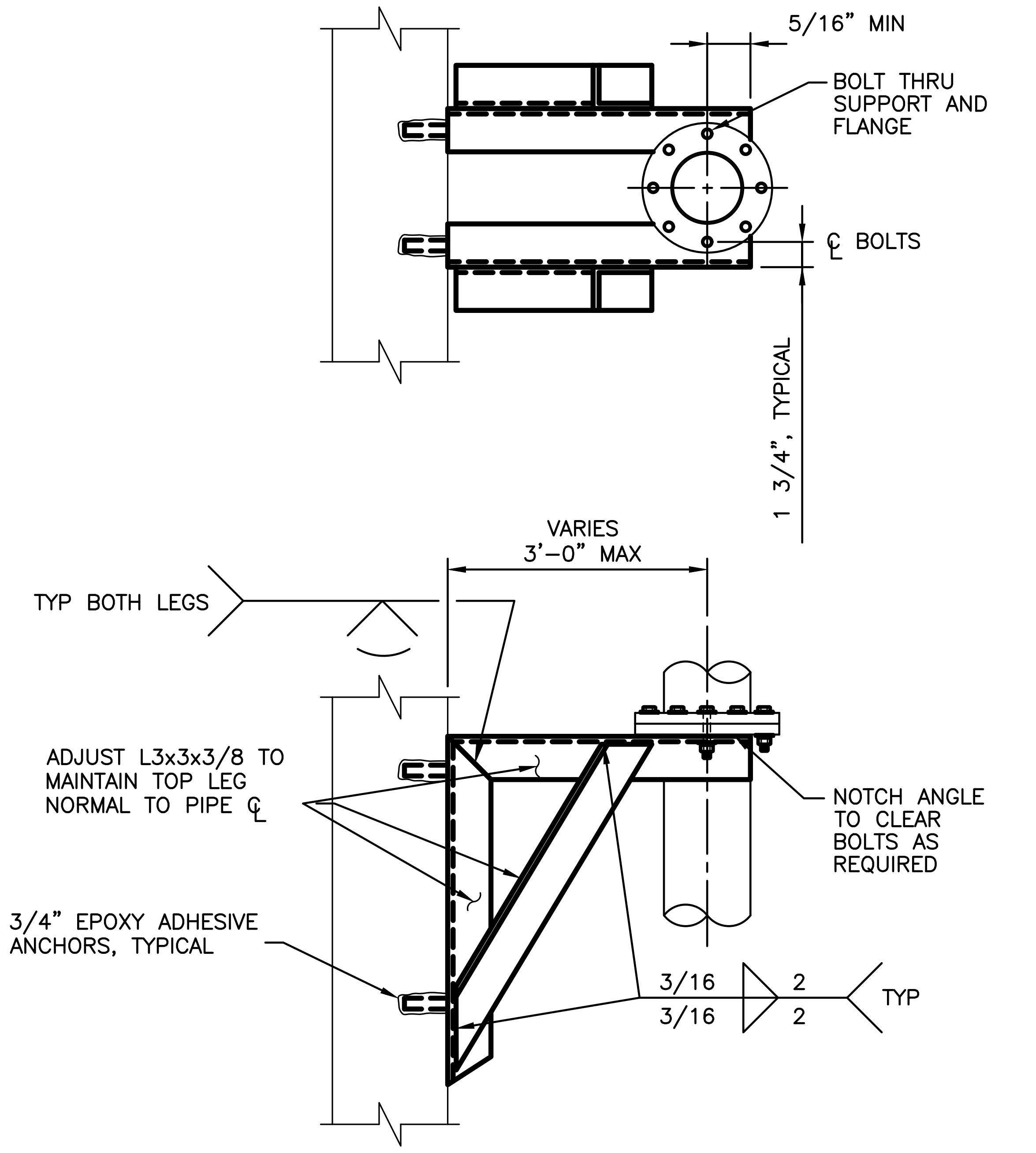

TRENCH WIDTH VARIES
2" CLR
2" CLR TYP
PROVIDE (1) ADD'L #6 BAR EA SIDE OF SIDE OF PENETRATION
℄
4'–6" TYP
℄ PIPE
VARIES DI PIPE
3" CLR
2'–6" TYP
#6 @ 18" EW–FIELD CUT BARS 2" CLR OF PIPE PENETRATION

GENERAL NOTES:

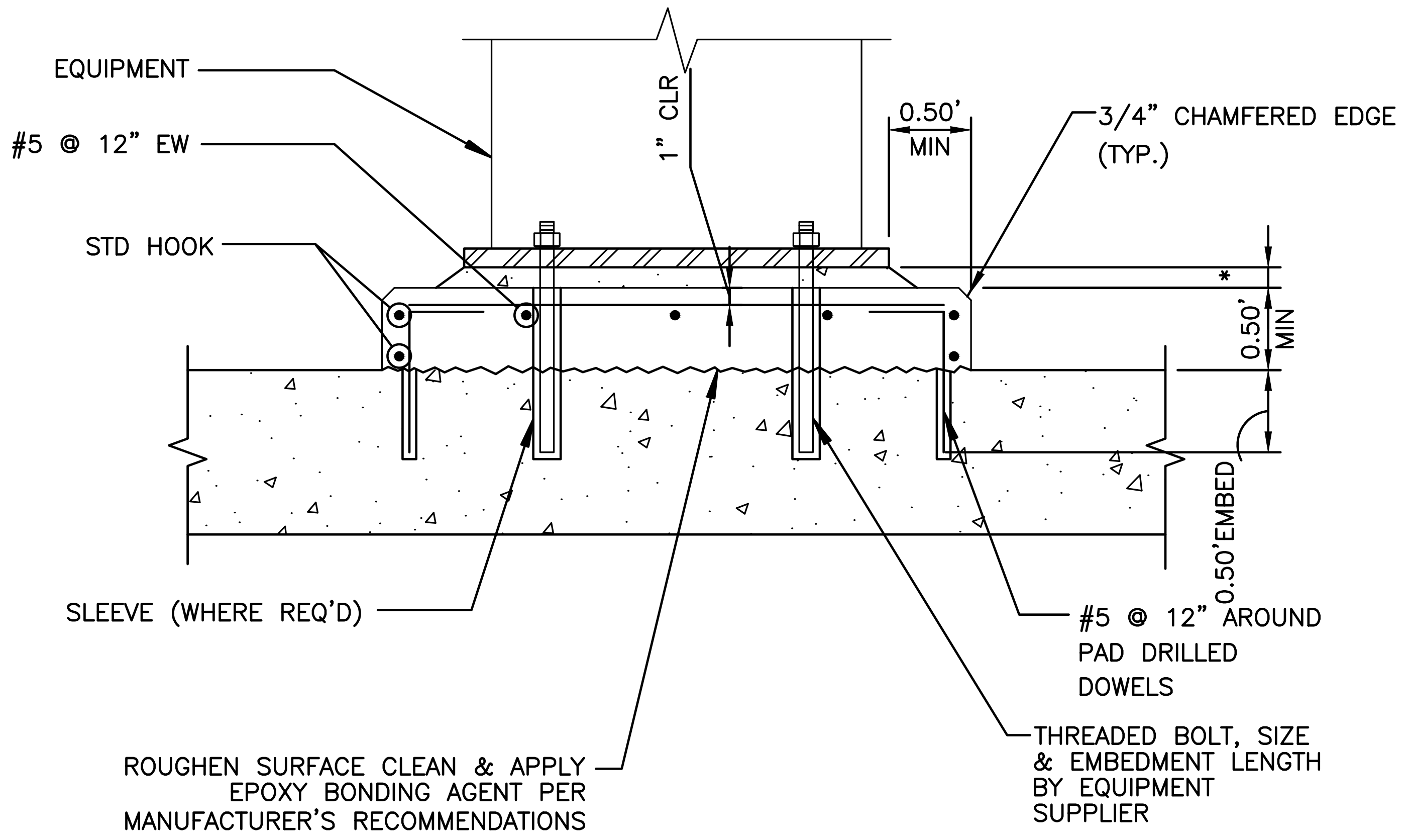
1. SINGLE THRUST BLOCK DIMENSIONS:
   WIDTH = 15'–0"
   HT = LENGTH
2. FOR 24" DI PIPE
   HT = LENGTH = 8'–0"
3. THIS DETAIL IS FOR EACH FACE;
   DIAGONAL REINFORCING BARS ARE REQUIRED ONLY AT PIPE PENETRATIONS.
4. THE CROSS SECTIONAL AREA OF THE THRUST BLOCK MUST BE 72 SQUARE FEET MIN. WIDTH (ALONG THE PIPE) WILL VARY. FITTING SHOULD BE POURED IN THE CENTER OF THE THRUST BLOCK.
5. THRUST BLOCKS 8.5FT X 8.5FT OR 72 SQUARE FEET OF BEARING AREA PERPENDICULAR TO THE FM CENTERLINE. ACTUAL DEPTH AND /OR WIDTH MAY VARY DEPENDING UPON FIELD CONDITIONS. KEYWAY MAY BE REQUIRED UNDER FM TO ACHIEVE THE REQUIRED BEARING AREA. THIRD DIMENSION , PARALLEL TO FM CENTERLINE, SHALL BE 8FT;

THRUST BLOCK
DETAIL 18 M–05 | M–05
NOT TO SCALE


5/16" MIN
BOLT THRU SUPPORT AND FLANGE
℄ BOLTS
1 3/4", TYPICAL
VARIES 3'–0" MAX
TYP BOTH LEGS
ADJUST L3x3x3/8 TO MAINTAIN TOP LEG NORMAL TO PIPE ℄
NOTCH ANGLE TO CLEAR BOLTS AS REQUIRED
3/4" EPOXY ADHESIVE ANCHORS, TYPICAL
3/16 2
3/16 2
TYP

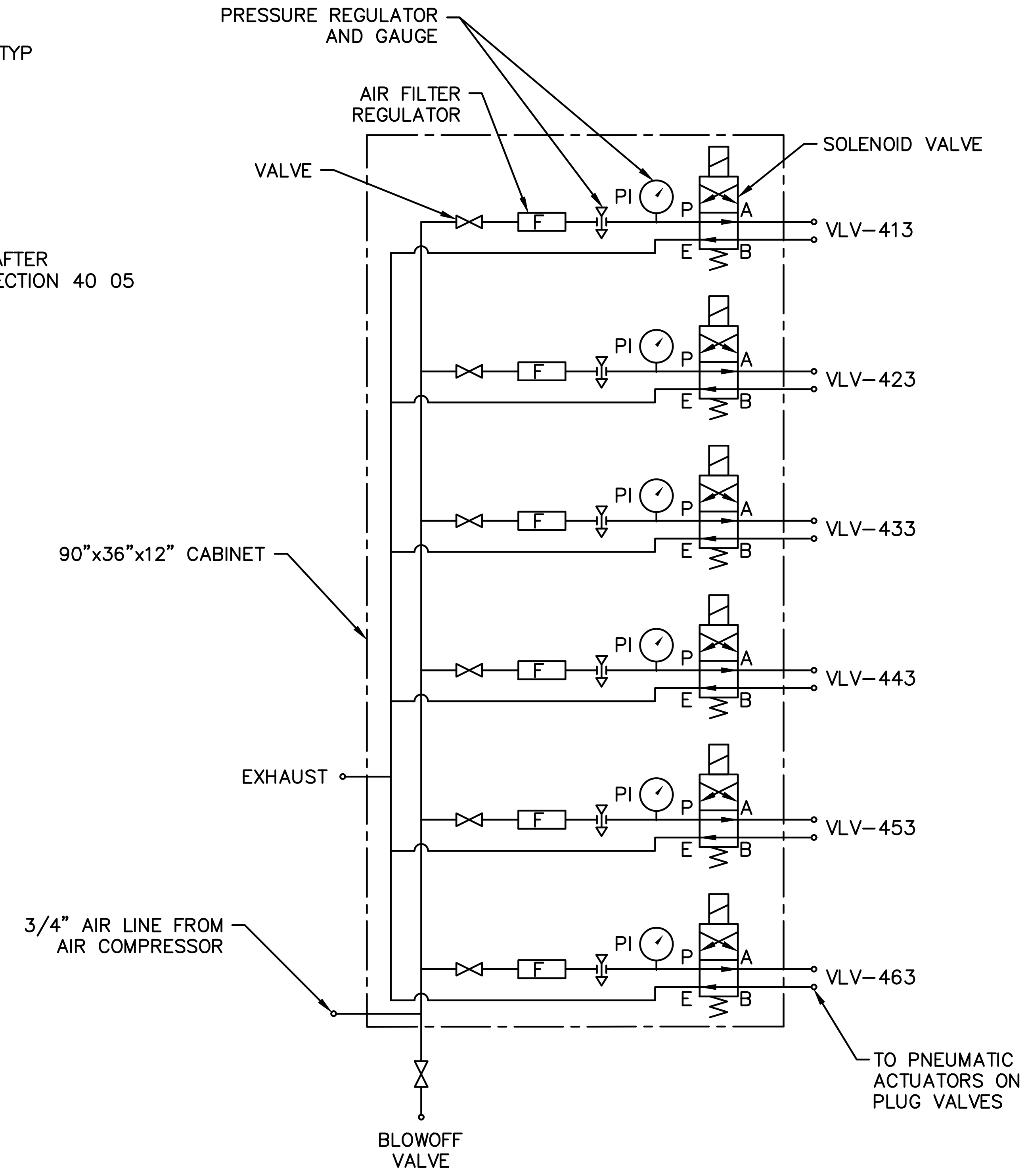
NOTE:
MATERIAL FOR ALL COMPONENTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION UNLESS NOTED OTHERWISE, REFERENCE SPECIFICATION SECTION 40 05 07.

DISCHARGE PIPE SUPPORT
DETAIL 15 M–05 | M–05
NOT TO SCALE


EQUIPMENT
#5 @ 12" EW
STD HOOK
1" CLR
0.50' MIN
3/4" CHAMFERED EDGE (TYP.)
0.50' MIN
0.50'EMBED
SLEEVE (WHERE REQ'D)
#5 @ 12" AROUND PAD DRILLED DOWELS
ROUGHEN SURFACE CLEAN & APPLY EPOXY BONDING AGENT PER MANUFACTURER'S RECOMMENDATIONS
THREADED BOLT, SIZE & EMBEDMENT LENGTH BY EQUIPMENT SUPPLIER

NOTE:
SEE ELECTRICAL DRAWINGS AND EQUIPMENT REQUIREMENTS.
CONTRACTOR TO MEET ALL CODE REQUIREMENTS.

EQUIPMENT SUPPORT PAD WITH DRILLED ANCHORS
DETAIL 14 M–05 | M–05
NOT TO SCALE


PRESSURE REGULATOR AND GAUGE
AIR FILTER REGULATOR
VALVE
SOLENOID VALVE
PI
P
A
E
B
VLV–413
VLV–423
VLV–433
VLV–443
VLV–453
VLV–463
90"x36"x12" CABINET
EXHAUST
3/4" AIR LINE FROM AIR COMPRESSOR
TO PNEUMATIC ACTUATORS ON PLUG VALVES
BLOWOFF VALVE

NOTE:
CONTRACTOR TO COORDINATE WITH AIR COMPRESSOR AND AIR ACTUATOR MANUFACTURERS TO INSTALL VALVES AND APPURTENANCES.

INSTRUMENT AIR SOLENOID CABINET PIPING DIAGRAM
DETAIL 20 M–05 | M–05
NOT TO SCALE

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#	–	–	–	–	–	–	–

40280
JASON R. FORT
Date Signed 08-30-24
Jason R. Fort

REVISIONS

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*				
*				

DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

GENERAL DETAILS 4

CITY PROJECT NO. WS90400085
DATE: 08/2024
M–05 SHEET 41 OF 134
CAD FILE: CSMLS40D04.DWG

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\41_CSMLS40D04.dwg DATE: 9/04/24 TIME: 03:23pm

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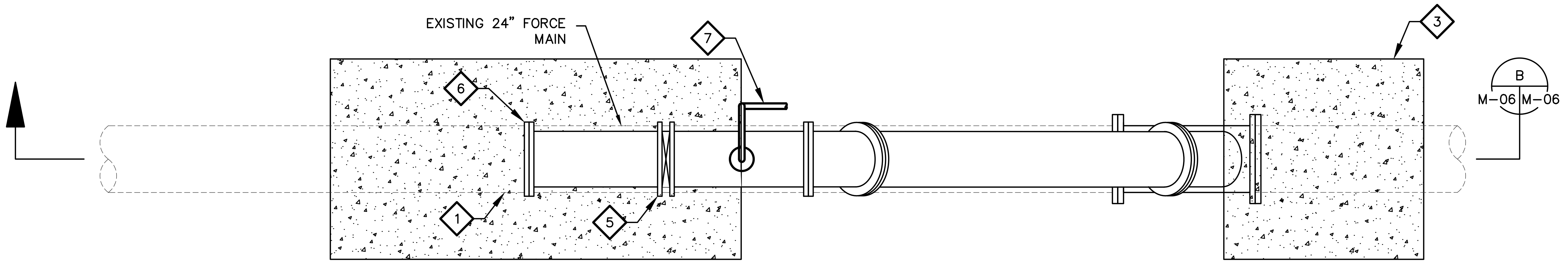
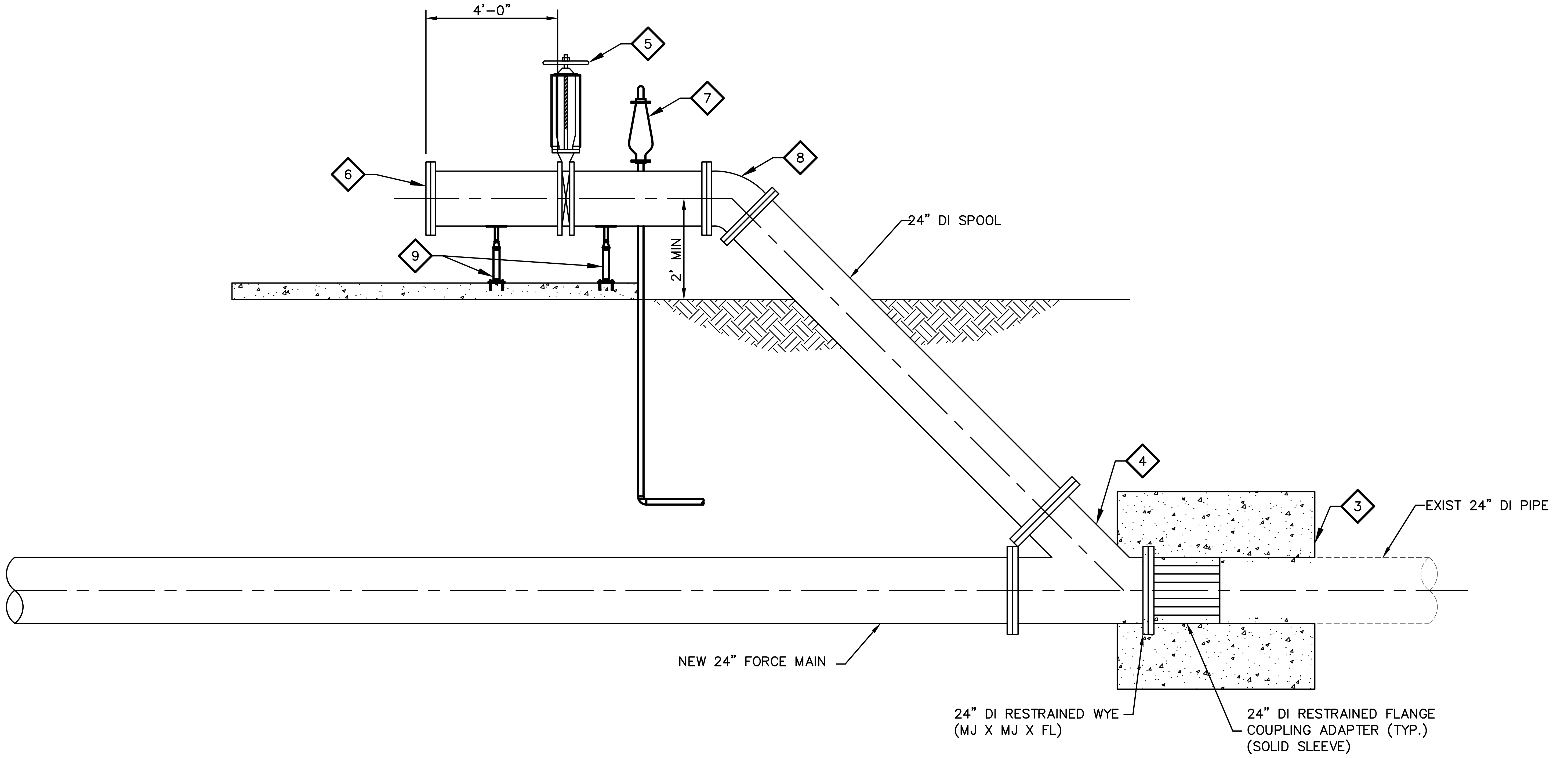


PLAN


4'-0"
5
7
6
8
24" DI SPOOL
9
2' MIN
4
3
EXIST 24" DI PIPE
NEW 24" FORCE MAIN
24" DI RESTRAINED WYE (MJ X MJ X FL)
24" DI RESTRAINED FLANGE COUPLING ADAPTER (TYP.) (SOLID SLEEVE)

SECTION B M-06 | M-06
SCALE = N.T.S.

LAUNCH STRUCTURE

DETAIL 20 M-06 | M-06
NOT TO SCALE

KEY NOTES

1. EXISTING 24" DI PIPE.
3. THRUST BLOCKS SHALL BE 8.5FT X 8.5FT OR 72 SQUARE FEET OF BEARING AREA PERPENDICULAR TO THE FM CENTERLINE AND POURED AGAINST NATIVE UNDISTURBED SOIL OR 1 SACK CLSM UNLESS APPROVED OTHERWISE BY THE ENGINEER. THRUST BLOCK REINFORCEMENT SHALL BE PER DTL 18 ON SHEET M-05.
4. 24" DI WYE.
5. 24" KNIFE GATE VALVE.
6. 24" BLIND FLANGE.
7. 2" CAV W/ SST ISOLATION BALL VALVE AND VENT DISCHARGE PIPE; ROUTE 2-INCH CPVC TO EXIST MH STRUCTURE NO. 402. CORE DRILL MH BELOW GRADE; SEAL W/ LINK SEAL OR APPROVED EQUAL. MAINTAIN POSITIVE SLOPE FROM MANHOLE TO ARV.
   SEE DETAIL 2 M-06 | M-02 .
8. 24" DI 45 DEGREE BEND.
9. PIPE SUPPORT PER DETAIL 1 M-06 | M-02 .

GENERAL NOTES:

1. ALL DI FITTINGS TO BE COATED WITH SEWER/SHIELD, SEE SPEC SECTION 09 90 00 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO GRADING AND DRAINAGE PLANS, SEE SHEETS C-25 AND C-26 FOR FINISHED FLOOR ELEVATIONS.
3. REFER TO SHEET M-08 FOR BURIED VALVES ON FORCE MAINS 2 AND 3.

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#	-	-	-	-	-	-	-

HDR

40280
JASON R. FORT
Jason R. Fort

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DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

GENERAL DETAILS 6
NEW LAUNCHING STRUCTURE

CITY PROJECT NO. WS90400085
DATE: 08/2024
M-06 SHEET 42 OF 134
CAD FILE: CSMLS40D05.DWG

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\42_CSMLS40D05.dwg DATE: 9/04/24 TIME: 03:23pm

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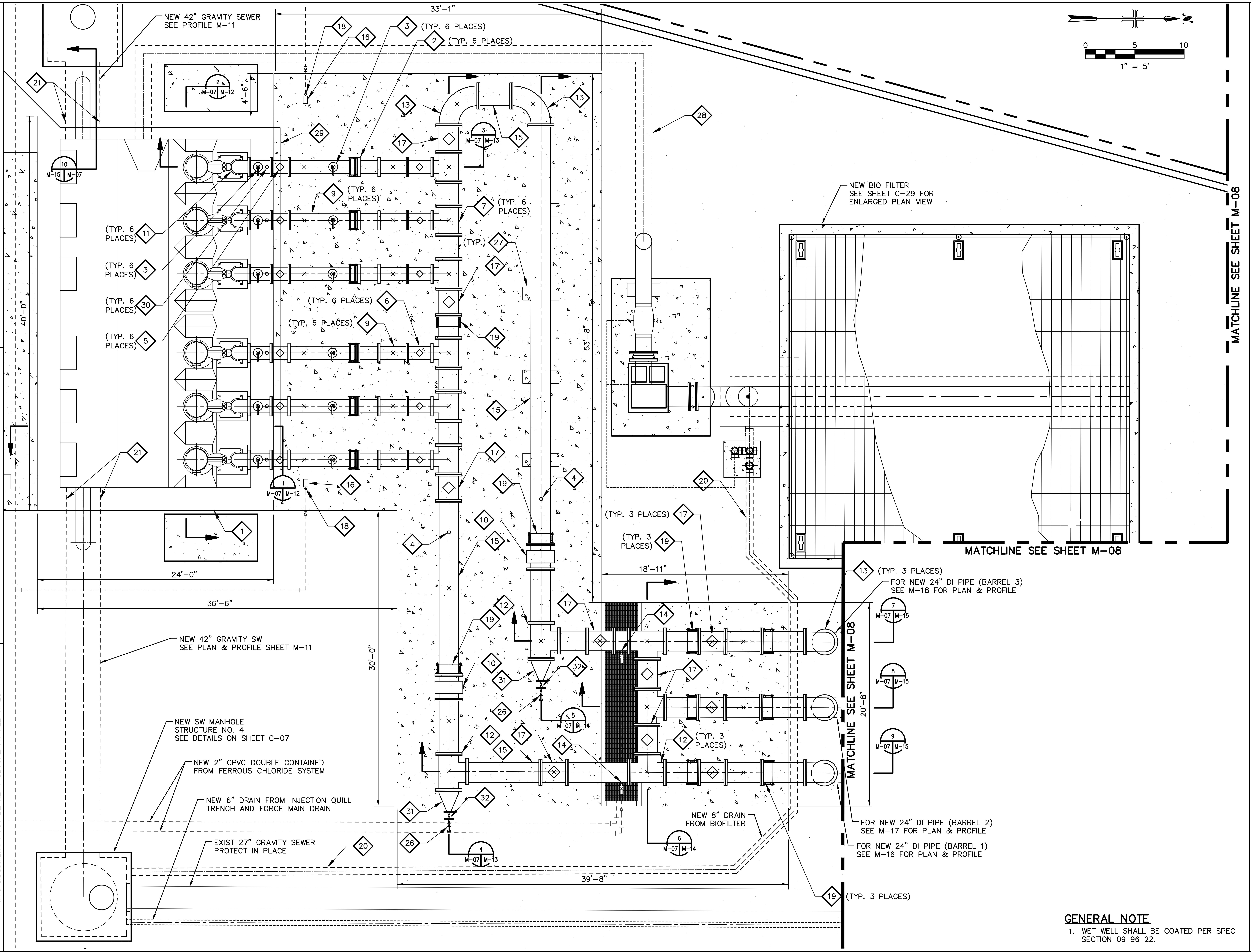
33'-1"
NEW 42" GRAVITY SEWER SEE PROFILE M-11
(TYP. 6 PLACES)
(TYP. 6 PLACES)
0 5 10
1" = 5'
NEW BIO FILTER SEE SHEET C-29 FOR ENLARGED PLAN VIEW
MATCHLINE SEE SHEET M-08
MATCHLINE SEE SHEET M-08
MATCHLINE SEE SHEET M-08
(TYP. 6 PLACES)
(TYP. 6 PLACES)
(TYP. 6 PLACES)
(TYP. 6 PLACES)
(TYP. 6 PLACES)
(TYP. 6 PLACES)
(TYP.)
(TYP. 6 PLACES)
(TYP. 6 PLACES)
40'-0"
53'-8"
4'-6"
24'-0"
36'-6"
30'-0"
18'-11"
20'-8"
39'-8"
(TYP. 3 PLACES)
(TYP. 3 PLACES)
(TYP. 3 PLACES)
(TYP. 3 PLACES)
(TYP. 3 PLACES)
FOR NEW 24" DI PIPE (BARREL 3) SEE M-18 FOR PLAN & PROFILE
FOR NEW 24" DI PIPE (BARREL 2) SEE M-17 FOR PLAN & PROFILE
FOR NEW 24" DI PIPE (BARREL 1) SEE M-16 FOR PLAN & PROFILE
NEW 42" GRAVITY SW SEE PLAN & PROFILE SHEET M-11
NEW SW MANHOLE STRUCTURE NO. 4 SEE DETAILS ON SHEET C-07
NEW 2" CPVC DOUBLE CONTAINED FROM FERROUS CHLORIDE SYSTEM
NEW 6" DRAIN FROM INJECTION QUILL TRENCH AND FORCE MAIN DRAIN
EXIST 27" GRAVITY SEWER PROTECT IN PLACE
NEW 8" DRAIN FROM BIOFILTER
2 M-07 M-12
3 M-07 M-13
10 M-15 M-07
1 M-07 M-12
5 M-07 M-14
4 M-07 M-13
6 M-07 M-14
7 M-07 M-15
8 M-07 M-15
9 M-07 M-15
1 2 3 4 6 7 9 10 11 12 13 14 15 16 17 18 19 20 21 26 27 28 29 30 31 32

GENERAL NOTE

1. WET WELL SHALL BE COATED PER SPEC SECTION 09 96 22.

KEY NOTES

1. NEW 40'-0" X 24'-0" WET WELL. SEE SECTION 1 SHEET M-12.
2. 16" RESTRAINED DISMANTLING JOINT ROMAC DJ400 OR APPROVED EQUAL. SEE DETAIL 3&4 M-07 M-02.
3. 3" COMBINATION AIR/VACUUM RELEASE VALVE. ROUTE VENT LINE TO WET WELL. SEE DETAIL 2 M-07 M-02.
4. PRESSURE GAUGE AND TRANSMITTER. SEE DETAIL 6 M-07 M-03.
5. 16" PLUG VALVE WITH PNEUMATIC ACTUATOR. SEE SPEC SECTION 40 05 62.
6. 16" FULL-PORT PLUG VALVE, EXTERNAL HAND WHEEL, CAST IRON.
7. 16" X 24" X 24" DI TEE.
9. 16" CLASS 250 DIP.
10. 24" INLINE MAGNETIC FLOW METER.
11. 16" DI – 90 DEGREE BEND.
12. 24" X 24" X 24" DI TEE.
13. 24" DI – 90 DEGREE BEND.
14. INJECTION QUILL. SEE DETAIL 5 M-07 M-03.
15. 24" CLASS 250 DIP PIPE.
16. HEAVY DUTY HOSE RACK SEE DETAIL 13 M-07 M-04.
17. 24" FULL PORT PLUG VALVE, EXTERNAL HAND WHEEL, CAST IRON.
18. HOSE BIB. SEE DETAIL 13 M-07 M-04.
19. 24" RESTRAINED DISMANTLING JOINT ROMAC DJ400 OR APPROVED EQUAL. SEE DETAIL 3&4 M-07 M-02.
20. NEW 8" CPVC DRAIN FROM BIOFILTER.
21. PIPE PENETRATION PER DETAIL 12 M-07 M-04.
26. NEW CAM-LOK CONNECTION.
27. ADJUSTABLE PIPE SUPPORT. SEE DETAIL 1 M-07 M-02.
28. NEW 20" FRP FAD.
29. 3/4" TYPE K COPPER AIR SUPPLY LINE TO FEED PNEUMATIC ACTUATORS.
30. PRESSURE SWITCH AND GAUGE. SEE DETAIL 6 M-07 M-03.
31. 24"X6" REDUCER.
32. 6" PLUG VALVE.

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USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\43_CSMLS40P01.dwg DATE: 9/04/24 TIME: 03:23pm

FDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 40280
JASON R. FORT
ARIZONA, U.S.A.

Jason R. Fort

REVISIONS

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C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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DES FA
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

LS YARD PIPING PLAN
SHEET 1 OF 3

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CITY PROJECT NO. WS90400085
DATE: 08/2024
M-07 SHEET 43 OF 134
CAD FILE: CSMLS40P01.dwg

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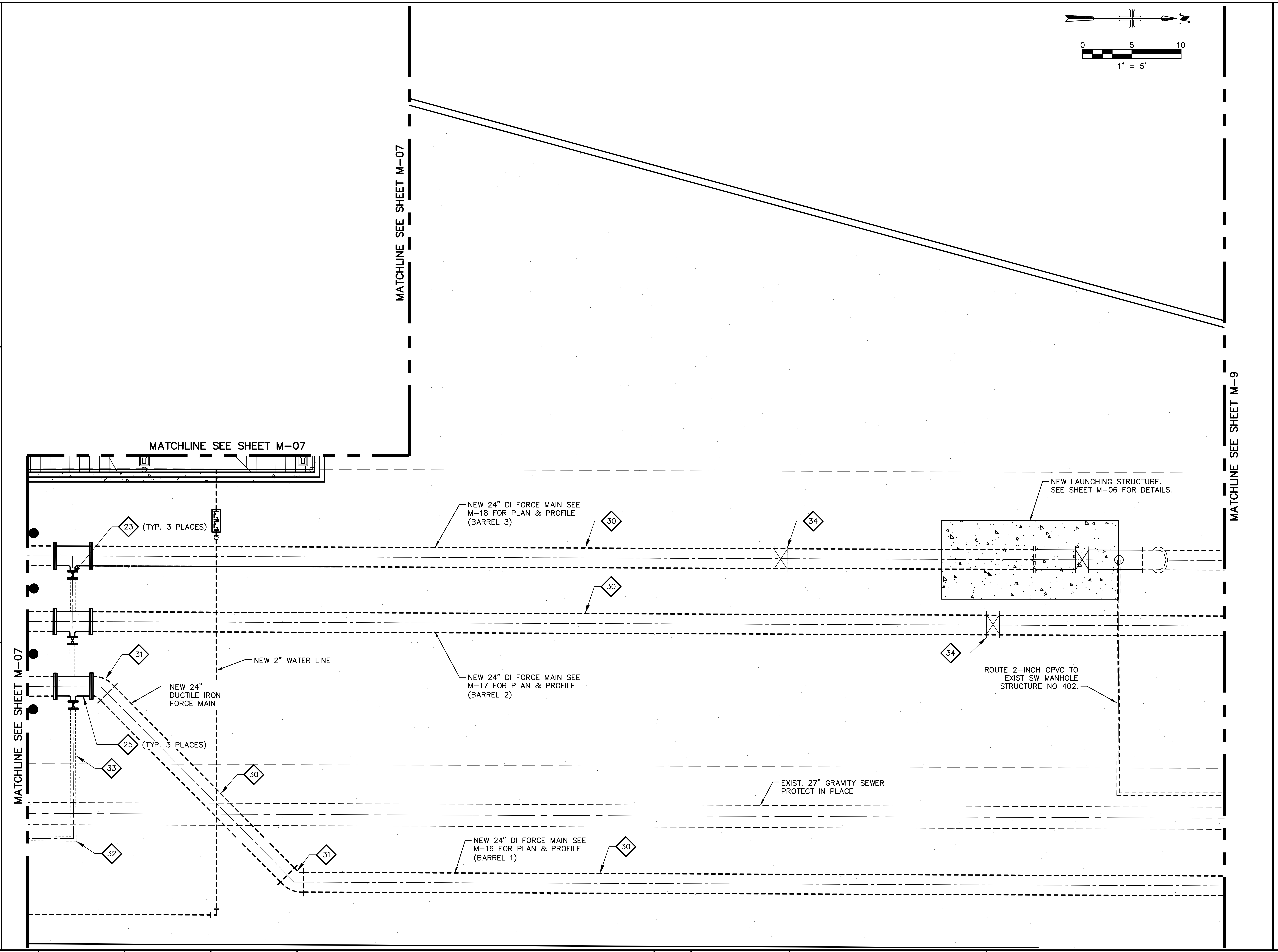
0
5
10
1" = 5'
MATCHLINE SEE SHEET M-07
MATCHLINE SEE SHEET M-07
MATCHLINE SEE SHEET M-07
MATCHLINE SEE SHEET M-9
23
(TYP. 3 PLACES)
NEW 24" DI FORCE MAIN SEE M-18 FOR PLAN & PROFILE (BARREL 3)
30
34
NEW LAUNCHING STRUCTURE. SEE SHEET M-06 FOR DETAILS.
30
34
31
NEW 24" DUCTILE IRON FORCE MAIN
NEW 2" WATER LINE
NEW 24" DI FORCE MAIN SEE M-17 FOR PLAN & PROFILE (BARREL 2)
ROUTE 2-INCH CPVC TO EXIST SW MANHOLE STRUCTURE NO 402.
25
(TYP. 3 PLACES)
33
30
EXIST. 27" GRAVITY SEWER PROTECT IN PLACE
32
31
NEW 24" DI FORCE MAIN SEE M-16 FOR PLAN & PROFILE (BARREL 1)
30

KEY NOTES

23	INSTALL NEW 6" FULL PORT PLUG VALVE. INSTALL VALVE BOX PER C.O.P. STD. DET. P1391.
25	INSTALL NEW 24"X24"X6" TEE.
30	INSTALL NEW 24" DI PIPE FORCE MAIN.
31	INSTALL NEW 24" DI PIPE 45° BEND.
32	INSTALL 6" FORCE MAIN DRAIN LINE 90° BEND.
33	INSTALL 6" DIP FORCE MAIN DRAIN LINE
34	INSTALL 24" FULL PORT PLUG VALVE WITH RISER AND VALVE BOX PER COP STD DET. 1391.

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#	-	-	-	-	-	-	-
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HDR

40280
JASON R.
FORT
Date Signed 08-30-24

Jason R. Fort

REVISIONS

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•				
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DES	RS
DWN	RS
CKD	JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

LS YARD PIPING PLAN
SHEET 2 OF 3

CITY PROJECT NO. WS90400085
DATE: 08/2024
M-08 SHEET 44 OF 134
CAD FILE: CSMLS40P02.dwg

USER:FDERASFRAIJO FILE:C:\pwworking\west01\d3411629\44_CSMLS40P02.dwg DATE:9/04/24 TIME:03:24pm

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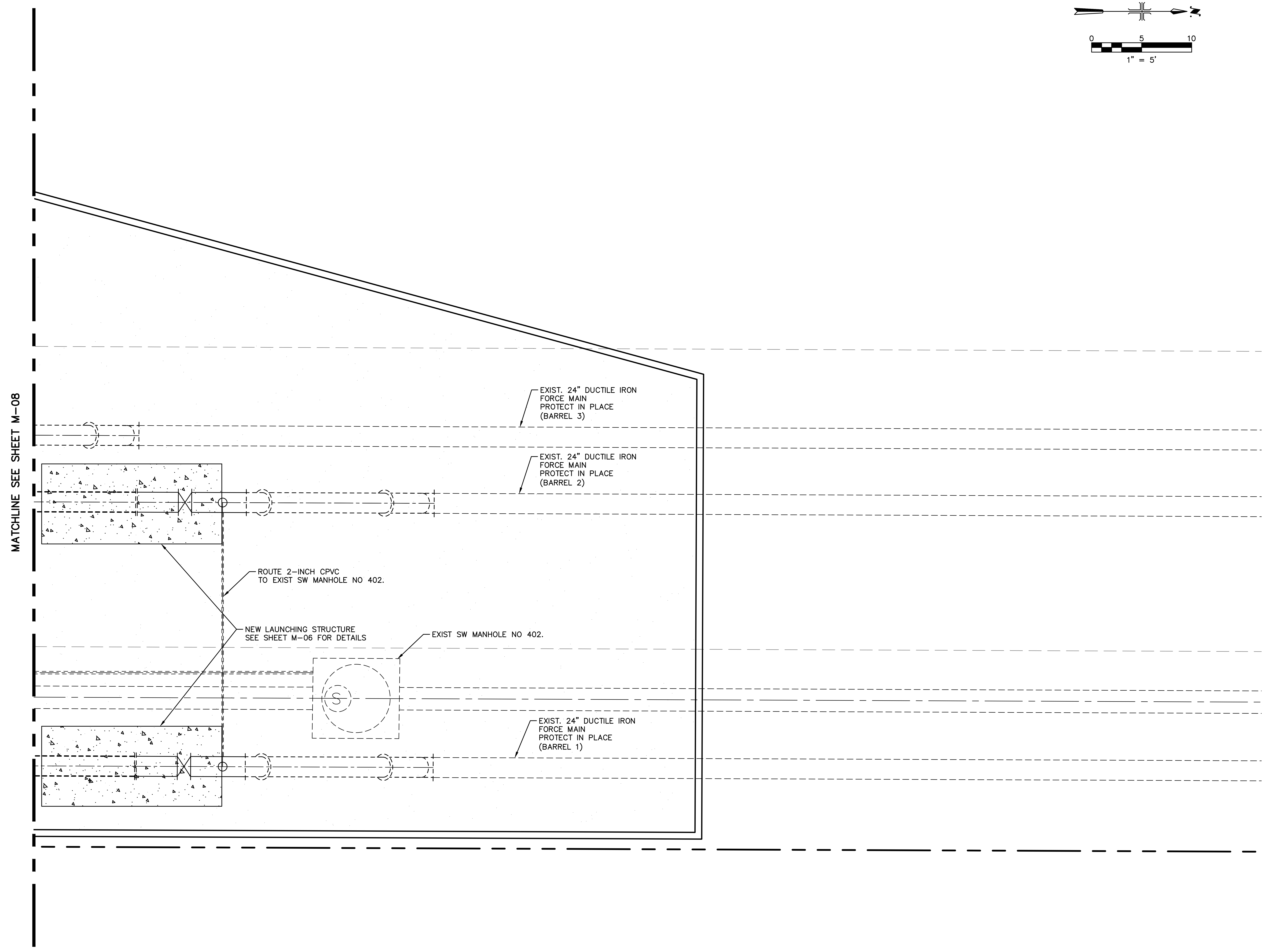
0
5
10
1" = 5'
MATCHLINE SEE SHEET M-08
EXIST. 24" DUCTILE IRON FORCE MAIN PROTECT IN PLACE (BARREL 3)
EXIST. 24" DUCTILE IRON FORCE MAIN PROTECT IN PLACE (BARREL 2)
ROUTE 2-INCH CPVC TO EXIST SW MANHOLE NO 402.
NEW LAUNCHING STRUCTURE SEE SHEET M-06 FOR DETAILS
EXIST SW MANHOLE NO 402.
S
EXIST. 24" DUCTILE IRON FORCE MAIN PROTECT IN PLACE (BARREL 1)

KEY NOTES

(30) INSTALL NEW 24" DI PIPE FORCE MAIN.

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40280
JASON R.
FORT
Date Signed 08-30-24

Jason R. Fort

REVISIONS

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DWN RS
CKD JF

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CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

LS YARD PIPING PLAN
SHEET 3 OF 3

CITY PROJECT NO. WS90400085
DATE: 08/2024
M-09 SHEET 45 OF 134
CAD FILE: CSMLS40P03.dwg

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EXIST 36" SW LINE
SEE SHEET C–23 FOR CONTINUATION
STA 5+00.00
NEW SW MANHOLE
STRUCTURE NO. 1
RIM=1220.63
INV (S)=1209.19±
INV (N)=1209.09
N 844329.97
E 682876.83
5+00
6+00
7+00
STA 5+00.00
TAP 4" DRAIN LINE INTO
SW STRUCTURE NO.1
1
EDGE OF NEW PAVEMENT
EDGE OF NEW PAVEMENT
NEW ELECTRICAL BUILDING
MATCHLINE STA 7+50.00
SEE SHEET M–11
0 5 10 20
1" = 10'
HORIZ. SCALE
PLAN VIEW
1224
1220
1216
1212
1208
1204
1200
1196
STA 5+00.00
NEW SW MANHOLE
STRUCTURE NO. 1
RIM=1220.81
FINISHED GRADE @ CL
OF 42" SW LINE
EXIST GRADE @ CL OF
42" SW LINE
NEW 42" VCP SW LINE
250 LF @ S=–0.00073 FT/FT
INV EL 1209.09
INV EL 1209.19±
EXIST 36" SW LINE
SEE SHEET C–23 FOR CONTINUATION
INV EL 1208.91
MATCHLINE STA 7+50.00 SEE SHEET M–11
0 2 4 8
1" = 4'
VERT. SCALE
PROFILE VIEW
5+00
6+00
7+00

KEY NOTES

NO.	DESCRIPTION	QUANTITY
◇1	INSTALL NEW 42" VCP SW LINE	250 LF

GENERAL NOTES

1. WET WELL AND SANITARY SEWER MANHOLES SHALL BE COATED PER SPEC SECTION 09 96 22

LEGEND

- - - - -	EQUIPMENT CLEARANCE LINES
▨	NEW AC PAVEMENT
▨	DECOMPOSED GRANITE

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HDR

40280
JASON R.
FORT

Jason R. Fort

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C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
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MECHANICAL

LS 42" SW LINE PLAN AND PROFILE
STA 5+00.00 TO 7+50.00
SHEET 1 OF 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
M–10 SHEET 46 OF 134
CAD FILE: CSMLS40P04.dwg

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\46_CSMLS40P04.dwg DATE: 9/04/24 TIME: 03:25pm

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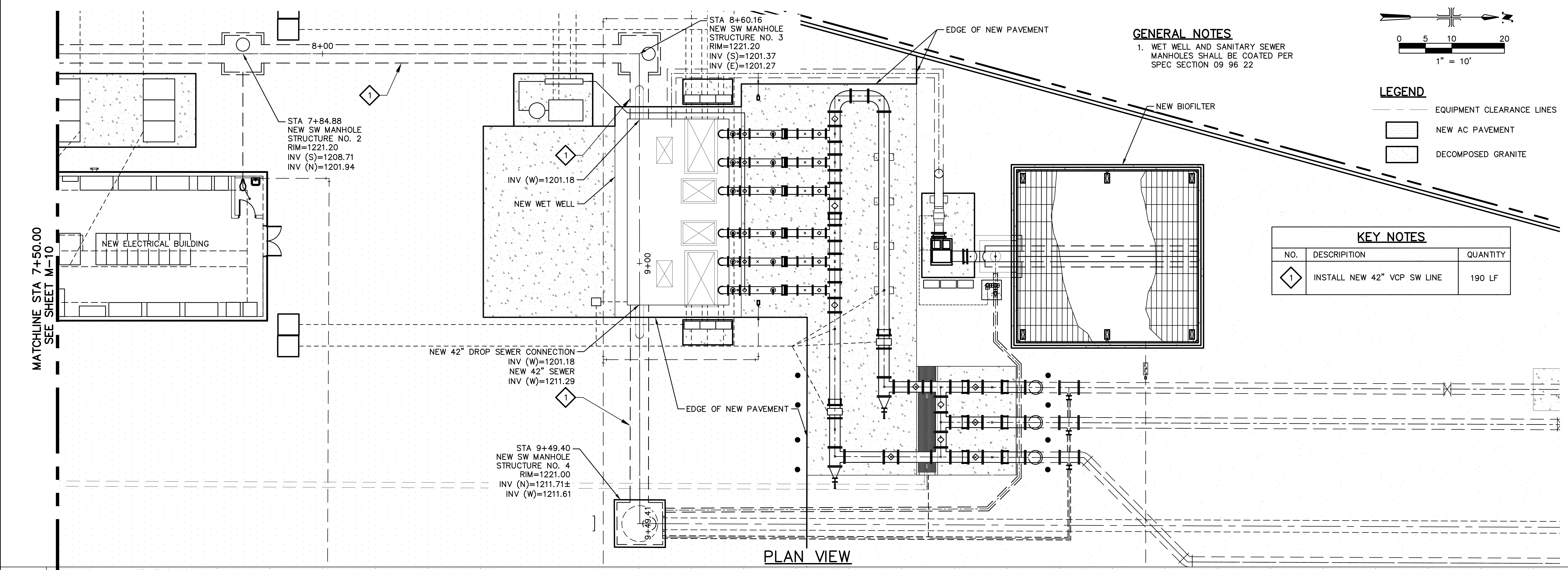
MATCHLINE STA 7+50.00
SEE SHEET M-10
8+00
9+00
1
STA 7+84.88
NEW SW MANHOLE
STRUCTURE NO. 2
RIM=1221.20
INV (S)=1208.71
INV (N)=1201.94
STA 8+60.16
NEW SW MANHOLE
STRUCTURE NO. 3
RIM=1221.20
INV (S)=1201.37
INV (E)=1201.27
EDGE OF NEW PAVEMENT
NEW BIOFILTER
NEW ELECTRICAL BUILDING
INV (W)=1201.18
NEW WET WELL
NEW 42" DROP SEWER CONNECTION
INV (W)=1201.18
NEW 42" SEWER
INV (W)=1211.29
EDGE OF NEW PAVEMENT
STA 9+49.40
NEW SW MANHOLE
STRUCTURE NO. 4
RIM=1221.00
INV (N)=1211.71±
INV (W)=1211.61
9+49.41
0
5
10
20
1" = 10'
PLAN VIEW

GENERAL NOTES

1. WET WELL AND SANITARY SEWER MANHOLES SHALL BE COATED PER SPEC SECTION 09 96 22

LEGEND

- EQUIPMENT CLEARANCE LINES
- ▭ NEW AC PAVEMENT
- ▨ DECOMPOSED GRANITE

KEY NOTES

NO.	DESCRIPTION	QUANTITY
1	INSTALL NEW 42" VCP SW LINE	190 LF

1220
1216
1212
1208
1204
1200
1196
1192
MATCHLINE STA 7+50.00 SEE SHEET M-10
STA 7+84.88
NEW SW MANHOLE AND
STRUCTURE NO. 2
RIM=1221.20
FINISHED GRADE @ CL
OF 42" SW LINE
STA 8+60.16
NEW SW MANHOLE AND
STRUCTURE NO. 3
RIM=1221.20
NEW WET WELL
FINISHED GRADE @ CL
OF 42" SW LINE
STA 9+49.40
NEW SW MANHOLE AND INLET
STRUCTURE NO. 4
RIM=1221.00
EXIST GRADE @ CL
OF 42" SW LINE
NEW 42" VCP SW LINE
50 LF @ S=-0.00073 FT/FT
STA 8+53.31
NEW 2" WATER
SERVICE TO YARD
PIPING HOSE BIB
INV EL 1217.88
STA 9+18.26
NEW 2" WATER
SERVICE TO YARD
PIPING HOSE BIB
INV EL 1217.68
NEW 2" CPVC FROM NEW
LAUNCH STRUCTURE
INV EL 1216.01
NEW 42" VCP SW LINE
42 LF @ S=-0.007000 FT/FT
INV EL 1211.32
NEW 6" PVC SW DRAIN LINE FROM
NEW INJECTION QUILL TRENCH
INV EL 1215.01
NEW 4" PVC SW
LINE
INV EL 1208.54
NEW 8" CPVC SW DRAIN LINE FROM BIOFILTER
INV EL 1211.71
INV EL 1208.71
EXIST 27" SW LINE
SEE SHEET C-18 FOR CONTINUATION
INV (N) 1211.71±
INV EL (W) 1211.61
NEW 42" VCP SW LINE
85 LF @ S=-0.001412 FT/FT
INV EL 1201.18
INV EL (N) 1201.49
INV EL 1201.37
INV EL (S) 1201.59
INV EL 1201.27
NEW 42" VCP SW LINE
13 LF @ S=-0.006923 FT/FT
INV EL 1208.91
INV EL 1201.18
0
2
4
8
1" = 4'
PROFILE VIEW
8+00
9+00
10+00

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REMARKS	DWG NUMBER	CAD FILE NAME	DATE	PROJECT NAME	PROJECT NO.	ENGINEERING COMPANY	REVISION
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JASON R. FORT

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DWN RS
CKD JF

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CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

LS 42" SW LINE PLAN AND PROFILE
STA 7+50.00 TO 9+49.41
SHEET 2 OF 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
M-11 SHEET 47 OF 134
CAD FILE: CSMLS40P05.dwg

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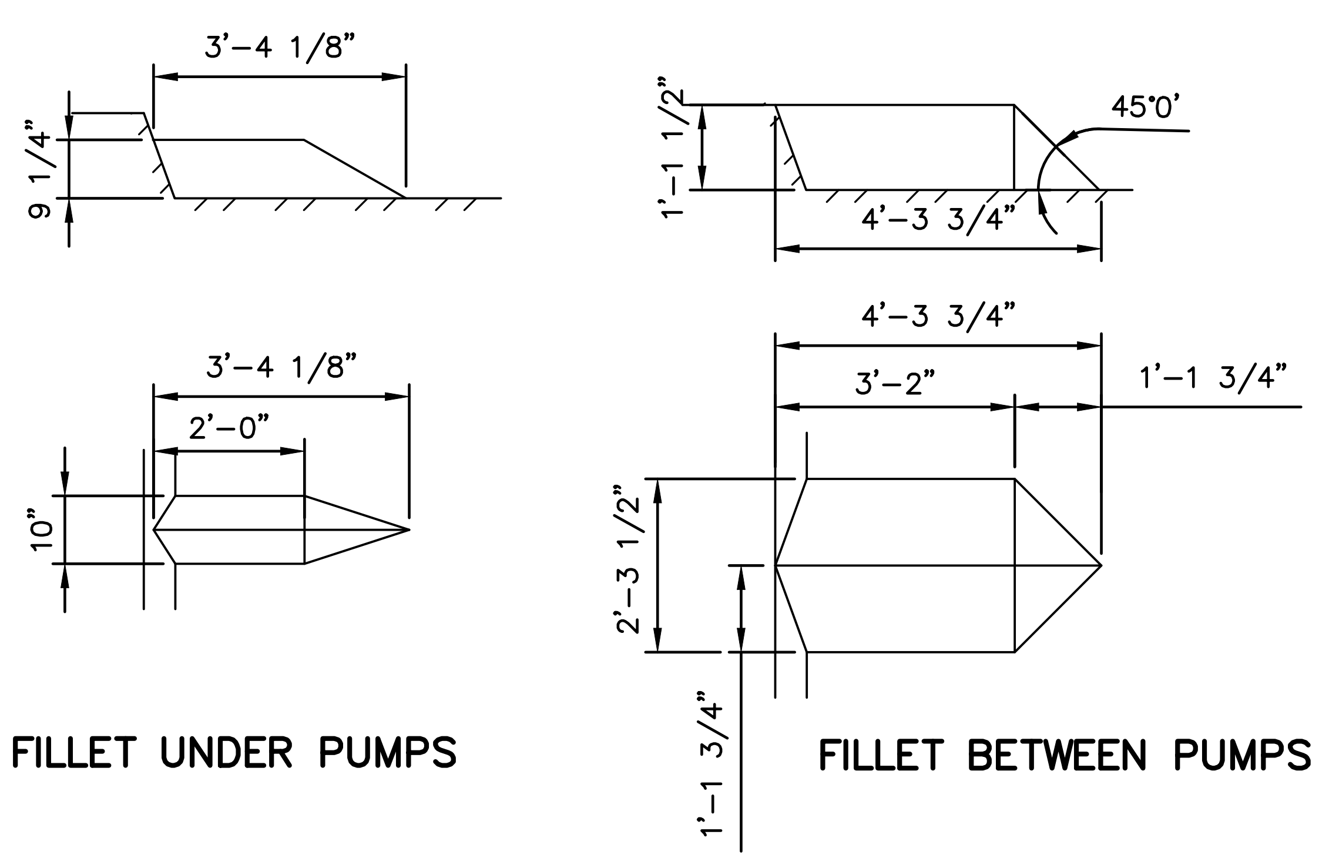

3'-4 1/8"
9 1/4"
1'-1 1/2"
45'0'
4'-3 3/4"
3'-4 1/8"
2'-0"
10"
4'-3 3/4"
3'-2"
1'-1 3/4"
2'-3 1/2"
1'-1 3/4"
FILLET UNDER PUMPS
FILLET BETWEEN PUMPS

FLOW FILLETS
DETAIL 1 M-12 M-12
NOT TO SCALE

KEY NOTES

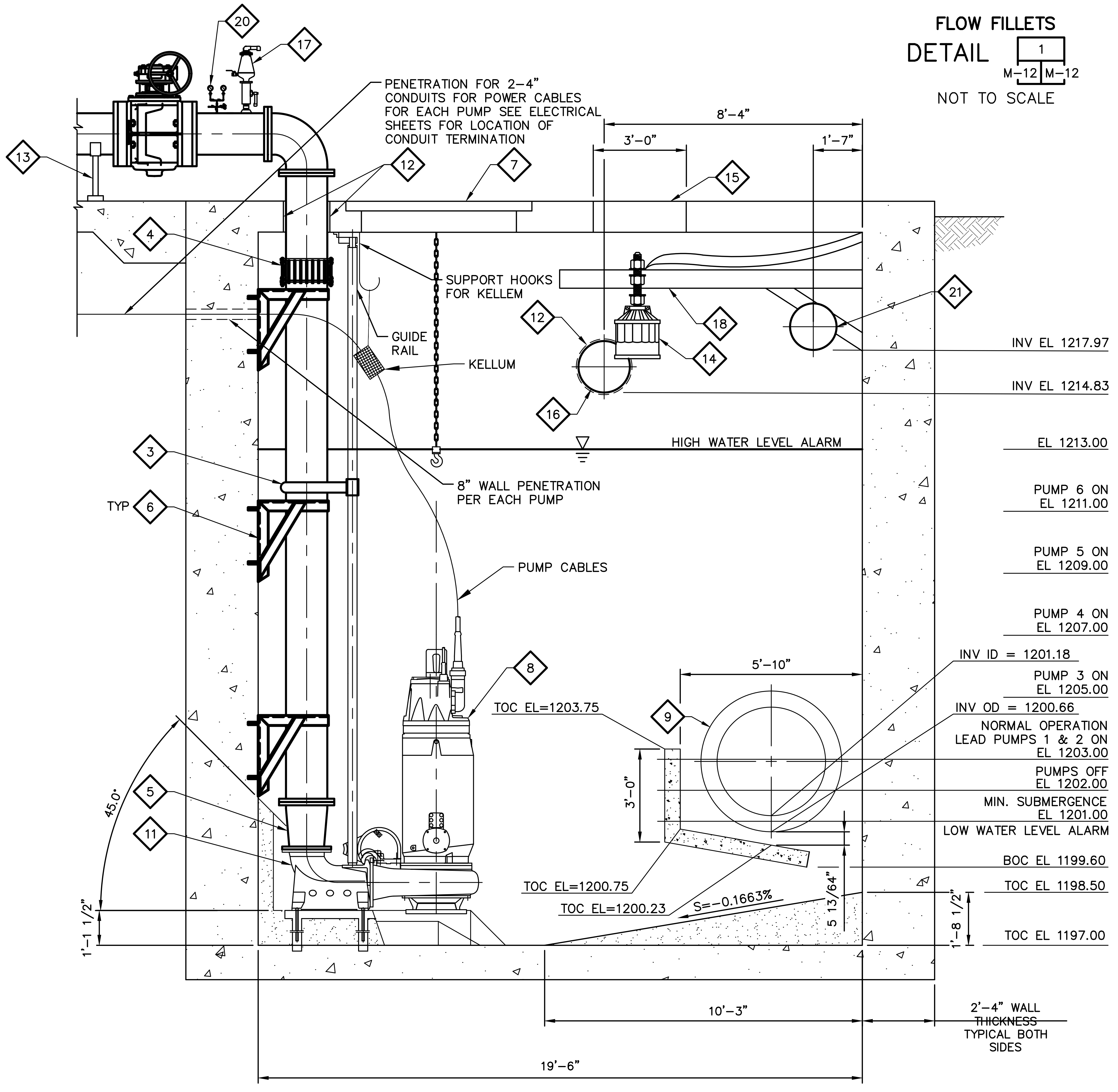
- ③ GUIDE RAIL BRACKET PER MANUFACTURERS RECOMMENDATIONS.
- ④ RESTRAINED DISMANTLING JOINT.
- ⑤ 16"X12" DIP REDUCER.
- ⑥ DISCHARGE PIPE BRACKET. SEE DETAIL 15 ON SHEET M-05.
- ⑦ 5'x10.5' EQUIPMENT HATCH (TYPICAL 2). SEE STRUCTURAL PLANS AND SPEC. SECTION 08 31 00 FOR ADDITIONAL DETAILS.
- ⑧ SUBMERSIBLE PUMP.
- ⑨ 42" VCP SEWER PIPE.

KEY NOTES (CON'T)

- ⑪ 12" DISCHARGE INLET TO A 16" DISCHARGE OUTLET CONNECTION PER FLYGT STANDARD CP/NP DISCHARGE CONNECTION (CAST IRON) PUMP MODEL 3312, PART NUMBER 442 16 05.
- ⑫ SLEEVE INSTALLATION THROUGH CONCRETE SLAB. SEE DETAIL 11 M-12 M-04 .
- ⑬ ADJUSTABLE PIPE SUPPORT. SEE DETAIL 1 M-12 M-02 .
- ⑭ ULTRASONIC LEVEL TRANSMITTERS (TYPICAL 2). ULTRASONIC LEVEL TRANSDUCERS SHALL BE INSTALLED WITH FACE PARALLEL TO THE WATER SURFACE. DISTANCE BELOW THE WET WELL TOP SLAB SHOULD BE PER MANUFACTURER'S RECOMMENDATIONS.
- ⑮ 3'X5' HATCH TO ACCESS LEVEL TRANSMITTERS. (TYPICAL 2). SEE STRUCTURAL PLANS AND SPEC. SECTION 08 31 00 FOR DETAILS.
- ⑯ NEW 20" FRP FAD. BURIED DUCT SHALL BE ABLE TO WITHSTAND ASSHTO 16,000 LB. SINGLE AXLE LOADS. PIPE INVERT ELEVATION = 1214.83 SEE SHEET C-24 FOR CONTINUATION.
- ⑰ NEW 3" COMBINATION AIR/VACUUM RELEASE VALVE. SEE DETAIL 2 M-12 M-02 .
- ⑱ NEW WET-WELL LEVEL TRANSMITTER SUPPORT. SEE DETAIL 12 M-12 C-04 .
- ⑳ NEW PRESSURE GAUGE AND TRANSMITTER. SEE DETAIL 6 M-12 M-03 .
- ㉑ NEW 18" DIP WET WELL VENT. SEE SECTION 10 ON SHEET M-15.

GENERAL NOTES

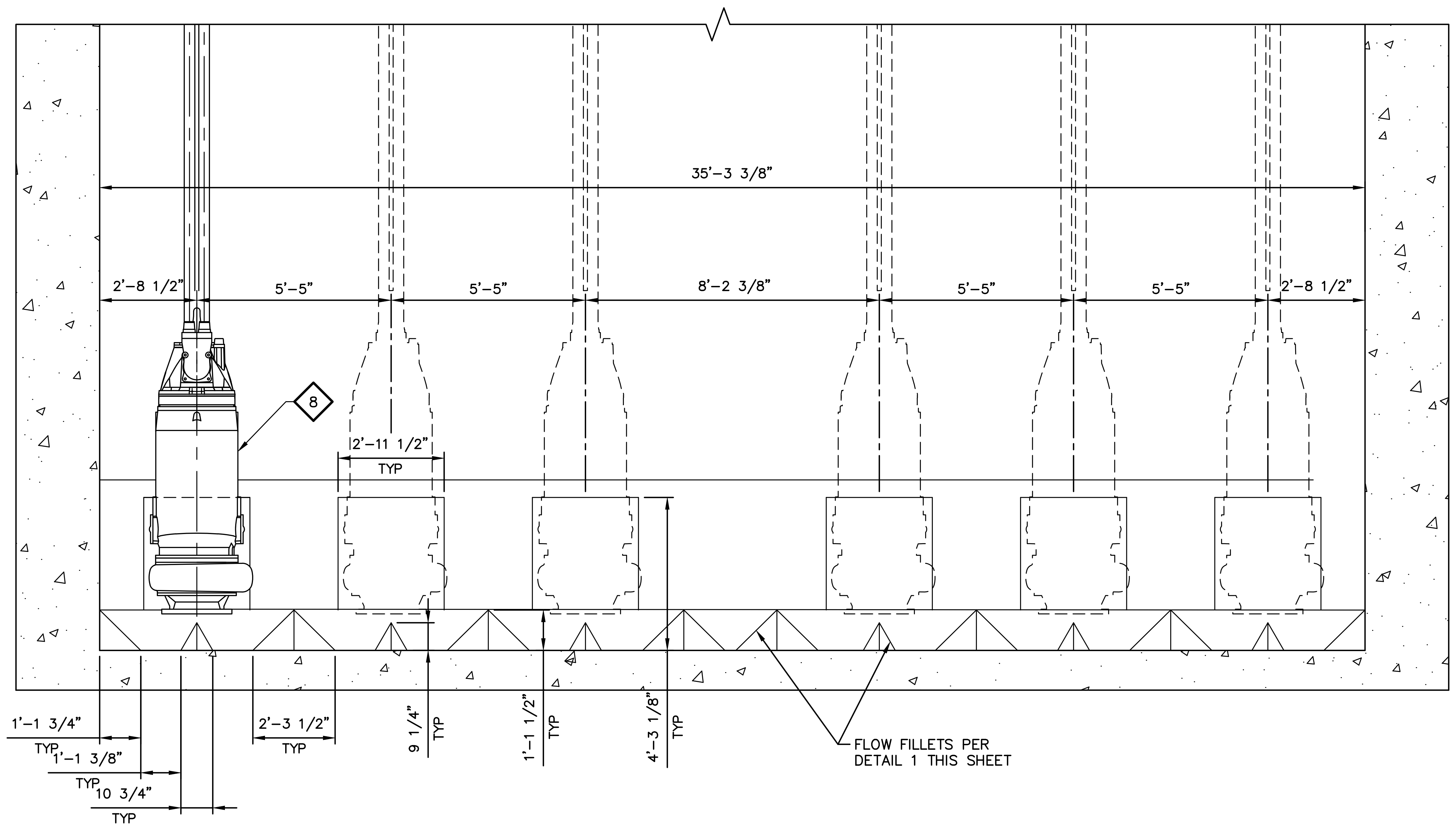
1. SEE STRUCTURAL PLANS FOR WET WELL FLOOR, WALL AND ROOF THICKNESS.
2. REFER TO GRADING AND DRAINAGE PLANS, SEE SHEETS C-25 AND C-26 FOR FINISHED FLOOR ELEVATIONS.
3. WET WELL SHALL BE COATED PER SPEC SECTION 09 96 22


20
17
13
4
3
TYP 6
5
11
45.0°
1'-1 1/2"
PENETRATION FOR 2-4" CONDUITS FOR POWER CABLES FOR EACH PUMP SEE ELECTRICAL SHEETS FOR LOCATION OF CONDUIT TERMINATION
12
7
8'-4"
3'-0"
1'-7"
15
SUPPORT HOOKS FOR KELLEM
GUIDE RAIL
KELLUM
12
18
14
16
21
HIGH WATER LEVEL ALARM
8" WALL PENETRATION PER EACH PUMP
PUMP CABLES
8
TOC EL=1203.75
9
5'-10"
3'-0"
TOC EL=1200.75
TOC EL=1200.23
S=-0.1663%
5 13/64"
1'-8 1/2"
INV EL 1217.97
INV EL 1214.83
EL 1213.00
PUMP 6 ON EL 1211.00
PUMP 5 ON EL 1209.00
PUMP 4 ON EL 1207.00
INV ID = 1201.18
PUMP 3 ON EL 1205.00
INV OD = 1200.66
NORMAL OPERATION LEAD PUMPS 1 & 2 ON EL 1203.00
PUMPS OFF EL 1202.00
MIN. SUBMERGENCE EL 1201.00
LOW WATER LEVEL ALARM
BOC EL 1199.60
TOC EL 1198.50
TOC EL 1197.00
10'-3"
2'-4" WALL THICKNESS TYPICAL BOTH SIDES
19'-6"

SECTION 1 M-07 M-12 SCALE = NOT TO SCALE

GENERAL WET WELL NOTE

1. THE WET WELL IS PROTECTED AGAINST CORROSION AT LEAST A 20-YEAR OPERATIONAL LIFE.


35'-3 3/8"
2'-8 1/2"
5'-5"
5'-5"
8'-2 3/8"
5'-5"
5'-5"
2'-8 1/2"
8
2'-11 1/2" TYP
1'-1 3/4" TYP
1'-1 3/8" TYP
10 3/4" TYP
2'-3 1/2" TYP
9 1/4" TYP
1'-1 1/2" TYP
4'-3 1/8" TYP
FLOW FILLETS PER DETAIL 1 THIS SHEET

SECTION 2 M-07 M-12 SCALE = NOT TO SCALE

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#	-	-	-	-	-	-	-

HDR

40280
JASON R.
FORT
Jason R. Fort

NO.	BY	DATE	CKD	REMARKS
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B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

LS WET WELL SECTIONS 1 & 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
M-12 SHEET 48 OF 134
CAD FILE: CSMLS40Q01.dwg

USER:FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\48_CSMLS40Q01.dwg DATE: 9/04/24 TIME: 03:25pm

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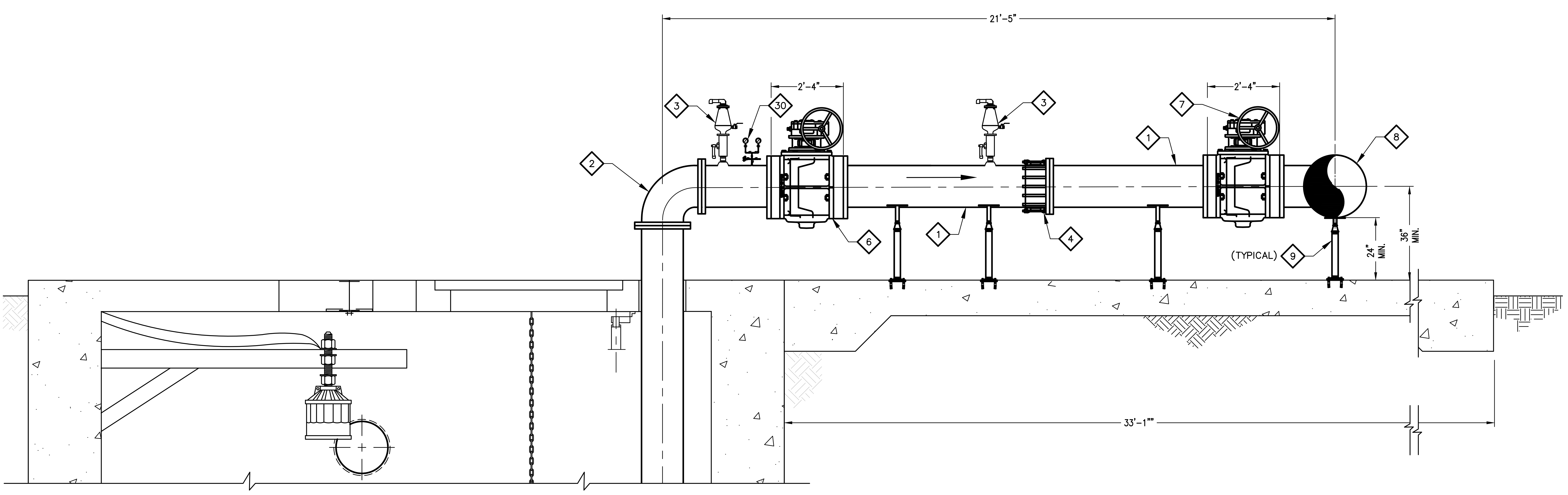
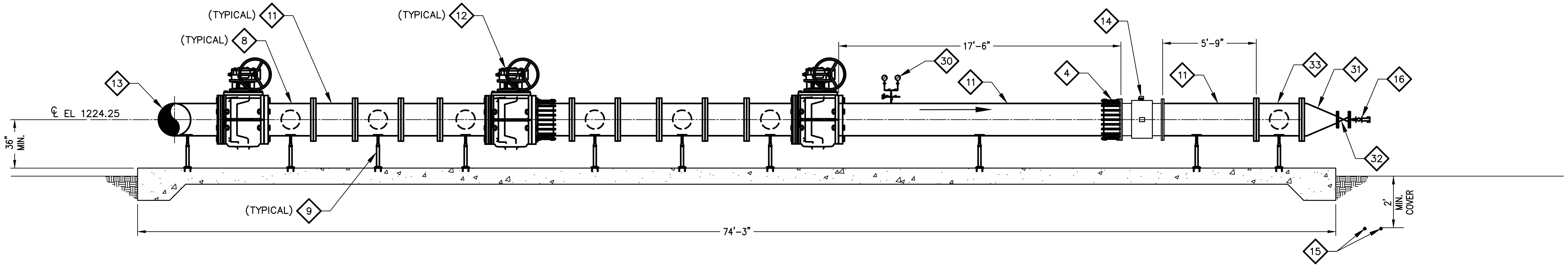


SECTION 3
M-07 | M-13
0 1 2 4
1/2" = 1'-0"



SECTION 4
M-07 | M-13
0 2 4 8
1/4" = 1'-0"

KEY NOTES

1. 16" CLASS 250 DIP PIPE.
2. 16" – 90° BEND.
3. 3" COMBO AIR/VACUUM RELEASE VALVE WITH DRAIN. SEE DETAIL 2 M-13 | M-02 .
4. RESTRAINED DISMANTLING JOINT. ROMAC DJ400 OR APPROVED EQUAL.
5. PRESSURE GAUGE AND TRANSMITTER. SEE DETAIL 6 M-13 | M-03 .
6. 16" PLUG VALVE WITH PNEUMATIC ACTUATOR.
7. 16" FULL PORT PLUG VALVE, EXTERNAL HAND WHEEL.
8. 16"X24"x24" TEE.
9. ADJUSTABLE PIPE SUPPORT. SEE DETAIL 1 M-13 | M-02 .
11. 24" CLASS 250 DIP PIPE.
12. 24" FULL PORT PLUG VALVE, EXTERNAL HAND WHEEL.
13. 24" – 90° BEND.
14. 24" INLINE MAGNETIC FLOW METER.
15. 1" CPVC PIPING FROM THE CHEMICAL FEED PANEL. SEE SHEET C-23 AND C-24.
16. CAM-LOK CONNECTION.
30. PRESSURE SWITCH AND GAUGE. SEE DETAIL 6 M-13 | M-03 .
31. 24"X6" REDUCER.
32. 6" PLUG VALVE.
33. 24"x24"x24" TEE.

GENERAL NOTES

1. CONTRACTOR TO VERIFY LOCATION OF FORCE MAINS PRIOR TO CONSTRUCTION.
2. FOR CONCRETE SLAB THICKNESS AND DETAILS SEE STRUCTURAL PLANS.
3. REFER TO GRADING AND DRAINAGE PLANS, SEE SHEETS C-25 AND C-26 FOR FINISHED FLOOR ELEVATIONS.

FACILITY DRAWINGS
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#	-	-	-	-	-	-	-

HDR

40280
JASON R.
FORT
Date Signed 08-30-24
Jason R. Fort

REVISIONS

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B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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*				

DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

LS YARD PIPING SECTIONS 3 & 4

CITY PROJECT NO. WS90400085
DATE: 08/2024
M-13 SHEET 49 OF 134
CAD FILE: DSM4AB9Q02.DWG

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\49_DSMLS40Q02.dwg DATE: 9/04/24 TIME: 03:25pm

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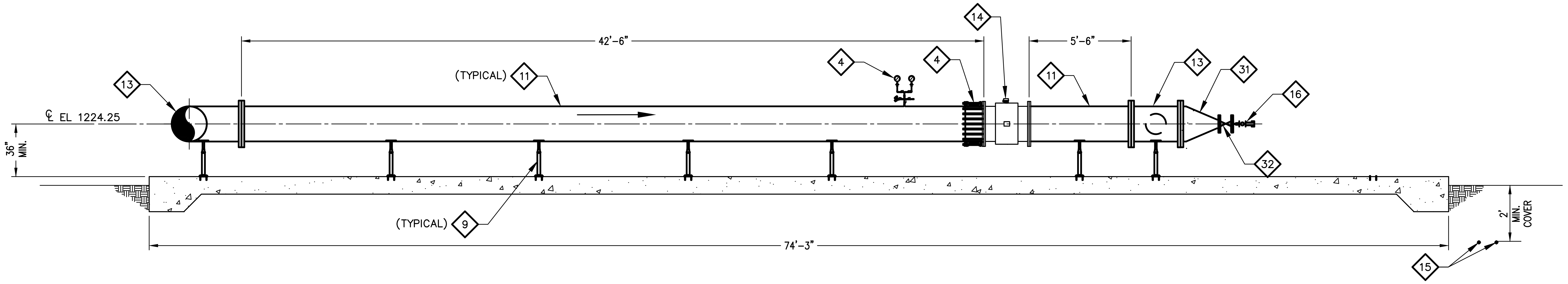
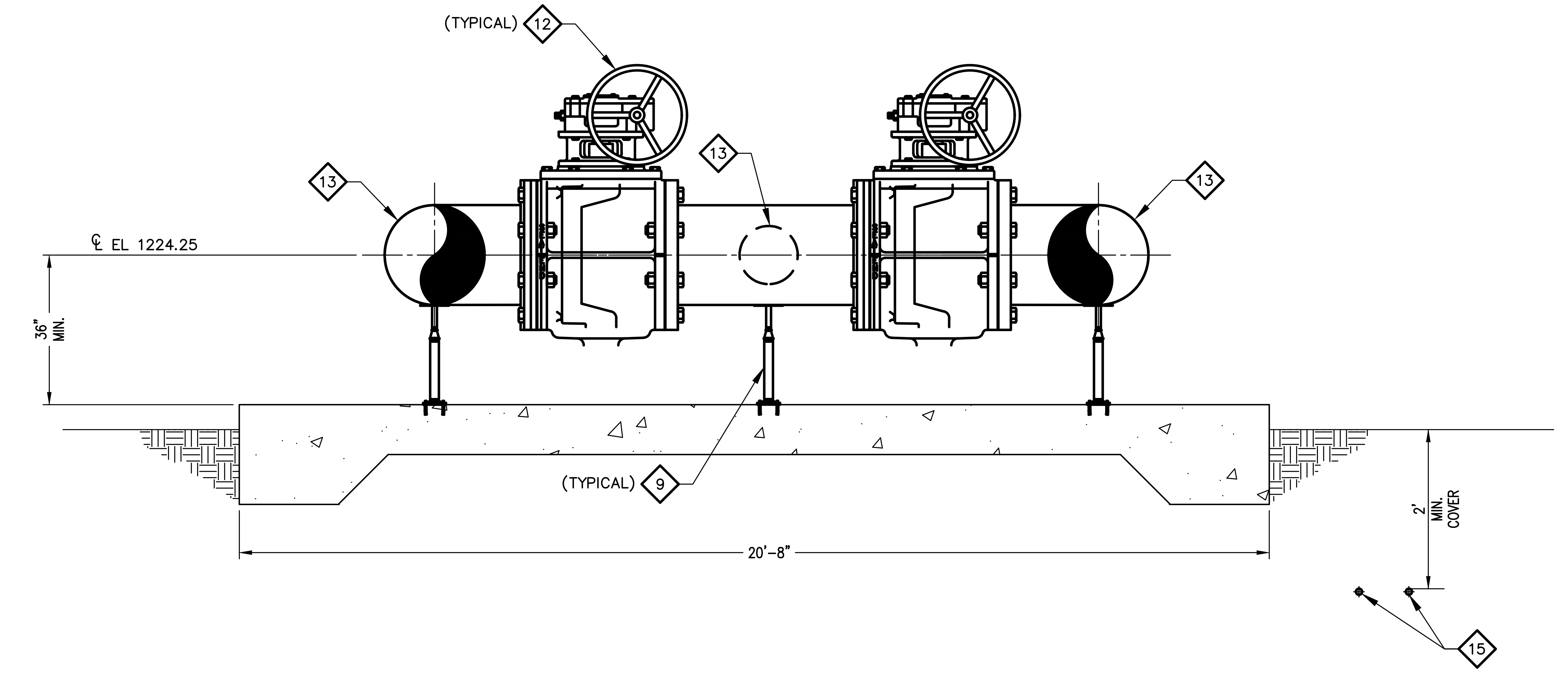


SECTION 5 M-07 M-14

0 2 4 8
1/4" = 1'-0"



SECTION 6 M-07 M-14

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

KEY NOTES

- 4 RESTRAINED DISMANTLING JOINT ROMAC DJ400 OR APPROVED EQUAL.
- 8 16" CLASS 250 DIP PIPE.
- 9 ADJUSTABLE PIPE SUPPORT.
  SEE DETAIL 1 M-14 M-02 .
- 11 24" CLASS 250 DIP PIPE.
- 12 24" FULL PORT PLUG VALVE, EXTERNAL HAND WHEEL.
- 13 24"X24"X24" TEE.
- 14 24" INLINE MAGNETIC FLOW METER.
- 15 1" CPVC PIPING FROM THE CHEMICAL FEED PANEL. SEE SHEET C-24 AND C-24.
- 16 CAM-LOK CONNECTION.
- 30 PRESSURE SWITCH AND GAUGE.
  SEE DETAIL 6 M-14 M-03 .
- 31 24"X6" REDUCER.
- 32 6" PLUG VALVE.

GENERAL NOTES

1. CONTRACTOR TO VERIFY LOCATION OF FORCE MAINS PRIOR TO CONSTRUCTION.
2. FOR CONCRETE SLAB THICKNESS AND DETAILS SEE STRUCTURAL PLANS.
3. REFER TO GRADING AND DRAINAGE PLANS, SEE SHEETS C-20 AND C-21 FOR FINISHED FLOOR ELEVATIONS.

FACILITY DRAWINGS
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#	-	-	-	-	-	-	-

HDR

CERTIFICATE NO. 40280
JASON R. FORT
Registered Professional Engineer (Civil)
ARIZONA, U.S.A.
Date Signed 08-30-24

Jason R. Fort

REVISIONS

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D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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DES FS
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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

LS YARD PIPING SECTIONS 5 & 6

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CITY PROJECT NO. WS90400085
DATE: 08/2024
M-14 SHEET 50 OF 134
CAD FILE: DSM4AB9Q03.DWG

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\50_DSMLS40Q03.dwg DATE: 9/04/24 TIME: 03:26pm

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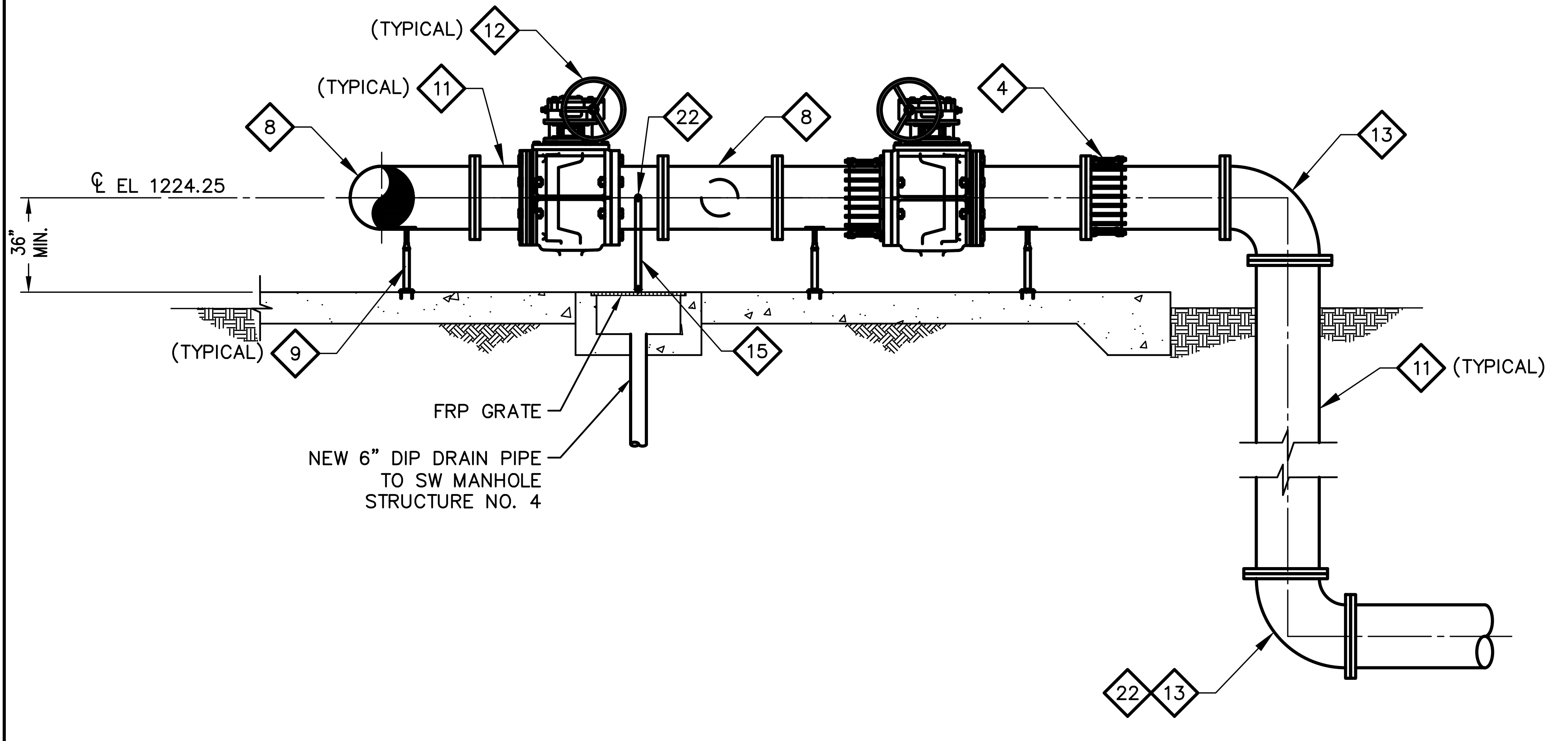
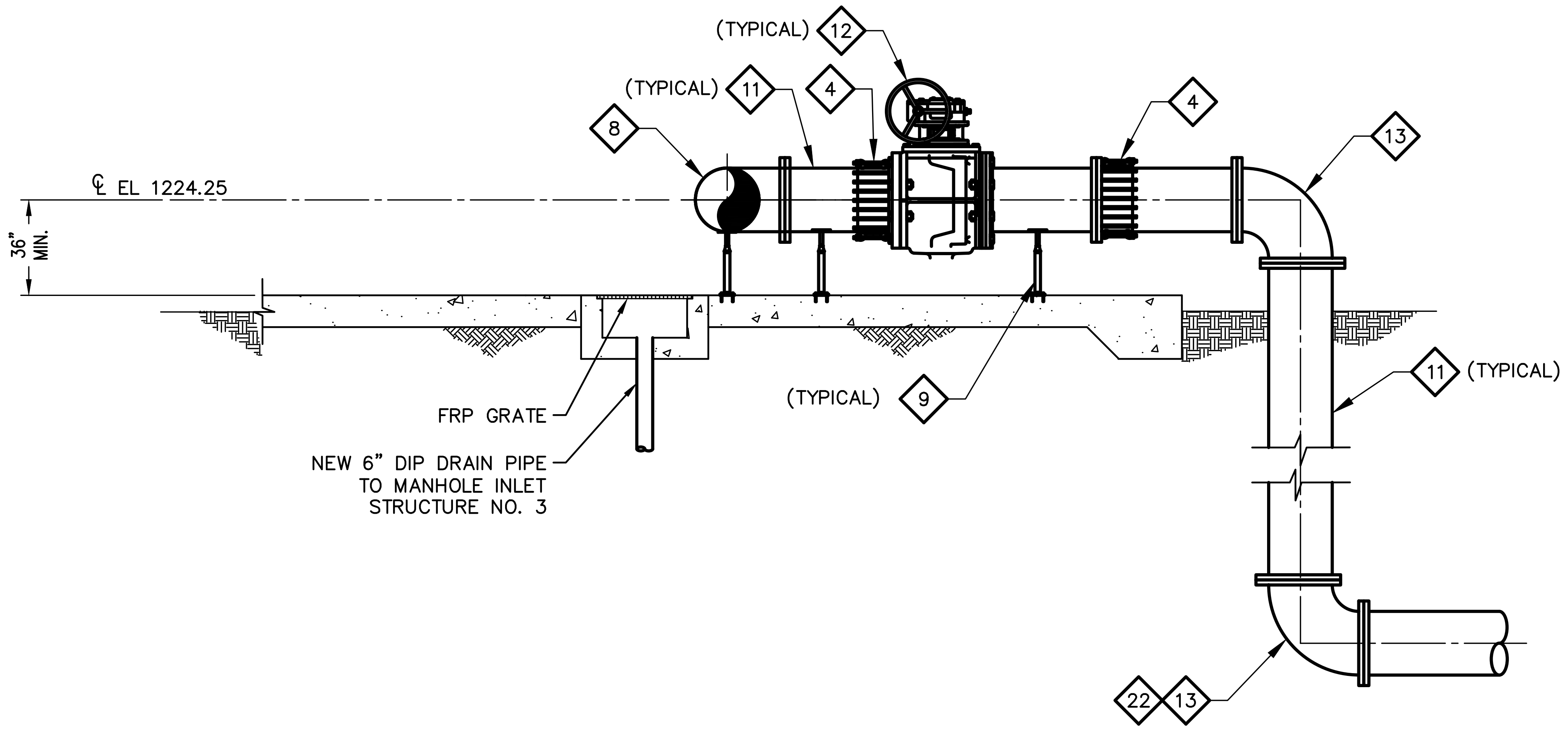

(TYPICAL) 12
(TYPICAL) 11
8
22
8
4
13
℄ EL 1224.25
36" MIN.
(TYPICAL) 9
15
FRP GRATE
NEW 6" DIP DRAIN PIPE TO SW MANHOLE STRUCTURE NO. 4
11 (TYPICAL)
22 13

SECTION 7 M-07 M-15

0 2 4 8
1/4" = 1'-0"


(TYPICAL) 12
(TYPICAL) 11
4
8
4
13
℄ EL 1224.25
36" MIN.
FRP GRATE
NEW 6" DIP DRAIN PIPE TO MANHOLE INLET STRUCTURE NO. 3
(TYPICAL) 9
11 (TYPICAL)
22 13

SECTION 8 M-07 M-15

0 2 4 8
1/4" = 1'-0"

KEY NOTES

4 RESTRAINED DISMANTLING JOINT ROMAC DJ400 OR APPROVED EQUAL.

8 24"x24"x24" TEE.

9 ADJUSTABLE PIPE SUPPORT.
SEE DETAIL 1 M-15 M-02 .

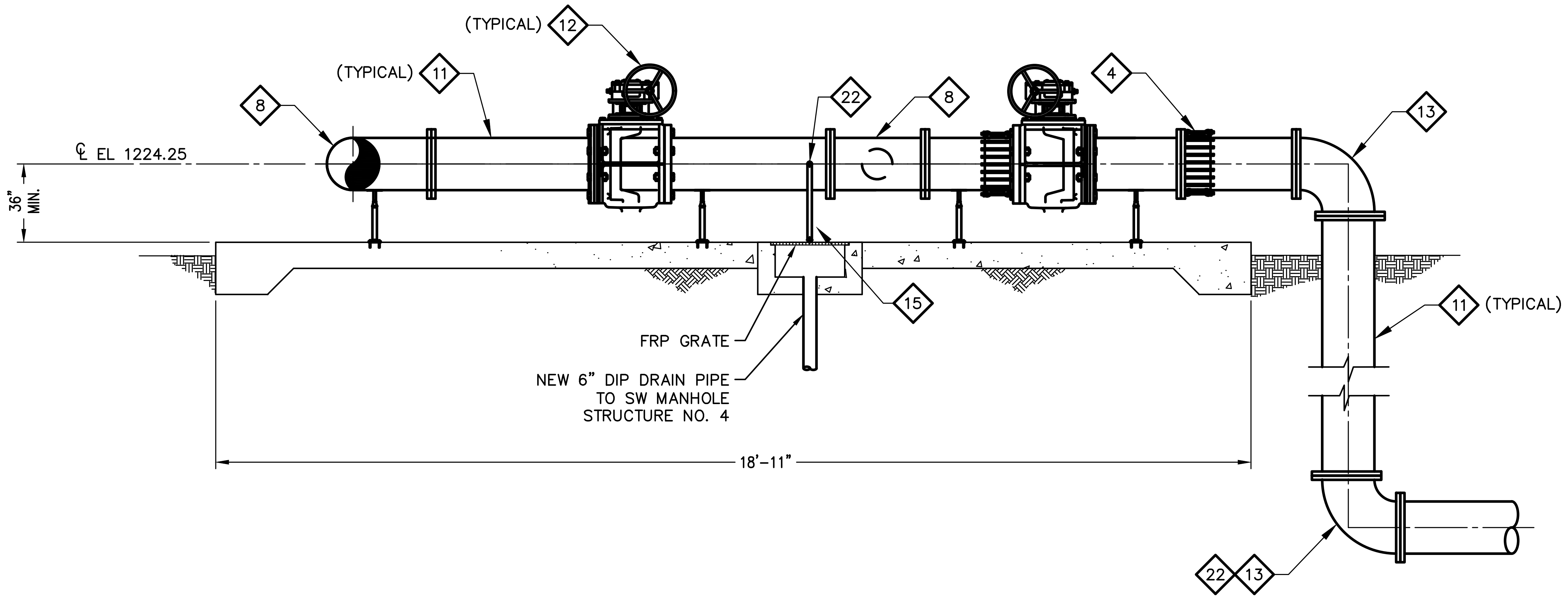
11 24" CLASS 250 DI PIPE.

12 24" FULL PORT PLUG VALVE, EXTERNAL HAND WHEEL.

13 24"– 90° BEND.

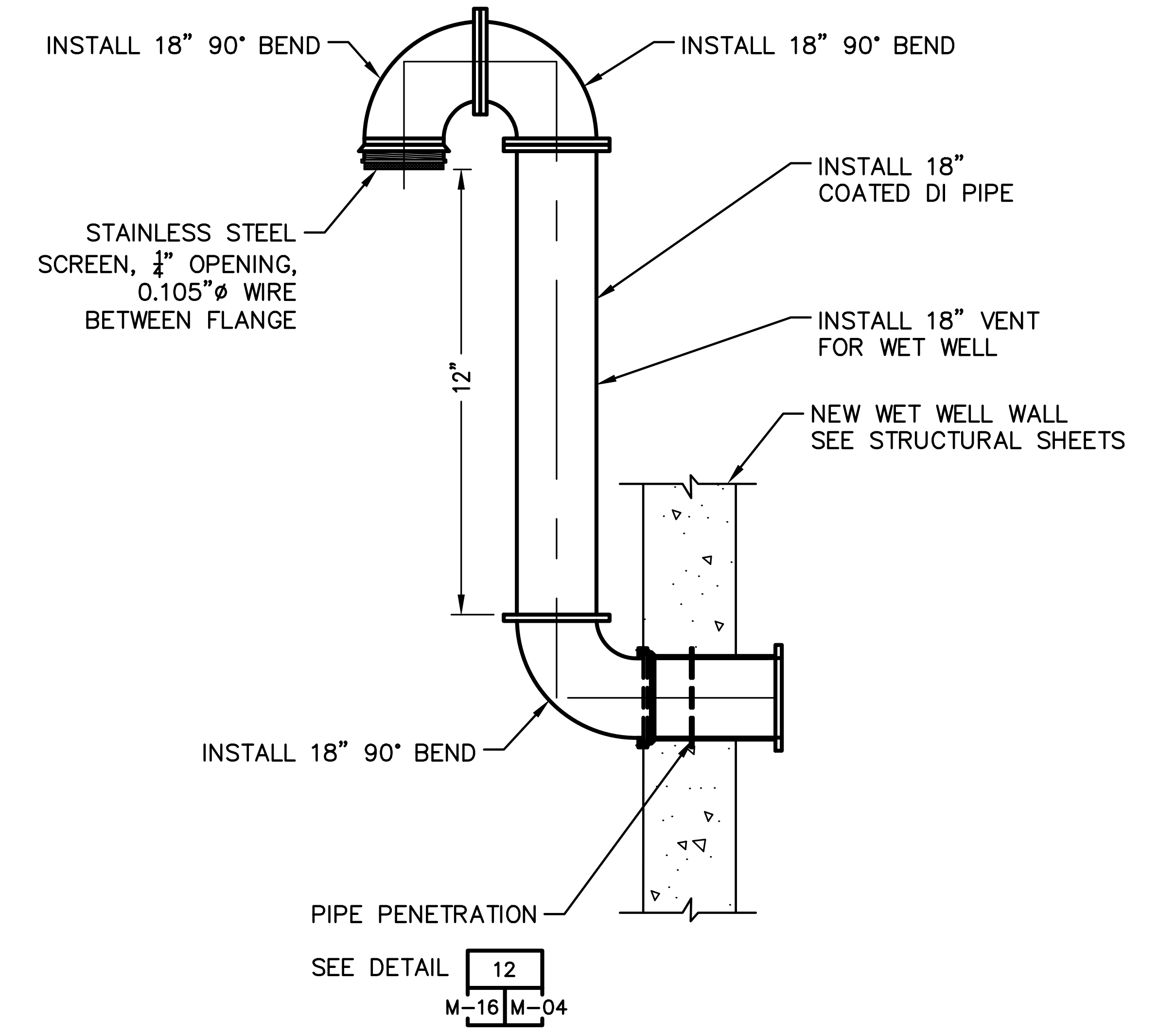
15 NEW 1" DOUBLE CONTAINED SCHEDULE 80 CPVC PIPING AND FITTINGS.

22 2" INJECTION QUILL. SEE DETAIL 5 M-15 M-03 .


(TYPICAL) 12
(TYPICAL) 11
8
22
8
4
13
℄ EL 1224.25
36" MIN.
15
FRP GRATE
NEW 6" DIP DRAIN PIPE TO SW MANHOLE STRUCTURE NO. 4
11 (TYPICAL)
18'-11"
22 13

SECTION 9 M-07 M-15

0 2 4 8
1/4" = 1'-0"


INSTALL 18" 90° BEND
INSTALL 18" 90° BEND
STAINLESS STEEL SCREEN, ¼" OPENING, 0.105"ø WIRE BETWEEN FLANGE
INSTALL 18" COATED DI PIPE
INSTALL 18" VENT FOR WET WELL
12"
NEW WET WELL WALL SEE STRUCTURAL SHEETS
INSTALL 18" 90° BEND
PIPE PENETRATION
SEE DETAIL 12 M-16 M-04

SECTION 10 M-07 M-15

0 2 4 8
1/4" = 1'-0"

GENERAL NOTES

1. CONTRACTOR TO VERIFY LOCATION OF FORCE MAINS PRIOR TO CONSTRUCTION.
2. FOR CONCRETE SLAB THICKNESS AND DETAILS SEE STRUCTURAL PLANS.
3. REFER TO GRADING AND DRAINAGE PLANS, SEE SHEETS C–25 AND C–26 FOR FINISHED FLOOR ELEVATIONS.

FACILITY DRAWINGS
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USER:FDERASFRAUO FILE:C:\pwworking\west01\d3411629\51_DSMLS40Q04.dwg DATE:9/04/24 TIME:03:26pm

HDR

40280
JASON R. FORT
Jason R. Fort

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C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
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*				

DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

LS YARD PIPING SECTIONS 7, 8, 9, & 10

CITY PROJECT NO. WS90400085
DATE: 08/2024
M–15 SHEET 51 OF 134
CAD FILE: DSM4AB9Q04.DWG

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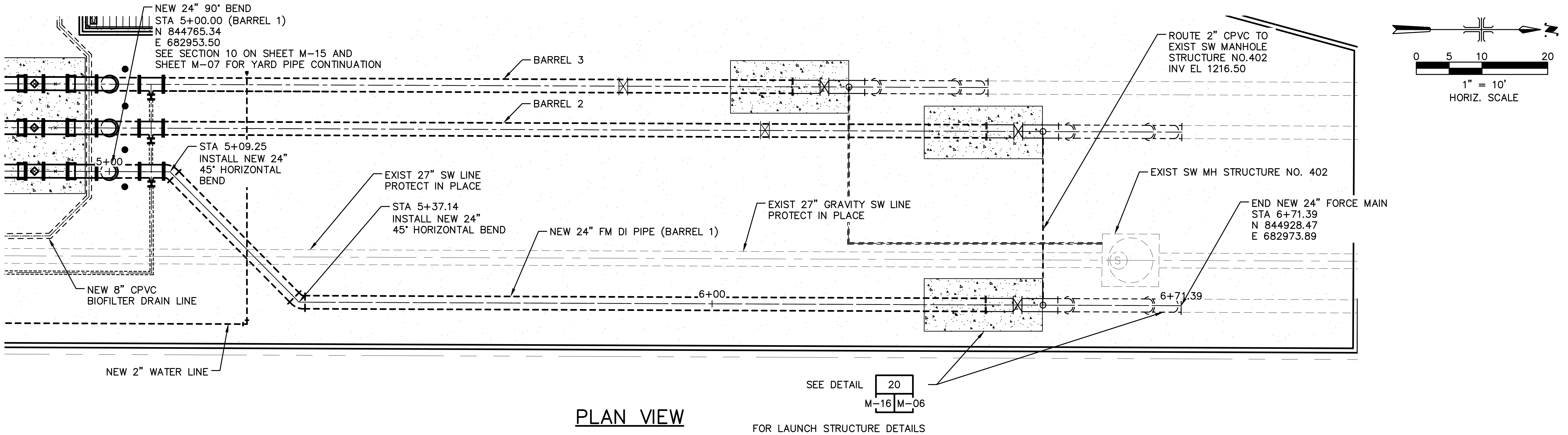
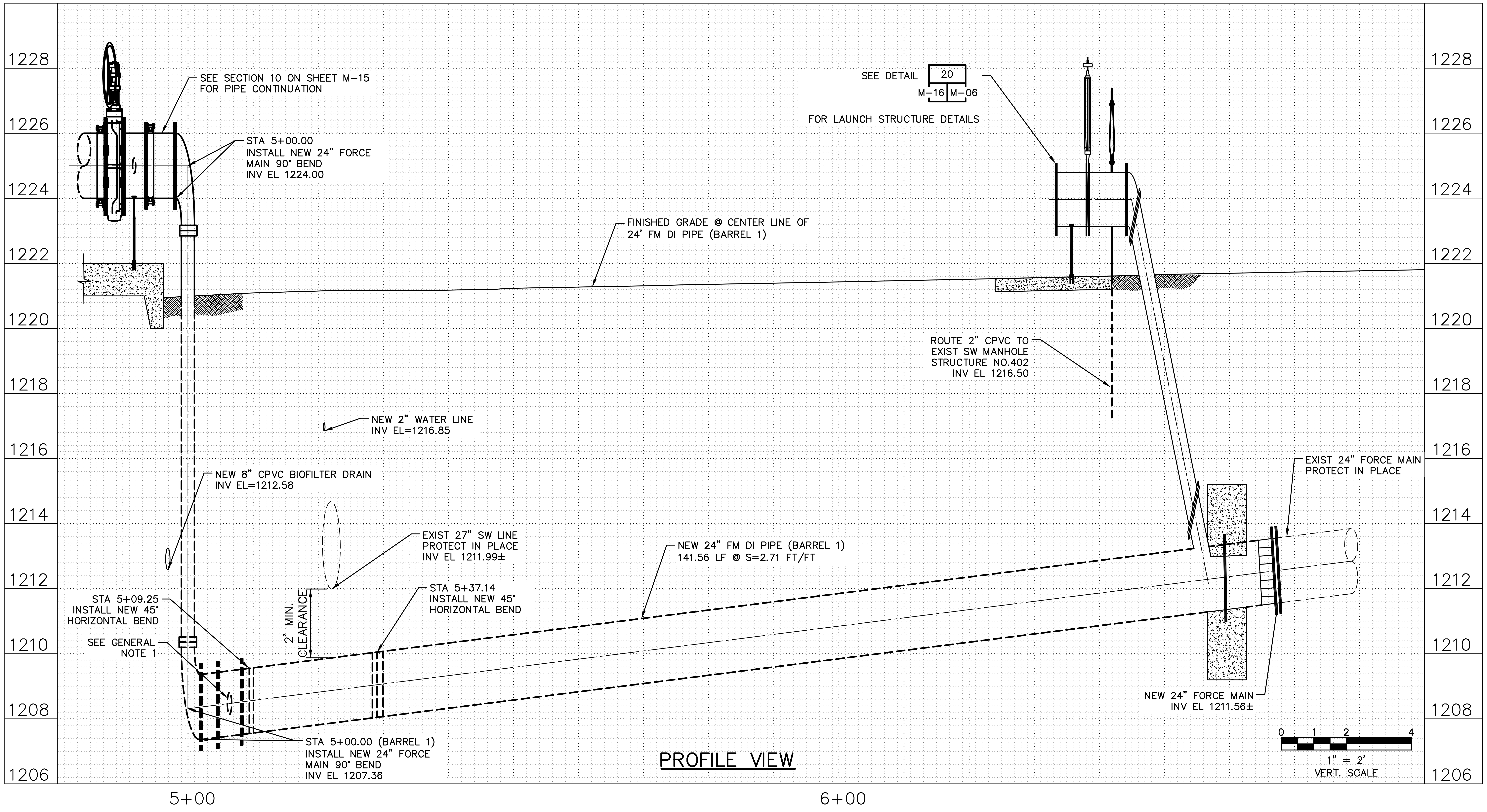

NEW 24" 90° BEND
STA 5+00.00 (BARREL 1)
N 844765.34
E 682953.50
SEE SECTION 10 ON SHEET M–15 AND SHEET M–07 FOR YARD PIPE CONTINUATION
BARREL 3
BARREL 2
5+00
STA 5+09.25
INSTALL NEW 24" 45° HORIZONTAL BEND
EXIST 27" SW LINE PROTECT IN PLACE
STA 5+37.14
INSTALL NEW 24" 45° HORIZONTAL BEND
NEW 24" FM DI PIPE (BARREL 1)
EXIST 27" GRAVITY SW LINE PROTECT IN PLACE
6+00
ROUTE 2" CPVC TO EXIST SW MANHOLE STRUCTURE NO.402 INV EL 1216.50
EXIST SW MH STRUCTURE NO. 402
END NEW 24" FORCE MAIN
STA 6+71.39
N 844928.47
E 682973.89
6+71.39
NEW 8" CPVC BIOFILTER DRAIN LINE
NEW 2" WATER LINE
SEE DETAIL 20 M–16 M–06
FOR LAUNCH STRUCTURE DETAILS
0 5 10 20
1" = 10'
HORIZ. SCALE

PLAN VIEW


1228
1226
1224
1222
1220
1218
1216
1214
1212
1210
1208
1206
SEE SECTION 10 ON SHEET M–15 FOR PIPE CONTINUATION
STA 5+00.00
INSTALL NEW 24" FORCE MAIN 90° BEND
INV EL 1224.00
FINISHED GRADE @ CENTER LINE OF 24' FM DI PIPE (BARREL 1)
SEE DETAIL 20 M–16 M–06
FOR LAUNCH STRUCTURE DETAILS
ROUTE 2" CPVC TO EXIST SW MANHOLE STRUCTURE NO.402 INV EL 1216.50
NEW 2" WATER LINE INV EL=1216.85
NEW 8" CPVC BIOFILTER DRAIN INV EL=1212.58
EXIST 24" FORCE MAIN PROTECT IN PLACE
EXIST 27" SW LINE PROTECT IN PLACE INV EL 1211.99±
NEW 24" FM DI PIPE (BARREL 1)
141.56 LF @ S=2.71 FT/FT
STA 5+09.25
INSTALL NEW 45° HORIZONTAL BEND
STA 5+37.14
INSTALL NEW 45° HORIZONTAL BEND
2' MIN. CLEARANCE
SEE GENERAL NOTE 1
STA 5+00.00 (BARREL 1)
INSTALL NEW 24" FORCE MAIN 90° BEND
INV EL 1207.36
NEW 24" FORCE MAIN INV EL 1211.56±
0 1 2 4
1" = 2'
VERT. SCALE
5+00
6+00

PROFILE VIEW

GENERAL NOTE

1. FOR CONSTRUCTION KEY NOTES SEE LS YARD PIPING PLAN SHEET M–08.

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#	–	–	–	–	–	–	–

HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO.
40280
JASON R.
FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

REVISIONS

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B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES
RS
DWN
RS
CKD
JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

LS 24" FORCE MAIN BARREL 1
DI PIPE PLAN AND PROFILE
STA 5+00.00 TO STA 6+71.37

CITY PROJECT NO. WS90400085
DATE: 08/2024
M–16 SHEET 52 OF 134
CAD FILE: CSMLS40P06.dwg

USER:FDERASFRAIJO FILE:C:\pwworking\west01\d3411629\52_CSMLS40P06.dwg DATE:9/04/24 TIME:03:26pm

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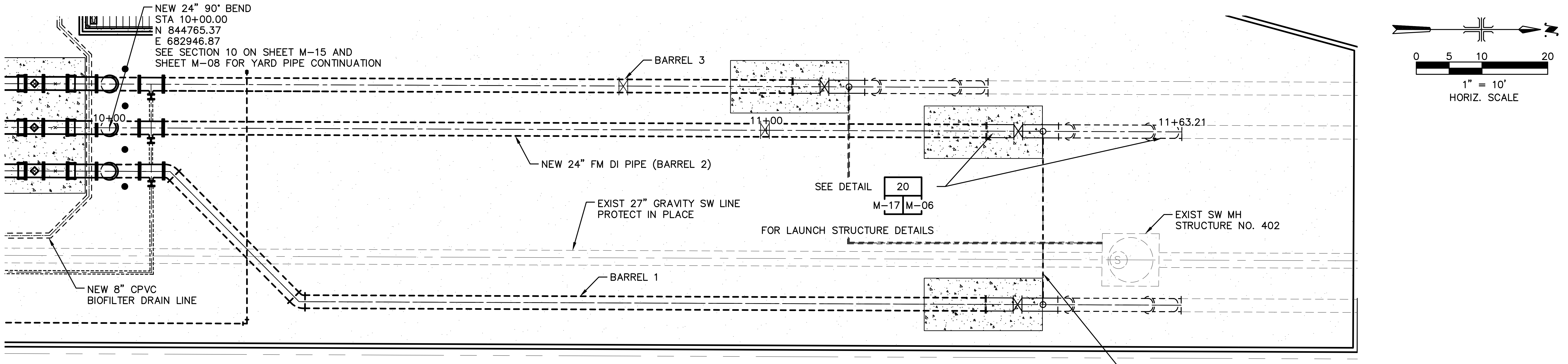
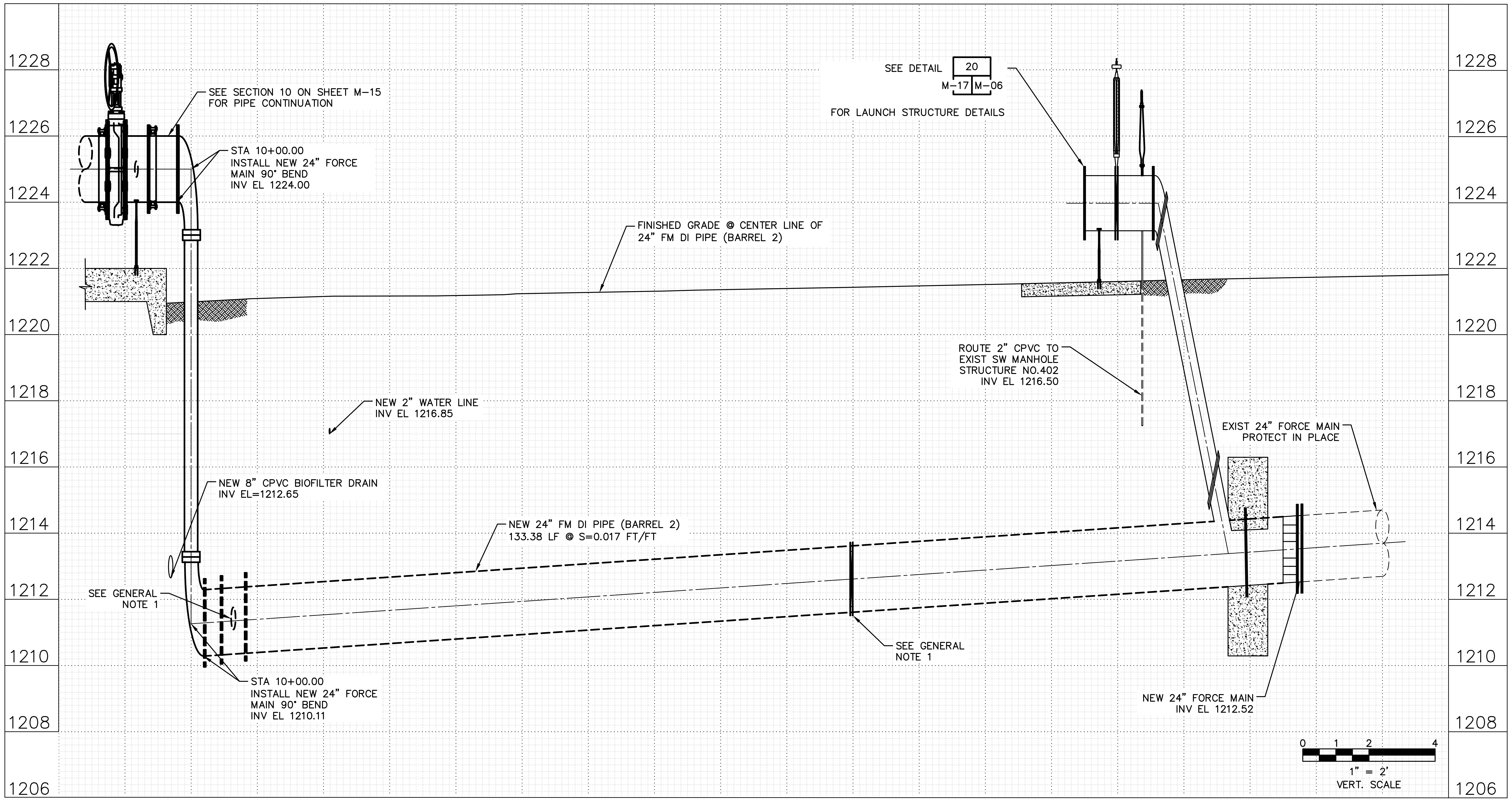

NEW 24" 90° BEND
STA 10+00.00
N 844765.37
E 682946.87
SEE SECTION 10 ON SHEET M-15 AND SHEET M-08 FOR YARD PIPE CONTINUATION
BARREL 3
10+00
11+00
11+63.21
NEW 24" FM DI PIPE (BARREL 2)
SEE DETAIL 20 M-17 M-06
FOR LAUNCH STRUCTURE DETAILS
EXIST 27" GRAVITY SW LINE PROTECT IN PLACE
EXIST SW MH STRUCTURE NO. 402
BARREL 1
NEW 8" CPVC BIOFILTER DRAIN LINE
0 5 10 20
1" = 10'
HORIZ. SCALE

ROUTE 2" CPVC TO EXIST SW MANHOLE STRUCTURE NO. 402 INV EL 1216.50

PLAN VIEW

GENERAL NOTE

1. FOR CONSTRUCTION KEY NOTES SEE LS YARD PIPING PLAN SHEET M-08.


1228
1226
1224
1222
1220
1218
1216
1214
1212
1210
1208
1206
SEE SECTION 10 ON SHEET M-15 FOR PIPE CONTINUATION
STA 10+00.00 INSTALL NEW 24" FORCE MAIN 90° BEND INV EL 1224.00
FINISHED GRADE @ CENTER LINE OF 24" FM DI PIPE (BARREL 2)
SEE DETAIL 20 M-17 M-06
FOR LAUNCH STRUCTURE DETAILS
ROUTE 2" CPVC TO EXIST SW MANHOLE STRUCTURE NO.402 INV EL 1216.50
NEW 2" WATER LINE INV EL 1216.85
EXIST 24" FORCE MAIN PROTECT IN PLACE
NEW 8" CPVC BIOFILTER DRAIN INV EL=1212.65
NEW 24" FM DI PIPE (BARREL 2) 133.38 LF @ S=0.017 FT/FT
SEE GENERAL NOTE 1
SEE GENERAL NOTE 1
STA 10+00.00 INSTALL NEW 24" FORCE MAIN 90° BEND INV EL 1210.11
NEW 24" FORCE MAIN INV EL 1212.52
0 1 2 4
1" = 2'
VERT. SCALE

PROFILE VIEW

FACILITY DRAWINGS
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FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
Jason R. Fort

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	RS	10/2023	JF	30% SUBMITTAL
B	RS	01/2024	JF	90% SUBMITTAL
C	RS	04/2024	JF	AGENCY REVIEW
D	FDF	08/2024	JF	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES RS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

LS 24" FORCE MAIN BARREL 2
DI PIPE PLAN AND PROFILE
STA 10+00.00 TO STA 11+63.21

CITY PROJECT NO. WS90400085
DATE: 08/2024
M-17 SHEET 53 OF 134
CAD FILE: CSMLS40P07.dwg

USER:FDERASFRAIJO FILE:C:\pwworking\west01\d3411629\53_CSMLS40P07.dwg DATE:9/04/24 TIME:03:26pm

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FOR CONSTRUCTION

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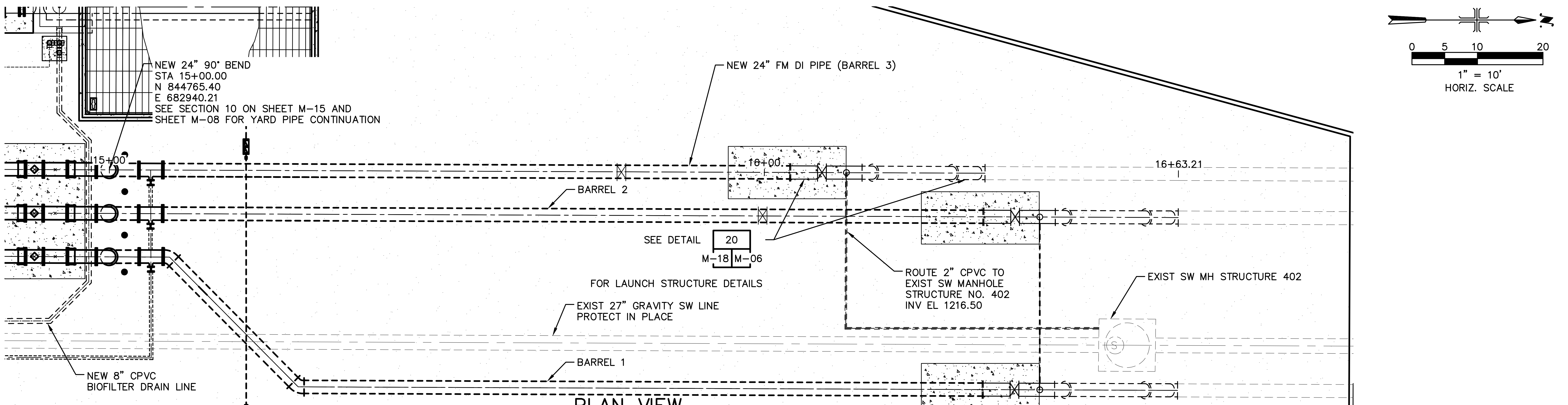
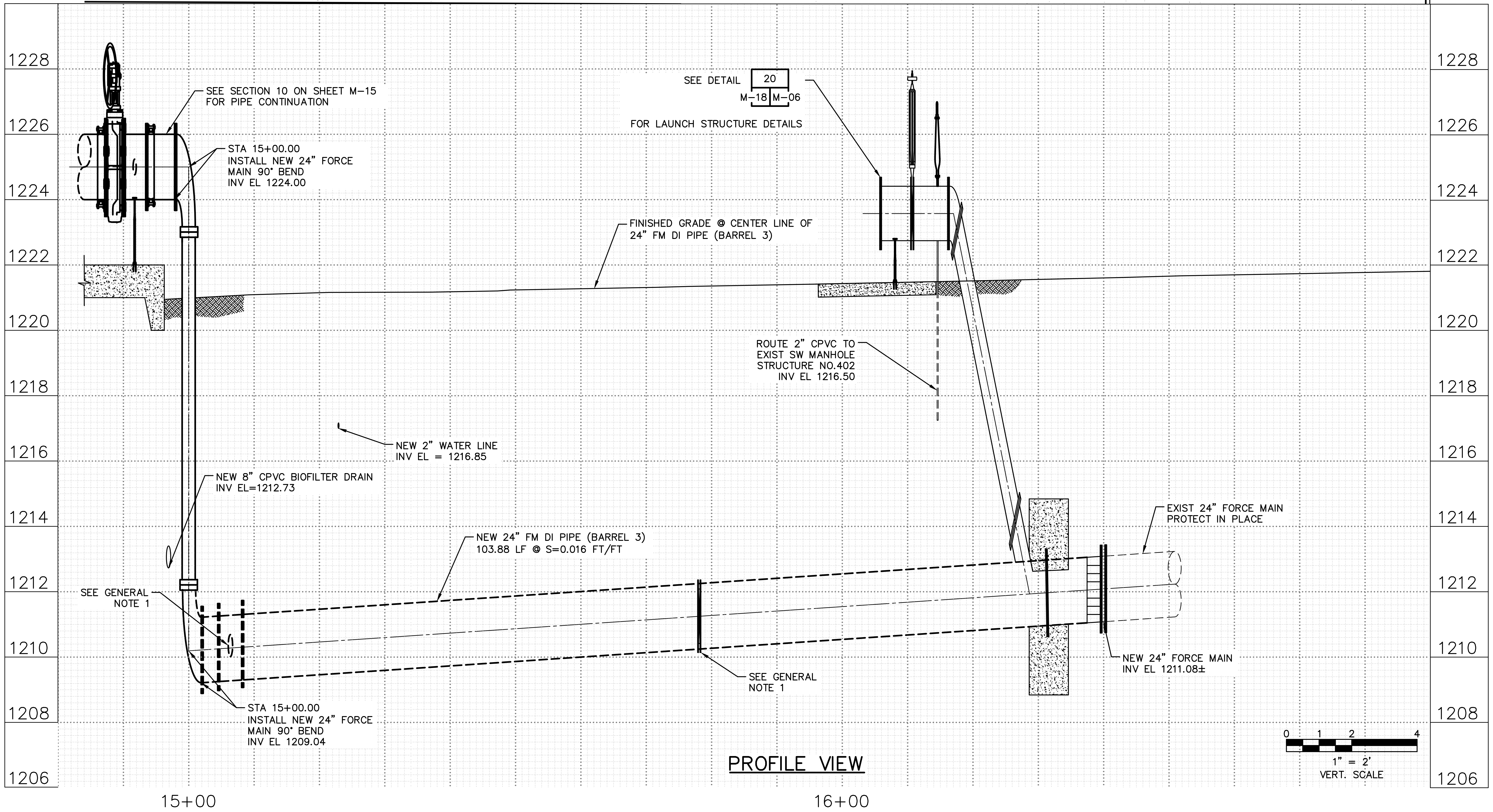

NEW 24" 90° BEND
STA 15+00.00
N 844765.40
E 682940.21
SEE SECTION 10 ON SHEET M–15 AND
SHEET M–08 FOR YARD PIPE CONTINUATION
NEW 24" FM DI PIPE (BARREL 3)
15+00
16+00
16+63.21
BARREL 2
SEE DETAIL 20 M–18 M–06
FOR LAUNCH STRUCTURE DETAILS
ROUTE 2" CPVC TO
EXIST SW MANHOLE
STRUCTURE NO. 402
INV EL 1216.50
EXIST SW MH STRUCTURE 402
EXIST 27" GRAVITY SW LINE
PROTECT IN PLACE
NEW 8" CPVC
BIOFILTER DRAIN LINE
BARREL 1
0 5 10 20
1" = 10'
HORIZ. SCALE

PLAN VIEW


1228
1226
1224
1222
1220
1218
1216
1214
1212
1210
1208
1206
SEE SECTION 10 ON SHEET M–15
FOR PIPE CONTINUATION
STA 15+00.00
INSTALL NEW 24" FORCE
MAIN 90° BEND
INV EL 1224.00
SEE DETAIL 20 M–18 M–06
FOR LAUNCH STRUCTURE DETAILS
FINISHED GRADE @ CENTER LINE OF
24" FM DI PIPE (BARREL 3)
ROUTE 2" CPVC TO
EXIST SW MANHOLE
STRUCTURE NO.402
INV EL 1216.50
NEW 2" WATER LINE
INV EL = 1216.85
NEW 8" CPVC BIOFILTER DRAIN
INV EL=1212.73
NEW 24" FM DI PIPE (BARREL 3)
103.88 LF @ S=0.016 FT/FT
EXIST 24" FORCE MAIN
PROTECT IN PLACE
SEE GENERAL
NOTE 1
SEE GENERAL
NOTE 1
NEW 24" FORCE MAIN
INV EL 1211.08±
STA 15+00.00
INSTALL NEW 24" FORCE
MAIN 90° BEND
INV EL 1209.04
0 1 2 4
1" = 2'
VERT. SCALE
15+00
16+00

PROFILE VIEW

GENERAL NOTE

1. FOR CONSTRUCTION KEY NOTES SEE LS YARD PIPING PLAN SHEET M–08.

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#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
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USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\54_CSMLS40P08.dwg DATE: 9/04/24 TIME: 03:26pm

HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
ARIZONA, U.S.A.
Jason R. Fort

REVISIONS

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*				
*				
*				

DES	RS
DWN	RS
CKD	JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

LS 24" FORCE MAIN BARREL 3
DI PIPE PLAN AND PROFILE
STA 15+00.00 TO STA 16+63.21

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CITY PROJECT NO. WS90400085
DATE: 08/2024
M–18 SHEET 54 OF 134
CAD FILE: CSMLS40P08.dwg

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FOR CONSTRUCTION

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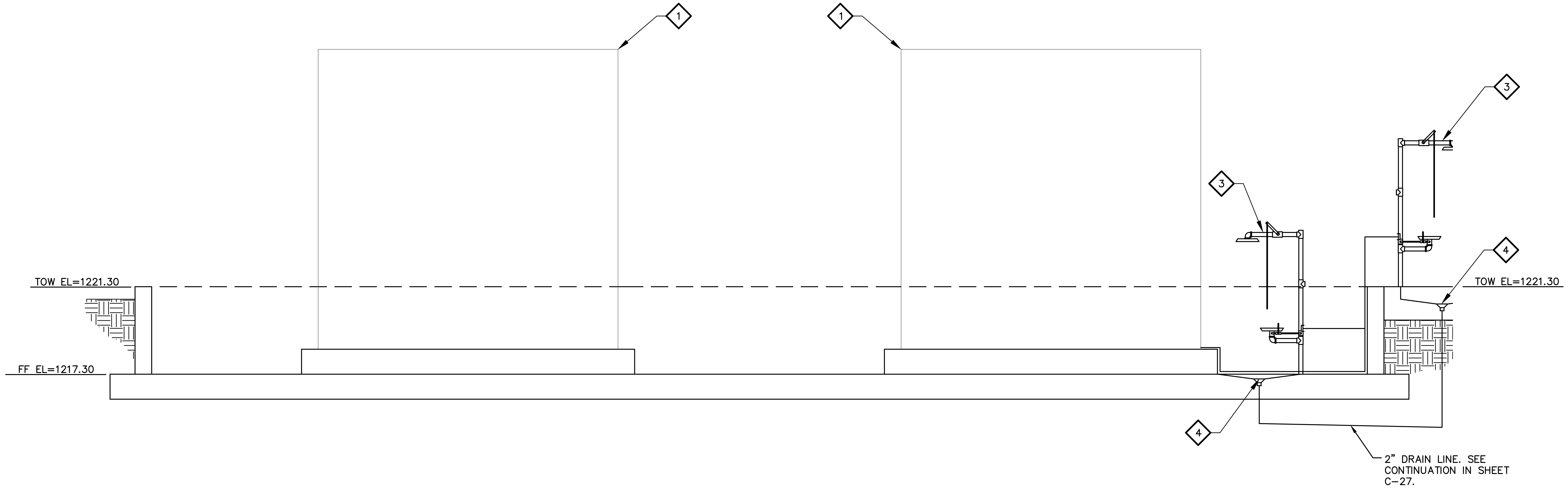
KEY NOTES

- ⟨1⟩ 7800 GAL FERROUS CHLORIDE STORAGE TANK.
- ⟨3⟩ EMERGENCY EYEWASH/SHOWER.
  PER DETAIL 9 M-19 | M-04 .
- ⟨4⟩ DRAIN PER DETAIL 7 M-19 | M-03 .

GENERAL NOTES

1. REFER TO GRADING AND DRAINAGE PLANS, SEE SHEETS C-25 AND C-26 FOR FINISHED FLOOR ELEVATIONS.
2. CHEMICAL CONTAINMENT AREA TO BE COATED PER SPEC SECTION 09 96 17.
3. CHEMICAL UNLOADING AREA INCLUDING TRENCH DRAINS, SUMPS, AND HORIZONTAL PIPE CHASES TO BE COATED PER SPEC SECTION 09 96 16.



SECTION 12 M-19 | S-14

0 1 2 4
3/8" = 1'-0"

FACILITY DRAWINGS

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#	-	-	-	-	-	-	-

Registered Professional Engineer
CERTIFICATE NO. 40280
JASON R. FORT
(Civil)
ARIZONA, U.S.A.
Jason R. Fort

REVISIONS				
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*				
*				
*				

DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

FERROUS CHLORIDE SYSTEM SECTION

CITY PROJECT NO. WS90400085
DATE: 08/2024
M-19 SHEET 55 OF 134
CAD FILE: DSM4AB9Q05.DWG

USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\55_DSMLS40Q05.dwg DATE: 9/04/24 TIME: 03:26pm

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CITY OF PHOENIX
WATER SERVICES DEPARTMENT
LS 40 REFURBISHMENT - EQUIPMENT SCHEDULE

VALVE SCHEDULE

TAG NO.	SERVICE	TYPE	SIZE (IN)	ACTUATOR	COMMENTS	LOCATION
VLV-413	WASTE WATER	FULL-PORT PLUG VALVE	16	PNEUMATIC	-	PUMP 1 LS-P1 DISCHARGE
VLV-423	WASTE WATER	FULL-PORT PLUG VALVE	16	PNEUMATIC	-	PUMP 2 LS-P2 DISCHARGE
VLV-433	WASTE WATER	FULL-PORT PLUG VALVE	16	PNEUMATIC	-	PUMP 3 LS-P3 DISCHARGE
VLV-443	WASTE WATER	FULL-PORT PLUG VALVE	16	PNEUMATIC	-	PUMP 4 LS-P4 DISCHARGE
VLV-453	WASTE WATER	FULL-PORT PLUG VALVE	16	PNEUMATIC	-	PUMP 5 LS-P5 DISCHARGE
VLV-463	WASTE WATER	FULL-PORT PLUG VALVE	16	PNEUMATIC	-	PUMP 6 LS-P6 DISCHARGE
ARV-001	WASTE WATER	COMBINATION AIR/VACUUM VALVE	2	MANUAL	-	PUMP 1 LS-P1 DISCHARGE
ARV-002	WASTE WATER	COMBINATION AIR/VACUUM VALVE	2	MANUAL	-	PUMP 2 LS-P2 DISCHARGE
ARV-003	WASTE WATER	COMBINATION AIR/VACUUM VALVE	2	MANUAL	-	PUMP 3 LS-P3 DISCHARGE
ARV-004	WASTE WATER	COMBINATION AIR/VACUUM VALVE	2	MANUAL	-	PUMP 4 LS-P4 DISCHARGE
ARV-005	WASTE WATER	COMBINATION AIR/VACUUM VALVE	2	MANUAL	-	PUMP 5 LS-P5 DISCHARGE
ARV-006	WASTE WATER	COMBINATION AIR/VACUUM VALVE	2	MANUAL	-	PUMP 6 LS-P6 DISCHARGE
PV-001	WASTE WATER	FULL-PORT PLUG VALVE	16	MANUAL	-	PUMP 1 LS-P1 DISCHARGE
PV-002	WASTE WATER	FULL-PORT PLUG VALVE	16	MANUAL	-	PUMP 2 LS-P2 DISCHARGE
PV-003	WASTE WATER	FULL-PORT PLUG VALVE	16	MANUAL	-	PUMP 3 LS-P3 DISCHARGE
PV-004	WASTE WATER	FULL-PORT PLUG VALVE	16	MANUAL	-	PUMP 4 LS-P4 DISCHARGE
PV-005	WASTE WATER	FULL-PORT PLUG VALVE	16	MANUAL	-	PUMP 5 LS-P5 DISCHARGE
PV-006	WASTE WATER	FULL-PORT PLUG VALVE	16	MANUAL	-	PUMP 6 LS-P6 DISCHARGE
PV-007	WASTE WATER	FULL-PORT PLUG VALVE	24	MANUAL	-	24 INCH DISCHARGE HEADER
PV-008	WASTE WATER	FULL-PORT PLUG VALVE	24	MANUAL	-	24 INCH DISCHARGE HEADER
PV-009	WASTE WATER	FULL-PORT PLUG VALVE	24	MANUAL	-	24 INCH DISCHARGE HEADER
PV-010	WASTE WATER	FULL-PORT PLUG VALVE	24	MANUAL	-	24 INCH METER BYPASS
PV-011	WASTE WATER	FULL-PORT PLUG VALVE	24	MANUAL	-	24 INCH METER BYPASS
PV-012	WASTE WATER	FULL-PORT PLUG VALVE	24	MANUAL	-	24 INCH METER BYPASS
PV-013	WASTE WATER	FULL-PORT PLUG VALVE	24	MANUAL	-	24 INCH METER BYPASS
PV-014	WASTE WATER	FULL-PORT PLUG VALVE	24	MANUAL	-	24 INCH METER BYPASS
PV-015	WASTE WATER	FULL-PORT PLUG VALVE	24	MANUAL	-	24 INCH METER BYPASS
PV-016	WASTE WATER	FULL-PORT PLUG VALVE	24	MANUAL	-	24 INCH METER BYPASS

METER/SENSOR/GAUGE/TRANSMITTER SCHEDULE

TAG NO.	SERVICE	TYPE	SIZE (IN)	ACTUATOR	COMMENTS	LOCATION
FE-500	WASTE WATER	MAGNETIC FLOW METER	24	N/A	-	24 INCH DISCHARGE HEADER
FE-501	WASTE WATER	MAGNETIC FLOW METER	24	N/A	-	24 INCH DISCHARGE HEADER
PSH-411	WASTE WATER	PRESSURE SWITCH	-	N/A	-	PUMP 1
PSH-421	WASTE WATER	PRESSURE SWITCH	-	N/A	-	PUMP 2
PSH-431	WASTE WATER	PRESSURE SWITCH	-	N/A	-	PUMP 3
PSH-441	WASTE WATER	PRESSURE SWITCH	-	N/A	-	PUMP 4
PSH-451	WASTE WATER	PRESSURE SWITCH	-	N/A	-	PUMP 5
PSH-461	WASTE WATER	PRESSURE SWITCH	-	N/A	-	PUMP 6
PI-411	WASTE WATER	PRESSURE GAUGE	-	N/A	-	PUMP 1
PI-421	WASTE WATER	PRESSURE GAUGE	-	N/A	-	PUMP 2
PI-431	WASTE WATER	PRESSURE GAUGE	-	N/A	-	PUMP 3
PI-441	WASTE WATER	PRESSURE GAUGE	-	N/A	-	PUMP 4
PI-451	WASTE WATER	PRESSURE GAUGE	-	N/A	-	PUMP 5
PI-461	WASTE WATER	PRESSURE GAUGE	-	N/A	-	PUMP 6
PIT-500	WASTE WATER	PRESSURE TRANSMITTER	-	N/A	-	24 INCH DISCHARGE HEADER
PIT-501	WASTE WATER	PRESSURE TRANSMITTER	-	N/A	-	24 INCH DISCHARGE HEADER
PI-500	WASTE WATER	PRESSURE GAUGE	-	N/A	-	24 INCH DISCHARGE HEADER
PI-501	WASTE WATER	PRESSURE GAUGE	-	N/A	-	24 INCH DISCHARGE HEADER
LIT-100	WASTE WATER	LEVEL TRANSMITTER	-	N/A	-	WET WELL
LIT-101	WASTE WATER	LEVEL TRANSMITTER	-	N/A	-	WET WELL
LIT-02	FERROUS CHLORIDE	LEVEL TRANSMITTER	-	N/A	-	FERROUS CHLORIDE TANK 1
LIT-04	FERROUS CHLORIDE	LEVEL TRANSMITTER	-	N/A	-	FERROUS CHLORIDE TANK 2
DPSH-511	BIOFILTER	DIFFERENTIAL PRESSURE SWITCH	-	N/A	-	BIOFILTER
DPSL-510	BIOFILTER	DIFFERENTIAL PRESSURE SWITCH	-	N/A	-	BIOFILTER
PSH-510	BIOFILTER	PRESSURE SWITCH	-	N/A	-	BIOFILTER

PUMP SCHEDULE

TAG NO.	SERVICE	TYPE	HP	CAPACITY	TDH	COMMENTS
PMP-410	WASTE WATER	SOLID-PASSING SUBMERSIBLE PUMP	470	2,944 GPM	234 FT	480 V, 3 PH, 60 HZ
PMP-420	WASTE WATER	SOLID-PASSING SUBMERSIBLE PUMP	470	2,944 GPM	234 FT	480 V, 3 PH, 60 HZ
PMP-430	WASTE WATER	SOLID-PASSING SUBMERSIBLE PUMP	470	2,944 GPM	234 FT	480 V, 3 PH, 60 HZ
PMP-440	WASTE WATER	SOLID-PASSING SUBMERSIBLE PUMP	470	2,944 GPM	234 FT	480 V, 3 PH, 60 HZ
PMP-450	WASTE WATER	SOLID-PASSING SUBMERSIBLE PUMP	470	2,944 GPM	234 FT	480 V, 3 PH, 60 HZ
PMP-460	WASTE WATER	SOLID-PASSING SUBMERSIBLE PUMP	470	2,944 GPM	234 FT	480 V, 3 PH, 60 HZ
MPN-1000	FERROUS CHLORIDE	METERING PUMP	5.5	3 GPM	20 FT	120 V, 60 HZ
MPN-1002	FERROUS CHLORIDE	METERING PUMP	5.5	3 GPM	20 FT	120 V, 60 HZ
MPN-1004	FERROUS CHLORIDE	METERING PUMP	5.5	3 GPM	20 FT	120 V, 60 HZ
MPN-1005	FERROUS CHLORIDE	METERING PUMP	5.5	3 GPM	20 FT	120 V, 60 HZ

PIPE SCHEDULE

DIAMETER (IN)	PIPE MATERIAL	PRESSURE CLASS	COMMENTS	LOCATION		
1	CPVC	SCHEDULE 80	DOUBLE CONTAINED	FERROUS CHLORIDE SOLUTION PIPE		
4	PVC	SCHEDULE 80	GRAVITY SEWER	ELECTRICAL BUILDING SEWER SERVICE		
6	DIP	250	-	DRAIN LINE FROM FORCE MAIN AND INJECTION TRENCH		
8	CPVC	SCHEDULE 80	-	DRAIN LINE FROM BIOFILTER		
24	DIP	250	BURIED - EXTERIOR POLYETHYLENE ENCASED AND BITUMINOUS COATED INTERIOR - CEMENT MORTAR LINED	PUMP DISCHARGE PIPING		
24	DIP	250	ABOVE GRADE - POLYURETHANE COATED INTERIOR - CEMENT MORTAR LINED	PUMP DISCHARGE PIPING		
16	DIP	250	-	PUMP DISCHARGE PIPING		
2	COPPER	TYPE K	-	POTABLE WATER (EMERGENCY EYE WASH AND HOSE BIB)		
3	COPPER	TYPE K	-	POTABLE WATER (EMERGENCY EYE WASH AND HOSE BIB)		
42	VCP	-	GRAVITY SEWER	GRAVITY SEWER TO WET WELL		
20	FRP	-	FOUL AIR DUCT	WET WELL TO BIOFILTER		

MISCELLANEOUS EQUIPMENT SCHEDULE

TAG NO.	SERVICE	TYPE	POWER	COMMENTS	LOCATION	
GEN-LS40	BACKUP ELECTRICITY	DIESEL GENERATOR	2,500 KW	-	GENERATOR SLAB	
FAN-510	ODOR CONTROL	BIOFILTER BLOWER	10 HP	-	BIOFILTER	

TANK SCHEDULE

TANK ID	LOCATION	SERVICE	TYPE	CAPACITY	DIAMETER (FT)	COMMENTS
FERROUS CHLORIDE TANK 1	FERROUS CHLORIDE STORGAGE SLAB	FERROUS CHLORIDE	VERTICAL	7,800 GAL	12	-
FERROUS CHLORIDE TANK 2	FERROUS CHLORIDE STORGAGE SLAB	FERROUS CHLORIDE	VERTICAL	7,800 GAL	12	-

HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 40280
JASON R. FORT
Date Signed 08-30-24
Jason R. Fort

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*				
*				

DES FS
DWN RS
CKD JF

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

MECHANICAL

EQUIPMENT SCHEDULE

CITY PROJECT NO. WS90400085
DATE: 08/2024
M-20 SHEET 56 OF 134
CAD FILE: DSM4AB9X01.dwg

FACILITY DRAWINGS
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USER: FDERASFRAIJO FILE: C:\pwworking\west01\d3411629\56_CSMLS40X01.dwg DATE: 9/04/24 TIME: 03:26pm

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GENERAL STRUCTURAL NOTES (GSN)

GENERAL

G1. SCOPE
THE NOTES ON THIS SHEET AND THE STANDARD STRUCTURAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT WHETHER SPECIFICALLY CALLED OUT OR NOT, EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY ON STRUCTURAL SHEETS. IF THERE ARE QUESTIONS, THEY SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER AND ANSWERED IN WRITING PRIOR TO CONSTRUCTION.

G2. CONTRACT DOCUMENTS
CONTRACT DOCUMENTS SHOW THE FINISHED PRODUCT. CONTRACTOR IS RESPONSIBLE FOR MEANS AND METHODS. VISITS TO THE JOB SITE BY THE ENGINEER TO OBSERVE THE CONSTRUCTION DO NOT IN ANY WAY MEAN THAT THE ENGINEER IS GUARANTOR OF CONTRACTOR'S WORK, NOR RESPONSIBLE FOR THE COMPREHENSIVE OR SPECIAL INSPECTIONS, COORDINATION, SUPERVISION, OR SAFETY AT THE JOB SITE.

G3. APPLICABLE SPECIFICATIONS AND CODES
- A. INTERNATIONAL BUILDING CODE (IBC 2018) WITH APPLICABLE EDITIONS OF THE CODE REFERENCED STANDARDS AND WITH CITY OF PHOENIX AMENDMENTS.
- B. ACI 318–14 BUILDING CODE REQUIREMENTS FOR CONCRETE BUILDINGS
- C. ACI 350–06 CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES AND COMMENTARY
- D. ACI 350.3–06 SEISMIC DESIGN OF LIQUID–CONTAINING CONCRETE STRUCTURES AND COMMENTARY
- E. AISC 360–16 STEEL CONSTRUCTION MANUAL, 14TH ED.

G4. DESIGN CRITERIA (APPLIES TO ALL STRUCTURES UNO)
- A. DEAD LOAD:
  - 1. ACTUAL TRIBUTARY STRUCTURE WEIGHT
- B. LIVE LOAD:
  - 1. OPERATION, PROCESS EQUIPMENT, AND ELECTRICAL AREAS: 250 PSF
  - 2. SLAB ON GRADE: 250 PSF
  - 3. LADDERS AND STAIRS: 100 PSF OR 300 LBS
  - 4. GRATED AREAS: 100 PSF MINIMUM OR LOAD AT ADJACENT FLOOR
  - 5. ROOF: 20 PSF (REDUCIBLE)
  - 6. VEHICULAR LOADING: AASHTO HL–93
- C. WIND:
  - 1. BASIC WIND SPEED = 108 MPH
  - 2. ALLOWABLE STRESS DESIGN WIND SPEED = 84 MPH
  - 3. EXPOSURE = C
  - 4. RISK CATEGORY = III
- D. SEISMIC:
  - 1. ALL STRUCTURES:
    - a. RISK CATEGORY = III
    - b. IMPORTANCE FACTOR = 1.25
    - c. SITE CLASS = D
    - d. SPECTRAL RESPONSE ACCELERATION, SS = 0.173
    - e. SPECTRAL RESPONSE ACCELERATION, S1 = 0.064
    - f. SPECTRAL RESPONSE COEFFICIENT, SDS = 0.184
    - g. SPECTRAL RESPONSE COEFFICIENT, SD1 = 0.102
    - h. SEISMIC DESIGN CATEGORY = B
  - 2. CONTAINMENT AREA:
    - a. BASIC SEISMIC FORCE RESISTING SYSTEM: STEEL ORDINARY CANTILEVER COLUMN SYSTEM
    - b. RESPONSE MODIFICATION FACTOR, R = 1.25
    - c. ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE
    - d. SEISMIC RESPONSE COEFFICIENT, Cs = 0.1845
    - e. DESIGN BASE SHEAR, V = 20 KIPS
  - 3. ELECTRICAL AND CONTROL BUILDING:
    - a. BASIC SEISMIC FORCE RESISTING SYSTEM: ORDINARY REINFORCED MASONRY SHEAR WALLS
    - b. RESPONSE MODIFICATION FACTOR, R = 2.0
    - c. ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE
    - d. SEISMIC RESPONSE COEFFICIENT, Cs = 0.1153
    - e. DESIGN BASE SHEAR, V = 40 KIPS
  - 4. WET WELL:
    - a. BASIC SEISMIC FORCE RESISTING SYSTEM: TYPE 1.1 FIXED BASE RECTANGULAR CONCRETE WALLS PER ACI 350.3
    - b. RESPONSE MODIFICATION FACTOR, Ri = 3.0
    - c. RESPONSE MODIFICATION FACTOR, Rc = 1.0
    - d. ANALYSIS PROCEDURE: ACI 350.3
    - e. SEISMIC RESPONSE COEFFICIENT, Cs = 0.0767
    - f. DESIGN BASE SHEAR, V = 90 KIPS
- E. SNOW LOAD:
  - 1. GROUND SNOW LOAD = 0 PSF

G5. GEOTECHNICAL
THE FOLLOWING NON–CONTRACTUAL GEOTECHNICAL REPORT WAS DEVELOPED FOR THIS PROJECT AND IS THE BASIS OF THIS STRUCTURAL DESIGN:
GEOTECHNICAL FIRM NAME: NINYO & MOORE
ADDRESS: 3202 EAST HARBOUR DRIVE, PHOENIX, AZ 85034
REPORT NUMBER: 606504001
- A. NET ALLOWABLE SOIL BEARING FOR SPREAD FOOTINGS = 3,000 PSF
- B. NET ALLOWABLE SOIL BEARING FOR MAT FOUNDATIONS = 2,500 PSF
- C. ACTIVE LATERAL EARTH PRESSURE (DRAINED/UNDRAINED) = 40 PCF/82 PCF
- D. AT–REST LATERAL EARTH PRESSURE (DRAINED/UNDRAINED) = 60 PCF/92 PCF
- E. PASSIVE LATERAL EARTH PRESSURE = 360 PCF
- F. SUBGRADE MODULUS FOR MAT FOUNDATION/SLAB–ON–GRADE = 200 PCI
- G. COEFFICIENT OF FRICTION = 0.45

G6. SAFETY
SAFETY AND STRUCTURE STABILITY DURING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. STRUCTURES HAVE BEEN DESIGNED TO RESIST THE DESIGN LIVE LOADS ONLY AS A COMPLETED STRUCTURE.

G7. SPECIAL INSPECTIONS
SPECIAL INSPECTIONS ARE REQUIRED IN ACCORDANCE WITH CHAPTER 1 AND CHAPTER 17 OF THE IBC. PAYMENT FOR THESE INSPECTIONS IS NOT THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE FOR FULL ACCESS TO THE WORK BY THE SPECIAL INSPECTOR AND SHALL PROVIDE FOR THESE INSPECTIONS IN THE CONSTRUCTION SCHEDULE IN ACCORDANCE WITH THE SPECIFICATIONS. A STATEMENT OF CONTRACTOR RESPONSIBILITY WILL BE SUBMITTED PRIOR TO ANY WORK THAT REQUIRES SPECIAL INSPECTION, AS REQUIRED BY SECTION 1704 OF THE IBC 2018. SEE NOTE 4 ON SHEET S–02. SPECIAL INSPECTIONS ARE REQUIRED FOR THE ITEMS AS SHOWN IN THE SCHEDULE ON SHEET S–02. FOR ADDITIONAL INFORMATION AND STATEMENT OF SPECIAL INSPECTION, SEE SPECIFICATION SECTION 01 45 33.

GENERAL (CONTINUED)

G8. STANDARD DETAILS
THE STANDARD DETAILS DEPICT TYPICAL DETAILING TO BE USED ON THIS PROJECT. IF CONDITIONS ARE NOT EXPLICITLY SHOWN ON THE DRAWINGS, THEY SHALL BE MADE SIMILAR TO THE STANDARD DETAILS. OBTAIN APPROVAL OF ENGINEER IN WRITING FOR SIMILAR CONDITIONS PRIOR TO CONSTRUCTION.

G9. EXISTING CONSTRUCTION
THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS OF EXISTING CONSTRUCTION AS REQUIRED TO COORDINATE NEW CONSTRUCTION.

G10. CONFLICTS
IN CASES WHERE CONFLICTS OCCUR BETWEEN THE DRAWINGS OR BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE MOST STRINGENT REQUIREMENTS SHALL CONTROL FOR BID PURPOSES. SUBMIT QUESTIONS IN WRITING TO ENGINEER FOR CLARIFICATION PRIOR TO CONSTRUCTION.

G11. DIMENSIONS
STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

G12. OPENINGS
OPENINGS FOR PIPES, DUCTS, CONDUITS, ETC. ARE NOT ALL SHOWN ON THE STRUCTURAL DRAWINGS. COORDINATE AND PROVIDE OPENINGS AS REQUIRED TO ACCOMMODATE ALL WORK SHOWN OR SPECIFIED IN THE CONTRACT DOCUMENTS AND OTHERWISE REQUIRED FOR THE FURNISHING OF A FUNCTIONALLY COMPLETE PROJECT. REINFORCE AROUND OPENINGS PER STANDARD STRUCTURAL DETAILS UNLESS OTHERWISE SHOWN.

G13. CONSTRUCTION JOINTS
UNLESS SHOWN ON THE STRUCTURAL DRAWINGS, LOCATION OF ALL CONSTRUCTION JOINTS SHALL HAVE THE APPROVAL OF THE ENGINEER. SEE NOTE C11 ON THIS SHEET FOR ADDITIONAL INFORMATION.

G14. PROVISIONS FOR EQUIPMENT
MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES, AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS BUT REQUIRED BY OTHER CONTRACT DOCUMENTS SHALL BE PROVIDED PRIOR TO CASTING CONCRETE.

G15. EQUIPMENT
CONTRACTOR TO SUBMIT FOR REVIEW ALL EQUIPMENT SIZES, OPERATING WEIGHTS, VIBRATION FORCES, SUPPORT LOCATIONS, ALONG WITH ANY FLOOR OPENINGS, NOTCHES, AND RECESSES REQUIRED BY SUCH EQUIPMENT. CONCRETE SUPPORT PADS AND/OR FRAMING REQUIRED TO SUPPORT SAID EQUIPMENT SHALL NOT BE FABRICATED AND PLACED UNTIL THE CONCRETE SUPPORT PADS AND/OR FRAMING IS APPROVED TO SUPPORT THE EQUIPMENT.

G16. CONTRACTOR DESIGNED ELEMENTS
WHEN THE SPECIFICATIONS REQUIRE STRUCTURAL CALCULATIONS BY THE CONTRACTOR AND THE ELEMENT IS SHOWN ON THE STRUCTURAL DRAWINGS, THE DRAWINGS DEPICT THE MINIMUM LEVEL OF QUALITY REQUIRED. IF THE CONTRACTOR'S CALCULATIONS INDICATE A MORE STRINGENT REQUIREMENT, IT SHALL BE PROVIDED AS SUCH AT NO ADDITIONAL COST TO THE OWNER. PROVIDE AT LEAST THE MINIMUM LEVEL OF QUALITY SHOWN ON THE DRAWINGS.

CONCRETE

C1. DESIGN STRENGTHS:
f'c = 4,000 PSI, TYPE 1 UNO
REINFORCING fy = 60,000 PSI

C2. CONCRETE COVER
UNLESS NOTED OTHERWISE OR SHOWN, PROVIDE CONCRETE COVER FOR REINFORCING AS FOLLOWS:
CONCRETE DEPOSITED AGAINST EARTH: 3 IN
ALL OTHER: 2 IN

C3. ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE ACI MANUAL OF STANDARD PRACTICE. SEE SPECIFICATIONS FOR ADDITIONAL REINFORCING PLACEMENT REQUIREMENTS.

C4. REFER TO OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION FOR EMBEDDED ITEMS AND PENETRATIONS NOT SHOWN ON STRUCTURAL DRAWINGS AND AS REQUIRED TO ACCOMMODATE ALL WORK SHOWN OR SPECIFIED IN THE CONTRACT DOCUMENTS AND OTHERWISE REQUIRED FOR THE FURNISHING OF A FUNCTIONALLY COMPLETE PROJECT. REINFORCE AROUND OPENINGS PER STANDARD STRUCTURAL DETAILS UNLESS OTHERWISE SHOWN.

C5. PLACE CONCRETE IN CONTINUOUS OPERATION WITHIN PLANNED JOINTS OR SECTIONS IN ACCORDANCE WITH ACI 304, 304R, AND ACI 304.2R.

C6. PROVIDE 3/4 IN CHAMFERS AT ALL EXPOSED EDGES. NOT ALL CHAMFERS MAY BE SHOWN ON DRAWINGS.

C7. FIELD ADJUST REINFORCING AT OPENINGS AND EMBEDDED ITEMS AS INDICATED.

C8. ANCHOR BOLTS NOT SPECIFIED BY ENGINEER SHALL BE DESIGNED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER, RETAINED BY THE CONTRACTOR, IN ACCORDANCE WITH APPLICABLE PROJECT AND CODE REQUIREMENTS. SUBMIT AS A SHOP DRAWING FOR REVIEW AND APPROVAL BY THE ENGINEER. COORDINATE LOCATION, SIZE AND EMBEDMENT PRIOR TO CASTING CONCRETE.

C9. CONTINUOUS WATERSTOP SHALL BE INSTALLED IN JOINTS SUBJECT TO STATIC WATER PRESSURE AND WHERE SHOWN ON THE DRAWINGS. PROVIDE PREFABRICATED JOINTS, CORNERS, AND INTERSECTIONS PER STANDARD DETAILS.

C10. ABSOLUTELY NO WELDING OF REINFORCING BARS OR TORCHING TO BEND REINFORCING BARS SHALL BE ALLOWED WITHOUT SPECIFIC APPROVAL FROM THE STRUCTURAL ENGINEER.

C11. CONTRACTOR SHALL SUBMIT A CONCRETE PLACEMENT PLAN PER SPECIFICATION SECTION 03 15 16 IDENTIFYING JOINT TYPES, JOINT LOCATIONS AND CONCRETE PLACEMENT SEQUENCE.

C12. ALL CAST IN PLACE AND POST–INSTALLED ANCHORS INDICATED IN THE STRUCTURAL DOCUMENTS SHALL COMPLY WITH CHAPTER 17 OF ACI 318 AND CHAPTER 19 OF THE IBC. ALL EXPANSION AND ADHESIVE ANCHORS SHALL HAVE AN ICC REPORT SHOWING EQUIVALENT LOAD CAPACITY. SUBMIT AND INSTALL PER THE ICC EVALUATION REPORT.

MASONRY NOTES:

M1. MASONRY CONSTRUCTION SHALL CONFORM TO CHAPTER 21 OF THE 2018 IBC. QUALITY ASSURANCE SHALL BE LEVEL 2 PER TMS 402/602, TABLE 3 AND TABLE 4.

M2. DESIGN STRENGTHS:
MINIMUM COMPRESSIVE STRENGTH OF CMU = 2000 PSI
MORTAR MINIMUM COMPRESSIVE STRENGTH = 2000 PSI
GROUT MINIMUM COMPRESSIVE STRENGTH = 2000 PSI

F'm= 2000 PSI
Fy = 60,000 PSI

M3. GROUT FOR FILLING MASONRY CAVITIES TO BE COARSE GROUT UNO, MAXIMUM COARSE AGGREGATE SIZE IS 3/8 INCH.

M4. GROUT POURS SHALL NOT EXCEED 4 FEET IN HEIGHT UNLESS CLEANOUTS ARE PROVIDED IN THE BOTTOM COURSE OF THE CELL(S) TO BE GROUTED AND WRITTEN PERMISSION IS OBTAINED FOR HIGH LIFT GROUTING.

M5. REINFORCING STEEL:
ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60, DEFORMED.

M6. LAP SPLICES:
LAP SPLICES OF MASONRY REINFORCING SHALL BE PER STANDARD DETAILS.

M7. RESTRICTED BAR ANCHORAGE:
IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS FAR AS REQUIRED, THE BARS SHALL EXTEND AS FAR AS POSSIBLE AND END IN A STANDARD HOOK. SHOW ON SHOP DRAWINGS AND HIGHLIGHT WITH A BOX TO BRING TO ENGINEER'S ATTENTION.

M8. ANCHOR BOLTS:
ALL MECHANICAL AND ADHESIVE ANCHORS SHALL HAVE AN ICC REPORT SHOWING EQUIVALENT LOAD CAPACITY. SUBMIT AND INSTALL PER THE ICC EVALUATION REPORT.

M9. IF BOND BEAMS AT INTERSECTING WALLS ARE SHOWN ON THE DRAWINGS TO MEET AT DIFFERENT ELEVATIONS, EXTEND REINFORCING OF BOTH BOND BEAMS AROUND INTERSECTING CORNER NOT LESS THAN 4 FEET IN EACH DIRECTION.

M10. LINTEL BLOCKS SHALL NOT BE USED AS BOND BEAM BLOCKS EXCEPT AT OPENINGS WHERE BOND BEAMS AND LINTELS COINCIDE.

M11. GROUT PLACEMENT SHALL CONFORM WITH THE REQUIREMENTS OF CHAPTER 21 OF THE 2018 IBC.

M12. ALL CORNERS, INTERSECTIONS, AND ANGLED WALLS SHALL BE TIED TOGETHER WITH REINFORCING STEEL AND GROUTED SOLID.

M13. GROUT WALL SOLID BELOW GRADE AND AT ALL CELLS CONTAINING REINFORCING.

M14. MORTAR COLOR TO MATCH COLOR OF CMU BLOCK.

STEEL

S1. DESIGN STRENGTHS:
WIDE FLANGE AND TEES: Fy = 50 KSI
PIPE Fy = 35 KSI
STAINLESS STEEL Fy = 33 KSI
HSS SECTIONS Fy = 46 KSI
ALL OTHER PLATES AND SHAPES: Fy = 36 KSI

S2. DIMENSIONS:
TO CENTERLINES OF COLUMNS AND BEAMS, TOP SURFACES OF BEAMS AND TUBES AND BACKS OF CHANNELS AND ANGLES UNO.

S3. ELEVATIONS:
TOP OF STEEL REFERS TO TOP SURFACE OF MEMBER OR FLANGE UNO.

S4. WHEN FILLET WELD SIZE IS NOT INDICATED, PROVIDE MAXIMUM WELD SIZE BASED ON MATERIAL THICKNESS IN ACCORDANCE WITH AISC SPECIFICATIONS.

S5. ALL BOLTED STRUCTURAL CONNECTIONS ARE BEARING TYPE CONNECTIONS, UNO. BOLTED CONNECTIONS SHALL BE MADE USING ASTM F3125 GRADE A325 GALVANIZED BOLTS, UNO.

S6. CONFORM TO AISC 360, STEEL CONSTRUCTION MANUAL AND AISC 341, SEISMIC DESIGN MANUAL.

S7. ALL STEEL, BOLTS, PLATES, SHAPES, AND CONNECTION ASSEMBLIES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SPECIFICATION. NO FIELD WELDING ALLOWED UNLESS EXPLICITLY NOTED ON DRAWINGS OR APPROVED BY THE ENGINEER.

STEEL DECK

SD1. THE DESIGN, FABRICATION, AND ERECTION OF METAL DECKING SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE SDI SPECIFICATIONS AND THE SDI DIAPHRAGM MANUAL.

SD2. STEEL ROOF DECK IS AS SHOWN ON THE PLANS AND SHALL BE DESIGNED FOR THE DEAD AND LIVE LOADS INDICATED ON THE DRAWINGS.

SD3. STEEL ROOF DECK IS TO BE A STRUCTURAL DIAPHRAGM AND SHALL BE CONNECTED TO THE STRUCTURE AS INDICATED IN THE SPECIFICATIONS.

SD4. THE DRAWINGS INDICATE DECK SPAN DIRECTION.

SD5. SUSPENDED CEILINGS, LIGHT FIXTURES, DUCTS, AND OTHER UTILITIES SHALL NOT BE SUPPORTED FROM THE STEEL DECK.

SD6. SPECIAL INSPECTIONS FOR STEEL ROOF DECK SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF SDI QA/QC.

STEEL JOISTS

SJ1. STEEL JOIST DESIGN, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR OPEN WEB STEEL JOIST BY THE STEEL JOIST INSTITUTE.

SJ2. STEEL JOISTS DEPTH AND TYPE AS SHOWN ON THE DRAWINGS AND SHALL BE DESIGNED FOR THE LOADINGS INDICATED ON THE DRAWINGS BY THE MANUFACTURER'S PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF ARIZONA WHOSE SEALED CALCULATIONS AND DRAWINGS SHALL BE SUBMITTED AND APPROVED PRIOR TO MANUFACTURE.

SJ3. STEEL JOISTS AND BRIDGING SHALL BE DESIGNED BY THE MANUFACTURER'S PROFESSIONAL ENGINEER TO RESIST THE LOADS INDICATED ON THE DRAWINGS.

SJ4. CONCENTRATED LOADS SHALL BE LOCATED WITHIN 4 INCHES OF A PANEL POINT OR SPECIAL REINFORCEMENT MUST BE ADDED PER STANDARD DETAILS.

SJ5. JOIST BRIDGING SHALL BE DESIGNED BY THE STEEL JOIST MANUFACTURER.

SJ6. ADJUST JOIST BRIDGING DESIGN AND DETAILING WHERE MECHANICAL DUCTS OR OTHER OBSTRUCTIONS RUN BETWEEN THE JOISTS. SEE STANDARD DETAILS.

SJ7. AT COMPLETION OF MANUFACTURE, THE STEEL JOISTS MANUFACTURER SHALL SUBMIT A CERTIFICATE OF COMPLIANCE PER SECTION 2207.5 OF THE 2018 IBC.

POST INSTALLED ANCHORS

PA1. POST–INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONTRACT DRAWINGS OR WHERE APPROVED IN WRITING BY THE ENGINEER. ALL ANCHOR INSTALLATIONS, INCLUDING CAST–IN–PLACE ANCHORS REQUIRE SPECIAL INSPECTION PER THE 2018 IBC AND PER THIS PROJECT'S REQUIREMENTS.

PA2. CARE SHALL BE TAKEN IN PLACING POST–INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REINFORCING. HOLES SHALL BE DRILLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) AND ICC REPORTS.

PA3. SPECIAL INSPECTION SHALL BE PROVIDED BY THE OWNER OR HIS DESIGNATED REPRESENTATIVE FOR ALL CAST–IN–PLACE, ADHESIVE AND MECHANICAL ANCHOR INSTALLATIONS AS REQUIRED BY THE BUILDING CODE AND ICC REPORTS. INDEPENDENT ON–SITE PROOF LOAD TESTING, PAID FOR BY THE CONTRACTOR, SHALL BE PERFORMED IN THE PRESENCE OF THE SPECIAL INSPECTOR FOR ALL ANCHORS INSTALLED WITHOUT THE REQUIRED LEVEL OF SPECIAL INSPECTION.

PA4. SUBSTITUTION REQUESTS, FOR PRODUCTS OTHER THAN THOSE SPECIFIED, SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER ALONG WITH CALCULATIONS THAT ARE PREPARED AND SEALED BY AN ARIZONA REGISTERED PROFESSIONAL ENGINEER. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERTINENT EQUIVALENT PERFORMANCE VALUES (MINIMUM) OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE BUILDING CODE. PRODUCT ICC–ES REPORTS SHALL BE INCLUDED WITH THE SUBMITTAL PACKAGE.

PA5. UNLESS NOTED OTHERWISE ON PLANS, ACCEPTABLE POST–INSTALLED CONCRETE ANCHOR PRODUCTS SHALL BE ADHESIVE ANCHORS FOR USE IN CRACKED CONCRETE AND SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC–ES AC308. SEE SPECIFICATION SECTION 03 15 19 FOR LIST OF APPROVED ADHESIVE ANCHORS.

DEFERRED SUBMITTALS:

DS1. 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.

DS2. THE FOLLOWING IS A LIST OF DEFERRED SUBMITTALS PER IBC SECTION 107.3.4.1 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 FILED BY THE CONTRACTOR AND ACKNOWLEDGED AS ACCEPTED BY THE PERMITTING AGENCY PRIOR TO INSTALLATION OF THESE ITEMS.

DEFERRED SUBMITTALS

SPECIFICATION SECTION	ITEM
05 21 00	STEEL JOISTS
05 30 00.15	METAL DECKING ROOF
05 50 00	MISCELLANEOUS METAL FABRICATIONS
05 52 00.15	METAL RAILINGS ALUMINUM
06 74 13	FIBERGLASS REINFORCED PLASTIC GRATINGS, HANDRAILS, AND RAILINGS
OTHER	ROOF MOUNTED MECHANICAL EQUIPMENT SCREENWALL. SEE ARCHITECTURAL DRAWINGS FOR BASIS OF DESIGN.
	ANY EQUIPMENT OR COMPONENT IN WHICH A TECHNICAL SPECIFICATION REQUIRES SUBMITTAL OF EQUIPMENT OR ANCHORAGE SYSTEM CALCULATIONS

FACILITY DRAWINGS
This drawing was supplied by a Consultant Engineer from a past construction project. The original construction drawing was modified based on information provided by the Contractor to provide the Record Drawing. The City does not warrant this drawing to be a complete and accurate portrayal of facilities as they exist in the field.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

USER:RWRIGHT FILE: C:\Users\rwright\AppData\Local\Temp\AcPublish_16400\CSSLS40A01.dwg DATE:8/28/24 TIME:04:22pm

HDR

CERTIFICATE NO. 62528
RYAN O. WRIGHT

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	RW	01/2024	TH	90% SUBMITTAL
B	RW	04/2024	TH	AGENCY REVIEW
C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

GENERAL STRUCTURAL NOTES

CITY PROJECT NO. WS90400085
DATE: 08/2024
S–01 SHEET 57 OF 134
CAD FILE: CSSLS40A01.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

SCHEDULE OF SPECIAL INSPECTION SERVICES

INSPECTION ITEM REQUIRED	FREQUENCY		CODE REFERENCE
	CONTINUOUS*	PERIODIC	
GENERAL STRUCTURAL OBSERVATIONS			
CONDUCT VISUAL OBSERVATION OF THE STRUCTURAL SYSTEMS FOR GENERAL CONFORMANCE TO THE CONSTRUCTION DOCUMENTS. PREPARE WEEKLY REPORT OF OBSERVATIONS DESCRIBING WORK PROGRESS AND NON-CONFORMING ITEMS.	–	X	IBC 1704.2.4
STRUCTURAL STEEL			
VERIFY FABRICATOR CERTIFICATION	–	X	
MATERIAL VERIFICATION OF BOLTS, NUTS, AND WASHERS: IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS. VERIFY ALL ARE GALVANIZED.	–	X	APPLICABLE ASTM MATERIAL STANDARDS
MATERIAL VERIFICATION OF BOLTS, NUTS, AND WASHERS: MANUFACTURER'S CERTIFICATE OF COMPLIANCE.	–	X	AISC 360 SECTION N5
INSPECTION OF BOLTING: SNUG-TIGHT JOINTS.	–	X	
INSTALLATION OF NEW BOLT HOLES IN EXISTING STRUCTURAL STEEL ROOF FRAMING MEMBERS: VERIFICATION OF SIZE AND LOCATION OF HOLES AND INSPECTION OF TOUCH-UP AS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	–	X	
INSPECTION OF WELDING; FILLET WELDS < OR = 5/16"	–	X	
INSPECTION OF WELDING CJP WELDS.	X	–	
OPEN-WEB STEEL JOISTS AND JOISTS GIRDERS			
1. INSTALLATION OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS			
a. END CONNECTIONS – WELDING OR BOLTED.	–	X	SJI SPECIFICATIONS LISTED IN SECTION 2207.1 OF THE IBC
b. BRIDGING – HORIZONTAL OR DIAGONAL.	–	–	
2. STANDARD BRIDGING.	–	X	SJI SPECIFICATIONS LISTED IN SECTION 2207.1 OF THE IBC
3. BRIDGING THAT DIFFERS FROM THE SJI SPECIFICATIONS LISTED IN SECTION 2207.1 OF THE IBC.	–	X	
CONCRETE AND REINFORCING STEEL			IBC TABLE 1705.3
INSPECTION OF REINFORCING STEEL AND PLACEMENT.	–	X	ACI 318: CH 20, 25.2, 25.3, 26.6.1–26.6.3
INSPECTION OF ANCHORS INSTALLED IN HARDENED CONCRETE.	X	–	ACI 318: 17.8.2
VERIFYING USE OF REQUIRED DESIGN MIX.	–	X	ACI 318: CH 19, 26.4.3, 26.4.4
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.	X	–	ASTM C172, ASTM C31, ACI 318: 26.5, 26.12
INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	–	X	ACI 318: 26.5.3–26.5.5
INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMS.	–	X	ACI 318: 26.11.1.2(b)
DURING THE REPAIR OF SURFACE DEFECTS IN THE EXISTING CONCRETE SURFACES, VERIFY REPAIR TECHNIQUE WITH APPROVED REPAIR PROCESS AND PROVIDE ALL INSPECTIONS THAT ARE REQUIRED FOR NEW INSTALLATION.	X	–	IBC 110.3.9
MASONRY CONSTRUCTION (LEVEL 2)			TMS 602 TABLE 3 AND TABLE 4
MINIMUM VERIFICATION			
PRIOR TO CONSTRUCTION, VERIFY CERTIFICATES OF COMPLIANCE USED IN MASONRY CONSTRUCTION.	–	–	
PRIOR TO CONSTRUCTION, VERIFICATION OF f'm, EXCEPT WHERE SPECIFICALLY EXEMPTED BY THE CODE.	–	–	ARTICLE 1.4B
PRIOR TO CONSTRUCTION, VERIFICATION OF COMPLIANCE OF APPROVED SUBMITTALS.	–	–	ARTICLE 1.5
MINIMUM TESTS			
1. AS MASONRY CONSTRUCTION BEGINS, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:			
a. PROPORTIONS OF SITE-PREPARED MORTAR	–	X	TMS 602 ARTICLE 2.1, 2.6A, 2.6C
b. GRADE, TYPE, AND SIZE OF REINFORCEMENT, CONNECTORS, AND ANCHORAGES	–	X	TMS 602 ARTICLE 3.4, 3.6A
2. PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:			
a. GROUT SPACE	–	X	TMS 602 ARTICLE 3.2D, 3.2F
b. PLACEMENT OF REINFORCEMENT, CONNECTORS AND ANCHOR BOLTS	–	X	TMS 602 ARTICLE 3.2E, 3.4
c. PROPORTIONS OF SITE-PREPARED GROUT	–	X	TMS 602 ARTICLE 2.6B, 2.4G.1b

SCHEDULE OF SPECIAL INSPECTION SERVICES

INSPECTION ITEM REQUIRED	FREQUENCY		CODE REFERENCE
	CONTINUOUS*	PERIODIC	
MASONRY CONSTRUCTION (CONT)			
3. VERIFY DURING CONSTRUCTION:			
a. MATERIALS AND PROCEDURES WITH THE APPROVED SUBMITTALS.			TMS 602 ARTICLE 1.5
b. PLACEMENT OF MASONRY UNITS AND MORTAR JOINT CONSTRUCTION.	–	X	TMS 602 ARTICLE 3.3B
c. SIZE AND LOCATION OF STRUCTURAL ELEMENTS	–	X	TMS 602 ARTICLE 3.3F
d. TYPE, SIZE, AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION	–	X	TMS 402 SECTIONS 1.2.1(e), 6.2.1, 6.3.1
e. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40° F) OR HOT WEATHER (TEMPERATURE BELOW 90° F)	–	X	TMS 602 ARTICLE 1.8C, 1.8D
f. PLACEMENT OF GROUT	X	–	TMS 602 ARTICLE 3.5, 3.6C
4. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISM	–	X	TMS 602 ARTICLE 1.4B
SOIL & EARTHWORK			
VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	–	X	IBC TABLE 1705.6
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	–	X	
PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	–	X	
VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	–	
PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	–	X	

TESTING AND INSPECTION FOR QUALITY ASSURANCE:

1. THE BUILDING CODE (2018 IBC WITH CITY OF PHOENIX AMENDMENTS) SECTION 1704 REQUIRES THAT QUALIFIED SPECIAL INSPECTORS, WHO ARE CONTRACTUALLY INDEPENDENT OF THE CONTRACTOR AND ARE APPROVED BY BUILDING OFFICIAL, PERFORM ALL SPECIAL INSPECTION DUTIES AND RESPONSIBILITIES AS REQUIRED BY THE BUILDING CODE.

2. THE FOLLOWING SCHEDULE CONTAINS A LIST OF SPECIAL INSPECTION ACTIVITIES RELATED TO THE QUALITY ASSURANCE PLAN REQUIRED BY THE BUILDING CODE (CHAPTER 17) FOR THE FABRICATION, ERECTION AND CONSTRUCTION OF THE STRUCTURAL SYSTEMS AS SHOWN ON THE CONTRACT DOCUMENTS FOR THE PROJECT. ALL INSPECTORS SHALL BE QUALIFIED BY TRAINING AND EXPERIENCE FOR THE REQUIRED INSPECTIONS AND TEST PROCEDURES. REFER TO BUILDING CODE CHAPTER 17 "STRUCTURAL TESTS AND SPECIAL INSPECTIONS" FOR SPECIFIC TEST PROCEDURES.

3. TESTING AND INSPECTION REPORTS SHALL BE PREPARED FOR EACH INSPECTION ITEM ON A DAILY BASIS WHENEVER WORK IS PERFORMED ON THAT ITEM. REPORTS SHALL BE DISTRIBUTED TO THE OWNER, CONTRACTOR, MARICOPA COUNTY (IF REQUESTED), AND THE ENGINEER FOR THEIR REVIEW, COMMENT, AND ACTION, AS NEEDED.

4. THE CONTRACTOR SHALL SUBMIT A STATEMENT OF RESPONSIBILITY CONTAINING THE FOLLOWING:
   - a. ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.
   - b. ACKNOWLEDGEMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL.
   - c. PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND THE DISTRIBUTION OF THE REPORTS.
   - d. IDENTIFICATION AND QUALIFICATIONS OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION.

FACILITY DRAWINGS
This drawing was supplied by a Consultant Engineer from a past construction project. The original construction drawing was modified based on information provided by the Contractor to provide the Record Drawing. The City does not warranty this drawing to be a complete and accurate portrayal of facilities as they exist in the field.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

HDR

62528
RYAN O. WRIGHT

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
A	RW	01/2024	TH	90% SUBMITTAL
B	RW	04/2024	TH	AGENCY REVIEW
C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

SPECIAL INSPECTION SCHEDULE

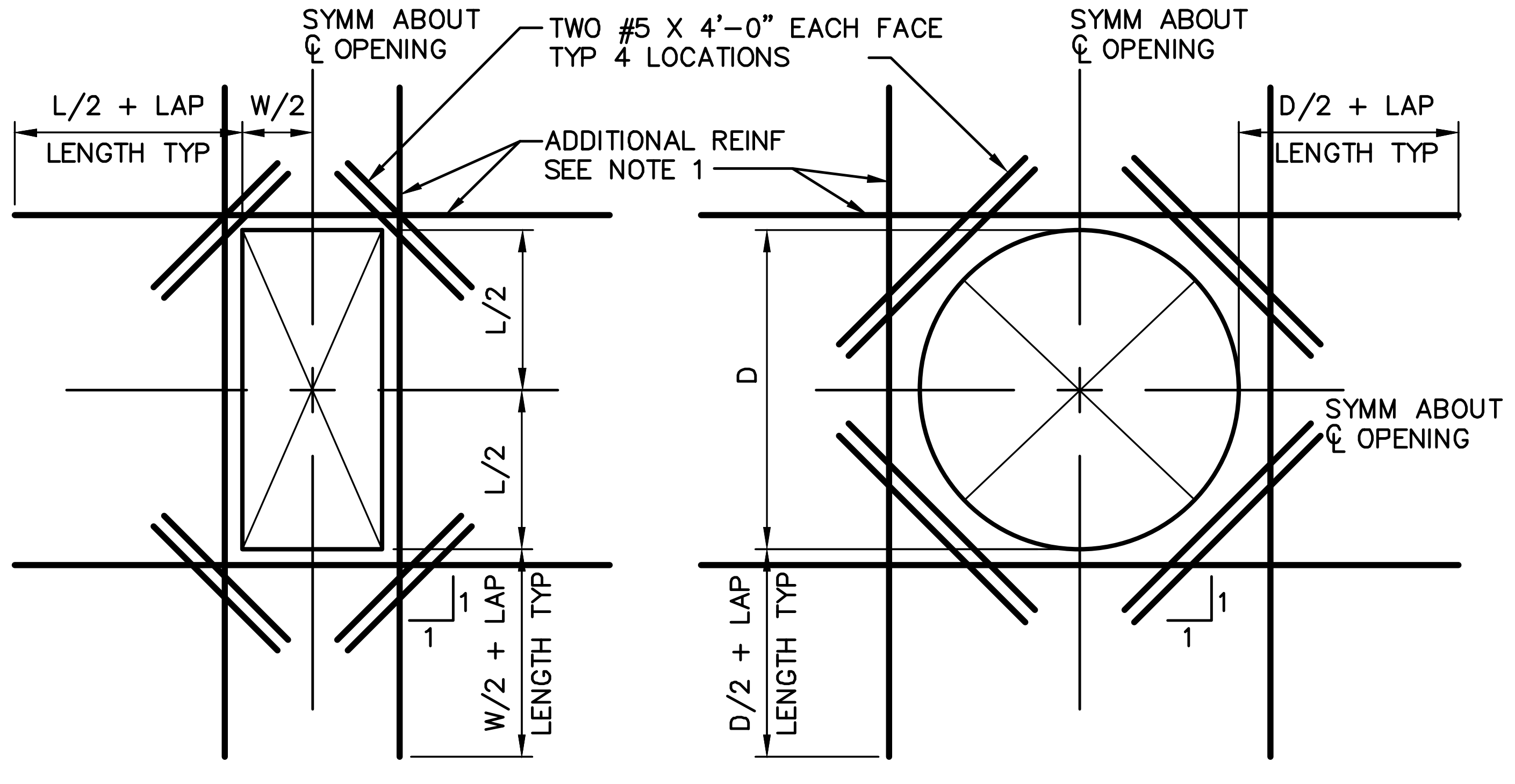
CITY PROJECT NO. WS90400085
DATE: 08/2024
S-02 SHEET 58 OF 134
CAD FILE: CSSLS40A02.dwg

USER: RWRIGHT FILE: C:\pwworking\west01\d3411632\CSSLS40A02.dwg DATE: 8/28/24 TIME: 04:28pm

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE.
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHER'S EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.


L/2 + LAP
LENGTH TYP
W/2
SYMM ABOUT
℄ OPENING
TWO #5 X 4'–0" EACH FACE
TYP 4 LOCATIONS
ADDITIONAL REINF
SEE NOTE 1
SYMM ABOUT
℄ OPENING
D/2 + LAP
LENGTH TYP
L/2
L/2
D
1
1
W/2 + LAP
LENGTH TYP
D/2 + LAP
LENGTH TYP
SYMM ABOUT
℄ OPENING

RECTANGULAR OPENING DETAIL **CIRCULAR OPENING DETAIL**

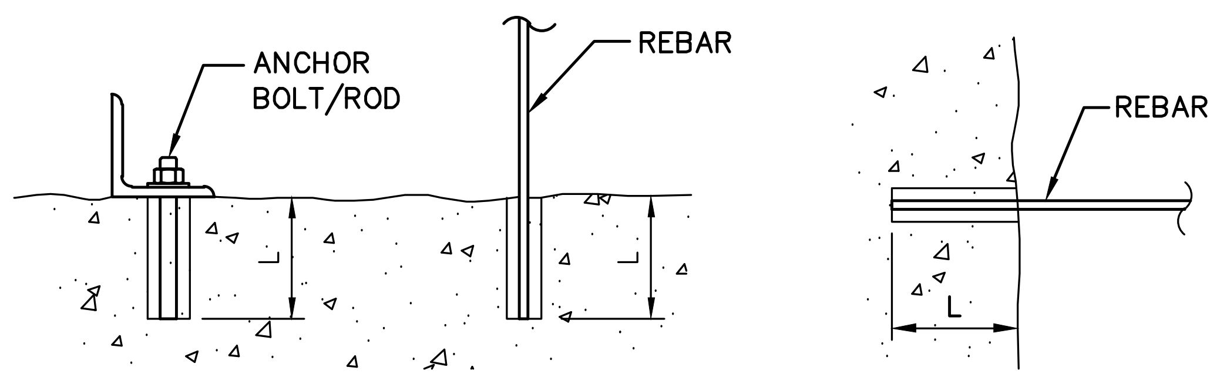
NOTES:

1. PROVIDE ADDITIONAL REINFORCING THE SAME SIZE AS DISCONTINUOUS REINFORCEMENT AT OPENING. QUANTITY OF REINFORCING IN EACH DIRECTION SHALL BE EQUAL TO OR ONE GREATER THAN THE NUMBER OF DISCONTINUOUS BARS. PLACE 1/2 OF ADDITIONAL REINFORCING BARS EACH SIDE OF OPENING, PLACE ADDITIONAL REINFORCEMENT AT 3" OC (TYPICAL BOTH DIRECTIONS AND ALL LAYERS OF REINFORCEMENT). START FIRST BAR 2" CLEAR TO OPENING.
2. EXTEND ADDITIONAL REINFORCING BEYOND EDGE OF OPENING AS SHOWN ABOVE. ADDITIONAL BARS MAY TERMINATE AT THE END OF THE WALL WITH A STANDARD HOOK WHERE THE LENGTH OF THE WALL WILL NOT PERMIT BARS TO EXTEND AS SHOWN ABOVE.
3. TYPICAL WALL OR SLAB REINFORCING NOT SHOWN FOR CLARITY. TERMINATE TYPICAL REINFORCING 2" CLEAR TO OPENING.
4. WHEN SLAB OR WALL REINFORCEMENT SPACING EXCEEDS OPENING SIZE, NO EXTRA REINFORCING ARE REQUIRED UNLESS SHOWN OTHERWISE.
5. UNLESS SHOWN OTHERWISE ON DRAWINGS, PROVIDE EXTRA REINFORCING AROUND OPENINGS AS SHOWN AND INDICATED ABOVE.
6. PROVIDE ADDITIONAL DOWELS PER NOTE 1 ABOVE FOR ALL OPENINGS NEAR THE FLOOR SLAB, BASE SLAB, OR CORNERS.
7. WHEN EDGES OF OPENINGS ARE FRAMED BY CONCRETE BEAMS, ONLY THE ADDITIONAL DIAGONAL BARS ARE REQUIRED.

EXTRA REINFORCING AROUND OPENINGS

1
–|–

SCALE: NTS


ANCHOR
BOLT/ROD
REBAR
L
L
REBAR
L

VERTICAL APPLICATION **HORIZONTAL APPLICATION**

ADHESIVE ANCHOR SCHEDULE			
REINFORCING BARS		ANCHOR BOLTS/RODS	
BAR SIZE	EMBED LENGTH (L)	DIA (IN)	EMBED LENGTH (L)
#4	5"	1/2"	6"
#5	6"	5/8"	7"
#6	7"	3/4"	8"
#7	8"	7/8"	9"
#8	9"	1"	10"

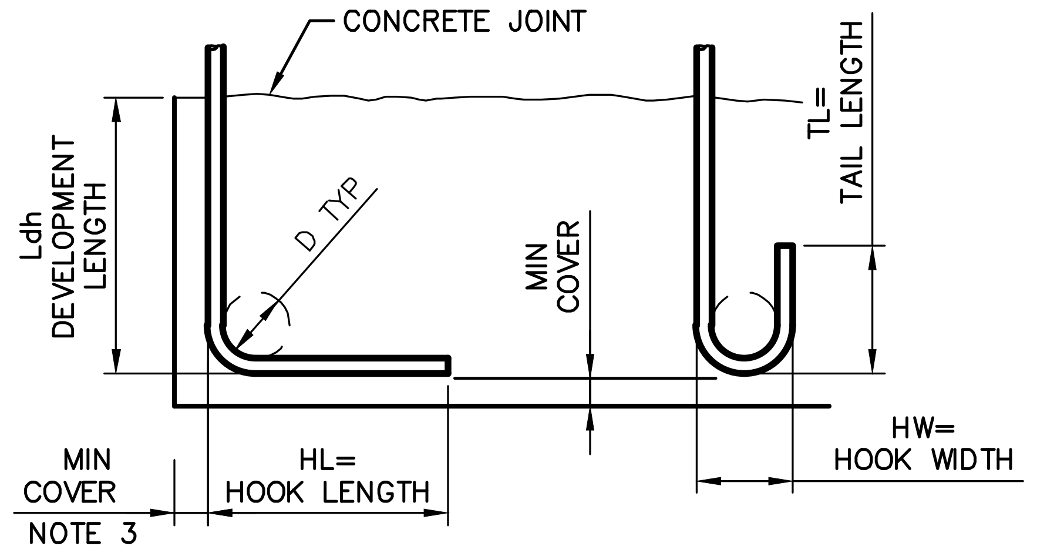
NOTES:

1. ADHESIVE SHALL BE PER SPECIFICATION SECTION 03 15 19.
2. EMBEDMENT LENGTHS SHOWN ARE MINIMUM. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION.
3. DO NOT USE ADHESIVE ANCHORS FOR UPWARDLY INCLINED APPLICATIONS.
4. EMBED LENGTHS SHOWN REFLECT CRACKED CONCRETE, SEISMIC LOADING CONDITION USING HY–200–R ADHESIVE. FOR ADHESIVE WITH A LOWER BOND STRENGTH, CONSULT ENGINEER FOR ALTERNATE EMBEDMENT.
5. CONSULT ENGINEER FOR ANCHORS WITH LESS THAN 1.5L OF EDGE DISTANCE.

ADHESIVE ANCHOR DETAILS AND SCHEDULE

2
–|–

SCALE: NTS


CONCRETE JOINT
Ldh
DEVELOPMENT
LENGTH
D TYP
MIN
COVER
TL=
TAIL LENGTH
MIN
COVER
NOTE 3
HL=
HOOK LENGTH
HW=
HOOK WIDTH

90 DEG STD HOOK **180 DEG STD HOOK**

HOOK DEVELOPMENT LENGTHS f'c=4.0 ksi fy=60 ksi					
BAR SIZE	HL	HW	TL	D	Ldh
#3	6"	3"	3"	2 1/4"	6"
#4	8"	4"	4 1/2"	3"	7"
#5	10"	5"	5"	3 3/4"	9"
#6	1'–0"	6"	6"	4 1/2"	10"
#7	1'–2"	7"	7"	5 1/4"	12"
#8	1'–4"	8"	8"	6"	14"
#9	1'–7"	11 3/4"	10 1/2"	9 1/2"	15"
#10	1'–10"	1'–1 1/4"	11 1/2"	10 3/4"	17"
#11	2'–0"	1'–2 3/4"	1'–1"	12"	19"

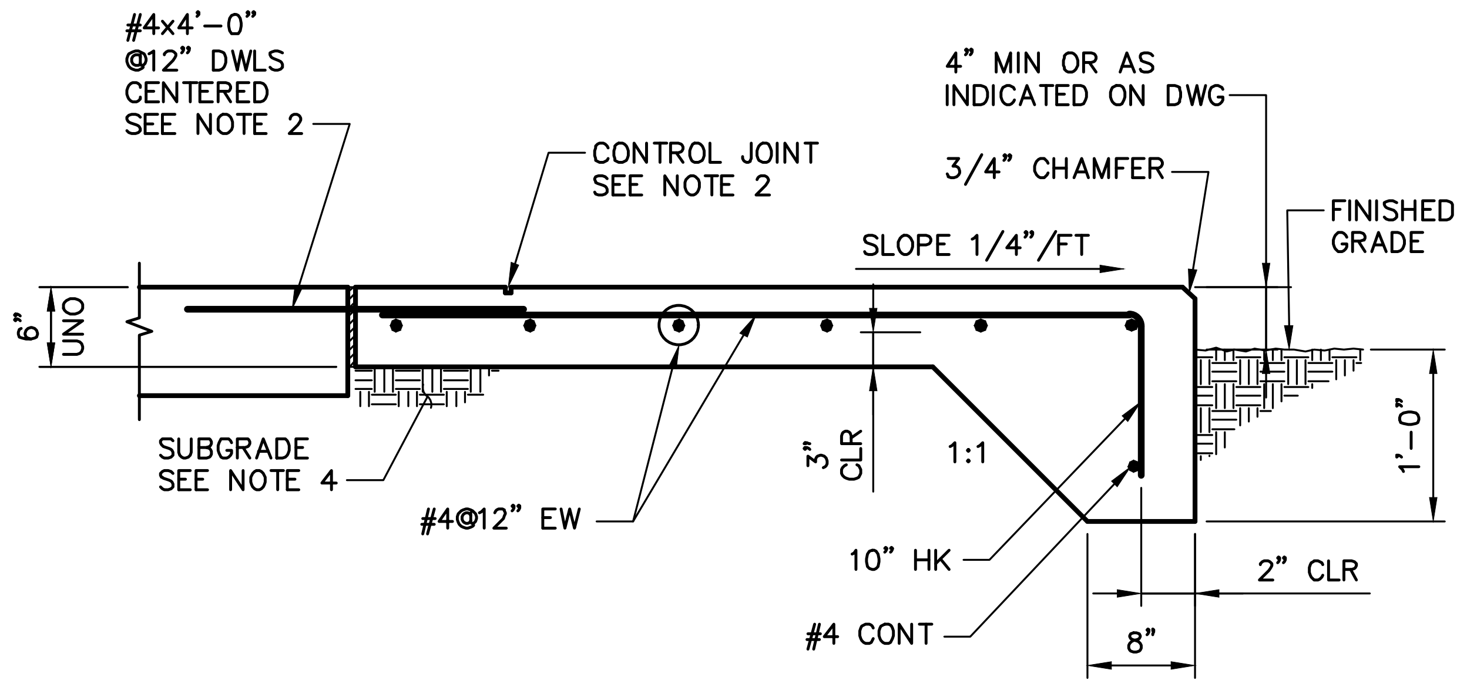
NOTES:

1. PROVIDE MINIMUM HOOK DEVELOPMENT LENGTHS PER TABLE UNO.
2. ALL HOOKS SHOWN ON THE DRAWINGS SHALL BE STANDARD HOOKS, UNO.
3. COMPLY WITH MINIMUM COVER REQUIREMENTS OF ACI 318, 25.4.3. OTHERWISE Ldh MUST BE RE–CALCULATED.

REINFORCING HOOK SCHEDULE

3
–|–

SCALE: NTS


#4x4'–0"
@12" DWLS
CENTERED
SEE NOTE 2
CONTROL JOINT
SEE NOTE 2
4" MIN OR AS
INDICATED ON DWG
3/4" CHAMFER
FINISHED
GRADE
SLOPE 1/4"/FT
6"
UNO
SUBGRADE
SEE NOTE 4
3"
CLR
1:1
1'–0"
#4@12" EW
10" HK
2" CLR
#4 CONT
8"

NOTES:

1. SEE ARCHITECTURAL DETAILS FOR ADDITIONAL REQUIREMENTS AT DOOR THRESHOLDS.
2. AT CONTRACTOR'S OPTION, THREADED BARS WITH MATCHING COUPLERS MAY BE SUBSTITUTED FOR THE #4 DOWELS SHOWN.
3. PROVIDE 1" DEEP x 3/16" WIDE SAWCUT CONTROL JOINTS WHERE SHOWN ON THE DRAWINGS. AS AN ALTERNATIVE, JOINTS MAY BE FORMED USING 3/16" THICK FIBERBOARD STRIPS. FILL JOINTS WITH SEALANT.
4. SEE SPECIFICATION SECTION 31 23 00 FOR SUBGRADE PREPARATION COMPACTION REQUIREMENTS.

TYPICAL CONCRETE STOOP

4
–|–

SCALE: NTS

LAP SPLICE AND EMDEDMENT LENGTHS f'c = 4.0 ksi fy = 60 ksi		
BAR	BARS SPACED GREATER THAN 4"	BARS SPACED LESS THAN OR EQUAL TO 4"
#3	14"	20"
#4	19"	32"
#5	29"	46"
#6	39"	62"
#7	55"	87"
#8	69"	107"
#9	76"	116"
#10	97"	140"
#11	120"	146"

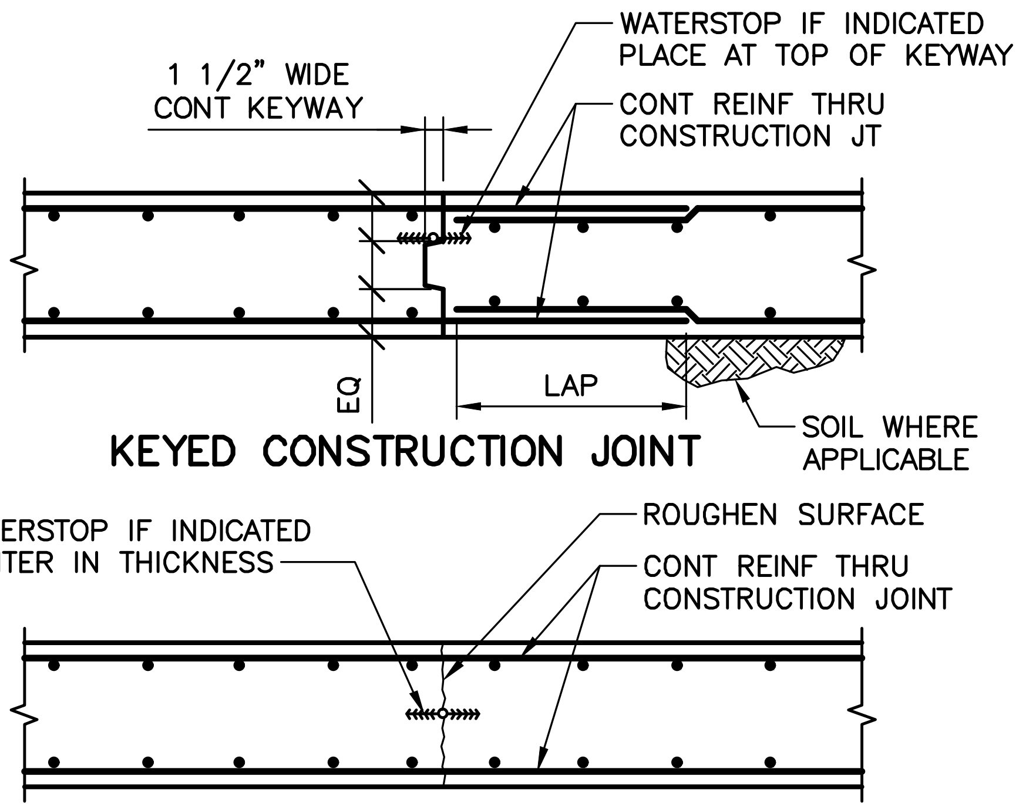
NOTES:

1. PROVIDE MINIMUM LAP SPLICE LENGTHS AND EMBEDMENTS PER TABLE UNLESS NOTED OTHERWISE. EMBEDMENT LENGTH EQUALS THE LAP SPLICE LENGTH UNLESS OTHERWISE NOTED.
2. BAR SPACING AT LAP SPLICE IS THE MINIMUM CLEAR DISTANCE BETWEEN LAPPED BARS PLUS ONE BAR DIAMETER.
3. ALL SPLICES TO BE CONTACT SPLICES AND WIRED TOGETHER UNLESS OTHERWISE APPROVED BY ENGINEER.
4. LENGTHS SHOWN IN THE TABLE ARE FOR BOTTOM BARS. MULTIPLY LENGTHS BY 1.3 FOR HORIZONTAL TOP BARS WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW.

CONCRETE REINFORCING LAP AND EMBEDMENT SCHEDULE

5
–|–

SCALE: NTS


1 1/2" WIDE
CONT KEYWAY
WATERSTOP IF INDICATED
PLACE AT TOP OF KEYWAY
CONT REINF THRU
CONSTRUCTION JT
EQ
LAP
SOIL WHERE
APPLICABLE
WATERSTOP IF INDICATED
CENTER IN THICKNESS
ROUGHEN SURFACE
CONT REINF THRU
CONSTRUCTION JOINT

KEYED CONSTRUCTION JOINT

ROUGHEN CONSTRUCTION JOINT

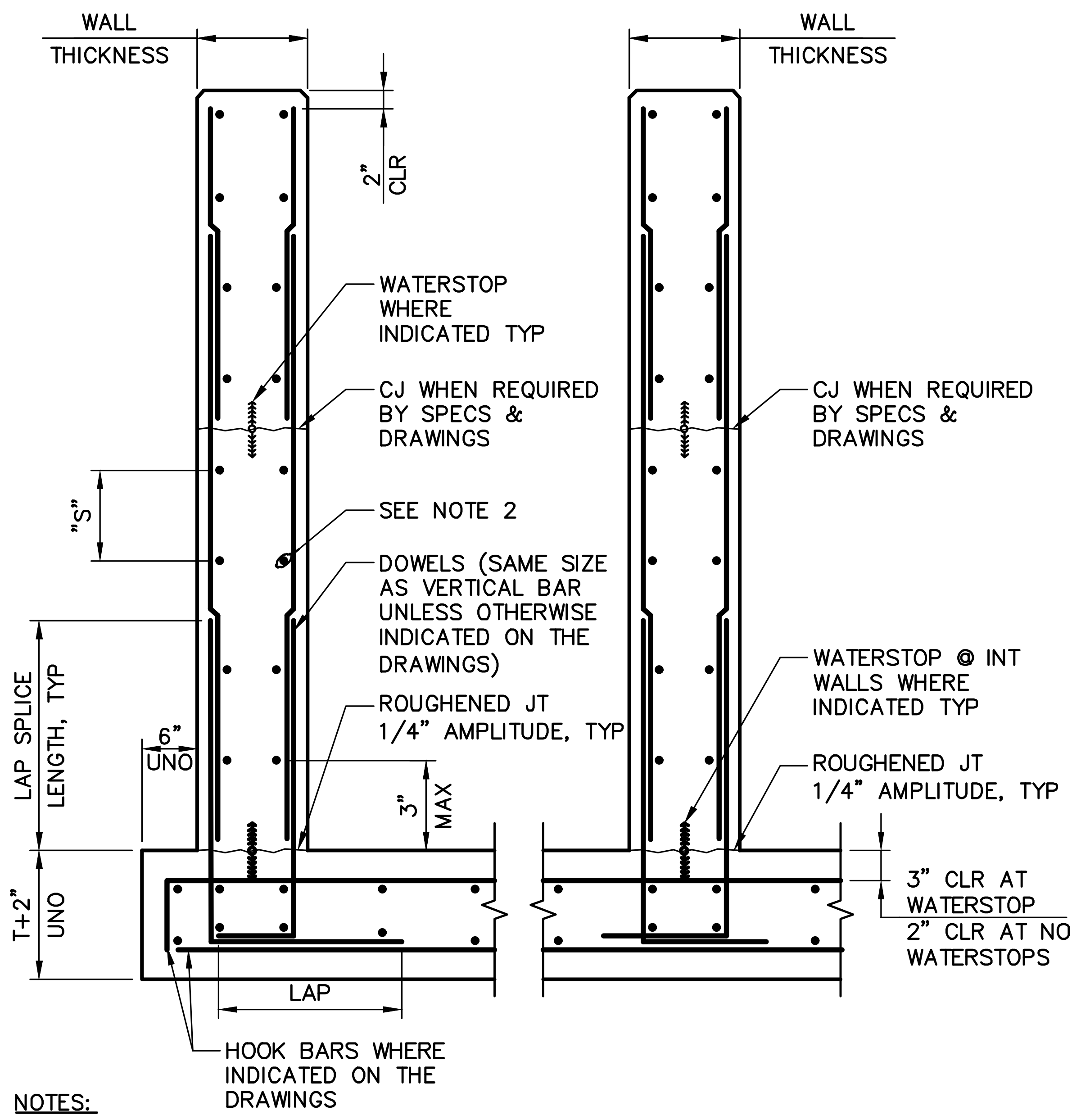
NOTE:

1. SEE SPECIFICATION FOR REQUIREMENT TO TIE WATERSTOPS IN PLACE TO PREVENT MOVEMENT OR FOLDING OVER.

CONSTRUCTION JOINT (CJ)

6
–|–

SCALE: NTS


WALL
THICKNESS
WALL
THICKNESS
2"
CLR
WATERSTOP
WHERE
INDICATED TYP
CJ WHEN REQUIRED
BY SPECS &
DRAWINGS
CJ WHEN REQUIRED
BY SPECS &
DRAWINGS
"S"
SEE NOTE 2
DOWELS (SAME SIZE
AS VERTICAL BAR
UNLESS OTHERWISE
INDICATED ON THE
DRAWINGS)
LAP SPLICE
LENGTH, TYP
6"
UNO
ROUGHENED JT
1/4" AMPLITUDE, TYP
WATERSTOP @ INT
WALLS WHERE
INDICATED TYP
ROUGHENED JT
1/4" AMPLITUDE, TYP
3"
MAX
T+2"
UNO
3" CLR AT
WATERSTOP
2" CLR AT NO
WATERSTOPS
LAP
HOOK BARS WHERE
INDICATED ON THE
DRAWINGS

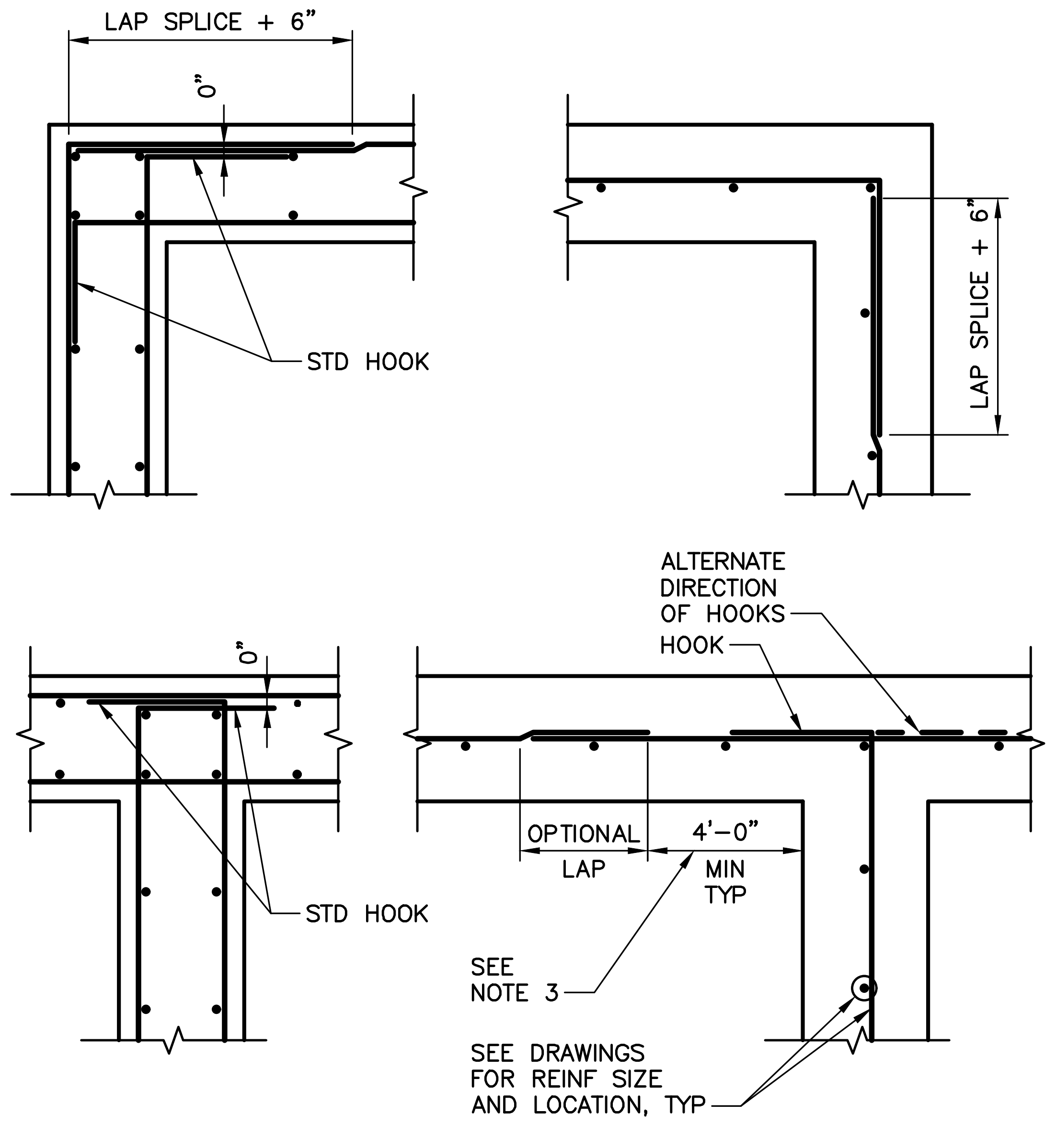
NOTES:

1. "S" = BAR SPACING INDICATED ON THE DRAWINGS
2. FOR HORIZONTAL REINF BAR LOCATION RELATIVE TO VERTICAL REINF BAR LOCATION (INSIDE OR OUTSIDE) SEE STRUCTURAL SECTIONS AND DETAILS (INSIDE SHOWN).
3. TIE WATERSTOP SECURELY IN PLACE PER SPECIFICATION SECTION 03 31 31.

HORIZONTAL WALL JOINTS w/WATERSTOP

7
–|–

SCALE: NTS


LAP SPLICE + 6"
0"
STD HOOK
LAP SPLICE + 6"
0"
ALTERNATE
DIRECTION
OF HOOKS
HOOK
STD HOOK
OPTIONAL
LAP
4'–0"
MIN
TYP
SEE
NOTE 3
SEE DRAWINGS
FOR REINF SIZE
AND LOCATION, TYP

NOTES:

1. ALL HOOKS SHALL BE STD 90 DEGREE HOOKS.
2. SEE DRAWINGS FOR ADDITIONAL HORIZONTAL BARS. STAGGER BETWEEN TYPICAL REINF SPACING, EXTEND TO 1/5 OF DISTANCE TO NEAREST ADJACENT WALL IN EACH DIRECTION, UNO.
3. OPTIONAL LAP LOCATION. APPLIES TO BOTH DOUBLE AND SINGLE LAYER CONDITIONS TYP.

WALL REINFORCEMENT AT CORNERS AND INTERSECTIONS

8
–|–

SCALE: NTS

FACILITY DRAWINGS
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FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

62528
RYAN O.
WRIGHT
08-30-24

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
A	RW	01/2024	TH	90% SUBMITTAL
B	RW	04/2024	TH	AGENCY REVIEW
C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

STANDARD STRUCTURAL DETAILS 1

CITY PROJECT NO. WS90400085

DATE: 08/2024

S–03 SHEET 59 OF 134

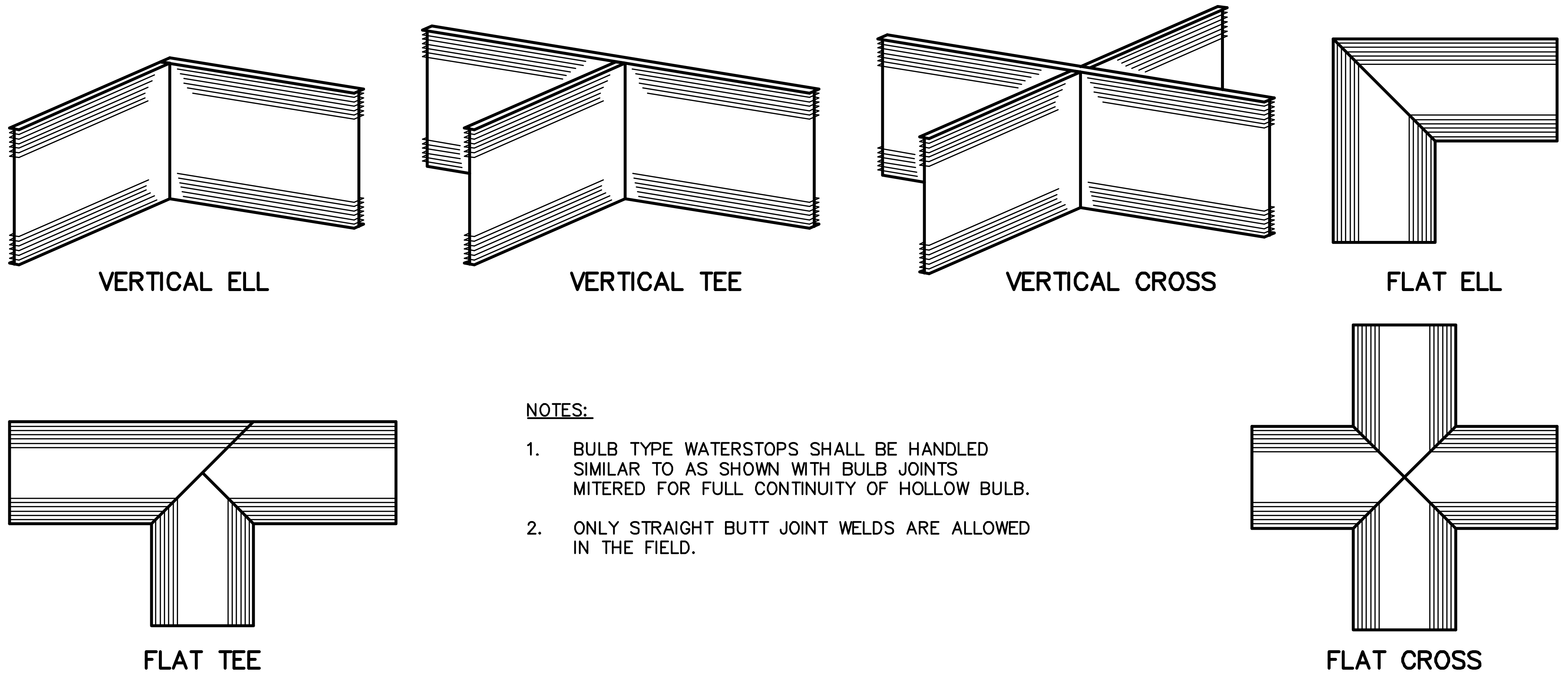
CAD FILE: CSSLS40D01.dwg

USER: RWRIGHT FILE: C:\pwworking\west01\d3411632\CSSLS40D01.dwg DATE: 8/28/24 TIME: 04:33pm

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

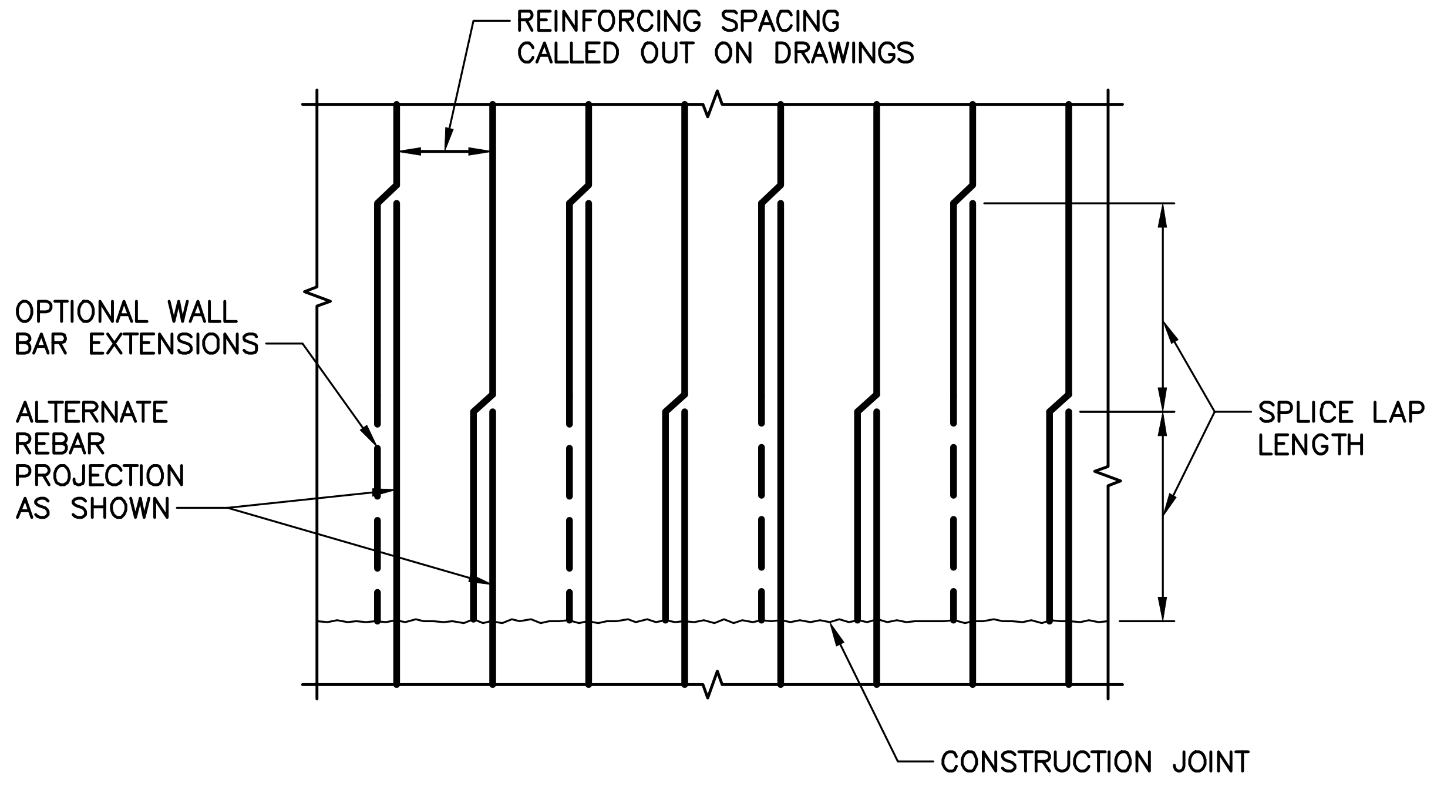

VERTICAL ELL
VERTICAL TEE
VERTICAL CROSS
FLAT ELL
FLAT TEE
FLAT CROSS

NOTES:

1. BULB TYPE WATERSTOPS SHALL BE HANDLED SIMILAR TO AS SHOWN WITH BULB JOINTS MITERED FOR FULL CONTINUITY OF HOLLOW BULB.
2. ONLY STRAIGHT BUTT JOINT WELDS ARE ALLOWED IN THE FIELD.

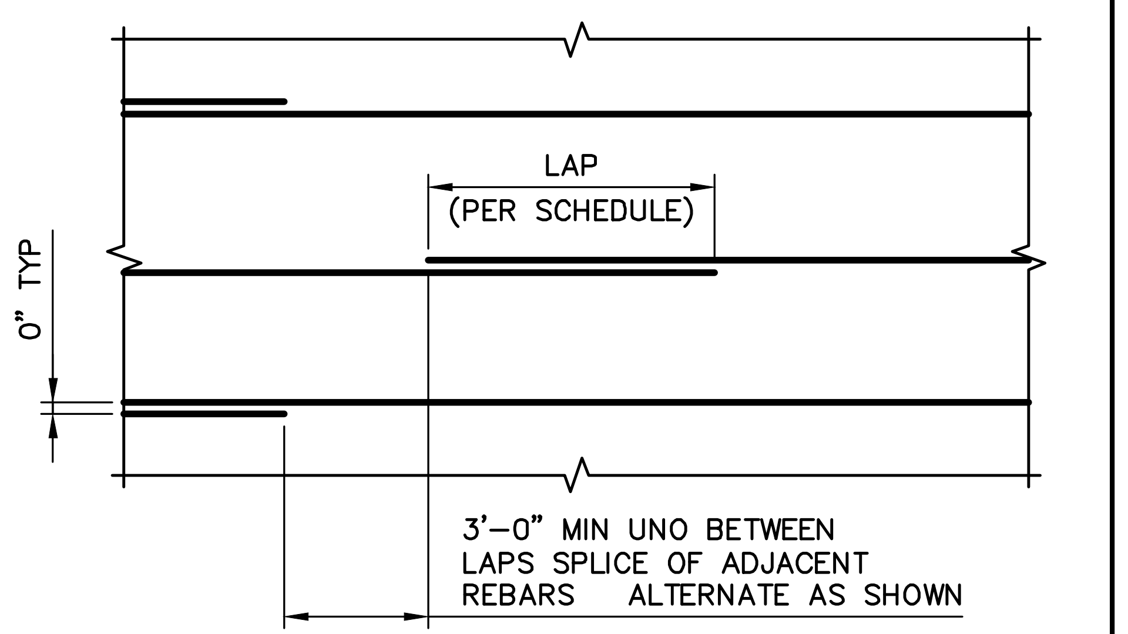
SHOP FABRICATED WATERSTOP 1 –|–

SCALE: NTS


REINFORCING SPACING CALLED OUT ON DRAWINGS
OPTIONAL WALL BAR EXTENSIONS
ALTERNATE REBAR PROJECTION AS SHOWN
SPLICE LAP LENGTH
CONSTRUCTION JOINT

STAGGERED REINFORCING AT CONSTRUCTION JOINT 2 –|–

SCALE: NTS

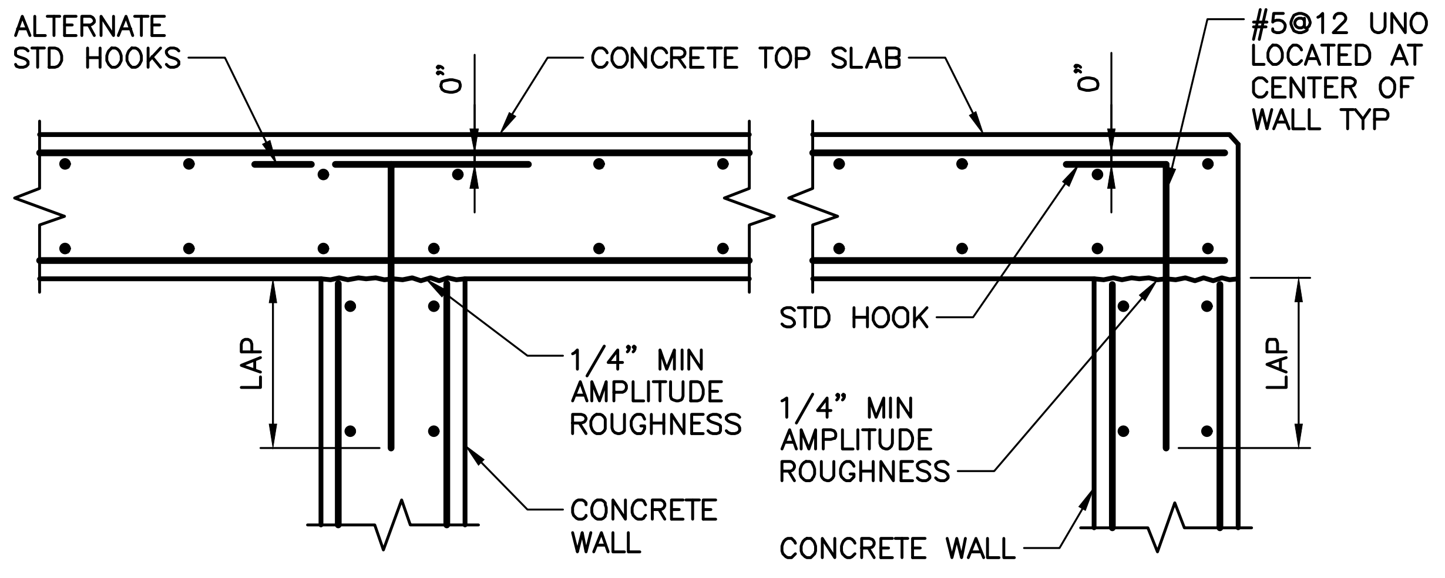

LAP
(PER SCHEDULE)
0" TYP
3'-0" MIN UNO BETWEEN LAPS SPLICE OF ADJACENT REBARS ALTERNATE AS SHOWN

NOTE:

1. APPLIES TO SLABS AND WALLS (BOTH HORIZONTAL AND VERTICAL).

REINFORCING SPLICE NOT AT CONSTRUCTION JOINT 3 –|–

SCALE: NTS

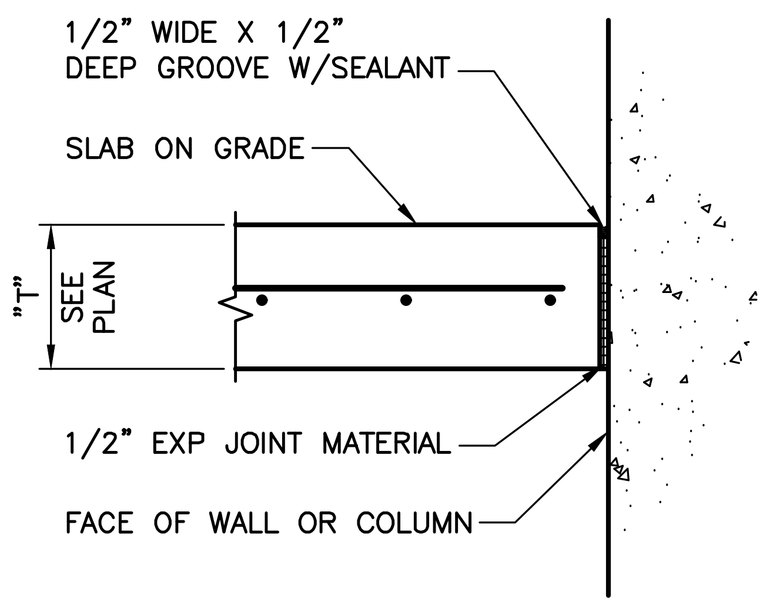

ALTERNATE STD HOOKS
0"
CONCRETE TOP SLAB
0"
#5@12 UNO LOCATED AT CENTER OF WALL TYP
LAP
1/4" MIN AMPLITUDE ROUGHNESS
CONCRETE WALL
STD HOOK
1/4" MIN AMPLITUDE ROUGHNESS
CONCRETE WALL
LAP

NOTE:

1. ALL HOOKS SHALL BE STD 90 DEGREE HOOKS.

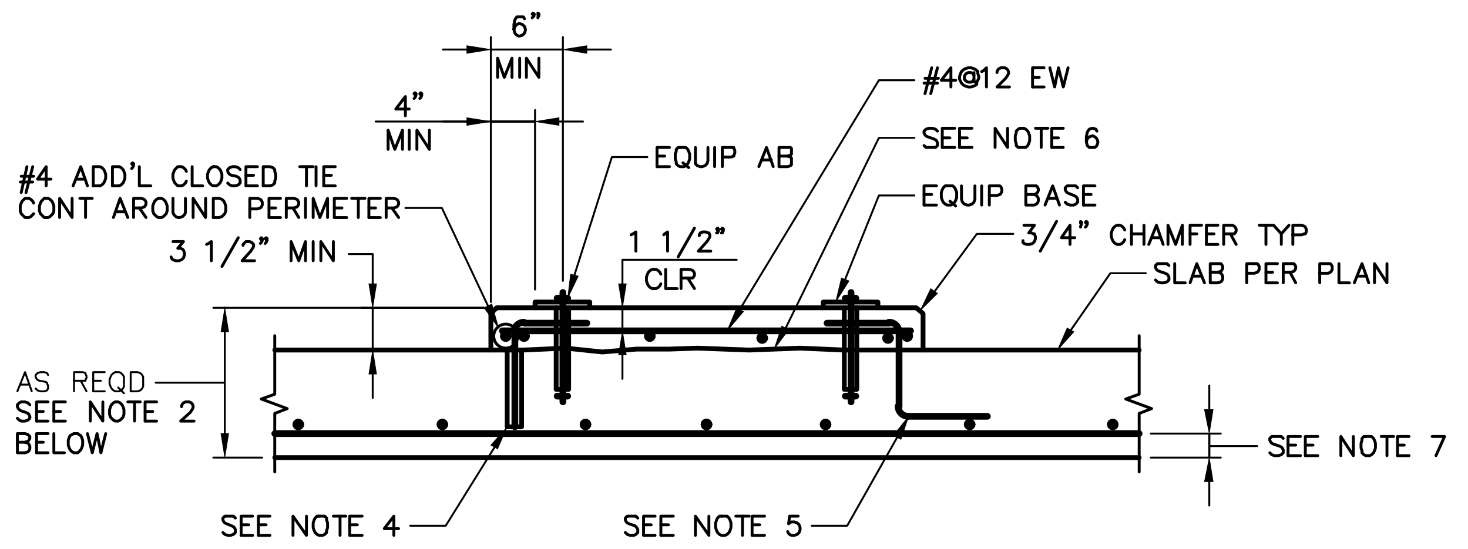
HINGED TOP SLAB 4 –|–

SCALE: NTS


1/2" WIDE X 1/2" DEEP GROOVE W/SEALANT
SLAB ON GRADE
"T" SEE PLAN
1/2" EXP JOINT MATERIAL
FACE OF WALL OR COLUMN

TYPICAL ISOLATION JOINT (IJ) 5 –|–

SCALE: NTS


6"
MIN
4"
MIN
#4 ADD'L CLOSED TIE CONT AROUND PERIMETER
3 1/2" MIN
EQUIP AB
#4@12 EW
SEE NOTE 6
EQUIP BASE
1 1/2" CLR
3/4" CHAMFER TYP
SLAB PER PLAN
AS REQD SEE NOTE 2 BELOW
SEE NOTE 7
SEE NOTE 4
SEE NOTE 5

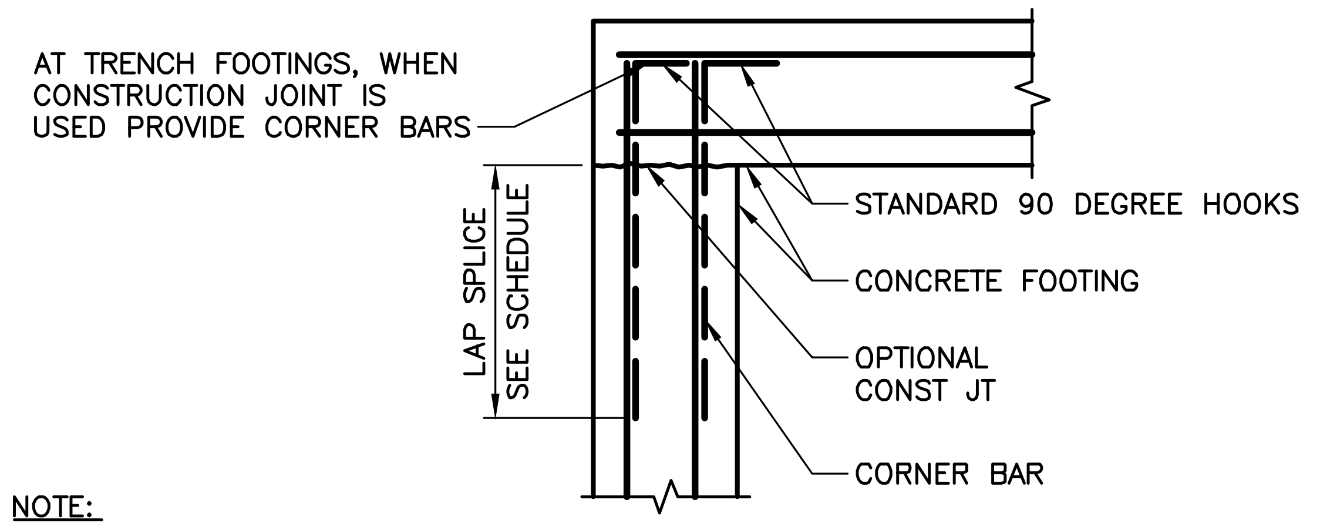
MINIMUM PAD THICKNESS TABLE	
AB DIA	MIN PAD THK
1/4" DIA	5"
3/8" DIA	6 1/2"
1/2" DIA	8"
5/8" DIA	9 1/2"
3/4" DIA	11"
7/8" DIA	12 1/2"
1" DIA	14"

EQUIPMENT SUPPORT PAD 6 –|–

SCALE: NTS

NOTES:

1. PROVIDE ABOVE PAD UNDER ALL ELECTRICAL AND MECHANICAL EQUIPMENT SUPPORTED ON STRUCTURAL SLABS. ALSO PROVIDE FOR EQUIPMENT WEIGHING LESS THAN 5000 POUNDS WHICH ARE SUPPORTED ON GRADE OR WHERE SPECIFICALLY NOTED ON PLANS.
2. PAD THICKNESS SHALL BE THE LARGER OF SLAB THICKNESS PLUS 3 1/2" OR MINIMUM PAD THICKNESS FROM TABLE. PROVIDE AN ADDITIONAL LAYER OF #4@12 EACH WAY WITH 1 1/2" CLEAR TOP AND BOTTOM FOR EACH 8" ADDITIONAL PAD THICKNESS EXCEEDING THE 3 1/2" MINIMUM THICKNESS. ALTERNATIVELY, THICKEN SLAB ON GRADE BELOW EQUIPMENT PAD AS REQD TO MAINTAIN MIN 3" COVER ON ANCHOR BOLTS.
3. BEFORE EQUIPMENT SUPPORT PADS ARE CAST, THE PAD SIZES AND REINFORCING SHALL BE APPROVED BY THE ENGINEER AS BEING CAPABLE OF SUPPORTING EQUIPMENT TO BE PLACED THEREON. EQUIPMENT BASE DIMENSIONS SHALL BE THE LARGER OF AS DETERMINED BY THE EQUIPMENT MANUFACTURER OR AS INDICATED ON THE DRAWINGS. SUBMIT ALL EQUIPMENT DIMENSIONS AND LOADS TO ENGINEER. THE SIZE, NUMBER, TYPE, LOCATION AND THREAD PROJECTION OF THE ANCHOR BOLTS (AB) SHALL BE AS DETERMINED BY THE EQUIPMENT MANUFACTURER AND SHALL BE AS APPROVED BY THE ENGINEER. AB SHALL BE HELD IN POSITION WITH A TEMPLATE WHILE EQUIPMENT PAD IS CAST.
4. FOR CONCRETE EQUIPMENT PADS ON EXISTING CONCRETE, PROVIDE #4@12" O.C. ADHESIVE DOWELS AROUND PERIMETER WITH STANDARD HOOK AS SHOWN.
5. FOR CONCRETE EQUIPMENT PADS ON NEW CONCRETE, PROVIDE #4@12" O.C. DOWELS AROUND PERIMETER WITH STANDARD HOOKS EACH ENDS.
6. CONCRETE SURFACE SHALL BE CLEAN, FREE OF LAITANCE, ROUGHENED TO A 1/4" AMPLITUDE, AND COATED WITH BONDING AGENT.
7. PROVIDE 3" CONCRETE COVER AT SLABS ON GRADE AND 2" AT ELEVATED SLABS.

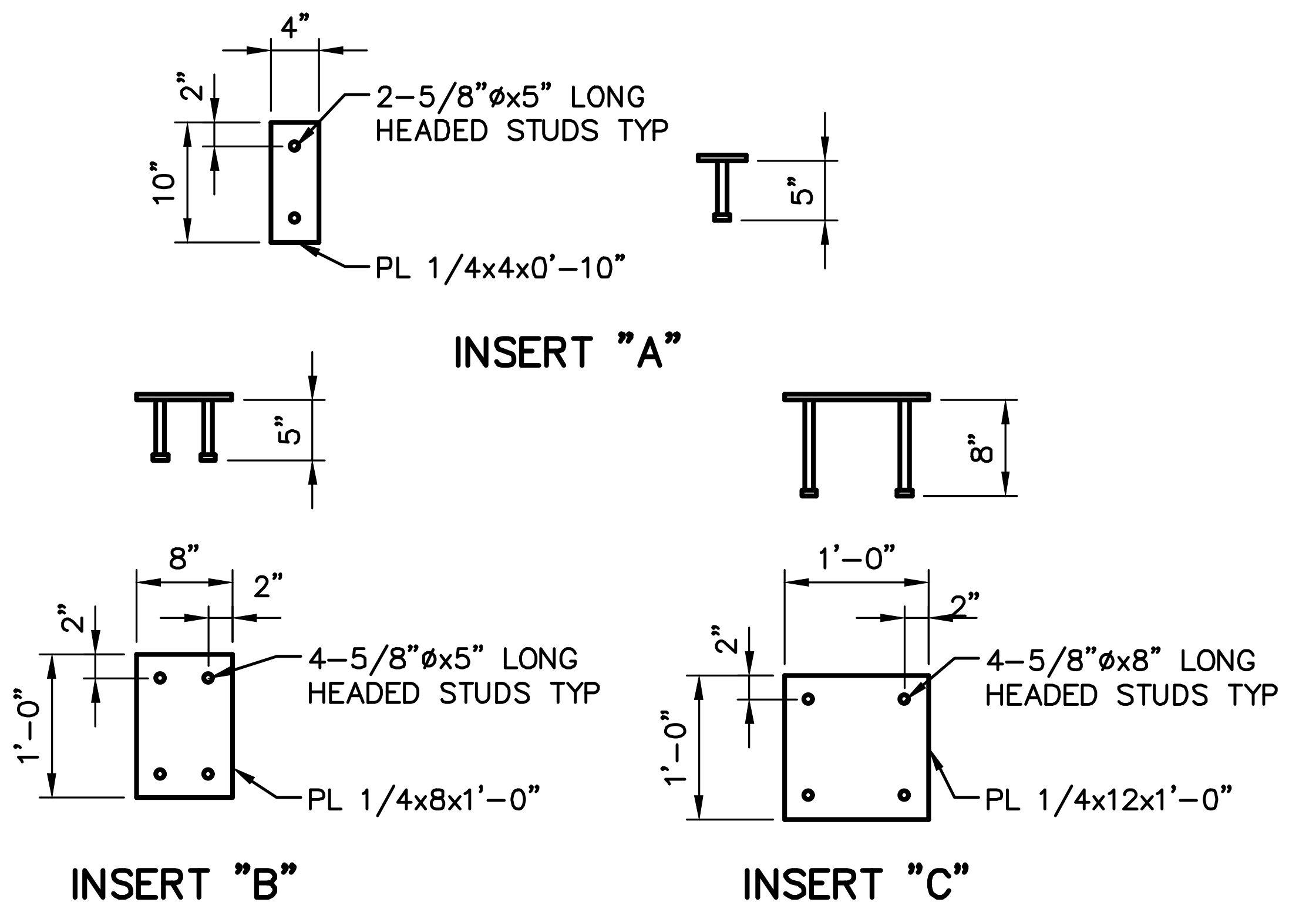

AT TRENCH FOOTINGS, WHEN CONSTRUCTION JOINT IS USED PROVIDE CORNER BARS
STANDARD 90 DEGREE HOOKS
CONCRETE FOOTING
OPTIONAL CONST JT
LAP SPLICE SEE SCHEDULE
CORNER BAR

NOTE:

1. CORNER BARS TO BE SAME SIZE AND SPACING AT FOOTING REINFORCING.

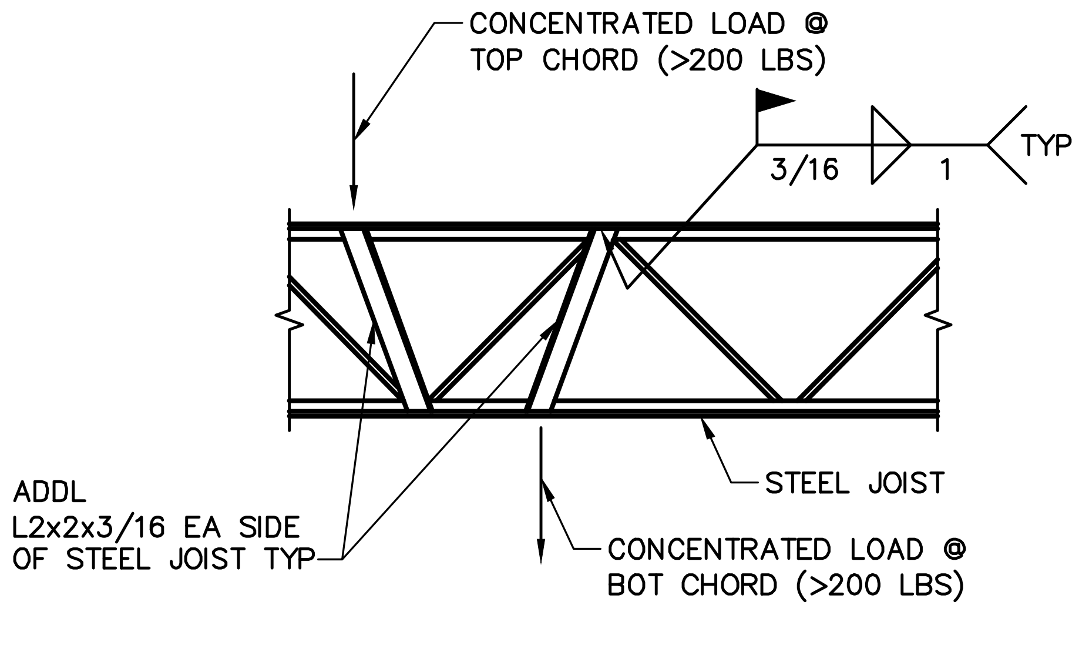
TYPICAL FOOTING REINFORCING AT CORNER 7 –|–

SCALE: NTS


4"
2"
10"
2-5/8"øx5" LONG HEADED STUDS TYP
5"
PL 1/4x4x0'-10"
INSERT "A"
5"
8"
8"
2"
2"
1'-0"
4-5/8"øx5" LONG HEADED STUDS TYP
PL 1/4x8x1'-0"
INSERT "B"
1'-0"
2"
2"
1'-0"
4-5/8"øx8" LONG HEADED STUDS TYP
PL 1/4x12x1'-0"
INSERT "C"

INSERT DETAIL 8 –|–

SCALE: NTS

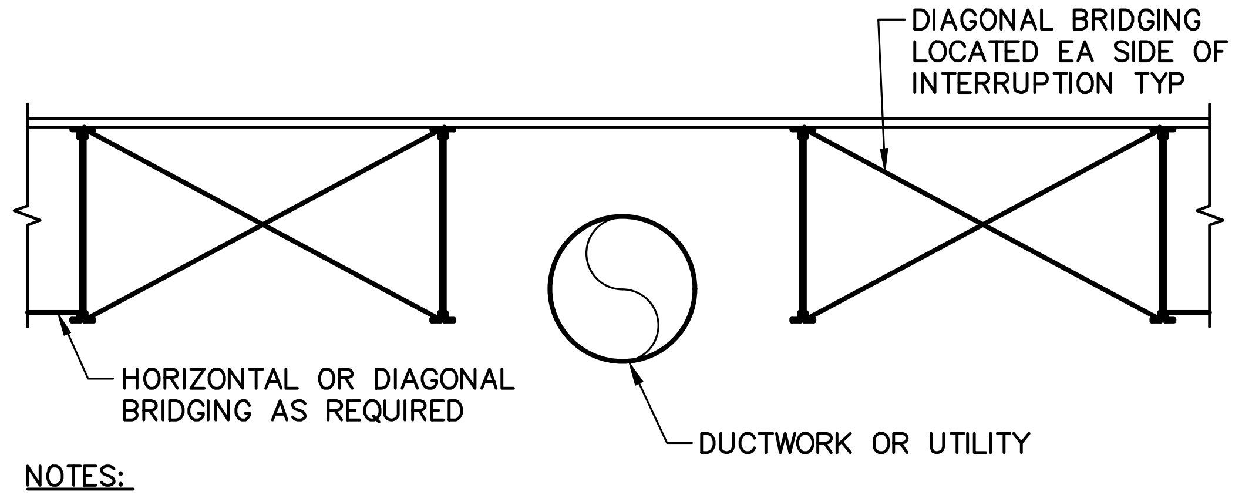

CONCENTRATED LOAD @ TOP CHORD (>200 LBS)
3/16
1
TYP
ADDL L2x2x3/16 EA SIDE OF STEEL JOIST TYP
STEEL JOIST
CONCENTRATED LOAD @ BOT CHORD (>200 LBS)

NOTE:

1. PROVIDE ADDL ANGLE REINFORCEMENT WHEN CONCENTRATED LOAD IS MORE THAN 9" FROM PANEL JOINT.

JOIST REINFORCEMENT AT CONCENTRATED LOAD 9 –|–

SCALE: NTS


DIAGONAL BRIDGING LOCATED EA SIDE OF INTERRUPTION TYP
HORIZONTAL OR DIAGONAL BRIDGING AS REQUIRED
DUCTWORK OR UTILITY

NOTES:

1. USE ONLY WHERE DUCTWORK OR UTILITY ARE SHOWN BETWEEN JOISTS ON ELECTRICAL, MECHANICAL OR PROCESS SHEETS. VERIFY LOCATION WITH SPECIALITY CONTRACTOR. LOCATION TO BE APPROVED BY ENGINEER.
2. DO NOT INSTALL DUCTWORK OR UTILITIES IN TWO ADJACENT JOIST SPACES.

INTERRUPTION OF JOIST BRIDGING 10 –|–

SCALE: NTS

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 62528
RYAN O. WRIGHT
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
A	RW	01/2024	TH	90% SUBMITTAL
B	RW	04/2024	TH	AGENCY REVIEW
C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

STANDARD STRUCTURAL DETAILS 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
S-04 SHEET 60 OF 134
CAD FILE: CSSLS40D02.dwg

USER: RWRIGHT FILE: C:\pwworking\west01\d3411632\CSSLS40D02.dwg DATE: 8/28/24 TIME: 04:36pm

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FOR CONSTRUCTION

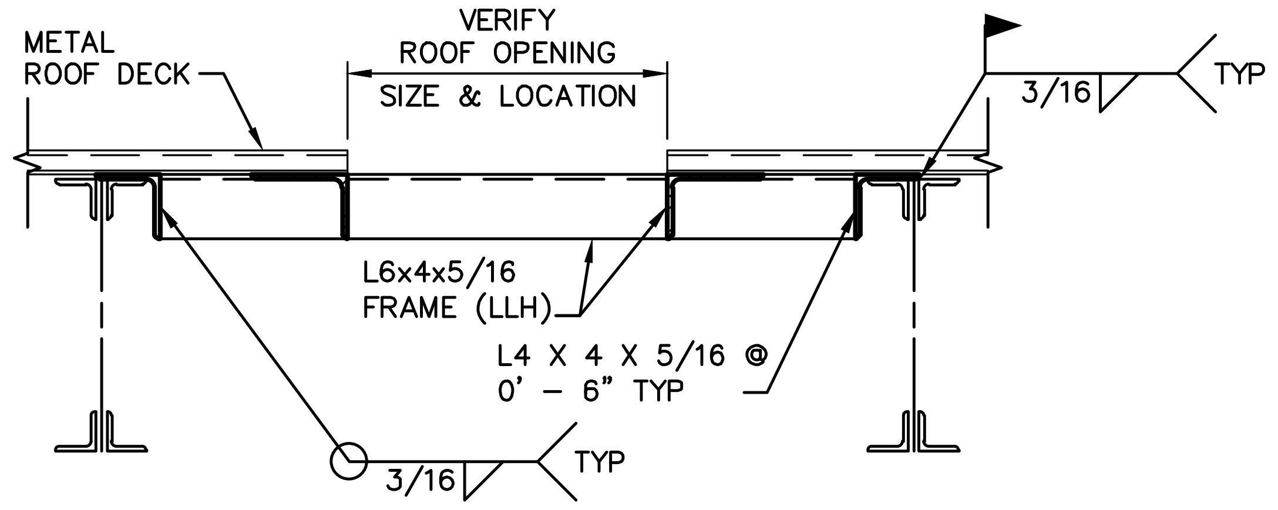
"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

MASONRY LAP SPLICE LENGTHS f'm=1500 psi, fy=60000 psi		
BAR SIZE	8" BLOCK	
	BAR @ CL	BAR @ EDGE
#3	19"	19"
#4	25"	31"
#5	31"	48"
#6	57"	–

NOTE:
1. WHEN REQD SPLICE LENGTH EXCEEDS 4'–0" USE HIGH LIFT GROUTING WITH NO SPLICES OR USE MECHANICAL TENSION SPLICES WITH LOW LIFT GROUTING.

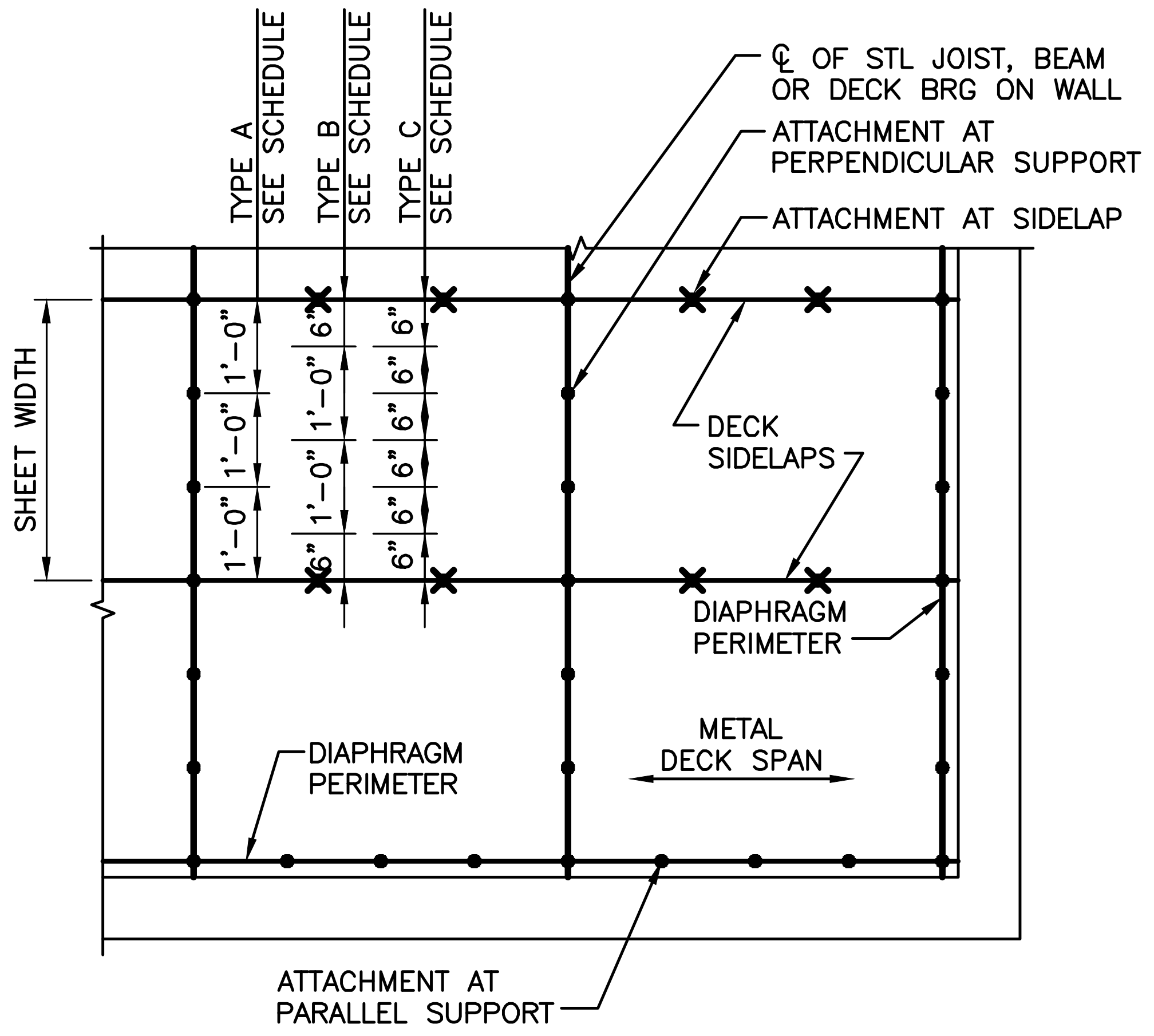
CMU REINFORCING LAP SCHEDULE 1 –|–

SCALE: NTS


METAL ROOF DECK
VERIFY ROOF OPENING SIZE & LOCATION
3/16
TYP
L6x4x5/16 FRAME (LLH)
L4 X 4 X 5/16 @ 0' – 6" TYP
3/16
TYP

ROOF DECK OPENING 2 –|–

SCALE: NTS

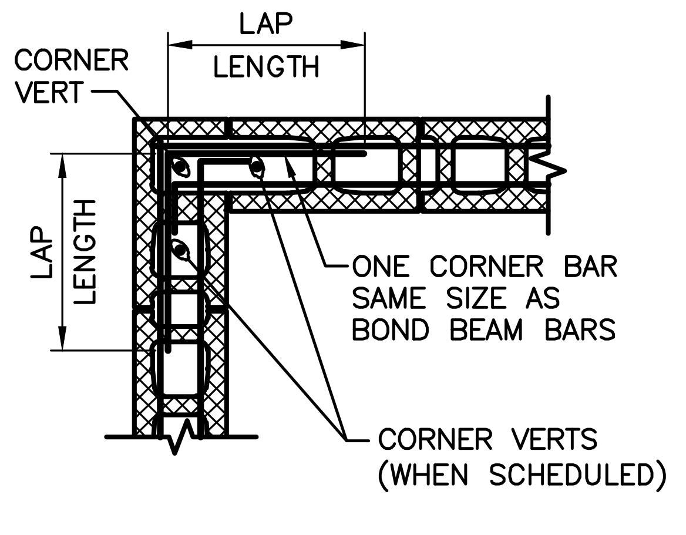

TYPE A SEE SCHEDULE
TYPE B SEE SCHEDULE
TYPE C SEE SCHEDULE
℄ OF STL JOIST, BEAM OR DECK BRG ON WALL
ATTACHMENT AT PERPENDICULAR SUPPORT
ATTACHMENT AT SIDELAP
SHEET WIDTH
1'–0"
1'–0"
1'–0"
1'–0"
6"
6"
6"
6"
6"
6"
6"
DECK SIDELAPS
DIAPHRAGM PERIMETER
DIAPHRAGM PERIMETER
METAL DECK SPAN
ATTACHMENT AT PARALLEL SUPPORT

METAL DECK ATTACHMENT SCHEDULE				
TYPE	ATTACHMENT AT SUPPORTS PERPENDICULAR TO FLUTES	ATTACHMENT AT SUPPORTS PARALLEL TO FLUTES	ATTACHMENT AT SIDELAPS	REMARKS
A	36/4: 4–FASTENERS PER 36" WIDE SHEET	FASTENERS @12"OC	PER SPECIFICATIONS	
B	36/5: 5–FASTENERS PER 36" WIDE SHEET	FASTENERS @12"OC	PER SPECIFICATIONS	
C	36/7: 7–FASTENERS PER 36" WIDE SHEET	FASTENERS @12"OC	PER SPECIFICATIONS	USE UNLESS NOTED ON PLANS

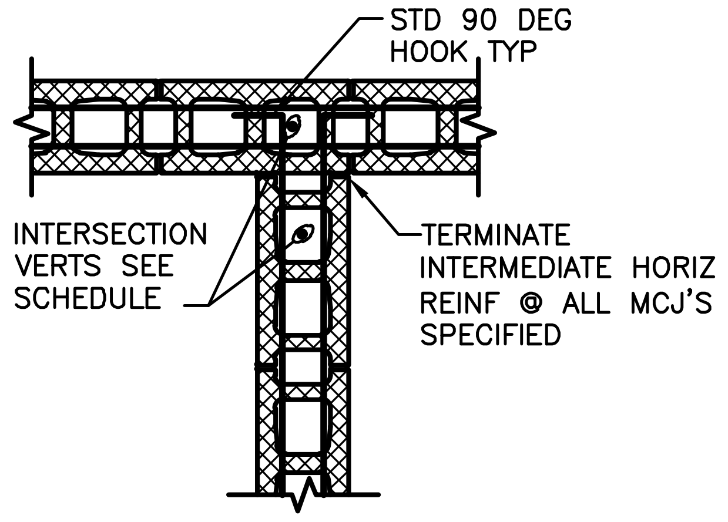
NOTES:
1. DIAPHRAGM PERIMETER SHALL BE ATTACHED WITH MOST STRINGENT AT POINTS PARALLEL OR POINTS PERPENDICULAR AS APPLICABLE PER SCHEDULE.
2. FASTENERS SHALL BE POWDER ACTUATED WITH SPACING AS INDICATED IN SCHEDULE.
3. AT CONTRACTOR'S OPTION, INTERLOCKING PUNCHED SIDE LAP CONNECTIONS (SIMILAR TO VULCRAFT PUNCHLOK II SYSTEM) MAY BE SUBSTITUTED FOR ARC SEAM WELDS. SUBMIT PROPOSED SIDELAP ATTACHMENTS FOR REVIEW.
4. WHERE DECK IS SUPPORTED ON STEEL JOISTS, WELDS SHALL BE STAGGERED TO ALTERNATE TOP CHORD JOIST ANGLES.
5. SEE SPECIFICATION SECTION 05 30 00.15 FOR ADDITIONAL INFORMATION.

ROOF DECK ATTACHMENT 3 –|–

SCALE: NTS

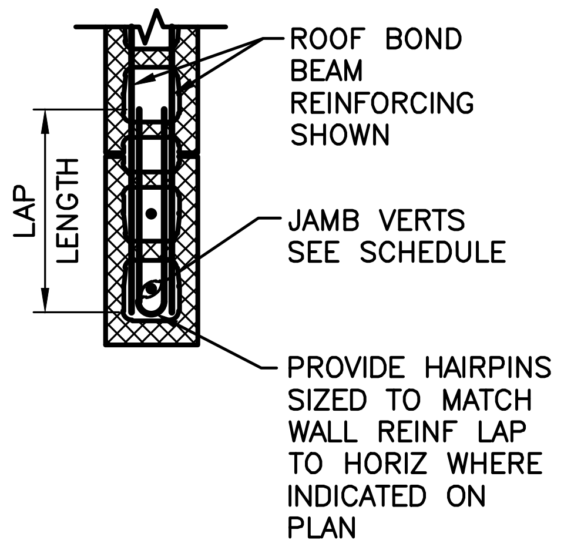

LAP LENGTH
CORNER VERT
LAP LENGTH
ONE CORNER BAR SAME SIZE AS BOND BEAM BARS
CORNER VERTS (WHEN SCHEDULED)

CORNER

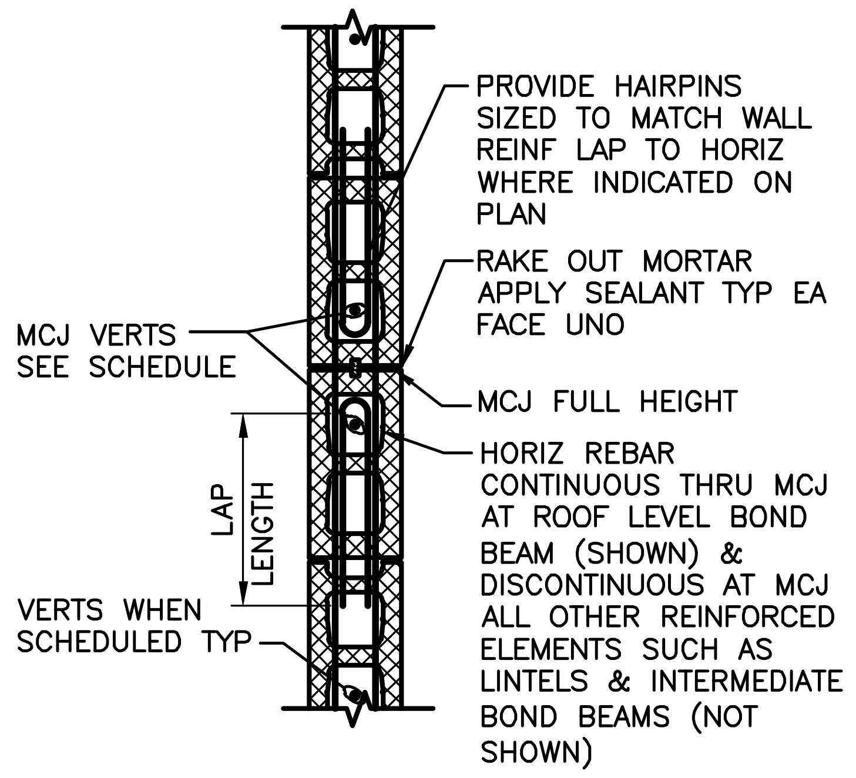

STD 90 DEG HOOK TYP
INTERSECTION VERTS SEE SCHEDULE
TERMINATE INTERMEDIATE HORIZ REINF @ ALL MCJ'S SPECIFIED

INTERSECTION

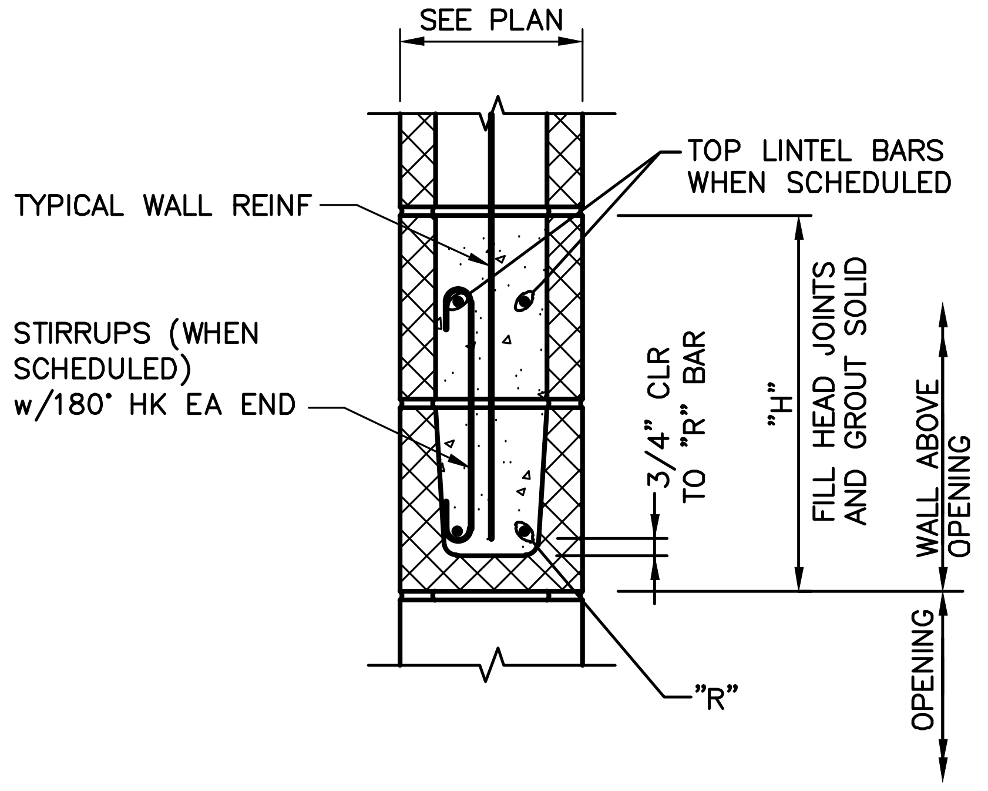
LINTEL REINFORCEMENT SCHEDULE					
MARK	"W"	"R"	"L"	"H"	STIRRUPS
ML–1	1'–4" THRU 3'–4"	(1) #5	25"	8"	–
ML–2	1'–4" THRU 3'–4"	(2) #5	25"	16"	–
ML–3	3'–5" THRU 6'–8"	(2) #5	25"	24"	–
ML–4	6'–9" THRU 10'–0"	(2) #6	30"	32"	–
ML–5	10'–1" THRU 12'–0"	(2) #7	35"	32"	#3@16"


ROOF BOND BEAM REINFORCING SHOWN
LAP LENGTH
JAMB VERTS SEE SCHEDULE
PROVIDE HAIRPINS SIZED TO MATCH WALL REINF LAP TO HORIZ WHERE INDICATED ON PLAN

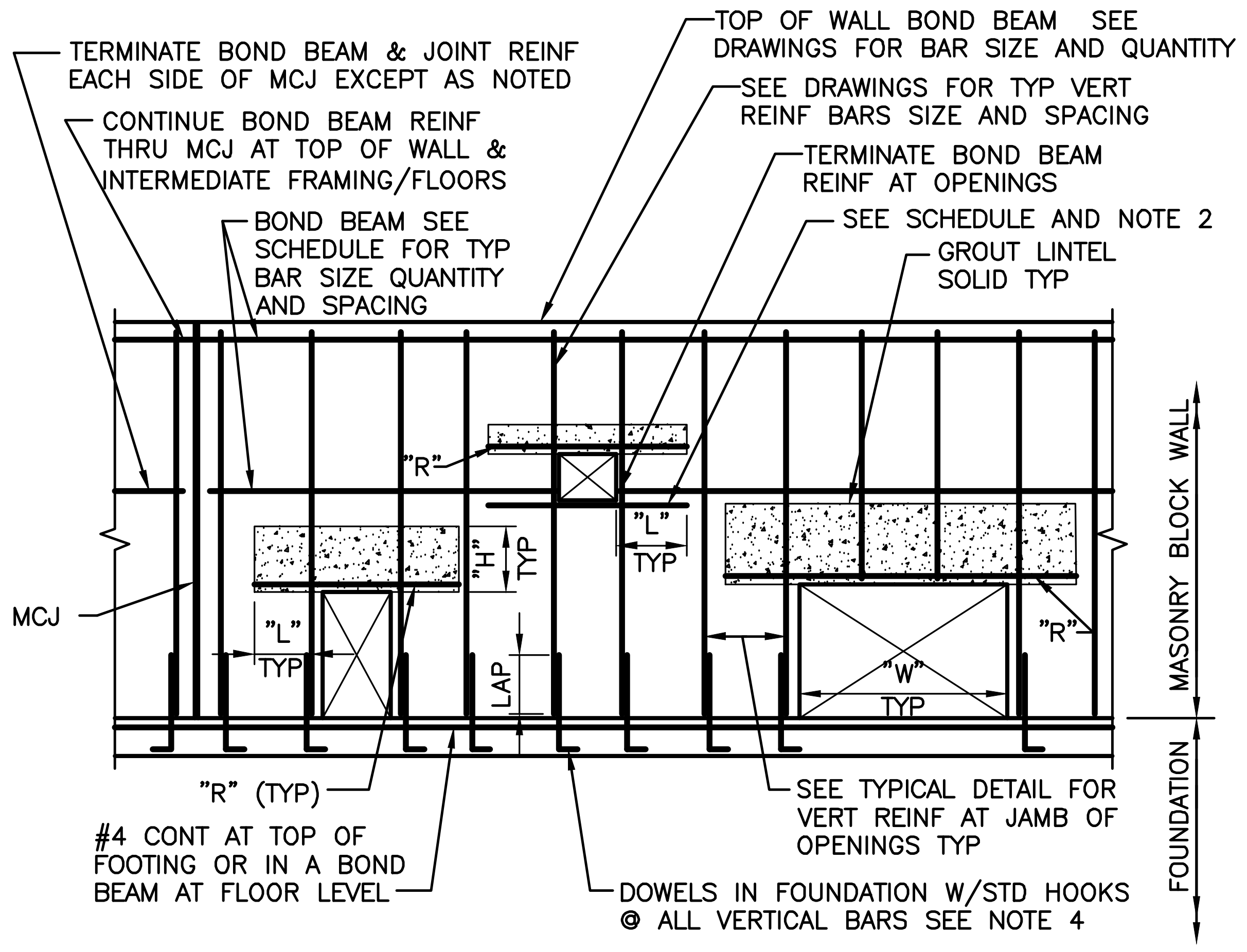
JAMB OR END OF WALL


PROVIDE HAIRPINS SIZED TO MATCH WALL REINF LAP TO HORIZ WHERE INDICATED ON PLAN
RAKE OUT MORTAR APPLY SEALANT TYP EA FACE UNO
MCJ VERTS SEE SCHEDULE
MCJ FULL HEIGHT
LAP LENGTH
HORIZ REBAR CONTINUOUS THRU MCJ AT ROOF LEVEL BOND BEAM (SHOWN) & DISCONTINUOUS AT MCJ ALL OTHER REINFORCED ELEMENTS SUCH AS LINTELS & INTERMEDIATE BOND BEAMS (NOT SHOWN)
VERTS WHEN SCHEDULED TYP

MASONRY CONTROL JOINT (MCJ)


SEE PLAN
TYPICAL WALL REINF
TOP LINTEL BARS WHEN SCHEDULED
STIRRUPS (WHEN SCHEDULED) w/180° HK EA END
3/4" CLR TO "R" BAR
"H"
FILL HEAD JOINTS AND GROUT SOLID
WALL ABOVE OPENING
OPENING
"R"

SECTION OF LINTEL AT OPENING


TERMINATE BOND BEAM & JOINT REINF EACH SIDE OF MCJ EXCEPT AS NOTED
CONTINUE BOND BEAM REINF THRU MCJ AT TOP OF WALL & INTERMEDIATE FRAMING/FLOORS
BOND BEAM SEE SCHEDULE FOR TYP BAR SIZE QUANTITY AND SPACING
TOP OF WALL BOND BEAM SEE DRAWINGS FOR BAR SIZE AND QUANTITY
SEE DRAWINGS FOR TYP VERT REINF BARS SIZE AND SPACING
TERMINATE BOND BEAM REINF AT OPENINGS
SEE SCHEDULE AND NOTE 2
GROUT LINTEL SOLID TYP
"R"
"H" TYP
"L" TYP
"L" TYP
MCJ
LAP
"W" TYP
"R"
MASONRY BLOCK WALL
FOUNDATION
"R" (TYP)
#4 CONT AT TOP OF FOOTING OR IN A BOND BEAM AT FLOOR LEVEL
DOWELS IN FOUNDATION W/STD HOOKS @ ALL VERTICAL BARS SEE NOTE 4
SEE TYPICAL DETAIL FOR VERT REINF AT JAMB OF OPENINGS TYP

WALL ELEVATION

NOTES:

1. FOR REINFORCING SEE "CMU REINFORCING SCHEDULE".
2. EXTEND MCJ FULL HEIGHT OF MASONRY WALL EXCEPT AT TOP OF WALL BOND BEAM.
3. LIMIT DISTANCE BETWEEN MCJ TO MAX 24'–0". SEE DRAWINGS FOR LOCATIONS.
4. MODIFY BAR CONFIGURATION SHOWN AS REQUIRED WHERE TWO VERTICAL REINFORCING BARS ARE SHOWN ON THE SCHEDULE.
5. SEE ARCHITECTURAL DRAWINGS FOR MCJ DETAILS AND REMAINDER OF JOINT DETAILS.

NOTES:

1. OPENINGS 8" OR LESS WIDE MAY OCCUR WITHOUT LINTEL REINFORCING AS LONG AS NO REINFORCING IS INTERRUPTED.
2. ML–1 TO BE USED ONLY AT NON–LOAD BEARING SITUATIONS.
3. SEE DRAWINGS FOR LINTEL TYPES. WHERE LINTEL TYPES ARE NOT SHOWN, PROVIDE LINTELS FROM THE ABOVE SCHEDULE BASED ON THICKNESS OF WALL AND MAX CLEAR OPENING WIDTH.

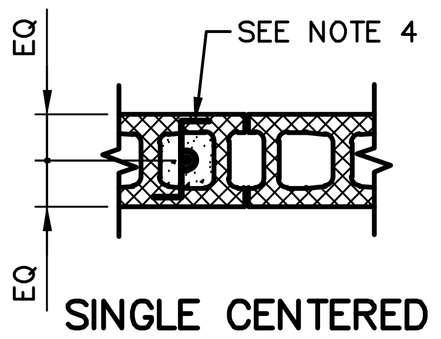
NOTES:

1. HATCHING SHOWN ONLY DEFINE EXTENTS OF LINTEL REINFORCING. GROUT SOLID ALL REINFORCED CELLS. SEE CMU WALL REINFORCING SCHEDULE.
2. WHERE OTHER DRAWING DETAILS INDICATE SOLID MASONRY SILL, PLACE BOND BEAM REINF IN FIRST COURSE BELOW SOLID CMU.
3. PROVIDE BOND BEAM AT ALL ELEVATED FLOORS WITH SAME REINFORCING AS TOP OF WALL, UNO.
4. STRAIGHT BARS EMBEDDED ONE CONCRETE LAP LENGTH INTO CONCRETE FOUNDATION MAY BE USED AT CONTRACTOR'S OPTION.
5. LINTEL REINFORCING AND BARS PASSING THROUGH "H" SHALL NOT BE SPLICED.
6. SHORE LINTEL MINIMUM 7 DAYS AFTER GROUTING OR UNTIL GROUT ATTAINS FULL DESIGN STRENGTH.

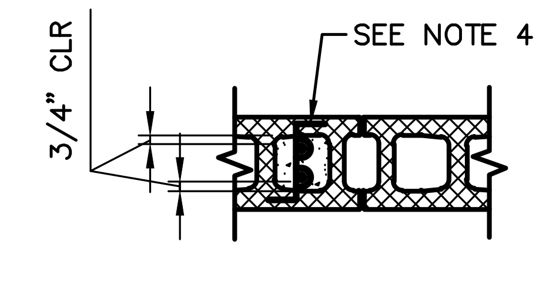
CMU WALL REINFORCING 4 –|–

SCALE: NTS

TYPE	REINFORCING LOCATION	8" WALL THK
VERTS	VERTICAL BARS	#5@32" OC SINGLE CENTERED
	JAMBS/ENDS/MCJ	#5, SEE 4 –|–
	CORNERS/INTERSECTIONS	#5, SEE 4 –|–
HORIZ	TOP OF WALL BOND BEAM	2–#5, SEE 4 –|–
	INTERMEDIATE BOND BEAMS	2–#5
	HORIZ JOINT REINF	9 GAGE WIRE, TRUSS TYPE JOINT REINF @16" OC BETWEEN BOND BEAMS
	BELOW OPENINGS	2–#5
	LINTELS	SEE CMU REINFORCEMENT ELEVATION 4 –|–


EQ
SEE NOTE 4
EQ

SINGLE CENTERED


3/4" CLR
SEE NOTE 4

DOUBLE CENTERED

NOTES:

1. PROVIDE THE ABOVE SCHEDULED MINIMUM WALL REINFORCING IN ALL CMU, UNO. SEE CMU WALL REINFORCEMENT DETAIL.
2. GROUT ONLY CELLS WITH REINFORCING.
3. MAINTAIN MINIMUM 3"x3" CONTINUOUS VERTICAL CELL AT EACH REBAR. PLACE WALLS TO MAXIMUM 4'–0" HEIGHT BEFORE GROUTING.
4. PROVIDE WIRE REBAR POSITIONERS TO HOLD BARS IN PLACE.
5. STOP GROUT POUR 1/2" BELOW TOP OF COURSE AT EACH GROUT LIFT.

CMU REINFORCING SCHEDULE 5 –|–

SCALE: NTS

62528
RYAN O. WRIGHT

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DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

STANDARD STRUCTURAL DETAILS 3

CITY PROJECT NO. WS90400085
DATE: 08/2024
S–05 SHEET 61 OF 134
CAD FILE: CSSLS40D03.dwg

FACILITY DRAWINGS
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USER: RWRIGHT FILE: C:\pwworking\west01\d3411632\CSSLS40D03.dwg DATE: 8/28/24 TIME: 04:40pm

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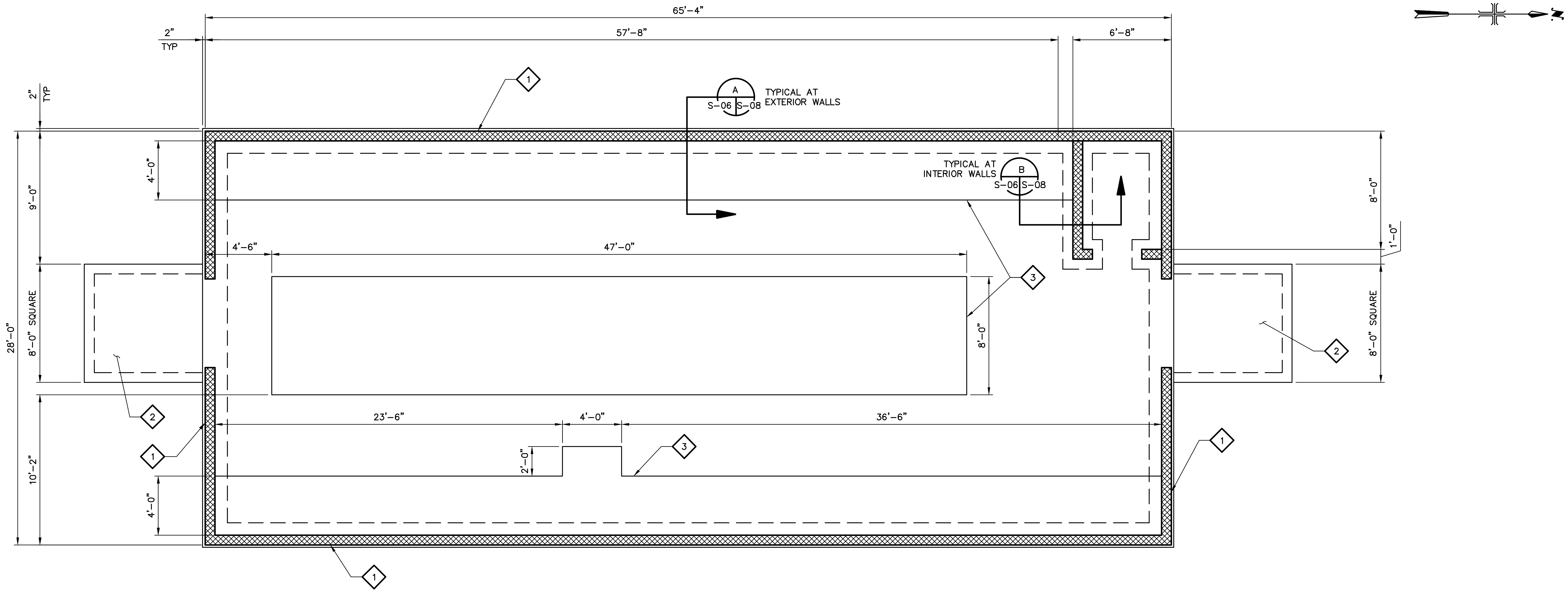

0 2 4 8
1/4" = 1'–0"

GENERAL NOTES

1. STRUCTURAL DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SHOWN ON SHEETS S–01.
2. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
3. COORDINATE LOCATION AND SIZE OF EQUIPMENT PADS PRIOR TO CONCRETE PLACEMENT.
4. SEE CIVIL DRAWINGS FOR STRUCTURE LOCATION AND COORDINATE POINTS.
5. FOR SLAB REINFORCEMENT, SEE WALL SECTIONS.
6. SEE ARCHITECTURAL DRAWINGS FOR LOCATION OF MASONRY CONTROL JOINTS (MCJ).

FACILITY DRAWINGS
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KEY NOTES

1. 8" STRUCTURAL MASONRY WALL WITH EIFS. SEE 4 S–06 S–05

   SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION ON FINISHES, ROUGH OPENING DIMENSIONS, ETC.
2. CONCRETE STOOP, TYPICAL. SEE 4 S–06 S–03
3. CONCRETE EQUIPMENT SUPPORT PAD, TYPICAL. SEE 6 S–06 S–04

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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

ELECTRICAL AND CONTROL BUILDING FOUNDATION PLAN

CITY PROJECT NO. WS90400085
DATE: 08/2024
S–06 SHEET 62 OF 134
CAD FILE: CSSLS40P01.dwg

USER: RWRIGHT FILE: C:\Users\rwright\AppData\Local\Temp\AcPublish_16400\CSSLS40P01.dwg DATE: 8/28/24 TIME: 04: 44pm

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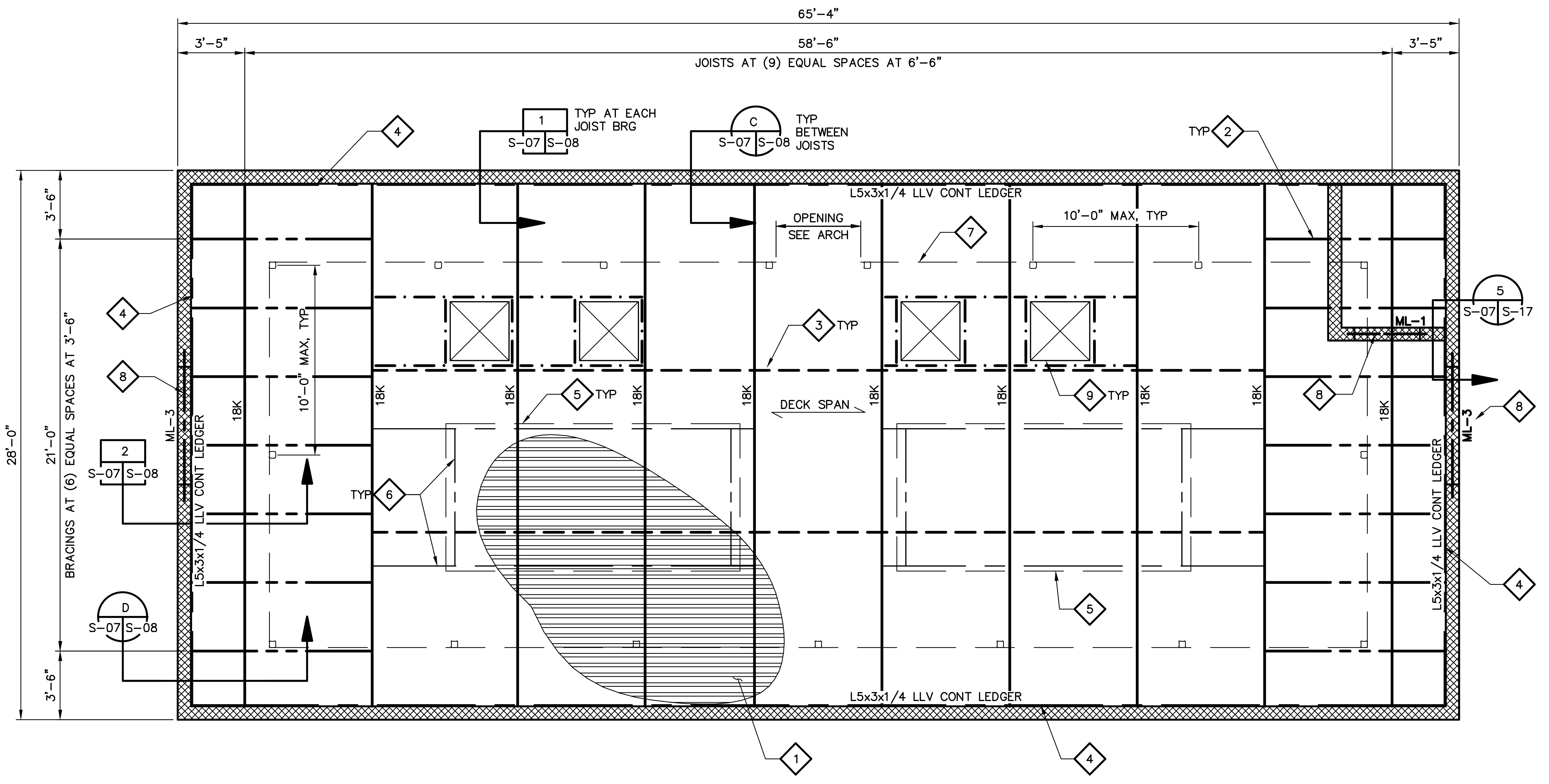
65'–4"
3'–5"
58'–6"
JOISTS AT (9) EQUAL SPACES AT 6'–6"
3'–5"
4
1
S–07 S–08
TYP AT EACH JOIST BRG
C
S–07 S–08
TYP BETWEEN JOISTS
TYP 2
L5x3x1/4 LLV CONT LEDGER
OPENING SEE ARCH
7
10'–0" MAX, TYP
5
S–07 S–17
ML–1
3'–6"
28'–0"
21'–0"
BRACINGS AT (6) EQUAL SPACES AT 3'–6"
3'–6"
4
8
ML–3
2
S–07 S–08
D
S–07 S–08
L5x3x1/4 LLV CONT LEDGER
18K
10'–0" MAX, TYP
3 TYP
5 TYP
DECK SPAN
9 TYP
TYP 6
8
ML–3
8
L5x3x1/4 LLV CONT LEDGER
4
5
L5x3x1/4 LLV CONT LEDGER
1
4

0 2 4 8
1/4" = 1'–0"

GENERAL NOTES

1. STRUCTURAL DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SHOWN ON SHEETS S–01.
2. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND ELEVATIONS NOT SHOWN.
3. COORDINATE LOCATION OF ALL OPENINGS AND SIZES WITH MEP DRAWINGS PRIOR TO CONSTRUCTION.
4. DESIGN STEEL JOISTS FOR THE DESIGN CRITERIA DEFINED ON SHEET S–01 AND LOAD DIAGRAM ON SHEET S–08. ALL LOADS SHALL BE COMBINED PER THE REQUIREMENTS OF THE 2018 IBC AND ASCE 7–16. SEE SPECIFICATION SECTION 05 21 00 FOR ADDITIONAL INFORMATION.
5. PROVIDE HORIZONTAL BRIDGING OF STEEL JOISTS PER THE SPECIFICATIONS. BRIDGING TO BE DESIGNED BY THE JOIST MANUFACTURER.
6. REFER TO STANDARD DETAILS FOR LINTEL REINFORCEMENT.

KEY NOTES

1. 1 1/2" GALVANIZED METAL DECK PER SPECIFICATION SECTION 05 30 00.15. SEE STANDARD DETAILS FOR REQUIRED ATTACHMENT.
2. 2.5K3 BRACING, TYPICAL. SEE GENERAL NOTE 3 FOR ADDITIONAL INFORMATION.
3. JOIST BRIDGING, TYPICAL. SEE GENERAL NOTE 5 FOR ADDITIONAL INFORMATION. ADJUST LOCATION OF BRIDGING, AS REQUIRED TO AVOID OPENINGS FOR MEP EQUIPMENT PER GENERAL SHEET NOTE 3.
4. CONTINUOUS LEDGER ANGLE, TYPICAL. MITER AND FULLY WELD LEDGER ANGLE AT CORNERS, TYPICAL.
5. ROOF MOUNTED MECHANICAL UNIT. MAXIMUM WEIGHT NOT TO EXCEED 5000 LBS. SEE MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
6. ADDITIONAL FRAMING AT ROOF MOUNTED MECHANICAL UNIT. SEE 7 S–07 S–17
7. SCREEN AROUND ROOF MOUNTED MECHANICAL UNIT. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION. FOR ADDITIONAL STRUCTURAL FRAMING, SEE 6 S–07 S–17
8. MASONRY LINTEL, TYPICAL. SEE 4 S–07 S–05
9. PENETRATION IN ROOF DECKING FOR HVAC EQUIPMENT. SEE HVAC DRAWINGS. PROVIDE ADDITIONAL FRAMING OPENING PER 2 S–07 S–05

FACILITY DRAWINGS
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RYAN O. WRIGHT

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WATER SERVICES DEPARTMENT

LIFT STATION 40
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STRUCTURAL

ELECTRICAL AND CONTROL BUILDING
ROOF FRAMING PLAN

CITY PROJECT NO. WS90400085
DATE: 08/2024
S–07 SHEET 63 OF 134
CAD FILE: CSSLS40P02.dwg

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DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

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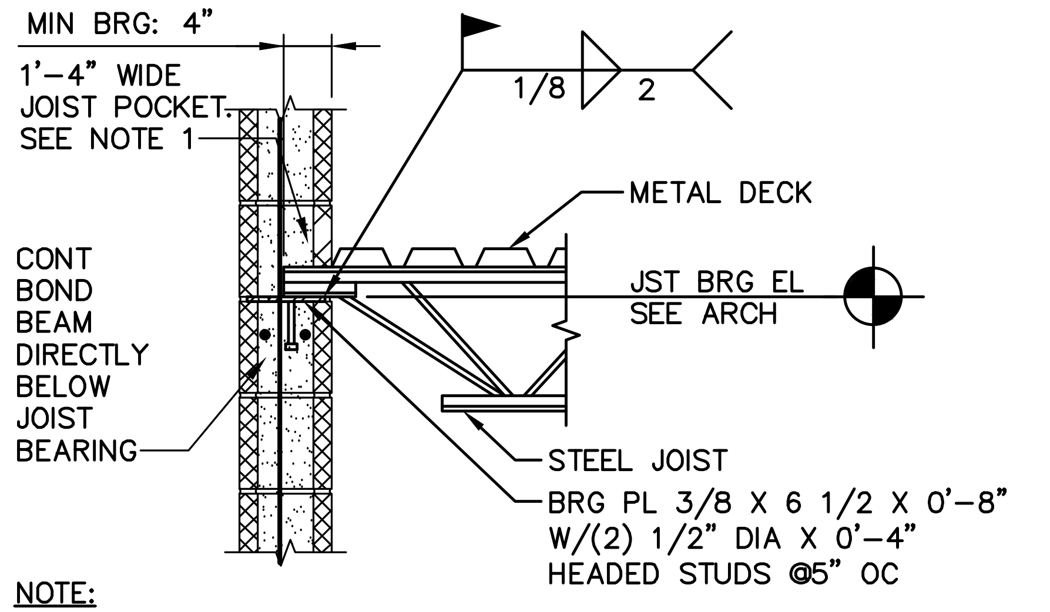
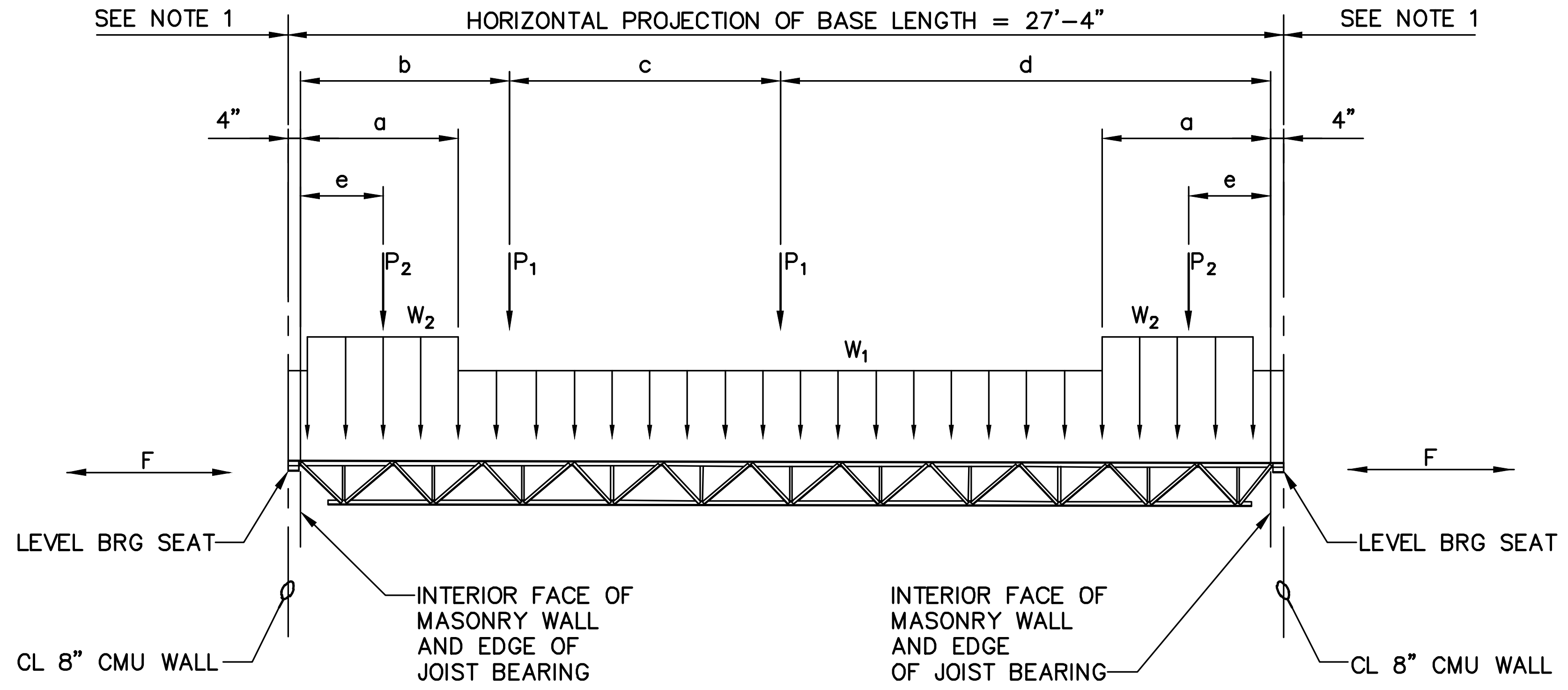

MIN BRG: 4"
1'–4" WIDE JOIST POCKET, SEE NOTE 1
1/8
2
METAL DECK
JST BRG EL SEE ARCH
CONT BOND BEAM DIRECTLY BELOW JOIST BEARING
STEEL JOIST
BRG PL 3/8 X 6 1/2 X 0'–8" W/(2) 1/2" DIA X 0'–4" HEADED STUDS @5" OC

NOTE:

1. JOIST POCKET TO BE GROUTED SOLID AFTER ROOF INSTALLATION.
2. FOR ADDITIONAL INFORMATION, SEE C

TYPICAL JOIST BEARING DETAIL 1 S-08 S-07

SCALE = NTS


SEE NOTE 1
HORIZONTAL PROJECTION OF BASE LENGTH = 27'–4"
SEE NOTE 1
4"
b
c
d
4"
a
a
e
e
P₂
P₁
P₁
P₂
W₂
W₁
W₂
F
F
LEVEL BRG SEAT
LEVEL BRG SEAT
INTERIOR FACE OF MASONRY WALL AND EDGE OF JOIST BEARING
INTERIOR FACE OF MASONRY WALL AND EDGE OF JOIST BEARING
CL 8" CMU WALL
CL 8" CMU WALL

NOTES:

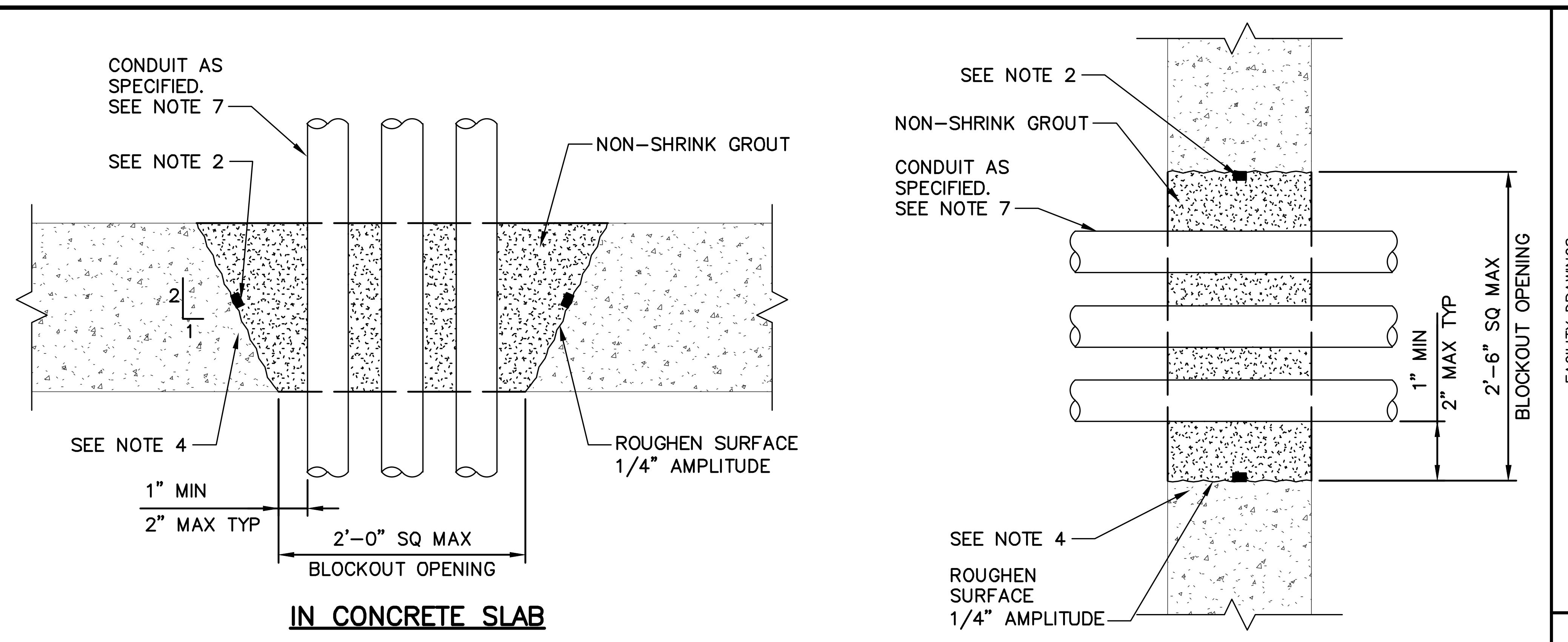
1. DIMENSIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY DIMENSIONS.
2. ALL LOADS REPRESENT ALLOWABLE STRESS DESIGN LEVEL FORCES.
3. SEE GENERAL NOTE 2 ON ELECTRICAL BUILDING ROOF PLAN.

JOIST LOADING DIAGRAM

JOIST	DIMENSION	LOAD	DEAD	LIVE	WIND	SEISMIC
18K	a=8'–4	W1	210 PLF	130 PLF	+120 PLF / –317 PLF	–
	b=6'–11"	W2	210 PLF	130 PLF	+120 PLF / –528 PLF	–
	c=7'–6"	F	–	–	+/–1.5 KIP	+/–1.6 KIP
	d=12'–3"	P_1	1200 LBS	–	–	–
	e=2'–0"	P_2	1300 LBS	–	–	–

JOIST LOAD DIAGRAM 3

SCALE = NTS


CONDUIT AS SPECIFIED. SEE NOTE 7
SEE NOTE 2
NON–SHRINK GROUT
2
1
SEE NOTE 4
ROUGHEN SURFACE 1/4" AMPLITUDE
1" MIN
2" MAX TYP
2'–0" SQ MAX
BLOCKOUT OPENING
SEE NOTE 2
NON–SHRINK GROUT
CONDUIT AS SPECIFIED. SEE NOTE 7
1" MIN
2" MAX TYP
2'–6" SQ MAX
BLOCKOUT OPENING
SEE NOTE 4
ROUGHEN SURFACE 1/4" AMPLITUDE

IN CONCRETE SLAB

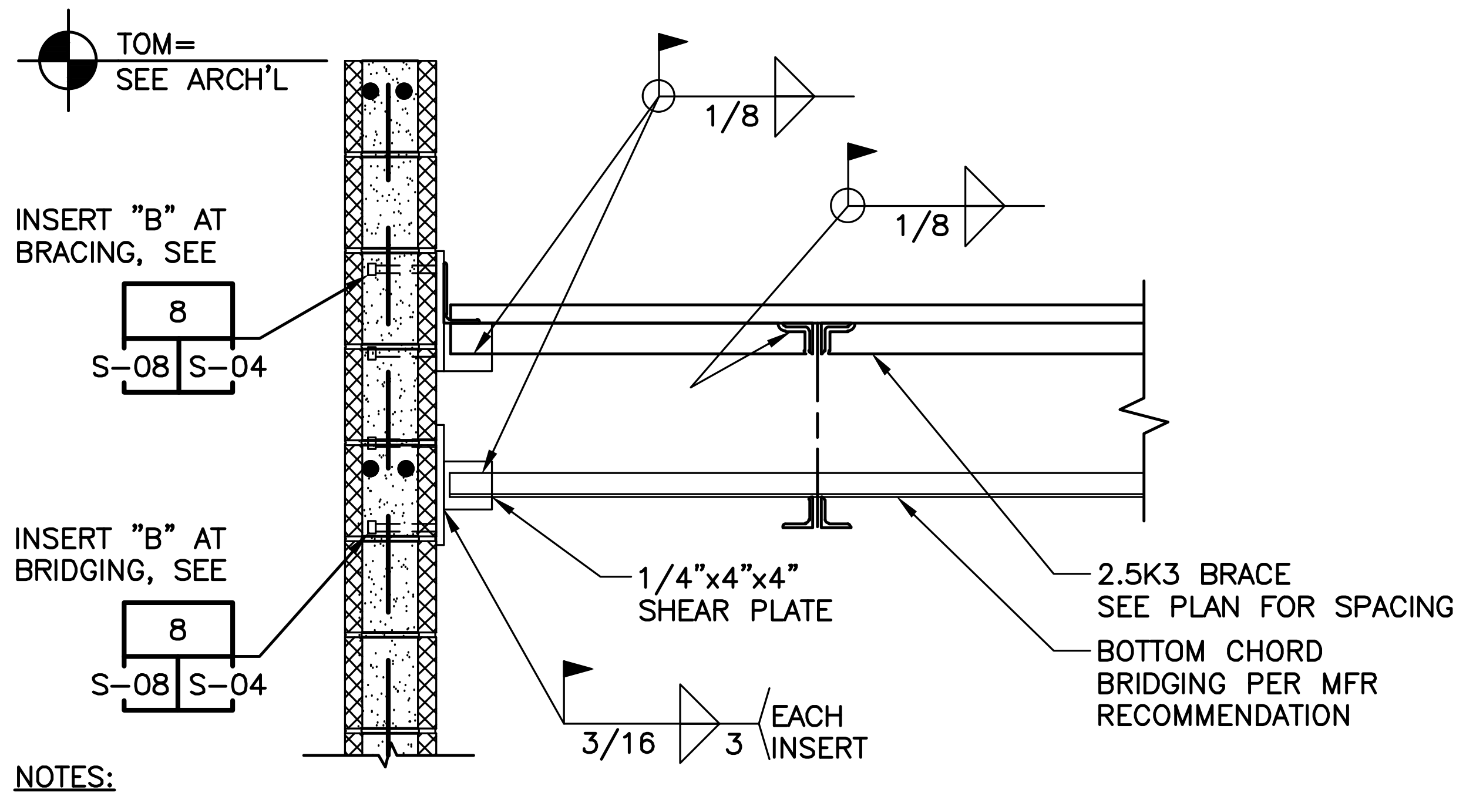
IN CONCRETE WALL

NOTES:

1. USE DETAIL ONLY WHERE THE FOLLOWING APPLY UNLESS NOTED ON THE DRAWINGS:
   - A. CONDUITS ARE CLOSELY SPACED IN A CLUSTER OF (4) OR MORE CONDUITS.
   - B. SLAB OR WALL REINFORCEMENT IS TIGHTLY SPACED AT 6" AND SMALLER.
   - C. CONDUIT CANNOT BE LOCATED WITHOUT INTERFERING WITH REINFORCEMENT.
2. WHERE SLAB AND WALL BLOCKOUTS ARE LOCATED BELOW GRADE PROVIDE 1 1/2" WIDE PREFORMED STRIP TYPE WATERSTOP CENTERED IN WALL OR SLAB ALL AROUND OPENING.
3. WALL AND SLAB REINFORCEMENT NOT SHOWN FOR CLARITY.
4. PROVIDE ADDITIONAL REINFORCEMENT AROUND OPENING PER DETAIL 1 ON SHEET S–03.
5. THERE SHALL BE 2'–6" MINIMUM SPACING BETWEEN ADJACENT OPENINGS.
6. CONDUITS SHALL NOT BE LOCATED TO PENETRATE THROUGH FOOTINGS OR NEAR BEARING WALLS.
7. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.

ELECTRICAL CONDUIT BLOCKOUT 4

SCALE: NTS

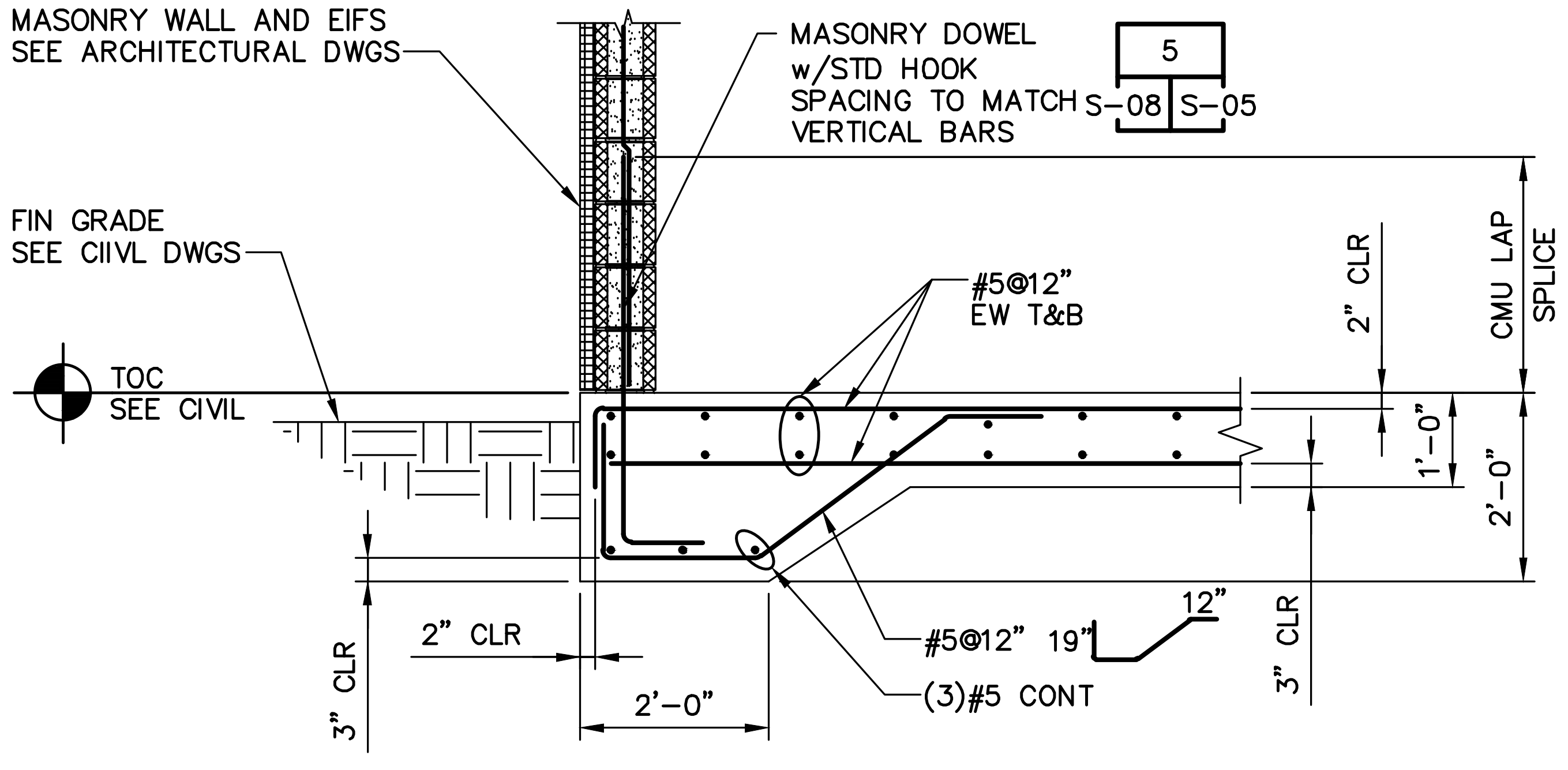

TOM= SEE ARCH'L
1/8
1/8
INSERT "B" AT BRACING, SEE 8 S–08 S–04
INSERT "B" AT BRIDGING, SEE 8 S–08 S–04
1/4"x4"x4" SHEAR PLATE
2.5K3 BRACE SEE PLAN FOR SPACING
BOTTOM CHORD BRIDGING PER MFR RECOMMENDATION
3/16
3
EACH INSERT

NOTES:

1. AT CONTRACTORS OPTION, INSERTS FOR BRIDGING AND BRACING ATTACHMENT TO CMU WALL MAY BE POST–INSTALLED. SUBMIT DETAILS FOR REVIEW AND APPROVAL. SEE SPECIFICATION SECTION 03 15 19 FOR ADDITIONAL INFORMATION.
2. FOR ADDITIONAL INFORMATION, SEE D

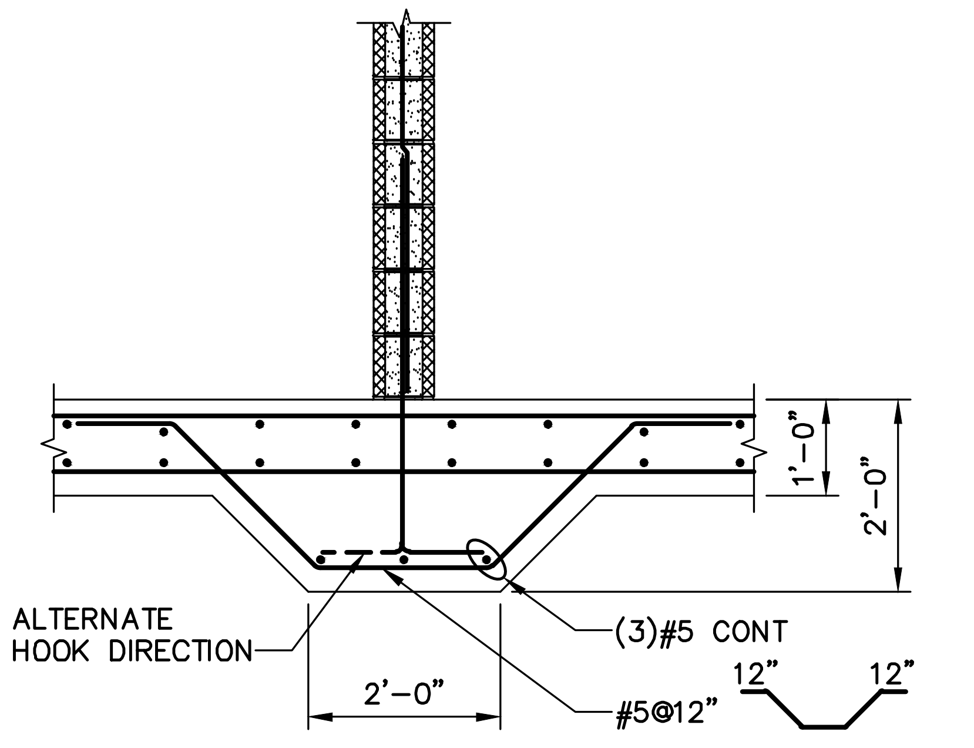
DETAIL AT BRACING 2 S-08 S-07

SCALE = NTS


MASONRY WALL AND EIFS SEE ARCHITECTURAL DWGS
MASONRY DOWEL w/STD HOOK SPACING TO MATCH VERTICAL BARS
5 S–08 S–05
FIN GRADE SEE CIIVL DWGS
TOC SEE CIVIL
#5@12" EW T&B
2" CLR
CMU LAP SPLICE
1'–0"
2'–0"
2" CLR
3" CLR
#5@12" 19"
12"
3" CLR
(3)#5 CONT
2'–0"

SECTION A S-08 S-06

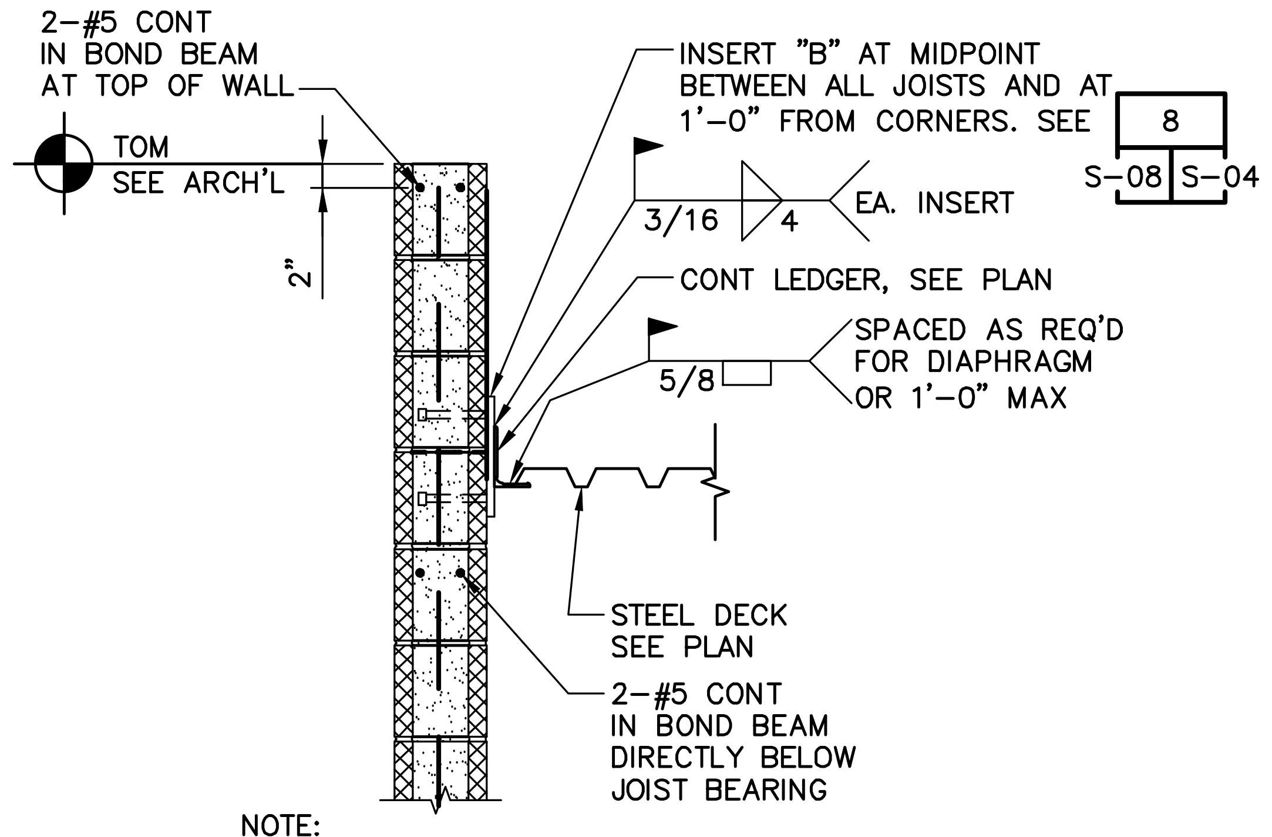
SCALE = NTS


1'–0"
2'–0"
ALTERNATE HOOK DIRECTION
2'–0"
(3)#5 CONT
12"
12"
#5@12"

FOR ADDITIONAL INFORMATION, SEE A

SECTION B S-08 S-06

SCALE = NTS

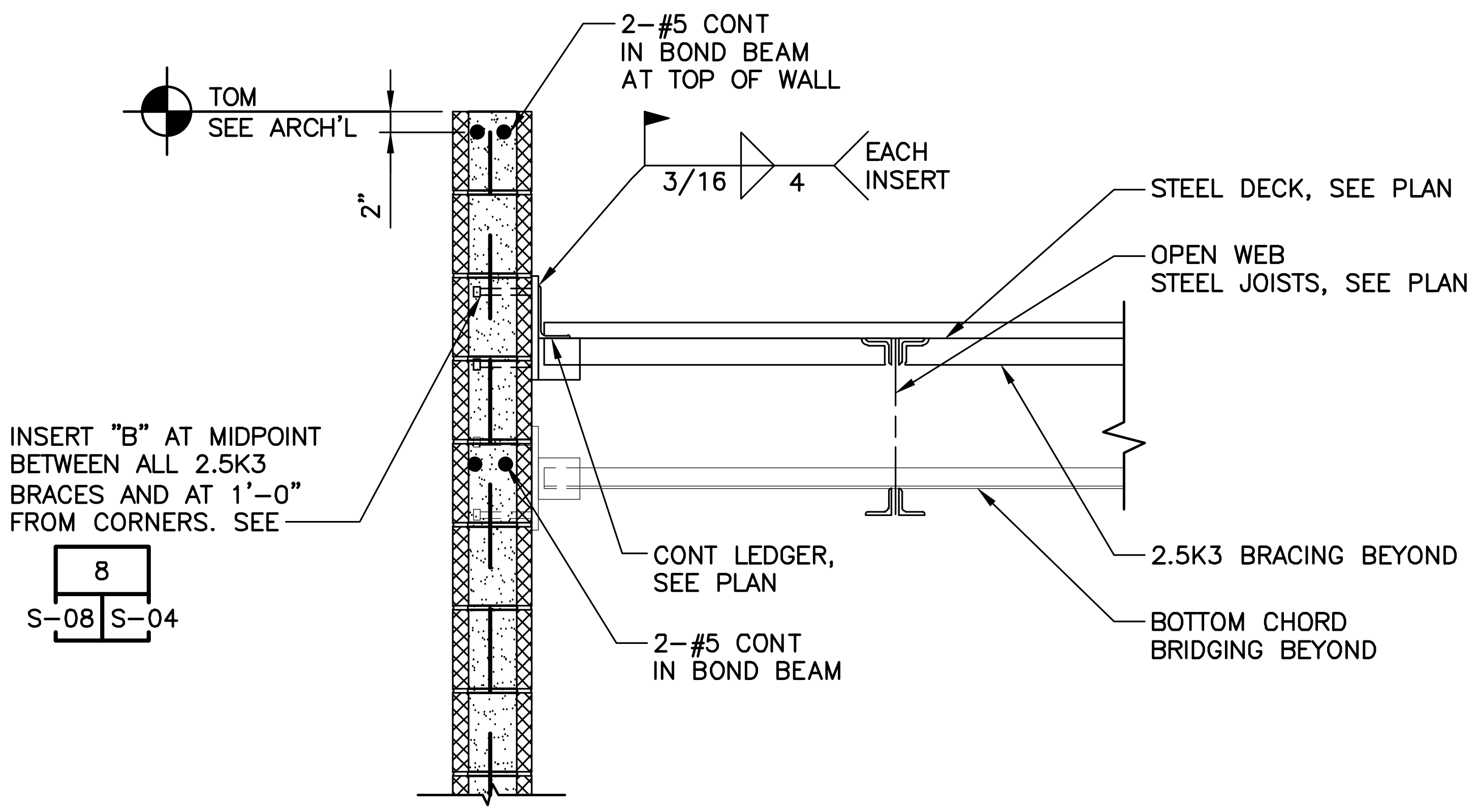

2–#5 CONT IN BOND BEAM AT TOP OF WALL
TOM SEE ARCH'L
2"
INSERT "B" AT MIDPOINT BETWEEN ALL JOISTS AND AT 1'–0" FROM CORNERS. SEE 8 S–08 S–04
3/16
4
EA. INSERT
CONT LEDGER, SEE PLAN
5/8
SPACED AS REQ'D FOR DIAPHRAGM OR 1'–0" MAX
STEEL DECK SEE PLAN
2–#5 CONT IN BOND BEAM DIRECTLY BELOW JOIST BEARING

NOTE:

1. FOR ADDITIONAL INFORMATION, SEE 1

SECTION C S-08 S-07

SCALE = 3/4"= 1'–0"


2–#5 CONT IN BOND BEAM AT TOP OF WALL
TOM SEE ARCH'L
2"
3/16
4
EACH INSERT
STEEL DECK, SEE PLAN
OPEN WEB STEEL JOISTS, SEE PLAN
INSERT "B" AT MIDPOINT BETWEEN ALL 2.5K3 BRACES AND AT 1'–0" FROM CORNERS. SEE 8 S–08 S–04
CONT LEDGER, SEE PLAN
2.5K3 BRACING BEYOND
BOTTOM CHORD BRIDGING BEYOND
2–#5 CONT IN BOND BEAM

NOTES:

1. AT CONTRACTORS OPTION, INSERTS FOR BRIDGING AND BRACING ATTACHMENT TO CMU WALL MAY BE POST–INSTALLED. SUBMIT DETAILS FOR REVIEW AND APPROVAL. SEE SPECIFICATION SECTION 03 15 19 FOR ADDITIONAL INFORMATION.
2. FOR ADDITIONAL INFORMATION, SEE 2

SECTION D S-08 S-07

SCALE = 3/4"= 1'–0"

FACILITY DRAWINGS
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USER: RWRIGHT FILE: C:\pwworking\west01\d3411632\CSSLS40Q01.dwg DATE: 8/28/24 TIME: 04:49pm

HDR

62528
RYAN O.
WRIGHT
Date Signed 08-30-24

REVISIONS

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B	RW	04/2024	TH	AGENCY REVIEW
C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES	RW
DWN	RW
CKD	TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

ELECTRICAL AND CONTROL BUILDING
SECTIONS AND DETAILS

CITY PROJECT NO. WS90400085

DATE: 08/2024

S–08 SHEET 64 OF 134

CAD FILE: CSSLS40Q01.dwg

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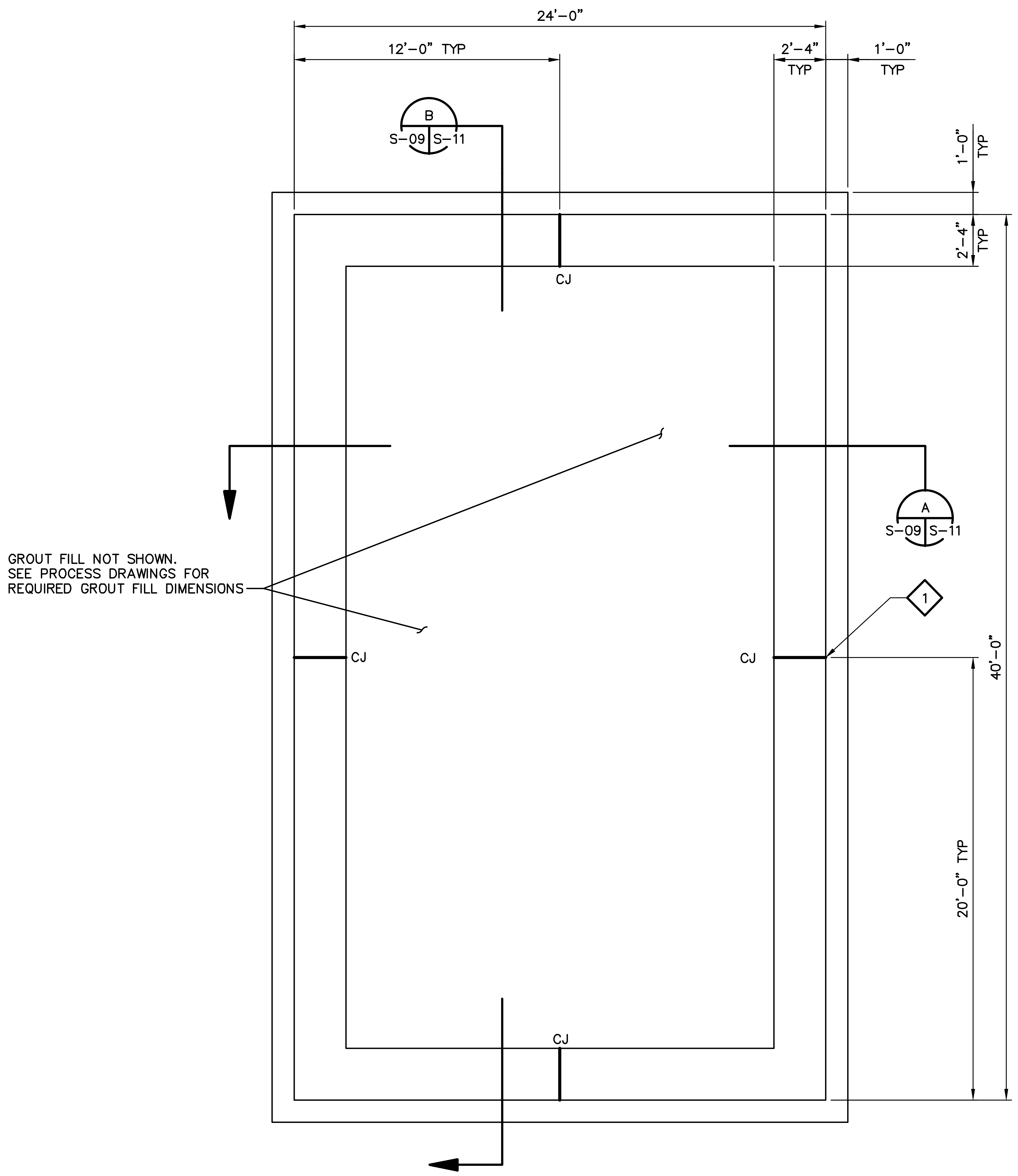
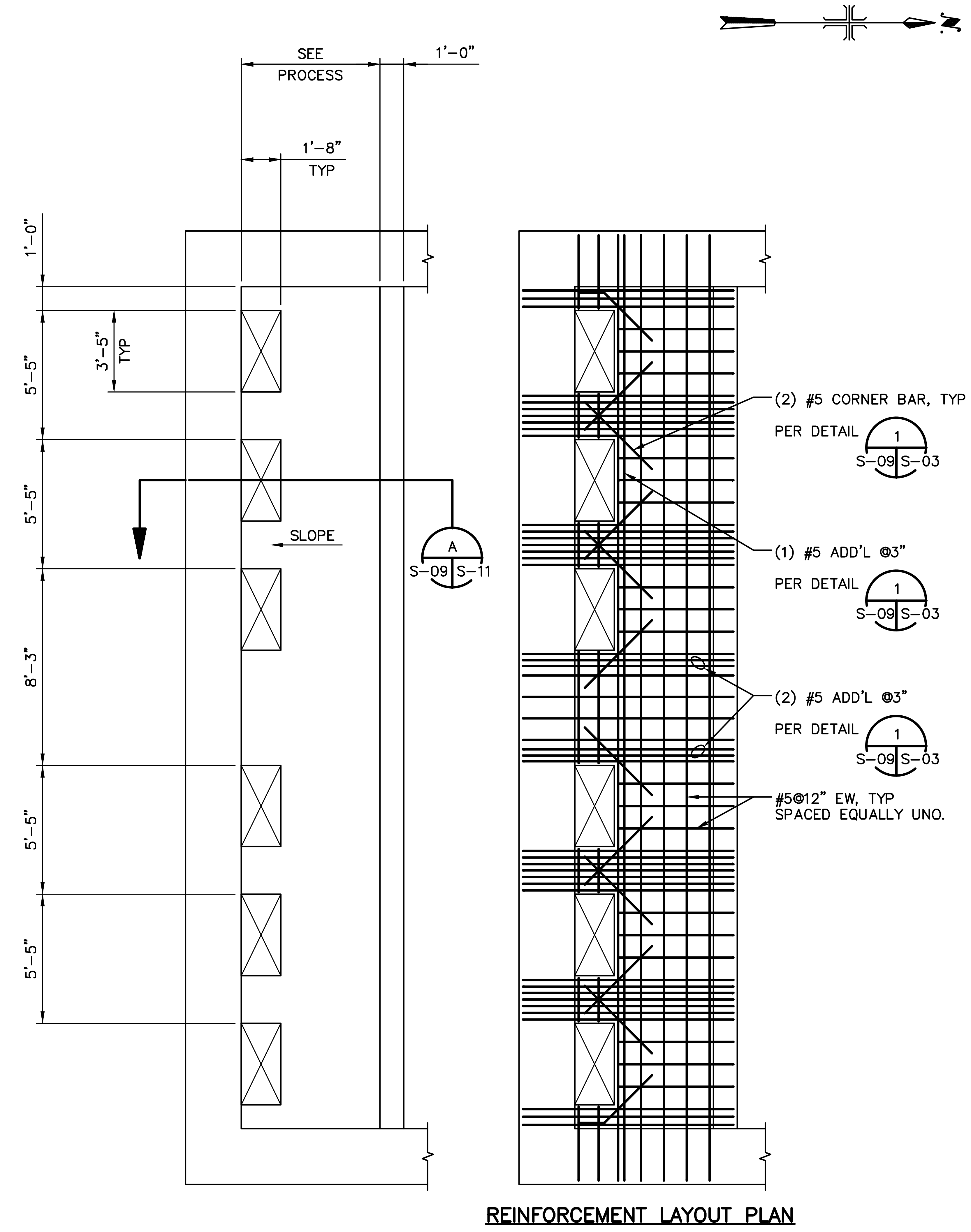
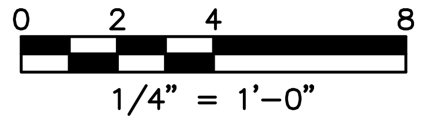

24'-0"
12'-0" TYP
2'-4" TYP
1'-0" TYP
1'-0" TYP
2'-4" TYP
B
S-09 S-11
CJ
A
S-09 S-11
GROUT FILL NOT SHOWN.
SEE PROCESS DRAWINGS FOR
REQUIRED GROUT FILL DIMENSIONS
1
CJ
CJ
40'-0"
20'-0" TYP
CJ

WET WELL FOUNDATION PLAN 1 / - | -
SCALE: 1/4" = 1'-0"


SEE PROCESS
1'-0"
1'-8" TYP
1'-0"
5'-5"
3'-5" TYP
5'-5"
SLOPE
A
S-09 S-11
8'-3"
5'-5"
5'-5"
(2) #5 CORNER BAR, TYP
PER DETAIL 1 S-09 S-03
(1) #5 ADD'L @3"
PER DETAIL 1 S-09 S-03
(2) #5 ADD'L @3"
PER DETAIL 1 S-09 S-03
#5@12" EW, TYP
SPACED EQUALLY UNO.
REINFORCEMENT LAYOUT PLAN

WET WELL CHANNEL PARTIAL PLAN 2 / - | -
AT ELEVATION 1200.75'
SCALE: 1/4" = 1'-0"



GENERAL NOTES

1. STRUCTURAL DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SHOWN ON SHEETS S-01.
2. SEE CIVIL DRAWINGS FOR STRUCTURE LOCATION AND COORDINATE POINTS.
3. SEE PROCESS DRAWINGS FOR EQUIPMENT, PIPING AND PIPE SUPPORT INFORMATION.
4. FOR SLAB REINFORCEMENT, SEE FULL SECTIONS.

KEY NOTES

1 VERTICAL CONSTRUCTION JOINT IN WALL WITH WATERSTOP. TYPICAL. SEE 6 S-09 S-03

FACILITY DRAWINGS
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RYAN O. WRIGHT

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C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

WET WELL
FOUNDATION PLAN
AND CHANNEL PARTIAL PLAN

CITY PROJECT NO. WS90400085
DATE: 08/2024
S–09 SHEET 65 OF 134
CAD FILE: CSSLS40P03.dwg

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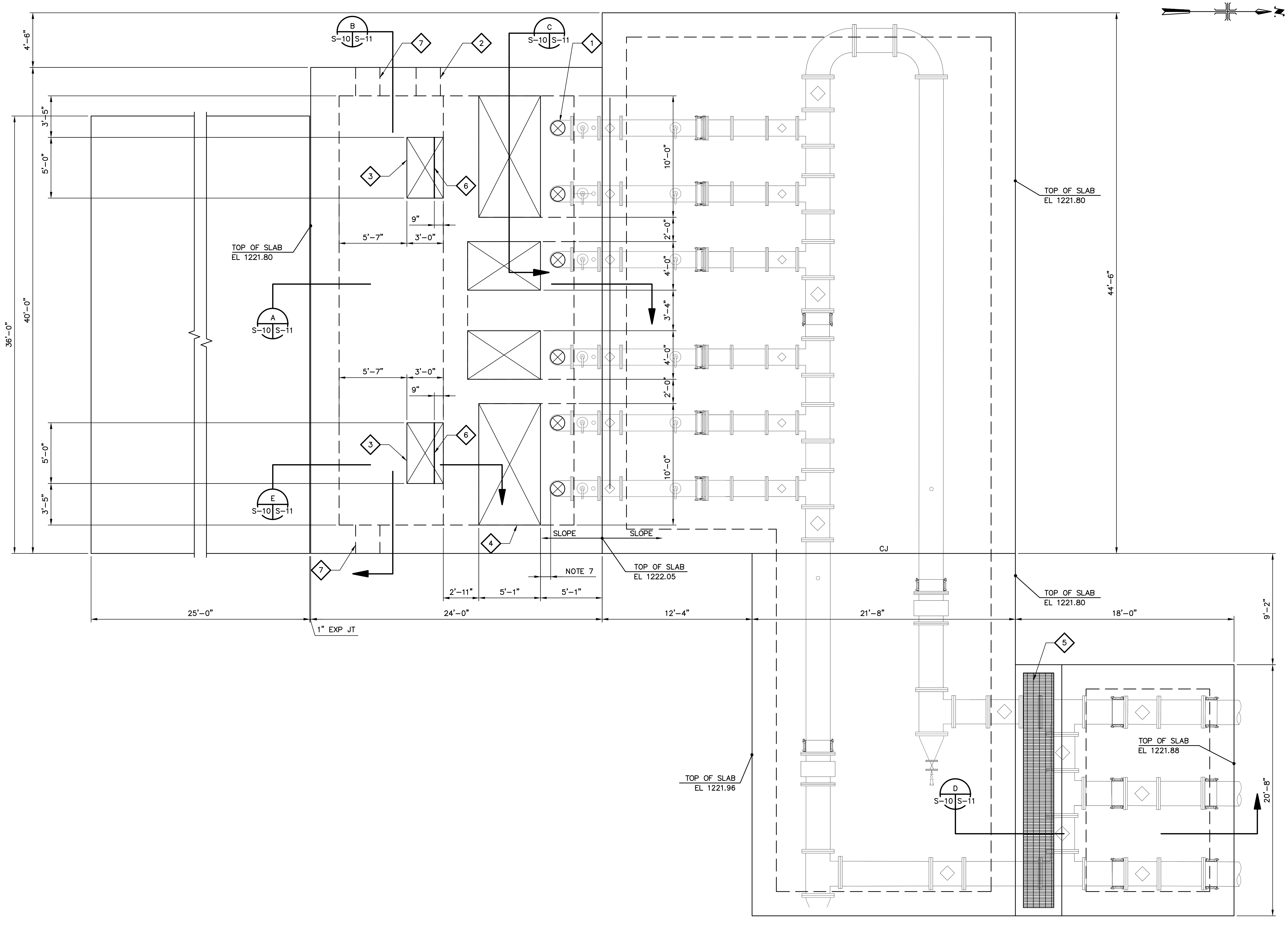
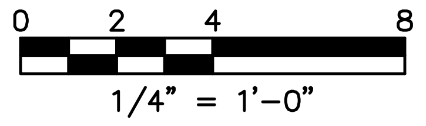


GENERAL NOTES

1. STRUCTURAL DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SHOWN ON SHEETS S-01.
2. COORDINATE LOCATION AND SIZE OF EQUIPMENT PADS PRIOR TO CONCRETE PLACEMENT.
3. SEE CIVIL DRAWINGS FOR STRUCTURE LOCATION AND COORDINATE POINTS.
4. SEE PROCESS DRAWINGS FOR PIPING AND PIPE SUPPORT INFORMATION.
5. FOR SLAB REINFORCEMENT, SEE FULL SECTIONS.
6. EQUIPMENT HATCH SIZE TO BE COORDINATED WITH FINAL PUMP SELECTION TO ENSURE ADEQUATE CLEARANCES. IF A LARGER OPENING THAN THAT SHOWN IS REQUIRED, CONTACT ENGINEER TO PROVIDE CLARIFICATION PRIOR TO FABRICATION.
7. ELIMINATE ADDITIONAL REINFORCING BARS REQUIRED AT OPENINGS EXCEPT THE DIAGONAL BARS AND SPACE MAIN EAST-WEST SLAB BARS AT 3" ON CENTER.

KEY NOTES

1. PENETRATION FOR PUMP DISCHARGE PIPE, TYPICAL. SEE PROCESS DRAWINGS.
2. PENETRATION FOR FOUL AIR DUCT. SEE PROCESS DRAWINGS.
3. ACCESS HATCH WITH SECONDARY FALL PROTECTION SYSTEM, TYPICAL. SEE SPECIFICATION SECTION 08 31 00 FOR ADDITIONAL INFORMATION.
4. EQUIPMENT HATCH WITH SECONDARY FALL PROTECTION SYSTEM, TYPICAL. SEE SPECIFICATION SECTION 08 31 00 FOR ADDITIONAL INFORMATION. SEE GENERAL NOTE 6.
5. FRP GRATING AND SUPPORTS PER STANDARD DETAIL. SEE SPECIFICATION SECTION 06 74 13 FOR ADDITIONAL INFORMATION.
6. W4x13 SST SUPPORT BEAM FOR WATER LEVEL ALARM FLOATS. FOR ADDITIONAL INFORMATION, SEE 8 S-10 S-17
7. PENETRATION FOR EXHAUST VENT. SEE PROCESS DRAWINGS.



1/4" = 1'-0"

FACILITY DRAWINGS
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RYAN O. WRIGHT

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C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES
RW
DWN
RW
CKD
TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

WET WELL ROOF PLAN
AND
PIPING SUPPORT PAD

CITY PROJECT NO. WS90400085
DATE: 08/2024
S-10 SHEET 66 OF 134
CAD FILE: CSSLS40P04.dwg

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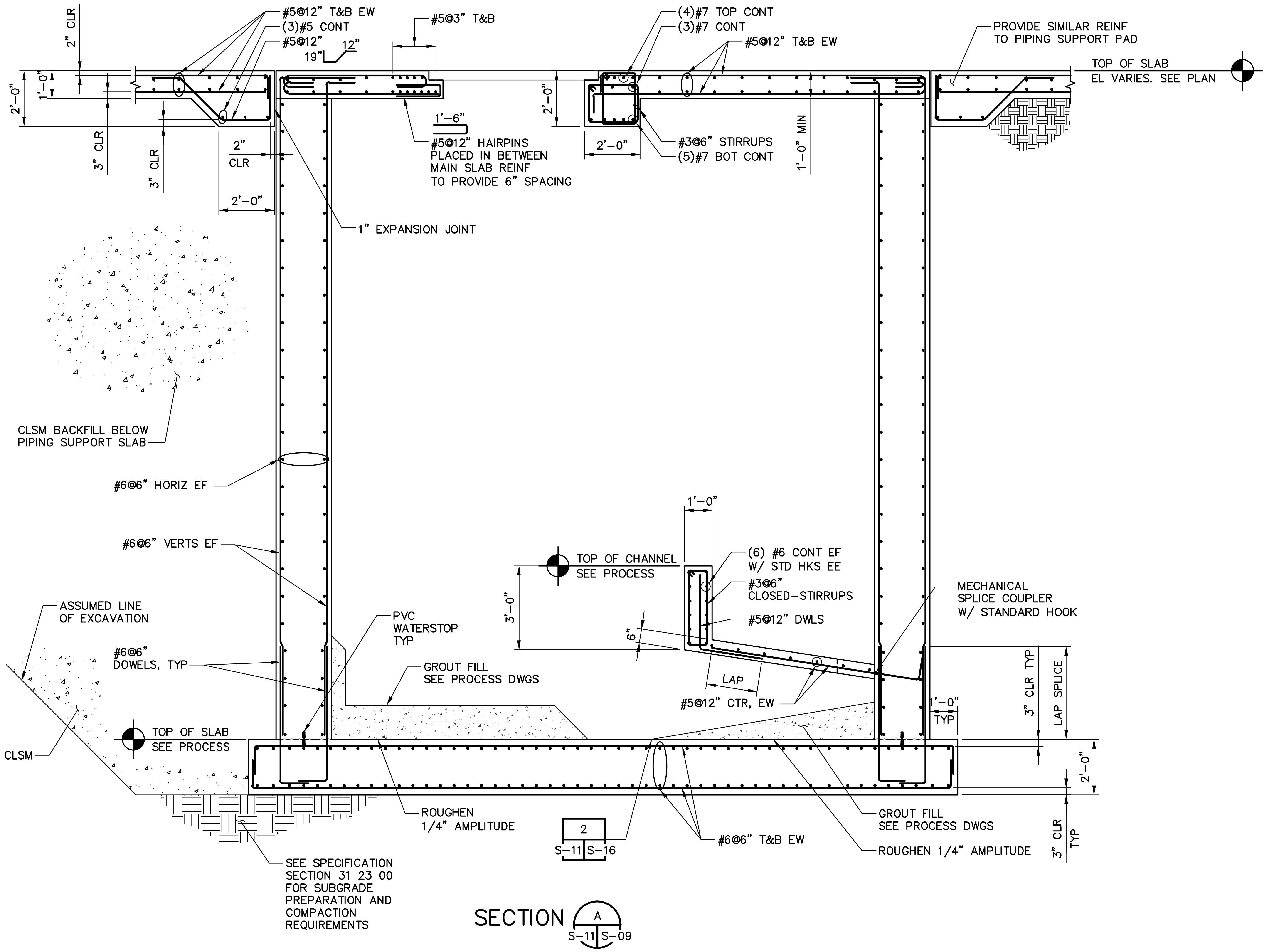
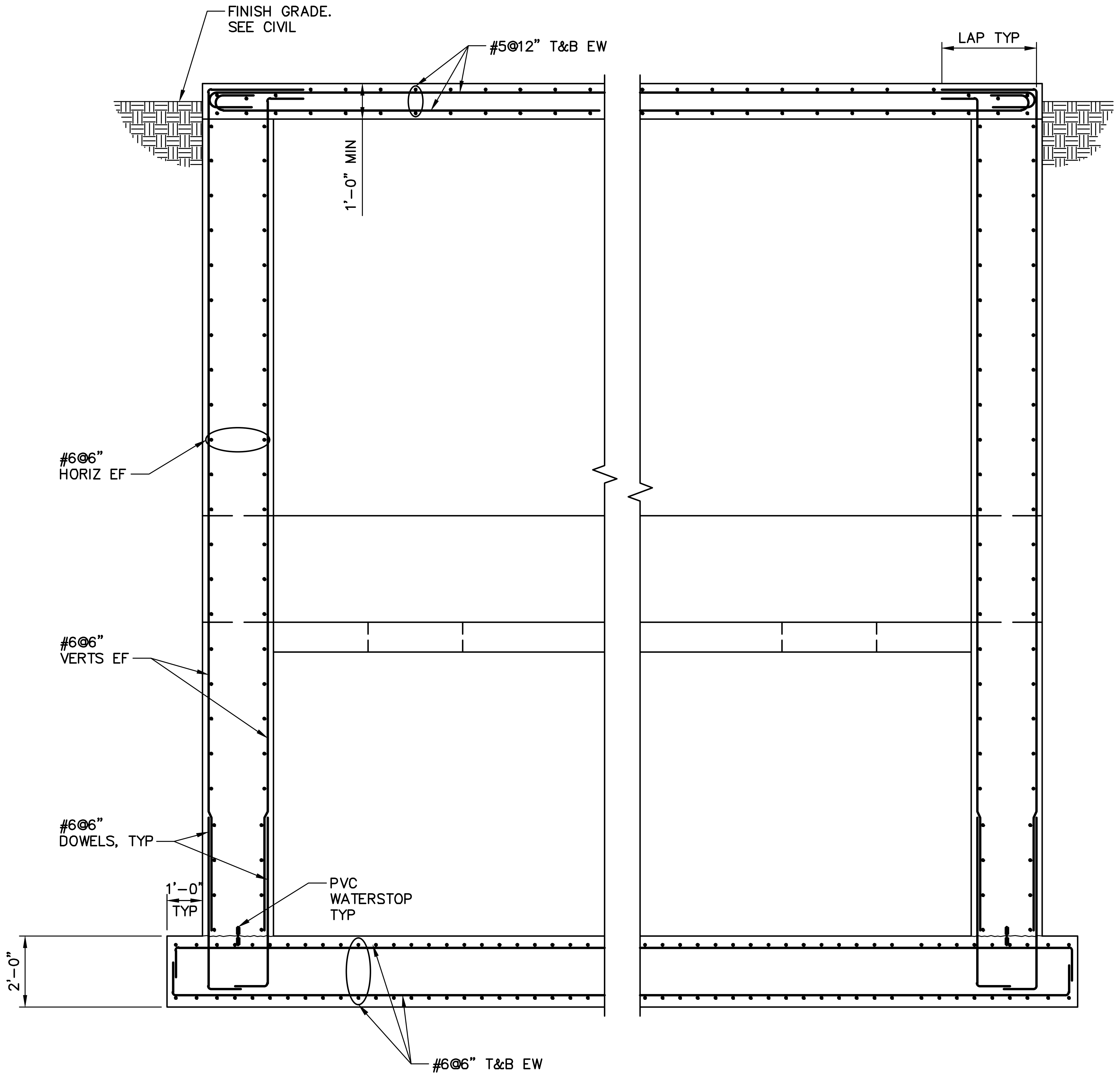
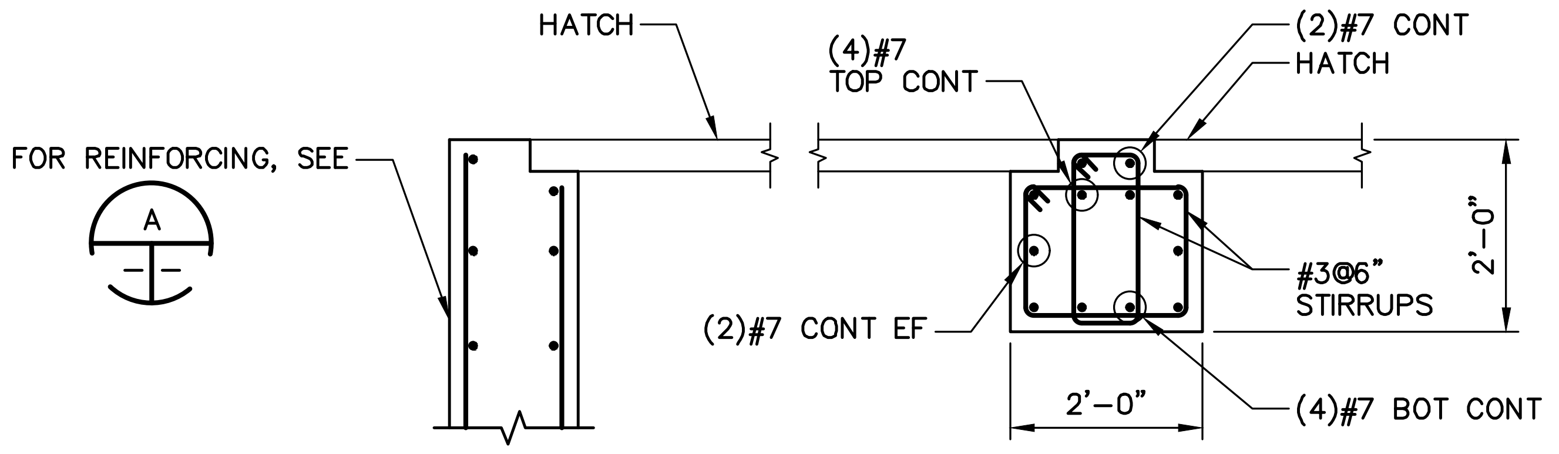

#5@12" T&B EW
(3)#5 CONT
#5@12" 12"
19"
2" CLR
1'-0"
2'-0"
3" CLR
3" CLR
2" CLR
2'-0"
#5@3" T&B
1'-6"
#5@12" HAIRPINS PLACED IN BETWEEN MAIN SLAB REINF TO PROVIDE 6" SPACING
(4)#7 TOP CONT
(3)#7 CONT
#5@12" T&B EW
2'-0"
2'-0"
#3@6" STIRRUPS
(5)#7 BOT CONT
1'-0" MIN
PROVIDE SIMILAR REINF TO PIPING SUPPORT PAD
TOP OF SLAB EL VARIES. SEE PLAN
1" EXPANSION JOINT
CLSM BACKFILL BELOW PIPING SUPPORT SLAB
#6@6" HORIZ EF
#6@6" VERTS EF
ASSUMED LINE OF EXCAVATION
#6@6" DOWELS, TYP
PVC WATERSTOP TYP
GROUT FILL SEE PROCESS DWGS
1'-0"
TOP OF CHANNEL SEE PROCESS
3'-0"
6"
(6) #6 CONT EF W/ STD HKS EE
#3@6" CLOSED-STIRRUPS
#5@12" DWLS
LAP
#5@12" CTR, EW
MECHANICAL SPLICE COUPLER W/ STANDARD HOOK
1'-0" TYP
3" CLR TYP
LAP SPLICE
2'-0"
3" CLR TYP
TOP OF SLAB SEE PROCESS
CLSM
ROUGHEN 1/4" AMPLITUDE
2 S-11 S-16
#6@6" T&B EW
GROUT FILL SEE PROCESS DWGS
ROUGHEN 1/4" AMPLITUDE
SEE SPECIFICATION SECTION 31 23 00 FOR SUBGRADE PREPARATION AND COMPACTION REQUIREMENTS

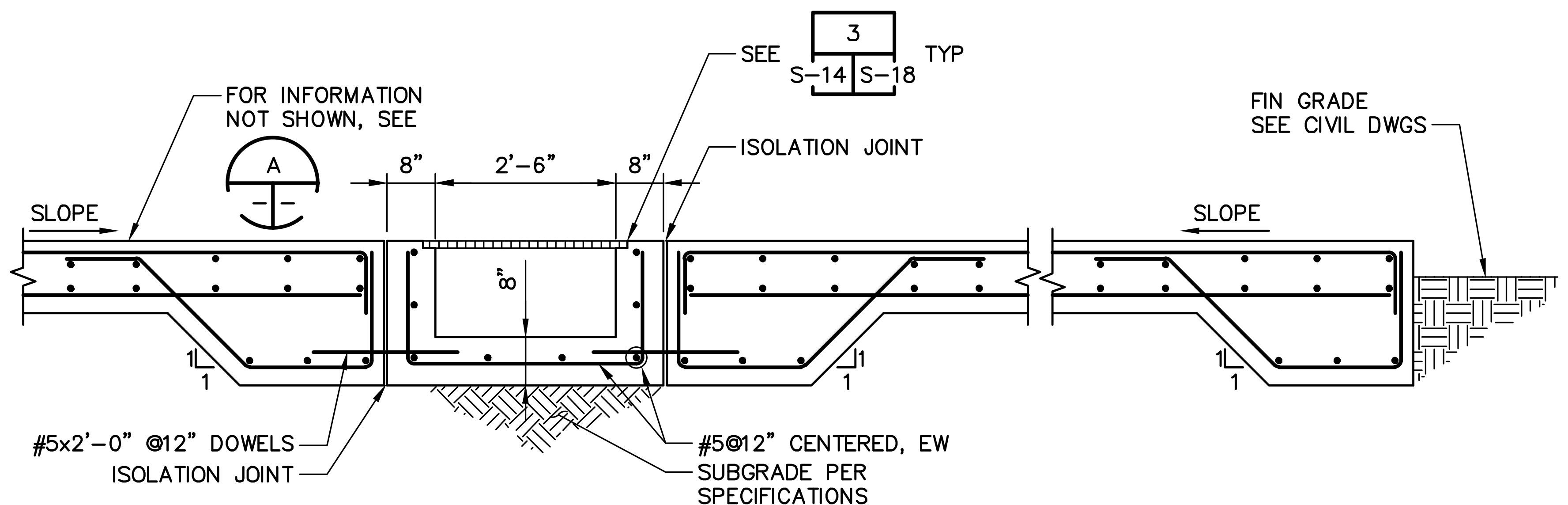
SECTION A S-11 S-09
SCALE = 3/8"= 1'-0"


FINISH GRADE. SEE CIVIL
#5@12" T&B EW
LAP TYP
1'-0" MIN
#6@6" HORIZ EF
#6@6" VERTS EF
#6@6" DOWELS, TYP
1'-0" TYP
PVC WATERSTOP TYP
2'-0"
#6@6" T&B EW

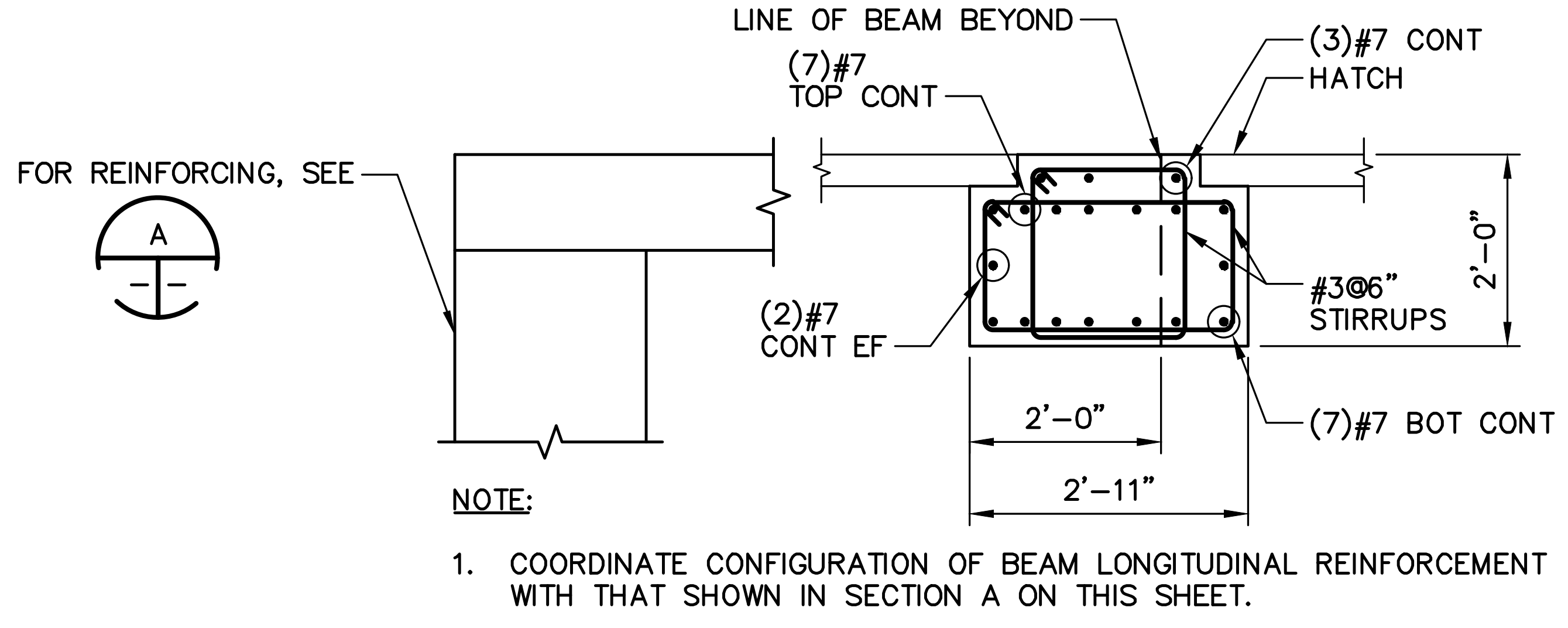
SECTION B S-11 S-09
SCALE = 3/8"= 1'-0"


HATCH
FOR REINFORCING, SEE
A
(4)#7 TOP CONT
(2)#7 CONT
HATCH
2'-0"
#3@6" STIRRUPS
(2)#7 CONT EF
2'-0"
(4)#7 BOT CONT

SECTION C S-11 S-10
SCALE = 1/2"= 1'-0"


SEE 3 S-14 S-18 TYP
FOR INFORMATION NOT SHOWN, SEE
A
8"
2'-6"
8"
ISOLATION JOINT
SLOPE
8"
SLOPE
FIN GRADE SEE CIVIL DWGS
1 1
1 1
1 1
#5x2'-0" @12" DOWELS
ISOLATION JOINT
#5@12" CENTERED, EW
SUBGRADE PER SPECIFICATIONS

SECTION D S-11 S-10
SCALE = 1/2"= 1'-0"


LINE OF BEAM BEYOND
FOR REINFORCING, SEE
A
(7)#7 TOP CONT
(3)#7 CONT
HATCH
2'-0"
#3@6" STIRRUPS
(2)#7 CONT EF
2'-0"
2'-11"
(7)#7 BOT CONT

NOTE:

1. COORDINATE CONFIGURATION OF BEAM LONGITUDINAL REINFORCEMENT WITH THAT SHOWN IN SECTION A ON THIS SHEET.

SECTION E S-11 S-10
SCALE = 1/2"= 1'-0"

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FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-
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HDR

62528
RYAN O. WRIGHT
Registered Professional Engineer (Civil)
Arizona, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	RW	01/2024	TH	90% SUBMITTAL
B	RW	04/2024	TH	AGENCY REVIEW
C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

WET WELL
SECTIONS AND DETAILS

CITY PROJECT NO. WS90400085
DATE: 08/2024
S–11 SHEET 67 OF 134
CAD FILE: CSSLS40Q02.dwg

USER:RWRIGHT FILE:C:\pwworking\west01\d3411632\CSSLS40Q02.dwg DATE:8/28/24 TIME:04:58pm

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FOR CONSTRUCTION

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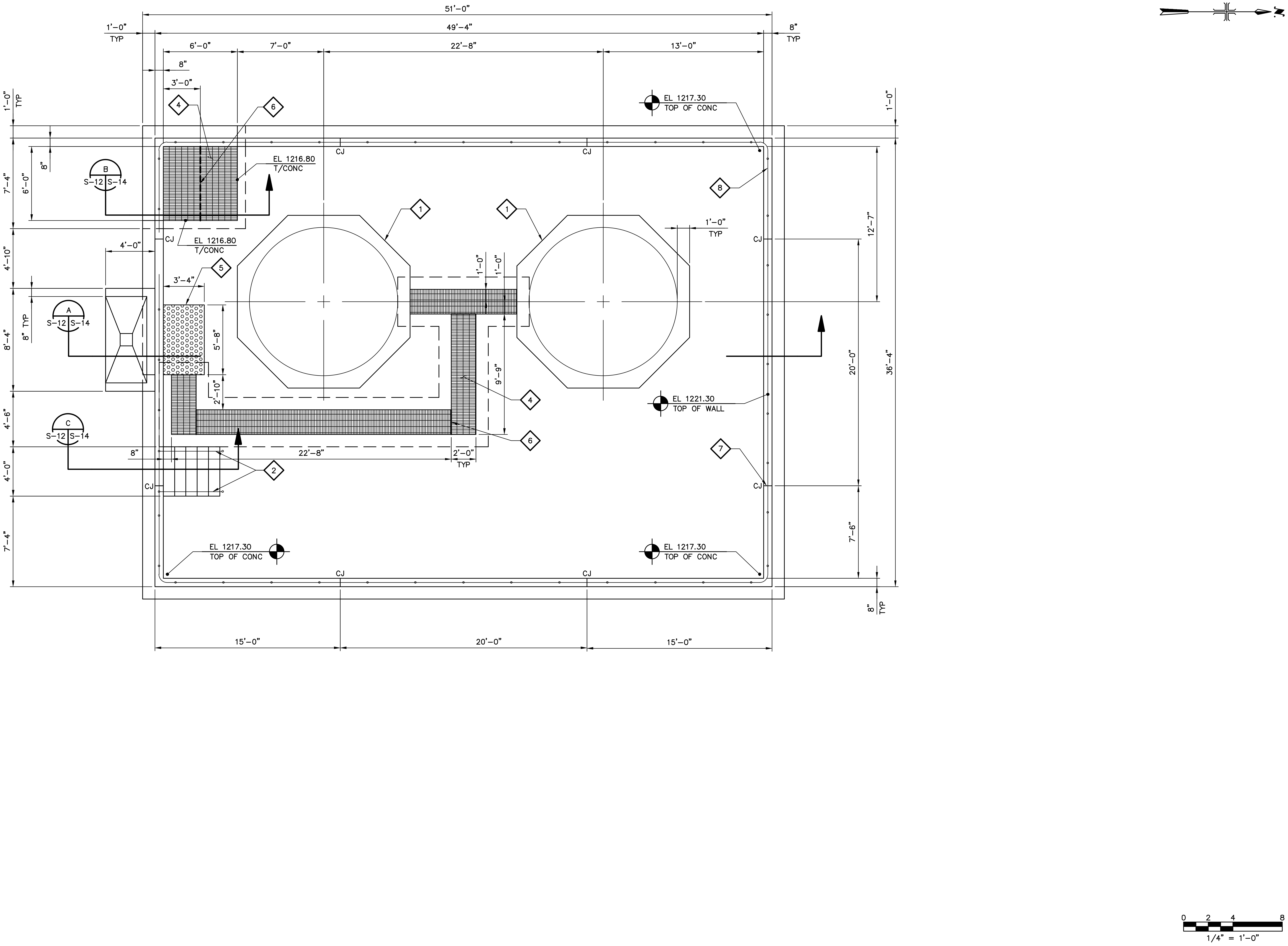

GENERAL NOTES

1. STRUCTURAL DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SHOWN ON SHEETS S–01.
2. COORDINATE LOCATION AND SIZE OF EQUIPMENT PADS PRIOR TO CONCRETE PLACEMENT.
3. SEE CIVIL DRAWINGS FOR STRUCTURE LOCATION AND COORDINATE POINTS.
4. SEE PROCESS DRAWINGS FOR PIPING AND PIPE SUPPORT INFORMATION.
5. FOR SLAB REINFORCEMENT, SEE SECTIONS.
6. COORDINATE ANCHOR BOLT LOCATIONS FOR THE EQUIPMENT SUPPLIED. ANCHORAGE DETAIL DRAWINGS AND DESIGN CALCULATIONS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE SUBMITTED DRAWINGS AND CALCULATIONS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF ARIZONA.

KEY NOTES

1. CHEMICAL STORAGE TANK CONCRETE SUPPORT PAD, TYPICAL. SEE GENERAL SHEET NOTE 6. FOR REINFORCEMENT, SEE 6 S–12 S–04
2. ALUMINUM HANDRAILS. SEE 1 S–12 S–17 AND 2 S–12 S–17
3. NOT USED
4. FRP GRATING AND SUPPORTS PER STANDARD DETAIL. SEE SPECIFICATION SECTION 06 74 13 FOR ADDITIONAL INFORMATION.
5. FILTER TANK SKID. SEE PROCESS.
6. W4x13 SST BEAM TO SUPPORT GRATING. SEE 8 S–12 S–17
7. VERTICAL CONSTRUCTION JOINT IN WALL WITH WATERSTOP, TYPICAL. SEE 6 S–09 S–03
8. ALUMINUM GUARDRAIL. TYPICAL. SEE 10 S–12 S–17

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
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#	–	–	–	–	–	–	–

USER:RWRIGHT FILE:C:\pwworking\west01\d3411632\CSSLS40P05.dwg DATE:8/28/24 TIME:05:00pm

HDR

Registered Professional Engineer (Civil)
CERTIFICATE NO. 62528
RYAN O. WRIGHT
ARIZONA, U.S.A.

REVISIONS

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DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

CHEMICAL CONTAINMENT AREA FOUNDATION PLAN

CITY PROJECT NO. WS90400085
DATE: 08/2024
S–12 SHEET 68 OF 134
CAD FILE: CSSLS40P05.dwg

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NOT IN CONTRACT

GENERAL NOTES

KEY NOTES

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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

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DES
RW
DWN
RW
CKD
TH

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CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

CHEMICAL CONTAINMENT AREA
ROOF FRAMING PLAN

CITY PROJECT NO. WS90400085
DATE: 08/2024
S–13 SHEET 69 OF 134
CAD FILE: CSSLS40P06.dwg

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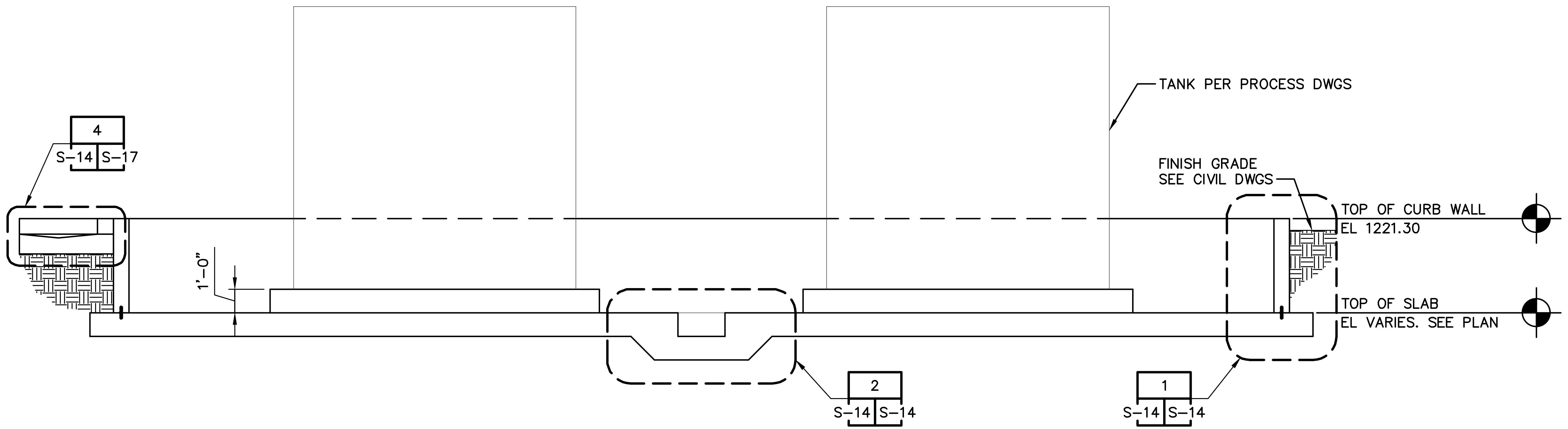
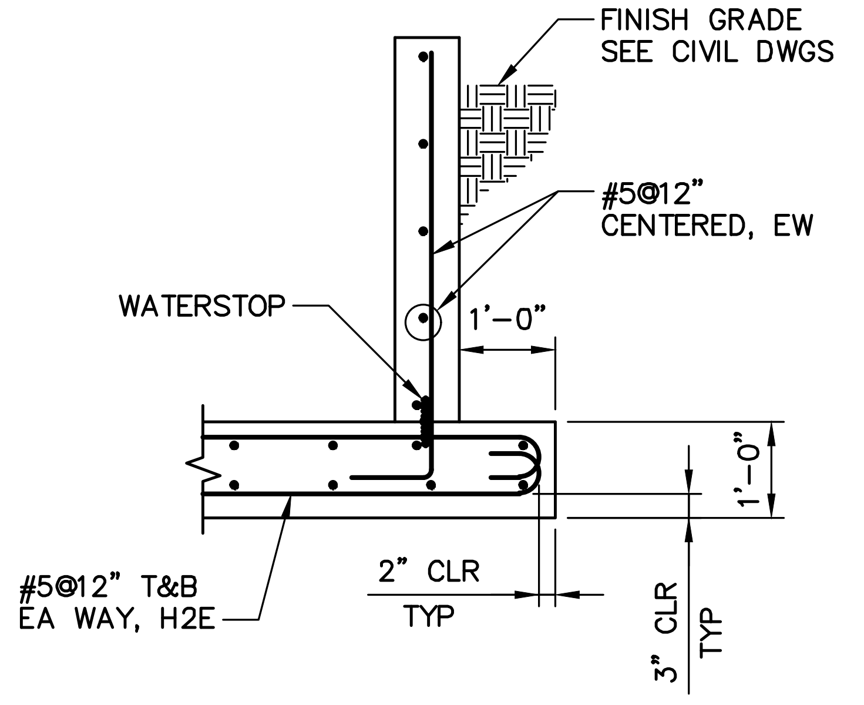
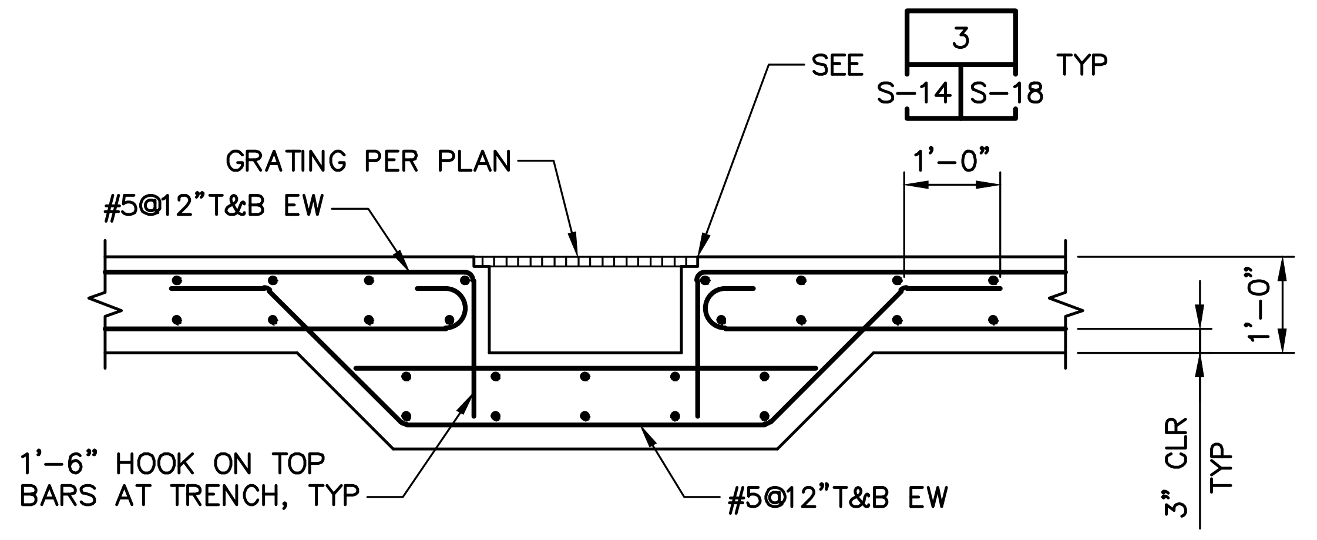

4
S–14 | S–17
TANK PER PROCESS DWGS
FINISH GRADE
SEE CIVIL DWGS
TOP OF CURB WALL
EL 1221.30
TOP OF SLAB
EL VARIES. SEE PLAN
1'–0"
2
S–14 | S–14
1
S–14 | S–14

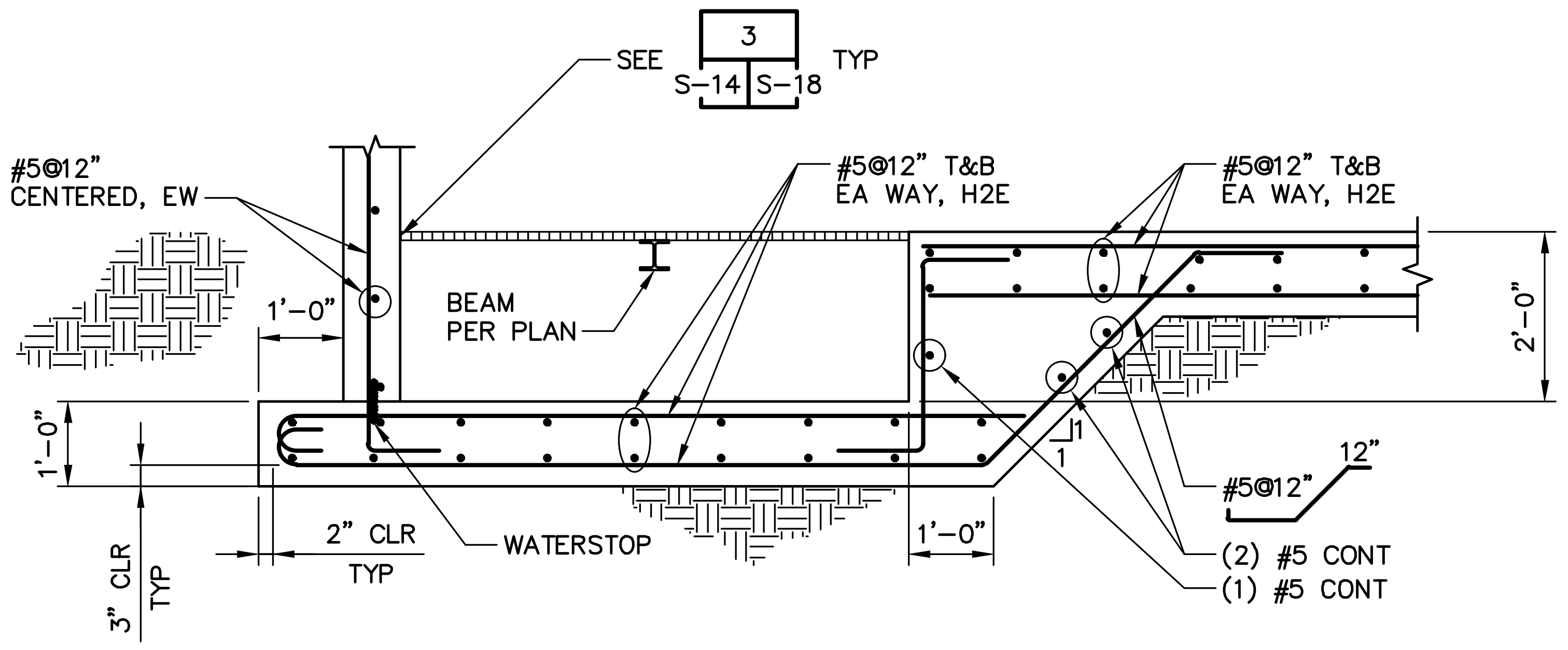
SECTION A S–14 | S–12
SCALE = 1/4"= 1'–0"


FINISH GRADE
SEE CIVIL DWGS
#5@12"
CENTERED, EW
WATERSTOP
1'–0"
1'–0"
#5@12" T&B
EA WAY, H2E
2" CLR
TYP
3" CLR
TYP

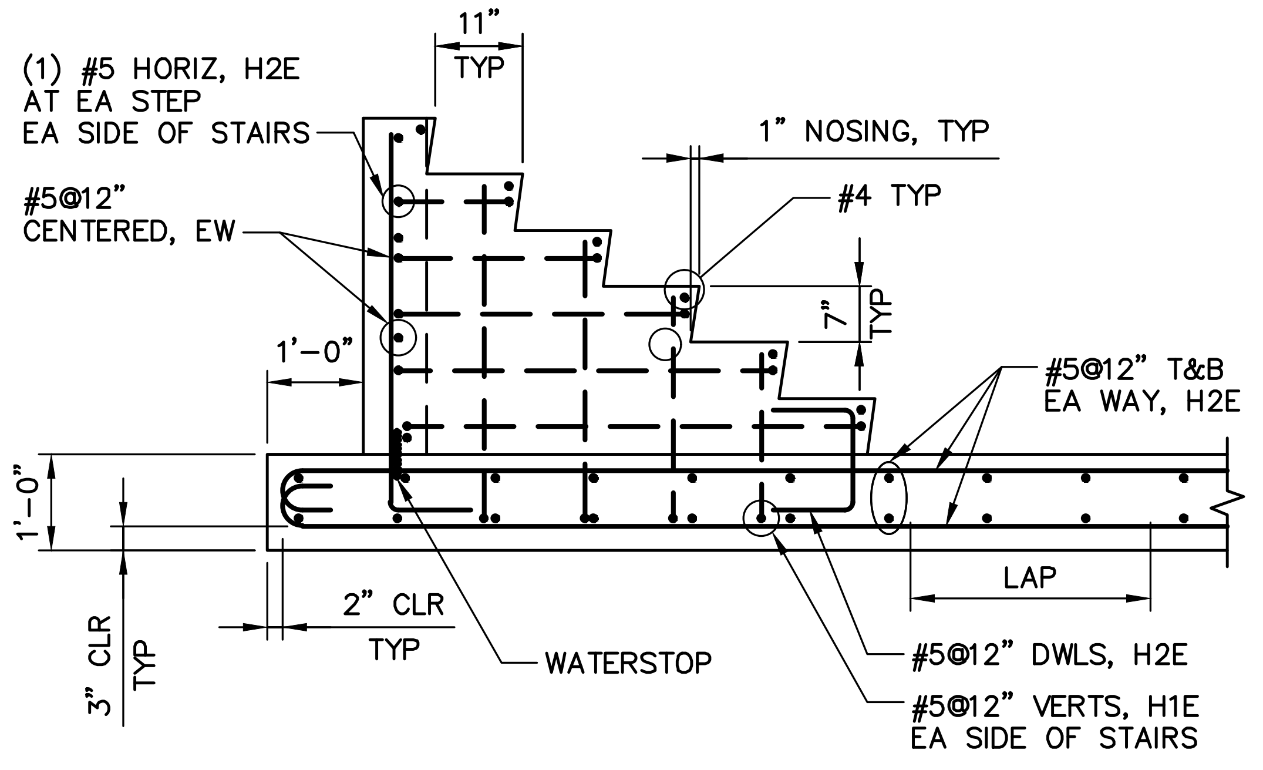
DETAIL 1 S–14 | S–14
SCALE = 1/2"= 1'–0"


SEE 3 S–14 | S–18 TYP
GRATING PER PLAN
#5@12" T&B EW
1'–0"
1'–0"
1'–6" HOOK ON TOP
BARS AT TRENCH, TYP
#5@12" T&B EW
3" CLR
TYP

DETAIL 2 S–14 | S–14
SCALE = 1/2"= 1'–0"


SEE 3 S–14 | S–18 TYP
#5@12"
CENTERED, EW
#5@12" T&B
EA WAY, H2E
#5@12" T&B
EA WAY, H2E
BEAM
PER PLAN
1'–0"
2'–0"
1'–0"
1
1
#5@12"
12"
2" CLR
TYP
WATERSTOP
1'–0"
(2) #5 CONT
(1) #5 CONT
3" CLR
TYP

SECTION B S–14 | S–12
SCALE = 1/2"= 1'–0"


(1) #5 HORIZ, H2E
AT EA STEP
EA SIDE OF STAIRS
11"
TYP
1" NOSING, TYP
#4 TYP
#5@12"
CENTERED, EW
7"
TYP
1'–0"
#5@12" T&B
EA WAY, H2E
1'–0"
LAP
2" CLR
TYP
WATERSTOP
#5@12" DWLS, H2E
#5@12" VERTS, H1E
EA SIDE OF STAIRS
3" CLR
TYP

SECTION C S–14 | S–12
SCALE = 1/2"= 1'–0"

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
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#	–	–	–	–	–	–	–

HDR

62528
RYAN O. WRIGHT

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	RW	01/2024	TH	90% SUBMITTAL
B	RW	04/2024	TH	AGENCY REVIEW
C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

CHEMICAL CONTAINMENT AREA
SECTIONS AND DETAILS

CITY PROJECT NO. WS90400085
DATE: 08/2024
S–14 SHEET 70 OF 134
CAD FILE: CSSLS40Q003.dwg

USER: RWRIGHT FILE: C:\pwworking\west01\d3411632\CSSLS40Q03.dwg DATE: 8/28/24 TIME: 05:07pm

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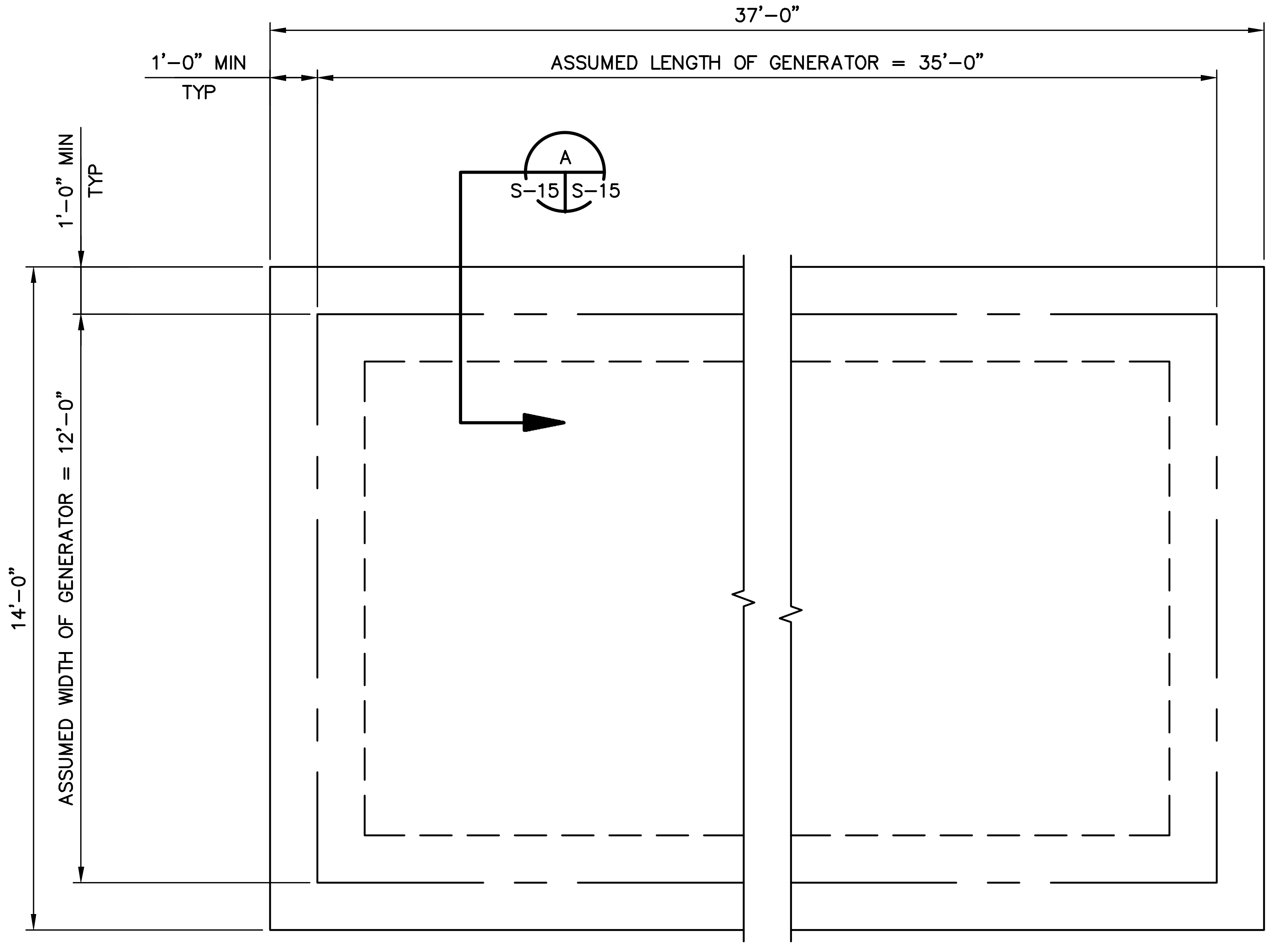
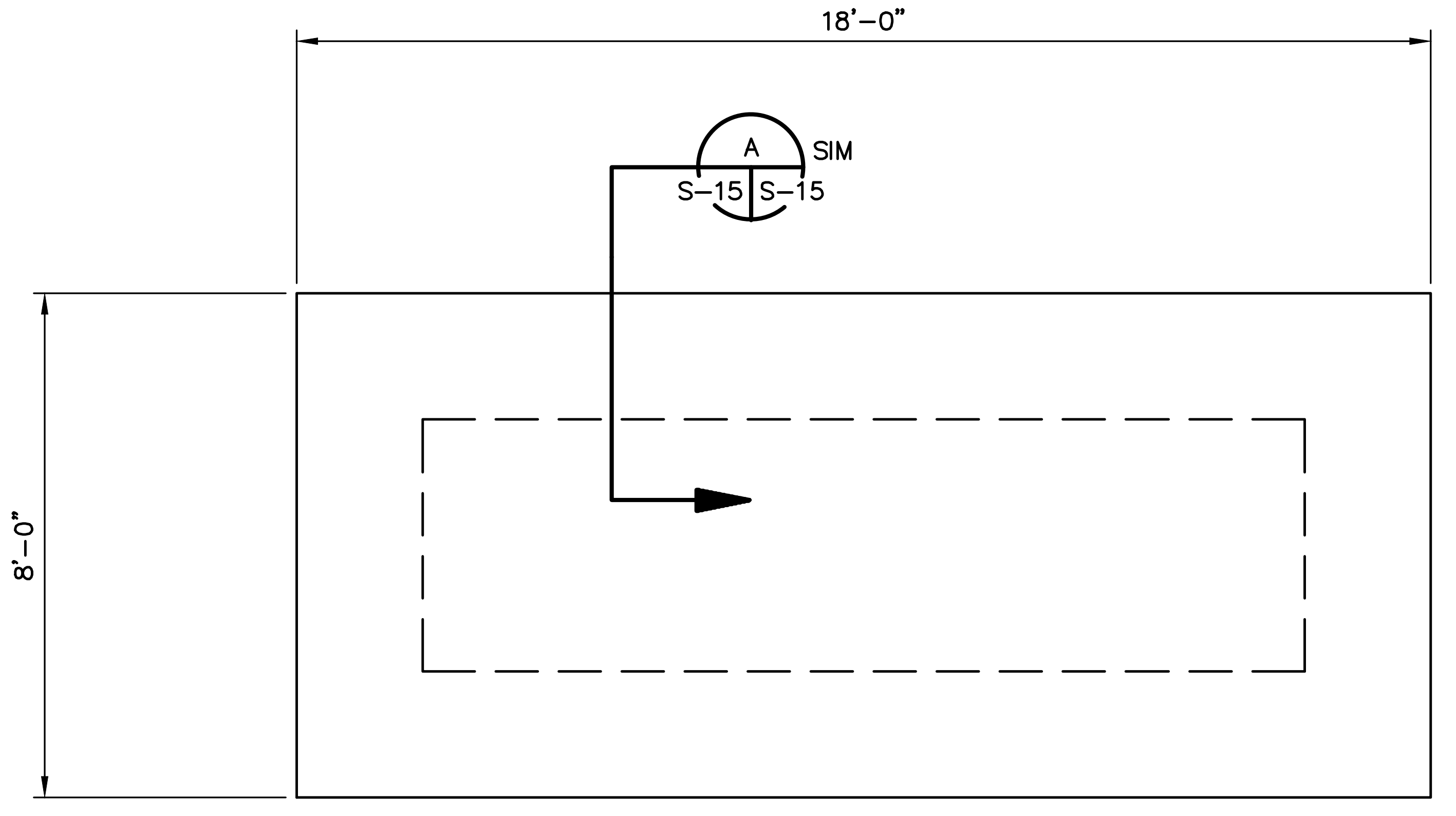

37'–0"
1'–0" MIN TYP
ASSUMED LENGTH OF GENERATOR = 35'–0"
1'–0" MIN TYP
A
S–15 S–15
14'–0"
ASSUMED WIDTH OF GENERATOR = 12'–0"

NOTES:

1. GENERATOR NOT SHOWN FOR CLARITY. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. GENERATOR MANUFACTURER TO COORDINATE ANCHOR BOLT LOCATIONS WITH CONTRACTOR PRIOR TO CONSTRUCTION. SEE GENERAL NOTE 5 FOR ADDITIONAL INFORMATION.
3. GENERATOR FOUNDATION PLAN DIMENSIONS SHALL BE VERIFIED AND MODIFIED AS NECESSARY BASED ON ACTUAL GENERATOR SELECTED BY CONTRACTOR. PROVIDE 1'–0" MINIMUM EDGE DISTANCE TO GENERATOR AS SHOWN IN PLAN. SEE GENERAL NOTE 4 FOR ADDITIONAL INFORMATION.
4. PAVING AROUND GENERATOR PAD FOUNDATION NOT SHOWN FOR CLARITY. SEE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
5. REFER TO GENERAL STRUCTURAL NOTE G5 ON SHEET S–01 FOR OPENING REQUIREMENTS.

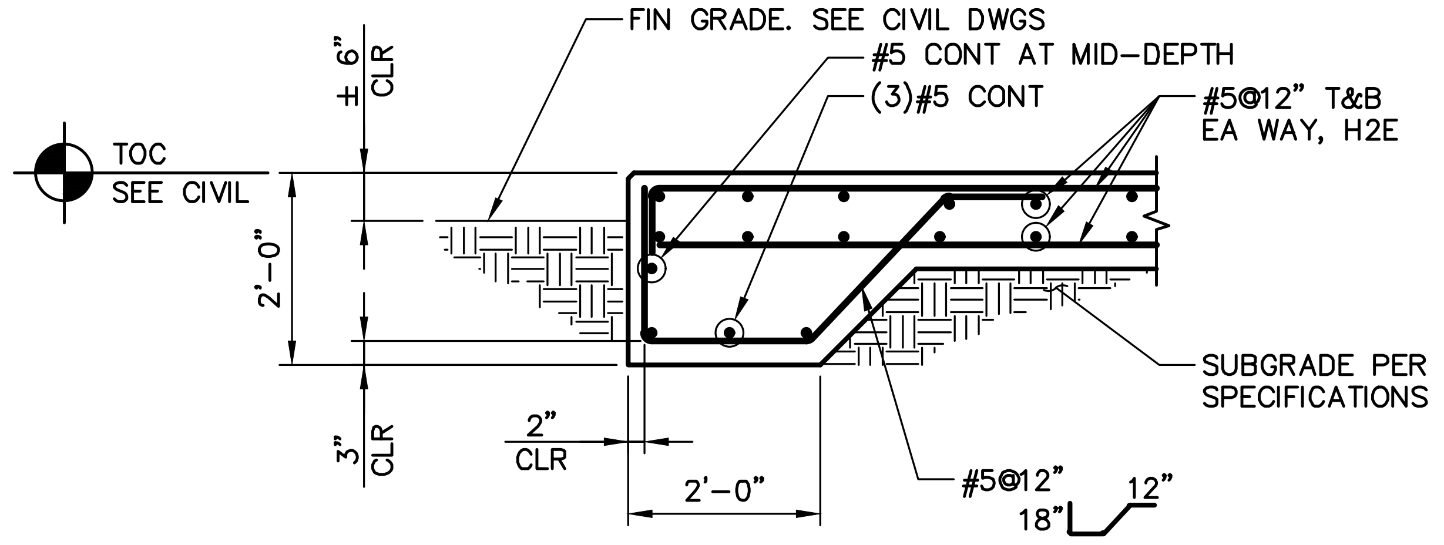
GENERATOR PAD FOUNDATION PLAN 1 / –

SCALE: 3/8" = 1'–0"



PIG LAUNCHING PAD FOUNDATION PLAN 2 / –

SCALE: 3/8" = 1'–0"



SECTION A / –

SCALE = 1/2"= 1'–0"

GENERAL NOTES

1. STRUCTURAL DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SHOWN ON SHEETS S–01.
2. SEE CIVIL DRAWINGS FOR STRUCTURE LOCATION AND COORDINATE POINTS.
3. DIMENSIONS SHOWN ARE BASED ON ASSUMED EQUIPMENT SIZES, WEIGHTS, AND ANCHORAGES. CONTRACTOR TO SUBMIT FOR REVIEW ALL EQUIPMENT SIZES, OPERATING WEIGHTS, VIBRATION FORCES, SUPPORT LOCATIONS, ANCHORAGE REQUIREMENTS, ALONG WITH ANY FOUNDATION OPENINGS, NOTCHES AND RECESSES REQUIRED BY THE SUBMITTED EQUIPMENT. FOUNDATION DIMENSIONS AND DESIGN ARE SUBJECT TO CHANGE BASED ON THE ACTUAL SIZE OF THE SUBMITTED EQUIPMENT.
4. COORDINATE ANCHOR BOLT LOCATIONS FOR THE EQUIPMENT SUPPLIED. ANCHORAGE DETAIL DRAWINGS AND DESIGN CALCULATIONS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE SUBMITTED DRAWINGS AND CALCULATIONS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF ARIZONA.

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
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USER:RWRIGHT FILE:C:\pwworking\west01\d3411632\CSSLS40P07.dwg DATE:8/28/24 TIME:05:09pm

HDR

62528
RYAN O. WRIGHT

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
A	RW	01/2024	TH	90% SUBMITTAL
B	RW	04/2024	TH	AGENCY REVIEW
C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

GENERATOR & PIG LAUNCHING PAD FOUNDATION
PLANS AND SECTION

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CITY PROJECT NO. WS90400085
DATE: 08/2024
S–15 SHEET 71 OF 134
CAD FILE: CSSLS40P07.dwg

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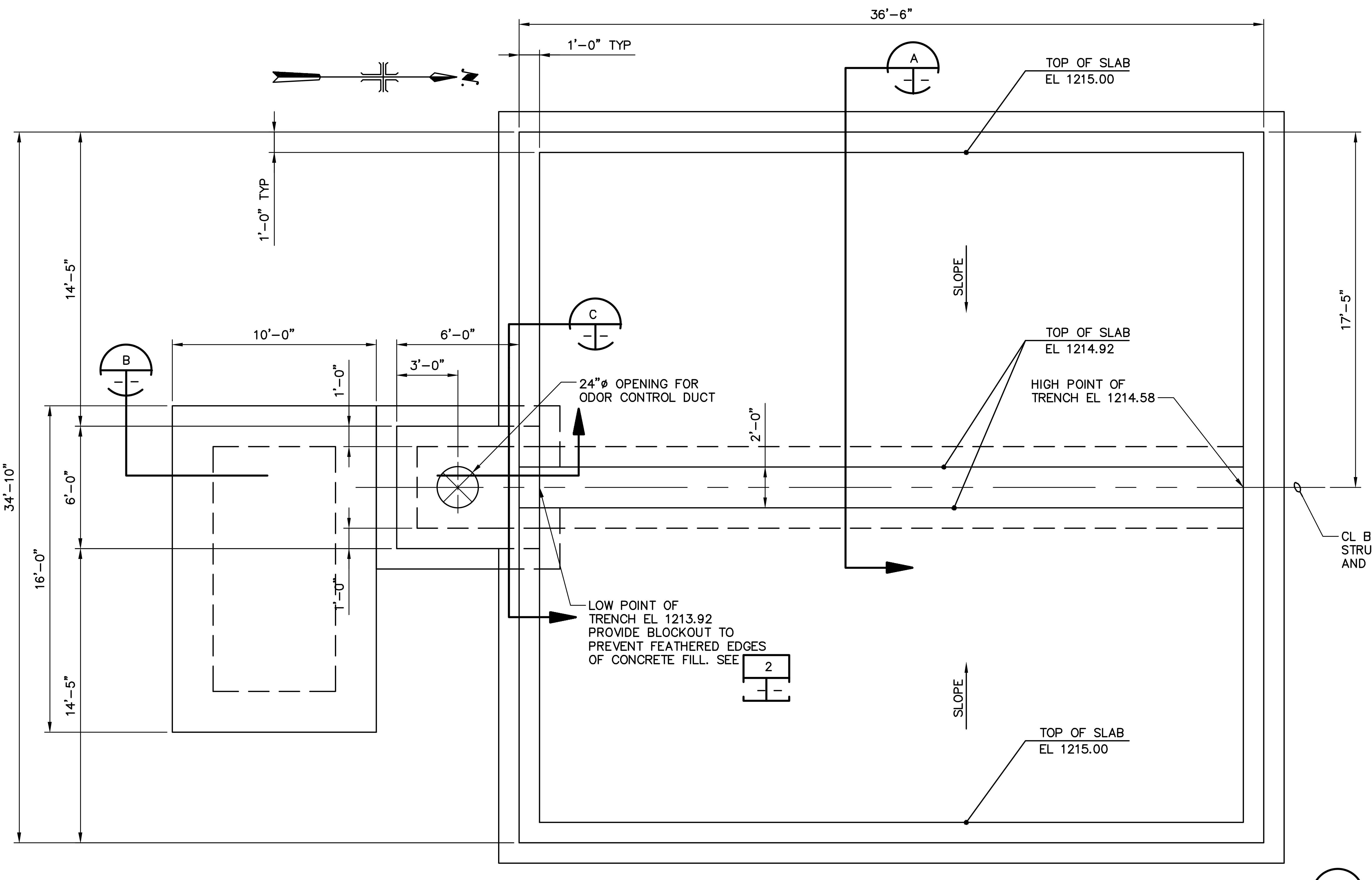
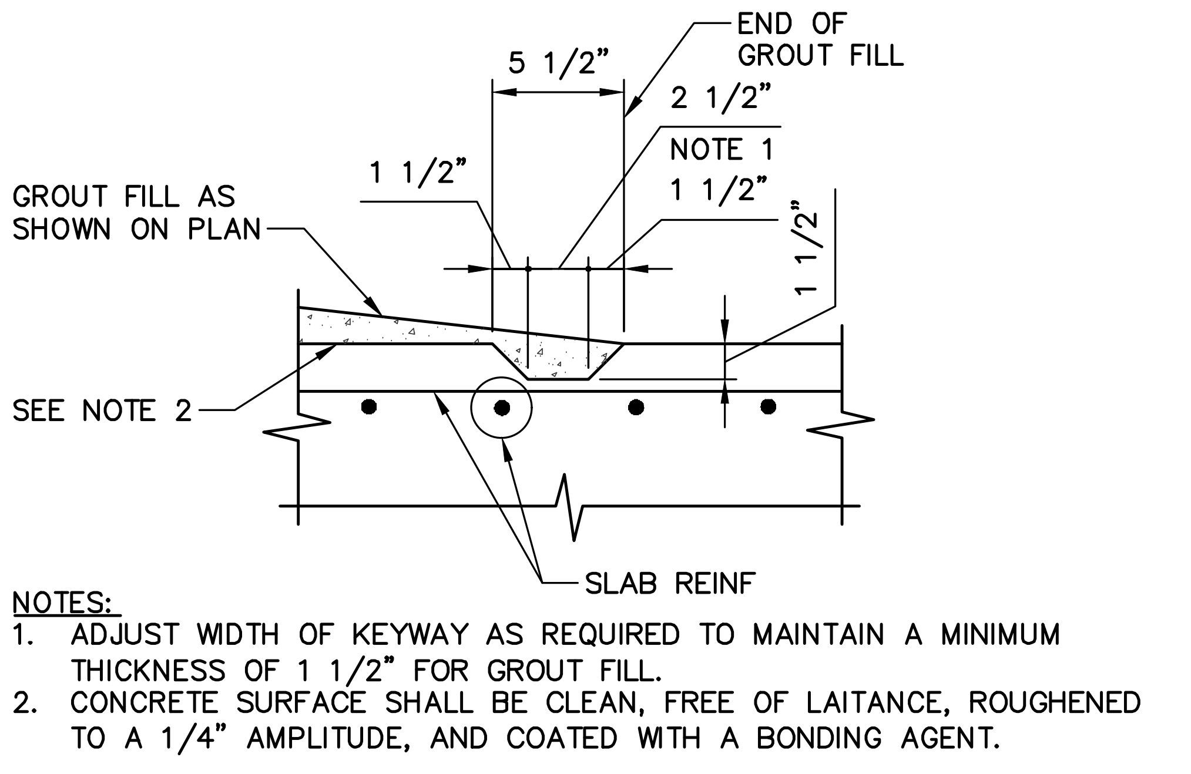

36'-6"
1'-0" TYP
N
1'-0" TYP
A
TOP OF SLAB
EL 1215.00
14'-5"
SLOPE
17'-5"
C
10'-0"
6'-0"
3'-0"
B
1'-0"
24"ø OPENING FOR
ODOR CONTROL DUCT
TOP OF SLAB
EL 1214.92
HIGH POINT OF
TRENCH EL 1214.58
2'-0"
34'-10"
6'-0"
16'-0"
CL BIOFILTER
STRUCTURE
AND TRENCH
1'-0"
LOW POINT OF
TRENCH EL 1213.92
PROVIDE BLOCKOUT TO
PREVENT FEATHERED EDGES
OF CONCRETE FILL. SEE 2
14'-5"
SLOPE
TOP OF SLAB
EL 1215.00

BIOFILTER FOUNDATION PLAN 1

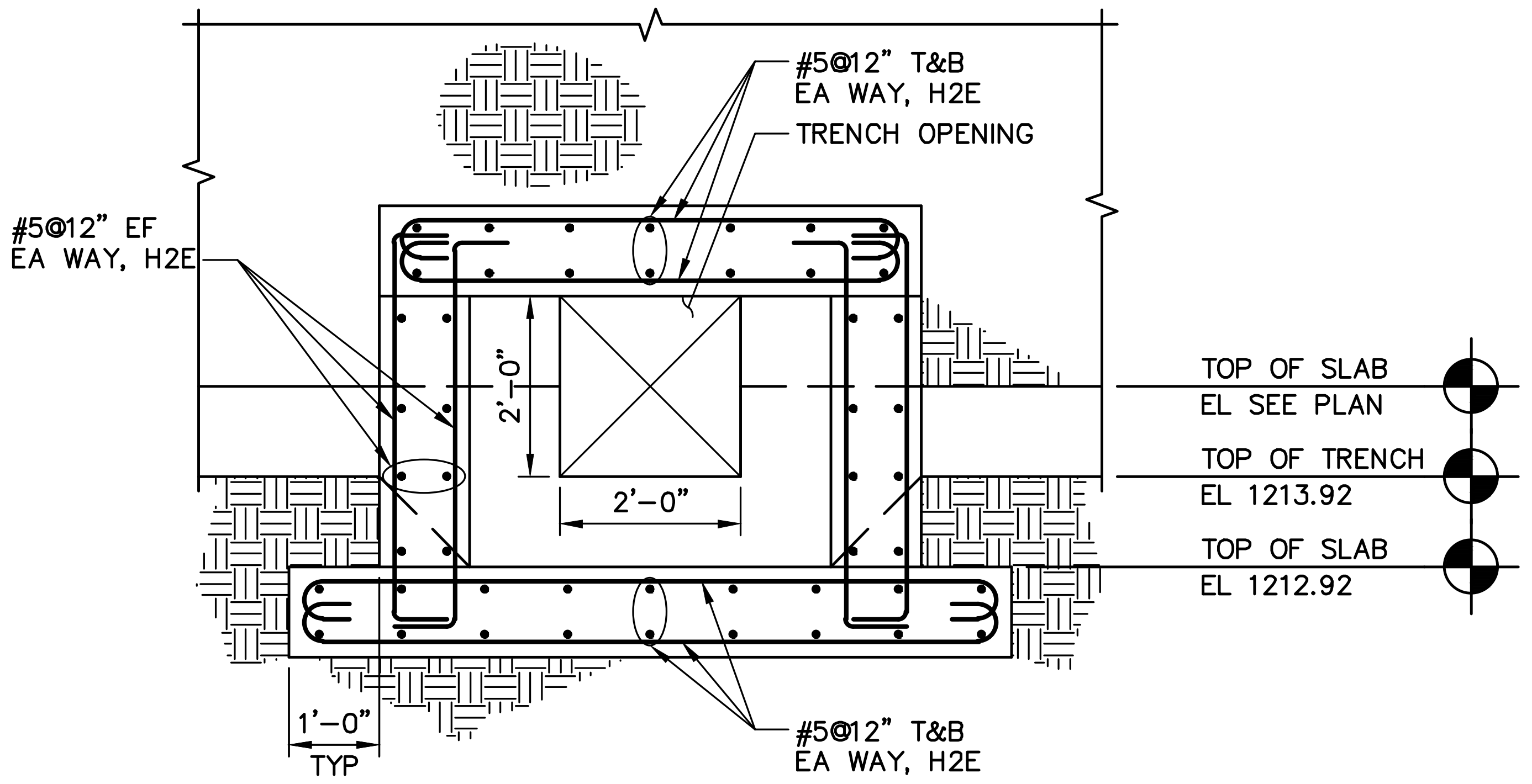
SCALE: 1/4" = 1'-0"


5 1/2"
END OF
GROUT FILL
2 1/2"
NOTE 1
1 1/2"
1 1/2"
1 1/2"
GROUT FILL AS
SHOWN ON PLAN
SEE NOTE 2
SLAB REINF

NOTES:
1. ADJUST WIDTH OF KEYWAY AS REQUIRED TO MAINTAIN A MINIMUM THICKNESS OF 1 1/2" FOR GROUT FILL.
2. CONCRETE SURFACE SHALL BE CLEAN, FREE OF LAITANCE, ROUGHENED TO A 1/4" AMPLITUDE, AND COATED WITH A BONDING AGENT.

KEYWAY FOR GROUT FILL 2

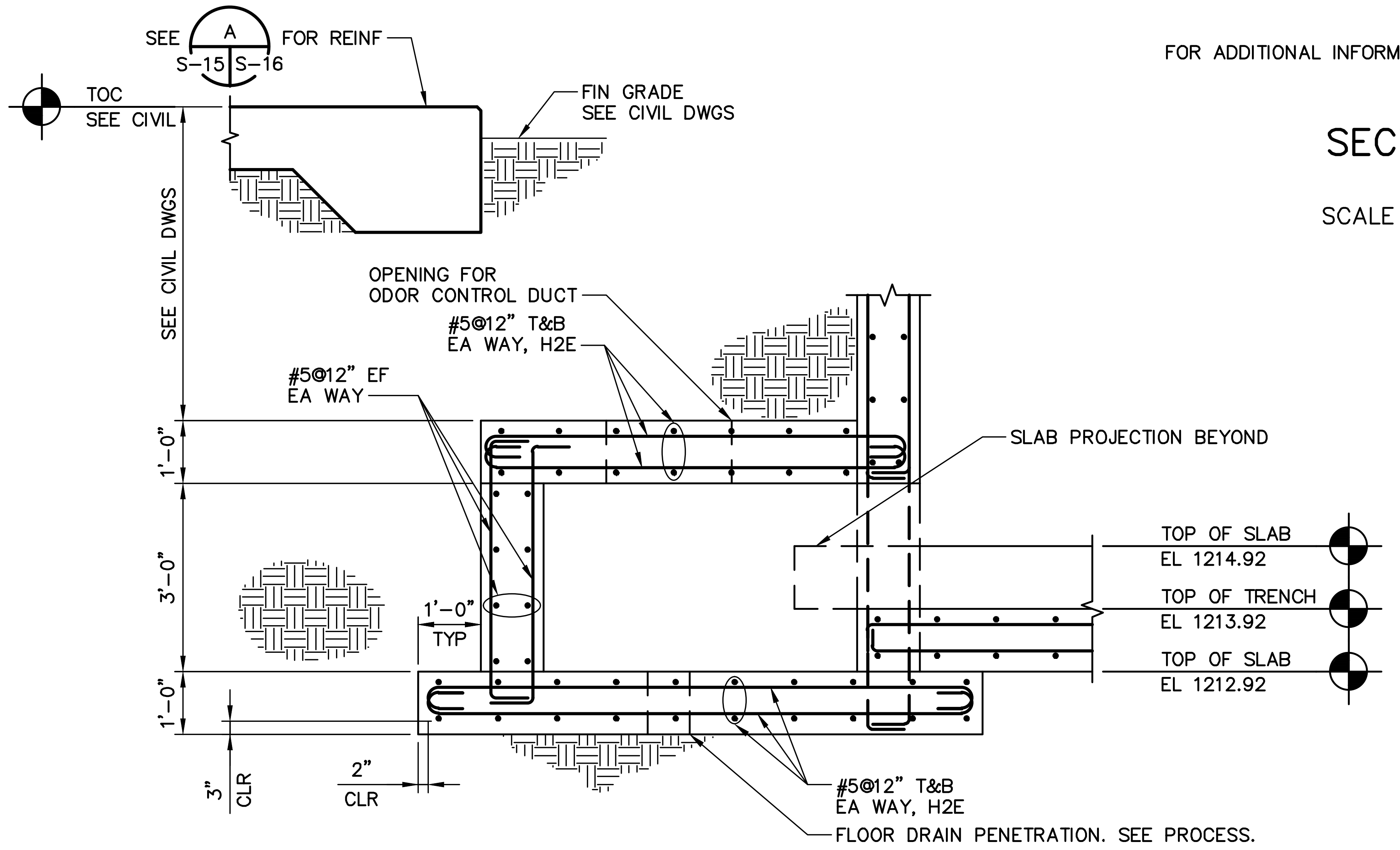
SCALE: 1 1/2" = 1'-0"


#5@12" T&B
EA WAY, H2E
TRENCH OPENING
#5@12" EF
EA WAY, H2E
2'-0"
2'-0"
TOP OF SLAB
EL SEE PLAN
TOP OF TRENCH
EL 1213.92
TOP OF SLAB
EL 1212.92
1'-0"
TYP
#5@12" T&B
EA WAY, H2E

FOR ADDITIONAL INFORMATION, SEE B

SECTION C

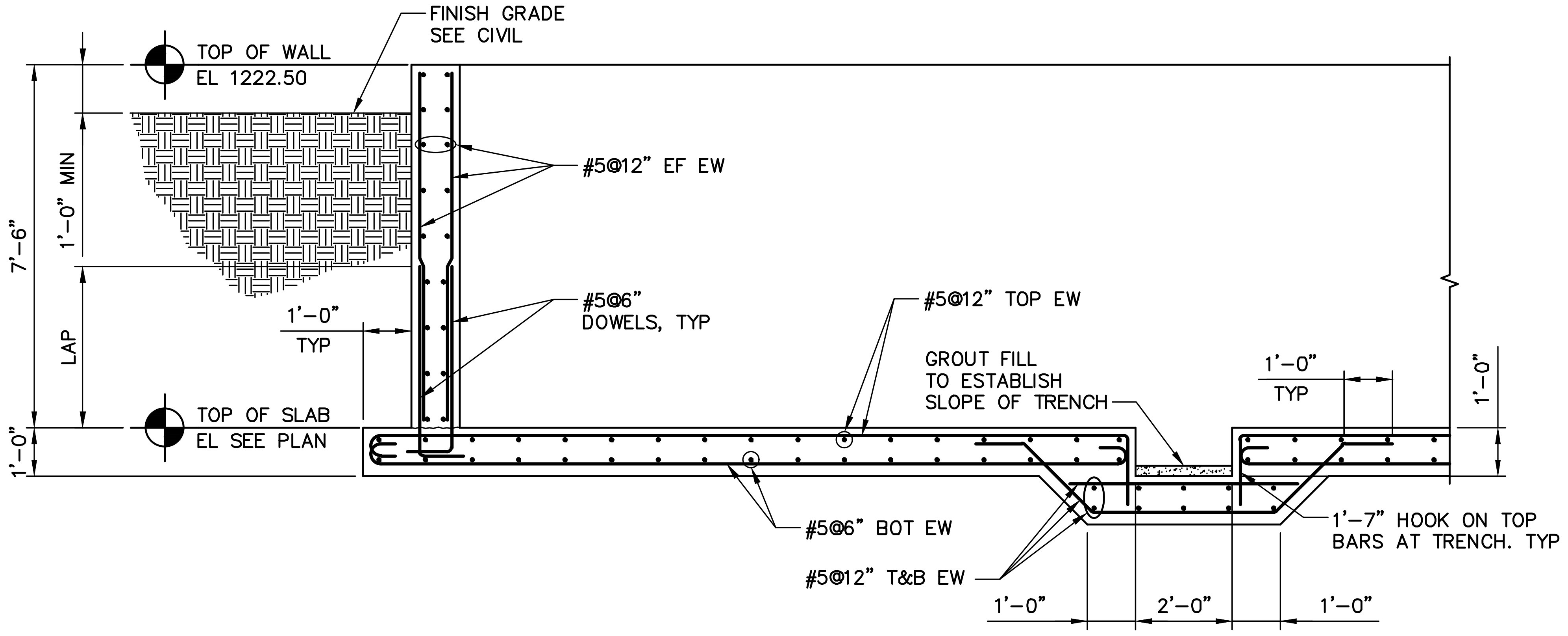
SCALE = 1/2"= 1'-0"


SEE A FOR REINF
S-15 S-16
TOC
SEE CIVIL
FIN GRADE
SEE CIVIL DWGS
SEE CIVIL DWGS
OPENING FOR
ODOR CONTROL DUCT
#5@12" T&B
EA WAY, H2E
#5@12" EF
EA WAY
SLAB PROJECTION BEYOND
1'-0"
3'-0"
1'-0"
1'-0"
TYP
TOP OF SLAB
EL 1214.92
TOP OF TRENCH
EL 1213.92
TOP OF SLAB
EL 1212.92
3"
CLR
2"
CLR
#5@12" T&B
EA WAY, H2E
FLOOR DRAIN PENETRATION. SEE PROCESS.

FOR ADDITIONAL INFORMATION, SEE A

SECTION B

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


TOP OF WALL
EL 1222.50
FINISH GRADE
SEE CIVIL
#5@12" EF EW
7'-6"
1'-0" MIN
LAP
1'-0"
TYP
#5@6"
DOWELS, TYP
#5@12" TOP EW
GROUT FILL
TO ESTABLISH
SLOPE OF TRENCH
1'-0"
TYP
1'-0"
TOP OF SLAB
EL SEE PLAN
1'-0"
#5@6" BOT EW
#5@12" T&B EW
1'-7" HOOK ON TOP
BARS AT TRENCH. TYP
1'-0"
2'-0"
1'-0"

SECTION A

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

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62528
RYAN O. WRIGHT

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DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

BIOFILTER FOUNDATION PLAN,
SECTIONS AND DETAILS

CITY PROJECT NO. WS90400085
DATE: 08/2024
S–16 SHEET 72 OF 134
CAD FILE: CSSLS40Q04.dwg

USER: RWRIGHT FILE: C:\pwworking\west01\d3411632\CSSLS40Q04.dwg DATE: 8/28/24 TIME: 05:12pm

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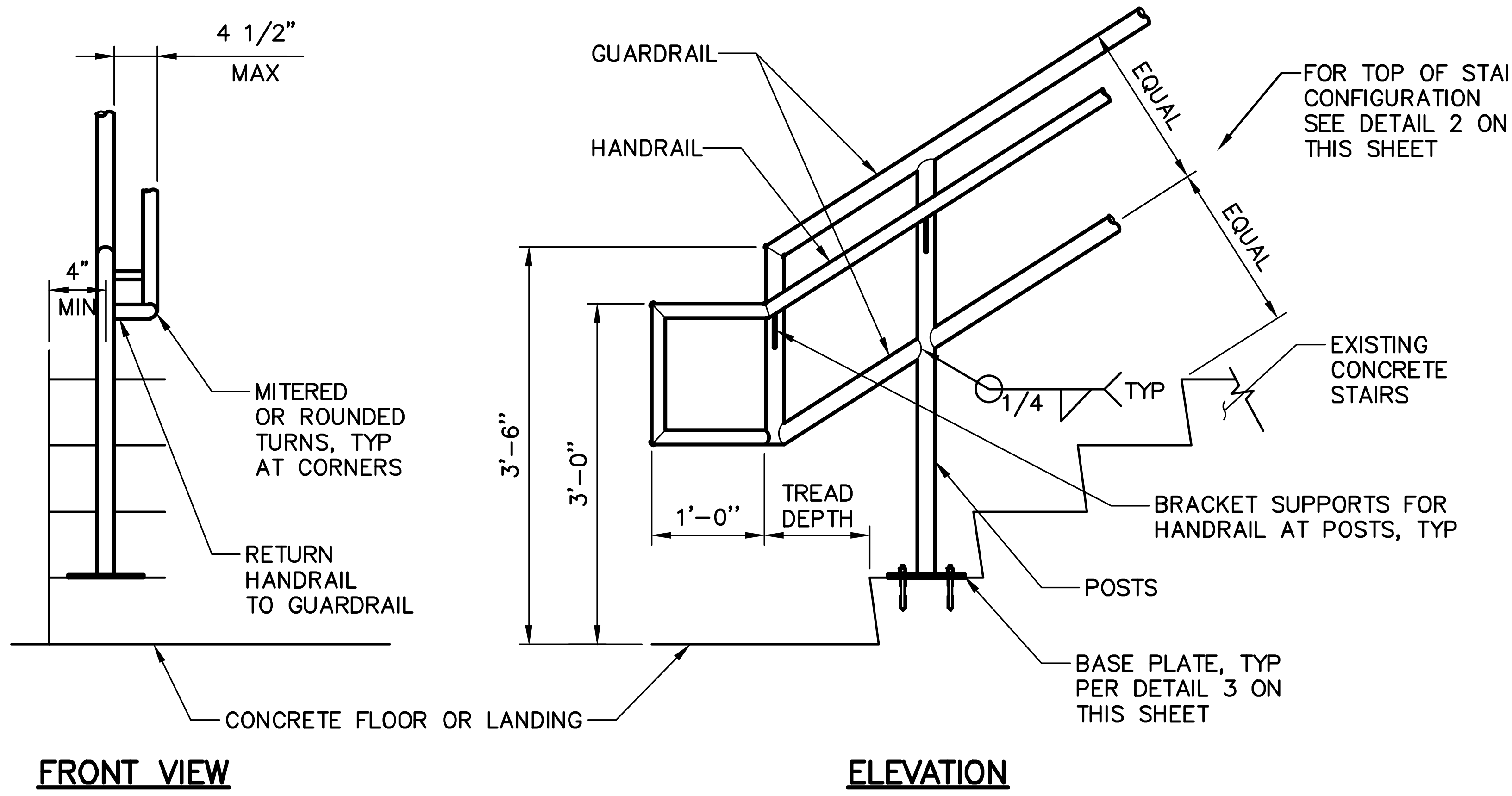
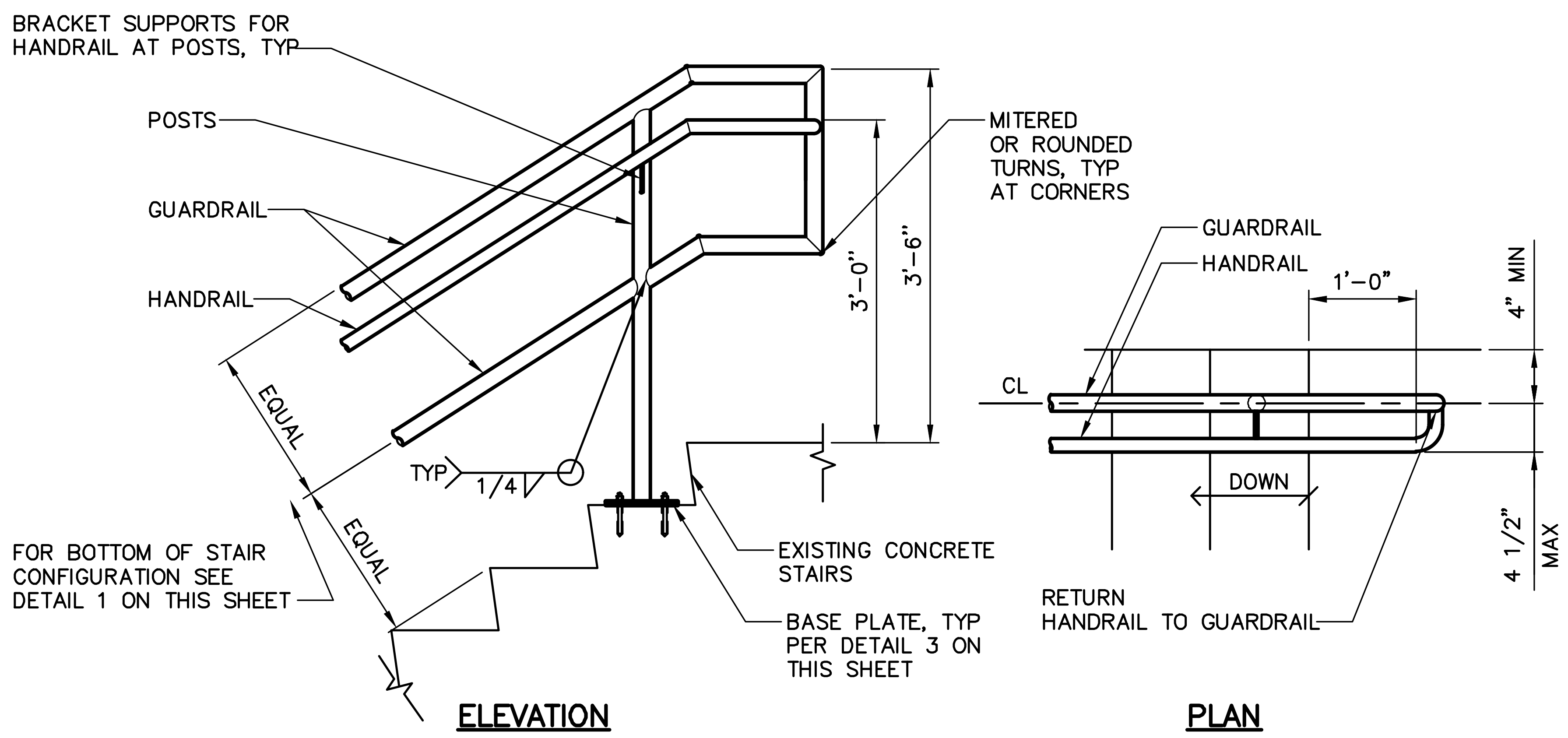

4 1/2"
MAX
4"
MIN
MITERED OR ROUNDED TURNS, TYP AT CORNERS
RETURN HANDRAIL TO GUARDRAIL
CONCRETE FLOOR OR LANDING
FRONT VIEW
GUARDRAIL
HANDRAIL
EQUAL
EQUAL
FOR TOP OF STAIR CONFIGURATION SEE DETAIL 2 ON THIS SHEET
3'-6"
3'-0"
1'-0"
TREAD DEPTH
1/4
TYP
EXISTING CONCRETE STAIRS
BRACKET SUPPORTS FOR HANDRAIL AT POSTS, TYP
POSTS
BASE PLATE, TYP PER DETAIL 3 ON THIS SHEET
ELEVATION

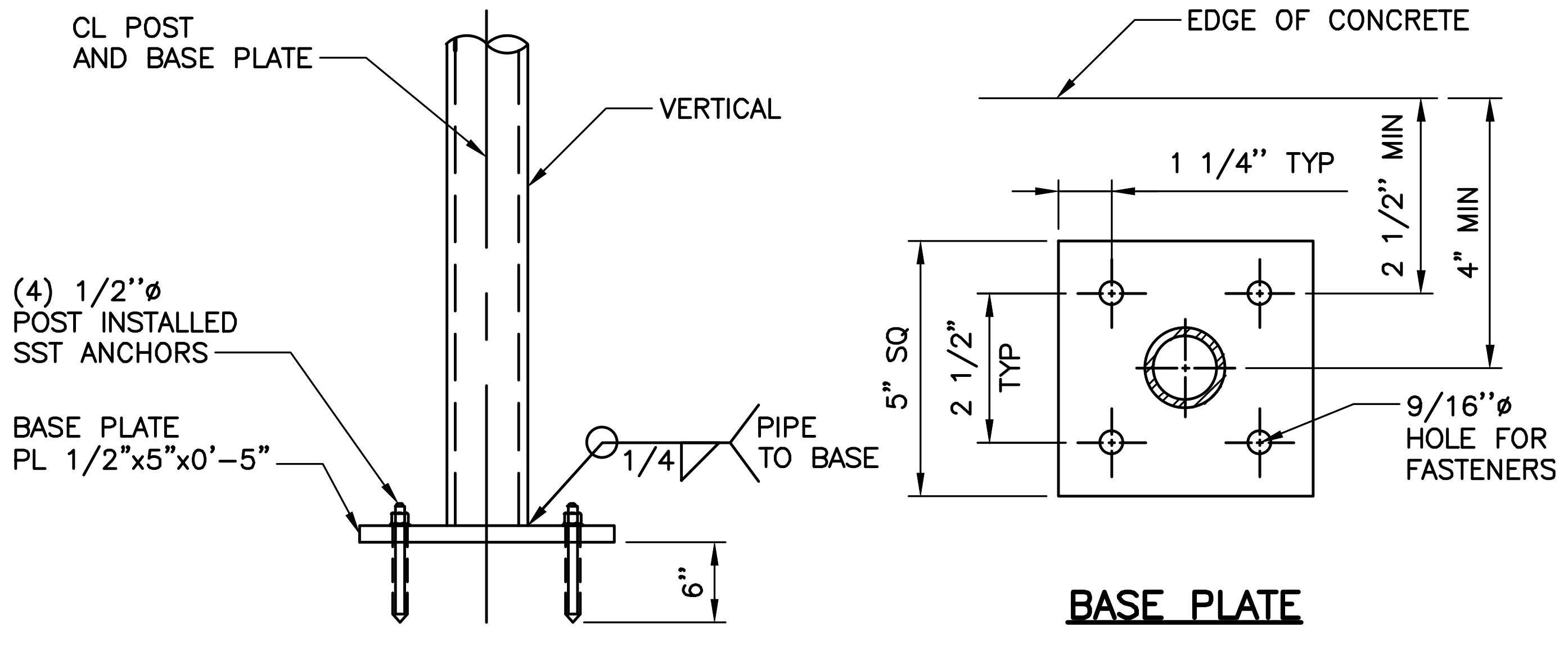
NOTES:
1. REFER TO SPECIFICATION SECTION 05 52 00.15 FOR ADDITIONAL INFORMATION.
2. ALL COMPONENTS SHALL BE ALUMINUM, UNO.
3. PROVIDE GALVANIC BREAK BETWEEN ALUMINUM AND DISSIMILAR METALS/CONCRETE PER SPECIFICATION 09900.

HANDRAIL – BOTTOM CONDITION 1 –|–
SCALE: NTS


BRACKET SUPPORTS FOR HANDRAIL AT POSTS, TYP
POSTS
GUARDRAIL
HANDRAIL
EQUAL
EQUAL
TYP
1/4
FOR BOTTOM OF STAIR CONFIGURATION SEE DETAIL 1 ON THIS SHEET
MITERED OR ROUNDED TURNS, TYP AT CORNERS
3'-0"
3'-6"
EXISTING CONCRETE STAIRS
BASE PLATE, TYP PER DETAIL 3 ON THIS SHEET
ELEVATION
GUARDRAIL
HANDRAIL
1'-0"
4" MIN
CL
DOWN
4 1/2" MAX
RETURN HANDRAIL TO GUARDRAIL
PLAN

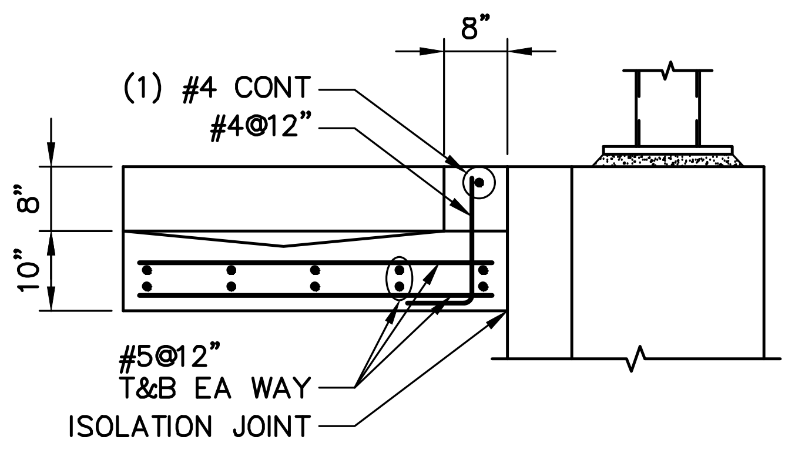
NOTES:
1. REFER TO SPECIFICATION SECTION 05 52 00.15 FOR ADDITIONAL INFORMATION.
2. ALL COMPONENTS SHALL BE ALUMINUM, UNO.
3. PROVIDE GALVANIC BREAK BETWEEN ALUMINUM AND DISSIMILAR METALS/CONCRETE PER SPECIFICATION 09900.

HANDRAIL – TOP CONDITION 2 –|–
SCALE: NTS

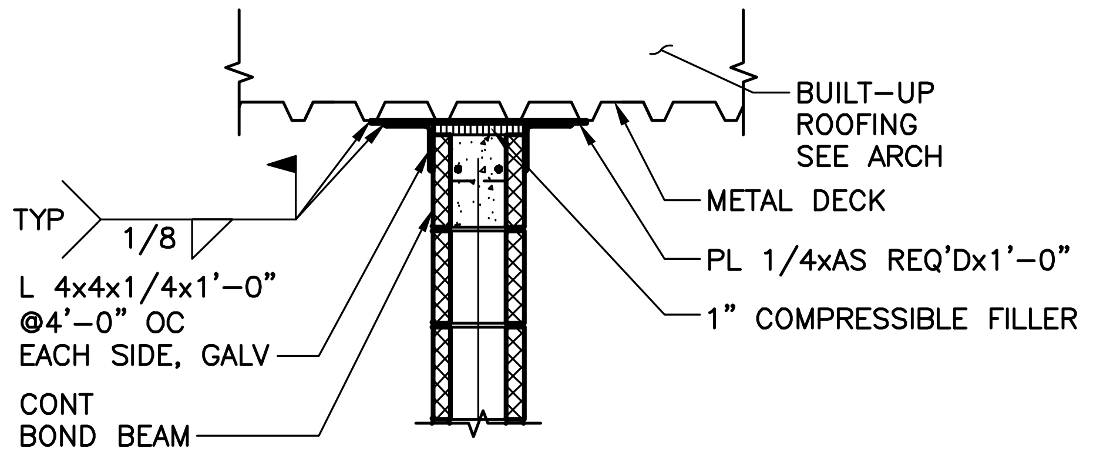

CL POST AND BASE PLATE
VERTICAL
(4) 1/2"ø POST INSTALLED SST ANCHORS
BASE PLATE PL 1/2"x5"x0'-5"
1/4
PIPE TO BASE
6"
EDGE OF CONCRETE
1 1/4" TYP
2 1/2" MIN
4" MIN
5" SQ
2 1/2" TYP
9/16"ø HOLE FOR FASTENERS
BASE PLATE

NOTES:
1. ALL COMPONENTS SHALL BE ALUMINUM, UNO.
2. PROVIDE GALVANIC BREAK BETWEEN ALUMINUM AND DISSIMILAR METALS/CONCRETE PER SPECIFICATION 09 90 00.

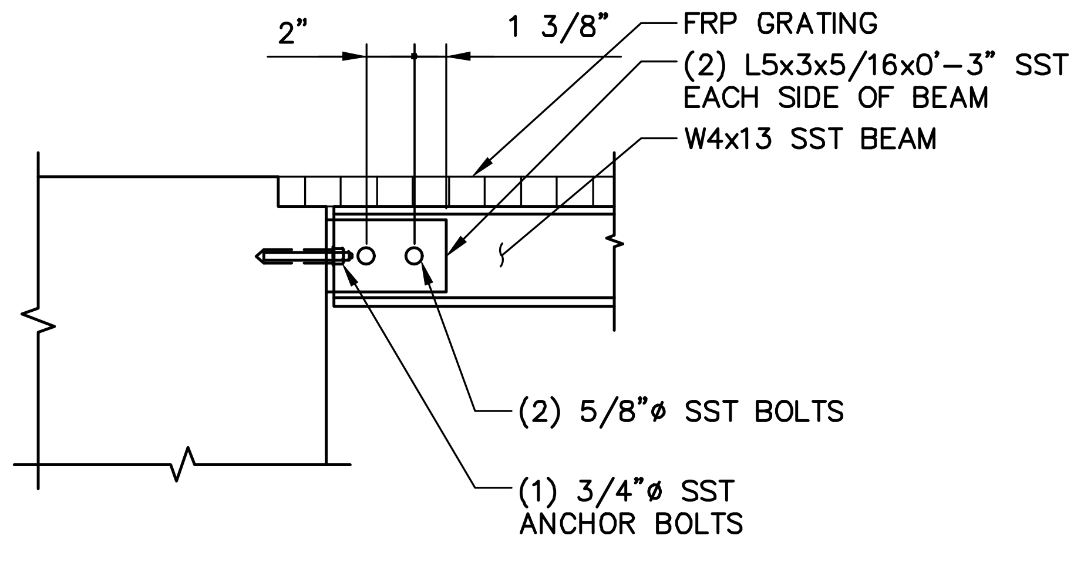
HANDRAIL BASEPLATE DETAIL 3 –|–
SCALE: NTS


8"
(1) #4 CONT
#4@12"
8"
10"
#5@12" T&B EA WAY
ISOLATION JOINT

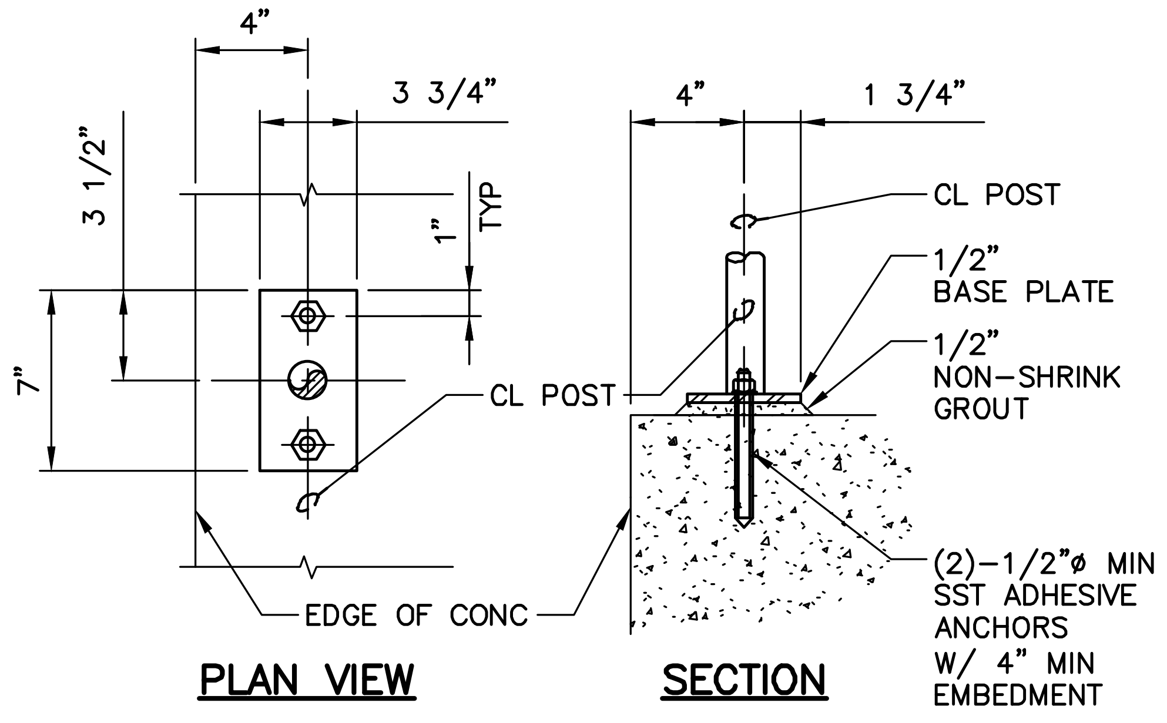
DETAIL 4 S-17|S-14
SCALE = 1/2"= 1'-0"


BUILT-UP ROOFING SEE ARCH
METAL DECK
TYP
1/8
PL 1/4xAS REQ'Dx1'-0"
L 4x4x1/4x1'-0" @4'-0" OC EACH SIDE, GALV
1" COMPRESSIBLE FILLER
CONT BOND BEAM

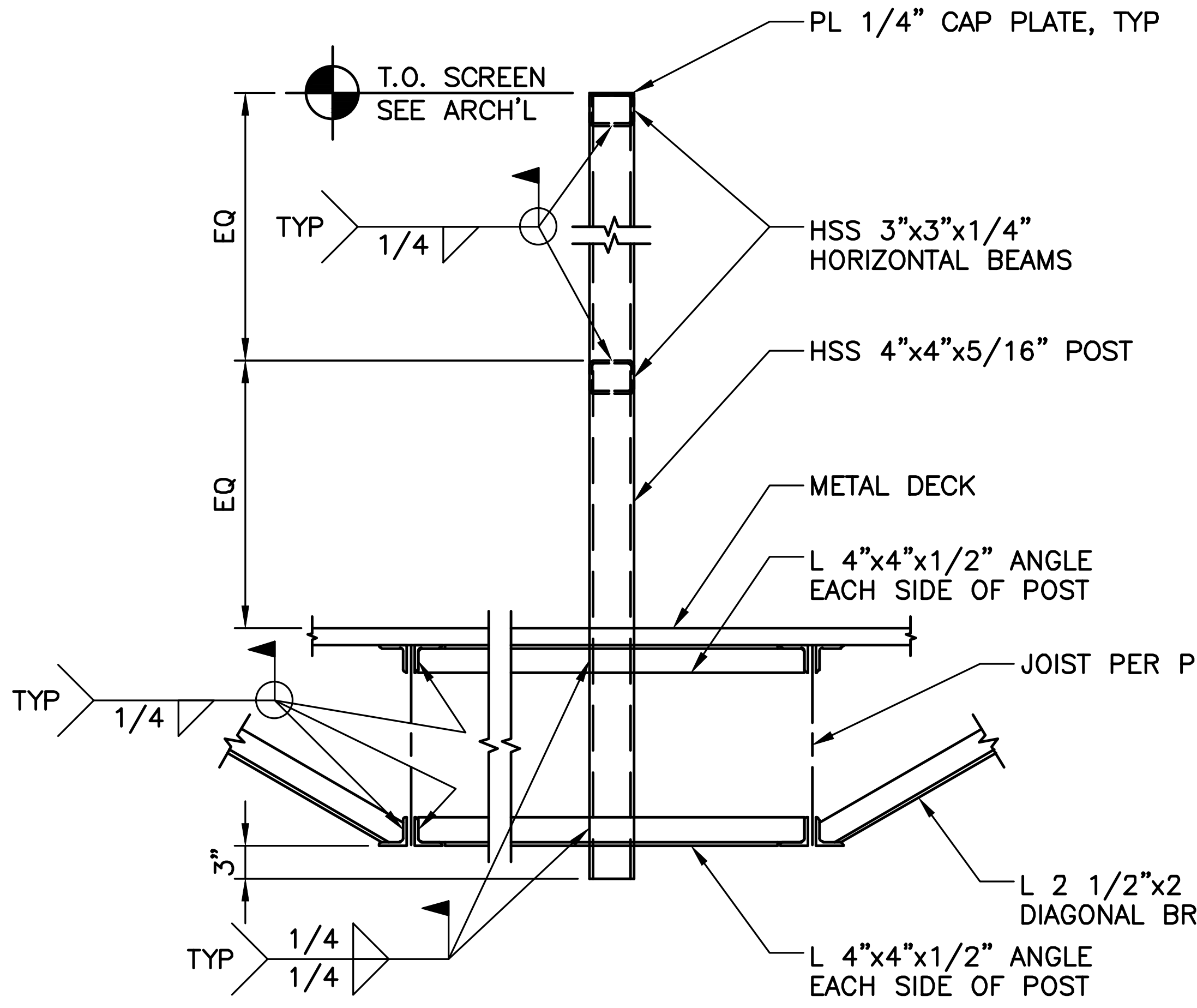
NON-LOAD BEARING MASONRY WALL SUPPORT AT ROOF DECK 5 –|–
SCALE = NTS


2"
1 3/8"
FRP GRATING
(2) L5x3x5/16x0'-3" SST EACH SIDE OF BEAM
W4x13 SST BEAM
(2) 5/8"ø SST BOLTS
(1) 3/4"ø SST ANCHOR BOLTS

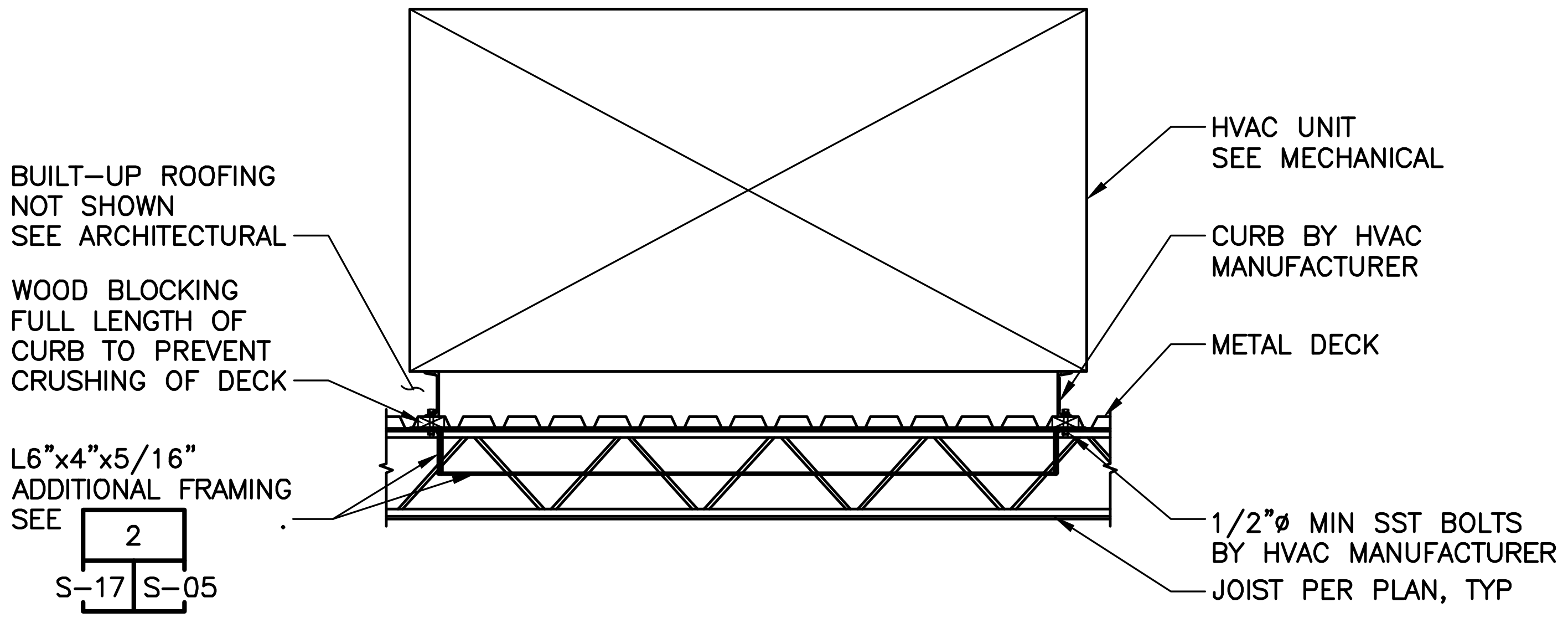
BEAM CONNECTION AT TRENCH 8 S-17|S-10
SCALE: 1 1/2" = 1'-0"


4"
3 3/4"
3 1/2"
1" TYP
7"
CL POST
EDGE OF CONC
PLAN VIEW
4"
1 3/4"
CL POST
1/2" BASE PLATE
1/2" NON-SHRINK GROUT
(2)-1/2"ø MIN SST ADHESIVE ANCHORS W/ 4" MIN EMBEDMENT
SECTION

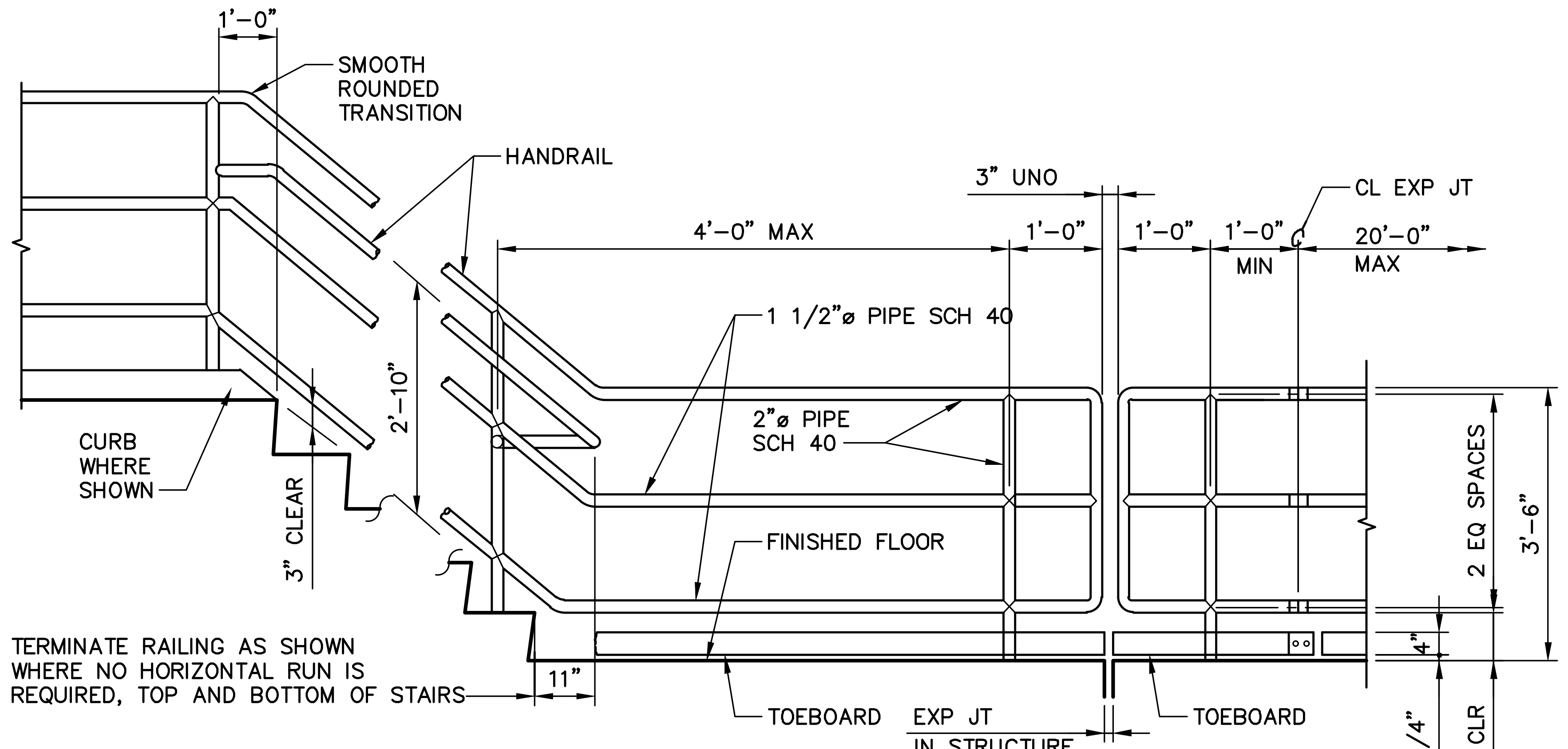
GUARDRAIL POST TOP-MOUNTED TO CONCRETE 11 –|–
SCALE: 1" = 1'-0"


PL 1/4" CAP PLATE, TYP
T.O. SCREEN SEE ARCH'L
EQ
TYP
1/4
HSS 3"x3"x1/4" HORIZONTAL BEAMS
HSS 4"x4"x5/16" POST
EQ
METAL DECK
L 4"x4"x1/2" ANGLE EACH SIDE OF POST
JOIST PER PLAN
TYP
1/4
3"
TYP
1/4
1/4
L 2 1/2"x2 1/2"x1/4" ANGLE DIAGONAL BRACE AT EA POST
L 4"x4"x1/2" ANGLE EACH SIDE OF POST

MECHANICAL SCREEN SUPPORTS 6 –|–
SCALE = NTS


HVAC UNIT SEE MECHANICAL
BUILT-UP ROOFING NOT SHOWN SEE ARCHITECTURAL
CURB BY HVAC MANUFACTURER
WOOD BLOCKING FULL LENGTH OF CURB TO PREVENT CRUSHING OF DECK
METAL DECK
L6"x4"x5/16" ADDITIONAL FRAMING SEE 2 S-17|S-05
1/2"ø MIN SST BOLTS BY HVAC MANUFACTURER
JOIST PER PLAN, TYP

ADDITIONAL FRAMING AT MECHANICAL UNIT 7 –|–
SCALE: NTS


1'-0"
SMOOTH ROUNDED TRANSITION
HANDRAIL
CURB WHERE SHOWN
2'-10"
3" CLEAR
TERMINATE RAILING AS SHOWN WHERE NO HORIZONTAL RUN IS REQUIRED, TOP AND BOTTOM OF STAIRS
11"
3" UNO
4'-0" MAX
1'-0"
1'-0"
1'-0" MIN
CL EXP JT
20'-0" MAX
1 1/2"ø PIPE SCH 40
2"ø PIPE SCH 40
FINISHED FLOOR
2 EQ SPACES
3'-6"
4"
1/4"
8" CLR
TOEBOARD
EXP JT IN STRUCTURE
TOEBOARD

NOTES:
1. ALL RAILING SHALL BE ALUMINUM, UNLESS NOTE OTHERWISE.
2. ALL FASTENERS SHALL BE STAINLESS STEEL.
3. RAILING SHALL BE INSTALLED SO AS NOT TO INTERFERE WITH ANY PIPING, EQUIPMENT OR EASE-OUT AIR PIPING ASSEMBLY. CONTRACTOR TO COORDINATE.
4. RAILING POST LOCATIONS SHALL BE FIELD MEASURED AND RAILING FABRICATED TO FIT. NO FIELD CUTTING OR WELDING WILL BE PERMITTED. RAILING WHICH DOES NOT FIT MOUNTING PREVIOUSLY SET IN CONCRETE WILL BE REJECTED.
5. WHERE NO CURB, PROVIDE TOEBOARD UNLESS SPECIFICALLY CALLED OUT AS NO TOEBOARD REQUIRED.
6. SPACING OF EXPANSION JOINT IN RAIL AND TOEBOARD SHALL NOT EXCEED 20 FEET.
7. RAILING POST TO BE EVENLY SPACED.

ALUMINUM GUARDRAIL 10 –|–
SCALE: 1" = 1'-0"

FACILITY DRAWINGS
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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

USER:RWRIGHT FILE:C:\pwworking\west01\d3411632\CSSLS40005.dwg DATE:8/28/24 TIME:05:15pm

HDR

62528
RYAN O. WRIGHT

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	RW	01/2024	TH	90% SUBMITTAL
B	RW	04/2024	TH	AGENCY REVIEW
C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

STRUCTURAL
SECTIONS AND DETAILS 1

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CITY PROJECT NO. WS90400085
DATE: 08/2024
S–17 SHEET 73 OF 134
CAD FILE: CSSLS40005.dwg

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FOR CONSTRUCTION

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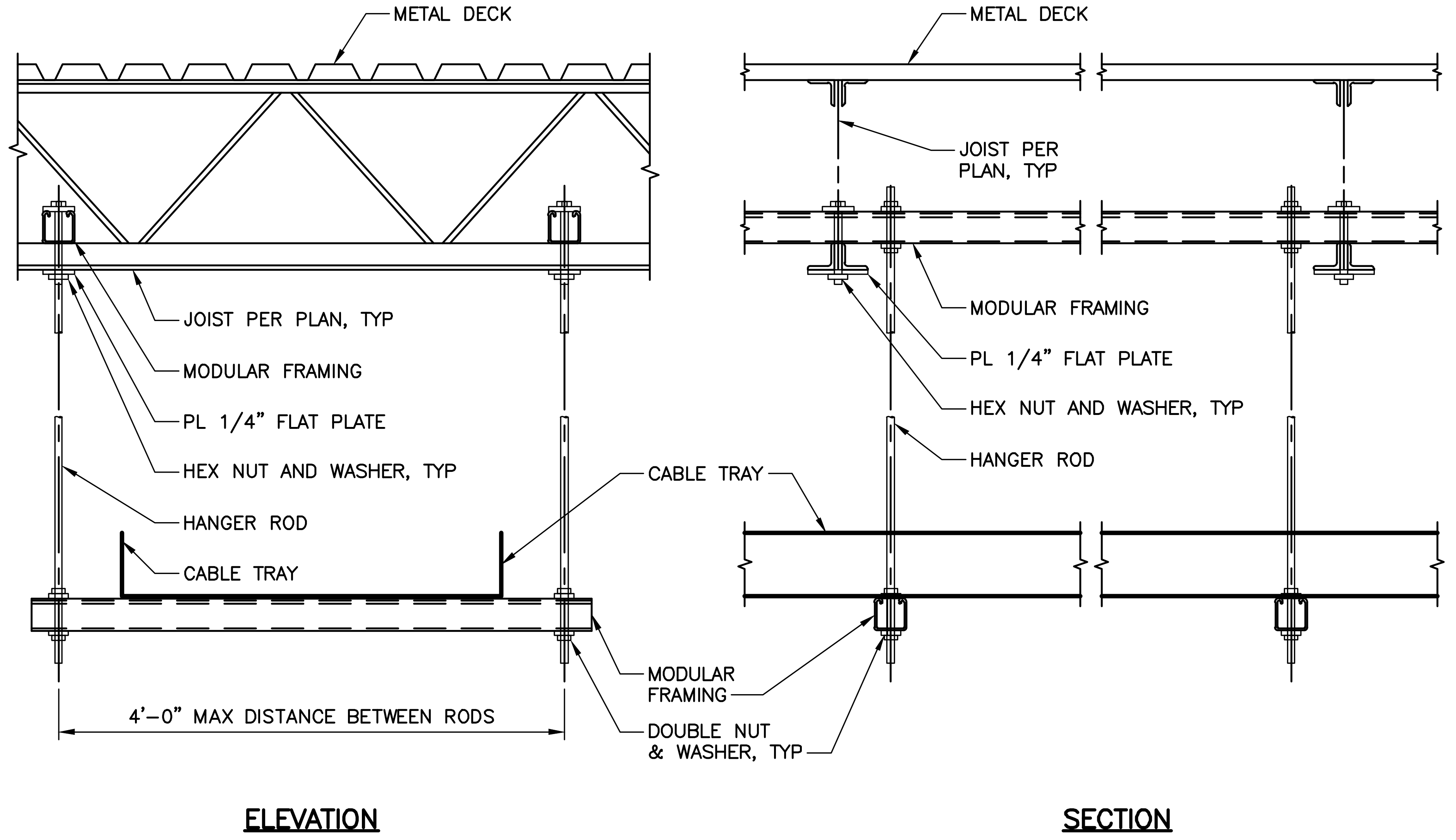
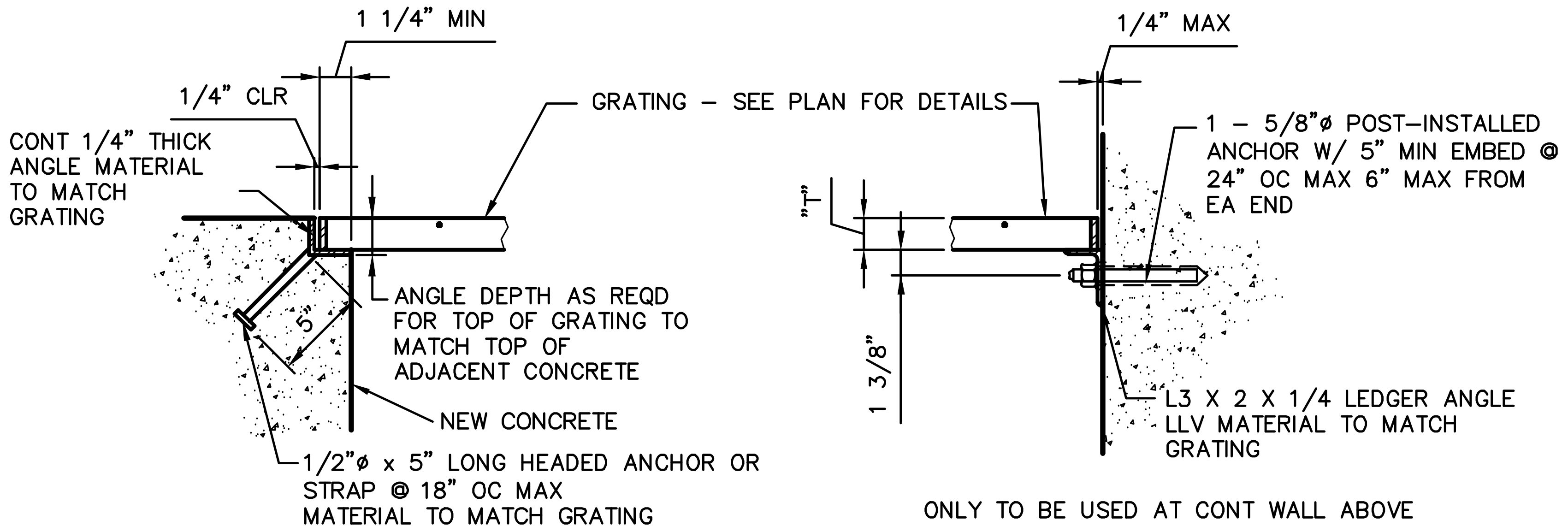

METAL DECK
JOIST PER PLAN, TYP
MODULAR FRAMING
PL 1/4" FLAT PLATE
HEX NUT AND WASHER, TYP
HANGER ROD
CABLE TRAY
MODULAR FRAMING
DOUBLE NUT & WASHER, TYP
4'-0" MAX DISTANCE BETWEEN RODS
METAL DECK
JOIST PER PLAN, TYP
MODULAR FRAMING
PL 1/4" FLAT PLATE
HEX NUT AND WASHER, TYP
HANGER ROD
CABLE TRAY
ELEVATION
SECTION

NOTES:
1. MATERIAL FOR ALL COMPONENTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION UNLESS NOTED OTHERWISE.
2. INSTALL ALL PARTS AND COMPONENTS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. DETAIL SHOWN FOR REPRESENTATION OF SYSTEM AND FOR BID PURPOSES ONLY. CONTRACTOR TO PROVIDE STRUCTURAL DESIGN INCLUDING CALCULATIONS FOR MODULAR FRAMING. CONTRACTOR TO SUBMIT SHOP DRAWINGS AND CALCULATIONS TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE SUBMITTED DRAWINGS AND CALCULATIONS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF ARIZONA.
4. REFERENCE THE STANDARD JOIST DETAILS FOR ADDITIONAL INFORMATION.
5. REFERENCE SPECIFICATION SECTIONS 05 50 00 AND 26 05 36 FOR ADDITIONAL INFORMATION.

CABLE TRAY SUPPORT 1 -|-

SCALE: NTS

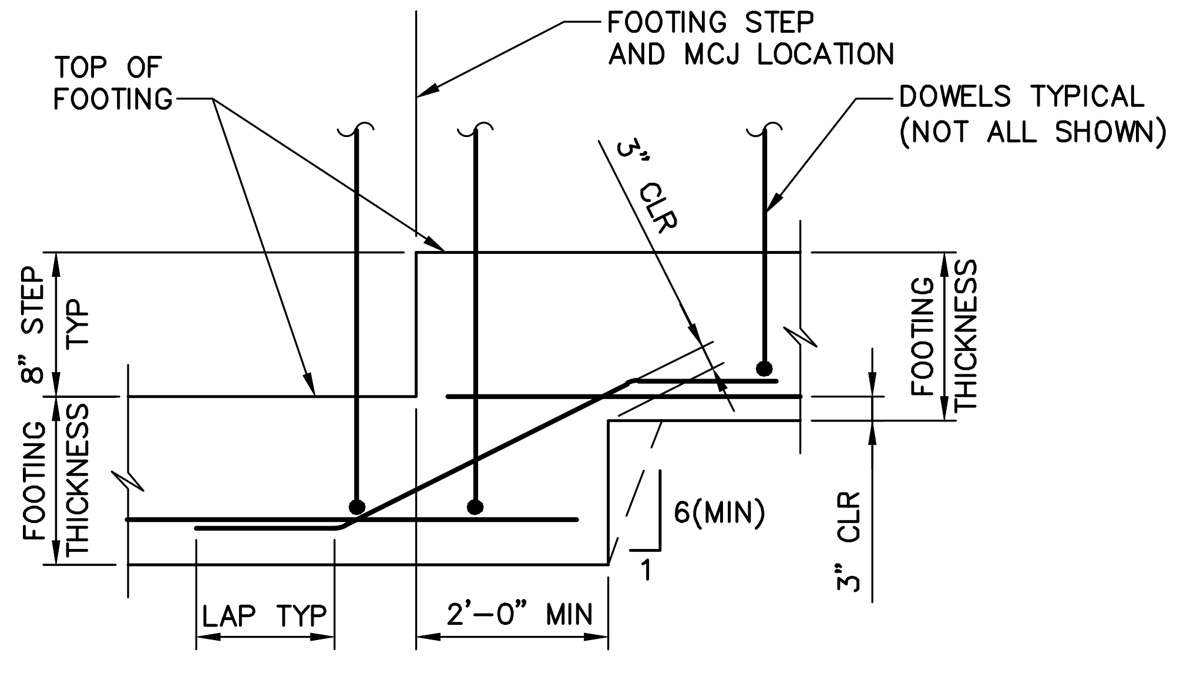

1 1/4" MIN
1/4" CLR
CONT 1/4" THICK ANGLE MATERIAL TO MATCH GRATING
GRATING – SEE PLAN FOR DETAILS
ANGLE DEPTH AS REQD FOR TOP OF GRATING TO MATCH TOP OF ADJACENT CONCRETE
5"
NEW CONCRETE
1/2"ø x 5" LONG HEADED ANCHOR OR STRAP @ 18" OC MAX MATERIAL TO MATCH GRATING WELD TO ANGLE
1/4" MAX
"T"
1 3/8"
1 – 5/8"ø POST-INSTALLED ANCHOR W/ 5" MIN EMBED @ 24" OC MAX 6" MAX FROM EA END
L3 X 2 X 1/4 LEDGER ANGLE LLV MATERIAL TO MATCH GRATING
ONLY TO BE USED AT CONT WALL ABOVE GRATING OR AT PRE-EXISTING CONCRETE CONSTRUCTION

NOTES:

1. GRATING SIZE PER CONTRACT DOCUMENTS.
2. ALL ENDS AND OPENINGS SHALL BE BANDED, SEE SPECIFICATION.
3. ATTACH GRATING TO ALL SUPPORT ANGLES WITH BOLTED CLIPS, SPACED AT 2'-0" MAX CENTERS.
4. PROVIDE DISSIMILAR MATERIAL PROTECTION FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATION.

GRATING AND SUPPORT DETAIL 3 -|-

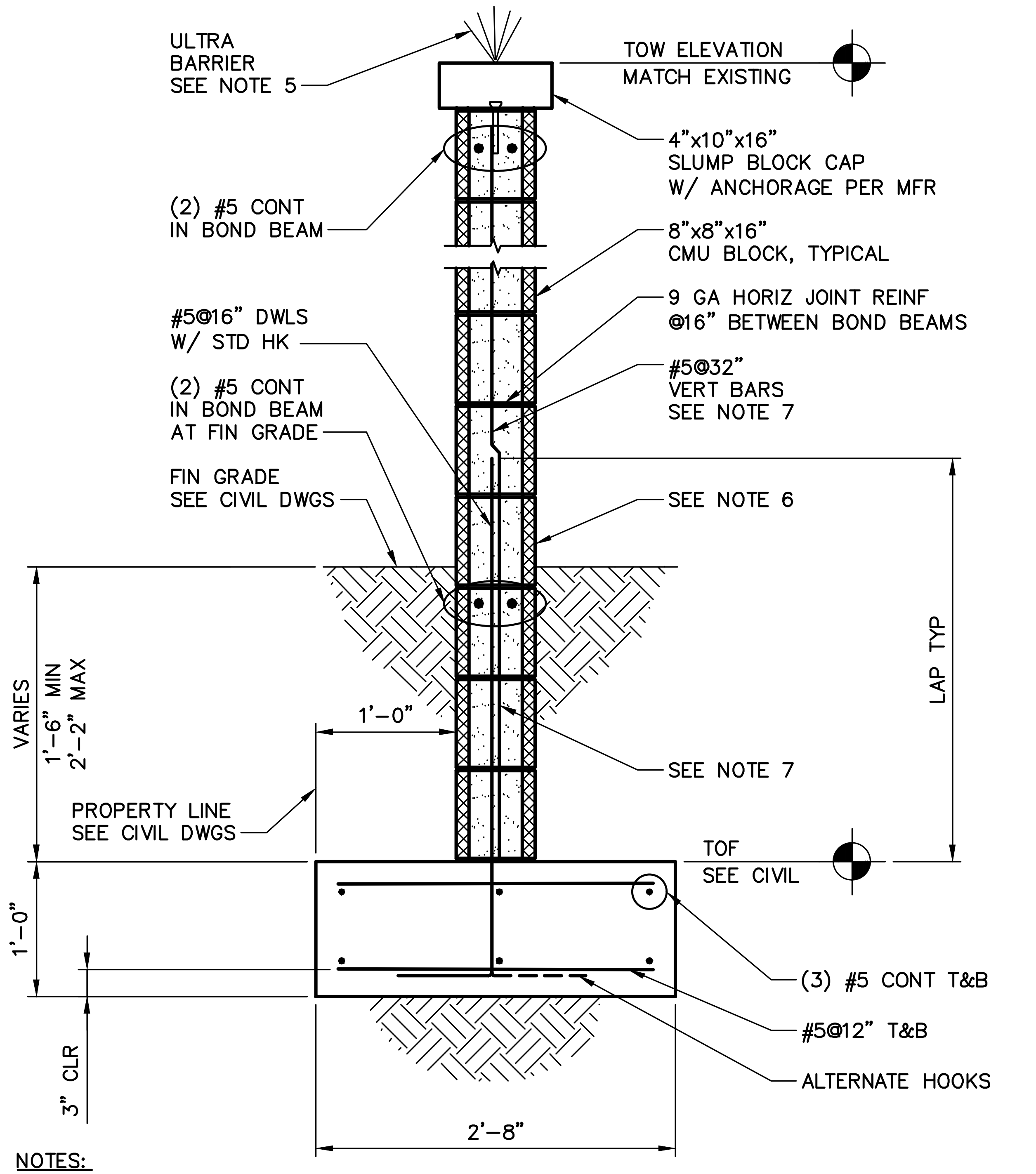
SCALE: NTS


TOP OF FOOTING
FOOTING STEP AND MCJ LOCATION
DOWELS TYPICAL (NOT ALL SHOWN)
3" CLR
8" STEP TYP
FOOTING THICKNESS
FOOTING THICKNESS
6(MIN)
1
3" CLR
LAP TYP
2'-0" MIN

NOTES:
1. THIS DETAIL SHALL BE USED AS REQUIRED TO MAINTAIN FOOTING DEPTHS SHOWN ON DETAILS AND MAY NOT SPECIFICALLY BE REFERENCED.
2. SEE DETAIL 4 ON THIS SHEET FOR REINFORCING AND FOOTING SIZE.
3. BOTTOM OF FOOTINGS SHALL BE STEPPED. SLOPING OF FOOTING BOTTOM IS NOT PERMITTED.

STEPPED CONCRETE FOOTING AT MASONRY WALL 2 -|-

SCALE: NTS


ULTRA BARRIER SEE NOTE 5
TOW ELEVATION MATCH EXISTING
4"x10"x16" SLUMP BLOCK CAP W/ ANCHORAGE PER MFR
(2) #5 CONT IN BOND BEAM
8"x8"x16" CMU BLOCK, TYPICAL
9 GA HORIZ JOINT REINF @16" BETWEEN BOND BEAMS
#5@16" DWLS W/ STD HK
#5@32" VERT BARS SEE NOTE 7
(2) #5 CONT IN BOND BEAM AT FIN GRADE
FIN GRADE SEE CIVIL DWGS
SEE NOTE 6
LAP TYP
VARIES 1'-6" MIN 2'-2" MAX
1'-0"
SEE NOTE 7
PROPERTY LINE SEE CIVIL DWGS
TOF SEE CIVIL
1'-0"
(3) #5 CONT T&B
#5@12" T&B
3" CLR
ALTERNATE HOOKS
2'-8"

NOTES:
1. REFER TO CIVIL SHEETS FOR WALL LOCATIONS.
2. CONTRACTOR TO SUBMIT WALL PROFILE DEPICTING FINISHED GRADE, TOP OF WALL AND TOP OF FOOTING ELEVATIONS ALONG WITH FOOTING/WALL STEP LOCATIONS FOR ENGINEER'S REVIEW AND APPROVAL.
3. EXTEND FOOTING 1'-0" MINIMUM BEYOND END OF WALL.
4. SEE SHEET S-05 FOR ADDITIONAL CMU REINFORCING REQUIREMENTS.
5. FURNISH AND INSTALL ULTRA-BARRIER PER DETAIL 11 ON SHEET C-04. INSTALL PER MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
6. PROVIDE DRAIN HOLES IN SITE WALLS AT GRADE. SPACE DRAIN HOLES AT 64 INCHES ON CENTER MAXIMUM. AT CONTRACTOR'S OPTION, FORM DRAIN HOLES BY PLACING A FULL BLOCK HORIZONTALLY, REMOVING A HALF BLOCK, OR REPLACING A FULL BLOCK WITH TWO BRICK-SIZED SOLID BLOCKS SET SOLDIER COURSE. SEE CIVIL DRAWINGS FOR LOCATION OF SITE WALLS.
7. GROUT SOLID ONLY CELLS WITH REINFORCING ABOVE GRADE AND ALL CELLS BELOW GRADE

TYPICAL CMU SITE WALL 4 -|-

SCALE: NTS

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CERTIFICATE NO. 62528
RYAN O. WRIGHT

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DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

STRUCTURAL
SECTIONS AND DETAILS 2

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CITY PROJECT NO. WS90400085
DATE: 08/2024
S-18
SHEET 74 OF 134
CAD FILE: CSSLS40Q06.dwg

USER: RWRIGHT FILE: C:\pwworking\west01\d3411632\CSSLS40Q06.dwg DATE: 8/28/24 TIME: 05:18pm

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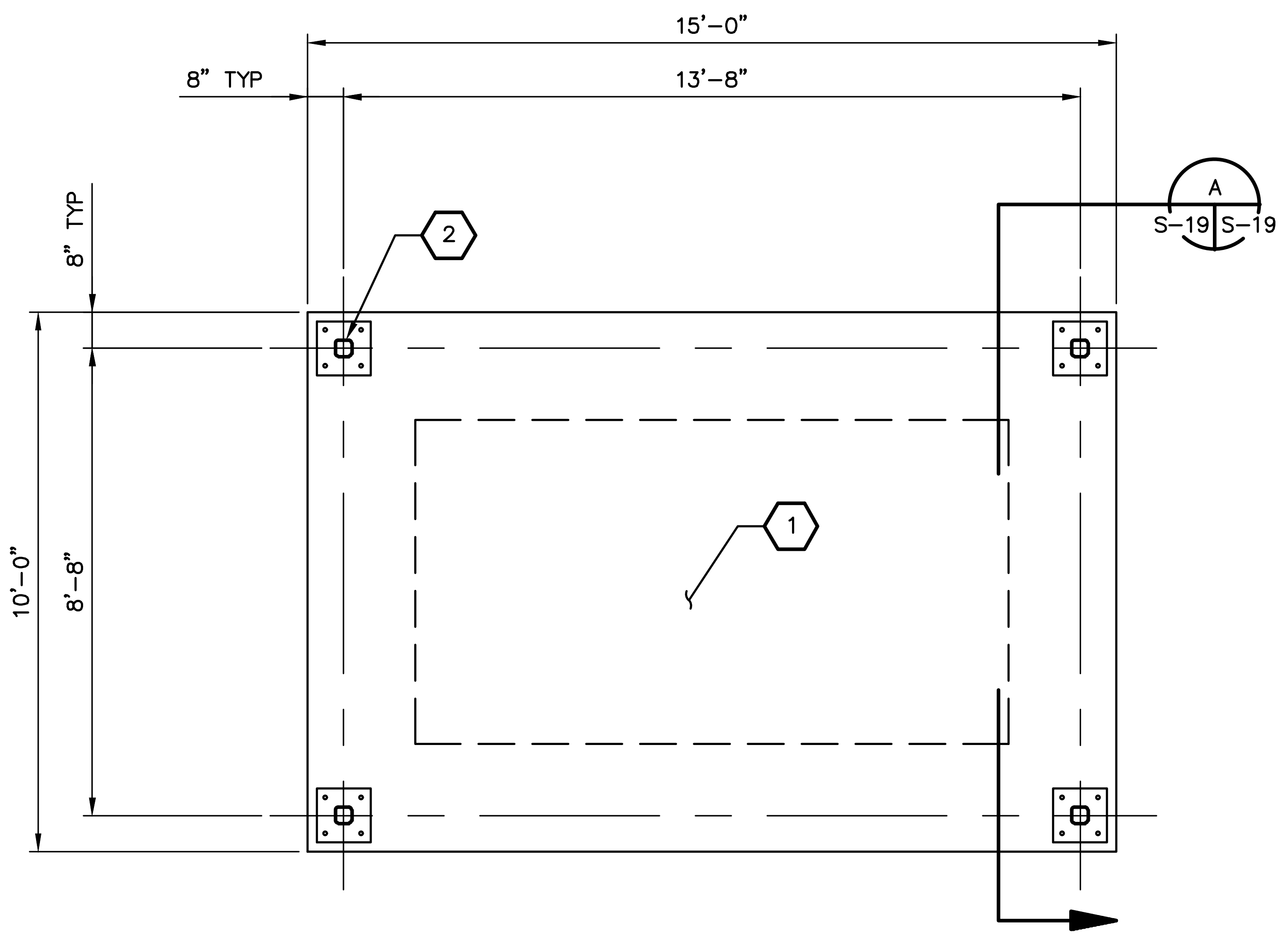
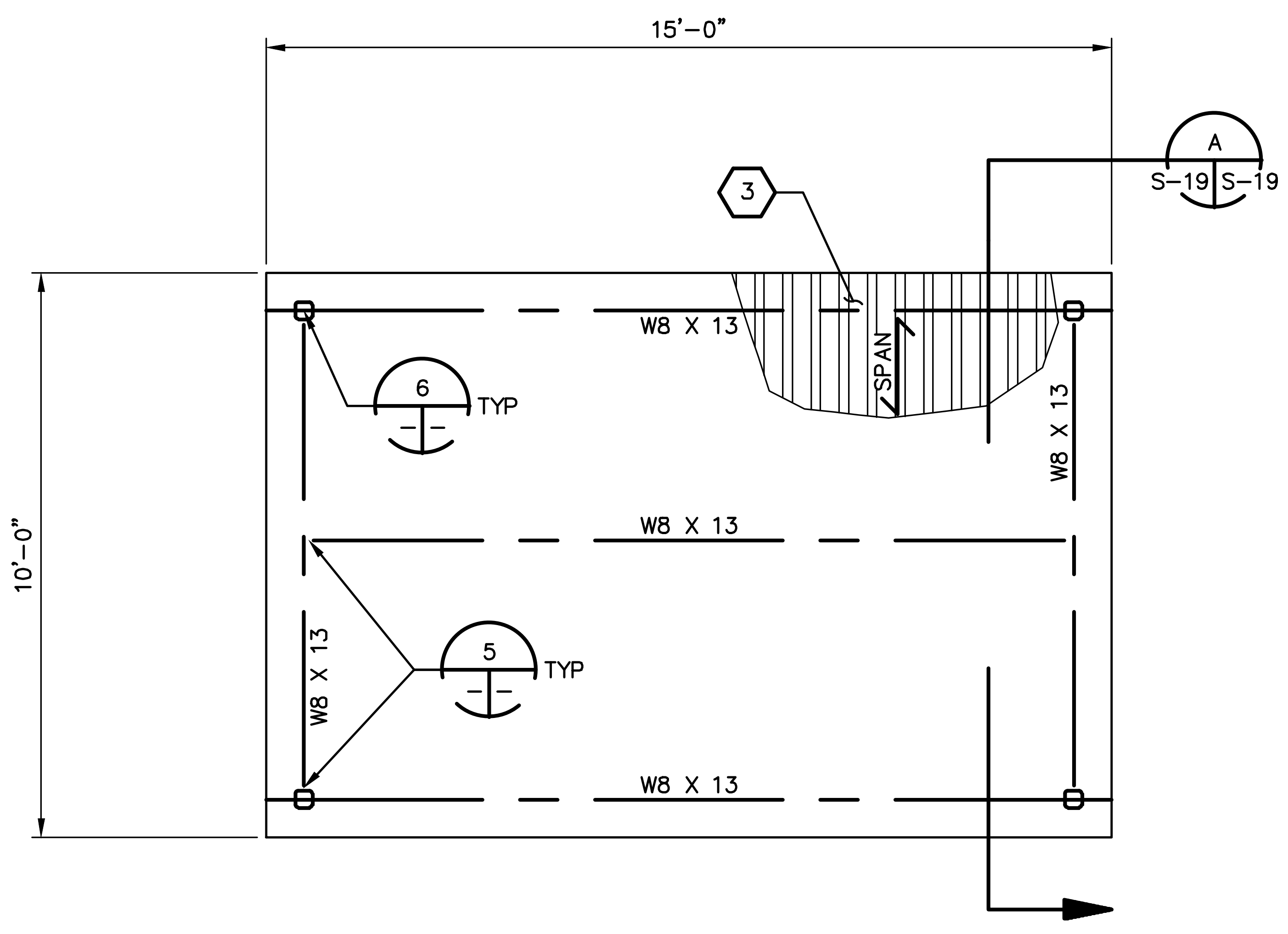

15'-0"
8" TYP
13'-8"
8" TYP
10'-0"
8'-8"
2
1
A
S-19 S-19

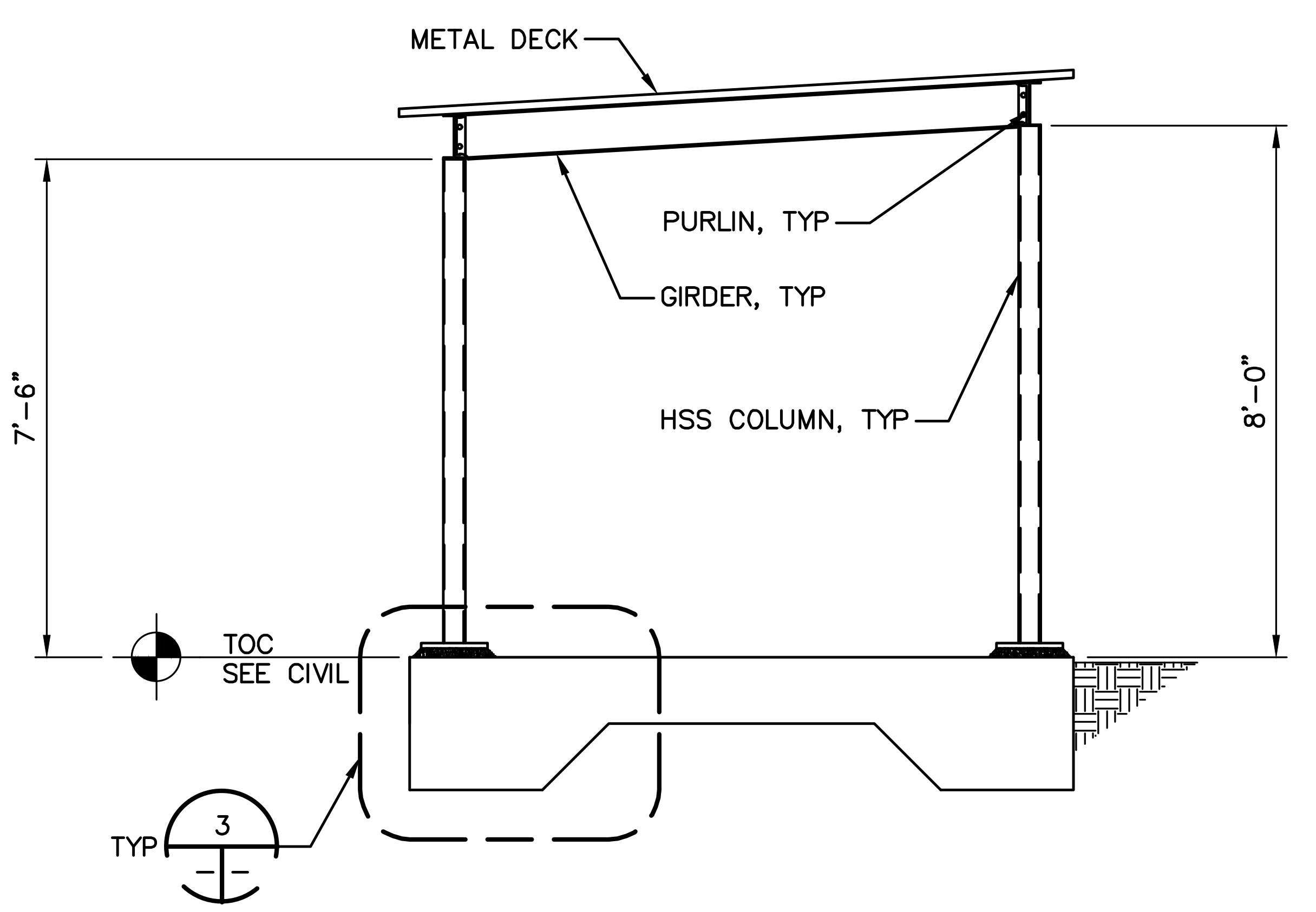
CANOPY FOUNDATION PLAN 1

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


15'-0"
10'-0"
3
A
S-19 S-19
W8 X 13
W8 X 13
W8 X 13
W8 X 13
W8 X 13
SPAN
6
TYP
5
TYP

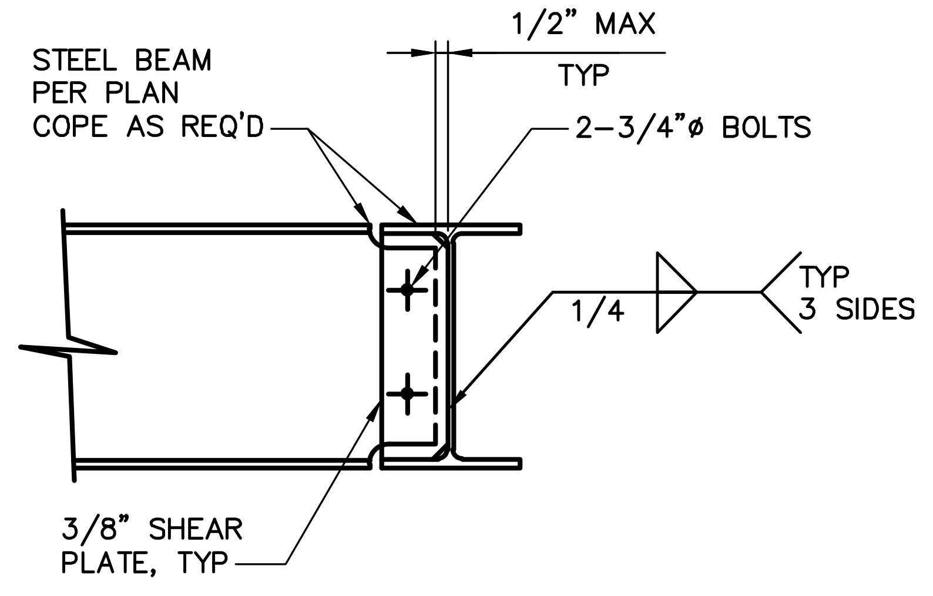
CANOPY ROOF FRAMING PLAN 2

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


METAL DECK
PURLIN, TYP
GIRDER, TYP
HSS COLUMN, TYP
7'-6"
8'-0"
TOC
SEE CIVIL
TYP
3

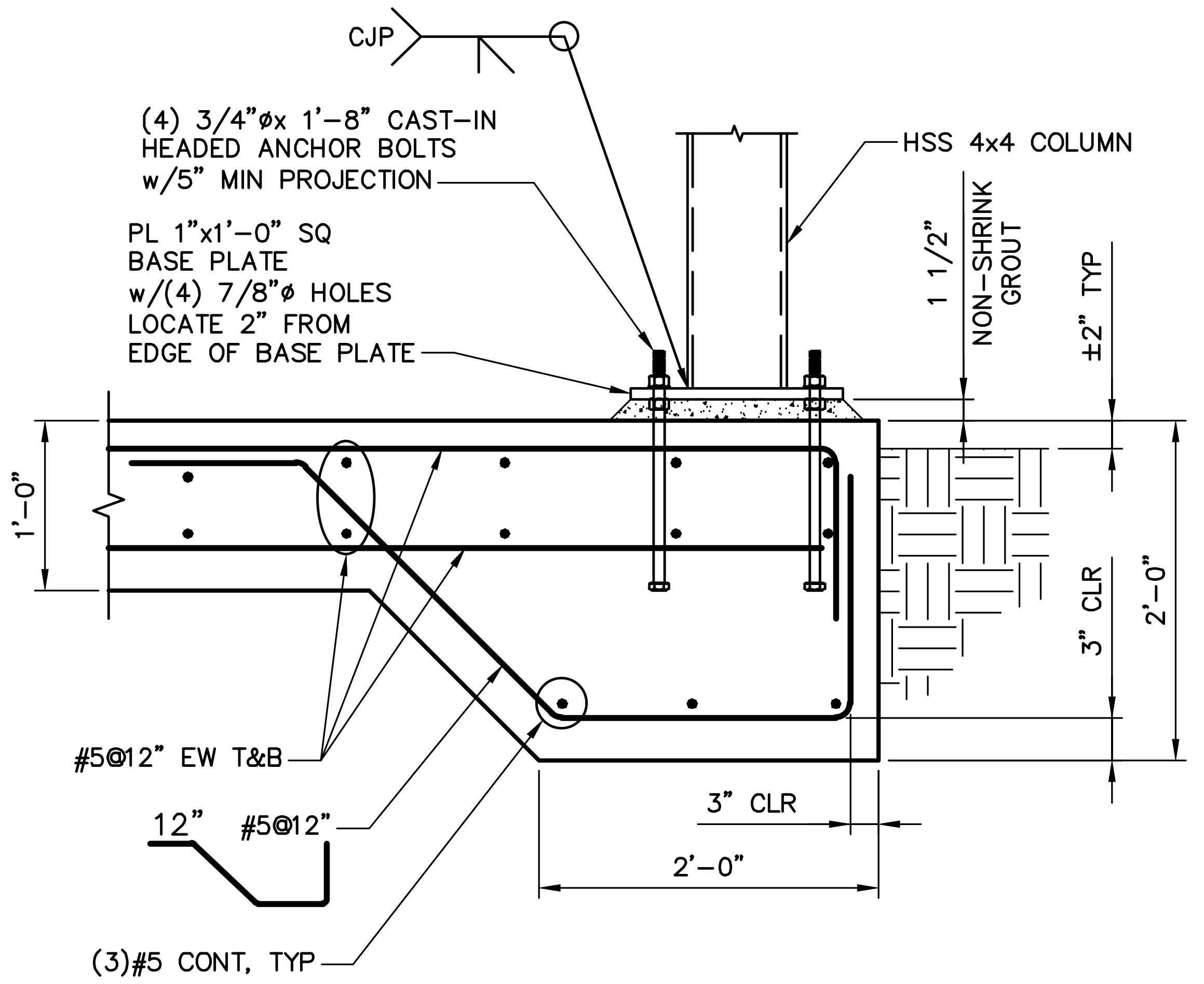
CANOPY SECTION A

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


STEEL BEAM
PER PLAN
COPE AS REQ'D
1/2" MAX
TYP
2-3/4"ø BOLTS
1/4
TYP
3 SIDES
3/8" SHEAR
PLATE, TYP

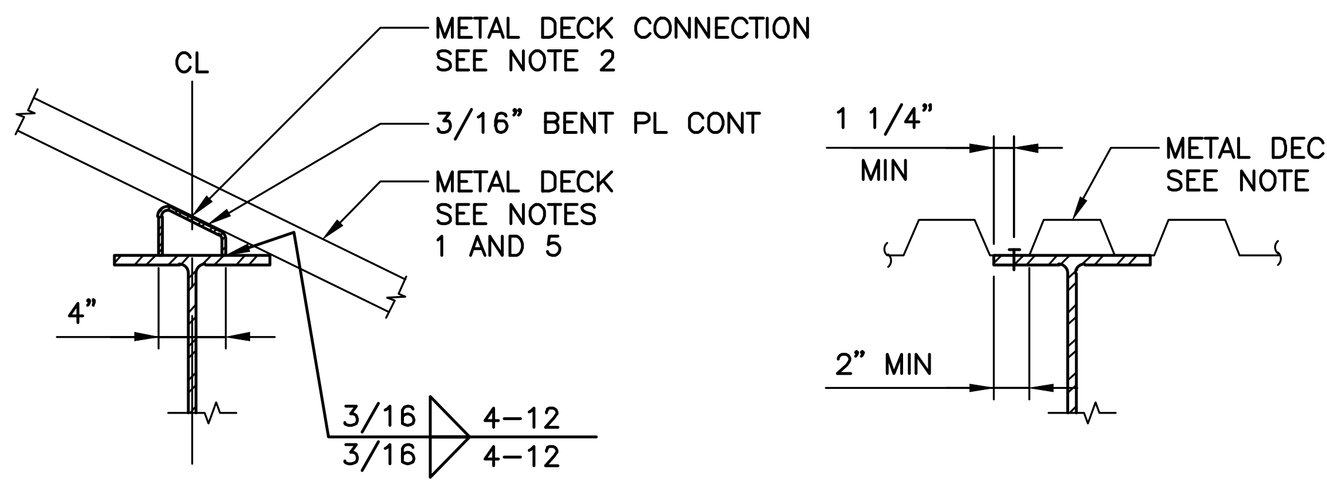
BEAM-TO-BEAM CONNECTION 5

NOT TO SCALE


CJP
(4) 3/4"øx 1'-8" CAST-IN
HEADED ANCHOR BOLTS
w/5" MIN PROJECTION
HSS 4x4 COLUMN
PL 1"x1'-0" SQ
BASE PLATE
w/(4) 7/8"ø HOLES
LOCATE 2" FROM
EDGE OF BASE PLATE
1 1/2"
NON-SHRINK
GROUT
±2" TYP
1'-0"
3" CLR
2'-0"
#5@12" EW T&B
12"
#5@12"
3" CLR
2'-0"
(3)#5 CONT, TYP

SLAB REINFORCEMENT AND COLUMN BASE 3

SCALE: 1"=1'-0"


CL
METAL DECK CONNECTION
SEE NOTE 2
3/16" BENT PL CONT
METAL DECK
SEE NOTES
1 AND 5
4"
3/16 4-12
3/16 4-12
1 1/4"
MIN
METAL DECK
SEE NOTE 1
2" MIN

PERPENDICULAR TO BEAM

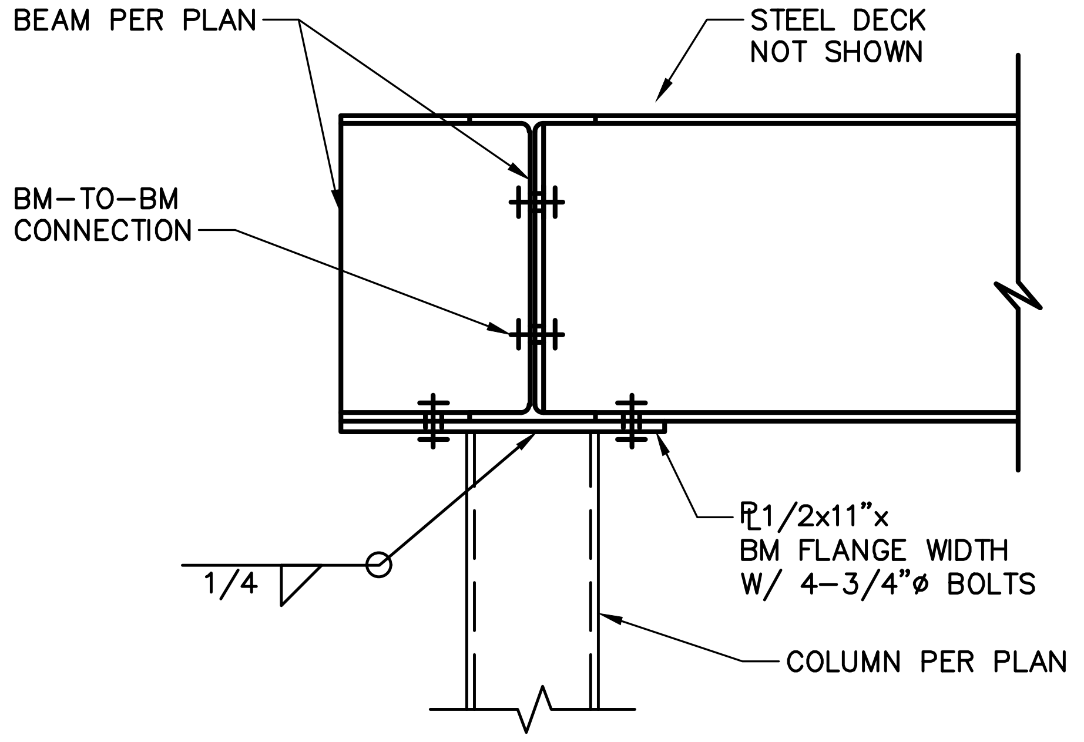
PARALLEL TO BEAM

NOTES:

1. PROVIDE 36" WIDE X 1 1/2" DEEP 20 GA STEEL DECKING ATTACHED TO STRUCTURAL FRAMING PER THE SPECIFICATIONS.
2. EXTEND DECK 8" BEYOND OUTSIDE FACE OF BEAM AT TYPICAL EAVE CONDITION.
3. SEE SPECIFICATION SECTION 05 30 00 FOR ADDITIONAL INFORMATION.

METAL DECK CONNECTION 4

NOT TO SCALE


BEAM PER PLAN
STEEL DECK
NOT SHOWN
BM-TO-BM
CONNECTION
PL1/2x11"x
BM FLANGE WIDTH
W/ 4-3/4"ø BOLTS
1/4
COLUMN PER PLAN

END BEAM AT COLUMN 6

NOT TO SCALE

GENERAL NOTES

1. STRUCTURAL DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SHOWN ON SHEETS S-01.
2. SEE CIVIL DRAWINGS FOR STRUCTURE LOCATION AND COORDINATE POINTS.

KEY NOTES

1. SHADE CANOPY FOUNDATION.
2. HSS 4x4x3/8 STEEL COLUMN AND BASE PLATE, TYPICAL. SEE 3 S-19 S-19
3. 1 1/2" COATED METAL DECK PER SPECIFICATION SECTIONS 05 30 00 AND 09 96 00. ARROW ON PLAN INDICATES SPAN DIRECTION. FOR REQUIRED ATTACHMENT, SEE 4 S-19 S-19

FACILITY DRAWINGS
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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

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RYAN O.
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B	RW	04/2024	TH	AGENCY REVIEW
C	RW	08/2024	TH	ISSUED FOR CONSTRUCTION

DES RW
DWN RW
CKD TH

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

STRUCTURAL

STRUCTURAL
SECTIONS AND DETAILS 3

CITY PROJECT NO. WS90400085

DATE: 08/2024

S-19 SHEET 75 OF 134

CAD FILE: CSSLS40Q07.dwg

USER:RWRIGHT FILE:C:\pwworking\west01\d3411632\CSSLS40Q07.dwg DATE:8/28/24 TIME:05:21pm

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FOR CONSTRUCTION

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CODE ANALYSIS

THIS PROJECT INVOLVES THE CONSTRUCTION OF A NEW ELECTRICAL EQUIPMENT BUILDING, OFFICE, AND UNISEX RESTROOM.

THE FOLLOWING CODE ANALYSIS IS PROVIDED TO SERVE AS A BASIS OF UNDERSTANDING FOR THE DEVELOPMENT OF THE DESIGN, DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.

REFERENCED CODES AND STANDARDS

- INTERNATIONAL BUILDING CODE, 2018
- INTERNATIONAL PLUMBING CODE, 2018
- INTERNATIONAL MECHANICAL CODE, 2018
- NATIONAL ELECTRIC CODE, 2017
- INTERNATIONAL FIRE CODE, 2018
- INTERNATIONAL ENERGY CONSERVATION CODE, 2018

BUILDING DESCRIPTION - PROVIDED

• TYPE IIB CONSTRUCTION (IBC)	IBC §602 & TABLE 601
• TOTAL BUILDING AREA: APPROXIMATELY 1829 SQUARE FEET (SF)	IBC §502 BUILDING AREA DEFINITION
• BUILDING HEIGHT AND STORIES: 16 FT AND 1 STORY	IBC §502 BUILDING HEIGHT DEFINITION

BUILDING OCCUPANCY CLASSIFICATION

• IBC OCCUPANCY CLASSIFICATION		
	GROUP U - UTILITY AND MISCELLANEOUS	IBC §312
• NFPA OCCUPANCY CLASSIFICATION		NFPA 101
	SPECIAL-PURPOSE INDUSTRIAL (LOW HAZZARD, LOW EMPLOYEE POPULATION, MUCH OF THE AREA OCCUPIED BY EQUIPMENT AND MACHINERY.)	NFPA CHAPTER 40.1.2.1.1

SPECIAL OCCUPANCY REQUIREMENTS

• NONE	IBC §

ALLOWABLE IBC BUILDING HEIGHT AND FLOOR AREA:

(SEE BUILDING DESCRIPTION)

• ALLOWABLE GROSS SQUARE FEET OF BUILDING: 8,500 SF (TYPE IIB, GROUP U, NON-SPRINKLERED)	IBC §506, TABLE 506.1
• ALLOWABLE HEIGHT: 55 FEET AND 2 STORIES (TYPE IIB, GROUP U, NON-SPRINKLERED)	IBC §504.1 TABLES 504.3 & 504.4

FIRE RESISTANCE REQUIREMENTS

IBC STRUCTURAL ELEMENTS: TYPE IIB

• BEARING WALLS EXTERIOR	0 HOUR	IBC 601 & TABLE 602 ALL ALLOWABLE COMBUSTIBLE MATERIALS AS DEFINED IN SECTION 603
• BEARING WALLS INTERIOR	0 HOUR	
• NONBEARING WALLS & PARTITIONS - INTERIOR	0 HOUR	
• ROOF CONSTRUCTION (INCLUDING SUPPORTING BEAMS AND JOISTS)	0 HOUR	

NOTE: BASED UPON FIRE AREA GREATER THAN 30' FROM OTHER BUILDINGS(& PERIMETER BLOCK WALL), PER TABLE 602

COMBUSTIBLE MATERIAL IN TYPES I & II CONSTRUCTION

• FIRE-RETARDANT-TREATED WOOD REQUIRED	IBC §603.1.1.1.3

MEANS OF EGRESS

• HEADROOM-PROTRUDING OBJECTS MIN HEADROOM 80" FOR LESS THAT 50% OF PATH, 90" CLEAR OTHERWISE	IBC §1003.3.1
• MIN EXIT PASSAGE AS COMPONENT OF MEANS OF EGRESS = WIDTH 36" CLEAR	IBC §1024.2

OCCUPANT COUNT: ROOM #		**GROSS SF**	PERSONS:	IBC §TABLE 1004.1.2
ELECTRICAL EQUIPMENT ROOM 100	1:300 GROSS	1,659	6	
TOILET 101		40	0	
BUILDING CONSTRUCTION				
TOTAL:		1,699	**6**	

• EQUIPMENT ROOM - EXIT TRAVEL DISTANCE WITH 2 EXITS= 200'.	IBC §TABLE 1017.2

ACCESSIBILITY

SPACE FREQUENTED ONLY BY SERVICE PERSONNEL FOR MAINTENANCE, REPAIR OR OCCASIONAL MONITORING OF EQUIPMENT ARE NOT REQUIRED TO COMPLY WITH ACCESSIBILITY CHAPTER 11.	IBC §1103.2.9

FIRE PROTECTION SYSTEMS

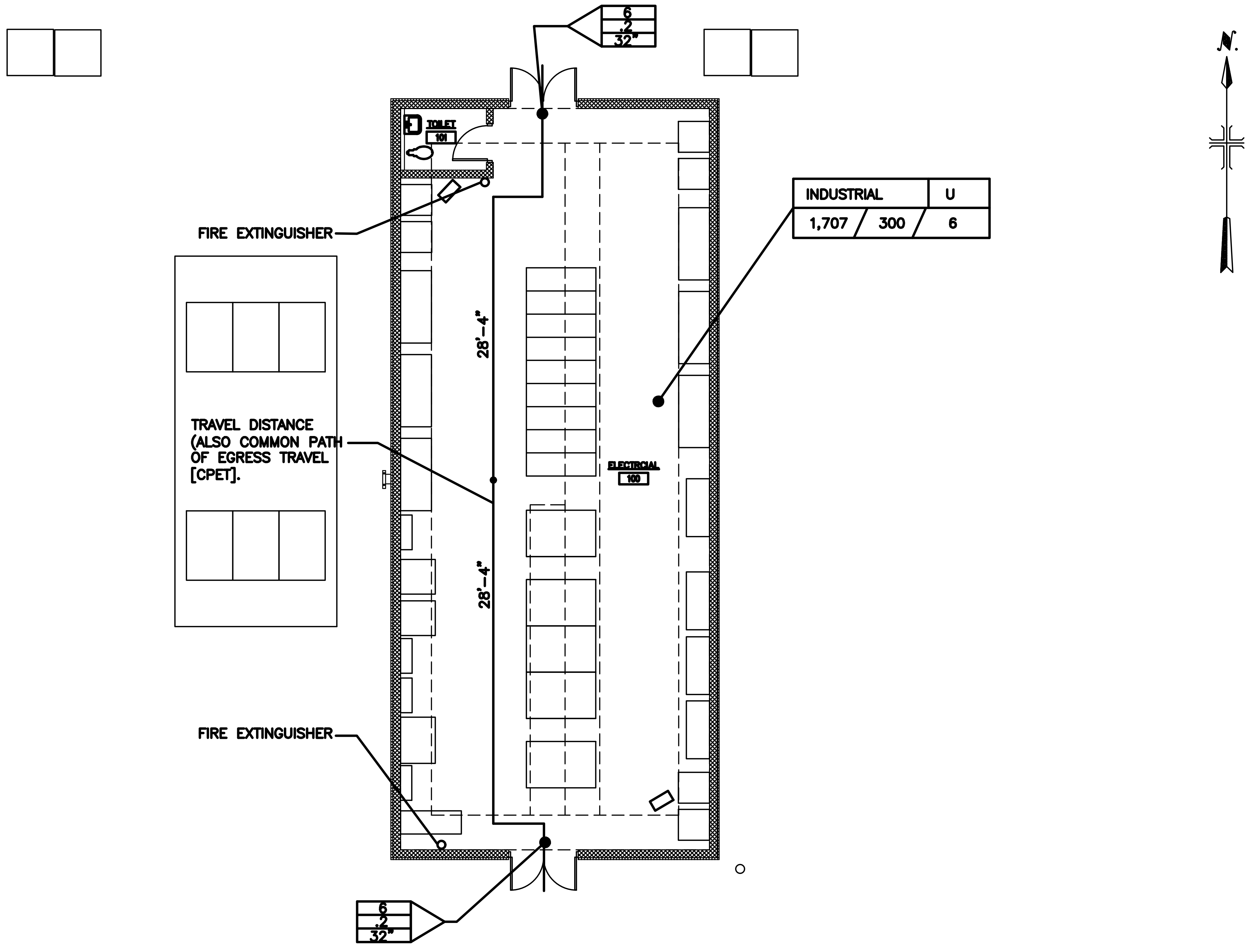
• FIRE ALARM SYSTEM IS NOT REQUIRED		IBC §907.2.4
• TYPE ABC MODERATE - PORTABLE FIRE EXTINGUISHERS REQUIRED, MINIMUM = 2	50' MAX TRAVEL DISTANCE	IBC TABLE §906.3(2); IBC §906.3.3
• AUTOMATIC SPRINKLER SYSTEM IS NOT REQUIRED		IBC §903.2.4

FIRE DEPARTMENT ACCESS & FIRE FLOW SITE REQUIREMENTS

• FIRE FLOW REQUIREMENTS	1,500 GPM (@20psi) - 2 HR DURATION	IFC TABLE §B105.1(2)
• FIRE HYDRANT DISTANCE <= 600' FROM THE BUIDLING		IFC §507.5.1, EXCEPTION 1
• APPROVED FIRE APPARATUS ACCESS ROADS		IFC §503.1.1

ENERGY CODE COMPLIANCE-2018 IECC		CLIMATE ZONE 2 TABLE C402.1.3. R-VALUE TABLE C402.1.4 U-FACTOR ALL OTHER	
ROOF	INSULATION ENTIRLEY ABOVE DECK	R-25ci	
WALLS - ABOVE GRADE	MASS	SUB-NOTE c.	AMINOPLAST MASONRY FOAM INSULATION = 0.217 THERMAL CONDUCTIVITY
WALLS - BELOW GRADE		NR	
FLOORS - SLAB ON GRADE	UNHEATED SLABS	NR	
DOORS (OPAQUE)	SWINGING	U-0.83	IECC TABLE 402.4

NOTE: SEE COMcheck REPORT
SUB-NOTE c. R-5.7ci IS ALLOWED TO BE SUBSTITUTED WITH CONCRETE BLOCK WALLS COMPLYING WITH ATSM C90, UNGROUTED OR PARTIALLY GROUTED AT 32" OR LESS ON CENTER VERTICALLY AND 48" OR LESS ON CENTER HORIZONTALLY, WITH UNGROUTED CORES FILLED WITH MATERIALS HAVING A MAXIMUM THERMAL CONDUCTIVITY OF 0.44 Btu-IN/h-f(SQUARED) DEGREES FARENHEIGHT.



ELECTRICAL BUILDING CODE PLAN

GENERAL NOTES

1. SEE A–09 FOR ROOM FINISH AND DOOR SCHEDULES.
2. SEE STRUCTURAL PLANS FOR FLOOR ELEVATIONS.
3. SEE EXTERIOR ELEVATIONS FOR FINISH, CONTROL JOINTS AND REVEAL LOCATIONS.
4. ALL DIMENSIONS ARE ACTUAL AND ARE FACE OF MASONRY UNLESS NOTED OTHERWISE. ALL DIMENSIONS ARE FOR BIDDING PURPOSES ONLY. ACTUAL FIELD DIMENSIONS SHALL BE VERIFIED PRIOR TO SUBMITTAL OF SHOP DRAWINGS, ORDERING RELATED MATERIALS AND PERFORMING CONSTRUCTION WORK.
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7. ARCHITECTURAL FINISH FLOOR FOR REFERENCE IS 100.00'.
8. ALL ANGLES ON PLAN ARE 90 DEGREES UNLESS NOTED OTHERWISE.
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0 4 8 16
1/8" = 1'–0"

FACILITY DRAWINGS
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#	–	–	–	–	–	–	–

REGISTERED ARCHITECT
CERTIFICATE NO.
36304
JON W.
GRIFFIN
DATE SIGNED 8-20-2024
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
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D	JWG	8/2024	JWG	ISSUED FOR CONSTRUCTION
•				
•				
•				

DES
JWG
DWN
JRL
CKD
JWG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ARCHITECTURAL

ELECTRICAL BUILDING
LIFE SAFETY AND CODES

CITY PROJECT NO. WS90400085
DATE: 04/2024
A–01 SHEET 76 OF 134
CAD FILE: CSAL40A01.DWG

USER: JOGRIFFIN FILE: C: \PWWORKING\west01\d3416668\CSALS40A01.dwg DATE: 8/28/24 TIME: 08:17am

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FOR CONSTRUCTION

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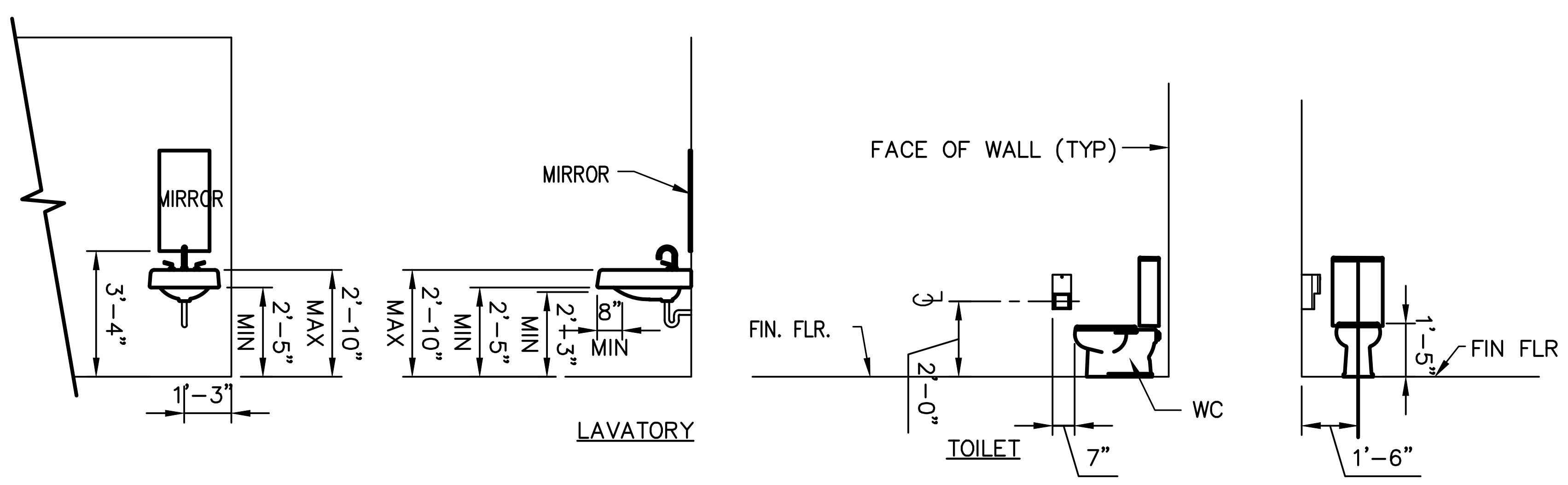
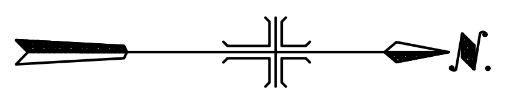
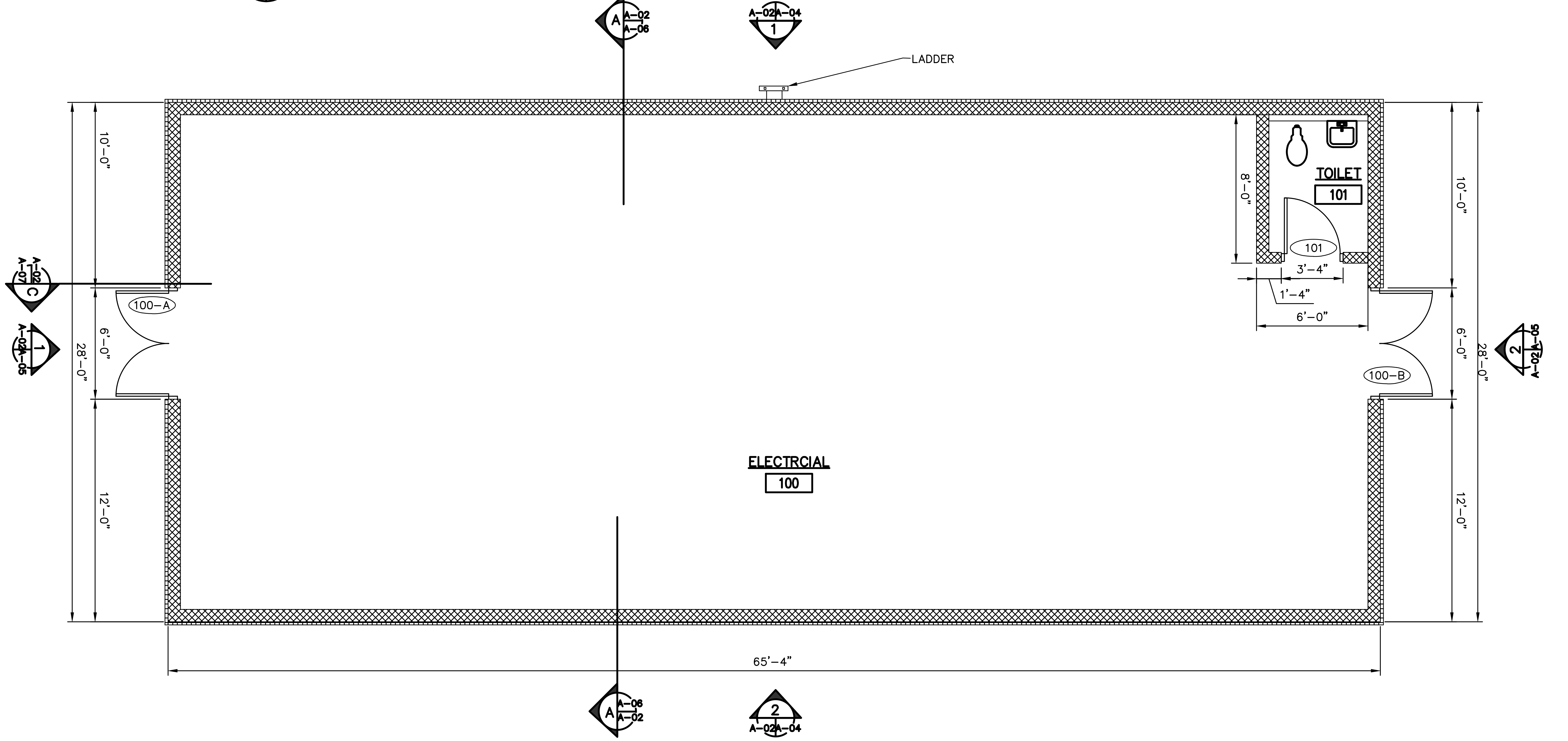


2 TOILET ELEVATIONS
A02 SCALE: 1/4" = 1'-0"





1 FLOOR PLAN
A02 SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. SEE A-09 FOR ROOM FINISH AND DOOR SCHEDULES.
2. SEE STRUCTURAL PLANS FOR FLOOR ELEVATIONS.
3. SEE EXTERIOR ELEVATIONS FOR FINISH, CONTROL JOINTS AND REVEAL LOCATIONS.
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11. MECHANICAL AND ELECTRICAL EQUIPMENT IS SHOWN FOR REFERENCE ONLY. SEE MECHANICAL AND ELECTRICAL SHEETS

FACILITY DRAWINGS
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#	–	–	–	–	–	–	–

0 2 4 8
1/4" = 1'-0"

REGISTERED ARCHITECT
36304
JON W. GRIFFIN
DATE SIGNED 8-20-2024
ARIZONA, U.S.A.

REVISIONS				
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D	JWG	8/2024	JWG	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES JWG
DWN JRL
CKD JWG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ARCHITECTURAL

ELECTRICAL BUILDING
FLOOR PLAN

CITY PROJECT NO. WS90400085
DATE: 04/2024
A–02 SHEET 77 OF 134
CAD FILE: CSALS40P02.DWG

USER: JOGRIFFIN FILE: C:\PWWORKING\west01\d3416668\CSALS40P02.dwg DATE: 8/28/24 TIME: 08:22am

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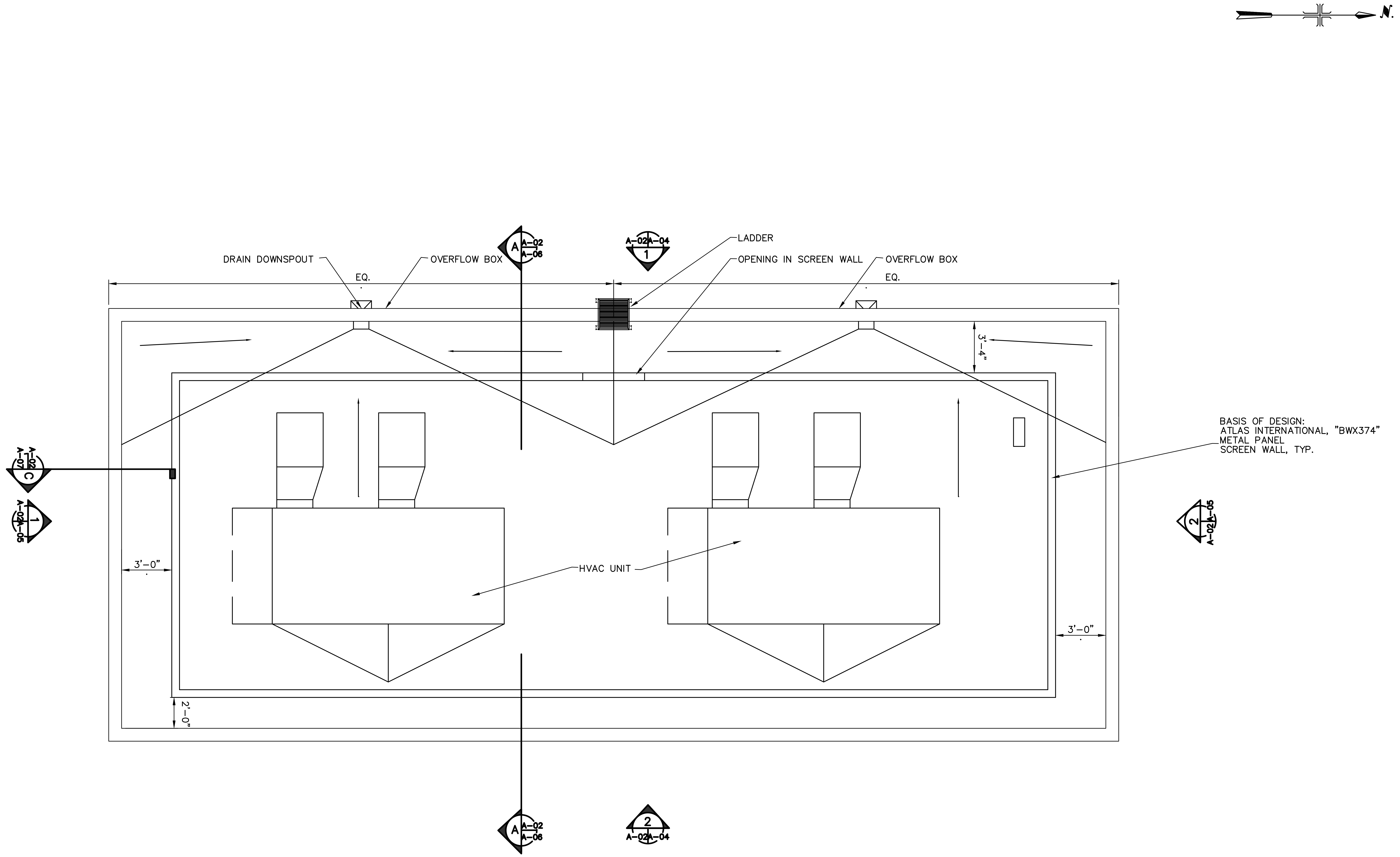

ROOF PLAN

1 / A03
SCALE: 1/4" = 1'-0"

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0 2 4 8
1/4" = 1'-0"

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36304
JON W.
GRIFFIN
8-20-2024

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*				
*				

DES JWG
DWN JRL
CKD JWG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ARCHITECTURAL

ELECTRICAL BUILDING
ROOF PLAN

CITY PROJECT NO. WS90400085
DATE: 04/2024
A-03 SHEET 78 OF 134
CAD FILE: CSALS40P03.DWG

USER: JOGRIFFIN FILE: C:\PWWORKING\west01\d3416668\CSALS40P03.dwg DATE: 8/28/24 TIME: 08:23am

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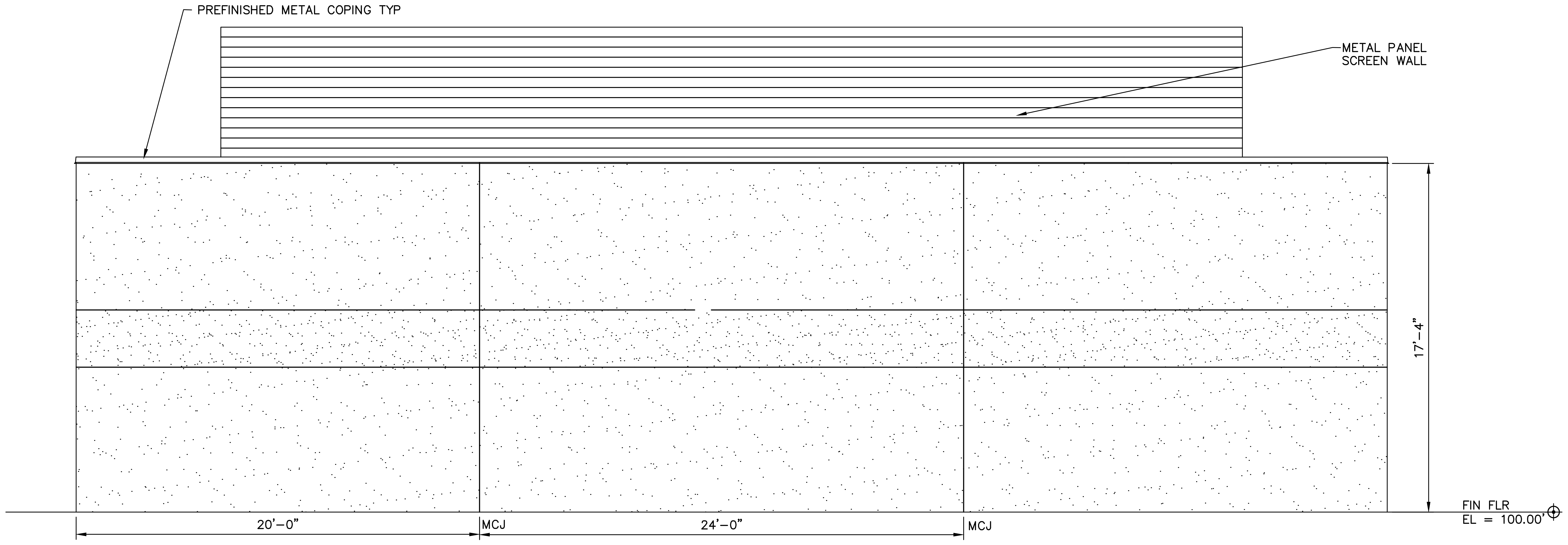
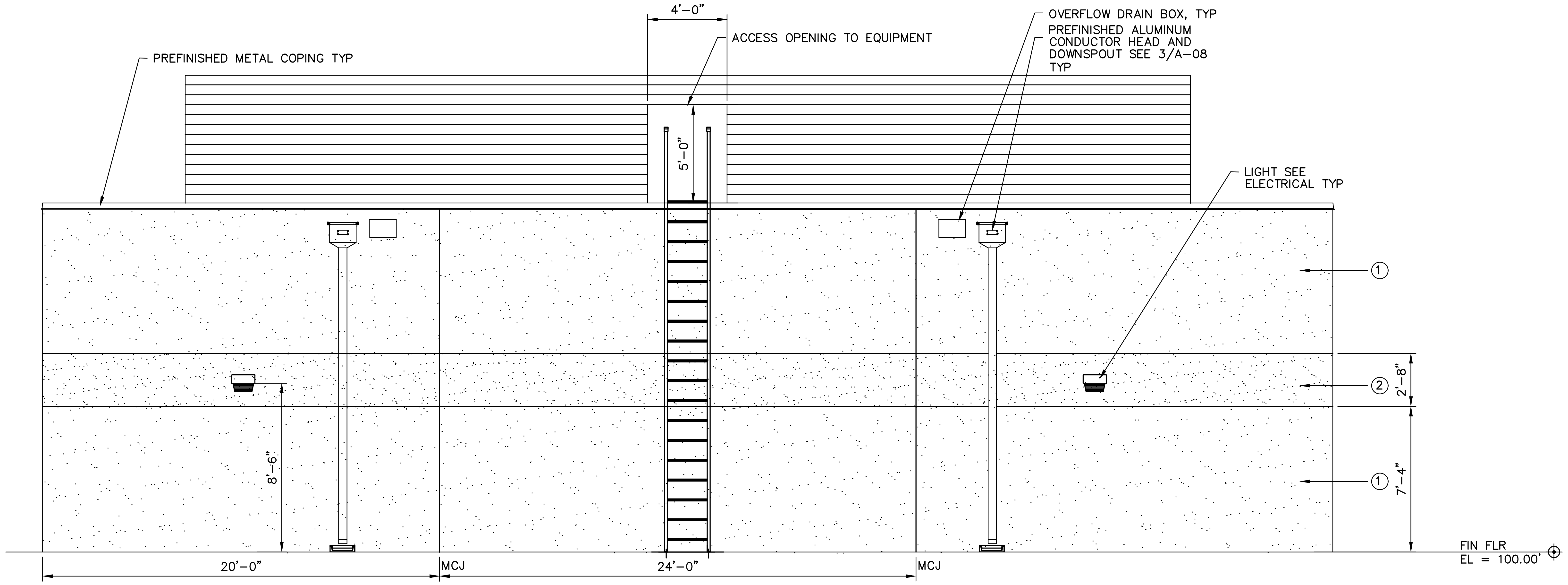
EIFS COLOR KEY		
#	HATCH	MATERIAL TYPE
①	▨	SW7572 LOTUS
②	▨	SW2803 ROCK WOOD TERRA


PREFINISHED METAL COPING TYP
METAL PANEL SCREEN WALL
17'-4"
20'-0"
MCJ
24'-0"
MCJ
FIN FLR
EL = 100.00'

2
A04
EAST ELEVATION
SCALE: 1/4" = 1'-0"


4'-0"
ACCESS OPENING TO EQUIPMENT
OVERFLOW DRAIN BOX, TYP
PREFINISHED ALUMINUM CONDUCTOR HEAD AND DOWNSPOUT SEE 3/A-08 TYP
PREFINISHED METAL COPING TYP
5'-0"
LIGHT SEE ELECTRICAL TYP
①
②
①
2'-8"
7'-4"
8'-6"
20'-0"
MCJ
24'-0"
MCJ
FIN FLR
EL = 100.00'

1
A04
WEST ELEVATION
SCALE: 1/4" = 1'-0"

GENERAL NOTES

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#	-	-	-	-	-	-	-

HDR

REGISTERED ARCHITECT
36304
JON W.
GRIFFIN
8-20-2024
ARIZONA, U.S.A.

Jon W Griffin

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DES JWG
DWN JRL
CKD JWG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ARCHITECTURAL

ELECTRICAL BUILDING
EXTERIOR ELEVATIONS

CITY PROJECT NO. WS90400085

DATE: 04/2024

A–04 SHEET 79 OF 134

CAD FILE: CSALS40E04

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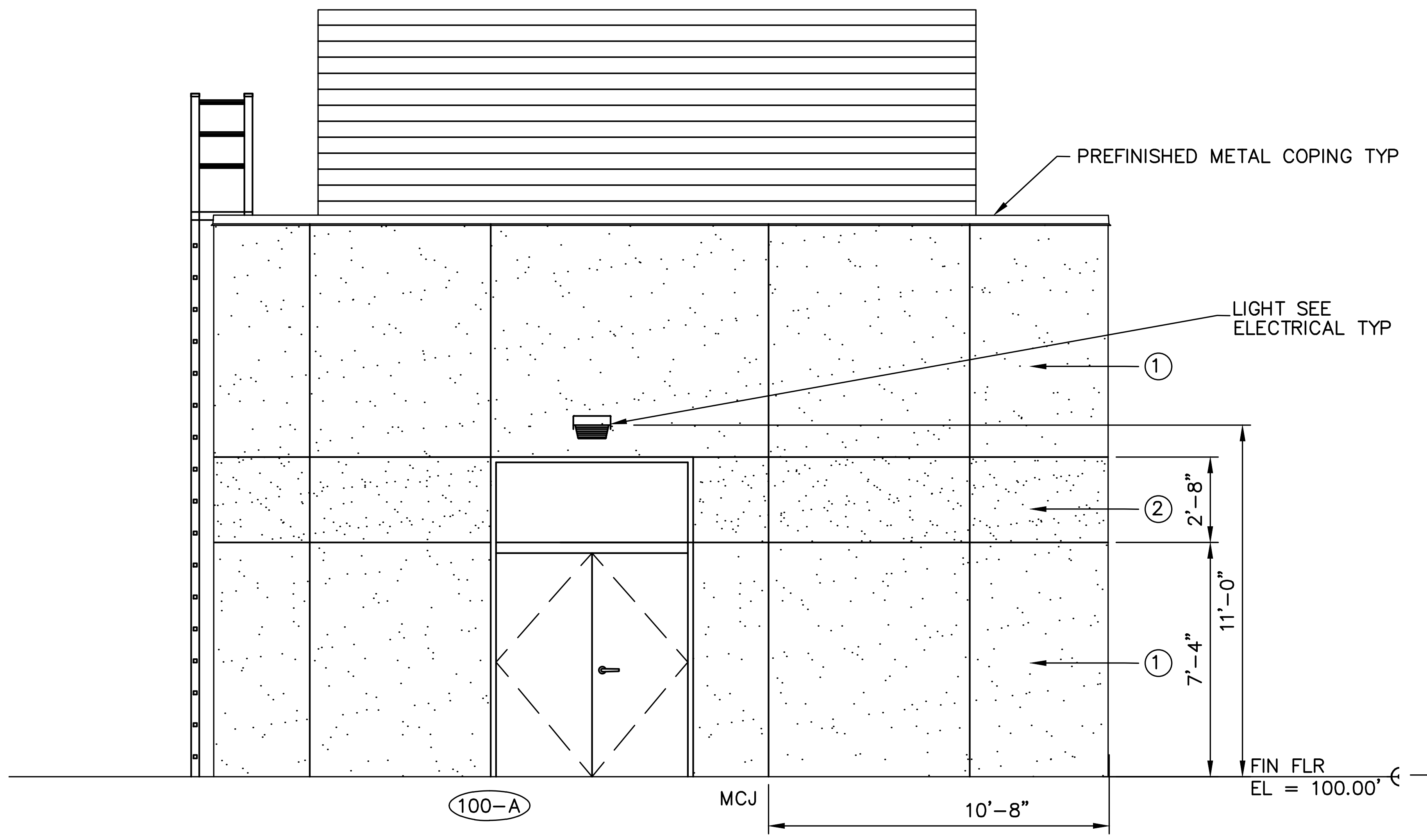
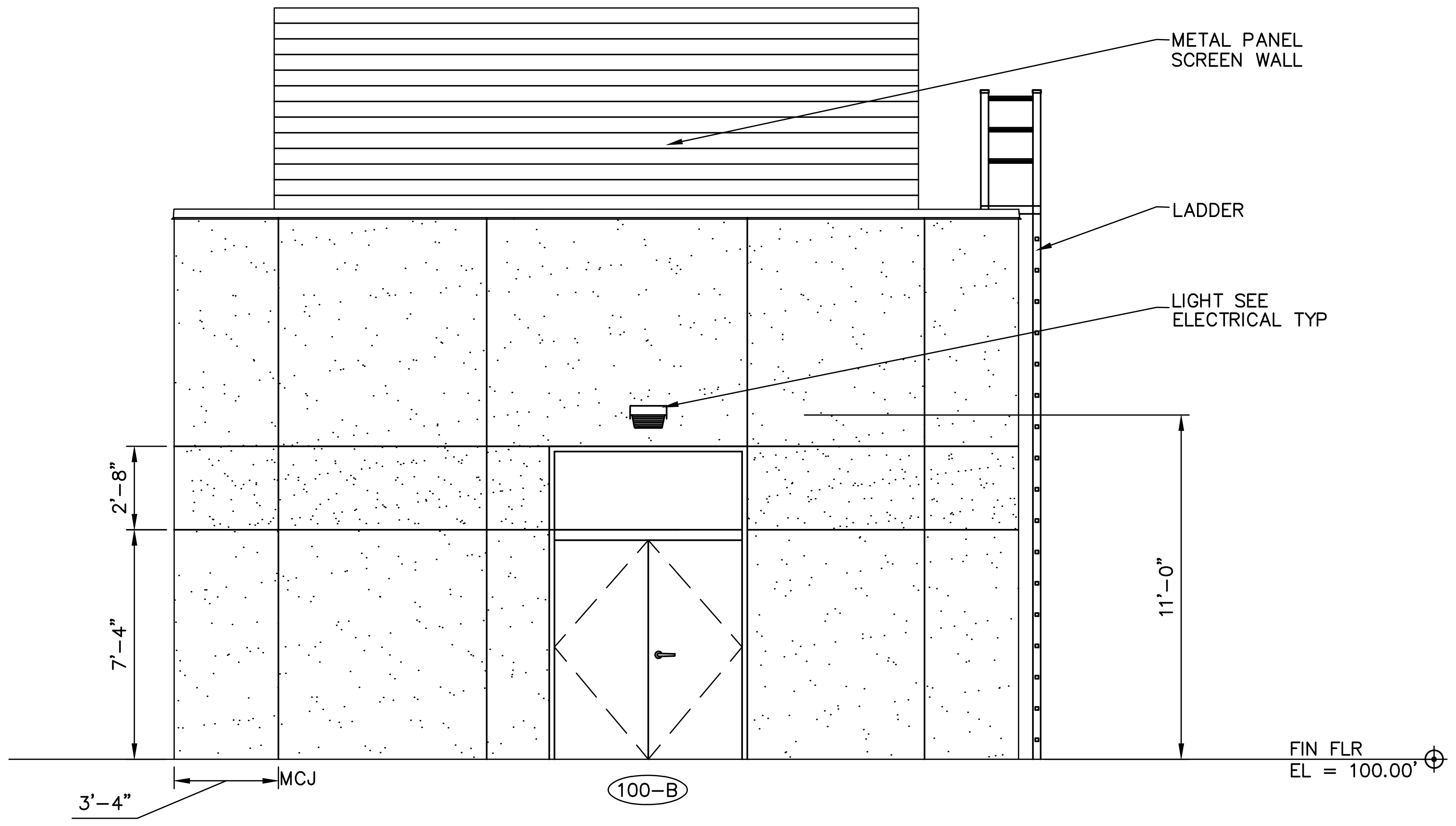


1 SOUTH ELEVATION
A05 SCALE: 1/4" = 1'-0"



2 NORTH ELEVATION
A05 SCALE: 1/4" = 1'-0"

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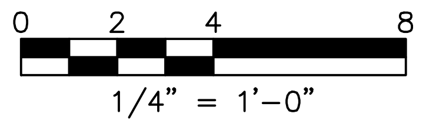

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36304
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NO.	BY	DATE	CKD	REMARKS
B	JWG	1/2024	JWG	90% SUBMITTAL
C	JWG	04/2024	JWG	AGENCY REVIEW
D	JWG	8/2024	JWG	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES JWG
DWN JRL
CKD JWG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ARCHITECTURAL

ELECTRICAL BUILDING
EXTERIOR ELEVATIONS

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CITY PROJECT NO. WS90400085
DATE: 04/2024
A-05 SHEET 80 OF 134
CAD FILE: CSALS40E05

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
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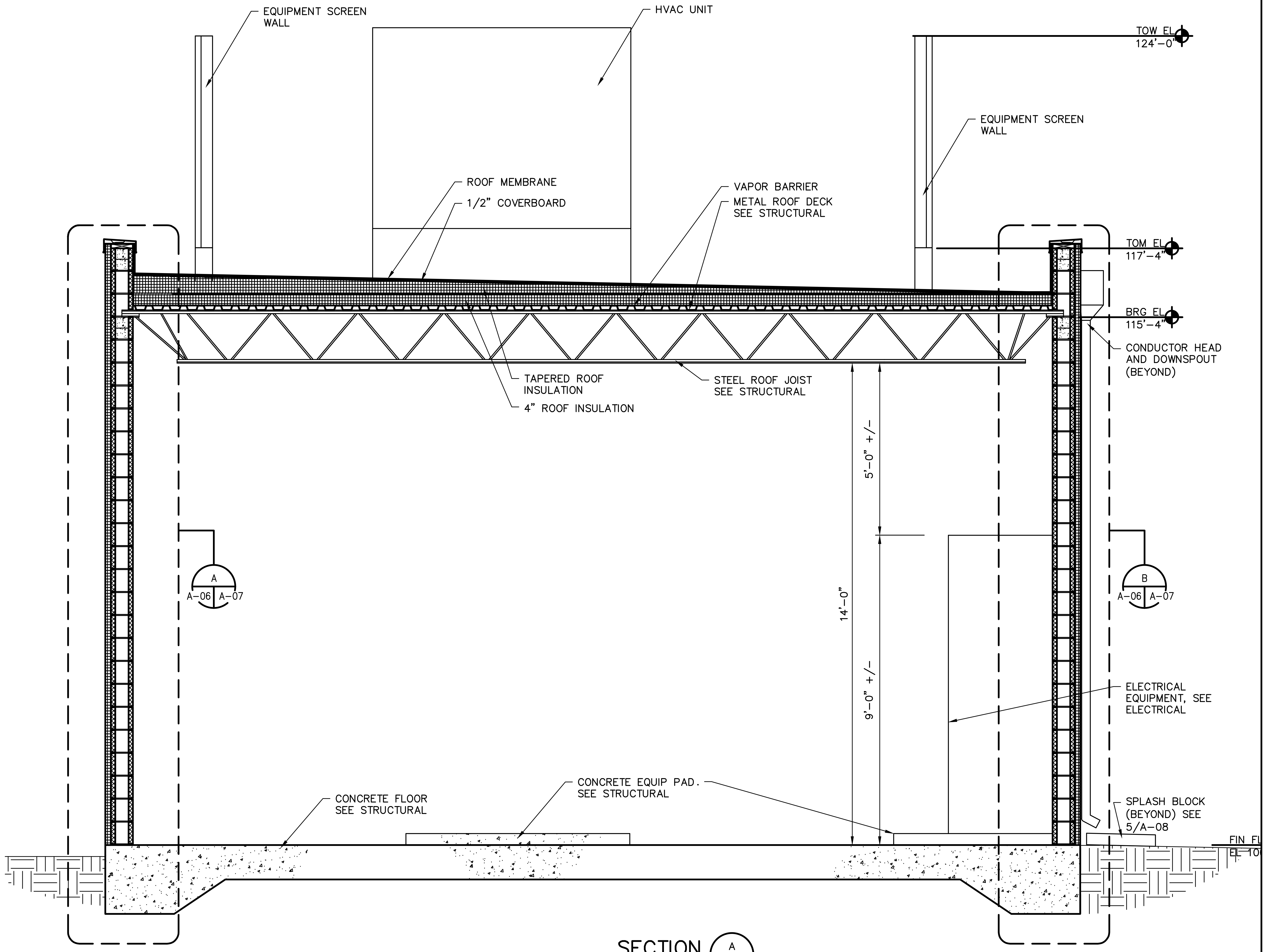
EQUIPMENT SCREEN WALL
HVAC UNIT
TOW EL 124'–0"
EQUIPMENT SCREEN WALL
ROOF MEMBRANE
1/2" COVERBOARD
VAPOR BARRIER
METAL ROOF DECK SEE STRUCTURAL
TOM EL 117'–4"
BRG EL 115'–4"
CONDUCTOR HEAD AND DOWNSPOUT (BEYOND)
TAPERED ROOF INSULATION
4" ROOF INSULATION
STEEL ROOF JOIST SEE STRUCTURAL
5'–0" +/–
14'–0"
9'–0" +/–
A A–06 A–07
B A–06 A–07
ELECTRICAL EQUIPMENT, SEE ELECTRICAL
CONCRETE EQUIP PAD. SEE STRUCTURAL
CONCRETE FLOOR SEE STRUCTURAL
SPLASH BLOCK (BEYOND) SEE 5/A–08
FIN FL EL 10

SECTION A A–02 A–06

GENERAL NOTES

1. SEE A–09 FOR ROOM FINISH AND DOOR SCHEDULES.
2. SEE STRUCTURAL PLANS FOR FLOOR ELEVATIONS.
3. SEE EXTERIOR ELEVATIONS FOR FINISH, CONTROL JOINTS AND REVEAL LOCATIONS.
4. ALL DIMENSIONS ARE ACTUAL AND ARE FACE OF MASONRY UNLESS NOTED OTHERWISE. ALL DIMENSIONS ARE FOR BIDDING PURPOSES ONLY. ACTUAL FIELD DIMENSIONS SHALL BE VERIFIED PRIOR TO SUBMITTAL OF SHOP DRAWINGS, ORDERING RELATED MATERIALS AND PERFORMING CONSTRUCTION WORK.
5. VERIFY MECHANICAL AND ELECTRICAL DRAWINGS FOR SCOPE AND INTERFACE. CONTRACTOR SHALL COORDINATE LOCATION FOR ALL MECHANICAL AND ELECTRICAL ITEMS WITH GENERAL CONSTRUCTION REVIEW, NOTIFY ENGINEER WITH ANY DISCREPANCIES
6. LOCATE CONTROL JOINTS WHERE SHOWN ON THE PLANS AND ELEVATIONS. LOCATE CONTROL JOINTS AS SPECIFICALLY NOTED OR PER INDUSTRY STANDARDS.
7. ARCHITECTURAL FINISH FLOOR FOR REFERENCE IS 100.00'.
8. ALL ANGLES ON PLAN ARE 90 DEGREES UNLESS NOTED OTHERWISE.
9. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS BEFORE ORDERING MATERIALS.
10. CONTRACTOR SHALL NOTIFY ENGINEER OF DISCREPANCIES OR UNKNOWN FOUND CONDITIONS.

0 1 2 4
1/2" = 1'–0"

FACILITY DRAWINGS
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FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

REGISTERED ARCHITECT
36304
JON W. GRIFFIN
8-20-2024
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
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*				
*				
*				

DES JWG
DWN JRL
CKD JWG

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ARCHITECTURAL

ELECTRICAL BUILDING
EXTERIOR ELEVATIONS AND BUILDING SECTION

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CITY PROJECT NO. WS90400085
DATE: 04/2024
A–06 SHEET 81 OF 134
CAD FILE: CSALS40V06.DWG

USER: JOGRIFFIN FILE: C:\PWWORKING\west01\d3416668\CSALS40V06.dwg DATE: 8/28/24 TIME: 08:24am

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FOR CONSTRUCTION

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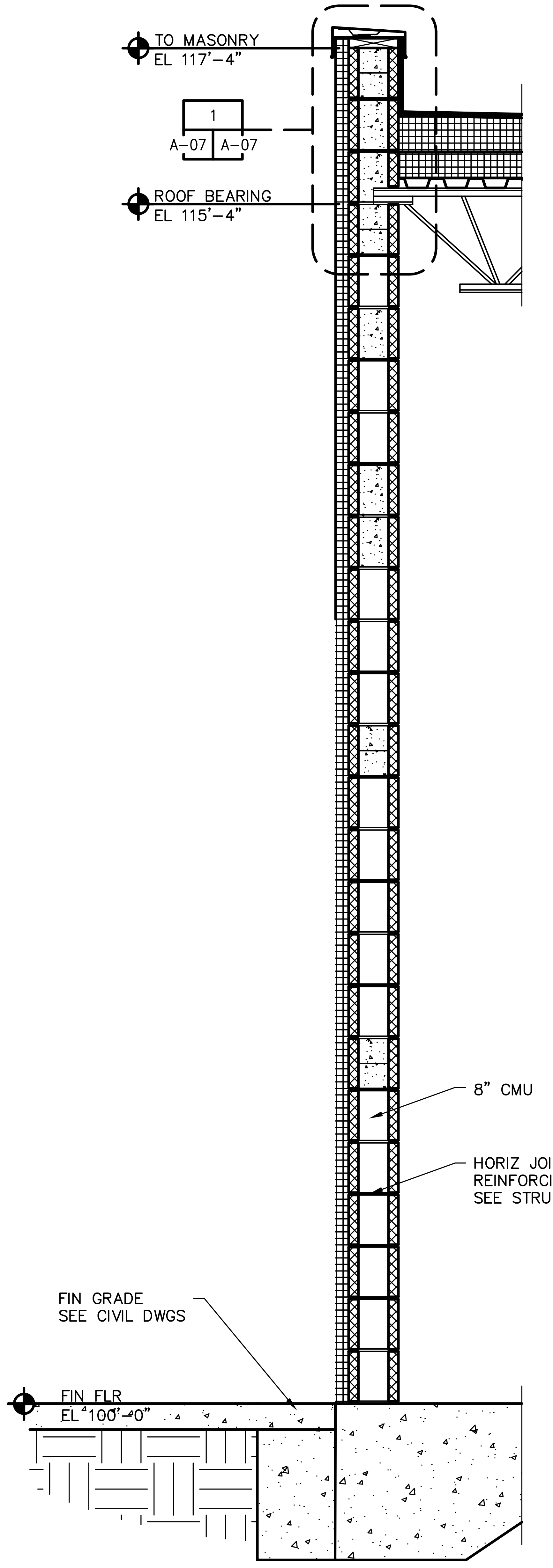
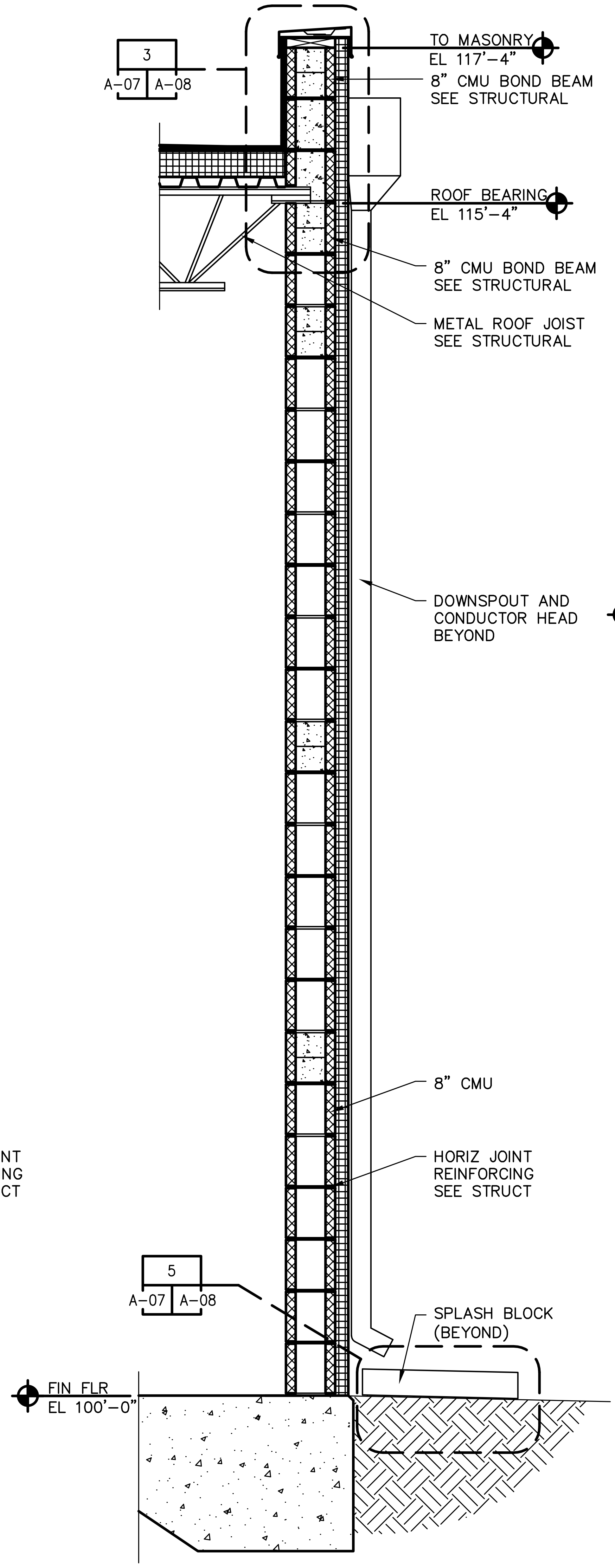

TO MASONRY
EL 117'–4"
1
A–07 A–07
ROOF BEARING
EL 115'–4"
8" CMU
HORIZ JOINT
REINFORCING
SEE STRUCT
FIN GRADE
SEE CIVIL DWGS
FIN FLR
EL 100'–0"

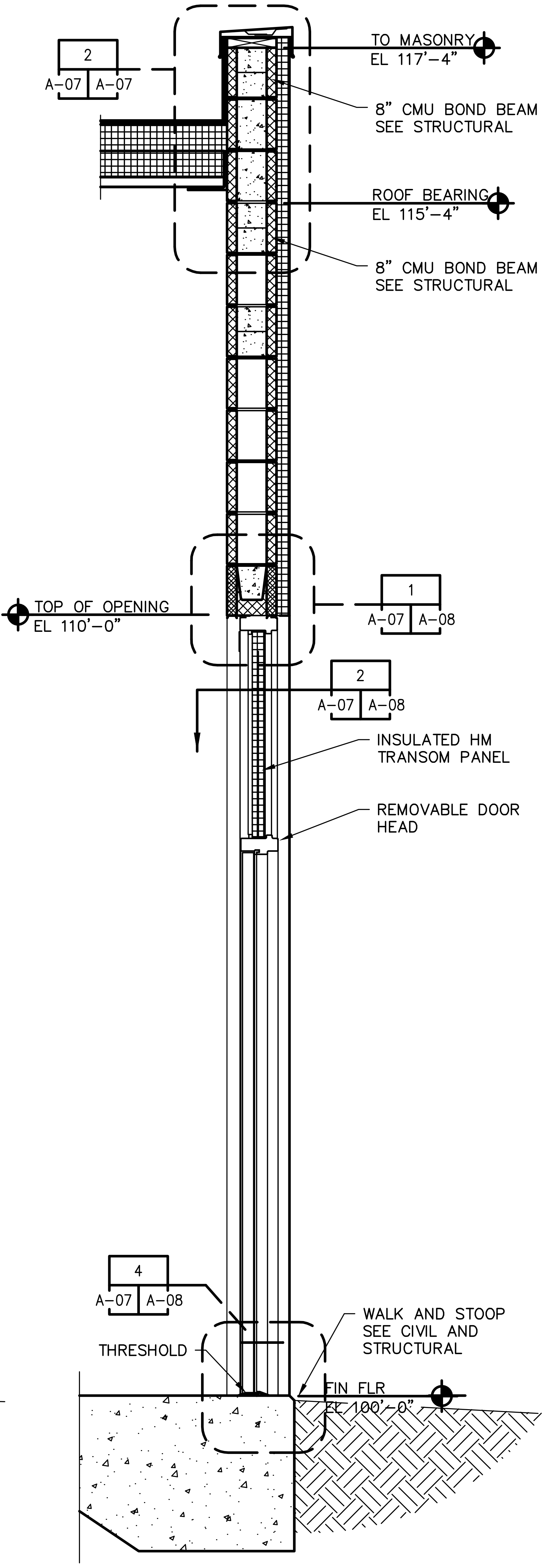
WALL SECTION A A–06 A–07

0 1 2
3/4" = 1'–0"


3
A–07 A–08
TO MASONRY
EL 117'–4"
8" CMU BOND BEAM
SEE STRUCTURAL
ROOF BEARING
EL 115'–4"
8" CMU BOND BEAM
SEE STRUCTURAL
METAL ROOF JOIST
SEE STRUCTURAL
DOWNSPOUT AND
CONDUCTOR HEAD
BEYOND
8" CMU
HORIZ JOINT
REINFORCING
SEE STRUCT
5
A–07 A–08
SPLASH BLOCK
(BEYOND)
FIN FLR
EL 100'–0"

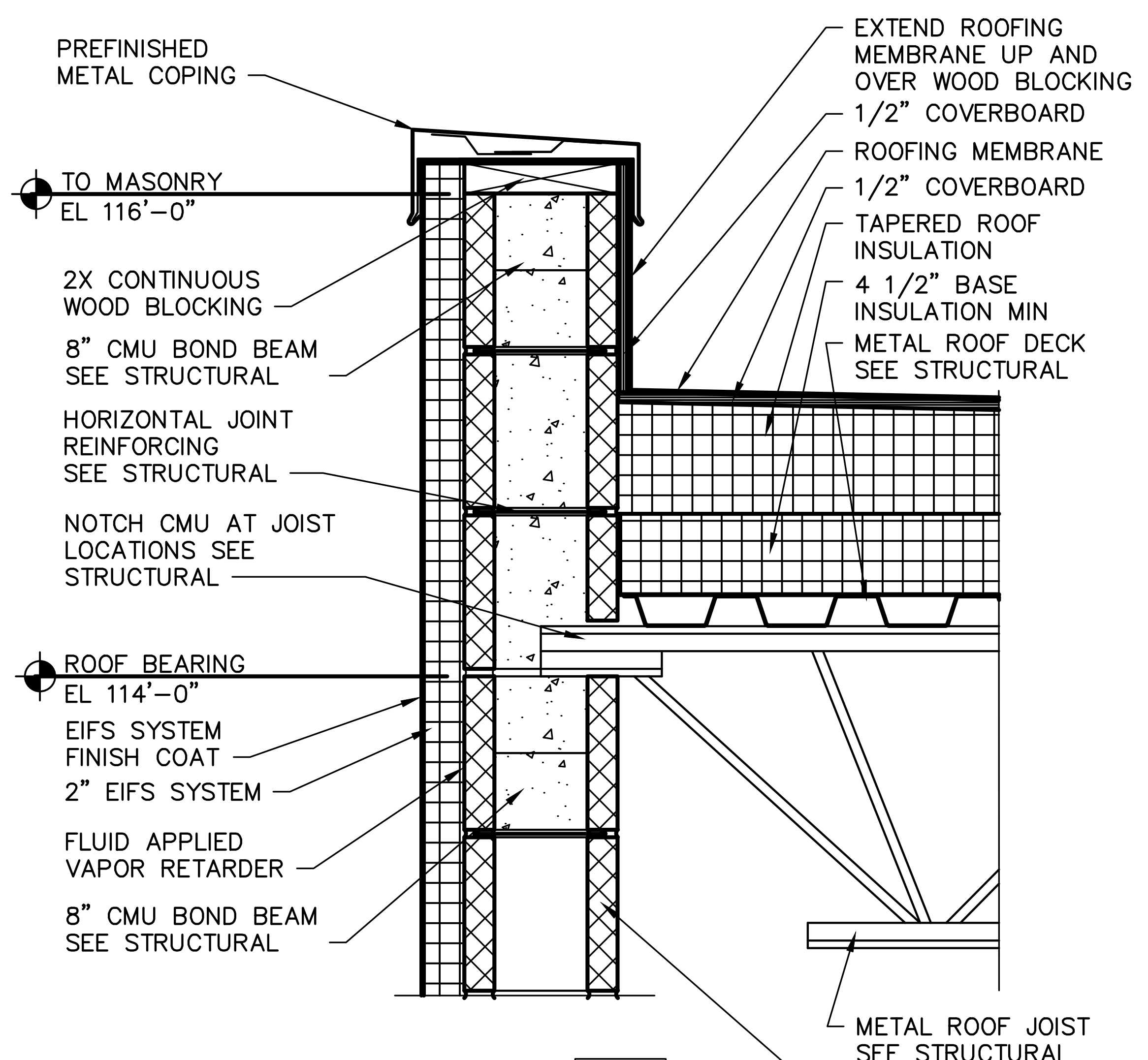
WALL SECTION B A–06 A–07

0 1 2
3/4" = 1'–0"


2
A–07 A–07
TO MASONRY
EL 117'–4"
8" CMU BOND BEAM
SEE STRUCTURAL
ROOF BEARING
EL 115'–4"
8" CMU BOND BEAM
SEE STRUCTURAL
TOP OF OPENING
EL 110'–0"
1
A–07 A–08
2
A–07 A–08
INSULATED HM
TRANSOM PANEL
REMOVABLE DOOR
HEAD
4
A–07 A–08
THRESHOLD
WALK AND STOOP
SEE CIVIL AND
STRUCTURAL
FIN FLR
EL 100'–0"

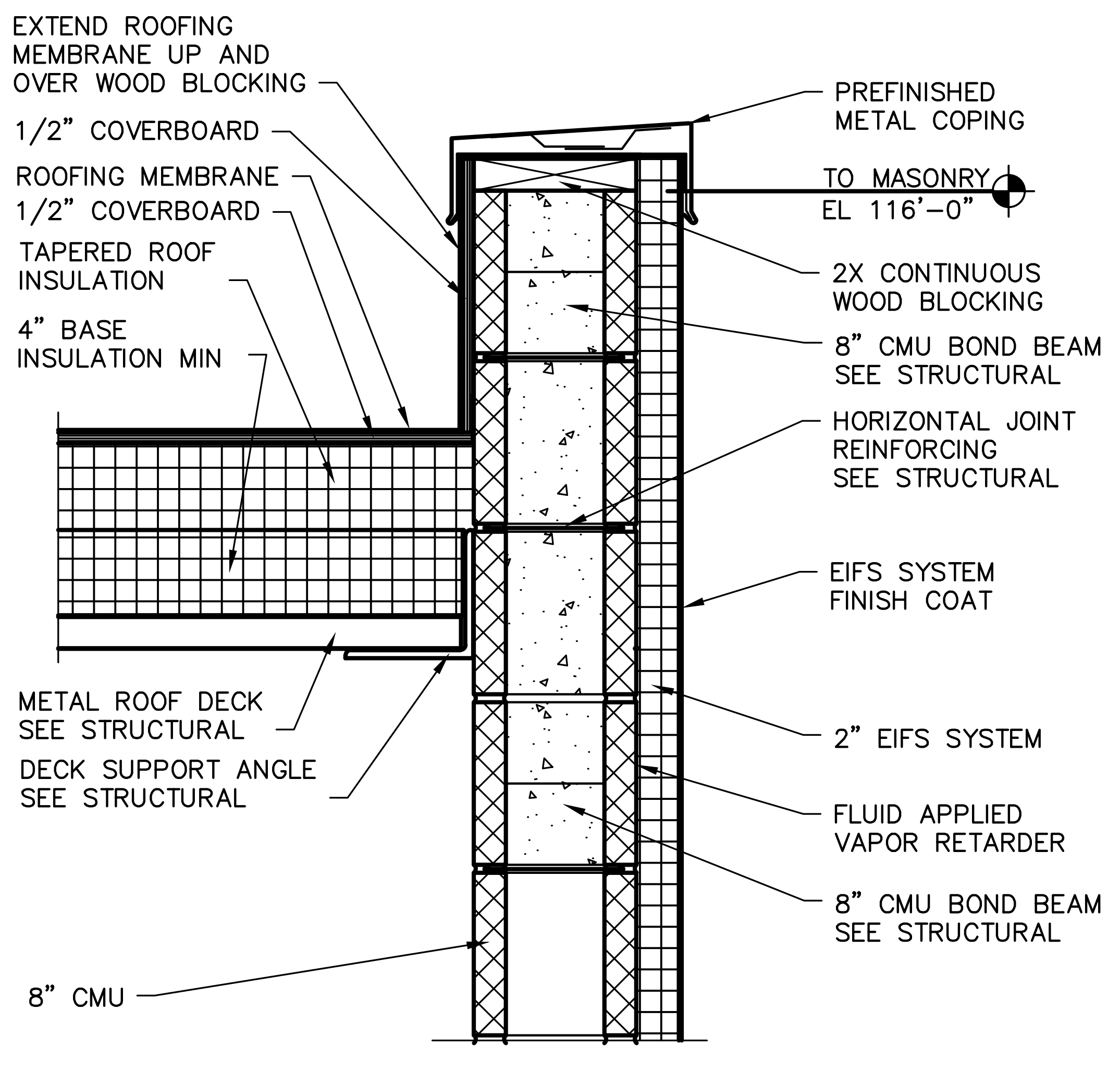
WALL SECTION C A–02 A–07

0 1 2
3/4" = 1'–0"


PREFINISHED
METAL COPING
TO MASONRY
EL 116'–0"
2X CONTINUOUS
WOOD BLOCKING
8" CMU BOND BEAM
SEE STRUCTURAL
HORIZONTAL JOINT
REINFORCING
SEE STRUCTURAL
NOTCH CMU AT JOIST
LOCATIONS SEE
STRUCTURAL
ROOF BEARING
EL 114'–0"
EIFS SYSTEM
FINISH COAT
2" EIFS SYSTEM
FLUID APPLIED
VAPOR RETARDER
8" CMU BOND BEAM
SEE STRUCTURAL
EXTEND ROOFING
MEMBRANE UP AND
OVER WOOD BLOCKING
1/2" COVERBOARD
ROOFING MEMBRANE
1/2" COVERBOARD
TAPERED ROOF
INSULATION
4 1/2" BASE
INSULATION MIN
METAL ROOF DECK
SEE STRUCTURAL
METAL ROOF JOIST
SEE STRUCTURAL
8" CMU

DETAIL 1 A–07 A–07

0 1 2
1-1/2" = 1'–0"


EXTEND ROOFING
MEMBRANE UP AND
OVER WOOD BLOCKING
1/2" COVERBOARD
ROOFING MEMBRANE
1/2" COVERBOARD
TAPERED ROOF
INSULATION
4" BASE
INSULATION MIN
METAL ROOF DECK
SEE STRUCTURAL
DECK SUPPORT ANGLE
SEE STRUCTURAL
8" CMU
PREFINISHED
METAL COPING
TO MASONRY
EL 116'–0"
2X CONTINUOUS
WOOD BLOCKING
8" CMU BOND BEAM
SEE STRUCTURAL
HORIZONTAL JOINT
REINFORCING
SEE STRUCTURAL
EIFS SYSTEM
FINISH COAT
2" EIFS SYSTEM
FLUID APPLIED
VAPOR RETARDER
8" CMU BOND BEAM
SEE STRUCTURAL

DETAIL 2 A–07 A–07

0 1 2
1-1/2" = 1'–0"

GENERAL NOTES

1. SEE A–09 FOR ROOM FINISH AND DOOR SCHEDULES.
2. SEE STRUCTURAL PLANS FOR FLOOR ELEVATIONS.
3. SEE EXTERIOR ELEVATIONS FOR FINISH, CONTROL JOINTS AND REVEAL LOCATIONS.
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#	–	–	–	–	–	–	–

USER: JOGRIFFIN FILE: C:\PWWORKING\west01\d3416668\CSALS40V07.dwg DATE: 8/28/24 TIME: 08:25am

HDR

REGISTERED ARCHITECT
CERTIFICATE NO.
36304
JON W.
GRIFFIN
DATE SIGNED 8-20-2024
ARIZONA, U.S.A.
Jon W

REVISIONS

NO.	BY	DATE	CKD	REMARKS
B	JWG	1/2024	JWG	90% SUBMITTAL
C	JWG	04/2024	JWG	AGENCY REVIEW
D	JWG	8/2024	JWG	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES
JWG
DWN
JRL
CKD
JWG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ARCHITECTURAL

ELECTRICAL BUILDING
WALL SECTIONS AND DETAILS

CITY PROJECT NO. WS90400085
DATE: 04/2024
A–07 SHEET 82 OF 134
CAD FILE: CSALS40V07.DWG

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FOR CONSTRUCTION

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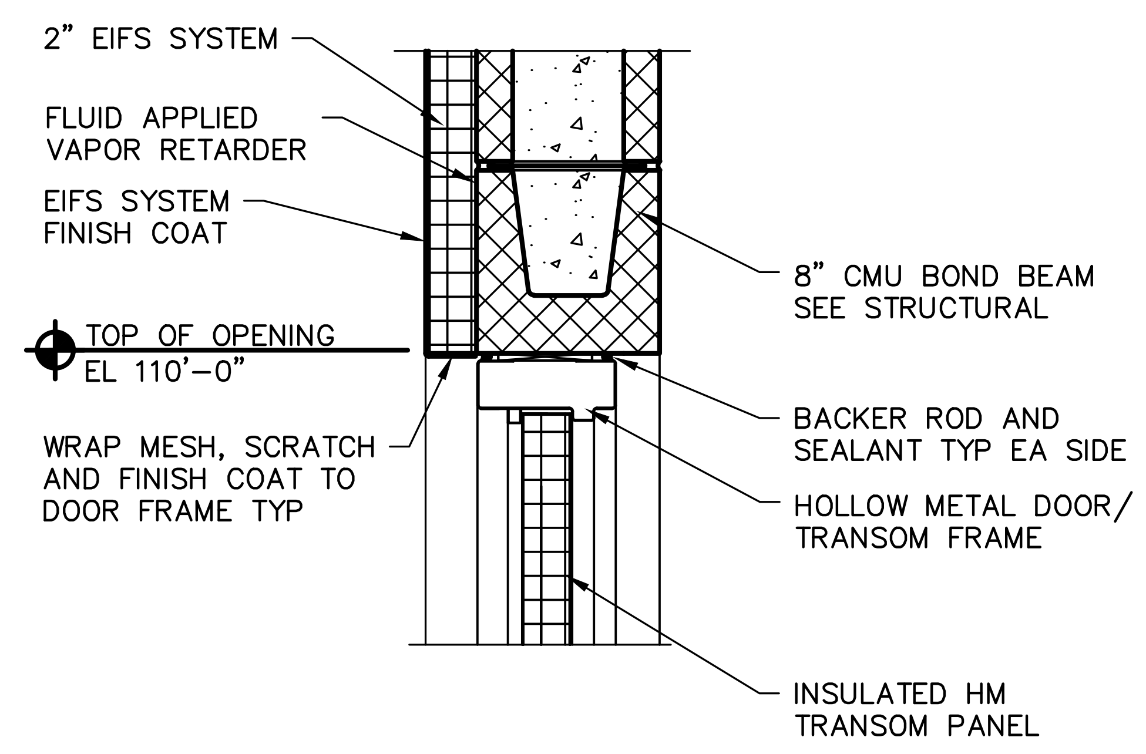
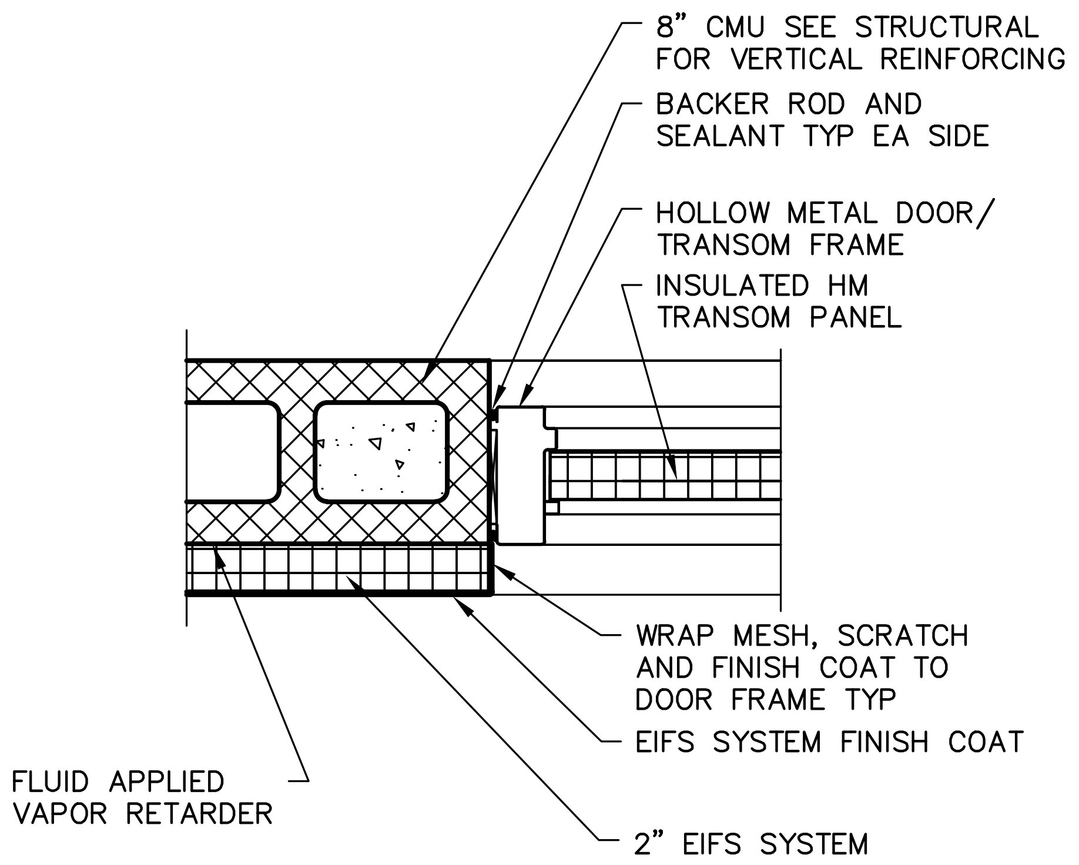

2" EIFS SYSTEM
FLUID APPLIED VAPOR RETARDER
EIFS SYSTEM FINISH COAT
TOP OF OPENING EL 110'-0"
WRAP MESH, SCRATCH AND FINISH COAT TO DOOR FRAME TYP
8" CMU BOND BEAM SEE STRUCTURAL
BACKER ROD AND SEALANT TYP EA SIDE
HOLLOW METAL DOOR/ TRANSOM FRAME
INSULATED HM TRANSOM PANEL

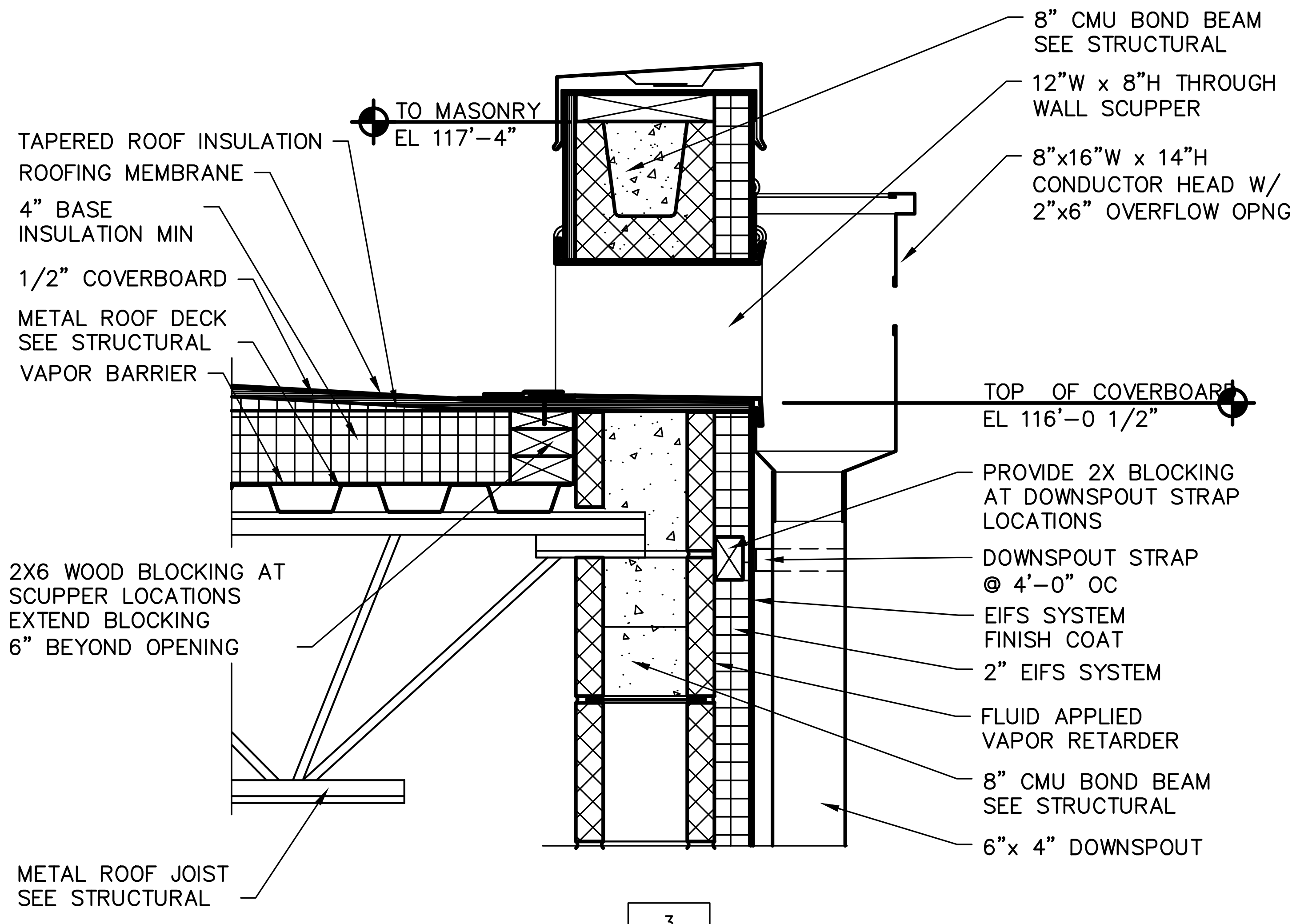
DETAIL 1 A-07 A-08

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


8" CMU SEE STRUCTURAL FOR VERTICAL REINFORCING
BACKER ROD AND SEALANT TYP EA SIDE
HOLLOW METAL DOOR/ TRANSOM FRAME
INSULATED HM TRANSOM PANEL
WRAP MESH, SCRATCH AND FINISH COAT TO DOOR FRAME TYP
EIFS SYSTEM FINISH COAT
2" EIFS SYSTEM
FLUID APPLIED VAPOR RETARDER

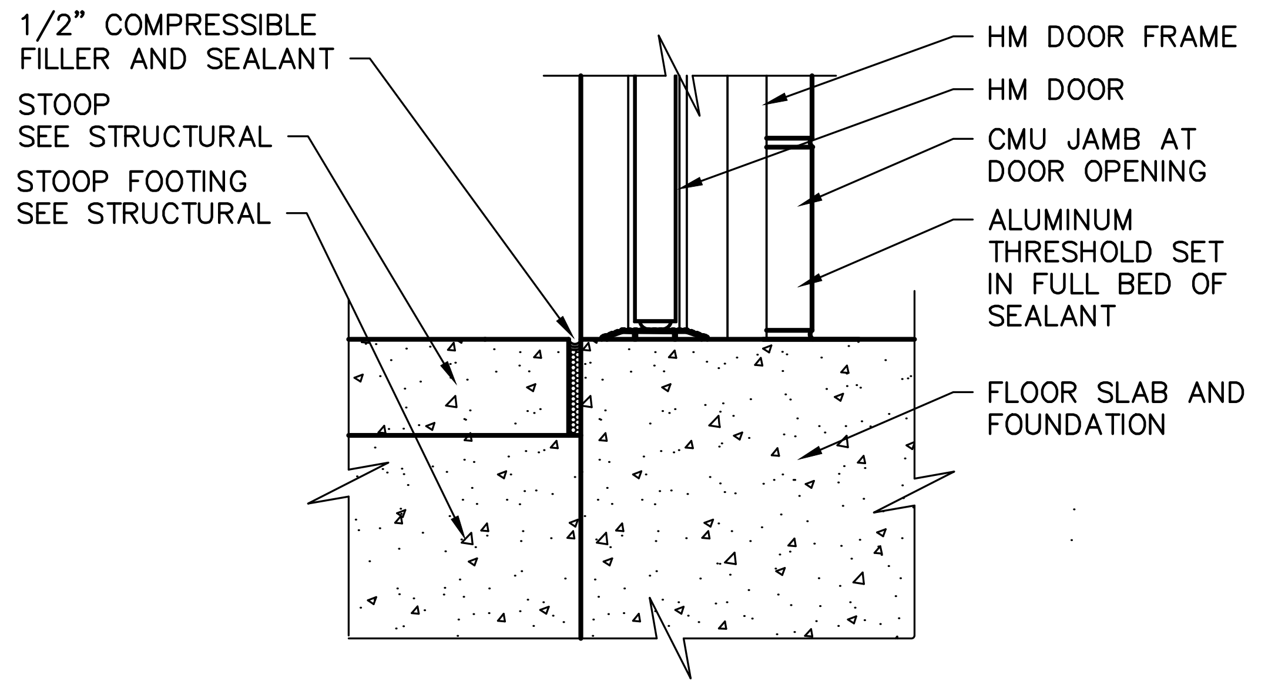
DETAIL 2 A-07 A-08

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


TO MASONRY EL 117'-4"
TAPERED ROOF INSULATION
ROOFING MEMBRANE
4" BASE INSULATION MIN
1/2" COVERBOARD
METAL ROOF DECK SEE STRUCTURAL
VAPOR BARRIER
2X6 WOOD BLOCKING AT SCUPPER LOCATIONS EXTEND BLOCKING 6" BEYOND OPENING
METAL ROOF JOIST SEE STRUCTURAL
8" CMU BOND BEAM SEE STRUCTURAL
12"W x 8"H THROUGH WALL SCUPPER
8"x16"W x 14"H CONDUCTOR HEAD W/ 2"x6" OVERFLOW OPNG
TOP OF COVERBOARD EL 116'-0 1/2"
PROVIDE 2X BLOCKING AT DOWNSPOUT STRAP LOCATIONS
DOWNSPOUT STRAP @ 4'-0" OC
EIFS SYSTEM FINISH COAT
2" EIFS SYSTEM
FLUID APPLIED VAPOR RETARDER
8" CMU BOND BEAM SEE STRUCTURAL
6"x 4" DOWNSPOUT

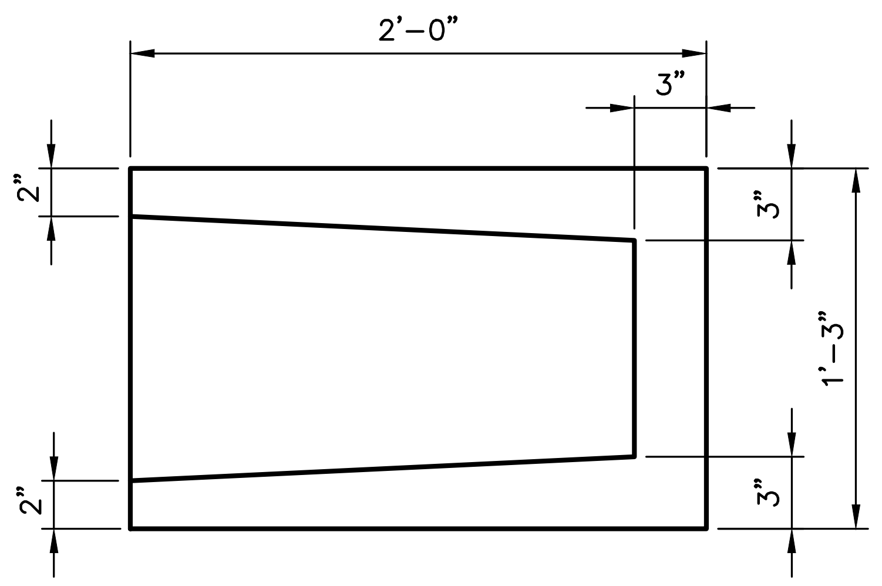
DETAIL 3 A-07 A-08

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

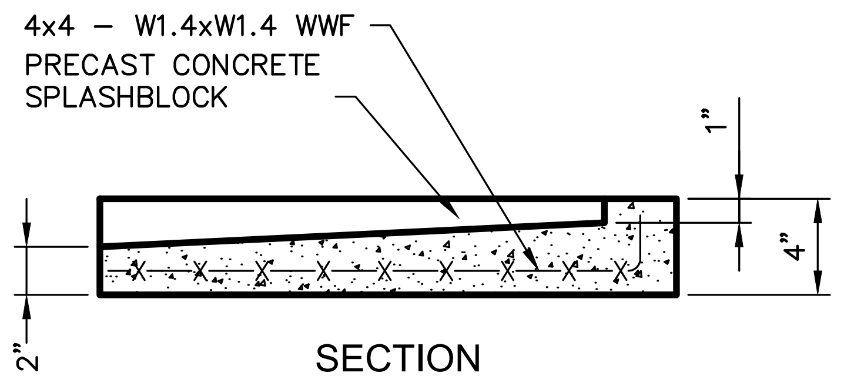

1/2" COMPRESSIBLE FILLER AND SEALANT
STOOP SEE STRUCTURAL
STOOP FOOTING SEE STRUCTURAL
HM DOOR FRAME
HM DOOR
CMU JAMB AT DOOR OPENING
ALUMINUM THRESHOLD SET IN FULL BED OF SEALANT
FLOOR SLAB AND FOUNDATION

DETAIL 4 A-07 A-08

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



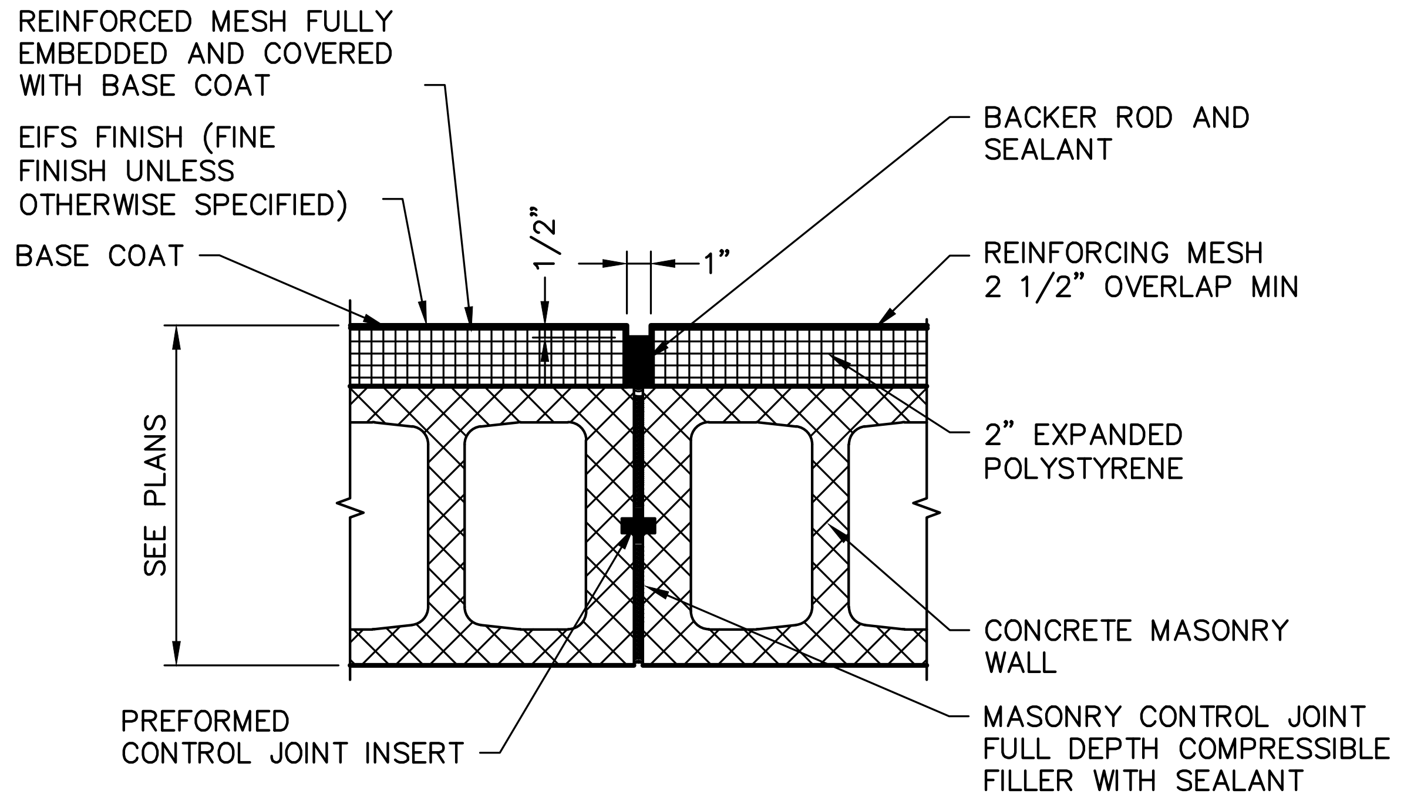
PLAN


4x4 - W1.4xW1.4 WWF
PRECAST CONCRETE SPLASHBLOCK
1"
4"
2"

SECTION

DETAIL 5 A-07 A-08

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

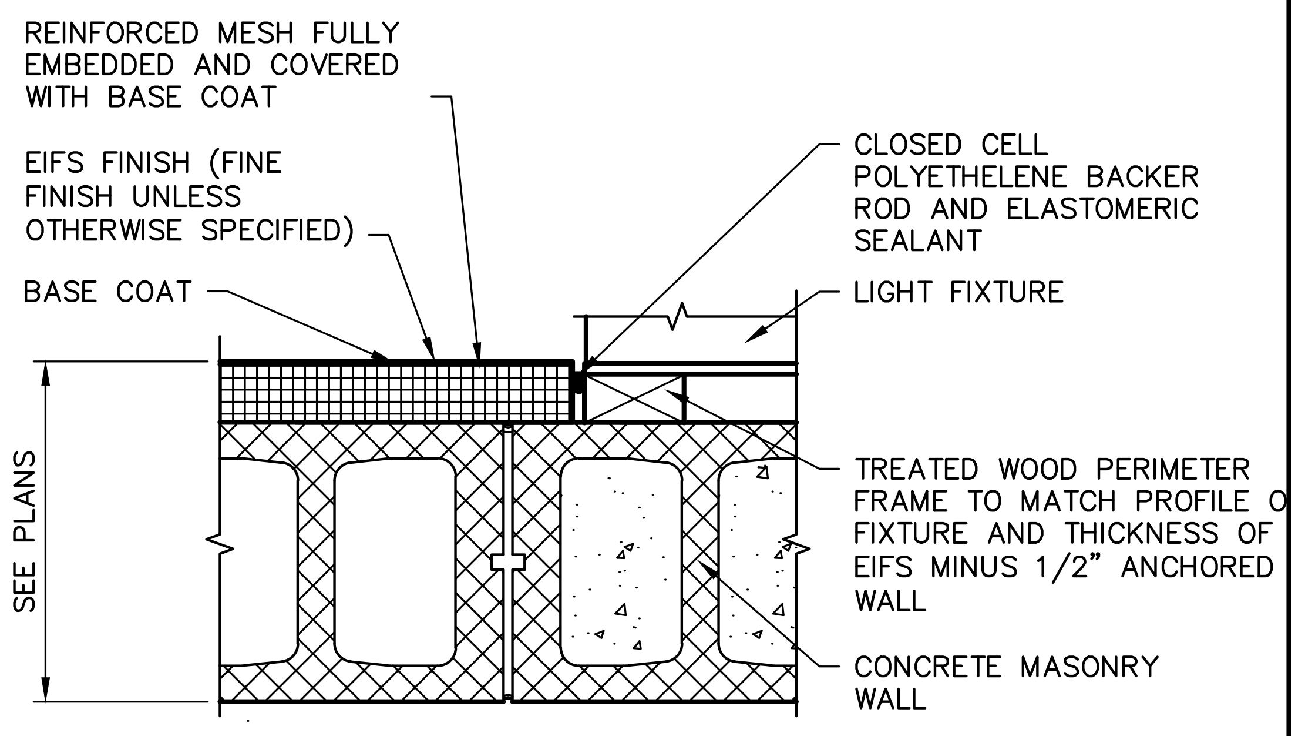

REINFORCED MESH FULLY EMBEDDED AND COVERED WITH BASE COAT
EIFS FINISH (FINE FINISH UNLESS OTHERWISE SPECIFIED)
BASE COAT
1/2"
1"
SEE PLANS
PREFORMED CONTROL JOINT INSERT
BACKER ROD AND SEALANT
REINFORCING MESH 2 1/2" OVERLAP MIN
2" EXPANDED POLYSTYRENE
CONCRETE MASONRY WALL
MASONRY CONTROL JOINT FULL DEPTH COMPRESSIBLE FILLER WITH SEALANT

NOTE:

1. SEE STRUCTURAL FOR VERTICAL WALL REINFORCMENT.

DETAIL 6 A-08

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


REINFORCED MESH FULLY EMBEDDED AND COVERED WITH BASE COAT
EIFS FINISH (FINE FINISH UNLESS OTHERWISE SPECIFIED)
BASE COAT
SEE PLANS
CLOSED CELL POLYETHELENE BACKER ROD AND ELASTOMERIC SEALANT
LIGHT FIXTURE
TREATED WOOD PERIMETER FRAME TO MATCH PROFILE O FIXTURE AND THICKNESS OF EIFS MINUS 1/2" ANCHORED WALL
CONCRETE MASONRY WALL

DETAIL 7 A-07 A-08

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

GENERAL NOTES

1. SEE A-09 FOR ROOM FINISH AND DOOR SCHEDULES.
2. SEE STRUCTURAL PLANS FOR FLOOR ELEVATIONS.
3. SEE EXTERIOR ELEVATIONS FOR FINISH, CONTROL JOINTS AND REVEAL LOCATIONS.
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7. ARCHITECTURAL FINISH FLOOR FOR REFERENCE IS 100.00'.
8. ALL ANGLES ON PLAN ARE 90 DEGREES UNLESS NOTED OTHERWISE.
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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

36304
JON W.
GRIFFIN
DATE SIGNED 8-20-2024
Jon W Griffin

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
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*				

DES JWG
DWN JRL
CKD JWG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ARCHITECTURAL

ELECTRICAL BUILDING
DETAILS

CITY PROJECT NO. WS90400085
DATE: 04/2024
A-08 SHEET 83 OF 134
CAD FILE: CSALS40D08.DWG

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DOOR SCHEDULE

DOOR NUMBER	SIZE (W x H)	DRAWING NUMBER	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	HARDWARE SET	FIRE RATING	DETAILS	REMARKS
100A	PR 6'-0" x 7'-0"	A-02	F	HM	A	1	HM	A	HW-1		1, 2 AND 4/A-08	
100B	PR 6'-0" x 7'-0"	A-02	F	HM	A	2	HM	A	HW-1		1, 2 AND 4/A-08	
101	PR 3'-0" x 7'-0"	A-02	F	HM	A	2	HM	A	HW-4		1, 2 AND 4/A-08	

MATERIAL AND FINISH LEGEND

MATERIAL		FINISH	
HM	HOLLOW METAL	A	PAINT

REMARKS

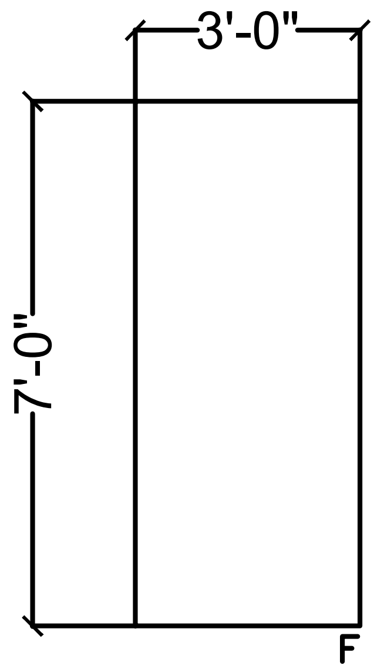
ROOM FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	DRAWING NUMBER	FLOOR	BASE	WALLS NORTH	WALLS EAST	WALLS SOUTH	WALLS WEST	CEILING HEIGHT	CEILING FINISH	REMARKS
100	ELECTRICAL ROOM	A-02	C	NA	CMU	CMU	CMU	CMU	14'-0"	ES	
101	TOILET ROOM	A-02	E	EB	CMU-P	CMU-P	CMU-P	GWB	8'-0"	GWB	

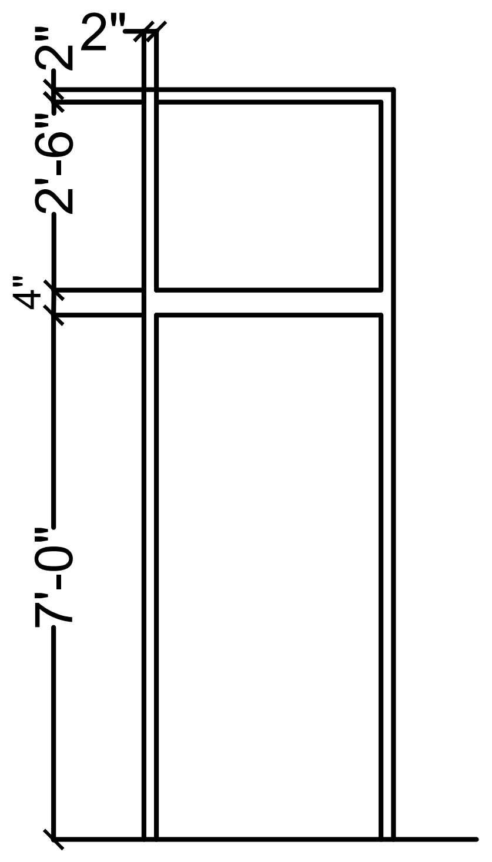
MATERIAL AND FINISH LEGEND

FLOOR		BASE	
C	SEALED CONCRETE W/ HARDENER	NA	NONE
E	EPOXY	EB	EPOXY - 6" HIGH
WALLS		CEILING	
CMU	CONCRETE MASONRY WALLS - NO PAINT	ES	EXPOSED STRUCTURE - NO PAINT
CMU-P	CONCRETE MASONRY WALLS - EPOXY PAINT	GWB	GYPSUM WALL BOARD - EPOXY PAINT
GWB	GYPSUM WALL BOARD - EPOXY PAINT	ACT	ACOUSTICAL CEILING TILE - 2x2

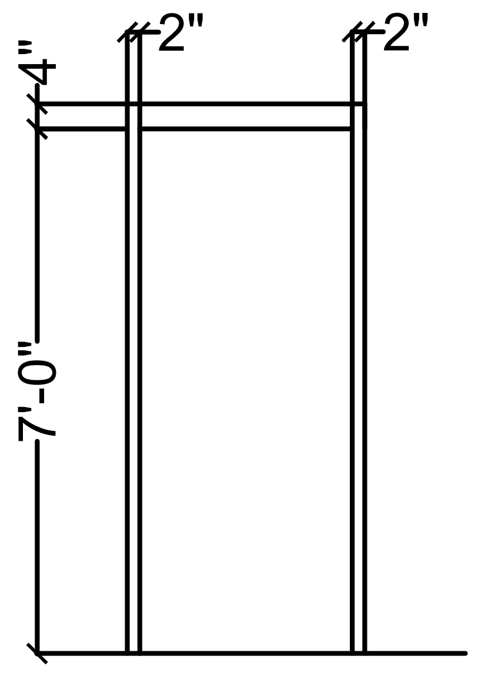
REMARKS



① DOOR TYPE



② FRAME TYPE 1



③ FRAME TYPE 2

GENERAL NOTES

1. SEE A-09 FOR ROOM FINISH AND DOOR SCHEDULES.
2. SEE STRUCTURAL PLANS FOR FLOOR ELEVATIONS.
3. SEE EXTERIOR ELEVATIONS FOR FINISH, CONTROL JOINTS AND REVEAL LOCATIONS.
4. ALL DIMENSIONS ARE ACTUAL AND ARE FACE OF MASONRY UNLESS NOTED OTHERWISE. ALL DIMENSIONS ARE FOR BIDDING PURPOSES ONLY. ACTUAL FIELD DIMENSIONS SHALL BE VERIFIED PRIOR TO SUBMITTAL OF SHOP DRAWINGS, ORDERING RELATED MATERIALS AND PERFORMING CONSTRUCTION WORK.
5. VERIFY MECHANICAL AND ELECTRICAL DRAWINGS FOR SCOPE AND INTERFACE. CONTRACTOR SHALL COORDINATE LOCATION FOR ALL MECHANICAL AND ELECTRICAL ITEMS WITH GENERAL CONSTRUCTION REVIEW, NOTIFY ENGINEER WITH ANY DISCREPANCIES
6. LOCATE CONTROL JOINTS WHERE SHOWN ON THE PLANS AND ELEVATIONS. LOCATE CONTROL JOINTS AS SPECIFICALLY NOTED OR PER INDUSTRY STANDARDS.
7. ARCHITECTURAL FINISH FLOOR FOR REFERENCE IS 100.00'.
8. ALL ANGLES ON PLAN ARE 90 DEGREES UNLESS NOTED OTHERWISE.
9. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS BEFORE ORDERING MATERIALS.
10. CONTRACTOR SHALL NOTIFY ENGINEER OF DISCREPANCIES OR UNKNOWN FOUND CONDITIONS.

FACILITY DRAWINGS
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#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

0 2 4 8
1/4" = 1'-0"

USER: JOGRIFFIN FILE: C:\PWWORKING\west01\d3416668\CSALS40X09.dwg DATE: 8/28/24 TIME: 08:25am

HDR

REGISTERED ARCHITECT
CERTIFICATE NO. 36304
JON W. GRIFFIN
DATE SIGNED 8-20-2024
ARIZONA, U.S.A.
Jon W

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
B	JWG	1/2024	JWG	90% SUBMITTAL
C	JWG	04/2024	JWG	AGENCY REVIEW
D	JWG	8/2024	JWG	ISSUED FOR CONSTRUCTION
*				
*				
*				

DES JWG
DWN JRL
CKD JWG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ARCHITECTURAL

ELECTRICAL BUILDING
SCHEDULES AND DETAILS

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CITY PROJECT NO. WS90400085
DATE: 04/2024
A–09 SHEET 84 OF 134
CAD FILE: CSAL40X09.DWG

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FOR CONSTRUCTION

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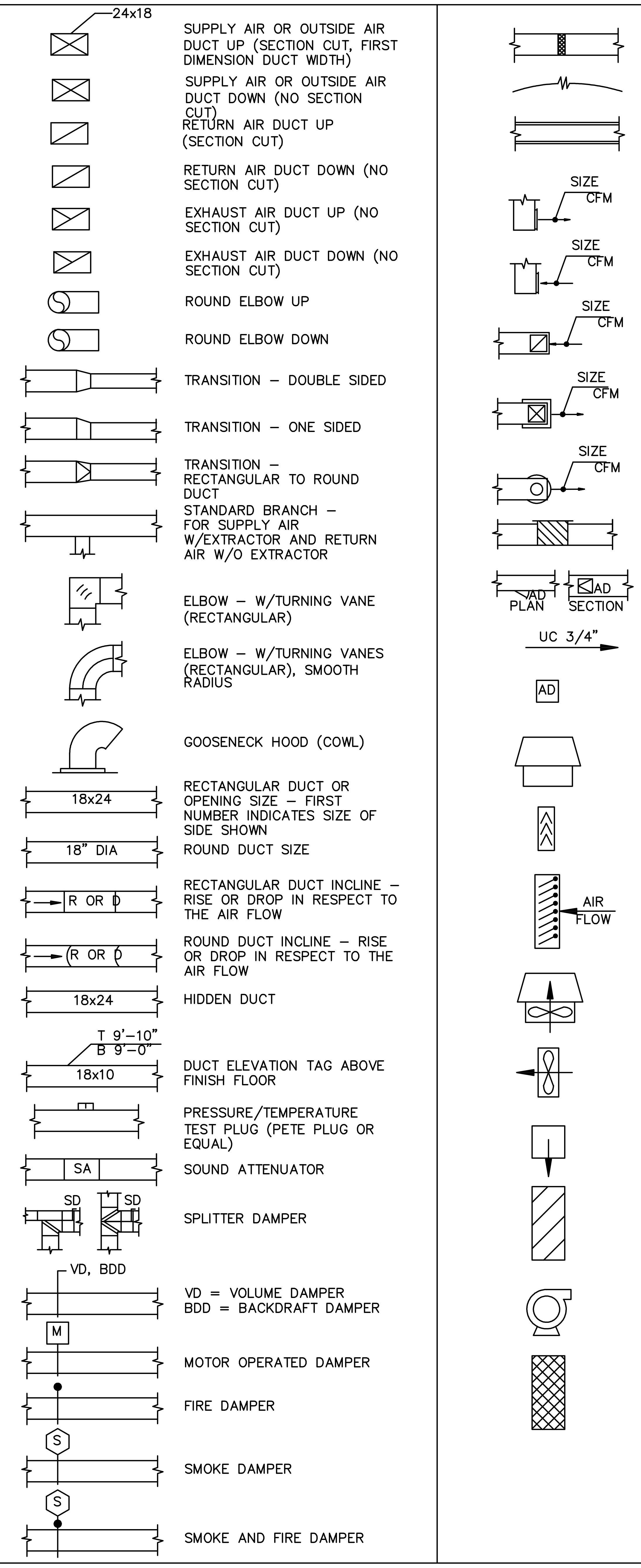
HVAC SYMBOLOGY

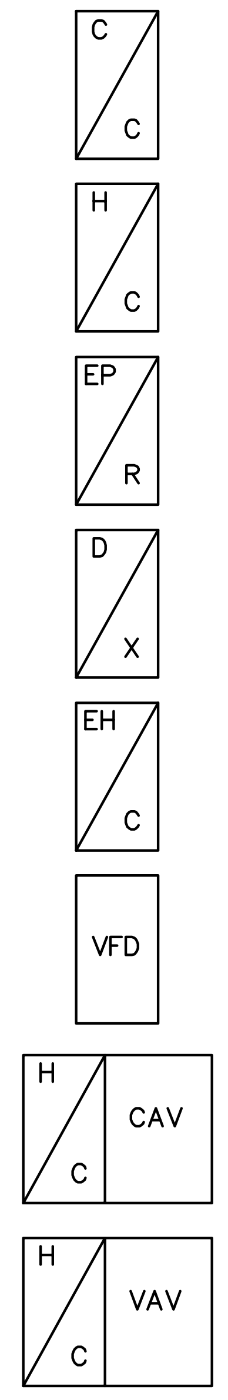


24x18	SUPPLY AIR OR OUTSIDE AIR DUCT UP (SECTION CUT, FIRST DIMENSION DUCT WIDTH)
	SUPPLY AIR OR OUTSIDE AIR DUCT DOWN (NO SECTION CUT)
	RETURN AIR DUCT UP (SECTION CUT)
	RETURN AIR DUCT DOWN (NO SECTION CUT)
	EXHAUST AIR DUCT UP (NO SECTION CUT)
	EXHAUST AIR DUCT DOWN (NO SECTION CUT)
	ROUND ELBOW UP
	ROUND ELBOW DOWN
	TRANSITION – DOUBLE SIDED
	TRANSITION – ONE SIDED
	TRANSITION – RECTANGULAR TO ROUND DUCT
	STANDARD BRANCH – FOR SUPPLY AIR W/EXTRACTOR AND RETURN AIR W/O EXTRACTOR
	ELBOW – W/TURNING VANE (RECTANGULAR)
	ELBOW – W/TURNING VANES (RECTANGULAR), SMOOTH RADIUS
	GOOSENECK HOOD (COWL)
18x24	RECTANGULAR DUCT OR OPENING SIZE – FIRST NUMBER INDICATES SIZE OF SIDE SHOWN
18" DIA	ROUND DUCT SIZE
R OR D	RECTANGULAR DUCT INCLINE – RISE OR DROP IN RESPECT TO THE AIR FLOW
R OR D	ROUND DUCT INCLINE – RISE OR DROP IN RESPECT TO THE AIR FLOW
18x24	HIDDEN DUCT
T 9'-10" B 9'-0" 18x10	DUCT ELEVATION TAG ABOVE FINISH FLOOR
	PRESSURE/TEMPERATURE TEST PLUG (PETE PLUG OR EQUAL)
SA	SOUND ATTENUATOR
SD SD	SPLITTER DAMPER
VD, BDD	VD = VOLUME DAMPER BDD = BACKDRAFT DAMPER
M	MOTOR OPERATED DAMPER
	FIRE DAMPER
S	SMOKE DAMPER
S	SMOKE AND FIRE DAMPER
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT
	ACOUSTICAL LINING – DUCT DIMENSIONS FOR NET FREE AREA
SIZE CFM	SUPPLY AIR REGISTER OR GRILLE – W/DUCT-MOUNTED EXTRACTOR
SIZE CFM	EXHAUST AIR OR RETURN AIR REGISTER OR GRILLE
SIZE CFM	EXHAUST AIR OR RETURN AIR REGISTER OR GRILLE
SIZE CFM	SUPPLY AIR ASSEMBLY SQUARE DIFFUSER
SIZE CFM	SUPPLY AIR ASSEMBLY ROUND DIFFUSER
	WALL LOUVER
AD PLAN AD SECTION	ACCESS DOOR
UC 3/4"	UNDERCUT DOOR 3/4"
AD	ACCESS DOOR OR ACCESS PANEL IN DUCTWORK
	INTAKE OR RELIEF HOOD
	DOOR GRILLE
AIR FLOW	BACKDRAFT DAMPER
	EXHAUST ROOF VENTILATOR PROPELLER OR CENTRIFUGAL TYPE
	PROPELLER WALL FAN
	ROOM AIR CONDITIONING UNIT
	INTAKE/EXHAUST LOUVER
	SUPPLY, RETURN OR EXHAUST FAN
	AIR FILTER

HVAC CONTROL SYMBOLOGY

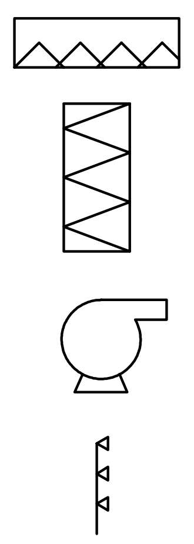
TC	TEMPERATURE CONTROLLER
TT	TEMPERATURE TRANSMITTER
TS	TEMPERATURE SWITCH
T	THERMOSTAT
TI	TEMPERATURE INDICATOR
%	PERCENTAGE TIMER
RC	RECEIVER CONTROLLER
HOA	HAND-OFF-AUTO
MS	MOTOR STARTER
M	DAMPER ACTUATOR
PI	PRESSURE INDICATOR
FRZ	FREEZE STAT
FS	FIRE STAT
DPS	DIFFERENTIAL PRESSURE SWITCH
SD	SMOKE DETECTOR
FS	FLOW SWITCH
PS	PRESSURE SWITCH
— D —	TIME DELAY
M	MINIMUM POSITION RELAY
S	SIGNAL
AO	ANALOG OUTPUT
AI	ANALOG INPUT
DO	DIGITAL OUTPUT
DI	DIGITAL INPUT
C	COMMON PORT
S	SIGNAL PORT
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
	BALANCING VALVE
RHC	RESISTANCE HEATING CONTACTOR
TA	TEST-AUTO
TOA	TEST-OFF-AUTO
	ELECTRIC SIGNAL
	PIPING
	BULB-TYPE THERMOSTAT

AIR FLOW SCHEMATIC AND TEMPERATURE CONTROL DIAGRAM SYMBOLOGY



C C	CHILLED WATER COOLING COIL
H C	HOT WATER HEATING COIL
EP R	DIRECT EVAPORATIVE COOLER
D X	DIRECT EXPANSION COOLING COIL
EH C	ELECTRIC HEATING COIL
VFD	VFD (VARIABLE FREQUENCY DRIVE)
H C CAV	CONSTANT AIR VOLUME BOX WITH REHEAT COIL
H C VAV	VARIABLE AIR VOLUME BOX WITH REHEAT COIL

MISCELLANEOUS SYMBOLOGY



MIST ELIMINATOR
ACTIVATED CARBON OR CHEMICAL FILTER
CENTRIFUGAL PUMP
SPRAY NOZZLE/HUMIDIFIER

GENERAL NOTES:

1. THIS IS A STANDARD HVAC AND PLUMBING SYMBOLOGY SHEET. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.

FACILITY DRAWINGS
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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

Registered Professional Engineer (Mechanical)
CERTIFICATE NO.
50980
JEFFREY D.
WURMLINGER
Date Signed 08-26-24
ARIZONA, U.S.A.

Expires 06/30/2025

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	CM	01/2024	JW	90% SUBMITTAL
B	CM	04/2024	JW	AGENCY REVIEW
C	CM	08/2024	JW	ISSUED FOR CONSTRUCTION

DES JW
DWN CM
CKD

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

HVAC

LEGEND AND SYMBOLS

CITY PROJECT NO. WS90400085
DATE: 01/2024
H-01 SHEET 85 OF 134
CAD FILE: CSMLS40A01.dwg

USER: CMCDONAL FILE: C:\PWWORKING\west01\d3411626\CSHLS40A01.dwg DATE: 8/26/24 TIME: 04:18pm

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FOR CONSTRUCTION

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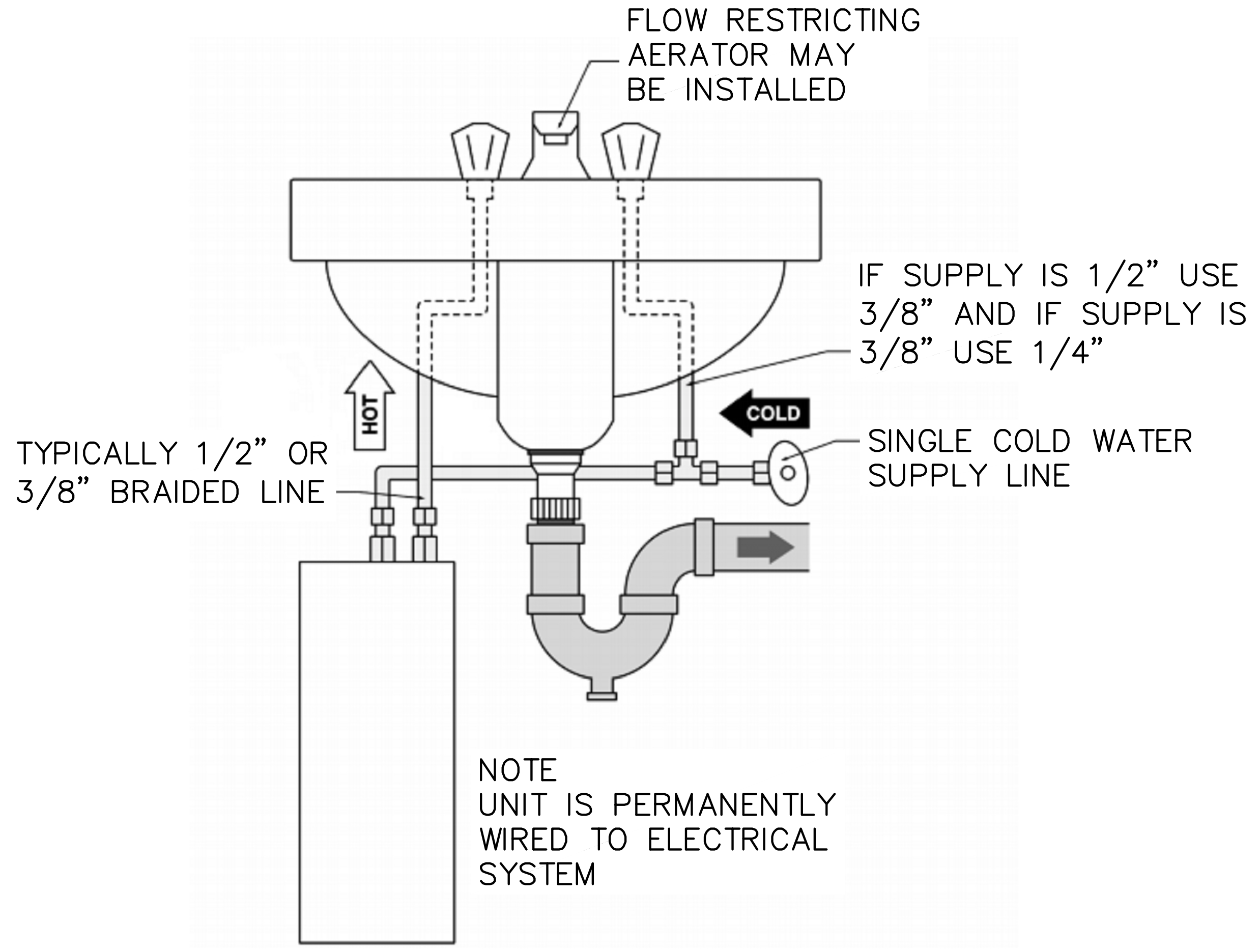
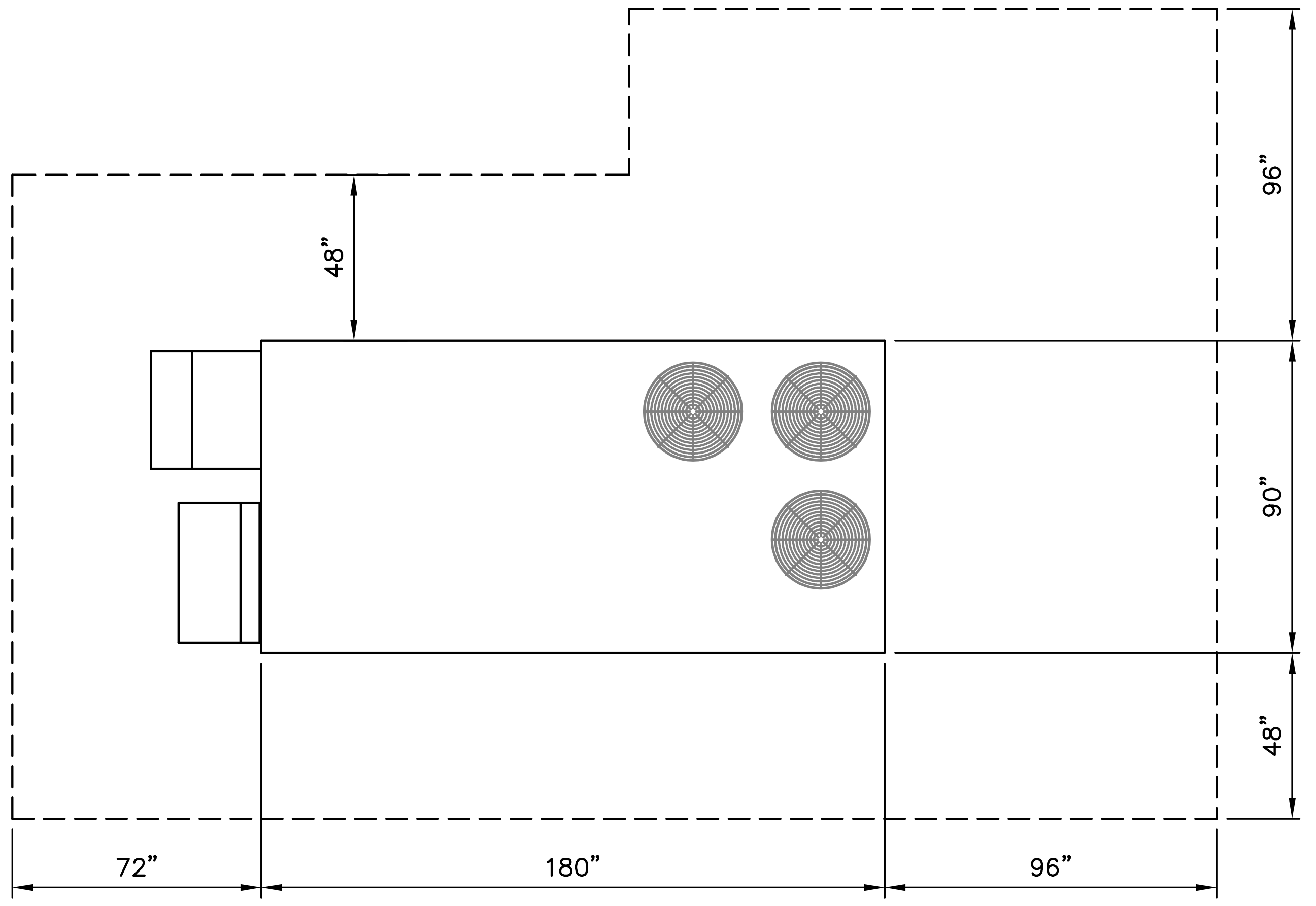

FLOW RESTRICTING
AERATOR MAY
BE INSTALLED
IF SUPPLY IS 1/2" USE
3/8" AND IF SUPPLY IS
3/8" USE 1/4"
HOT
COLD
TYPICALLY 1/2" OR
3/8" BRAIDED LINE
SINGLE COLD WATER
SUPPLY LINE
NOTE
UNIT IS PERMANENTLY
WIRED TO ELECTRICAL
SYSTEM

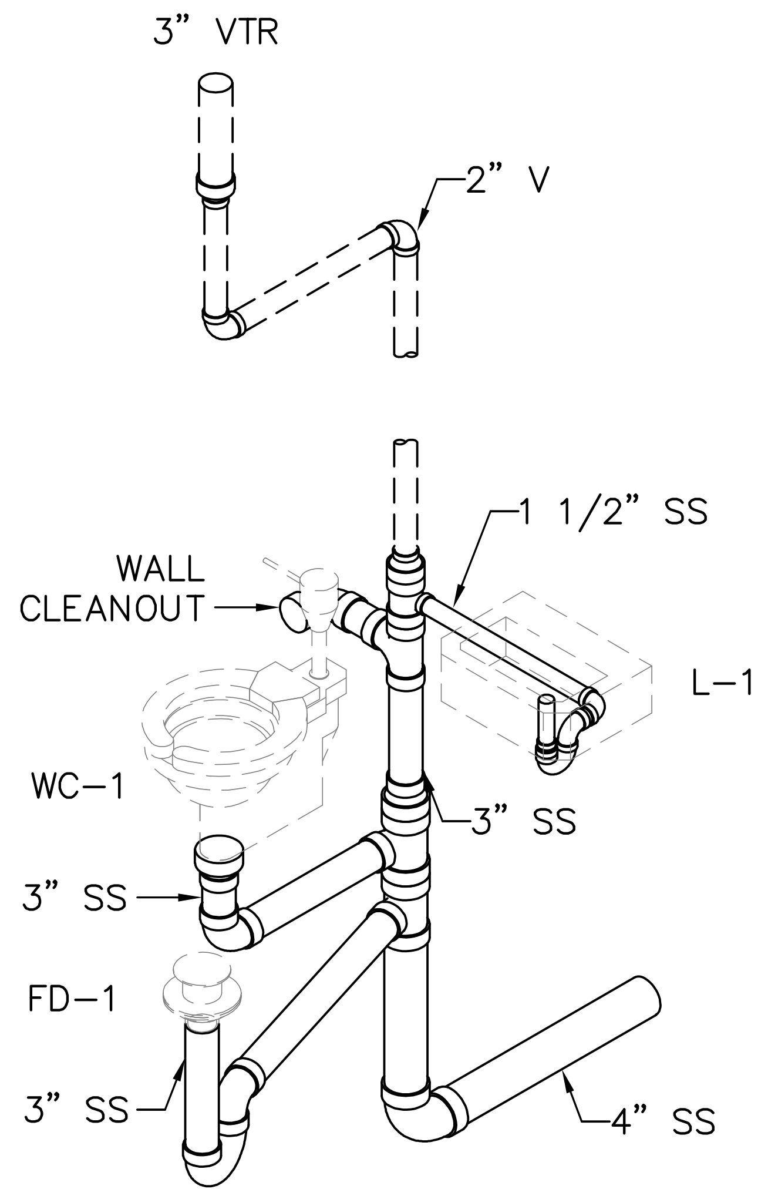
UNDERSINK INSTANT WATER HEATER DETAIL 3 / –

SCALE: NTS


48"
96"
90"
48"
72"
180"
96"

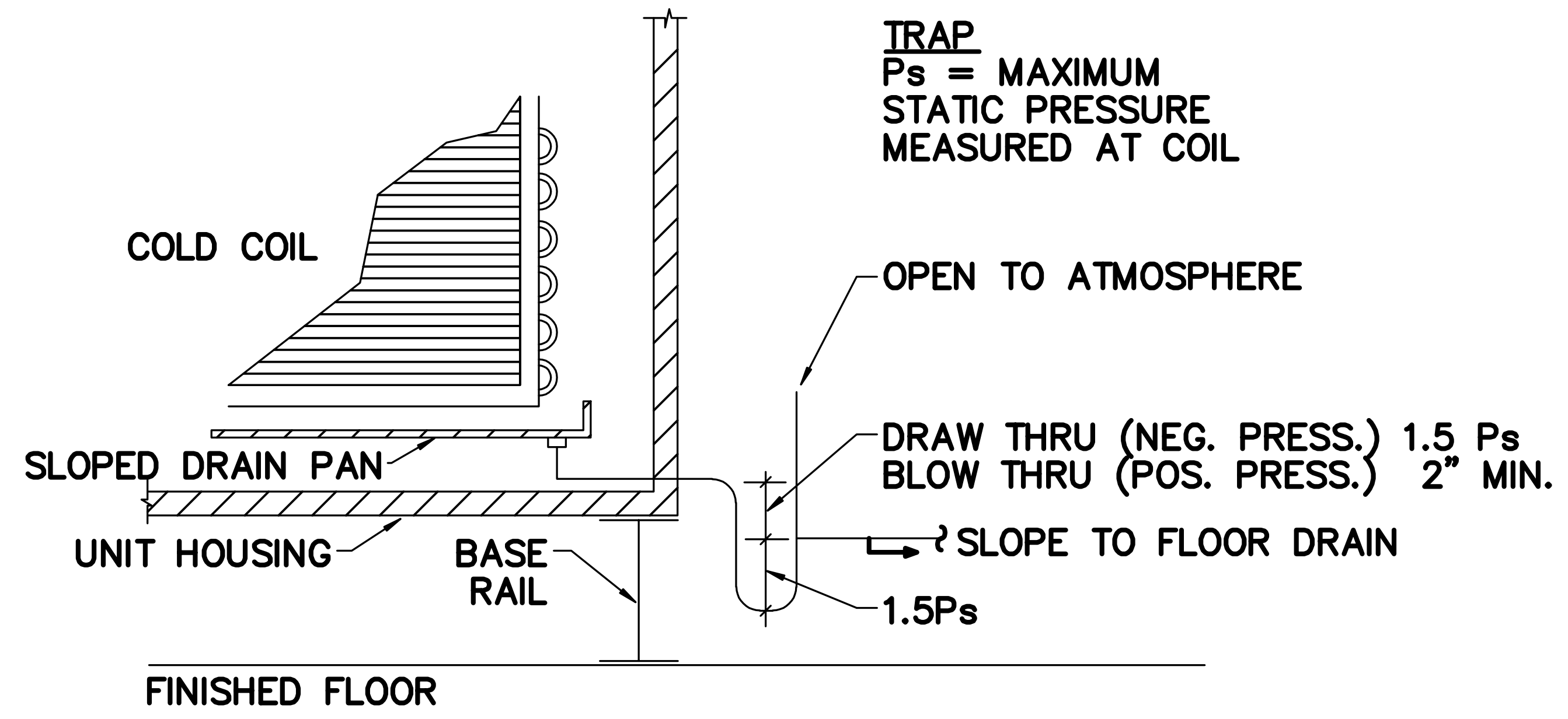
AIR HANDLING UNIT DETAIL 1 / –

SCALE: NTS


3" VTR
2" V
1 1/2" SS
WALL
CLEANOUT
L-1
WC-1
3" SS
3" SS
FD-1
3" SS
4" SS

PLUMBING RISER DIAGRAM DETAIL 4 / –

SCALE: NTS


TRAP
Ps = MAXIMUM
STATIC PRESSURE
MEASURED AT COIL
COLD COIL
OPEN TO ATMOSPHERE
DRAW THRU (NEG. PRESS.) 1.5 Ps
BLOW THRU (POS. PRESS.) 2" MIN.
SLOPED DRAIN PAN
UNIT HOUSING
BASE RAIL
SLOPE TO FLOOR DRAIN
1.5Ps
FINISHED FLOOR

NOTES:

1. TRAP AND DRAIN PIPING SIZE TO BE THE LARGER OF THE OUTLET SIZES OR THE FOLLOWING:

COOLING CAPACITY (MBH)	NOMINAL PIPE SIZE
UP TO 200	3/4"
201 TO 450	1"
451 TO 1000	1 1/4"
1001 TO 1500	1 1/2"
1501 TO 3000	2"

2. INSULATE TRAP AND DRAIN PIPING WITH 1/2" CLOSED CELL POLYETHYLENE FOAM INSULATION.

COIL CONDENSATE DRAIN PIPING DETAIL 2 / –

SCALE: NTS

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#	–	–	–	–	–	–	–

USER: CMCDONAL FILE: C:\PWWORKING\west01\d3411626\CSHLS40D01.dwg DATE: 8/26/24 TIME: 04:18pm

HDR

Registered Professional Engineer (Mechanical)
CERTIFICATE NO. 50980
JEFFREY D. WURMLINGER
Date Signed 08-26-24
Expires 06/30/2025

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
A	CM	01/2024	JW	90% SUBMITTAL
B	CM	04/2024	JW	AGENCY REVIEW
C	CM	08/2024	JW	ISSUED FOR CONSTRUCTION

DES JW
DWN CM
CKD

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

HVAC

HVAC/PLUMBING DETAILS

CITY PROJECT NO. WS90400085
DATE: 01/2024
H-02 SHEET 86 OF 134
CAD FILE: CSHLS40D01.dwg

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THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

KEY NOTES

1. 36X36 SUPPLY AIR DUCT UP.
2. 36X36 RETURN AIR DUCT UP.
3. 36X18 RETURN AIR DUCT WITH 1/4" SQUARE WELDED WIRE FABRIC IN A REMOVABLE FRAME.
4. INDOOR UNIT (SPLIT AIR CONDITIONING UNIT) MOUNTED HIGH ON WALL. INSTALLED PER MANUFACTURER'S INSTRUCTIONS. ROUTE CONDENSATE DRAIN THRU WALL AND DOWN. SPILL TO GRADE IN AN APPROPRIATE LANDSCAPING AREA. SEE 2 H-03 H-02
5. CEILING MOUNTED TOILET EXHAUST FAN: GREENHECK, SP-B70-QD (35-89CFM), 115V/1PH/60HZ ROUTE 6" RIGID DUCT TO EXTERIOR WALL. TERMINATE AT WALL WITH VENT CAP INCLUDING BACKDRAFT DAMPER AND BIRDSCREEN. SET FAN TO HIGH SPEED.

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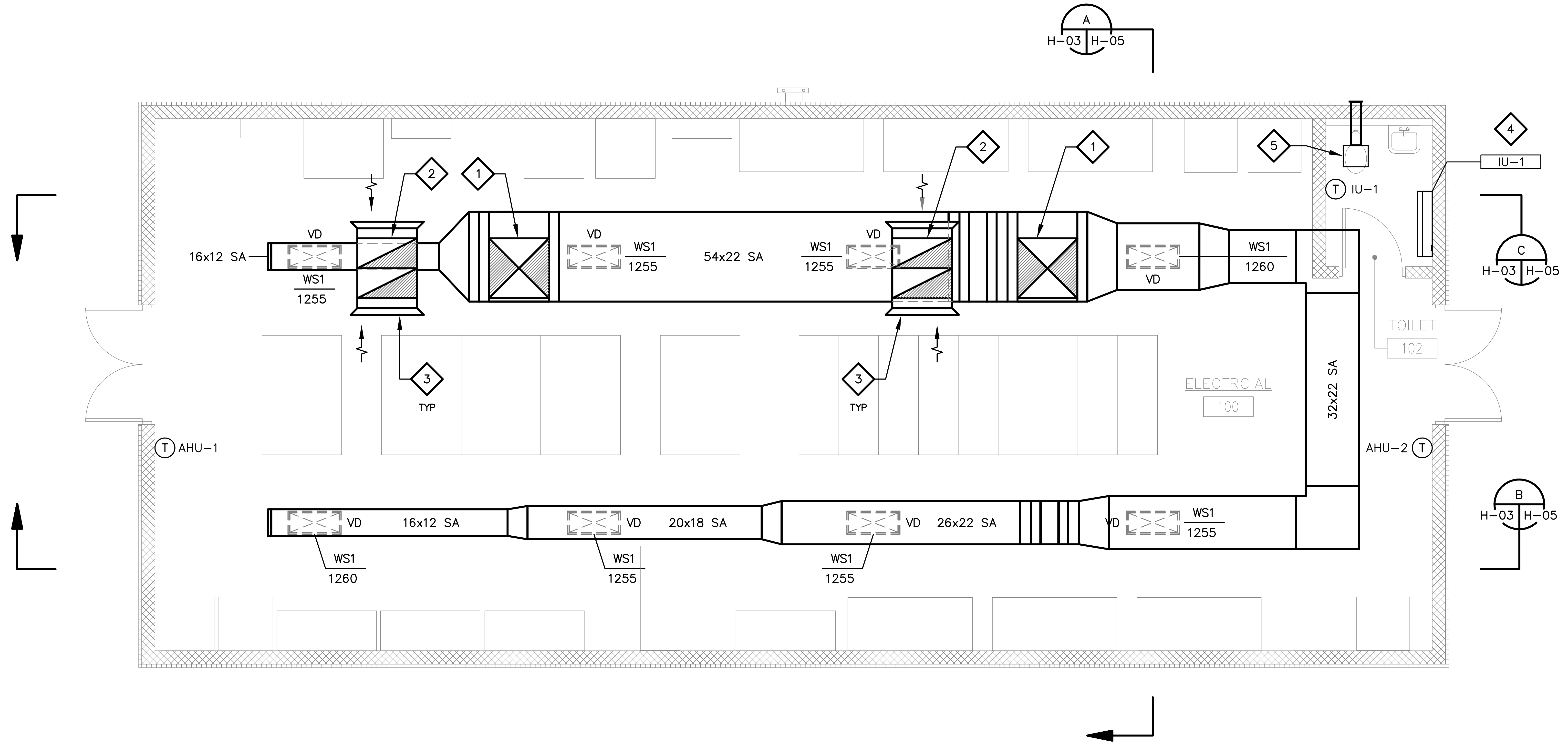

ELECTRICAL BUILDING HVAC PLAN 1 / – –

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

NO.	BY	DATE	CKD	REMARKS
A	CM	01/2024	JW	90% SUBMITTAL
B	CM	04/2024	JW	AGENCY REVIEW
C	CM	08/2024	JW	ISSUED FOR CONSTRUCTION

REVISIONS

HDR

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CERTIFICATE NO. 50980
JEFFREY D. WURMLINGER
Date Signed 08-26-24
ARIZONA, U.S.A.
Expires 06/30/2025

DES JW
DWN CM
CKD

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

HVAC

ELECTRICAL BUILDING HVAC PLAN

CITY PROJECT NO. WS90400085
DATE: 01/2024
H-03 SHEET 87 OF 134
CAD FILE: CSHLS40P01.dwg

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

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USER:CMCDONAL FILE:C:\PWWORKING\west01\d3411626\CSHLS40P01.dwg DATE:8/26/24 TIME:04:19pm

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KEY NOTES

1. AIR HANDLING UNIT WITH ASSOCIATED ROOF CURB. INSTALL PER MANUFACTURER'S INSTRUCTIONS. ROUTE CONDENSATE DRAIN ACROSS ROOF, DOWN WALL AND SPILL TO GRADE IN AN APPROPRIATE LANDSCAPING AREA. SEE 1 H–04 H–02 AND 2 H–04 H–02
2. EQUIPMENT CLEARANCE.
3. 36X36 SUPPLY AIR DUCT DOWN.
4. 36X36 RETURN AIR DUCT DOWN.
5. OUTDOOR UNIT (SPLIT AIR CONDITIONING UNIT) MOUNTED ON ROOF CURB OR SUPPORTED FROM ARCHITECTURAL SCREEN WALL. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

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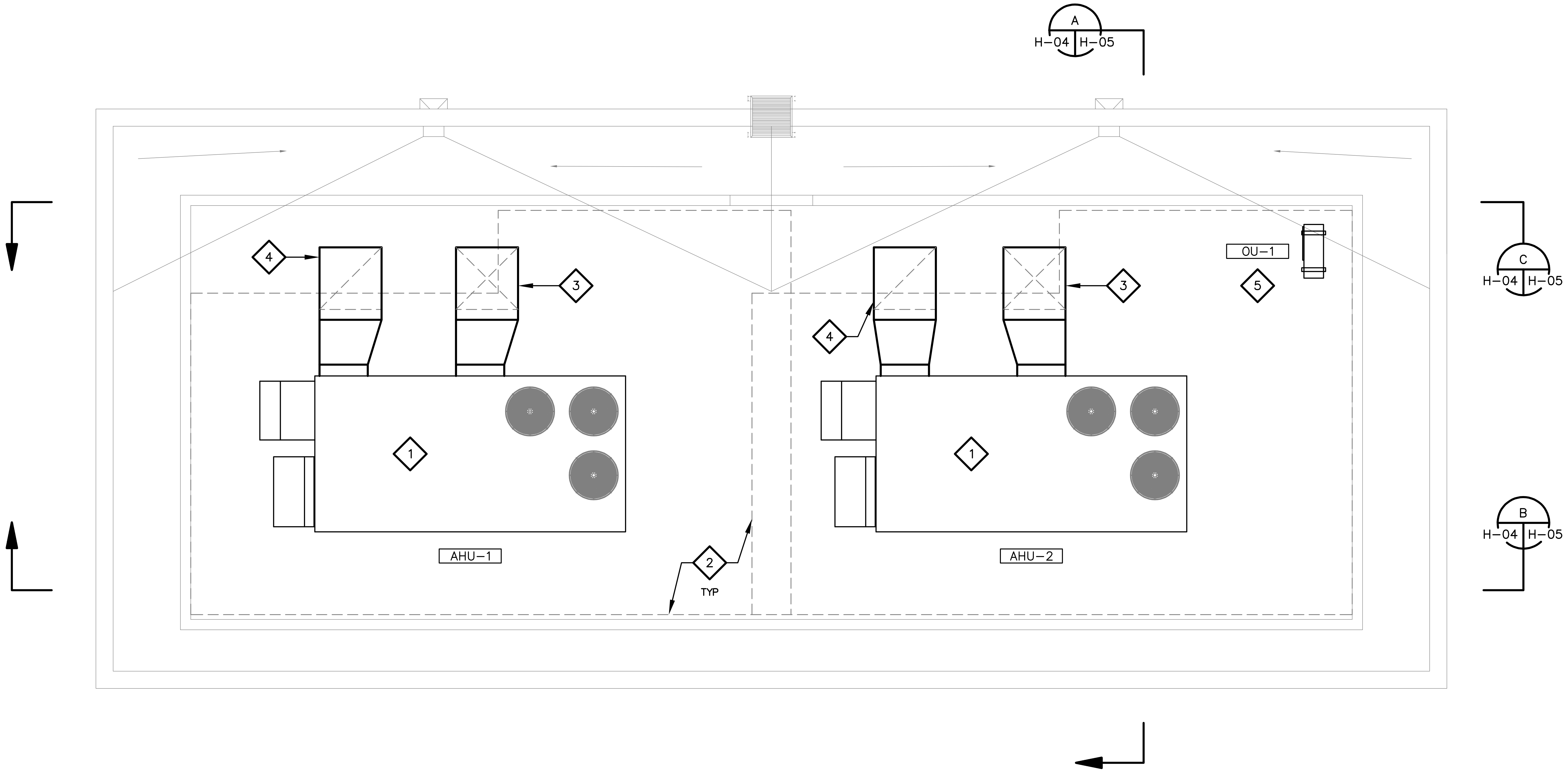

ELECTRICAL BUILDING HVAC ROOF PLAN 1 –|–
SCALE: 1/4" = 1'–0"

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
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#	–	–	–	–	–	–	–

HDR

50980
JEFFREY D. WURMLINGER
Date Signed 08-26-24
Expires 06/30/2025

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	CM	01/2024	JW	90% SUBMITTAL
B	CM	04/2024	JW	AGENCY REVIEW
C	CM	08/2024	JW	ISSUED FOR CONSTRUCTION

DES JW
DWN CM
CKD

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

HVAC

ELECTRICAL BUILDING HVAC ROOF PLAN

CITY PROJECT NO. WS90400085
DATE: 01/2024
H–04 SHEET 88 OF 134
CAD FILE: CSHLS40P02.dwg

USER: CMCDONAL FILE: C:\PWWORKING\west01\d3411626\CSHLS40P02.dwg DATE: 8/26/24 TIME: 04:19pm

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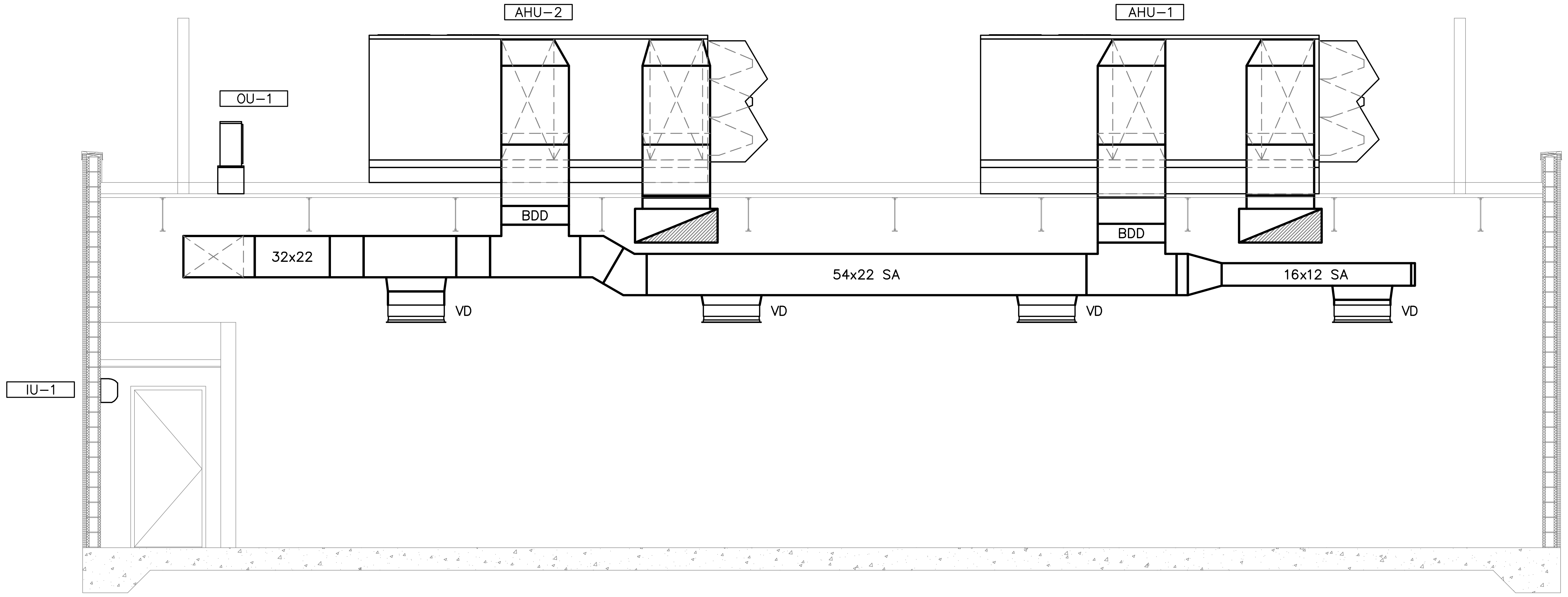
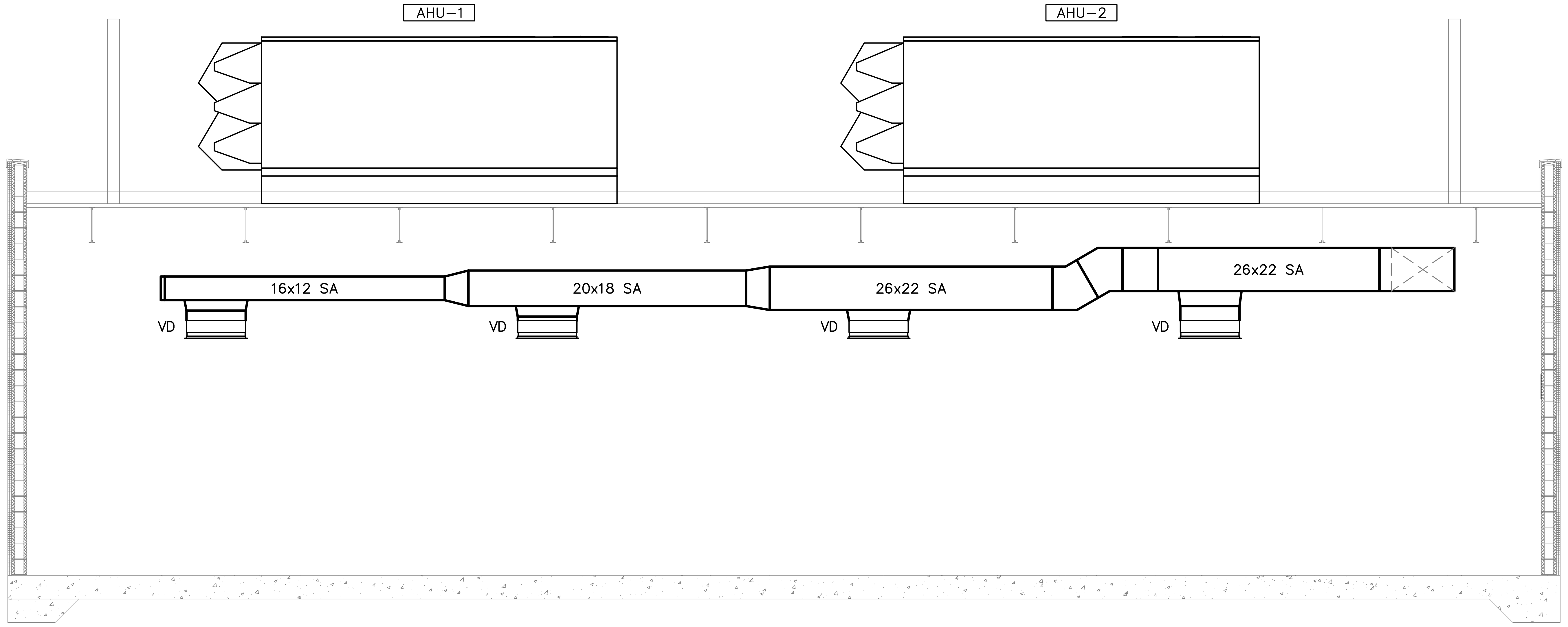


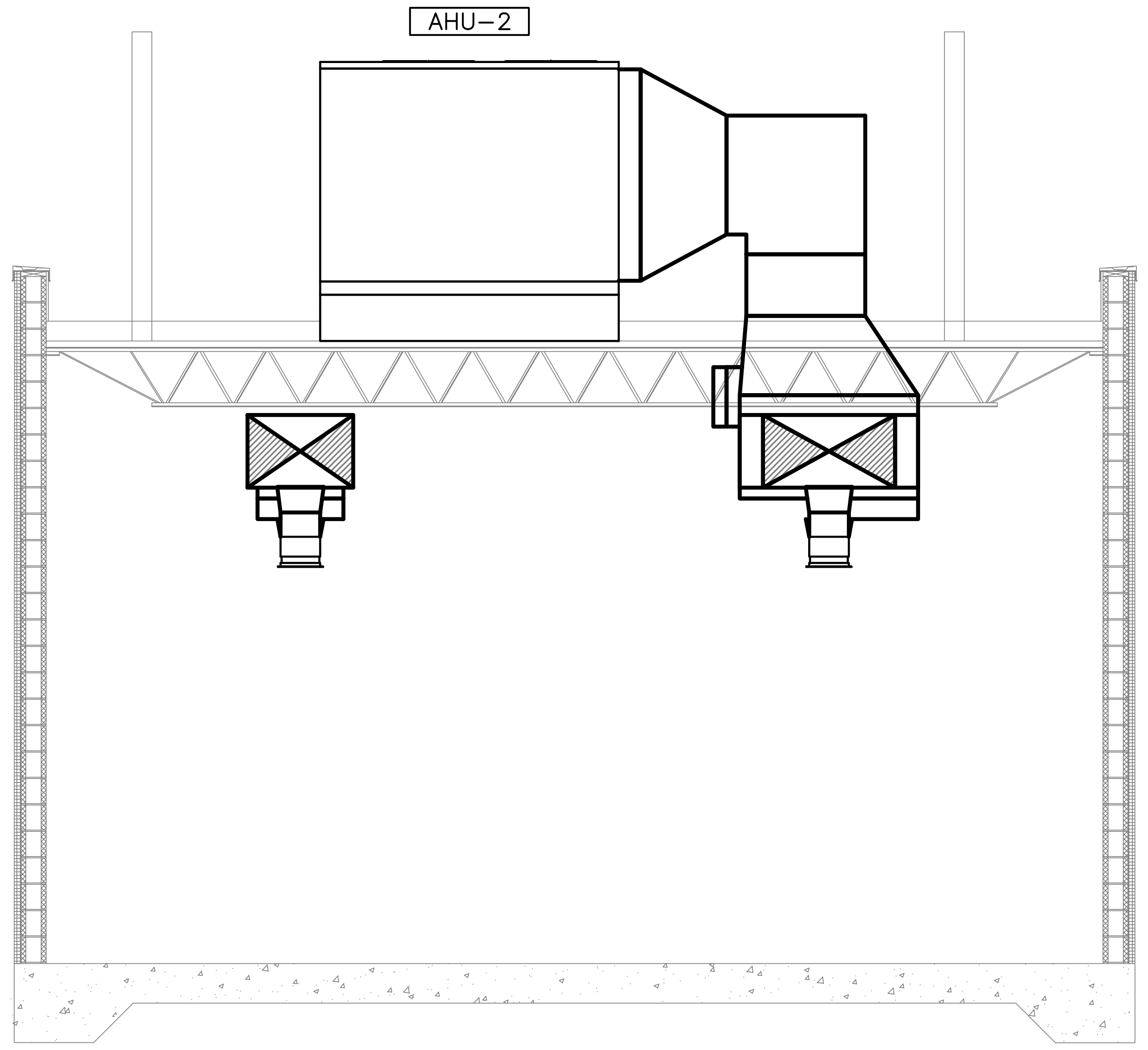
SECTION C

SCALE: 1/4" = 1'–0"



SECTION B

SCALE: 1/4" = 1'–0"



SECTION A

SCALE: 1/4" = 1'–0"

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HDR

50980
JEFFREY D.
WURMLINGER
Expires 06/30/2025

REVISIONS				
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DES
JW
DWN
CM
CKD

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

HVAC

HVAC SECTIONS

CITY PROJECT NO. WS90400085

DATE: 01/2024

H–05 SHEET 89 OF 134

CAD FILE: CSHLS40Q01.dwg

USER: CMCDONAL FILE: C:\PWWORKING\west01\d3411626\CSHLS40Q01.dwg DATE: 8/26/24 TIME: 04:22pm

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PLUMBING FIXTURE CONNECTION SCHEDULE

MARK NUMBER	FIXTURE DESCRIPTION	SPECIFICATION SECTION	PIPE DIAMETER (IN)				WATER FLOW RATE	NOTES
			CW	HW	WASTE	VENT		
WC–1	WATER CLOSET	–	1"	–	3"	2"	1.28 GPF	FLOOR MOUNT
L–1	LAVATORY	–	1/2"	1/2"	1 1/2"	1 1/2"	0.5 GPM	WALL HUNG
FD–1	FLOOR SINK	–	–	–	3"	1 1/2"	–	–
TP–1	TRAP PRIMER	–	1/2"	–	–	–	–	–

NOTES:
SEE PLANS AND RISER DIAGRAMS FOR DRAIN AND PIPE SIZE REQUIREMENTS.

AIR HANDLING UNIT SCHEDULE

MARK NUMBER	LOCATION	SERVES	NOMINAL AIRFLOW CFM	ELECTRICAL			WEIGHT LBS	BASIS OF DESIGN	NOTES
				VOLT/ PH	FLA	MCA			
AHU–1	ROOF	ELECTRICAL ROOM	10000	460 / 3		75.80	4532.0	TRANE TCH330B4	1
AHU–2	ROOF	ELECTRICAL ROOM	10000	460 / 3		75.80	4532.0	TRANE TCH330B4	1, 2

NOTES:
1. PROVIDE PREFABRICATED ROOF CURB.
2. AIR HANDLING UNIT (AHU–2) PROVIDES REDUNDANCY

DIFFUSER, REGISTER, AND GRILLE SCHEDULE

MARK NUMBER	MAX AIRFLOW CFM	FACE SIZE IN (WXH)	CONNECTION SIZE, IN (WXH OR DIA)	MAX STATIC PRESS DROP IN WG	MAX NC	MOUNTING LOCATION	FRAME TYPE	MATERIAL	FINISH	BASIS OF DESIGN	NOTES
WS1	1270	24X12	24X12	0.10	30	SIDEWALL	SURFACE	STEEL	WHITE	TITUS 300RS	1

NOTES:
1. ADJUSTABLE DOUBLE DEFLECTION GRILLE WITH 3/4 IN BLADE SPACING AND FRONT BLADES PARALLEL TO THE HEIGHT (H) DIMENSION.

WATER HEATER SCHEDULE

MARK NUMBER	KW	AMP	VOLT	TURN ON GPM	0.3 GPM	0.5 GPM	1.0 GPM	1.5 GPM	NOTES
WH–1	3.5	29	120	0.3	80°	48°	24°	16°	AM004120T

SPLIT AIR CONDITIONING UNIT SCHEDULE

MARK NUMBER INDOOR / OUTDOOR	LOCATION / SERVES	INDOOR EVAPORATOR UNIT DATA												
		TYPE	FAN				COOLING COIL				ELECTRICAL			WEIGHT LBS
			AIRFLOW CFM	EXT SP IN WC	COUNT	SPEED	TOTAL CAP BTUH	SENS CAP BTUH	EAT DB/WB DEG F	LAT DB DEG F	FLA	MCA	V / PH	
OU–1 / IU–1	ROOF / TOILET	WALL MOUNT	437	0	1	HIGH	5240.0	5240.0	80 / 67	68.7	POWERED BY OUTDOOR UNIT			40

SPLIT AIR CONDITIONING UNIT SCHEDULE (CONTINUED)

OUTDOOR CONDENSER DATA										BASIS OF DESIGN	NOTES
TYPE	AMB AIR TEMP DB DEG F	COMPRESSOR		REFRIGERANT TYPE	EFFICIENCY		ELECTRICAL			WEIGHT LBS	INDOOR / OUTDOOR	
		COUNT	STEPS EACH		EER BTUH/W	SEER BTUH/W	MCA	MOCP	V / PH			
ROTARY	115	1	R410A	R410A	19.0	33.1	11	15	208 / 1	120	MITSUBISHI NTXWPH06A112AA / MITSUBISHI NTXSPH06A112AA	

NOTES:
INDOOR UNIT SHALL BE POWERED FROM OUTDOOR UNIT – SINGLE CIRCUIT SERVES BOTH INDOOR AND OUTDOOR UNIT.
PROVIDE HARDWIRED WALL-MOUNT THERMOSTAT WITH THE INDOOR UNIT. WIRELESS CONTROLS IS NOT ACCEPTABLE.
PROVIDE INDOOR UNIT CONDENSATE PUMP.

FACILITY DRAWINGS
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#	–	–	–	–	–	–	–

HDR

50980
JEFFREY D.
WURMLINGER
Date Signed 08-26-24
Expires 06/30/2025

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
A	CM	01/2024	JW	90% SUBMITTAL
B	CM	04/2024	JW	AGENCY REVIEW
C	CM	08/2024	JW	ISSUED FOR CONSTRUCTION

DES
JW
DWN
CM
CKD

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

HVAC

HVAC/PLUMBING SCHEDULES

CITY PROJECT NO. WS90400085
DATE: 01/2024
H–06 SHEET 90 OF 134
CAD FILE: CSHLS40X01.dwg

USER: CMCDONAL FILE: C:\PWWORKING\west01\d3411626\CSHLS40X01.dwg DATE: 8/26/24 TIME: 04:17pm

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

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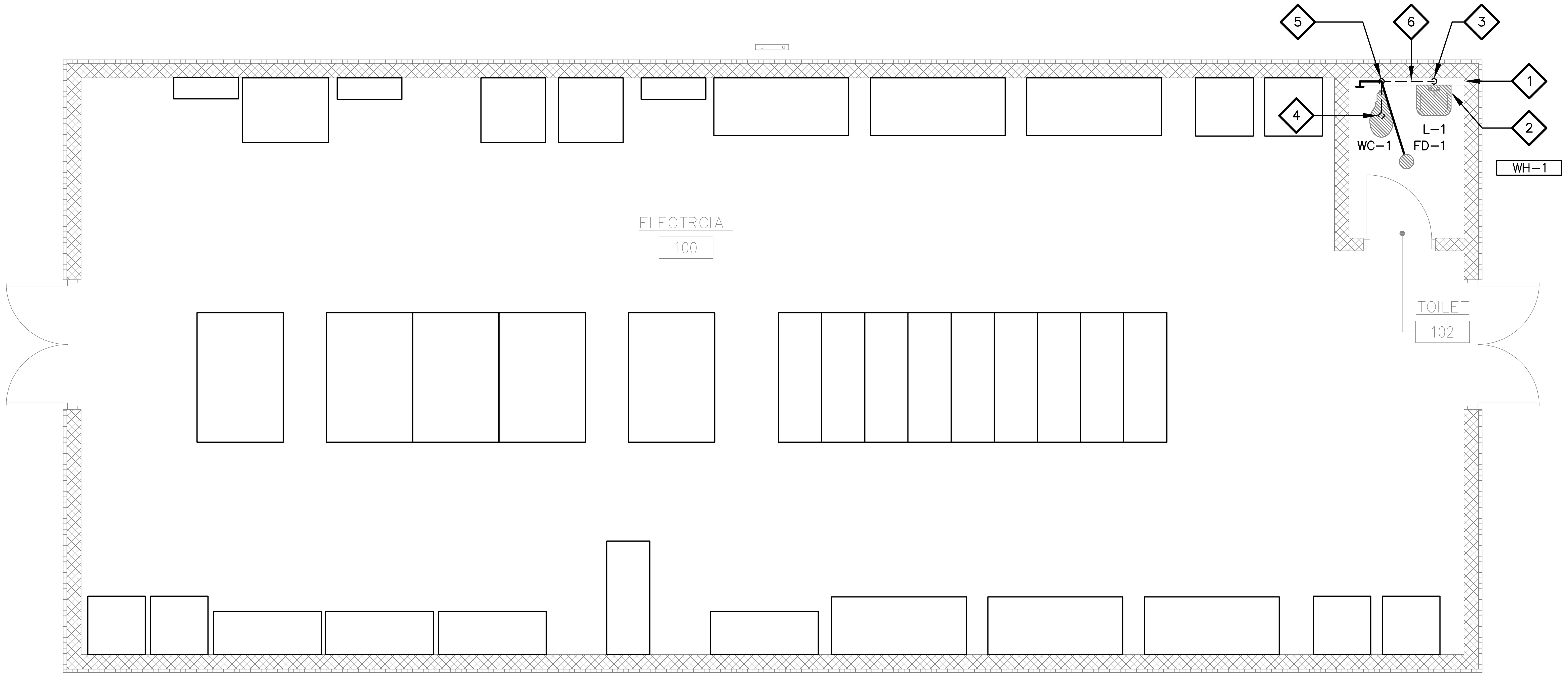

KEY NOTES

1. 2" COLD WATER SERVICE. SEE CIVIL FOR CONTINUATION. 1" COLD WATER TO WATER CLOSET. 1/2" COLD WATER TO UNDERSINK INSTANT WATER HEATER. 1/2" COLD WATER TO FLOOR DRAIN TRAP PRIMER VALVE. INSTALLED PER MANUFACTURER'S INSTRUCTIONS
2. UNDERSINK INSTANT WATER HEATER WH–1. INSTALL PER MANUFACTURER'S INSTRUCTIONS. SEE 3 P–01 H–02
3. 1 1/2" SANITARY SEWER IN WALL.
4. 3" VENT THRU ROOF.
5. 2" VENT UP. 4" SANITARY SEWER DOWN. SEE CIVIL FOR CONTINUATION.
6. SEE 4 P–01 H–02 FOR PLUMBING RISER DIAGRAM.

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#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

ELECTRICAL BUILDING PLUMBING PLAN 1 – –
SCALE: 1/4" = 1'–0"

HDR

Registered Professional Engineer (Mechanical)
CERTIFICATE NO. 50980
JEFFREY D. WURMLINGER
Date Signed 08-26-24
ARIZONA, U.S.A.
Expires 06/30/2025

REVISIONS

NO.	BY	DATE	CKD	REMARKS
A	CM	01/2024	JW	90% SUBMITTAL
B	CM	04/2024	JW	AGENCY REVIEW
C	CM	08/2024	JW	ISSUED FOR CONSTRUCTION

DES JW
DWN CM
CKD

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

HVAC

ELECTRICAL BUILDING PLUMBING PLAN

CITY PROJECT NO. WS90400085
DATE: 01/2024
P–01 SHEET 91 OF 134
CAD FILE: CSPLS40P01.dwg

USER: CMCDONAL FILE: C:\PWWORKING\west01\d3411631\CSPLS40P01.dwg DATE: 8/26/24 TIME: 04:17pm

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FOR CONSTRUCTION

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3W	THREE WAY
4W	FOUR WAY

A

AMP	AMPERE
A/C	AIR CONDITIONING
AB	ANCHOR BOLT
AC	ALTERNATING CURRENT
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
AL	ALUMINUM
ALCP	AREA LIGHTING CONTACTOR PANEL
AO	ANALOG OUTPUT
ATC	AUTOMATIC TEMPERATURE
ATS	CONTROL AUTOMATIC TRANSFER
AUTO	SWITCH AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE CURRENT

B

BCP	BLOWER CONTROL PANEL
BLDG	BUILDING
BTU	BRITISH THERMAL UNIT

C

CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
CND	CONDUIT
COMB	COMBINATION
COND	CONDUCTIVITY
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CS	CONTROL SWITCH
CT	CURRENT TRANSFORMER
CU	COPPER

D

DC	DIRECT CURRENT
DI	DIGITAL INPUT
DIA	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DN	DOWN
DO	DIGITAL OUTPUT
DS	DISCONNECT SWITCH

E

EC	EMPTY CONDUIT
EGC	EQUIPMENT GROUNDING CONDUCTOR
EHH	ELECTRICAL HANDHOLE
EL	ELEVATION
ELEC	ELECTRICAL
ELP	EMERGENCY LIGHTING PANEL
EMERG	EMERGENCY
EMH	ELECTRICAL MANHOLE
ENT	ETHERNET SIGNAL
EP	ELECTROPNEUMATIC
EPP	EMERGENCY POWER PANEL

F

FBO	FURNISHED BY OTHERS
FT	FEET/FOOT
FU	FUSE
FUT	FUTURE
FURN	FURNISHED
FVR	FULL VOLTAGE REVERSING
FVNR	FULL VOLTAGE NON–REVERSING

G

GEC	GROUNDING ELECTRODE CONDUCTOR
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL

H

HGT	HEIGHT
HH	HANDHOLE
HP	HORSEPOWER
HTR	HEATER
Hz	HERTZ

I

I	INSRUMENTATION
IHH	INSTRUMENTATION HANDHOLE
IMH	INSTRUMENTATION MANHOLE
IN	INCH
INST	INSTANTANEOUS
INSTR	INTRUMENT
ISW	INSTRUMENT ISOLATION SWITCH
ITP	INTERMEDIATE TERMINATION PANEL

L

L	LINE
LA	LIGHTNING ARRESTER
LCP	LOCAL CONTROL PANEL
LD	LEAK DETECTOR
LP	LIGHTING PANEL

M

MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MOV	MOTOR OPERATED VALVE
MPR	MOTOR PROTECTION RELAY
MS	MOTOR STARTER
MTD	MOUNTED

N

N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NO	NORMALLY OPEN
NTS	NOT TO SCALE
NUM	NUMBER

O

OC	ON CENTER
OL	OVERLOAD

P

PB	PULL BOX
PF	POWER FACTOR
PFM	POWER FACTOR METER
PH	PHASE
PNL	PANEL
PD	PLATE DESIGNATION
PP	POWER PANEL
PT	POTENTIAL TRANSFORMER

R

RCS	REMOTE CONTROL STATION
RECEPT	RECEPTACLE
RVA	REDUCE VOLTAGE AUTOTRANSFER
RVNR	REDUCE VOLTAGE NON–REVERSING

S

SC	SURGE CAPACITOR
SCR	SEMICONDUCTOR CONTROLLED RECTIFIER
SN	SOLID NEUTRAL
SV	SOLENOID VALVE
SSRV	SOFT START REDUCED VOLTAGE
ST	SPEED TACHOMETER
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR

T

TFR	TRANSFORMER
TDC	TIME DELAY ON CLOSING
TDD	TIME DELAY AFTER DEENERGIZATION–OFF
TDE	TIME DELAY ENERGIZATION–ON DELAY
TDO	TIME DELAY ON OPENING
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TWSH	TWISTED SHIELDED
TW	TWISTED

U

UPS	UNINTERRUPTABLE POWER SUPPLY

V

V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE

W

W	WATTS
WHDM	WATTHOUR DEMAND METER
WHDR	WATTHOUR DEMAND
WHM	RECORDER WATTHOUR METER
WM	WATTMETER
WX	WATT TRANSDUCER

X

XFMR	TRANSFORMER

Z

ZD	CIRCUIT BREAKER AUX. CONTACT
ZM	ISOLATION SWITCH AUX. CONTACT

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#	–	–	–	–	–	–	–
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ENGINEERING

33468
VAHID
BAGHERI
7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES	RB
DWN	BB
CKD	VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

ABBREVIATIONS – 1

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–01 SHEET 92 OF 134
CAD FILE: CSELS40ABBREV1.dwg

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STANDARD ABBREVIATIONS

SYMBOLS	
@	AT
%	PERCENT
A	
A	ARCHITECTURAL
AB	ANCHOR BOLT
ABC	AGGREGATE BASE COURSE
AC	ASPHALTIC CONCRETE
AD	ACCESS DOOR
ADM	ADMINISTRATION
AFF	ABOVE FINISHED FLOOR
AG	AUTOMATIC GATE
AHU–#	AIR HANDLING UNIT NO. #
ALT	ALTERNATE
ALUM	ALUMINUM
AMB	AMBIENT
ANPP	ARIZONA NUCLEAR POWER PLANT
APPROX	APPROXIMATELY
ASE	ATM SWITCH ENCLOSURE
ASP	ASPHALT PAVEMENT
ATC	AUTOMATIC TEPERATURE CONTROL
ATM	ASYCHRONOUS TRANSFER MODE
B	
BC	BRASS CAP
BDD	BACKDRAFT DAMPER
BDG	BRIDGE
BDS	BUSINESS DATA SERVER
BE	BEAM
BHP	BRAKE HORSEPOWER
BLD	BLIND
BLDG	BUILDING
BM	BENCHMARK
BOD	BOTTOM OF DUCT
BOR	BOTTOM OF REGISTER
BOT	BOTTOM
BOW/BW	BOTTOM OF WALL
BP	BYPASS
BUSH	BUSHING
BVC	BEGIN VERTICAL CURVE
C	
C	CIVIL
CC	CENTER TO CENTER
CCS	COMPUTER CONTROL SYSTEM
CD#	CEILING AIR DIFFUSER (#=TYPE A, B...)
CFH	CUBIC FEET OF STANDARD AIR PER HOUR
CFM	CUBIC FEET OF STANDARD AIR PER MINUTE
CG	CONTROL GATE
CHR	CHLORINATOR
CJ	CONSTRUCTION JOINT
CLR	CLEAR OR CLEARANCE
CMMS	COMPUTER MAINTENANCE MANAGEMET SYSTEM
CMP	COMPUTER
CMU	CEMENT MASONRY UINT
CODP	CLEAN OUT DECK PLATE
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS OR CONTINUATION
COP	CITY OF PHOENIX
CPLG	COUPLING
D	
DB	DRY BULB
DBL	DOUBLE
DCS	DISTRIBUTED CONTROL SYSTEM
DCU	DISTIBUTED CONTROL UNIT
DMWS	DATA MANAGEMENT WORK STATION
DEGC	DEGREES CENTIGRADE
DEGF	DEGREES FAHRENHEIT
DEGREE	ANGULAR DEGREES
DG	DECOMPOSED GRANITE
DIA	DIAMETER
DMH	DRAINAGE MANHOLE
DT	DAY TANK
DTL	DETAIL
DWG	DRAWING
DWG	DRAWING WEB FORMAT
DWL	DOWEL
E	
E	ELECTRICAL
EA	EACH
ECC	ECCENTRIC
ECV	EVAPORATIVE COOLING UNIT
EDB	ELECTRICAL DUCT BANK
EF–#	EXHAUST FAN NO. #
EF	EACH FACE
EJ	EXPANSION JOINT
EL/ELEV	ELEVATION
EMER	EMERGENCY
EMH	ELECTRICAL MANHOLE
EOP	EDGE OF PAVEMENT
EQUIP	EQUIPMENT
ER#	EXHAUST AIR REGISTER (#=TYPE A,
EVC	B...)
EW	END VERTICAL CURVE
EWS	EACH WAY
EXIST	ENGINEERING WORK STATION
	EXISTING
F	
FC	FLEXIBLE CONNECTOR
FCU	FIELD CONTROL UNIT
FCP	FIELD CONTROL PANEL
FD	FLOOR DRAIN
FDDI	FIELD DISTIBUTED DATA INTERFACE
FDN	FOUNDATION
FE	FLOW ELEMENT
FEH	FIELD ETHERNET HUB
FF	FINISHED FLOOR
FH	FIRE HYDRANT
FHC	FIELD HUB CONVERTER
FHE	FIELD HUB ENCLOSURE
FG	FINISHED GRADE
FIN	FINISHED
FN	FAN
FO	FOAM
FOC	FIBER OPTIC CONVERTER
FPM	FEET PER MINUTE
FPP	FIELD PANEL PATCH
FPS	FIRE PROTECTION SYSTEM
FT	FOOT OR FEET
FTG	FITTING OR FOOTING
FWS	FIELD WORKSTATION
G	
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRADE BREAK
GBD	GRAVITY BACKDRAFT DAMPER
GDS	GENERAL DATA SERVER
GMW	GROUNDWATER MONITORING WELL
GND	GROUND
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRINDER
GRT	GRAVITY THICKENER
GRV	GROOVED
H	
H	HIGH
HCP	HORIZONTAL CONTROL POINT
HDP	HIGH DENSITY POLYETHYLENE
HDS	HISTORICAL DATA SERVER
HORIZ	HORIZONTAL
HPMP	HEAT PUMP
HPT	HIGH POINT
HP	HORSEPOWER
I	
IAS	INFORMATION ACCESS SYSTEM
I\O	INPUT\OUTPUT
IE	INSTRUMENT ELECTRIC
IJS	INFLUENT JUNCTION STRUCTURE
IN.	INCH\INCHES
INSUL	INSULATION
INV	INVERT
IPH	INCHES PER HOUR
IPM	INCHES PER MINUTE
IPS	INCHES PER SECOND
ITP	INTERMEDIATE TERMINAL PANEL
J	
JB	JUNCTION BOX
JC	JANITOR'S CLOSET
JT	JOINT
K	
KCFM	1000 CUBIC FT. PER MINUTE
KSCFM	1000 STD. CUBIC FT. PER MINUTE
L	
L	LANDSCAPE
LB	POUND
LB\DT	POUNDS PER DRY TON
LB\D	POUNDS PER DAY
LB\H	POUNDS PER HOUR
LCP	LOCAL CONTROL PANEL
LF	LINEAR FEET
LGTH	LENGTH
LI	LEVEL INDICATOR
LM	LOUVER MOTOR
LP	LOW POINT
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LSS	LANDSCAPING SPINKLER SYSTEM
M	
MAG	MAGNETIC
MASG	MARICOPA ASSOCIATION OF GOV.
MAX	MAXIMUM
MB	MACHINE BOLT
MCC	MOTOR CONTROL CENTER
MCS	MOTOR CONTROL STATION
MFC	MICROSCREEN FEED CHANNEL
MFR	MANUFACTURER
MG	MANUAL GATE
MGD	MILLION GALLONS PER DAY
MGL	MILLIGRAMS PER LITER
MH	MANHOLE
MIN	MINIMUM
MINS	MINUTES
MJ	MECHANICAL JOINT
ML	MILLILITER
MO	MASONRY OPENING
MSC	MICROSCREEN
MTD	MOUNTED
MV	MILLIVOLT
MVC	MID POINT VERTICAL CURVE
MW	MEGAWATT
N	
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NK	NECK
NO	NORMALLY OPEN
NOM	NOMINAL
O	
OA	OUTSIDE AIR
OC	ON CENTER
ODR	ODOR
ODRC	ODOR CONTROL
OF	OVERFLOW
OHE	OVERHEAD ELEC. POWER LINES
OPCTY	PERCENT OPACITY
OPNG	OPENING
OWS	OPERATOR WORK STATION
P	
P–#	PUMP NO. #
PCA	PLANT COMPRESSED AIR
PCCP	PORTLAND CEMENT CONCRETE PAVEMENT
PCU	PROCESS CONTROL UNIT
PDR	PROCESS DATA ROUTER
PSB	PRIMARY SEDIMENTATION BASIN
PB	PULL BOX
PE	PLAIN END
PF	POWER FACTOR
PH	pH, HYDROGEN ION ACTIVITY
PHYD	POST HYDRANT
PLCS	PLACES
PI	PRESSURE INDICATOR
PLTE	PLATE
PL	PROPERTY LINE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PMC	PROGRAM MANAGEMENT CENTER
POSS	POSITION SWITCH
PPB	PARTS PER BILLION
PPBV	PARTS PER BILLION VOLUME
PPD	POUNDS PER DAY
PPM	PARTS PER MILLION
PPMV	PARTS PER MILLION VOUME
PPSEG	POUNDS PER SQUARE INCH GAUGE
PRESS	PRESSURE
PRT	PRINTER
PS	PRESSURE SWITCH
PV	PUMP VACUUM
PVNGS	PALO VERDE NUCLEAR GENERATING STATION
Q	
QTY	QUANTITY
R	
R	RADIUS
RCS	REMOTE CONTROL STATION
RED	REDUCER, REDUCING
REINF	REINFORCING, REINFORCEMENT
REQ'D	REQUIRED
RF	ROOF
RGS	RIGID GALVINIZED STEEL
RH	RELATIVE HUMIDITY
RIO	REMOTE INPUT\OUTPUT
RMS	ROOT MEAN SQUARE
RO	ROOF OPENING
ROT	ROTARY VALVE
RPH	REVOLUTIONS PER HOUR
RPS	REVOLUTIONS PER SECOND
RPM	REVOLUTIONS PER MINUTE
RTU	REMOTE TERMINAL UNIT
RV–#	ROOF VENT NO. #
S	
S	STRUCTURAL
SAR	SUPPLY AIR REGISTER
SC	SCREW CONVEYOR
SCFH	STANDARD CUBIC FEET PER HOUR
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SCR	SILICON CONTROLLED RECTIFIER
SEC	SECONDARY
SECS	SECONDS
SED	SEDIMENTATION
SG	SLUICE GATE
SH	SHIELDED
SF–#	SUPPLY AIR FAN NO. #
SFES	SERVER FAST ETHERNET SWITCH
SHF	SOLIDS HANDLING FACILITY
SHT	SHEET
SIM	SIMILAR
SLG	SLIDE GATE
SP IN WG	STATIC PRESSURE INCHES OF WATER GAGE
SPECS	SPECIFICATIONS
SQ	SQUARE
SRP	SALT RIVER PROJECT
SRUA	SALT RIVER VALLEY USERS ASSOCIATION
SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
SU	SURGE UNIT
SUB	SUBSTATION
SV–#	SOLENOID VALVE NO. #
SW	SIDEWALK
T	
T	TELEPHONE
T/	TOP OF
T&B	TOP AND BOTTOM
TB	TERMINATION BOX
TBOC	TOP BACK OF CURB
TEMP	TEMPERATURE OR TEMPORARY
THK	THICK
TMH	TELEPHONE MANHOLE
TOC	TOP OF CONCRETE
TOD	TOP OF DUCT
TOG	TOP OF GRATING
TOR	TOP OF REGISTER
TOW/TW	TOP OF WALL
TOS	TOP OF SLAB
TPH	TONS PER HOUR
TR	TRANSDUCER
TTB	TELEPHONE TERMINATION BOARD
TYP	TYPICAL
U	
UG	UNDER GROUND
UH–#	UNIT HEATER NO. #
UMHO	MICROMHO
UON	UNLESS OTHERWISE NOTED
V	
VAC	VACUUM
VACBK	VACUUM BREAKER
VB	VALVE BOX
VCP	VITRIFIED CLAY PIPE
VD	VOLUME DAMPER
VDU	VIDEO DISPLAY UNIT
VEL	VELOCITY
VERT	VERTICAL
VF	VACUUM FILTER
VFD	VARIABLE FREQUENCEY DRIVE
VG	VALLEY GUTTER
VMS	VIBRATION MONITORING SYSTEM
VS	VIEW STATION
VTR	VENT THROUGH ROOF
W	
W/	WITH
WB	WET BULB
WC	WATER COLUMN
WD	WIDE
WP	WEATHERPROOF
WS	WATER SURFACE
X	
XP	EXPLOSION PROOF
XFER	TRANSFER

PROCESS ABBREVIATIONS

A	
ALM	ALUM
AMN	AMMONIA
AR	PROCESS AIR
AS	INSTRUMENT AIR
ASL	ALTERNATE
AW	SLUDGE ACID
AWD	WASTE
	ACID WASTE DRAIN
B	
BCV	BALL CHECK VALVE
BFV	BUTTERYFLY VALVE
BF	BLIND FLANGE
BP	BY–PASS
BS	BRINE SOLUTION
BV	BALL VALVE
C	
CAS	CAUSTIC SODA
CD	CHLORINATOR DETECTOR
CEFF	CHLORINATED EFFLUENT
CEN	CENTRATE
CEN–EFF	CENTRATE EFFLUENT
CEN–ML	CENTRATE MIXED LIQUOR
CEN–RAS	CENTRATE RETURN ACTIVATED SLUDGE
CEN–SCUM	CENTRATE SCUM
CEN–SE	CENTRATE SECONDARY EFFLUENT
CEN–WAS	CENTRATE WASTE ACTIVATED SLUDGE
CEND	CENTRIFUGE DRAIN
CENV	CENTRATE VENT
CG	CHLORINE GAS
CGV	CHLORINE GAS VACUUM
CH2OR	COOLING WATER RETURN
CH2OS	COOLING WATER SUPPLY
CHL	CHLORINE LIQUID
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CKV	CHECK VALVE
CL2	CHLORINE
CLS	CHLORINE SOLUTION
CO	CLEAN OUT
CPVC	CHLORINATED POLYVINYL CHLORIDE
CV	CHLORINATOR VENT
CW	DOMESTIC COLD WATER
CWD	CAUSTIC WASTE DRAIN
CWR	COOLING WATER RETURN
CWS	COOLING WATER SUPPLY
D	
D	DRAIN
DAF	DISSOLVED AIR
DCL	FLOATATION DIGESTER
DEC	CLEANING LINE DECANT
DEFF	DECHLORINATED EFFLUENT
DG	DIGESTER GAS
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DISCH	DISCHARGE
DL	DRAIN LINE
DP	DILUTED POLYMER
DS	DIGESTED SLUDGE
DSF	DIESEL FUEL
DV	DIAPHRAM VALVE
DW	DEWATERING
DWS	DEWATERED SLUDGE
DWW	DOMESTIC WASTE
E	
EFF	EFFLUENT
EOF	EMERGENCY OVERFLOW
EPS	EFFLUENT PUMP STATION
ES	EFFLUENT SLUDGE
F	
FA	FOUL AIR
FAD	FOUL AIR DUCT
FEC	FERRIC CHLORIDE
FL	FLOW LINE
FLG\FLGD	FLANGE\FLANGED
FLW	FILTERED WASTE
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FRP	FIBERGLASS REINFORCED POLYVINYL
G	
GC	GRIT CLEANING
GCEN	GRAVITY CENTRATE
GLDI	GLASS LINED DUCTILE IRON
GLV	GLOBE VALVE
GR	GRIT
GSP	GALVINIZED STEEL PIPE
GV	GATE VALVE
GW	GROUNDWATER
H	
HCL	HYDROCHLORIC ACID
HPA	HIGH PRESSURE AIR
HPO	HIGH PRESSURE OIL
HPS	HIGH PRESSURE
HSL	STREAM HEATED
HW	SLUDGE HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
I	
IMLR	INTERMEDIATE MIXED LIQUOR RECYCLE
INF	INFLUENT
IPA	INTERMEDIATE PRESSURE AIR
IR	INTERMEDIATE RECYCLE
IRG	IRRIGATION
K	
KGV	KNIFE GATE VALVE
L	
LO	LUBE OIL
M	
M	MECHANICAL
MA	METHYL ALCOHOL (METHANOL)
MD	MOTORIZED DAMPER
MAS	METHYL ALCOHOL SOLUTION
ML	MIXED LIQUOR
N	
NAOCL	SODIUM HYPOCHLORITE
NG	NATURAL GAS
NPW	NON–POTABLE WATER
NPR	NON–POTABLE WATER RETURN
NPS	NON–POTABLE WATER SUPPLY
NSD	NON–SANITARY DRAIN
NV	NEEDLE VALVE
O	
OCD	ODOR CONTROL DRAIN
P	
PCA	PLANT COMPRESSED AIR
PC	PRIMARY SCUM
PD	PROCESS DRAIN
PE	PRIMARY EFFLUENT
PI	PRIMARY INFLUENT
POL	POLYMER
POLS	POLYMER SOLUTION
PSL	PRIMARY SLUDGE
PSK	PRIMARY SKIMMINGS
PW	POTABLE WATER
R	
RAS	RETURNED ACTIVATED SLUDGE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RECIRC	RECIRCULATE\RECIRCULATION
RGR	RETURNED GRIT
ROT	ROTARY VALVE
RV	RELEASE VALVE
RW	REUSE WATER
RWW	RAW WASTE WATER
S	
SAS	SCRUBBER AIR SAMPLING
SB	SODIUM BISULFIT
SBD	SCRUBBER BLOWDOWN
SBS	SODIUM BISULFITE SOLUTION
SC	SECONDARY SCUM
SCK	SLUDGE CAKE
SCR	SCREENINGS
SD	SULPHUR DIOXIDE LIQUID
SDAF	STORM DRAIN ABOVE FLOOR
SDBF	STORM DRAIN BELOW FLOOR
SDG	SULPHUR DIOXIDE GAS
SESL	SECONDARY EFFLUENT SLUDGE
SMP	SAMPLE
SNPW	SOFTENED NON–POTABLE WATER
SNPWV	SOFTENED NON–POTABLE WATER VENT
SP	SPARE PIPE OR FUTURE PIPE
SPD	SUMP PUMP DISCHARGE
SPRW	SPRAY WATER
SPW	SOFTENED POTABLE WATER
SR	SCRUBBER RECIRCULATION
SRV	SURGE RELIEF VALVE
SRW	SERVICE WATER
SSK	SECONDARY SKIMMINGS
SSL	SECONDARY SLUDGE
STM	STEAM
SU	STRUCTURAL UNDERDRAIN\FOOTING DRAIN
SUC	STRUCTURAL UNDERDRAIN COLLECTOR
SW	SANITARY WASTE
SWR	SEAL WATER
T	
THK EFF	THICKENED EFFLUENT
TSL	THICKENED SLUDGE
TO	THICKENER OVERFLOW
TPS	THICKENED PRIMARY SLUDGE
TWAS	THICKENED WASTE ACTIVIATED SLUDGE
U	
UTPS	UNTHICKENED PRIMARY SLUDGE
V	
V	VENT
VAC	VACUUM
VCP	VITRIFIED CLAY PIPE
W	
WAS	WASTE ACTIVATED SLUDGE

FACILITY DRAWINGS
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#	-	-	-	-	-	-	-

ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer CERTIFICATE NO. 33468 VAHID BAGHERI (Electrical) Date Signed 7-31-24 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

ABBREVIATIONS – 2

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CITY PROJECT NO. WS90400085
DATE: 08/2024
E-02 SHEET 93 OF 134
CAD FILE: CSELS40ABBREV2.dwg

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FOR CONSTRUCTION

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AREA CLASSIFICATIONS

	DESCRIPTION
DAMP	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 12 CONSTRUCTION (OR GASKETED AND SUITABLE FOR USE IS A WET LOCATION WHERE NEMA STANDARDS DO NOT APPLY) UNLESS OTHER-WISE NOTED.
WET	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 4X CONSTRUCTION (OR GASKETED AND SUITABLE FOR USE IN A WET LOCATION WHERE NEMA STANDARDS DO NOT APPLY) UNLESS OTHER-WISE NOTED.
CORROSIVE	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 4X NON-METALLIC CONSTRUCTION (OR CORROSION RESISTANT CONSTRUCTION SUITABLE FOR USE IN A WET LOCATION WHERE NEMA STANDARDS DO NOT APPLY) UNLESS OTHERWISE NOTED.
CLASS 1, DIV. 1 GROUP D	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL CONFORM TO N.E.C. REQUIREMENTS FOR THE HAZARDOUS AREA CLASSIFICATION SHOWN.

BREAKERS

SINGLE LINE	PLAN	
52 XXXX/XXXX	—	DRAWOUT MEDIUM OR LOW VOLTAGE POWER BREAKER UPPER NUMBER INDICATES LONG TIME TRIP SETTING LOWER NUMBER INDICATES BREAKER CONTINUOUS CURRENT RATING
XXXX/XXXX	CB	THERMAL-MAGNETIC CIRCUIT BREAKER TRIP RATING ABOVE; FRAME RATING BELOW. TYPICAL FOR OTHER TYPES OF BREAKERS. BREAKER TO BE 3 POLE UNLESS NOTED OTHERWISE AS 1P OR 2P
X/MCP Y Z	⧓	COMBINATION MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR, MAGNETIC CONTACTOR AND OVERLOAD PROTECTION X= AMPERE SIZE, Y= FVNR-FULL VOLTAGE, NON-REVERSING FVR- FULL VOLTAGE REVERSING RVNR-REDUCED VOLTAGE NON-REVERSING 2S1W-TWO SPEED, ONE WINDING 2S2W-TWO SPEED, TWO WINDING Z= NEMA SIZE
⊠ Y Z	⊠ Y Z	MOTOR STARTER WITH MAGNETIC CONTACTOR AND OVERLOAD PROTECTION Y= FVNR-FULL VOLTAGE, NON-REVERSING FVR- FULL VOLTAGE REVERSING RVNR-REDUCED VOLTAGE NON-REVERSING 2S1W-TWO SPEED, ONE WINDING 2S2W-TWO SPEED, TWO WINDING Z= NEMA SIZE

COMMUNICATION SYSTEMS

TTB	TELEPHONE TERMINAL BOARD 4FT X 8FT X 3/4 INCH UNLESS NOTED OTHERWISE
▼	TELEPHONE OUTLET, WALL TYPE (MOUNT 1'-6" AFF UNO)
▼	TELEPHONE OUTLET AND FLOOR BOX
▽	TELEPHONE/DATA OUTLET, WALL TYPE (MOUNT 1'-6" AFF UNO)
▽	TELEPHONE/DATA OUTLET AND FLOOR BOX
S C1	PAGING SPEAKER, WALL MOUNTED "H1" AND "C1" DENOTES TYPE. H=HORN, C=CONE
S H1 S H3	PAGING SPEAKER, WALL MOUNTED, BI-DIRECTIONAL NOTATIONS SAME AS ABOVE
S C2	PAGING SPEAKER, FLUSH MOUNTED CEILING TYPE
S	PAGING STATION, SURFACE MOUNTED
VC	REMOTE WALL MOUNTED VOLUME CONTROL. FOR CEILING SPEAKER (MOUNT UP 5'-0" AFF UNO)
A	PAGING SPEAKER AMPLIFIER ASSEMBLY

CONDUIT

———	EXPOSED CONDUIT
- - - -	UNDERGROUND DUCT BANK OR CONCEALED CONDUIT IN CONCRETE FLOOR, CEILING OR WALL UNLESS OTHERWISE INDICATED OR NOTED.
——◎ - - -◎	INDICATES CONDUIT TURNING UP OR TOWARD THE VIEWER.
——● - - -●	INDICATES CONDUIT TURNING DOWN OR AWAY FROM THE VIEWER.
1000	CONDUITS IDENTIFIED BY A NUMBER SHALL BE LISTED IN THE CONDUIT SCHEDULES
AA	CONDUITS IDENTIFIED BY LETTERS SHALL CONFORM TO THE TABLES IN THE LEGEND
——∃	CONDUIT STUBBED OUT AND CAPPED
∿	FLEXIBLE CONDUIT OR MANUFACTURER'S CABLE(S)
——┼——	TEE FITTING IN CONDUIT

CONDUIT CONTINUED

	DESCRIPTION
► XXXX	CONDUIT HOMERUN, XXX DENOTES DESTINATION CONTRACTOR SHALL FIELD ROUTE FROM EQUIPMENT TO DESIGNATED LOCATION
(2)-3"C, 3-#3/0, 1-#2G	DENOTES A QUANTITY OF TWO (2) 3-INCH CONDUITS EACH CONTAINING THREE NO. 3/0 AWG CONDUCTORS AND 1 NO. 2 AWG GROUND CONDUCTOR
2 PR #16 TWSH	DENOTES A QUANTITY OF TWO INSTRUMENT CABLES. EACH CABLE TO CONSIST OF TWO NO. 16 AWG CONDUCTORS TWISTED TOGETHER AND COVERED WITH A METALLIC SHIELD AND AN OVERALL PROTECTIVE JACKET. REFER TO THE SPECIFICATIONS FOR THE EXACT CABLE TO BE PROVIDED.
2 TR #16 TWSH	SAME AS ABOVE EXCEPT CABLE TO CONSIST OF THREE NO. 16 AWG CONDUCTORS TWISTED, SHIELDED AND COVERED WITH AN OVERALL PROTECTIVE JACKET. REFER TO THE SPECIFICATIONS FOR THE EXACT CABLE TO BE PROVIDED.
2 PR #16 TW	DENOTES A QUANTITY OF TWO INSTRUMENT CABLES. EACH CABLE TO CONSIST OF TWO NO. 16 AWG CONDUCTORS TWISTED TOGETHER AND AN OVERALL PROTECTIVE JACKET. REFER TO THE SPECIFICATIONS FOR THE EXACT CABLE TO BE PROVIDED.
(3)-4"C	THREE 4-INCH CONDUITS
——G——	BARE COPPER GROUNDING CONDUCTOR AWG #4/0 UNLESS NOTED OTHERWISE OR SPECIFIED

DESCRIPTION

CONTROL DIAGRAM CONDUCTORS

——┼——	CONDUCTORS NOT CONNECTED
—●—●—	CONDUCTORS CONNECTED
⬭	CONDUCTOR SHIELD
∞	CONDUCTOR SHIELD TWISTED PAIR
⬭	FIELD CONDUCTOR SHIELD
∞	FIELD CONDUCTOR SHIELD TWISTED PAIR
⏚	EARTH GROUND
⊥	CHASSIS GROUND
↓	NEUTRAL
o—>>—o	SEPARABLE CONNECTOR SIFICATION SHOWN.

CONTROL DIAGRAM COMPUTER CONTOL SYSTEM INPUT\OUTPUT

DI #	DISCRETE INPUT
DO #	DISCRETE OUTPUT
AI + - #	ANALOG INPUT
AO + - #	ANALOG OUTPUT

ELEMENTS

o-/\/\/-o	RESISTOR OR RESISTIVE ELEMENT
——⌒——	OVERLOAD RELAY THERMAL ELEMENT (HEATER)
o—⊓⊔⊓—o	STRIP HEATER OR HEATING ELEMENT
⁄*	HIGH VOLTAGE, GROUP OPERATED, AIR-BREAK SWITCH * CONTINUOUS AMPERE RATING

EQUIPMENT

SINGLE LINE	PLAN	
UH-_ _KW	UH-	UNIT HEATER NO. 1
WH-_ _KW	WH-	WATER HEATER NO. 1
DAMPER	DM	DAMPER MOTOR
MOV	MOV	MOTOR OPERATED VALVE "XXXX" DENOTES LOOP NUMBER TO BE OBTAINED FROM INSTRUMENTATION DRAWINGS
—	RCS	REMOTE CONTROL STATION

FIRE ALARM SYSTEMS

	DESCRIPTION
TYPE R	FIRE ALARM HEAT DETECTOR 135Y FIXED TEMPERATURE UNLESS OTHER- WISE NOTED. "200" DENOTES 200YF TYPE, "R" DENOTES FIXED TEMPERATURE RATE-OF-RISE TYPE.
2 I	FIRE ALARM DUCT SMOKE DETECTOR PHOTOCELL TYPE UNLESS OTHERWISE NOTED: "I" DENOTES IONIZATION TYPE.
2	FIRE ALARM DUCT SMOKE DETECTOR
FACP-	FIRE ALARM CONTROL PANEL NO. 1
FAVP-	FIRE ALARM VENTILATION PANEL NO. 1 (WITH GRAPHIC PANEL)
FARAP-	FIRE ALARM REMOTE ANNUNCIATOR NO. 1
M WP	FIRE ALARM MANUAL PULL STATION, MOUNT UP 4'-0" WP DENOTES WEATHERPROOF COVER
F	OUTDOOR WEATHERPROOF FIRE ALARM MASTER BOX
F	WP FIRE ALARM SPEAKER, MOUNT UP 7'-8"
S	FIRE ALARM STROBE, WALL MOUNT UP 6'-8" OR AT CEILING
F	FIRE ALARM HORN AND STROBE LIGHT COMBINATION, MOUNT UP 6'-8"
F	FIRE ALARM HORN AND STROBE LIGHT COMBINATION, CEILING MOUNT
⊘	SPRINKLER VALVE SUPERVISORY SWITCH
F	FIRE ALARM BELL
FB	WEATHERPROOF HI-DENSITY FIRE ALARM STROBE LIGHT
◇	SPRINKLER FLOW ALARM SWITCH
CM	ADDRESSABLE CONTROL MODULE
MM	ADDRESSABLE MONITOR MODULE
SD	SMOKE DETECTOR

GROUNDING

SINGLE LINE	PLAN	
⏚	⏚	GROUND ROD
—	⏚	GROUND ROD IN GROUNDING WELL
—	■	GROUND GRID CABLE CONNECTION, WELDED

LIGHTING

$\$_a$	SINGLE POLE SWITCH "a" INDICATES SWITCHLEG SHALL CONTROL LUMINAIRES WITH "a" DESIGNATION
$\$^2_b$	DOUBLE POLE SWITCH "b" INDICATES SWITCHLEG SHALL CONTROL LUMINAIRES WITH "b" DESIGNATION
$\$^3_c$	THREE WAY SWITCH "c" INDICATES SWITCHLEG SHALL CONTROL LUMINAIRES WITH "c" DESIGNATION
$\$^4_d$	FOUR WAY SWITCH "d" INDICATES SWITCHLEG SHALL CONTROL LUMINAIRES "d" DESIGNATION
$\$^M$	SINGLE POLE, DOUBLE THROW MOMENTARY CONTACT SWITCH, CENTER OFF
$\$^P$	SINGLE POLE SWITCH AND PILOT LIGHT
PB PB	PULL BOX
Ca	LIGHTING CONTACTOR WITH NUMBER OF POLES AS INDICATED a-CONTACTOR NUMBER (C1, C2, ETC.)
ALCP-X OR ALP-X	AREA LIGHTING CONTACTOR PANEL X= PANEL NAME
TM	TIME SWITCH
LP-X OR LP-X	LIGHTING PANELBOARD NO. X (240/120V OR 208/120V) X= PANELBOARD NAME
PP-X OR PP-X	POWER DISTRIBUTION PANELBOARD NO. X (480V OR 480/277V) X= PANELBOARD NAME
XX X Y b NL	TYPICAL LUMINAIRES SEE SCHEDULE FOR SPECIFICS "XX"-FIXTURE TYPE "b"-CONTROLLED BY SWITCH "b" X= PANELBOARD NAME Y= CIRCUIT NUMBER NL= NIGHT LIGHT (UNSWITCHED)
XX NL X Y b	FLUORESCENT TYPE LUMINAIRES. SEE SCHEDULE FOR SPECIFICS. NOTATIONS SAME AS ABOVE.

LIGHTING CONTINUED

XX NL X Y a	FLUORESCENT TYPE LUMINAIRES. SEE SCHEDULE FOR SPECIFICS. NOTATIONS SAME AS ABOVE.
TYPE	INDICATES ALL LUMINAIRES WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE TYPE "A" UNLESS OTHERWISE NOTED. SEE LIGHTING FIXTURE SCHEDULE FOR TYPES
R	ALARM BEACON. COLOR AS NOTED. SEE SPECIFICATIONS FOR REQUIREMENTS.
E1 LP-X Y	EMERGENCY LUMINAIRES WITH BATTERY PACK "E1" FIXTURE TYPE. SEE SCHEDULE FOR SPECIFICS. X= PANELBOARD NAME Y= CIRCUIT NUMBER
REM	REMOTE EMERGENCY LUMINAIRES "E2"-FIXTURE TYPE. SEE SCHEDULE FOR SPECIFICS
⊗ X1 LP-3 Y *	CEILING MOUNTED EXIT SIGN "X1" LUMINAIRE TYPE. SEE SCHEDULE FOR SPECIFICS X= PANELBOARD NAME Y= CIRCUIT NUMBER * SP= SELF POWERED
→ X2 ⊗ LP-X Y *	WALL OUTLET EXIT SIGN. ARROW INDICATES DIRECTION OF EXCESS "X2" LUMINAIRE TYPE. SEE SCHEDULE FOR SPECIFICS. X= PANELBOARD NAME Y= CIRCUIT NUMBER * SP= SELF POWERED

MISCELLANEOUS

SINGLE LINE	PLAN	
┼	—	CONDUCTORS OR CONDUITS CROSSING PATHS BUT NOT CONNECTED
┼●	—	CONDUCTORS ELECTRICALLY CONNECTED
⬚	—	INDICATES LIMITS OF EQUIPMENT OR WIRING ENCLOSURE
AMPS	—	FUSE, AMPERE RATING AS NOTED
⌒⌒⌒	—	INDUCTOR
K	—	KEY INTERLOCK
E K	—	ELECTRONIC KEY INTERLOCK
—	∿	CORD AND PLUG CONNECTION.
—	T	THERMOSTAT
—	OS	OCCUPANCY SENSOR
—	PC	PHOTOCELL
—	ESA	EMERGENCY SHOWER ALARM STATION
—	◷	SINGLE FACE CLOCK AND CLOCK HANGER OUTLET
⟨		JUMPER (OPTION 1)
⎡		JUMPER (OPTION 2)

FACILITY DRAWINGS
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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 33468
VAHID BAGHERI
ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

SYMBOLS AND LEGENDS – 1

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CITY PROJECT NO. WS90400085
DATE: 08/2024
E-03 SHEET 94 OF 134
CAD FILE: CSELS40LEGEND1.dwg

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POWER SWITCHES

SINGLE LINE	PLAN	DESCRIPTION
* /		NON-FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, * AMPERE RATING NOTED IF OTHER THAN 30A
* *	F	FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, AMPERE RATING AND FUSE SIZE AS NOTED *AMPERE RATING NOTED IF OTHER THAN 30A *FUSE RATING, EXAMPLE 15A
	P 2	MANUAL MOTOR STARTER WITH THERMAL OVERLOAD PROTECTION "P" INDICATES WITH PILOT LIGHT "2" INDICATES NUMBER OF POLES
«	——	DRAWOUT TYPE EQUIPMENT OR DEVICE
▷	——	MEDIUM VOLTAGE CABLE TERMINATION
	——	MEDIUM VOLTAGE AIR INTERRUPTER SWITCH
	——	MEDIUM VOLTAGE FUSED AIR INTERRUPTER SWITCH
#	——	MEDIUM VOLTAGE FUSED MOTOR CONTROLLER *AT=AUTOTRANSFORMER TYPE
KVA # VOLTS	T	TRANSFORMER, RATINGS AND CONNECTIONS AS NOTED. UNLESS OTHERWISE NOTED ON THE ONE LINE DIAGRAMS ALL DRY TYPE TRANSFORMERS SERVICING ADMINISTRATIVE AND LABORATORY SPACES SHALL HAVE A K FACTOR OF 13. ALL OTHER DRY TYPE TRANSFORMERS SHALL HAVE A K-4 RATING. ISOLATION TRANSFORMERS SHALL HAVE A K-20 RATING
M * *	——	METER * WM-WATTMETER WHM-WATTHOUR METER WHDM-WATTHOUR DEMAND METER WHDR-WATTHOUR DEMAND RECORDER PF-POWER FACTOR METER TRANSDUCER * AX-CURRENT TRANSDUCER WX-WATT TRANSDUCER
XX/XX (*) CT	——	CURRENT TRANSFORMER *QUANTITY XXXX = PRIMARY AMPERE RATING
XX/XX (*) **	——	POTENTIAL TRANSFORMER (PT) OR CONTROL POWER TRANSFORMER (CPT) *QUANTITY XXXX = PRIMARY VOLTAGE RATING
G#	——	GENERATOR WITH GENERATION NUMBER, RATINGS AND CONNECTIONS AS NOTED IN CALL-OUT ON DRAWING
S N RATE ATS-#	ATS-#	AUTOMATIC TRANSFER SWITCH (ATS) "N" INDICATES NORMAL SOURCE "S" INDICATES STANDBY SOURCE "RATE" INDICATES CONTINUOUS CURRENT RATING "#" INDICATES ATS NAME
VFD	VFD	AC MOTOR SPEED CONTROLLER (VARIABLE FREQUENCY DRIVE)
SCR	SCR	DC MOTOR SPEED CONTROLLER (SILICON CONTROLLED RECTIFIER)
#	MTR	MOTOR, NUMERAL INDICATES HORSEPOWER
VS VM *	——	VOLTMETER WITH SWITCH, 3 PHASE * = SCALE
VS AM *	——	AMMETER WITH SWITCH, 3 PHASE * = SCALE
LA	——	LIGHTNING ARRESTOR
	——	SURGE SUPPRESSER
TVSS	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR (POWER DISTRIBUTION TYPE)
* TAGNUMBER	——	PILOT LIGHT, COLOR AS NOTED A-AMBER, B-BLUE, C-CLEAR G-GREEN, R-RED, W-WHITE
*	——	SPECIAL CAPACITOR *SC-SURGE CAPACITOR PR-POWER FACTOR CORRECTION CAPACITOR
——	▣	CONTROL STATION (STANDMOUNT OR WALLMOUNT) SEE SCHEMATIC DIAGRAMS AND/OR INSTRUMENTATION DIAGRAMS FOR TYPE AND QUANITY OF OPERATORS.
TAGNUMBER	TAGNUMBER ☐ OR SV	SOLENOID OPERATED VALVE
ETM	——	ELAPSED TIME METER

PUSH BUTTONS

SINGLE LINE	DESCRIPTION
X X # (X)	EMERGENCY STOP PUSHBUTTON WITH RED MUSHROOM HEAD OPERATOR (MAINTAINED CONTACT)
X X # (X)	PUSHBUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY CLOSED
X X # (X)	PUSHBUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY OPEN
X X # (X)	START-STOP PUSHBUTTON CONTROL STATION, MAINTAINED CONTACT WITH LOCKOUT DEVICE ON STOP
X X A B XO # (X)	2 POSITION SELECTOR SWITCH, NORMALLY CLOSED
X X A B XO # (X)	2 POSITION SELECTOR SWITCH, NORMALLY OPEN
X X A B XO OX # (X)	2 POSITION 2 POLE SELECTOR SWITCH
X X LOCAL COMPUTER XO OX OX # (X)	2 POSITION 3 POLE SELECTOR SWITCH
X X A B C XOO # (X)	3 POSITION SELECTOR SWITCH, NORMALLY CLOSED
X X A B C XOO # (X)	3 POSITION SELECTOR SWITCH, NORMALLY OPEN
X X A B C XOO OXO OOX # (X)	3 POSITION 3 POLE SELECTOR SWITCH
X X A B C D XOOO # (X)	4 POSITION SELECTOR SWITCH, NORMALLY OPEN

PUSH BUTTONS CONT.

SINGLE LINE	DESCRIPTION
X X A B C D XOOO # (X)	4 POSITION SELECTOR SWITCH, NORMALLY CLOSED
X X A B C D XOOO OXOO OOXO OOOX # (X)	4 POSITION 4 POLE SELECTOR SWITCH

RELAY CONTACTS

SINGLE LINE	DESCRIPTION
X M # (X)	MOTOR STARTER COIL, NUMBER AS INDICATED
X TR # (X)	TIMING RELAY RANGE AS NOTED STEPPING AS NOTED
X CR # (X)	CONTROL RELAY COIL, NUMBER AS INDICATED
X M (X)	NORMALLY OPEN MOTOR STARTER CONTACT
X M # (X)	NORMALLY CLOSED MOTOR STARTER CONTACT
X R # (X)	NORMALLY OPEN RELAY CONTACT
X R # (X)	NORMALLY CLOSED RELAY CONTACT
X X # (X)	NOTC-NORMALLY OPEN TIMED CLOSING, WHEN ENERGIZED
X X # (X)	NCTO-NORMALLY CLOSED TIMED OPENING, WHEN ENERGIZED
X X # (X)	NOTO-NORMALLY OPEN, TIMED OPENING WHEN DE-ENERGIZED
X X # (X)	NCTC-NORMALLY CLOSED, TIMED CLOSING WHEN DE-ENERGIZED

SWITCH CONTACTS

SINGLE LINE	PLAN	DESCRIPTION
——	TAGNUMBER ☐ OR X 0000	FIELD MOUNTED INSTRUMENT X= DESIGNATION TO BE OBTAINED FROM INSTRUMENTATION DRAWINGS 0000= LOOP NUMBER TO BE OBTAINED FROM INSTRUMENTATION DRAWINGS
XO		AUXILLARY SWITCH CONTACT NORMALLY CLOSED
XO		AUXILLARY SWITCH CONTACT NORMALLY OPEN
X X # (X)		LIQUID LEVEL (FLOAT) SWITCH NORMALLY OPEN, CLOSES ON RISING LEVEL
X X # (X)		LIQUID LEVEL (FLOAT) NORMALLY CLOSED, OPENS ON RISING LEVEL
X X # (X)		PRESSURE SWITCH NORMALLY OPEN, CLOSES ON RISING PRESSURE
X X # (X)		PRESSURE SWITCH NORMALLY CLOSED, OPENS ON DROPPING PRESSURE
X X V # (X)		VACUUM SWITCH NORMALLY OPEN, CLOSES ON RISING PRESSURE
X X V # (X)		VACUUM SWITCH NORMALLY CLOSED, OPENS ON DROPPING PRESSURE
X X # (X)		DIFFERENTIAL PRESSURE SWITCH NORMALLY OPEN, CLOSES ON RISING DIFFERENTIAL PRESSURE
X X # (X)		DIFFERENTIAL PRESSURE SWITCH NORMALLY CLOSED, OPENS ON RISING DIFFERENTIAL PRESSURE
X X # (X)		TEMPERATURE SWITCH NORMALLY OPEN, CLOSES ON RISING TEMPERATURE
X X # (X)		TEMPERATURE SWITCH NORMALLY CLOSED, OPENS ON RISING TEMPERATURE
X X # (X)		FLOW SWITCH (AIR, WATER, ETC.) NORMALLY OPEN, CLOSES ON INCREASED FLOW
X X # (X)		FLOW SWITCH (AIR, WATER, ETC.) NORMALLY CLOSED, OPENS ON INCREASED FLOW
X X # (X)		POSITION (LIMIT) SWITCH NORMALLY OPEN

SWITCH CONTACTS CONT.

SINGLE LINE	DESCRIPTION
X X # (X)	POSITION (LIMIT) SWITCH NORMALLY OPEN-HELD CLOSED
X X # (X)	NORMALLY CLOSED
X X # (X)	NORMALLY CLOSED-HELD OPEN
X X # (X)	TORQUE SWITCH NORMALLY OPEN, CLOSES ON HIGH TORQUE
X X # (X)	TORQUE SWITCH NORMALLY CLOSED, OPENS ON HIGH TORQUE
X X * # (X)	PUSH-TEST, 110V S6 LAMP UNLESS NOTED, LETTER IS LENS COLOR * R-RED G-GREEN B-BLUE

RECEPTACLES

SYMBOL	DESCRIPTION
LP-X * Y	208V, 3P, 4W, RECEPTACLE *AMPERE RATING AS NOTED X= PANELBOARD NUMBER Y= CIRCUIT NUMBER
LP-X Y	COMBINATION 20A, 120V, 2P, 3W DUPLEX AND 20A, 240V, 2P,3W SINGLE RECEPTACLES UNDER COMMON PLATE X= PANELBOARD NUMBER Y= CIRCUIT NUMBER
LP-X Y	DOUBLE RECEPTACLE (QUAD), 20A, 120V, 2P, 3W MOUNTED IN 2 GANG BOX. X= PANELBOARD NUMBER Y= CIRCUIT NUMBER
*	240V, 20, 3W, RECEPTACLE *AMPERE RATING AS NOTED
	MULTI-OUTLET ASSEMBLY
TYPE	FLOOR OUTLET BOX WITH TYPE OUTLET INDICATED
LP-X * Y	480V, 3P, 4W RECEPTACLE AND DISCONNECT SWITCH *AMPERE RATING AS NOTED X= PANELBOARD NUMBER Y= CIRCUIT NUMBER
LP-X * Y	DUPLEX RECEPTACLE, 20A, 120V, 2P, 3W UNLESS OTHERWISE NOTED * C-MOUNTED ABOVE COUNTER-TOP GF- GROUND FAULT INTERRUPTER TYPE WP-WEATHERPROOF T-TRANSIENT VOLTAGE SURGE SUPPRESSER X= PANELBOARD NUMBER Y= CIRCUIT NUMBER
LP-X * Y **	240V, 3P, 4W, RECEPTACLE **AMPERE RATING AS NOTED *WP= WEATHER PROOF XP= EXPLOSION PROOF X= PANELBOARD NUMBER Y= CIRCUIT NUMBER

SECURITY SYSTEMS

SYMBOL	DESCRIPTION
DS	SECURITY SYSTEM DOOR OR SWITCH
WS	SECURITY SYSTEM WINDOW SWITCH
KP	SECURITY SYSTEM KEY PAD
CR	SECURITY SYSTEM CARD ACCESS READER
GB	GLASS BREAK DETECTOR
MD	SECURITY ALARM MOTION DETECTOR
CCTV	CLOSED CIRCUIT TV CAMERA
PTZ	PAN, TILT, ZOOM CAMERA LENS CONTROLS

FACILITY DRAWINGS
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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

ENGINEERING

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 33468
VAHID BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

SYMBOLS AND LEGENDS – 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-04 SHEET 95 OF 134
CAD FILE: CSELS40LEGEND2.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

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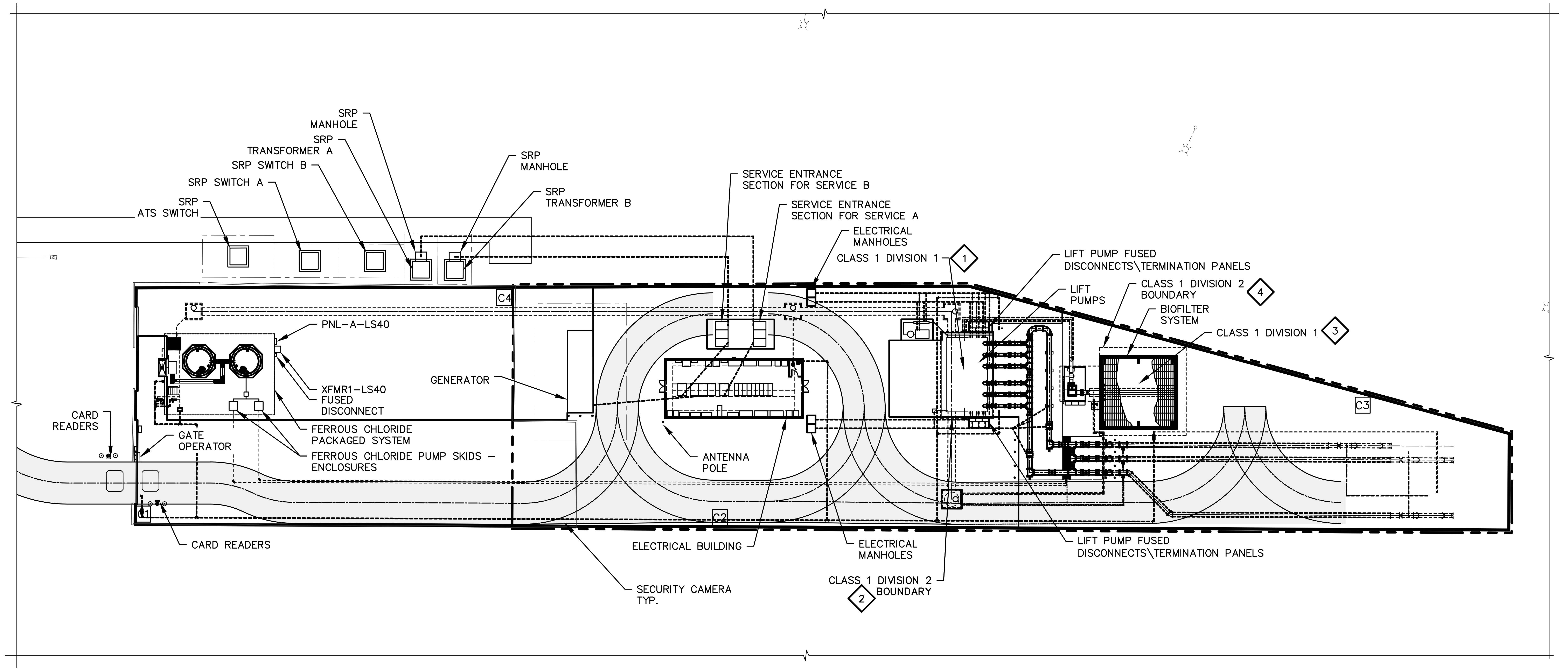
SRP MANHOLE
SRP TRANSFORMER A
SRP SWITCH B
SRP SWITCH A
SRP ATS SWITCH
SRP MANHOLE
SRP TRANSFORMER B
SERVICE ENTRANCE SECTION FOR SERVICE B
SERVICE ENTRANCE SECTION FOR SERVICE A
ELECTRICAL MANHOLES
CLASS 1 DIVISION 1
1
LIFT PUMP FUSED DISCONNECTS\TERMINATION PANELS
LIFT PUMPS
CLASS 1 DIVISION 2 BOUNDARY
4
BIOFILTER SYSTEM
CLASS 1 DIVISION 1
3
C4
PNL-A-LS40
XFMR1-LS40 FUSED DISCONNECT
GENERATOR
FERROUS CHLORIDE PACKAGED SYSTEM
FERROUS CHLORIDE PUMP SKIDS – ENCLOSURES
CARD READERS
GATE OPERATOR
ANTENNA POLE
C3
C2
C1
CARD READERS
ELECTRICAL BUILDING
ELECTRICAL MANHOLES
LIFT PUMP FUSED DISCONNECTS\TERMINATION PANELS
SECURITY CAMERA TYP.
CLASS 1 DIVISION 2 BOUNDARY
2

0 16 32 64
1/32" = 1'-0"

GENERAL NOTES:

1. PRIOR TO THE BID, THE CONTRACTOR SHALL VISIT THE PROJECT SITE AND INVESTIGATE THE DETAILS OF WORK ASSOCIATED WITH THIS PROJECT. NOT ALL DETAILS ARE INCLUDED IN THE BID DOCUMENTS. A SITE VISIT INVESTIGATION PRIOR TO THE BID IS REQUIRED.
2. THIS DRAWING DOES NOT INDICATE ALL THE PROJECT REQUIREMENTS. THE PROJECT REQUIREMENTS ARE INDICATED IN VARIOUS ELECTRICAL AND INSTRUMENTATION DRAWINGS AND SPECIFICATIONS. ALL DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
3. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE HIGHER RATING DEVICE AND EQUIPMENT, THE FURTHER DISTANCE, ETC..
4. REFER TO NON-ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS THAT ARE NOT INDICATED ON THE ELECTRICAL DRAWINGS. THESE REQUIREMENTS MAY BE ELECTRICAL OR NON-ELECTRICAL WORK.
5. CIRCUITRY IS NOT SHOWN INTENTIONALLY. REFER TO OTHER DRAWINGS AND SPECIFICATIONS FOR COMPLETE CONDUIT AND CONDUCTOR REQUIREMENTS, INCLUDING BUT NOT LIMITED TO: SINGLE LINE DIAGRAMS, PANEL SCHEDULES, AND BLOCK DIAGRAMS
6. CONDUIT ROUTING IS NOT SHOWN INTENTIONALLY. CONDUIT ROUTING SHALL BE AS PERMITTED BY THE SPECIFICATIONS.
7. WHERE THE CONDUITS ARE INSTALLED UNDER EXISTING CONCRETE OR ASPHALT: SAW CUT AND REMOVE CONCRETE/ASPHALT; TRENCH, INSTALL CONDUITS, AND BACKFILL; AND INSTALL CONCRETE/ASPHALT AS REQUIRED TO MATCH EXISTING CONDITIONS.
8. EXISTING ITEMS ARE INDICATED AS EXISTING. ALL ITEMS ARE NEW UNLESS INDICATED EXISTING.
9. FURNISH AND INSTALL A 20-AMP, 120V, WEATHERPROOF, GFCI RECEPTACLE WITHIN 25 FEET OF EACH HVAC EQUIPMENT EVEN IF THEY ARE NOT INDICATED ON THE DRAWINGS.
10. FURNISH AND INSTALL A FUSED DISCONNECT SWITCH AT EACH HVAC EQUIPMENT EVEN IF THEY ARE NOT INDICATED ON THE DRAWINGS. UNLESS INDICATED OTHERWISE, FURNISH AND INSTALL A 60A, 480V, NEMA 4X SWITCH WITH FUSES PER MANUFACTURER'S RECOMMENDATION.
11. FOR EACH SPLIT SYSTEM AIR CONDITIONING UNIT, FURNISH AND INSTALL 3/4-INCH CONDUIT FROM THE CONDENSER TO THE AIR HANDLING UNIT WITH 4-#12, #12GND FOR CONTROL.
12. FOR EACH THERMOSTAT, FURNISH AND INSTALL 3/4-INCH CONDUIT FROM THE THERMOSTAT TO THE HVAC EQUIPMENT CONTROLLER WITH MULTI-CONDUCTOR CABLE CONTROL.
13. CONTRACTOR TO FIELD VERIFY THE LOCATION OF THE STORM DRAIN AND MOVE SRP EQUIPMENT ACCORDINGLY WITHOUT REDUCING THE CLEARANCE REQUIRED AS SHOWN BY THE DASHED LINES.

KEY NOTES:

1. ENTIRE WETWELL SPACE.
2. AREAS WITHIN THREE (3) FEET OF THE WETWELL PERIMETER.
3. ENTIRE BIOFILTER SPACE.
4. AREAS WITHIN 3 FEET OF LEAKAGE SOURCES SUCH AS BIOFILTER, BLOWER, DAMPER, PIPES, DUCTWORKS, AND VESSELS.

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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

OVERALL SITE PLAN

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-05
SHEET 96 OF 134
CAD FILE: CSELS40EP01.dwg

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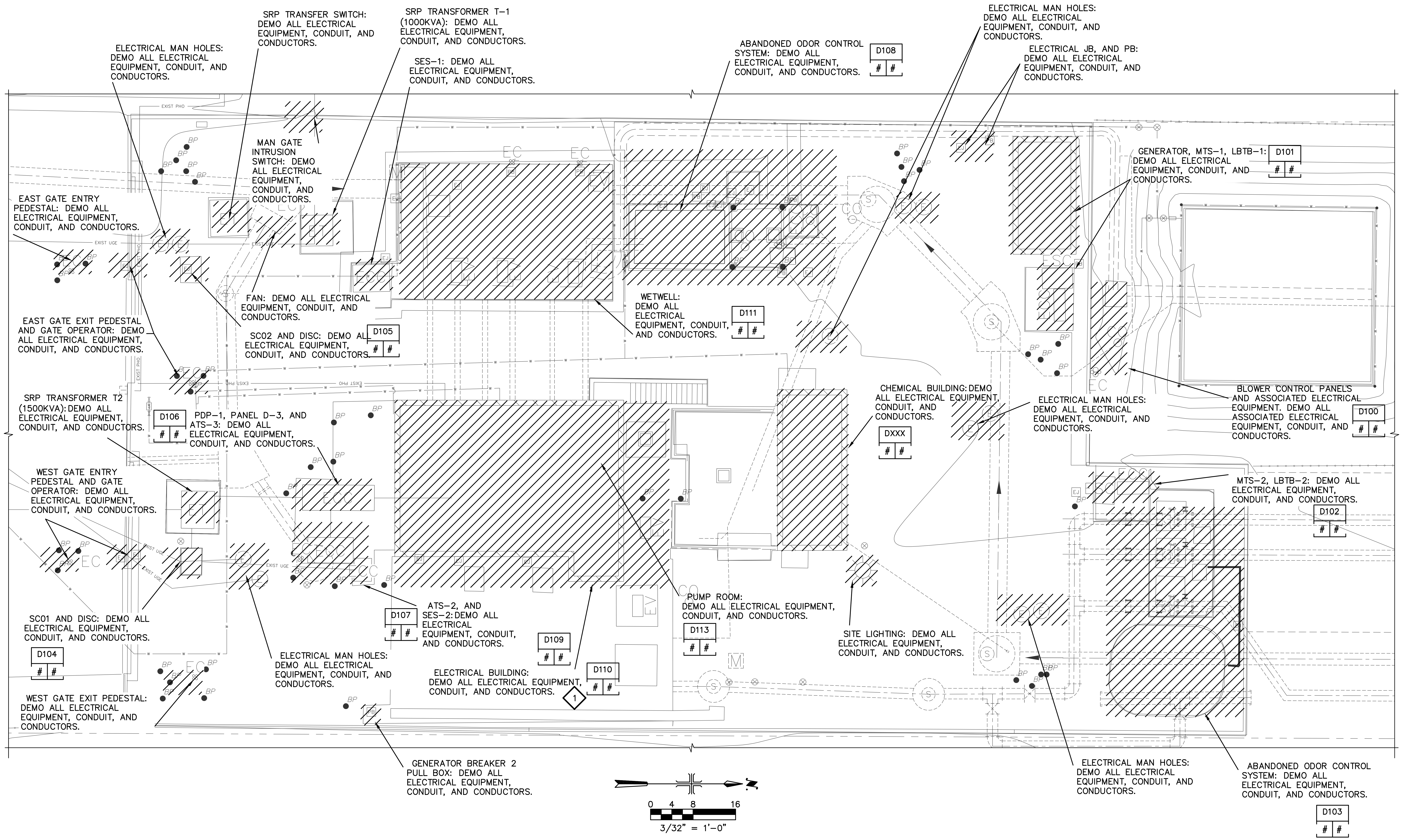
ELECTRICAL MAN HOLES: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
SRP TRANSFER SWITCH: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
SRP TRANSFORMER T-1 (1000KVA): DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
SES-1: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
ABANDONED ODOR CONTROL SYSTEM: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D108
# #
ELECTRICAL MAN HOLES: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
ELECTRICAL JB, AND PB: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
MAN GATE INTRUSION SWITCH: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
EAST GATE ENTRY PEDESTAL: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
GENERATOR, MTS-1, LBTB-1: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D101
# #
FAN: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
WETWELL: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D111
# #
EAST GATE EXIT PEDESTAL AND GATE OPERATOR: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
SC02 AND DISC: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D105
# #
CHEMICAL BUILDING: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
DXXX
# #
ELECTRICAL MAN HOLES: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
BLOWER CONTROL PANELS AND ASSOCIATED ELECTRICAL EQUIPMENT. DEMO ALL ASSOCIATED ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D100
# #
SRP TRANSFORMER T2 (1500KVA): DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D106
# #
PDP-1, PANEL D-3, AND ATS-3: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
WEST GATE ENTRY PEDESTAL AND GATE OPERATOR: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
MTS-2, LBTB-2: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D102
# #
SC01 AND DISC: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D104
# #
ATS-2, AND SES-2: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D107
# #
PUMP ROOM: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D113
# #
D109
# #
SITE LIGHTING: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
ELECTRICAL MAN HOLES: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
ELECTRICAL BUILDING: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D110
# #
1
WEST GATE EXIT PEDESTAL: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
GENERATOR BREAKER 2 PULL BOX: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
ELECTRICAL MAN HOLES: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
ABANDONED ODOR CONTROL SYSTEM: DEMO ALL ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS.
D103
# #
EXIST PHO
EXIST UGE
BP
EC
CO
S
M
EV
ESC
EJ
0 4 8 16
3/32" = 1'-0"

GENERAL NOTES:

1. PRIOR TO THE BID, THE CONTRACTOR SHALL VISIT THE PROJECT SITE AND INVESTIGATE THE DETAILS OF WORK ASSOCIATED WITH THIS PROJECT. NOT ALL DETAILS ARE INCLUDED IN THE BID DOCUMENTS. A SITE VISIT INVESTIGATION PRIOR TO THE BID IS REQUIRED.
2. THIS DRAWING DOES NOT INDICATE ALL DEMOLITION REQUIREMENTS FOR THIS PROJECT. THE EXISTING PROJECT CONDITIONS (STRUCTURES, POLES, EQUIPMENT, UNDERGROUND AND ABOVEGROUND PIPES AND CONDUITS, AND ETC...) ARE INDICATED ON NON-ELECTRICAL DRAWINGS INCLUDING BUT NOT LIMITED TO CIVIL AND MECHANICAL DRAWINGS. REFER TO NON-ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION NOT INDICATED ON THIS DRAWING. ALL CONTRACT DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
3. FOR CIRCUITS BEING DEMOLISHED, REMOVE ASSOCIATED CONDUCTORS, REMOVE ASSOCIATED ABOVEGROUND CONDUITS (INCLUDING FITTINGS AND SUPPORTS), AND ABANDON BELOW GRADE CONDUITS IN PLACE. CUT CONDUIT STUB-UPS FLUSH WITH CONCRETE PAD OR 12" BELOW GRADE AND ABANDON REMAINING UNDERGROUND CONDUIT IN PLACE. DEMOLISHED CONDUCTORS SHALL ALWAYS BE DISCONNECTED AND REMOVED BACK TO SOURCE UNLESS OTHERWISE INDICATED.
4. DISCONNECT AND REMOVE EQUIPMENT AND ASSOCIATED HARDWARE AND LABELING IN ITS ENTIRETY AS INDICATED ON THE PLANS. PATCH AND, OR PAINT ANY EXISTING HOLES OR OUTLINES LEFT FROM DEMOLISHED EQUIPMENT AS NECESSARY TO MINIMIZE INDICATIONS OF PREVIOUS EQUIPMENT LOCATIONS.
5. ALL DEMOLISHED EQUIPMENT AND MATERIAL NOT BEING SALVAGED BY THE OWNER SHALL BECOME PROPERTY OF THE CONTRACTOR FOR PROPER REMOVAL AND DISPOSAL.
6. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO DETERMINE IF ANY EQUIPMENT OR MATERIALS ARE TO BE SALVAGED TO THE OWNER. CONTRACTOR SHALL PROVIDE PROPER PROTECTION, STORAGE AND TRANSPORTATION OF SALVAGED EQUIPMENT TO AN OWNER DESIGNATED DROP OFF LOCATION.
7. USE IF APPROPRIATE: ELECTRICAL DEMOLITION INCLUDES THE REMOVAL OF ANY ELECTRICAL EQUIPMENT CONCRETE PADS AND/OR EQUIPMENT FOUNDATIONS UNLESS OTHERWISE INDICATED.
8. REFER TO DEMOLITION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS NOT INDICATED ON THIS DRAWING.
9. COORDINATE WORK WITH THE UTILITY COMPANY. REFER TO DEMOLITION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
10. REMOVE ELECTRICAL, INSTRUMENTATION, AND CONTROL DEVICES, EQUIPMENT, EXPOSED CONDUITS, CONDUCTORS, AND THEIR ASSOCIATED APPURTENANCES. VERIFY WITH OWNER PRIOR TO DISCONNECTION AND REMOVAL OF THE ITEMS. RETAIN AND DELIVER THE ITEMS THAT THE OWNER WISHED TO KEEP. DISPOSE OF THE REMAINDER. REFER TO DEMOLITION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

KEY NOTES:

◇1 KEEP AND REUSE EXISTING TRIPOD ANTENNA POLE ON TOP OF EXITING ELECTRICAL BUILDING.

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#						

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
Date Signed 7-31-24

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

DEMO SITE PLAN

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CITY PROJECT NO. WS90400085
DATE: 08/2024
E-06 SHEET 97 OF 134
CAD FILE: CSELS40EM01.dwg

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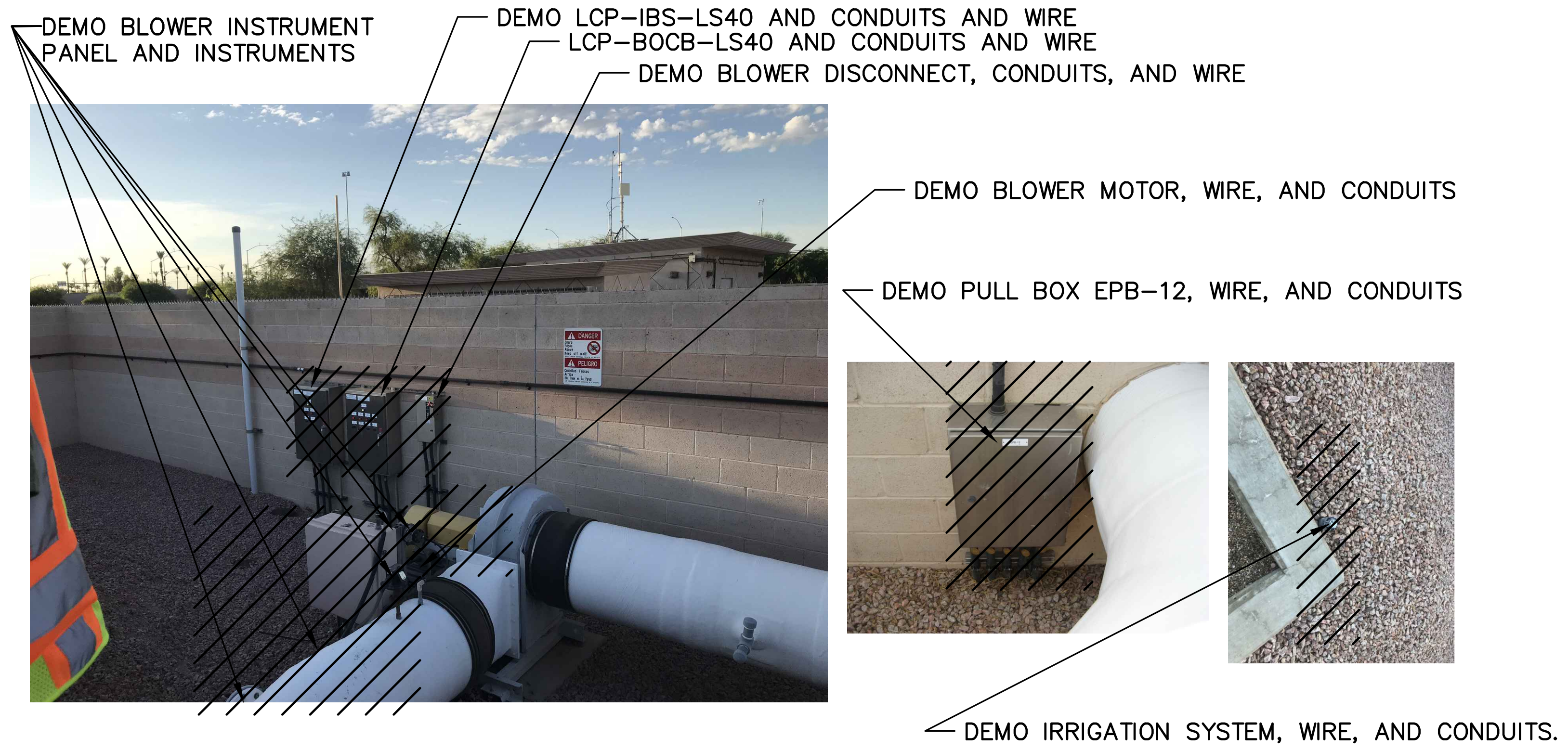
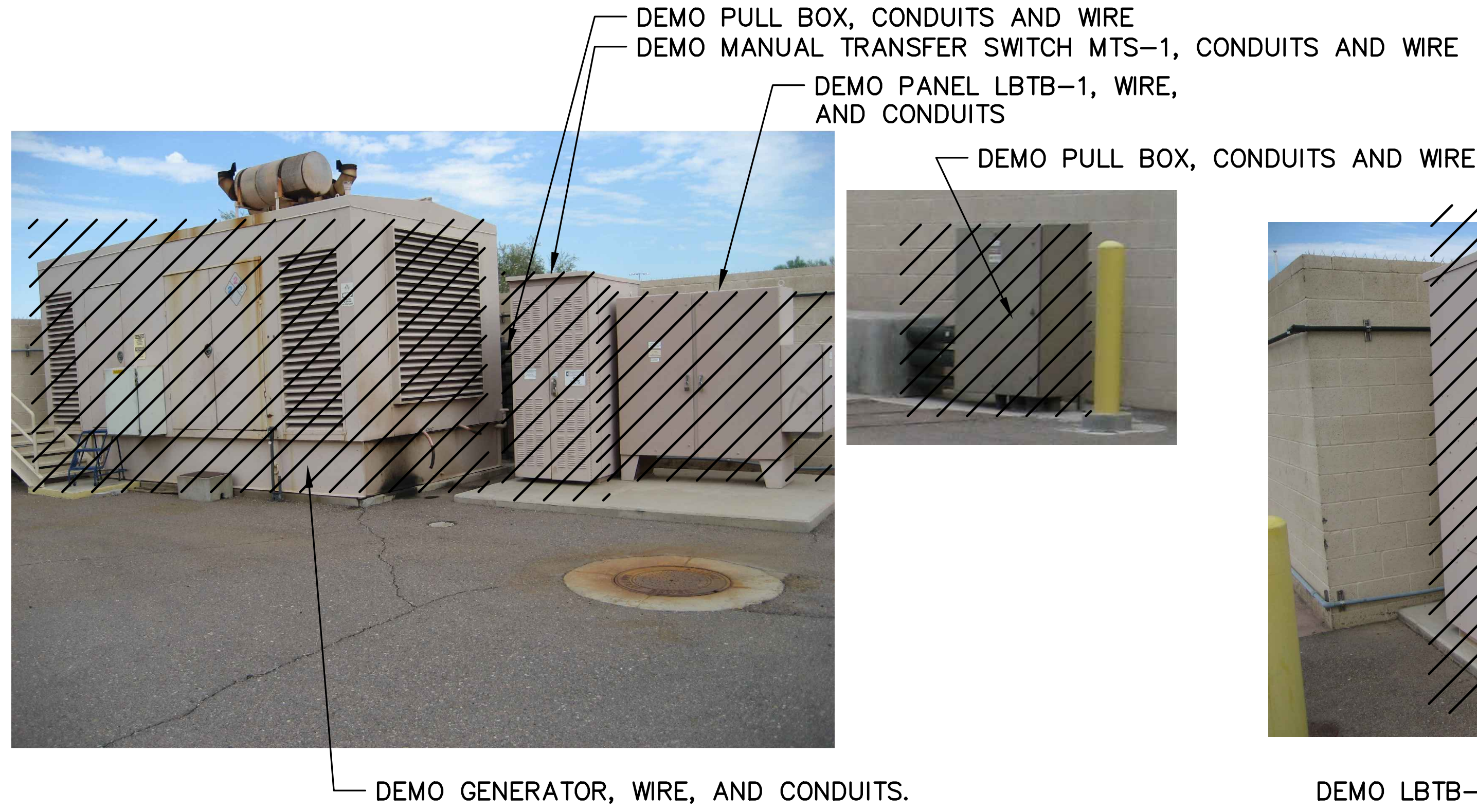

DEMO BLOWER INSTRUMENT PANEL AND INSTRUMENTS
DEMO LCP–IBS–LS40 AND CONDUITS AND WIRE
LCP–BOCB–LS40 AND CONDUITS AND WIRE
DEMO BLOWER DISCONNECT, CONDUITS, AND WIRE
DEMO BLOWER MOTOR, WIRE, AND CONDUITS
DEMO PULL BOX EPB–12, WIRE, AND CONDUITS
DEMO IRRIGATION SYSTEM, WIRE, AND CONDUITS.

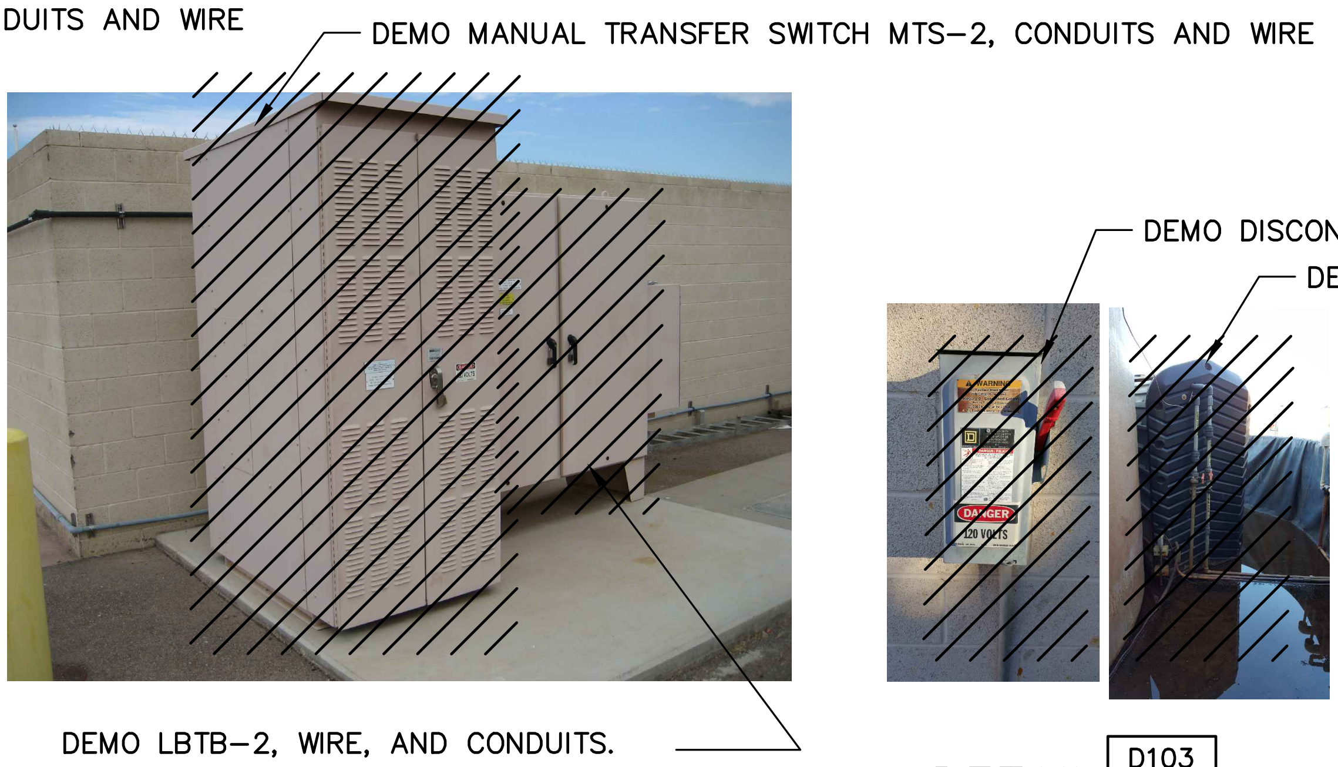
DETAIL D100 # # **BIOFILTER EQUIPMENT DEMO DETAILS**

SCALE = NONE


DEMO PULL BOX, CONDUITS AND WIRE
DEMO MANUAL TRANSFER SWITCH MTS–1, CONDUITS AND WIRE
DEMO PANEL LBTB–1, WIRE, AND CONDUITS
DEMO PULL BOX, CONDUITS AND WIRE
DEMO GENERATOR, WIRE, AND CONDUITS.

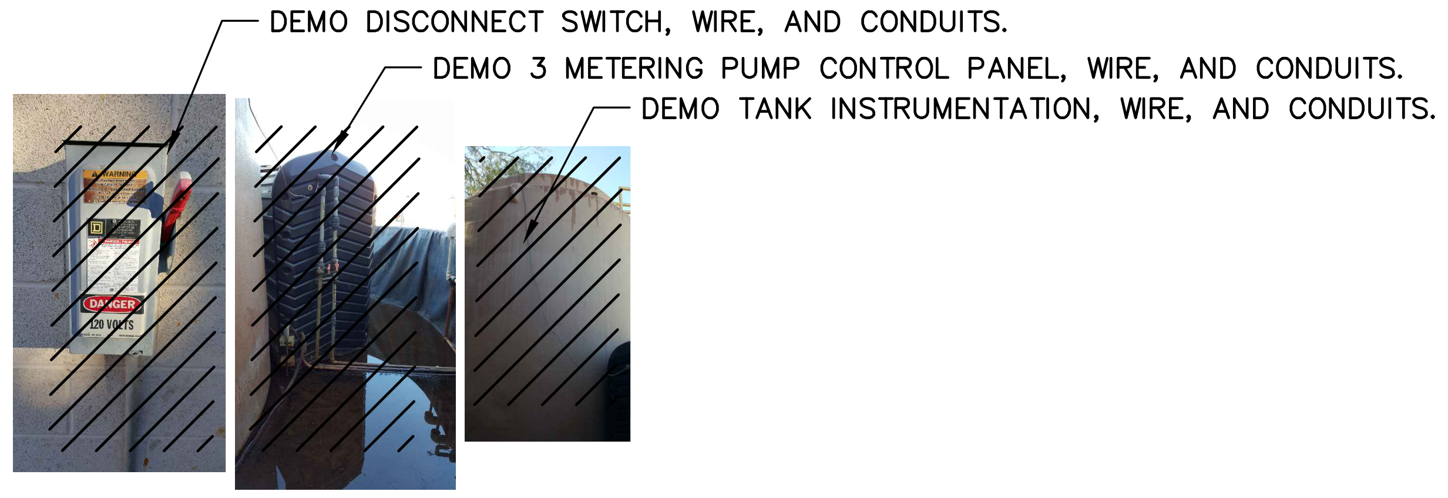
DETAIL D101 # # **GENERATOR, LBTB–1, AND MTS–1 DEMO DETAILS**

SCALE = NONE


DEMO MANUAL TRANSFER SWITCH MTS–2, CONDUITS AND WIRE
DEMO LBTB–2, WIRE, AND CONDUITS.

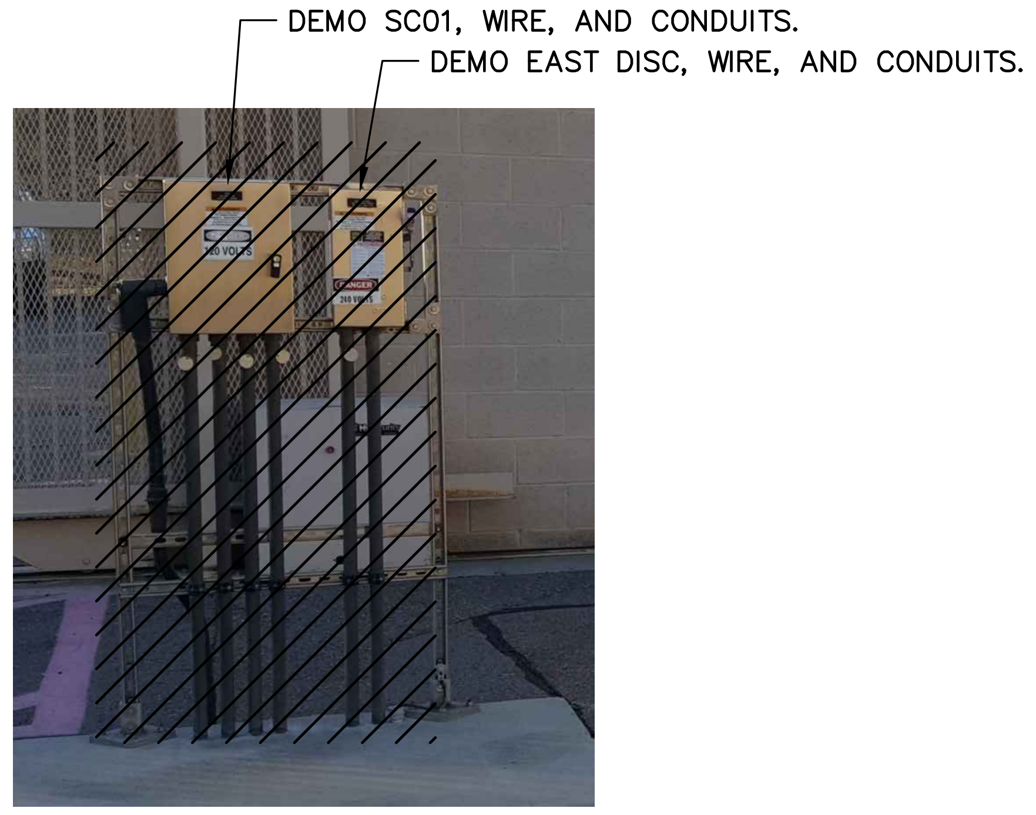
DETAIL D102 # # **MTS–2 AND LBTB–2 DEMO DETAILS**

SCALE = NONE


DEMO DISCONNECT SWITCH, WIRE, AND CONDUITS.
DEMO 3 METERING PUMP CONTROL PANEL, WIRE, AND CONDUITS.
DEMO TANK INSTRUMENTATION, WIRE, AND CONDUITS.

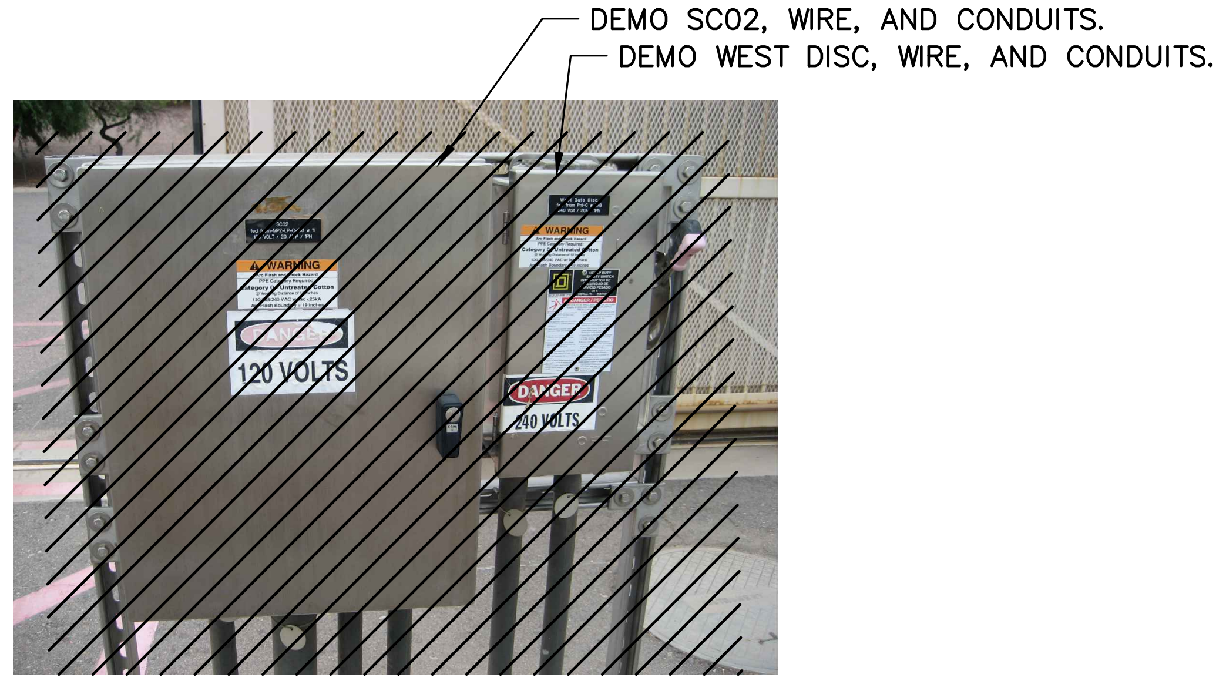
DETAIL D103 # # **ODOR CONTROL EQUIPMENT DEMO DETAILS**

SCALE = NONE


DEMO SC01, WIRE, AND CONDUITS.
DEMO EAST DISC, WIRE, AND CONDUITS.

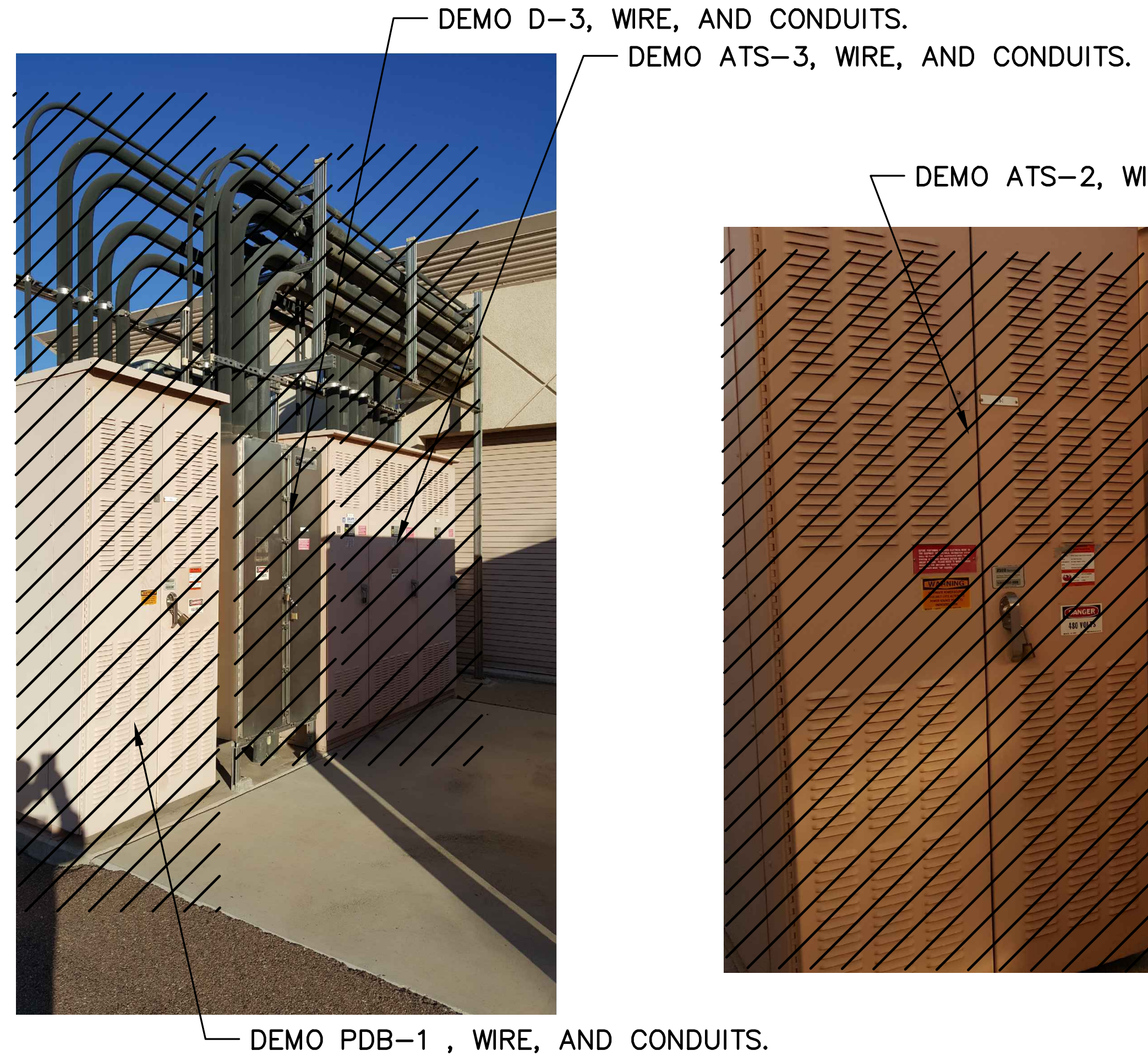
DETAIL D104 # # **SC01, AND DISCONNECT DEMO DETAILS**

SCALE = NONE


DEMO SC02, WIRE, AND CONDUITS.
DEMO WEST DISC, WIRE, AND CONDUITS.
120 VOLTS

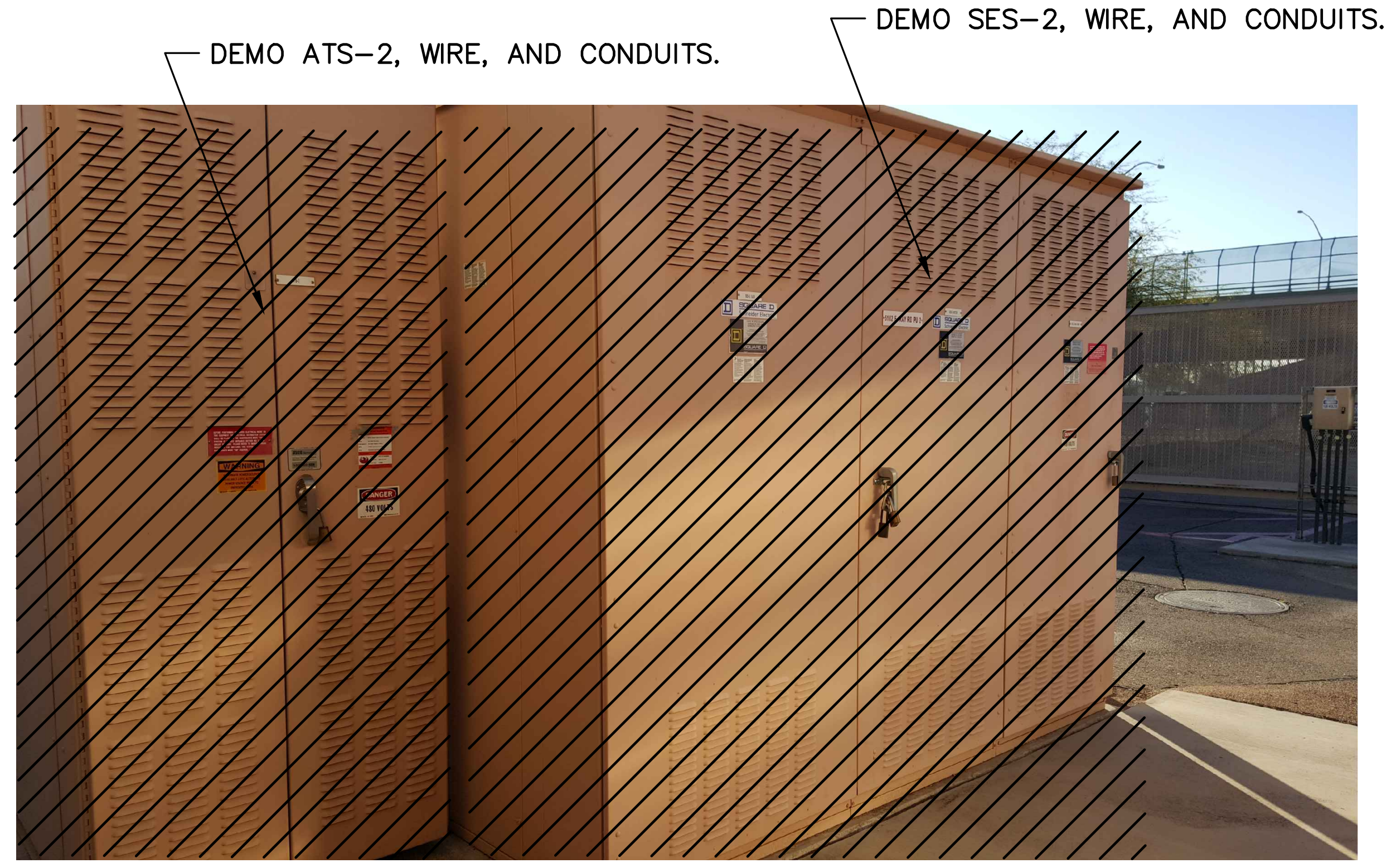
DETAIL D105 # # **SC02, AND DISCONNECT DEMO DETAILS**

SCALE = NONE


DEMO D–3, WIRE, AND CONDUITS.
DEMO ATS–3, WIRE, AND CONDUITS.
DEMO PDB–1 , WIRE, AND CONDUITS.

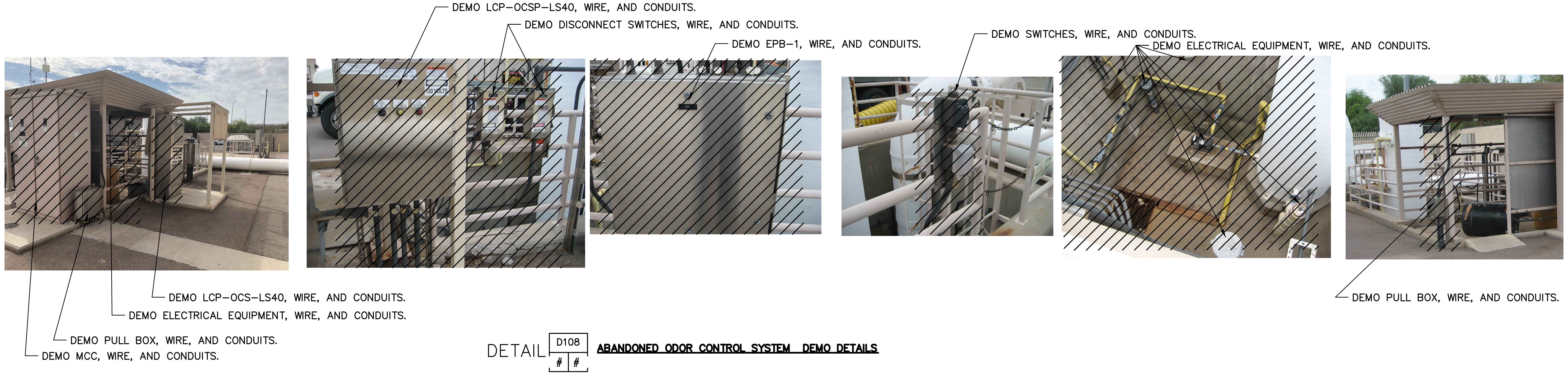
DETAIL D106 # # **PDB–1, D–3, AND ATS–3 DEMO DETAILS**

SCALE = NONE


DEMO ATS–2, WIRE, AND CONDUITS.
DEMO SES–2, WIRE, AND CONDUITS.

DETAIL D107 # # **ATS–2, and SES–2 DEMO DETAILS**

SCALE = NONE


DEMO LCP–OCSP–LS40, WIRE, AND CONDUITS.
DEMO DISCONNECT SWITCHES, WIRE, AND CONDUITS.
DEMO EPB–1, WIRE, AND CONDUITS.
DEMO SWITCHES, WIRE, AND CONDUITS.
DEMO ELECTRICAL EQUIPMENT, WIRE, AND CONDUITS.
DEMO LCP–OCS–LS40, WIRE, AND CONDUITS.
DEMO ELECTRICAL EQUIPMENT, WIRE, AND CONDUITS.
DEMO PULL BOX, WIRE, AND CONDUITS.
DEMO MCC, WIRE, AND CONDUITS.
DEMO PULL BOX, WIRE, AND CONDUITS.

DETAIL D108 # # **ABANDONED ODOR CONTROL SYSTEM DEMO DETAILS**

SCALE = NONE

GENERAL NOTES:

1. PRIOR TO THE BID, THE CONTRACTOR SHALL VISIT THE PROJECT SITE AND INVESTIGATE THE DETAILS OF WORK ASSOCIATED WITH THIS PROJECT. NOT ALL DETAILS ARE INCLUDED IN THE BID DOCUMENTS. A SITE VISIT INVESTIGATION PRIOR TO THE BID IS REQUIRED.
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3. FOR CIRCUITS BEING DEMOLISHED, REMOVE ASSOCIATED CONDUCTORS, REMOVE ASSOCIATED ABOVEGROUND CONDUITS (INCLUDING FITTINGS AND SUPPORTS), AND ABANDON BELOW GRADE CONDUITS IN PLACE. CUT CONDUIT STUB–UPS FLUSH WITH CONCRETE PAD OR 12" BELOW GRADE AND ABANDON REMAINING UNDERGROUND CONDUIT IN PLACE. DEMOLISHED CONDUCTORS SHALL ALWAYS BE DISCONNECTED AND REMOVED BACK TO SOURCE UNLESS OTHERWISE INDICATED.
4. DISCONNECT AND REMOVE EQUIPMENT AND ASSOCIATED HARDWARE AND LABELING IN ITS ENTIRETY AS INDICATED ON THE PLANS. PATCH AND, OR PAINT ANY EXISTING HOLES OR OUTLINES LEFT FROM DEMOLISHED EQUIPMENT AS NECESSARY TO MINIMIZE INDICATIONS OF PREVIOUS EQUIPMENT LOCATIONS.
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7. USE IF APPROPRIATE: ELECTRICAL DEMOLITION INCLUDES THE REMOVAL OF ANY ELECTRICAL EQUIPMENT CONCRETE PADS AND/OR EQUIPMENT FOUNDATIONS UNLESS OTHERWISE INDICATED.
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9. COORDINATE WORK WITH THE UTILITY COMPANY. REFER TO DEMOLITION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
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FACILITY DRAWINGS
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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 33468
VAHID BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

DEMO SITE PLAN DETAILS 1

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–07
SHEET 98 OF 134
CAD FILE: CSELS40EM02.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

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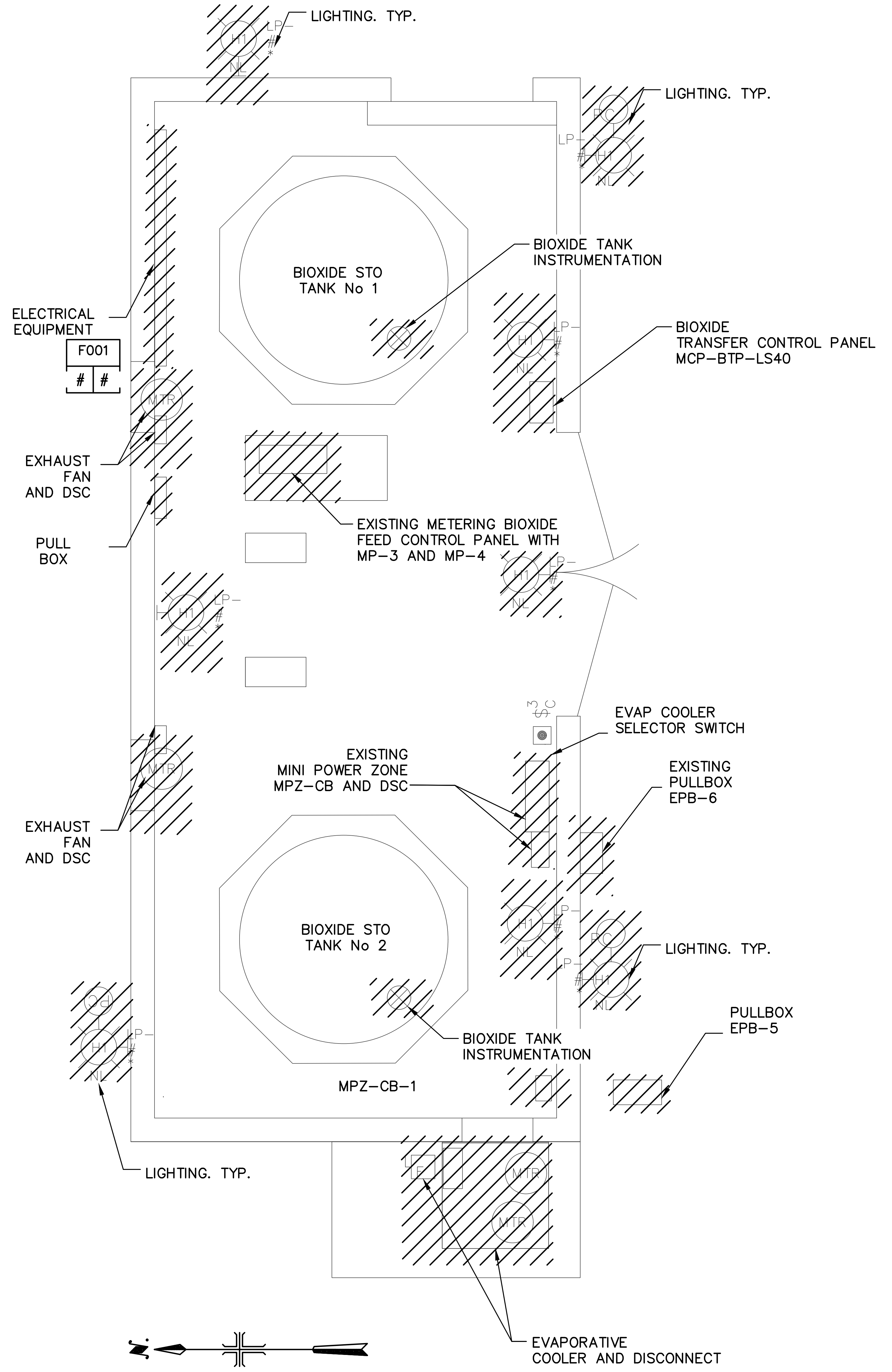
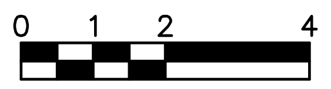
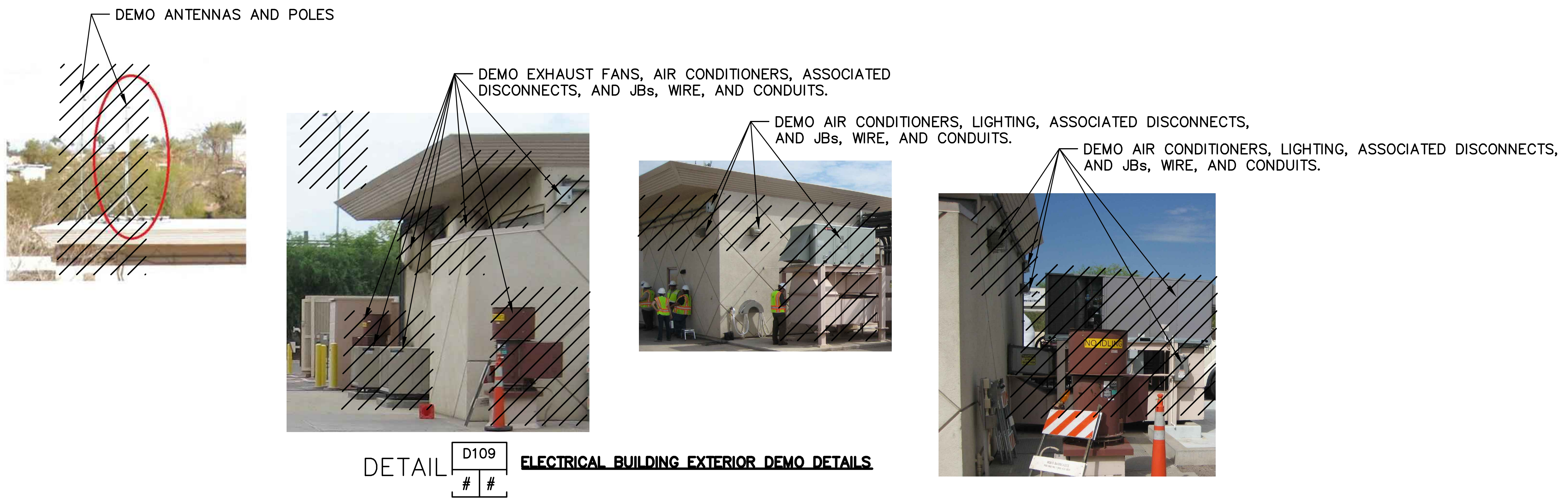

LIGHTING. TYP.
LIGHTING. TYP.
BIOXIDE STO TANK No 1
BIOXIDE TANK INSTRUMENTATION
ELECTRICAL EQUIPMENT
F001
# #
BIOXIDE TRANSFER CONTROL PANEL MCP–BTP–LS40
EXHAUST FAN AND DSC
PULL BOX
EXISTING METERING BIOXIDE FEED CONTROL PANEL WITH MP–3 AND MP–4
EVAP COOLER SELECTOR SWITCH
EXISTING MINI POWER ZONE MPZ–CB AND DSC
EXISTING PULLBOX EPB–6
EXHAUST FAN AND DSC
BIOXIDE STO TANK No 2
LIGHTING. TYP.
BIOXIDE TANK INSTRUMENTATION
PULLBOX EPB–5
MPZ–CB–1
LIGHTING. TYP.
EVAPORATIVE COOLER AND DISCONNECT

DETAIL D112 # # **CHEMICAL BUILDING DEMO DETAILS**

SCALE = NONE

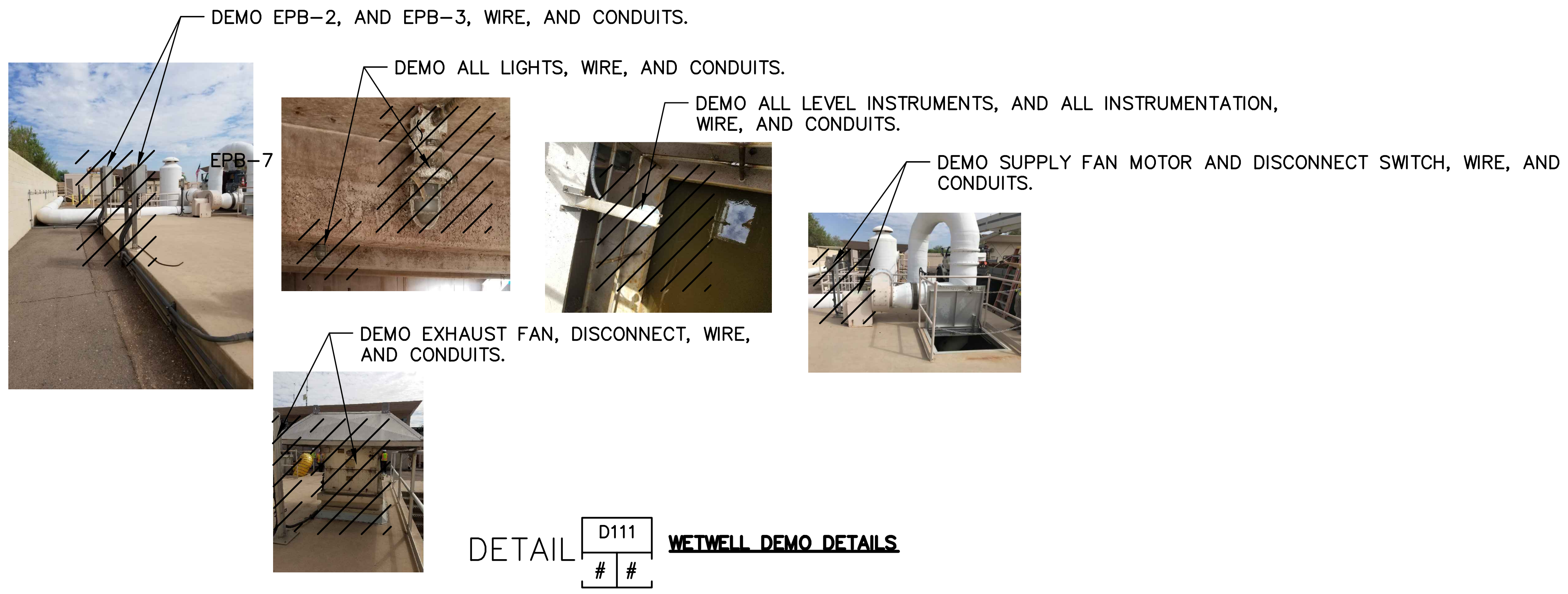


SCALE IN FEET


DEMO ANTENNAS AND POLES
DEMO EXHAUST FANS, AIR CONDITIONERS, ASSOCIATED DISCONNECTS, AND JBs, WIRE, AND CONDUITS.
DEMO AIR CONDITIONERS, LIGHTING, ASSOCIATED DISCONNECTS, AND JBs, WIRE, AND CONDUITS.
DEMO AIR CONDITIONERS, LIGHTING, ASSOCIATED DISCONNECTS, AND JBs, WIRE, AND CONDUITS.

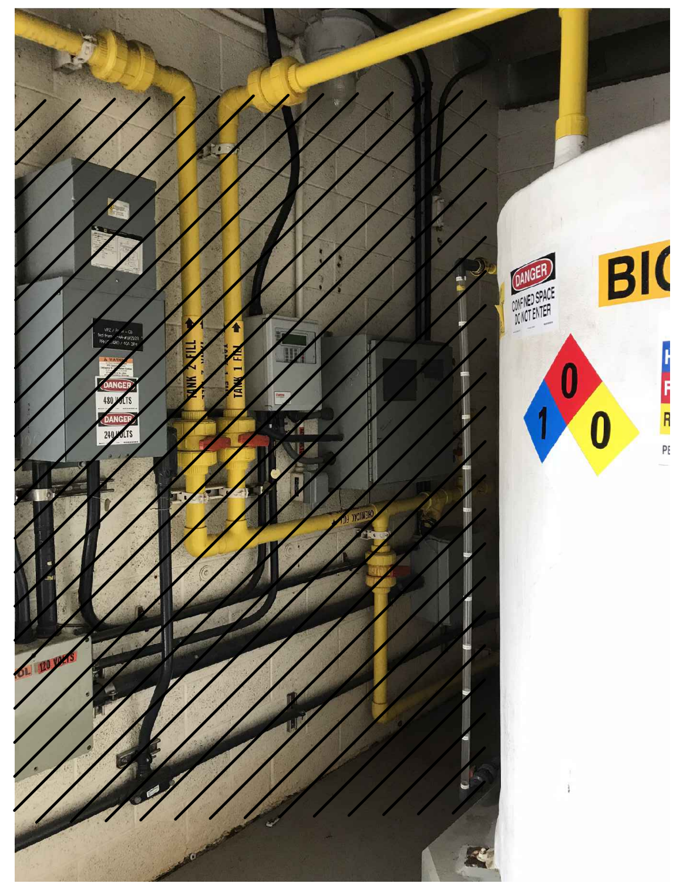
DETAIL D109 # # **ELECTRICAL BUILDING EXTERIOR DEMO DETAILS**

SCALE = NONE


DEMO EPB–2, AND EPB–3, WIRE, AND CONDUITS.
EPB–7
DEMO ALL LIGHTS, WIRE, AND CONDUITS.
DEMO ALL LEVEL INSTRUMENTS, AND ALL INSTRUMENTATION, WIRE, AND CONDUITS.
DEMO SUPPLY FAN MOTOR AND DISCONNECT SWITCH, WIRE, AND CONDUITS.
DEMO EXHAUST FAN, DISCONNECT, WIRE, AND CONDUITS.

DETAIL D111 # # **WETWELL DEMO DETAILS**

SCALE = NONE



DETAIL F001 # # **ELECTRICAL EQUIPMENT**

SCALE = NONE

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FACILITY DRAWINGS
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#							
#							

HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 33468
VAHID BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

DEMO SITE PLAN DETAILS 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–08
SHEET 99 OF 134
CAD FILE: CSELS40EM03.dwg

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DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

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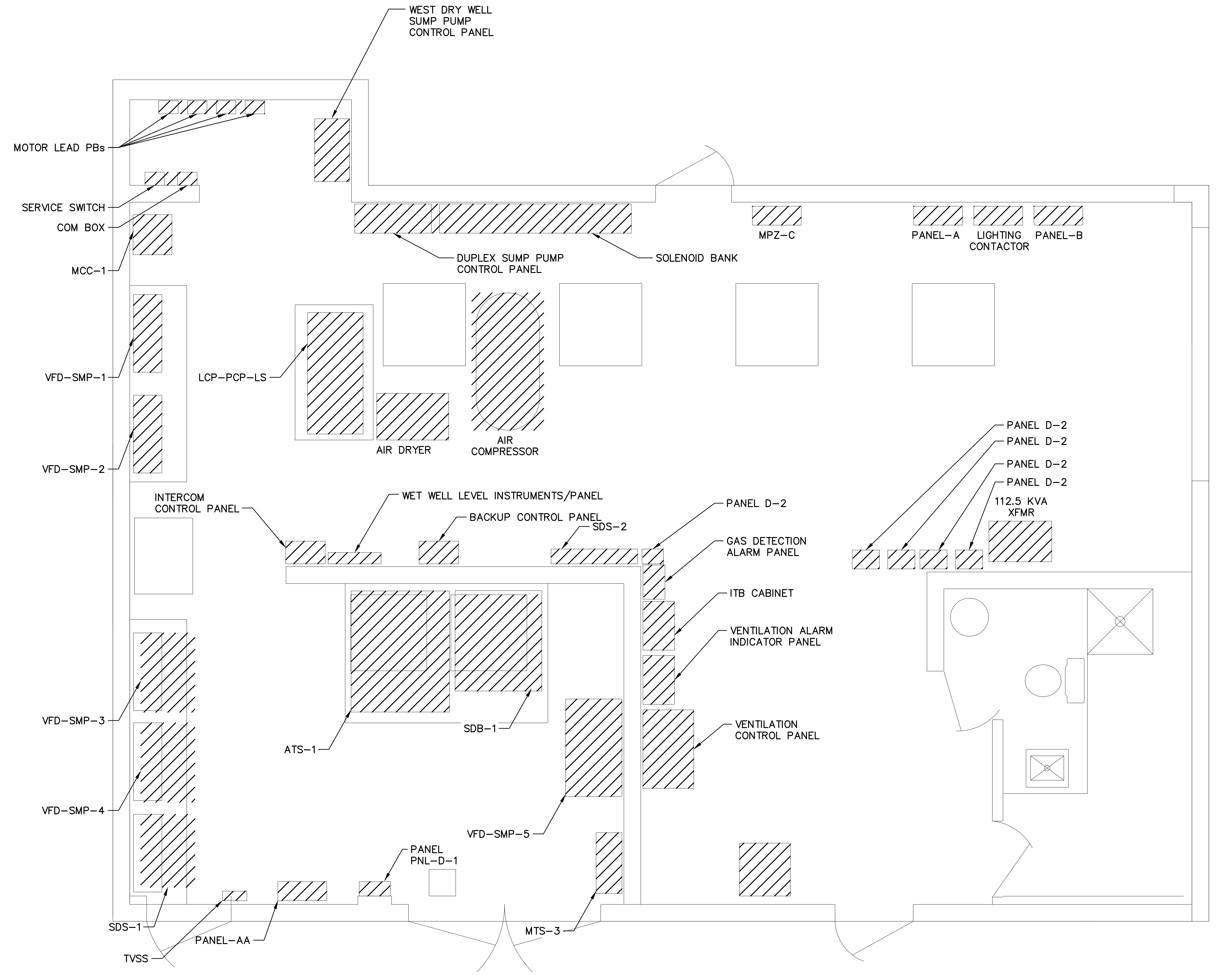
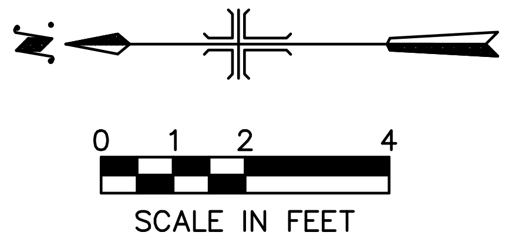

WEST DRY WELL
SUMP PUMP
CONTROL PANEL
MOTOR LEAD PBs
SERVICE SWITCH
COM BOX
MCC–1
DUPLEX SUMP PUMP
CONTROL PANEL
SOLENOID BANK
MPZ–C
PANEL–A
LIGHTING
CONTACTOR
PANEL–B
VFD–SMP–1
LCP–PCP–LS
AIR DRYER
AIR
COMPRESSOR
VFD–SMP–2
PANEL D–2
PANEL D–2
PANEL D–2
PANEL D–2
112.5 KVA
XFMR
INTERCOM
CONTROL PANEL
WET WELL LEVEL INSTRUMENTS/PANEL
BACKUP CONTROL PANEL
SDS–2
PANEL D–2
GAS DETECTION
ALARM PANEL
ITB CABINET
VENTILATION ALARM
INDICATOR PANEL
VFD–SMP–3
ATS–1
SDB–1
VENTILATION
CONTROL PANEL
VFD–SMP–4
VFD–SMP–5
PANEL
PNL–D–1
SDS–1
TVSS
PANEL–AA
MTS–3

DETAIL D110 # # ELECTRICAL BUILDING INTERIOR DEMO DETAILS

SCALE = NONE


0
1
2
4
SCALE IN FEET

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#	-	-	-	-	-	-	-

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID
BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

DEMO SITE PLAN DETAILS 3

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–09 SHEET 100 OF 134
CAD FILE: CSELS40EM03.dwg

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FOR CONSTRUCTION

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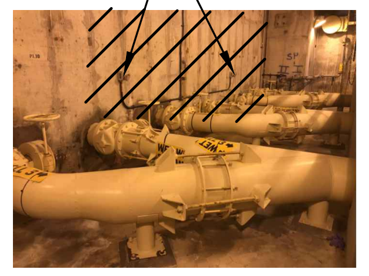
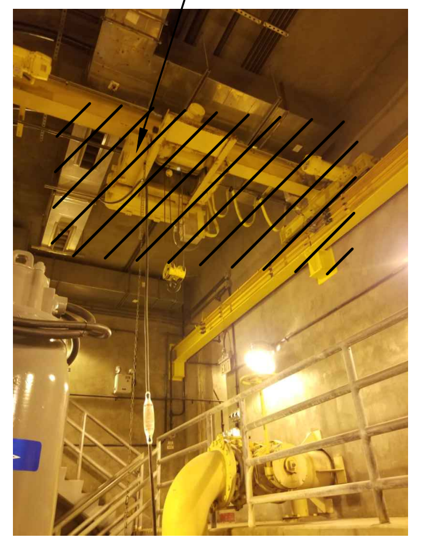
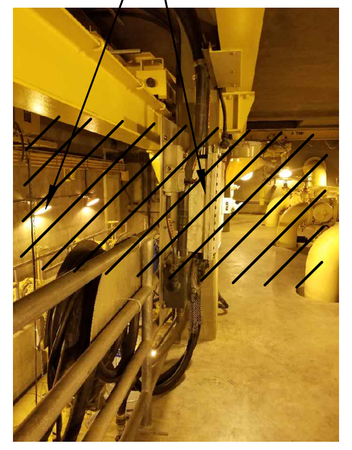
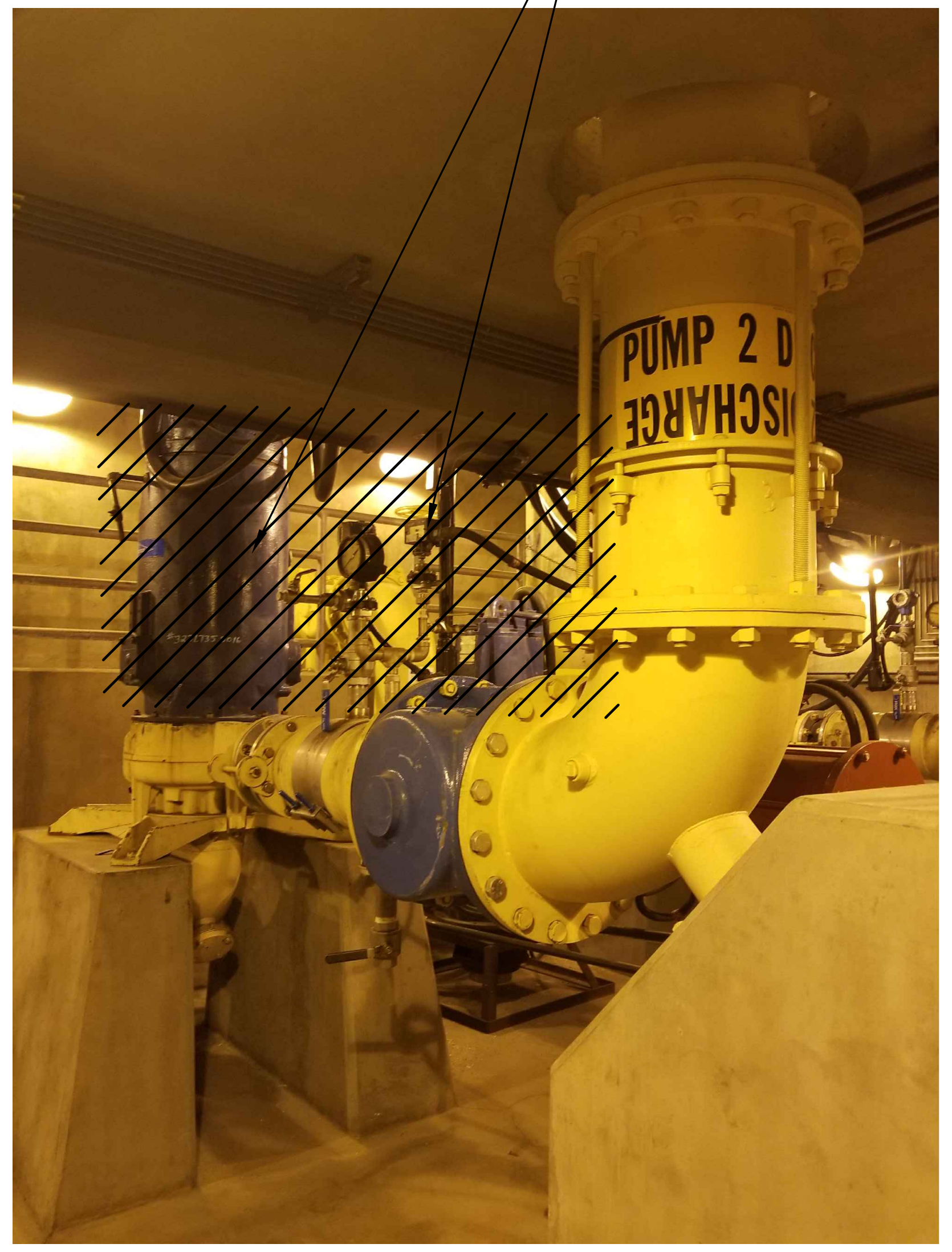

DEMO ALL OUTLETS, WIRE, AND CONDUITS.


DEMO OVERHEAD CRANE, SENSORS, AND ALL INSTRUMENTATION, WIRE, AND CONDUITS.


DEMO ALL LIGHTING, GAS SENSORS, JBs, AND PBs, WIRE, AND CONDUITS.



DEMO PUMP MOTOR/SENSORS, SWITCHES, AND COMMON DISCHARGE HEADER INSTRUMENTATION, JBs, AND PBs, WIRE, AND CONDUITS. (TYPICAL ALL PUMPS)

DETAIL D113 # # **PUMP STATION LOWER LEVEL DEMO DETAILS**
SCALE = NONE

GENERAL NOTES:

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KEY NOTES:

◇1 --

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HDR

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BAGHERI
Date Signed 7-31-24

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES	RB
DWN	BB
CKD	VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

DEMO SITE PLAN DETAILS 4

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–10 SHEET 101 OF 134
CAD FILE: CSELS40EM04.dwg

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FOR CONSTRUCTION

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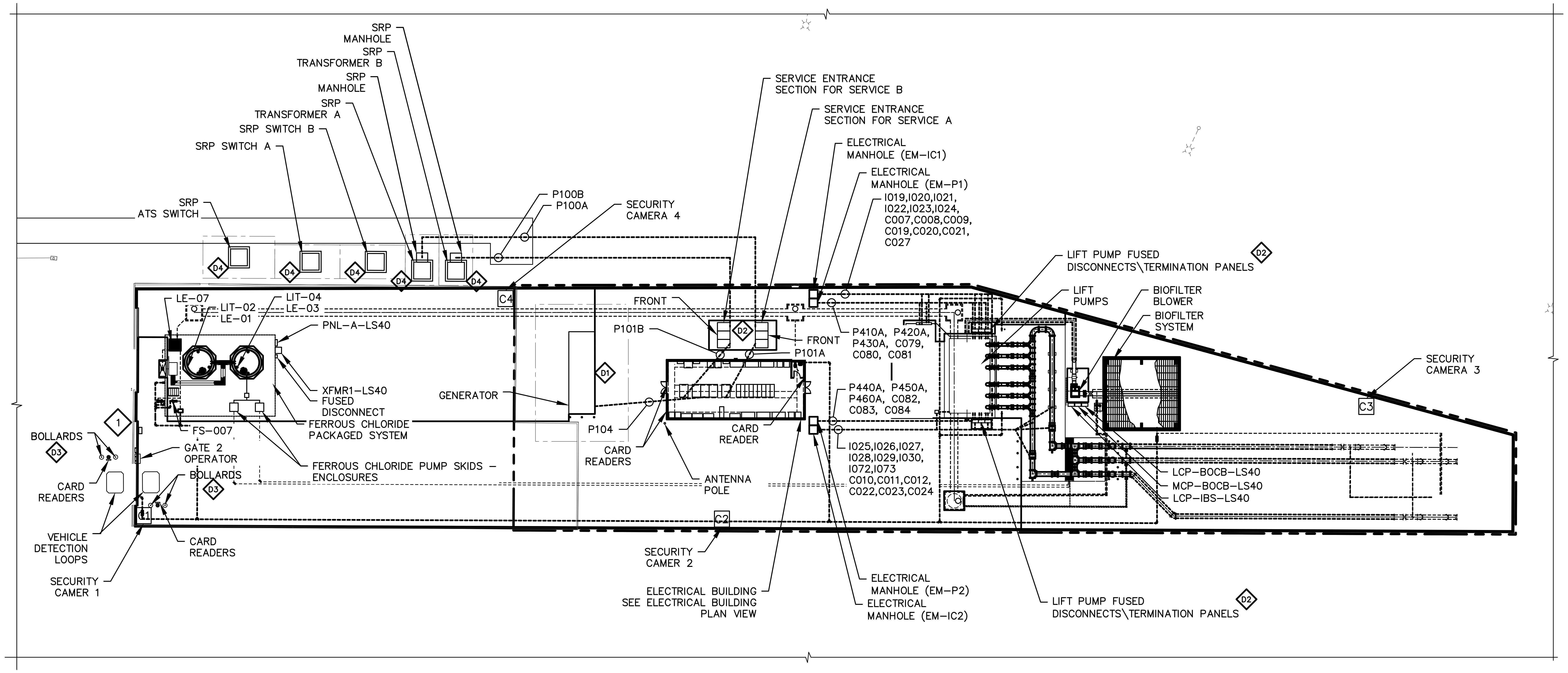
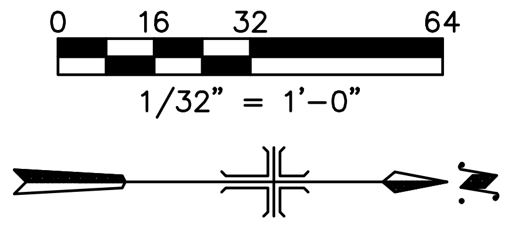

SRP MANHOLE
SRP TRANSFORMER B
SRP MANHOLE
SRP TRANSFORMER A
SRP SWITCH B
SRP SWITCH A
SRP ATS SWITCH
P100B
P100A
SECURITY CAMERA 4
SERVICE ENTRANCE SECTION FOR SERVICE B
SERVICE ENTRANCE SECTION FOR SERVICE A
ELECTRICAL MANHOLE (EM–IC1)
ELECTRICAL MANHOLE (EM–P1)
I019,I020,I021, I022,I023,I024, C007,C008,C009, C019,C020,C021, C027
LIFT PUMP FUSED DISCONNECTS\TERMINATION PANELS
D2
LIFT PUMPS
BIOFILTER BLOWER
BIOFILTER SYSTEM
SECURITY CAMERA 3
C3
D4
D4
D4
D4
D4
D4
C4
LE–07
LIT–02
LE–01
LIT–04
LE–03
PNL–A–LS40
XFMR1–LS40 FUSED DISCONNECT
FERROUS CHLORIDE PACKAGED SYSTEM
FS–007
GATE 2 OPERATOR
BOLLARDS
D3
BOLLARDS
D3
1
CARD READERS
VEHICLE DETECTION LOOPS
SECURITY CAMER 1
C1
CARD READERS
FERROUS CHLORIDE PUMP SKIDS – ENCLOSURES
GENERATOR
D1
FRONT
P101B
D2
FRONT
P101A
P104
CARD READERS
CARD READER
ANTENNA POLE
P410A, P420A, P430A, C079, C080, C081
P440A, P450A, P460A, C082, C083, C084
I025,I026,I027, I028,I029,I030, I072,I073 C010,C011,C012, C022,C023,C024
LCP–BOCB–LS40
MCP–BOCB–LS40
LCP–IBS–LS40
C2
SECURITY CAMER 2
ELECTRICAL BUILDING SEE ELECTRICAL BUILDING PLAN VIEW
ELECTRICAL MANHOLE (EM–P2)
ELECTRICAL MANHOLE (EM–IC2)
LIFT PUMP FUSED DISCONNECTS\TERMINATION PANELS
D2


0
16
32
64
1/32" = 1'–0"
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GENERAL NOTES:

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4. REFER TO NON–ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS THAT ARE NOT INDICATED ON THE ELECTRICAL DRAWINGS. THESE REQUIREMENTS MAY BE ELECTRICAL OR NON–ELECTRICAL WORK.
5. CIRCUITRY IS NOT SHOWN INTENTIONALLY. REFER TO OTHER DRAWINGS AND SPECIFICATIONS FOR COMPLETE CONDUIT AND CONDUCTOR REQUIREMENTS, INCLUDING BUT NOT LIMITED TO: SINGLE LINE DIAGRAMS, PANEL SCHEDULES, AND BLOCK DIAGRAMS
6. CONDUIT ROUTING IS NOT SHOWN INTENTIONALLY. CONDUIT ROUTING SHALL BE AS PERMITTED BY THE SPECIFICATIONS.
7. WHERE THE CONDUITS ARE INSTALLED UNDER EXISTING CONCRETE OR ASPHALT: SAW CUT AND REMOVE CONCRETE/ASPHALT; TRENCH, INSTALL CONDUITS, AND BACKFILL; AND INSTALL CONCRETE/ASPHALT AS REQUIRED TO MATCH EXISTING CONDITIONS.
8. EXISTING ITEMS ARE INDICATED AS EXISTING. ALL ITEMS ARE NEW UNLESS INDICATED EXISTING.

CONCRETE PAD KEYED NOTES:

D1 SEE DETAIL 1 ON SHEET S–12 FOR CONCRETE PAD DETAILS.
D2 SEE DETAIL 6 ON SHEET S–04 FOR CONCRETE PAD DETAILS.
D3 SEE MAG DETAILS.
D4 CONCRETE PAD PER SRP REQUIREMENTS.

KEY NOTES:

1 FURNISH AND INSTALL AREA LIGHTING CONTACTOR PANEL WITH ON/OFF SELECTOR SWITCH. NEMA 4 RATED ENCLOSURE AND CONTROLS.

FACILITY DRAWINGS
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FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

EIC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

SITE PLAN POWER AND CONTROL

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–11 SHEET 102 OF 134
CAD FILE: CSELS40EP07.dwg

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FOR CONSTRUCTION

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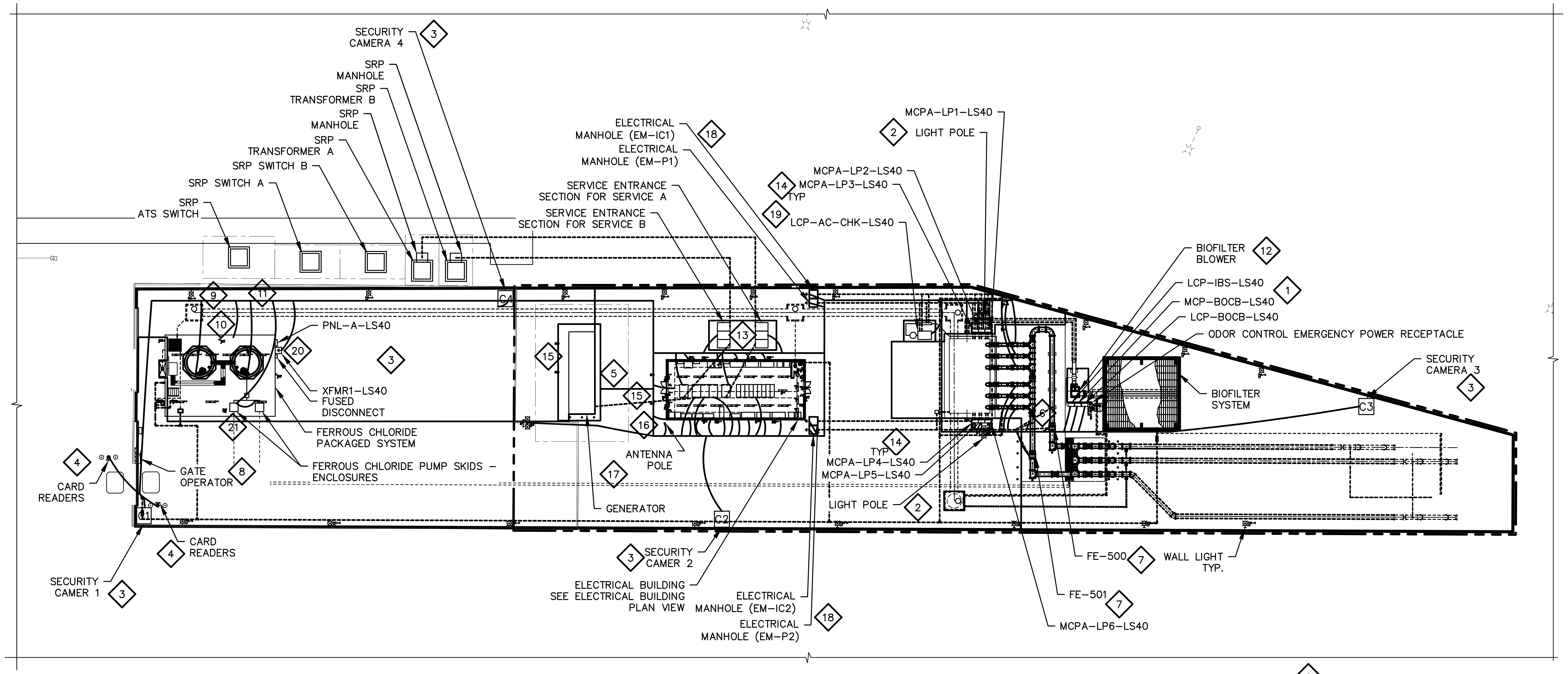
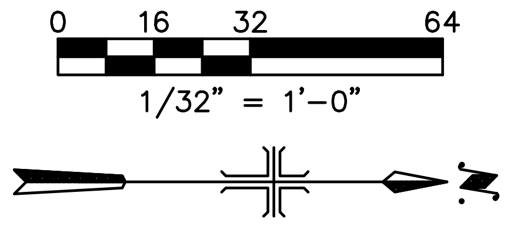

SECURITY CAMERA 4 (3)
SRP MANHOLE
SRP TRANSFORMER B
SRP MANHOLE
SRP TRANSFORMER A
SRP SWITCH B
SRP SWITCH A
SRP ATS SWITCH
ELECTRICAL MANHOLE (EM-IC1) (18)
ELECTRICAL MANHOLE (EM-P1)
SERVICE ENTRANCE SECTION FOR SERVICE A
SERVICE ENTRANCE SECTION FOR SERVICE B
MCPA-LP1-LS40
(2) LIGHT POLE
MCPA-LP2-LS40
(14) MCPA-LP3-LS40
TYP
(19) LCP-AC-CHK-LS40
BIOFILTER BLOWER (12)
LCP-IBS-LS40 (1)
MCP-BOCB-LS40
LCP-BOCB-LS40
ODOR CONTROL EMERGENCY POWER RECEPTACLE
SECURITY CAMERA 3 (3)
BIOFILTER SYSTEM
C3
(9) (11) (10) (20) (3) (13) (15) (5) (15) (16) (21) (6)
PNL-A-LS40
XFMR1-LS40 FUSED DISCONNECT
FERROUS CHLORIDE PACKAGED SYSTEM
FERROUS CHLORIDE PUMP SKIDS - ENCLOSURES
(4) CARD READERS
GATE OPERATOR (8)
ANTENNA POLE
(17)
GENERATOR
C1 C2 C4
(14) TYP
MCPA-LP4-LS40
MCPA-LP5-LS40
LIGHT POLE (2)
FE-500 (7)
WALL LIGHT TYP.
FE-501 (7)
MCPA-LP6-LS40
(4) CARD READERS
(3) SECURITY CAMER 2
SECURITY CAMER 1 (3)
ELECTRICAL BUILDING SEE ELECTRICAL BUILDING PLAN VIEW
ELECTRICAL MANHOLE (EM-IC2)
ELECTRICAL MANHOLE (EM-P2) (18)


0 16 32 64
1/32" = 1'-0"
N

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2. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE HIGHER RATING DEVICE AND EQUIPMENT, THE FURTHER DISTANCE, ETC...
3. INSTALL RECEPTACLES AND DATA OUTLETS AT 18 INCHES ABOVE FINISHED FLOOR.
4. FURNISH AND INSTALL A 20-AMP, 120V, WEATHERPROOF, GFCI RECEPTACLE WITHIN 25 FEET OF ALL HVAC EQUIPMENT EVEN IF THEY ARE NOT INDICATED ON THE DRAWINGS.
5. INSTALL RECEPTACLES AT 18 INCHES ABOVE FINISHED FLOOR.
6. INSTALL LIGHT SWITCHES AT 42 INCHES ABOVE FINISHED FLOOR.
7. INSTALL WALL MOUNTED LIGHT FIXTURES AT 8 FEET ABOVE FINISHED FLOOR.
8. ALL OUTDOOR LIGHT FIXTURES SHALL BE EQUIPPED WITH FULL CUT-OFF SHIELDS EVEN IF IT IS NOT INDICATED ON THE LIGHT FIXTURE SCHEDULE OR ELSEWHERE ON THE DRAWINGS AND/OR SPECIFICATIONS.
9. INSTALL CEILING MOUNTED LIGHT FIXTURES AT 12 FEET ABOVE FINISHED FLOOR.
10. FURNISH AND INSTALL LIGHTING CONTROL PANEL FOR ALL OUTDOOR LIGHTS. THE CONTROL PANEL SHALL MEET OR EXCEED THE FOLLOWING REQUIREMENTS
    a. BE EQUIPPED WITH A MAIN CIRCUIT BREAKER RATED 65AIC
    b. BE EQUIPPED WITH A CONTACTOR RATED FOR 30 AMPS
    c. HAVE A VOLTAGE RATING AS INDICATED BY ITS FEEDER
    d. TURN LIGHTS ON AND OFF BY A PHOTOCELL REMOTELY LOCATED OUTSIDE THE BUILDING.
    e. BE EQUIPPED WITH A TIMER THAT LIMITS THE HOURS OF OPERATION DURING PHOTOCELL OPERATION
    f. HAVE OVERRIDE CAPABILITY TO TURN LIGHTS ON AND OFF REGARDLESS OF PHOTOCELL
    g. BE EQUIPPED WITH A NEMA 12 ENCLOSURE
    h. LOCATION OF THE LIGHTING CONTROL PANEL WILL BE DETERMINED DURING CONSTRUCTION. ALLOW FOR 30 FEET OF DISTANCE BETWEEN THE POWER SOURCE AND THE LIGHTING CONTROL PANEL
    i. LOCATION OF THE PHOTOCELL WILL BE DETERMINED DURING CONSTRUCTION. ALLOW FOR 100 FEET OF DISTANCE BETWEEN THE LIGHTING CONTROL PANEL AND THE PHOTOCELL

KEY NOTES:

1 BOND THE GROUNDING ELECTRODE CONDUCTOR TO LCP-BOCB-LS40, TO MCP-BOCB-LS40, AND LCP-IBS-LS40.
2 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE LIGHT POLE.
3 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE SECURITY CAMERA POLE .
4 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE KEYPAD PEDESTALS.
5 BOND THE GENERATOR GROUNDING ELECTRODE TO THE BUILDING GROUNDING ELECTRODE.
6 BOND THE GROUNDING ELECTRODE CONDUCTOR TO ABOVE GROUND WATER PIPE.
7 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE MAGNETIC FLOW METERS.
8 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE GATE OPERATOR POWER SUPPLY.
9 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE SHADE STRUCTURE.
10 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE FERROUS CHLORIDE TANKS.
11 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE FERROUS CHLORIDE SYSTEM STRUCTURE.
12 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE BIOFILTER BLOWER.
13 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE SERVICE ENTRANCE SECTIONS.
14 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE LIFT PUMP MCP PANELS.
15 GROUND ROD AND GROUND TEST WELL PER TYPICAL DETAIL.
16 CONCRETE ENCASED GROUND (UFER) IN BLOCK WALL.
17 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE ANTENNA POLE.
18 BOND THE MANHOLE GROUNDING ELECTRODES TO THE BUILDING GROUNDING ELECTRODE.
19 BOND THE GROUNDING ELECTRODE TO THE COMPRESSOR.
20 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE SECONDARY SIDE OF THE TRANSFORMER AND GROUND ROD.
21 BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE FERROUS CHLORIDE PUMP SKIDS.

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#	-	-	-	-	-	-	-
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HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 33468
VAHID BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

SITE PLAN LIGHTING AND GROUNDING

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-12 SHEET 103 OF 134
CAD FILE: CSELS40EP01.dwg

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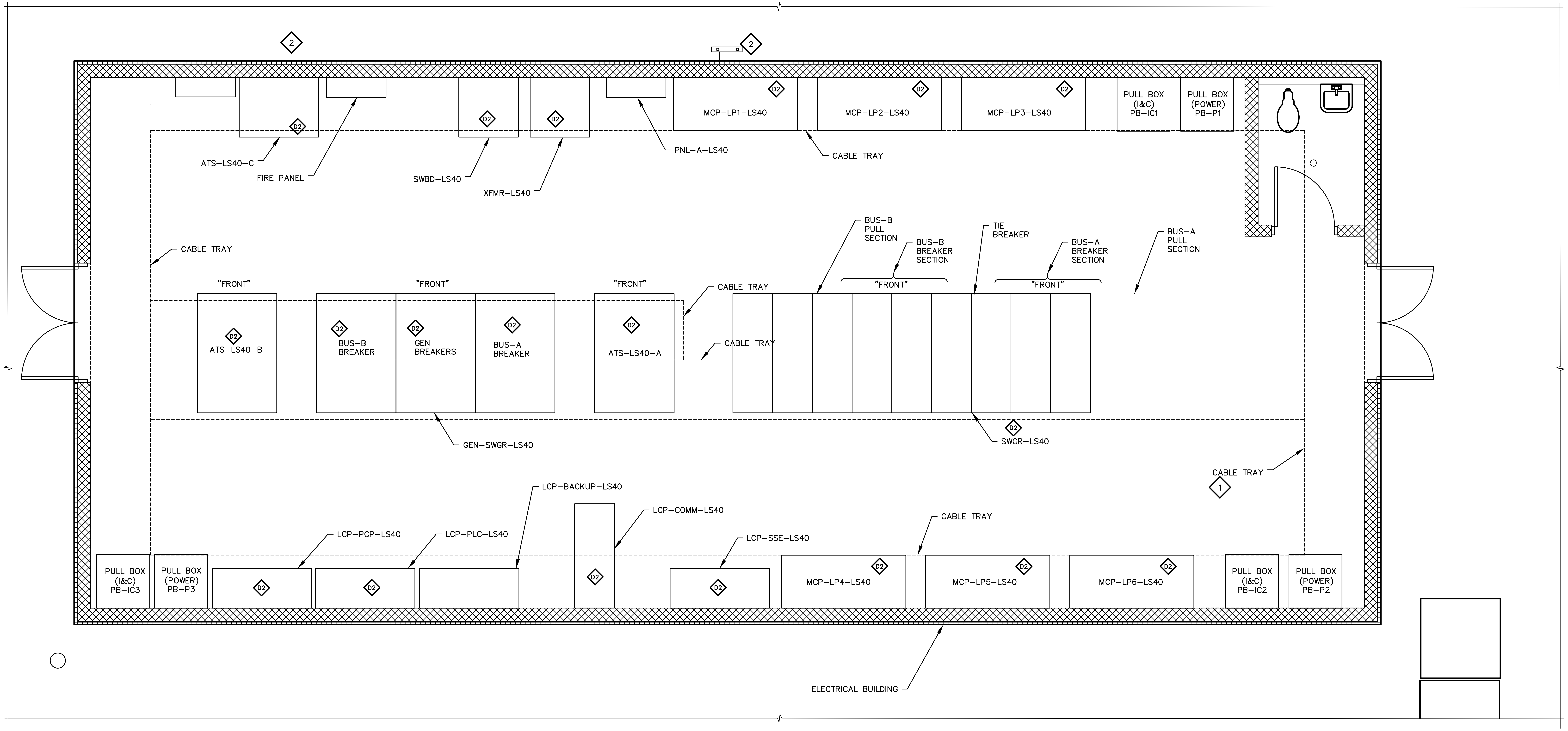
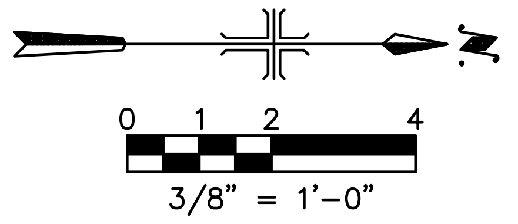

2
2
ATS–LS40–C
FIRE PANEL
SWBD–LS40
XFMR–LS40
PNL–A–LS40
CABLE TRAY
MCP–LP1–LS40
MCP–LP2–LS40
MCP–LP3–LS40
D2
PULL BOX (I&C) PB–IC1
PULL BOX (POWER) PB–P1
CABLE TRAY
BUS–B PULL SECTION
BUS–B BREAKER SECTION
TIE BREAKER
BUS–A BREAKER SECTION
BUS–A PULL SECTION
"FRONT"
"FRONT"
"FRONT"
"FRONT"
"FRONT"
CABLE TRAY
CABLE TRAY
ATS–LS40–B
BUS–B BREAKER
GEN BREAKERS
BUS–A BREAKER
ATS–LS40–A
GEN–SWGR–LS40
SWGR–LS40
CABLE TRAY
1
LCP–BACKUP–LS40
LCP–COMM–LS40
LCP–PCP–LS40
LCP–PLC–LS40
LCP–SSE–LS40
CABLE TRAY
PULL BOX (I&C) PB–IC3
PULL BOX (POWER) PB–P3
MCP–LP4–LS40
MCP–LP5–LS40
MCP–LP6–LS40
PULL BOX (I&C) PB–IC2
PULL BOX (POWER) PB–P2
ELECTRICAL BUILDING



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6. CONDUIT ROUTING IS NOT SHOWN INTENTIONALLY. CONDUIT ROUTING SHALL BE AS PERMITTED BY THE SPECIFICATIONS.
7. WHERE THE CONDUITS ARE INSTALLED UNDER EXISTING CONCRETE OR ASPHALT: SAW CUT AND REMOVE CONCRETE/ASPHALT; TRENCH, INSTALL CONDUITS, AND BACKFILL; AND INSTALL CONCRETE/ASPHALT AS REQUIRED TO MATCH EXISTING CONDITIONS.
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CONCRETE PAD KEYED NOTES:

D1 SEE DETAIL 1 ON SHEET S–12 FOR CONCRETE PAD DETAILS.

D2 SEE DETAIL 6 ON SHEET S–04 FOR CONCRETE PAD DETAILS.

D3 SEE MAG DETAILS.

KEY NOTES:

1 CABLE TRAY SHOWN FOR REFERENCE ONLY. SEE SPECIFICATIONS FOR REQUIREMENTS.

2 FURNISH AND INSTALL GFI–WP DUPLEX OUTLET NEXT TO EACH A/C UNIT ON ROOF. (PNL–A CKT 19).

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DWG NUMBER	CAD FILE NAME	DATE	REMARKS
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HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

CERTIFICATE NO. 33468
VAHID BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

ELECTRICAL BUILDING POWER AND CONTROL

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–13

CAD FILE: CSELS40EP04.dwg

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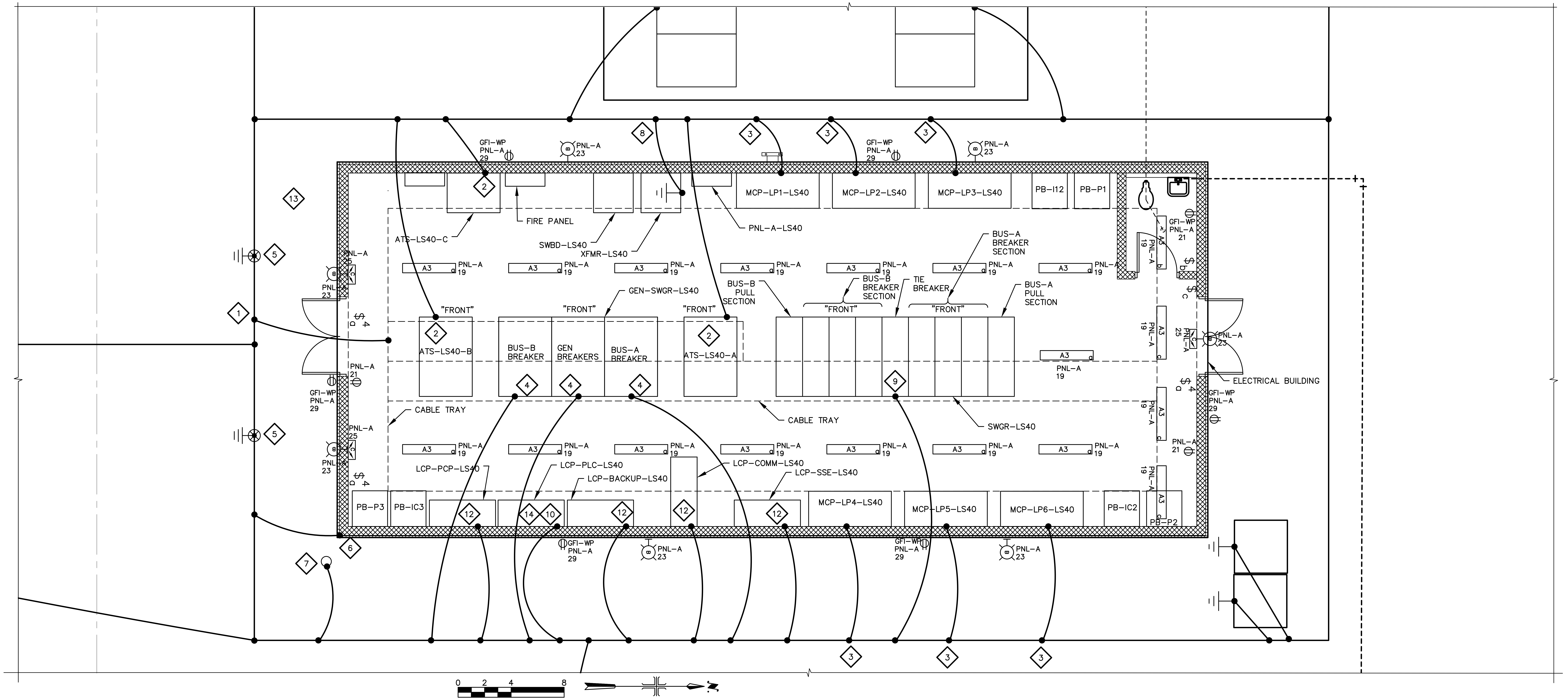

MCP–LP1–LS40
MCP–LP2–LS40
MCP–LP3–LS40
PB–I12
PB–P1
FIRE PANEL
ATS–LS40–C
SWBD–LS40
XFMR–LS40
PNL–A–LS40
GFI–WP PNL–A 29
PNL–A 23
PNL–A 19
PNL–A 21
PNL–A 25
A3
"FRONT"
GEN–SWGR–LS40
ATS–LS40–B
BUS–B BREAKER
GEN BREAKERS
BUS–A BREAKER
ATS–LS40–A
BUS–B PULL SECTION
BUS–B BREAKER SECTION
TIE BREAKER
BUS–A BREAKER SECTION
BUS–A PULL SECTION
CABLE TRAY
SWGR–LS40
ELECTRICAL BUILDING
LCP–PCP–LS40
LCP–PLC–LS40
LCP–BACKUP–LS40
LCP–COMM–LS40
LCP–SSE–LS40
PB–P3
PB–IC3
MCP–LP4–LS40
MCP–LP5–LS40
MCP–LP6–LS40
PB–IC2
PB–P2
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1/4" = 1'–0"
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3. INSTALL RECEPTACLES AND DATA OUTLETS AT 18 INCHES ABOVE FINISHED FLOOR.
4. FURNISH AND INSTALL A 20–AMP, 120V, WEATHERPROOF, GFCI RECEPTACLE WITHIN 25 FEET OF ALL HVAC EQUIPMENT EVEN IF THEY ARE NOT INDICATED ON THE DRAWINGS.
5. INSTALL RECEPTACLES AT 18 INCHES ABOVE FINISHED FLOOR.
6. INSTALL LIGHT SWITCHES AT 42 INCHES ABOVE FINISHED FLOOR.
7. INSTALL WALL MOUNTED LIGHT FIXTURES AT 8 FEET ABOVE FINISHED FLOOR.
8. ALL OUTDOOR LIGHT FIXTURES SHALL BE EQUIPPED WITH FULL CUT–OFF SHIELDS EVEN IF IT IS NOT INDICATED ON THE LIGHT FIXTURE SCHEDULE OR ELSEWHERE ON THE DRAWINGS AND/OR SPECIFICATIONS.
9. INSTALL CEILING MOUNTED LIGHT FIXTURES AT 12 FEET ABOVE FINISHED FLOOR.
10. FURNISH AND INSTALL LIGHTING CONTROL PANEL FOR ALL OUTDOOR LIGHTS. THE CONTROL PANEL SHALL MEET OR EXCEED THE FOLLOWING REQUIREMENTS
    a. BE EQUIPPED WITH A MAIN CIRCUIT BREAKER RATED 65AIC
    b. BE EQUIPPED WITH A CONTACTOR RATED FOR 30 AMPS
    c. HAVE A VOLTAGE RATING AS INDICATED BY ITS FEEDER
    d. TURN LIGHTS ON AND OFF BY A PHOTOCELL REMOTELY LOCATED OUTSIDE THE BUILDING.
    e. BE EQUIPPED WITH A TIMER THAT LIMITS THE HOURS OF OPERATION DURING PHOTOCELL OPERATION
    f. HAVE OVERRIDE CAPABILITY TO TURN LIGHTS ON AND OFF REGARDLESS OF PHOTOCELL
    g. BE EQUIPPED WITH A NEMA 12 ENCLOSURE
    h. LOCATION OF THE LIGHTING CONTROL PANEL WILL BE DETERMINED DURING CONSTRUCTION. ALLOW FOR 30 FEET OF DISTANCE BETWEEN THE POWER SOURCE AND THE LIGHTING CONTROL PANEL
    i. LOCATION OF THE PHOTOCELL WILL BE DETERMINED DURING CONSTRUCTION. ALLOW FOR 100 FEET OF DISTANCE BETWEEN THE LIGHTING CONTROL PANEL AND THE PHOTOCELL

KEY NOTES:

1. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE CABLE TRAY.
2. BOND THE GROUNDING ELECTRODE CONDUCTOR TO ATS–LS40–A, ATS–LS40–B AND ATS–LS40–C.
3. BOND THE GROUNDING ELECTRODE CONDUCTOR TO MCP–LP1–LS40, MCP–LP2–LS40, MCP–LP3–LS40, MCP–LP4–LS40, MCP–LP5–LS40, MCP–LP6–LS40.
4. BOND THE GROUNDING ELECTRODE CONDUCTOR TO BUS–A BREAKER, BUS–B BREAKER AND GEN BREAKER.
5. GROUND ROD AND GROUND TEST WELL PER TYPICAL DETAIL.
6. CONCRETE ENCASED GROUND (UFER) IN BLOCK WALL.
7. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE ANTENNA POLE.
8. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE SECONDARY SIDE OF THE TRANSFORMER AND GROUND ROD.
9. BOND THE GROUNDING ELECTRODE CONDUCTOR TO SWGR–LS40.
10. BOND THE GROUNDING ELECTRODE CONDUCTOR TO LCP–PLC–LS40.
11. NOT USED.
12. BOND THE GROUNDING ELECTRODE CONDUCTOR TO LCP–COMM–LS40, LCP–SSE–LS40, LCP–PCP–LS40 AND LCP–BACKUP–LS40.
13. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE A/C UNITS.
14. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE PLC PANEL DC GROUND BUS USING GREEN INSULATED WIRE CONNECTION. SEE SECTION 16061 FOR DETAILS.

FACILITY DRAWINGS
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FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

ELECTRICAL BUILDING LIGHTING AND GROUNDING

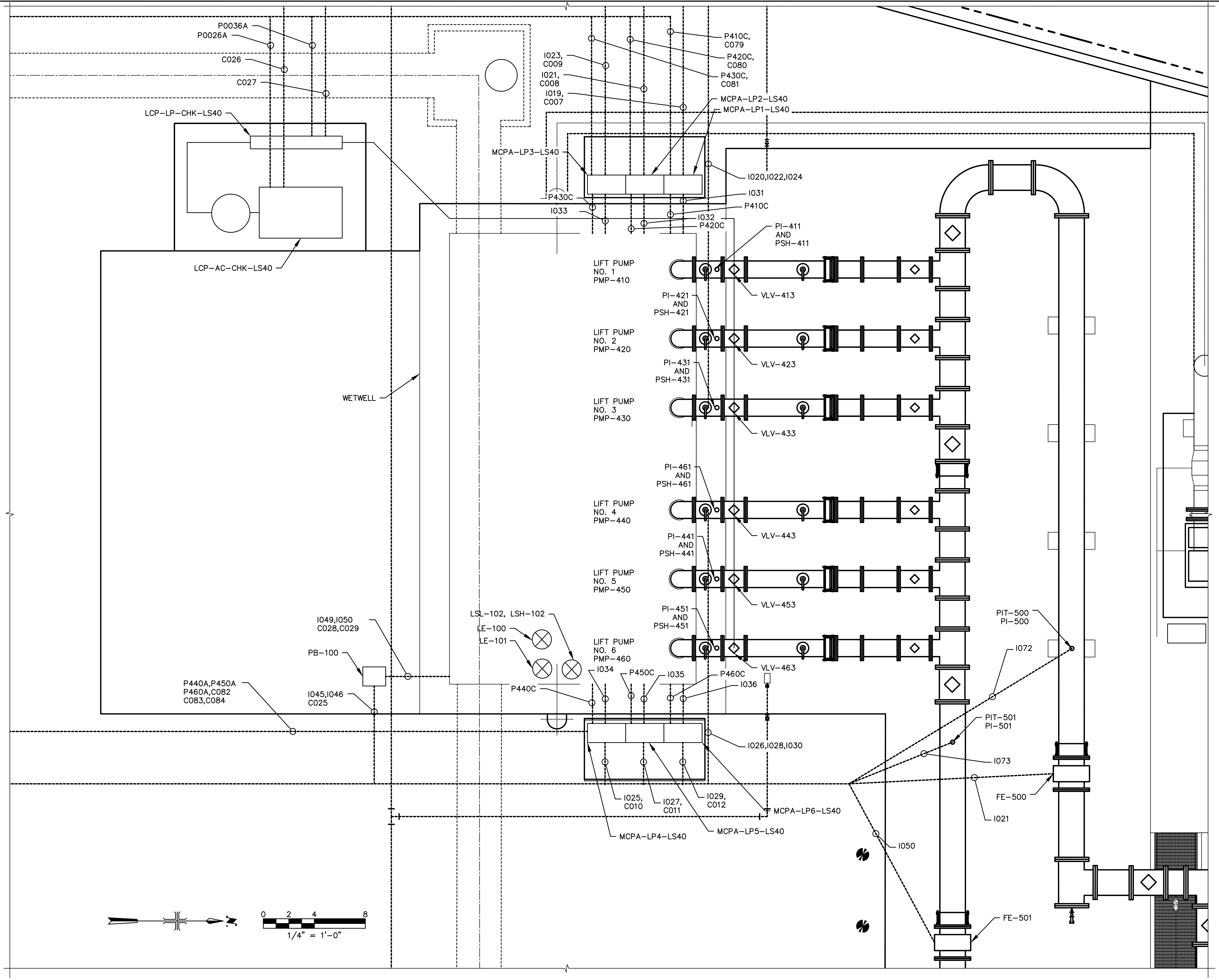
CITY PROJECT NO. WS90400085
DATE: 08/2024
E–14

CAD FILE: CSELS40EP05.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE.
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHER'S EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.


P0036A
P0026A
C026
C027
LCP-LP-CHK-LS40
LCP-AC-CHK-LS40
I023, C009
I021, C008
I019, C007
P410C, C079
P420C, C080
P430C, C081
MCPA-LP2-LS40
MCPA-LP1-LS40
MCPA-LP3-LS40
I020,I022,I024
I031
P410C
P430C
I033
I032
P420C
PI-411 AND PSH-411
LIFT PUMP NO. 1 PMP-410
VLV-413
PI-421 AND PSH-421
LIFT PUMP NO. 2 PMP-420
VLV-423
PI-431 AND PSH-431
LIFT PUMP NO. 3 PMP-430
VLV-433
WETWELL
PI-461 AND PSH-461
LIFT PUMP NO. 4 PMP-440
VLV-443
PI-441 AND PSH-441
LIFT PUMP NO. 5 PMP-450
VLV-453
PI-451 AND PSH-451
LIFT PUMP NO. 6 PMP-460
VLV-463
LSL-102, LSH-102
LE-100
LE-101
I049,I050 C028,C029
PB-100
P440A,P450A P460A,C082 C083,C084
I045,I046 C025
P440C
I034
P450C
I035
P460C
I036
I026,I028,I030
I025, C010
I027, C011
I029, C012
MCPA-LP6-LS40
MCPA-LP4-LS40
MCPA-LP5-LS40
PIT-500 PI-500
I072
PIT-501 PI-501
I073
FE-500
I021
I050
FE-501
0 2 4 8
1/4" = 1'-0"

GENERAL NOTES:

1. PRIOR TO THE BID, THE CONTRACTOR SHALL VISIT THE PROJECT SITE AND INVESTIGATE THE DETAILS OF WORK ASSOCIATED WITH THIS PROJECT. NOT ALL DETAILS ARE INCLUDED IN THE BID DOCUMENTS. A SITE VISIT INVESTIGATION PRIOR TO THE BID IS REQUIRED.
2. THIS DRAWING DOES NOT INDICATE ALL THE PROJECT REQUIREMENTS. THE PROJECT REQUIREMENTS ARE INDICATED IN VARIOUS ELECTRICAL AND INSTRUMENTATION DRAWINGS AND SPECIFICATIONS. ALL DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
3. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE HIGHER RATING DEVICE AND EQUIPMENT, THE FURTHER DISTANCE, ETC...
4. REFER TO NON-ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS THAT ARE NOT INDICATED ON THE ELECTRICAL DRAWINGS. THESE REQUIREMENTS MAY BE ELECTRICAL OR NON-ELECTRICAL WORK.
5. CIRCUITRY IS NOT SHOWN INTENTIONALLY. REFER TO OTHER DRAWINGS AND SPECIFICATIONS FOR COMPLETE CONDUIT AND CONDUCTOR REQUIREMENTS, INCLUDING BUT NOT LIMITED TO: SINGLE LINE DIAGRAMS, PANEL SCHEDULES, AND BLOCK DIAGRAMS
6. CONDUIT ROUTING IS NOT SHOWN INTENTIONALLY. CONDUIT ROUTING SHALL BE AS PERMITTED BY THE SPECIFICATIONS.
7. WHERE THE CONDUITS ARE INSTALLED UNDER EXISTING CONCRETE OR ASPHALT: SAW CUT AND REMOVE CONCRETE/ASPHALT; TRENCH, INSTALL CONDUITS, AND BACKFILL; AND INSTALL CONCRETE/ASPHALT AS REQUIRED TO MATCH EXISTING CONDITIONS.
8. EXISTING ITEMS ARE INDICATED AS EXISTING. ALL ITEMS ARE NEW UNLESS INDICATED EXISTING.

FACILITY DRAWINGS
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FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

WETWELL PLAN

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CITY PROJECT NO. WS90400085
DATE: 08/2024
E-15 SHEET 106 OF 134
CAD FILE: CSELS40EP10.dwg

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FOR CONSTRUCTION

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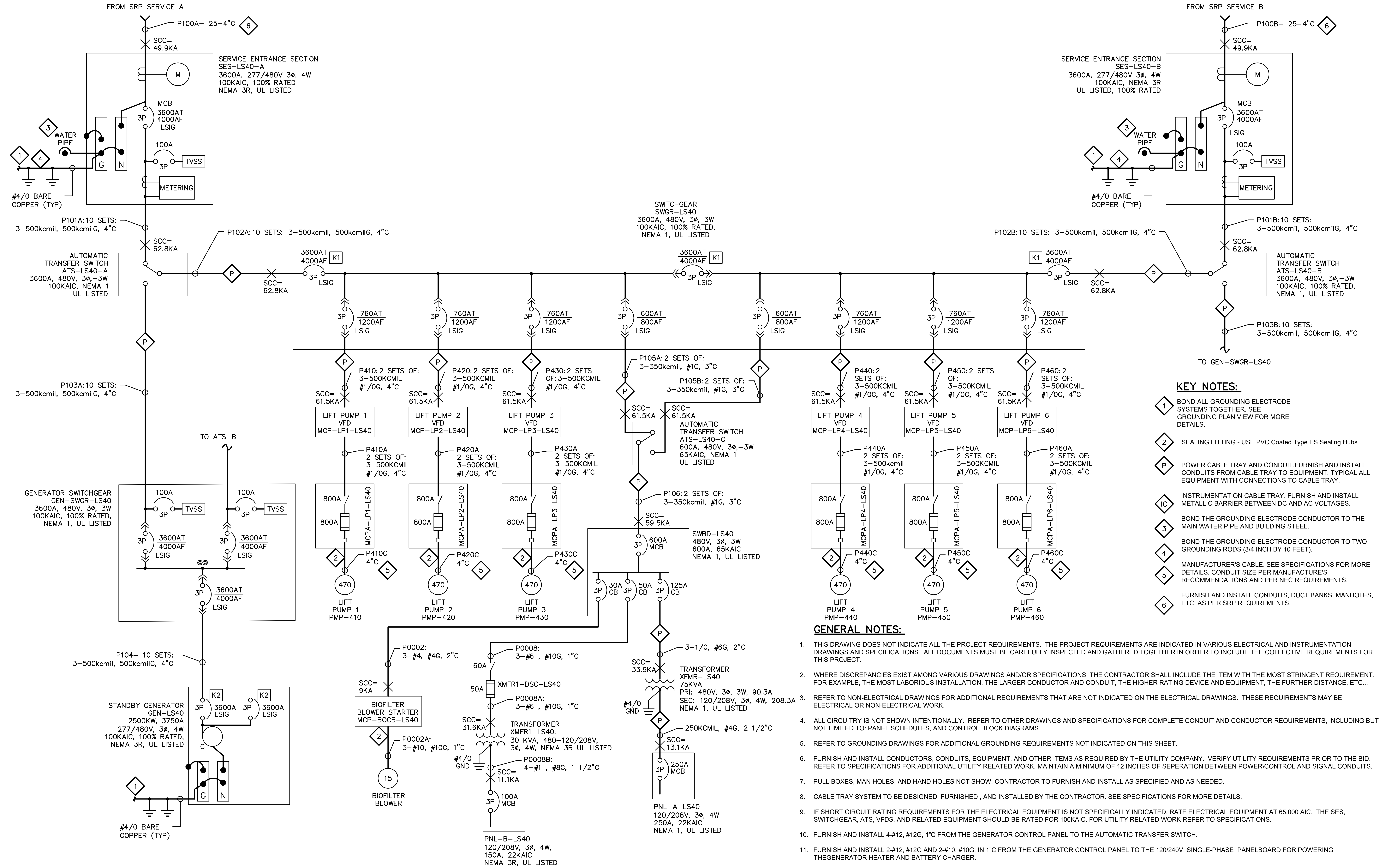
FROM SRP SERVICE A
P100A– 25–4"C
6
SCC= 49.9KA
M
SERVICE ENTRANCE SECTION
SES–LS40–A
3600A, 277/480V 3Ø, 4W
100KAIC, 100% RATED
NEMA 3R, UL LISTED
MCB
3P
3600AT
4000AF
LSIG
3
WATER PIPE
1
4
G
N
100A
3P
TVSS
METERING
#4/0 BARE COPPER (TYP)
P101A: 10 SETS: 3–500kcmil, 500kcmilG, 4"C
SCC= 62.8KA
AUTOMATIC TRANSFER SWITCH
ATS–LS40–A
3600A, 480V, 3Ø,–3W
100KAIC, NEMA 1
UL LISTED
P102A: 10 SETS: 3–500kcmil, 500kcmilG, 4"C
P
SCC= 62.8KA
SWITCHGEAR
SWGR–LS40
3600A, 480V, 3Ø, 3W
100KAIC, 100% RATED,
NEMA 1, UL LISTED
3600AT
4000AF
K1
3P
LSIG
P102B: 10 SETS: 3–500kcmil, 500kcmilG, 4"C
760AT
1200AF
600AT
800AF
P103A: 10 SETS: 3–500kcmil, 500kcmilG, 4"C
P410: 2 SETS OF: 3–500KCMIL #1/0G, 4"C
P420: 2 SETS OF: 3–500KCMIL #1/0G, 4"C
P430: 2 SETS OF: 3–500KCMIL #1/0G, 4"C
P105A: 2 SETS OF: 3–350kcmil, #1G, 3"C
P105B: 2 SETS OF: 3–350kcmil, #1G, 3"C
P440: 2 SETS OF: 3–500KCMIL #1/0G, 4"C
P450: 2 SETS OF: 3–500KCMIL #1/0G, 4"C
P460: 2 SETS OF: 3–500KCMIL #1/0G, 4"C
SCC= 61.5KA
LIFT PUMP 1 VFD MCP–LP1–LS40
LIFT PUMP 2 VFD MCP–LP2–LS40
LIFT PUMP 3 VFD MCP–LP3–LS40
LIFT PUMP 4 VFD MCP–LP4–LS40
LIFT PUMP 5 VFD MCP–LP5–LS40
LIFT PUMP 6 VFD MCP–LP6–LS40
AUTOMATIC TRANSFER SWITCH
ATS–LS40–C
600A, 480V, 3Ø,–3W
65KAIC, NEMA 1
UL LISTED
P410A 2 SETS OF: 3–500KCMIL #1/0G, 4"C
P420A 2 SETS OF: 3–500KCMIL #1/0G, 4"C
P430A 2 SETS OF: 3–500KCMIL #1/0G, 4"C
P440A 2 SETS OF: 3–500KCMIL #1/0G, 4"C
P450A 2 SETS OF: 3–500KCMIL #1/0G, 4"C
P460A 2 SETS OF: 3–500KCMIL #1/0G, 4"C
800A
MCPA–LP1–LS40
MCPA–LP2–LS40
MCPA–LP3–LS40
MCPA–LP4–LS40
MCPA–LP5–LS40
MCPA–LP6–LS40
P410C 4"C
P420C 4"C
P430C 4"C
P440C 4"C
P450C 4"C
P460C 4"C
2
5
470
LIFT PUMP 1 PMP–410
LIFT PUMP 2 PMP–420
LIFT PUMP 3 PMP–430
LIFT PUMP 4 PMP–440
LIFT PUMP 5 PMP–450
LIFT PUMP 6 PMP–460
P106: 2 SETS OF: 3–350kcmil, #1G, 3"C
SCC= 59.5KA
SWBD–LS40
480V, 3Ø, 3W
600A, 65KAIC
NEMA 1, UL LISTED
600A MCB
30A CB
50A CB
125A CB
TO ATS–B
GENERATOR SWITCHGEAR
GEN–SWGR–LS40
3600A, 480V, 3Ø, 3W
100KAIC, 100% RATED,
NEMA 1, UL LISTED
100A
TVSS
3600AT
4000AF
LSIG
P104– 10 SETS: 3–500kcmil, 500kcmilG, 4"C
STANDBY GENERATOR
GEN–LS40
2500KW, 3750A
277/480V, 3Ø, 4W
100KAIC, 100% RATED,
NEMA 3R, UL LISTED
K2
3600A LSIG
G
#4/0 BARE COPPER (TYP)
P0002: 3–#4, #4G, 2"C
SCC= 9KA
BIOFILTER BLOWER STARTER MCP–BOCB–LS40
P0002A: 3–#10, #10G, 1"C
15
BIOFILTER BLOWER
P0008: 3–#6 , #10G, 1"C
60A
50A
XMFR1–DSC–LS40
P0008A: 3–#6 , #10G, 1"C
SCC= 31.6KA
TRANSFORMER
XMFR1–LS40:
30 KVA, 480–120/208V,
3Ø, 4W, NEMA 3R UL LISTED
#4/0 GND
P0008B: 4–#1 , #8G, 1 1/2"C
SCC= 11.1KA
100A MCB
PNL–B–LS40
120/208V, 3Ø, 4W,
150A, 22KAIC
NEMA 3R, UL LISTED
3–1/0, #6G, 2"C
SCC= 33.9KA
TRANSFORMER
XFMR–LS40
75KVA
PRI: 480V, 3Ø, 3W, 90.3A
SEC: 120/208V, 3Ø, 4W, 208.3A
NEMA 1, UL LISTED
#4/0 GND
250KCMIL, #4G, 2 1/2"C
SCC= 13.1KA
250A MCB
PNL–A–LS40
120/208V, 3Ø, 4W
250A, 22KAIC
NEMA 1, UL LISTED
FROM SRP SERVICE B
P100B– 25–4"C
SERVICE ENTRANCE SECTION
SES–LS40–B
3600A, 277/480V 3Ø, 4W
100KAIC, NEMA 3R
UL LISTED, 100% RATED
P101B: 10 SETS: 3–500kcmil, 500kcmilG, 4"C
AUTOMATIC TRANSFER SWITCH
ATS–LS40–B
3600A, 480V, 3Ø,–3W
100KAIC, 100% RATED,
NEMA 1, UL LISTED
P103B: 10 SETS: 3–500kcmil, 500kcmilG, 4"C
TO GEN–SWGR–LS40

KEY NOTES:

1. BOND ALL GROUNDING ELECTRODE SYSTEMS TOGETHER. SEE GROUNDING PLAN VIEW FOR MORE DETAILS.
2. SEALING FITTING - USE PVC Coated Type ES Sealing Hubs.
P. POWER CABLE TRAY AND CONDUIT.FURNISH AND INSTALL CONDUITS FROM CABLE TRAY TO EQUIPMENT. TYPICAL ALL EQUIPMENT WITH CONNECTIONS TO CABLE TRAY.
IC. INSTRUMENTATION CABLE TRAY. FURNISH AND INSTALL METALLIC BARRIER BETWEEN DC AND AC VOLTAGES.
3. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE MAIN WATER PIPE AND BUILDING STEEL.
4. BOND THE GROUNDING ELECTRODE CONDUCTOR TO TWO GROUNDING RODS (3/4 INCH BY 10 FEET).
5. MANUFACTURER'S CABLE. SEE SPECIFICATIONS FOR MORE DETAILS. CONDUIT SIZE PER MANUFACTURE'S RECOMMENDATIONS AND PER NEC REQUIREMENTS.
6. FURNISH AND INSTALL CONDUITS, DUCT BANKS, MANHOLES, ETC. AS PER SRP REQUIREMENTS.

GENERAL NOTES:

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2. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE HIGHER RATING DEVICE AND EQUIPMENT, THE FURTHER DISTANCE, ETC...
3. REFER TO NON-ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS THAT ARE NOT INDICATED ON THE ELECTRICAL DRAWINGS. THESE REQUIREMENTS MAY BE ELECTRICAL OR NON-ELECTRICAL WORK.
4. ALL CIRCUITRY IS NOT SHOWN INTENTIONALLY. REFER TO OTHER DRAWINGS AND SPECIFICATIONS FOR COMPLETE CONDUIT AND CONDUCTOR REQUIREMENTS, INCLUDING BUT NOT LIMITED TO: PANEL SCHEDULES, AND CONTROL BLOCK DIAGRAMS
5. REFER TO GROUNDING DRAWINGS FOR ADDITIONAL GROUNDING REQUIREMENTS NOT INDICATED ON THIS SHEET.
6. FURNISH AND INSTALL CONDUCTORS, CONDUITS, EQUIPMENT, AND OTHER ITEMS AS REQUIRED BY THE UTILITY COMPANY. VERIFY UTILITY REQUIREMENTS PRIOR TO THE BID. REFER TO SPECIFICATIONS FOR ADDITIONAL UTILITY RELATED WORK. MAINTAIN A MINIMUM OF 12 INCHES OF SEPERATION BETWEEN POWER\CONTROL AND SIGNAL CONDUITS.
7. PULL BOXES, MAN HOLES, AND HAND HOLES NOT SHOW. CONTRACTOR TO FURNISH AND INSTALL AS SPECIFIED AND AS NEEDED.
8. CABLE TRAY SYSTEM TO BE DESIGNED, FURNISHED , AND INSTALLED BY THE CONTRACTOR. SEE SPECIFICATIONS FOR MORE DETAILS.
9. IF SHORT CIRCUIT RATING REQUIREMENTS FOR THE ELECTRICAL EQUIPMENT IS NOT SPECIFICALLY INDICATED, RATE ELECTRICAL EQUIPMENT AT 65,000 AIC. THE SES, SWITCHGEAR, ATS, VFDS, AND RELATED EQUIPMENT SHOULD BE RATED FOR 100KAIC. FOR UTILITY RELATED WORK REFER TO SPECIFICATIONS.
10. FURNISH AND INSTALL 4-#12, #12G, 1"C FROM THE GENERATOR CONTROL PANEL TO THE AUTOMATIC TRANSFER SWITCH.
11. FURNISH AND INSTALL 2-#12, #12G AND 2-#10, #10G, IN 1"C FROM THE GENERATOR CONTROL PANEL TO THE 120/240V, SINGLE-PHASE PANELBOARD FOR POWERING THEGENERATOR HEATER AND BATTERY CHARGER.

FACILITY DRAWINGS
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REMARKS	DWG NUMBER	CAD FILE NAME	DATE	PROJECT NAME	PROJECT NO.	ENGINEERING COMPANY	REVISION
–	–	–	–	–	–	–	#

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
7-31-24
ARIZONA, U.S.A.

NO.	BY	DATE	CKD	REMARKS

REVISIONS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

SINGLE LINE DIAGRAM

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–16
SHEET 107 OF 134
CAD FILE: CSELS40EN01.dwg

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DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

LOAD SUMMARY

FAC/AREA (ZONE/SITE): LS-40
EQUIPMENT LOCATION: LS-40
TAG NAME: SES-LS40-A
FED FROM: SRP SERVICE A

MANUFACTURER: TBD
VOLTS/PHASE/WIRE 480 VAC, 3P, 3W
MAIN BUS RATING: 3600
MAIN BREAKER (AMPS): 3600
AIC RATING (AMPS): 100k
MAIN LUG ONLY: NO

SECTION NO.	TAG/CMMS NUMBER	BREAKER / FUSE SIZE	STARTER SIZE	FEEDER CABLE SIZE	EQUIPMENT NAME	KVA	HP	FLA	BREAKER TRIP RATING
TBD	TBD	800	VFD	500 kcmil	PUMP NO.1		470	535	720
TBD	TBD	800	VFD	500 kcmil	PUMP NO.2		470	535	720
TBD	TBD	800	VFD	500 kcmil	PUMP NO.3		470	535	720
TBD	TBD	800	VFD	500 kcmil	PUMP NO.4		470	535	720
TBD	TBD	800	TBD	500 kcmil	PUMP NO.5		470	535	720
TBD	TBD	800	TBD	500 kcmil	PUMP NO.6 (Standby)		470		720
TBD	TBD	600	TBD	350 kcmil	SWITCHBOARD			300	600
SUBTOTAL OF FLA FOR NON-MOTOR LOADS (KVA):								100	
SUBTOTAL OF FLA FOR MOTOR LOADS:								2975	
PLUS 25% OF LARGEST MOTOR (THE SWITCHGEAR IS 100% RATED):								0	
TOTAL AMPS								3075	
% LOADED (NO LARGER THAN 80% OF SELECTED LOAD SERVICE SIZE):								85%	

A
SES-LS40-A LOAD CALCULATION
N.T.S.

LOAD SUMMARY

FAC/AREA (ZONE/SITE): LS-40
EQUIPMENT LOCATION: LS-40
TAG NAME: SES-LS40-B
FED FROM: SRP SERVICE B

MANUFACTURER: TBD
VOLTS/PHASE/WIRE 480 VAC, 3P, 3W
MAIN BUS RATING: 3600
MAIN BREAKER (AMPS): 3600
AIC RATING (AMPS): 100k
MAIN LUG ONLY: NO

SECTION NO.	TAG/CMMS NUMBER	BREAKER / FUSE SIZE	STARTER SIZE	FEEDER CABLE SIZE	EQUIPMENT NAME	KVA	HP	FLA	BREAKER TRIP RATING
TBD	TBD	800	VFD	500 kcmil	PUMP NO.1		470	535	720
TBD	TBD	800	VFD	500 kcmil	PUMP NO.2		470	535	720
TBD	TBD	800	VFD	500 kcmil	PUMP NO.3		470	535	720
TBD	TBD	800	VFD	500 kcmil	PUMP NO.4		470	535	720
TBD	TBD	800	TBD	500 kcmil	PUMP NO.5		470	535	720
TBD	TBD	800	TBD	500 kcmil	PUMP NO.6 (Standby)		470		720
TBD	TBD	600	TBD	350 kcmil	SWITCHBOARD			300	600
SUBTOTAL OF FLA FOR NON-MOTOR LOADS (KVA):								100	
SUBTOTAL OF FLA FOR MOTOR LOADS:								2975	
PLUS 25% OF LARGEST MOTOR (THE SWITCHGEAR IS 100% RATED):								0	
TOTAL AMPS								3075	
% LOADED (NO LARGER THAN 80% OF SELECTED LOAD SERVICE SIZE):								85%	

B
SES-LS40-B LOAD CALCULATION
N.T.S.

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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
33468
VAHID
BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

LOAD SUMMARY

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-17

CAD FILE: CSELS40EN02.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

KEY NOTES:

1. FURNISH AND INSTALL A NEMA 4X, SS 316, 600V, 30A, FUSED DISCONNECT SWITCHS. FUSED PER HVAC EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PLEASE NOTE THAT THESE DISCONNECT SWITCHES ARE NOT INDICTED ON THE PLAN VIEWS BUT ARE REQUIRED.
2. FURNISH AND INSTALL A NEMA 4X, SS 316, 600V, 30A, FUSED DISCONNECT SWITCHS. FUSED PER VENDOR EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PLEASE NOTE THAT THESE DISCONNECT SWITCHES ARE NOT INDICTED ON THE PLAN VIEWS BUT ARE REQUIRED.

GENERAL NOTES:

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2. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE HIGHER RATING DEVICE AND EQUIPMENT, THE FURTHER DISTANCE, ETC...
3. THE CONTRACTOR SHALL VERIFY THAT ALL LOADS INDICATED ON THE PANEL SCHEDULE HAVE DESIGNATED CONDUITS AND CONDUCTORS. IF CIRCUITS DO NOT HAVE DESIGNATED CONDUITS AND CONDUCTORS, THEN THE CONTRACTOR SHALL INCLUDE CONDUITS AND CONDUCTORS PER NEC FOR THESE LOADS. IF THE DISTANCE BETWEEN THE LOADS AND PANELS ARE NOT EVIDENT, THEN THE CONTRACTOR SHALL INCLUDE 100 FEET OF CIRCUITRY FOR EACH LOAD.
4. FURNISH AND INSTALL 100 FEET OF CIRCUITRY (2–#12, #12G, 1"C) FOR EACH CIRCUIT INDICATED AS SPARE. THIS WORK SHALL BE IDENTIFIED AND DIRECTED PER ENGINEER ONLY.

PANEL: SWBD-LS40 **MANUFACTURER: TBD**
VOLTAGE, PHASE &WIRE: 480V VAC 3Ø, 3W **LOCATION: ELECTRICAL ROOM**
BUS SIZE: 600 AMPS **ENCLOSURE: NEMA 1**
MAIN SIZE: 600 AMPS **MOUNTING: SURFACE**
MAIN TYPE: MCB **BUS BRACING: 65 KAIC**
MAIN TYPE: **FED FROM: SWGR-LS40**

WIRE/CONDUIT SIZE	CKT NO.	LOAD DESCRIPTION	CKT. BKR. AMP	AMPS A	AMPS B	AMPS C	AMPS A	AMPS B	AMPS C	CKT. BKR. AMP	LOAD DESCRIPTION	CKT NO.	WIRE/CONDUIT SIZE
SEE SINGLE LINE.	1	TRANSFORMER XFMR-LS-40	125A	90.3			21.0			30A	MCP-BOCB-LS40	2	SEE SINGLE LINE.
	3				90.3			21.0				4	
	5					90.3			21.0			6	
◇1 P0007: 3-#8, #10G, 1"C	7	BUILDING A\C UNIT 1	40A	32.0			37.0			50A	TRANSFORMER XFMR1-LS-40	8	P0008: 3-#6, #10G, 1"C
	9				32.0			37.0				10	
	11					32.0			37.0			12	
◇1 P0013: 3-#8, #10G, 1"C	13	BUILDING A\C UNIT 2	40A	32.0			-			20A	SPARE	14	
	15				32.0			-				16	
	17					32.0			-			18	
P0019: 3-#4, #10G, 1"C	19	EMERG ODOR CONTROL PWR REC	60A	48.0			-			20A	SPARE	20	
	21				48.0			-				22	
	23					48.0			-			24	
	25	SPARE	40A	-			18.0			30A MCP	LCP-AC-VLV-LS40	26	P0026: 3-#10, #10G, 1"C ◇2
	27				-			18.0				28	
	29					-			18.0			30	
	31	SPARE	40A				-				SPACE	32	
	33							-				34	
	35								-			36	
	37	SPARE	20A	-							SPACE	38	
	39				-							40	
	41					-						42	
	43	SPACE		-			-				SPACE	44	
	45				-			-				46	
	47					-			-			48	
	49	SPACE		-			-				SPACE	50	
	51				-			-				52	
	53					-			-			54	
	55	SPACE		-			-				SPACE	56	
	57				-			-				58	
	59					-			-			60	
	61	SPACE		-			-				SPACE	62	
	63				-			-				64	
	65					-			-			66	
				202.3	202.3	202.3	76.0	76.0	76.0				

NOTES:
KVA A PHASE = 96.4 **AMPS A PHASE = 347.9** **BY FIRM:**
KVA B PHASE = 96.4 **AMPS B PHASE = 347.9** **DATE:**
KVA C PHASE = 96.4 **AMPS C PHASE = 347.9**
Changes to this Schedule Require Approval From the City Electrical Foreman
TOTAL KVA = 289.1 **(Load totals are calculated as continuous duty at 125%)**

A SWBD–LS40 SCHEDULE
N.T.S.

PANEL: PNL-A **MANUFACTURER: TBD**
VOLTAGE, PHASE &WIRE: 120/208 VAC 3Ø, 4W **LOCATION: ELECTRICAL ROOM**
BUS SIZE: 250 AMPS **ENCLOSURE: NEMA 1**
MAIN SIZE: 250 AMPS **MOUNTING: SURFACE**
MAIN TYPE: MCB **BUS BRACING: 22 KAIC**
MAIN TYPE: MCB **FED FROM: XFMR-LS40**

WIRE/CONDUIT SIZE	CKT NO.	LOAD DESCRIPTION	CKT. BKR. AMP	AMPS A	AMPS B	AMPS C	AMPS A	AMPS B	AMPS C	CKT. BKR. AMP	LOAD DESCRIPTION	CKT NO.	WIRE/CONDUIT SIZE
P001: 2#12, #12G, 1"C	1	LCP-PLC-LS40	20A	7.0			8.0			20A	LCP-SSE-LS40	2	P002: 2#12, #12G, 1"C
P003: 2#12, #12G, 1"C	3	LCP-PLC-LS40 (LIGHTING\REC)	20A		3.0			3.0		20A	LCP-SSE-LS40 (LIGHTING\REC)	4	P004: 2#12, #12G, 1"C
P005: 2#12, #12G, 1"C	5	LCP-PCP-LS40	20A			8.0			6.0	20A	LCP-BOCB-LS40	6	P006: 2#8, #8G, 1"C
P007: 2#12, #12G, 1"C	7	LCP-PCP-LS40 (LIGHTING\REC)	20A	3.0			3.0			20A	LCP-BOCB-LS40 (LIGHTING\REC)	8	P008: 2#8, #8G, 1"C
	9	SPARE	20A		-			2.0		20A	LCP-BACKUP-LS40	10	P010: 2#12, #12G, 1"C
P011: 2#12, #12G, 1"C	11	ROOF RECEPTACLES	20A			3.0			12.0	20A	LCP-COM-LS40	12	P012: 2#12, #12G, 1"C
P013: 2#1, #8G, 1 1/2"C	13	GENERATOR PANELBOARD	100A	80.0			3.0			20A	LCP-COM-LS40 (LIGHTING\REC)	14	P014: 2#12, #12G, 1"C
	15				80.0			5.0		20A	LCP-IBS-LS40	16	P016: 2#12, #12G, 1"C
P017: 2#8, #12G, 1"C	17	AREA LIGHT CONT PNL (ALCP-LS40)	20A			4.5			3.0	20A	LCP-IBS-LS40 (LIGHTING\REC)	18	P018: 2#12, #12G, 1"C
P019: 2#12, #12G, 1"C	19	ELECTRICAL ROOM LIGHTS	20A	5.0			-			20A	SPARE	20	
P021: 2#12, #12G, 1"C	21	ELECTRICAL BUILDING RECEPTACLES	20A		12.0			-		20A	SPARE	22	
P023: 2#12, #12G, 1"C	23	ELECTRICAL BUILDING OUTSIDE LIGHTS	20A			7.5			5.6	20A	BIOFILTER BLOWER ENCLOSURE FAN	24	P024: 2#8, #8G, 1"C
P025: 2#12, #12G, 1"C	25	ELECTRICAL BUILDING EXIT LIGHTS	20A	4.5			-			20A	SPARE	26	
	27	SPARE	20A		-			-		20A	SPARE	28	
P029: 2#12, #12G, 1"C	29	ELECTRICAL BUILDING OUTSIDE REC	20A			7.5			-	20A	SPARE	30	
	31	SPARE	20A	-			9.5			20A	OUTSIDE RECEPTACLES	32	P032: 2#8, #8G, 1"C
	33	SPARE	20A		-			-		20A	SPARE	34	
P035: 2#12, #12G, 1"C	35	OUTSIDE POLE LIGHTING	20A			5.5			15.0	20A	LCP-LP-VLV-LS40	36	P036: 2#12, #12G, 1"C
	37	SPARE	20A	-			-			-	SPACE	38	
	39	SPARE	20A		-			-		-	SPACE	40	
	41	SPARE	20A			-			-	-	SPACE	42	
				99.5	95.0	36.0	23.5	10.0	41.6				

NOTES:
KVA A PHASE = 18.5 **AMPS A PHASE = 153.8** **BY FIRM:**
KVA B PHASE = 15.8 **AMPS B PHASE = 131.3** **DATE:**
KVA C PHASE = 11.6 **AMPS C PHASE = 97.0**
Changes to this Schedule Require Approval From the City Electrical Foreman
TOTAL KVA = 45.8 **(Load totals are calculated as continuous duty at 125%)**

B PNL–A–LS40 SCHEDULE
N.T.S.

PANEL: PNL-B **MANUFACTURER: TBD**
VOLTAGE, PHASE &WIRE: 120/208 VAC 3Ø, 4W **LOCATION: ELECTRICAL ROOM**
BUS SIZE: 125 AMPS **ENCLOSURE: NEMA 3R**
MAIN SIZE: 100 AMPS **MOUNTING: SURFACE**
MAIN TYPE: MCB **BUS BRACING: 22 KAIC**
MAIN TYPE: MCB **FED FROM: XFMR1-LS40**

WIRE/CONDUIT SIZE	CKT NO.	LOAD DESCRIPTION	CKT. BKR. AMP	AMPS A	AMPS B	AMPS C	AMPS A	AMPS B	AMPS C	CKT. BKR. AMP	LOAD DESCRIPTION	CKT NO.	WIRE/CONDUIT SIZE
P1001: 2#10, #10G, 1"C	1	FERROUS CHLORIDE SYSTEM	20A	14.0			-			20A	SPARE	2	
P1003: 2#12, #12G, 1"C	3	FERROUS CHLORIDE LIGHTING	20A		7.0			20.0		25A	FERROUS CHLORIDE SYSTEM	4	P1004: 2#10, #10G, 1"C
P1005: 2#12, #12G, 1"C	5	FERROUS CHLORIDE RECEPTACLES	20A			8.0			20.0	25A	FERROUS CHLORIDE CONTROL SYSTEMS	6	P1006: 2#10, #10G, 1"C
P1007: 2#12, #12G, 1"C	7	GATE OPERATOR POWER SUPPLY	20A	17.5			-			20A	SPARE	8	
	9				17.5			-		20A	SPARE	10	
	11	SPARE	20A			-			-	20A	SPARE	12	
	13	SPARE	20A	-			-			-	SPACE	14	
P1015: 2#10, #10G, 1"C	15	FERROUS CHLORIDE SYSTEM	25A		20.0			-		-	SPACE	16	
P1017: 2#10, #10G, 1"C	17	FERROUS CHLORIDE SYSTEM	25A			20.0			-	-	SPACE	18	
	19	SPACE	-	-			-			-	SPACE	20	
				31.5	44.5	28.0	0.0	20.0	20.0				

NOTES:
KVA A PHASE = 4.7 **AMPS A PHASE = 39.4** **BY FIRM:**
KVA B PHASE = 9.7 **AMPS B PHASE = 80.6** **DATE:**
KVA C PHASE = 7.2 **AMPS C PHASE = 60.0**
Changes to this Schedule Require Approval From the City Electrical Foreman
TOTAL KVA = 21.6 **(Load totals are calculated as continuous duty at 125%)**

C PNL–B–LS40 SCHEDULE
N.T.S.

FACILITY DRAWINGS
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FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#							
#							
#							

EiC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
Date Signed 7-31-24

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

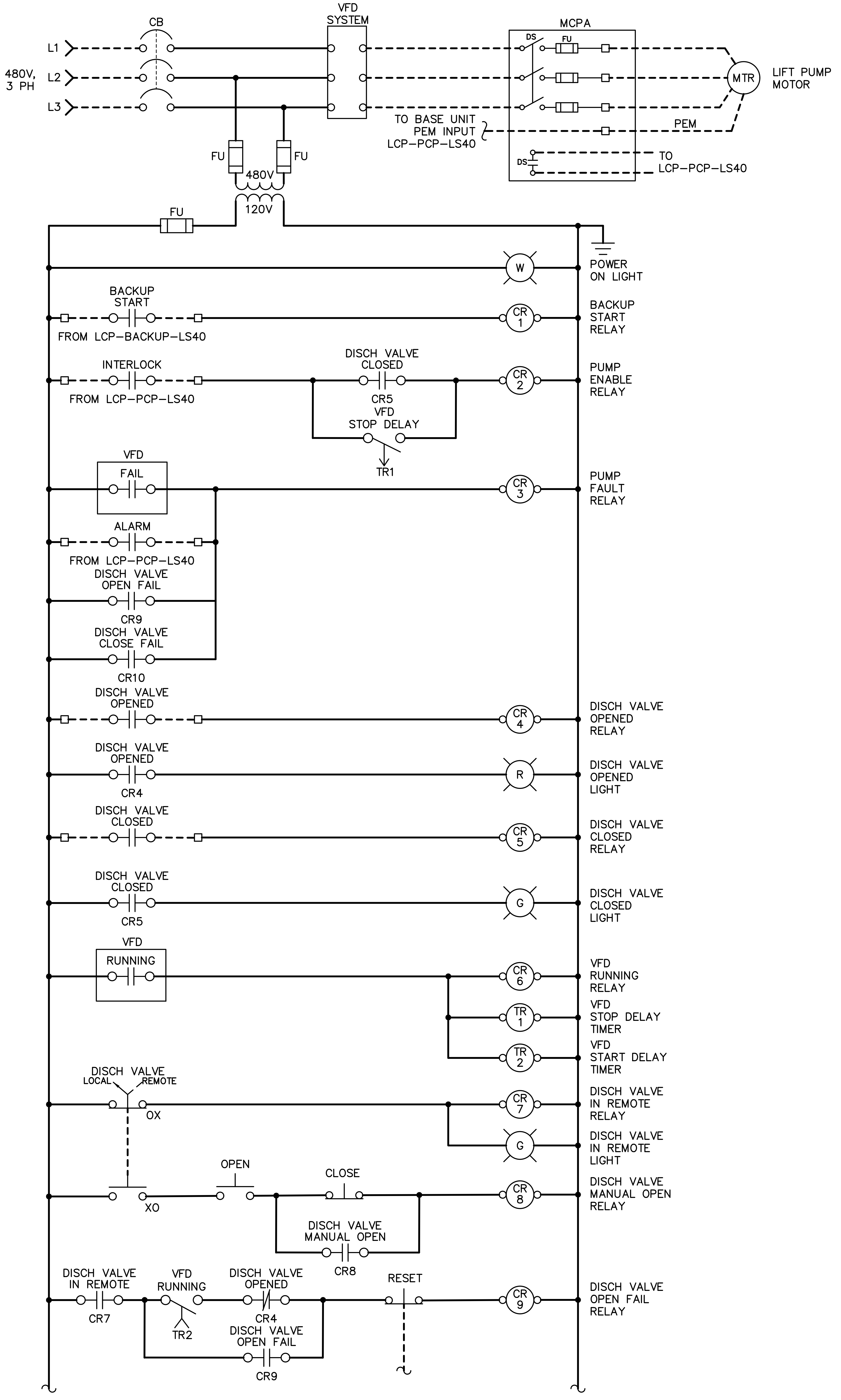
CITY OF PHOENIX
WATER SERVICES DEPARTMENT

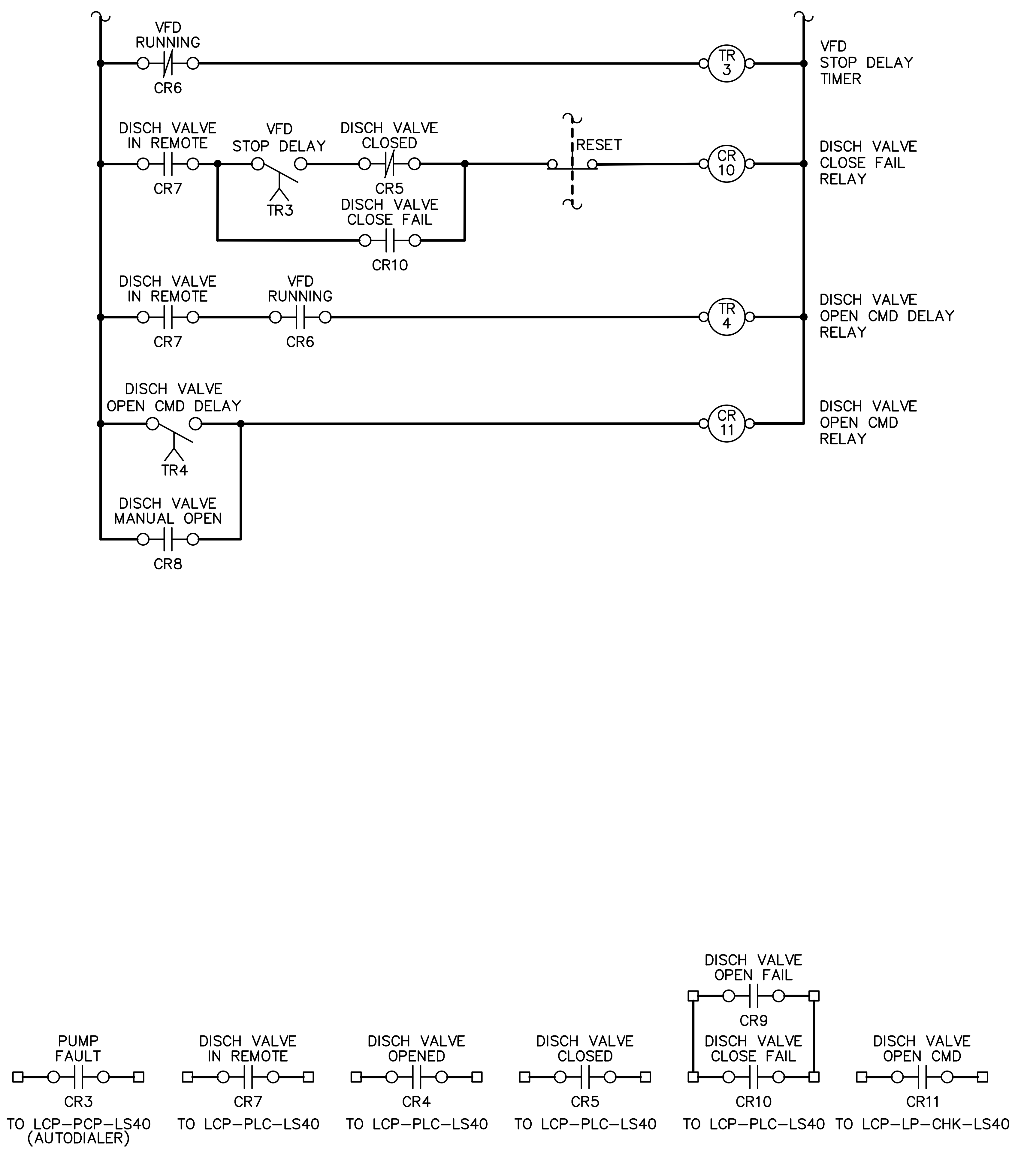
LIFT STATION 40
REFURBISHMENT

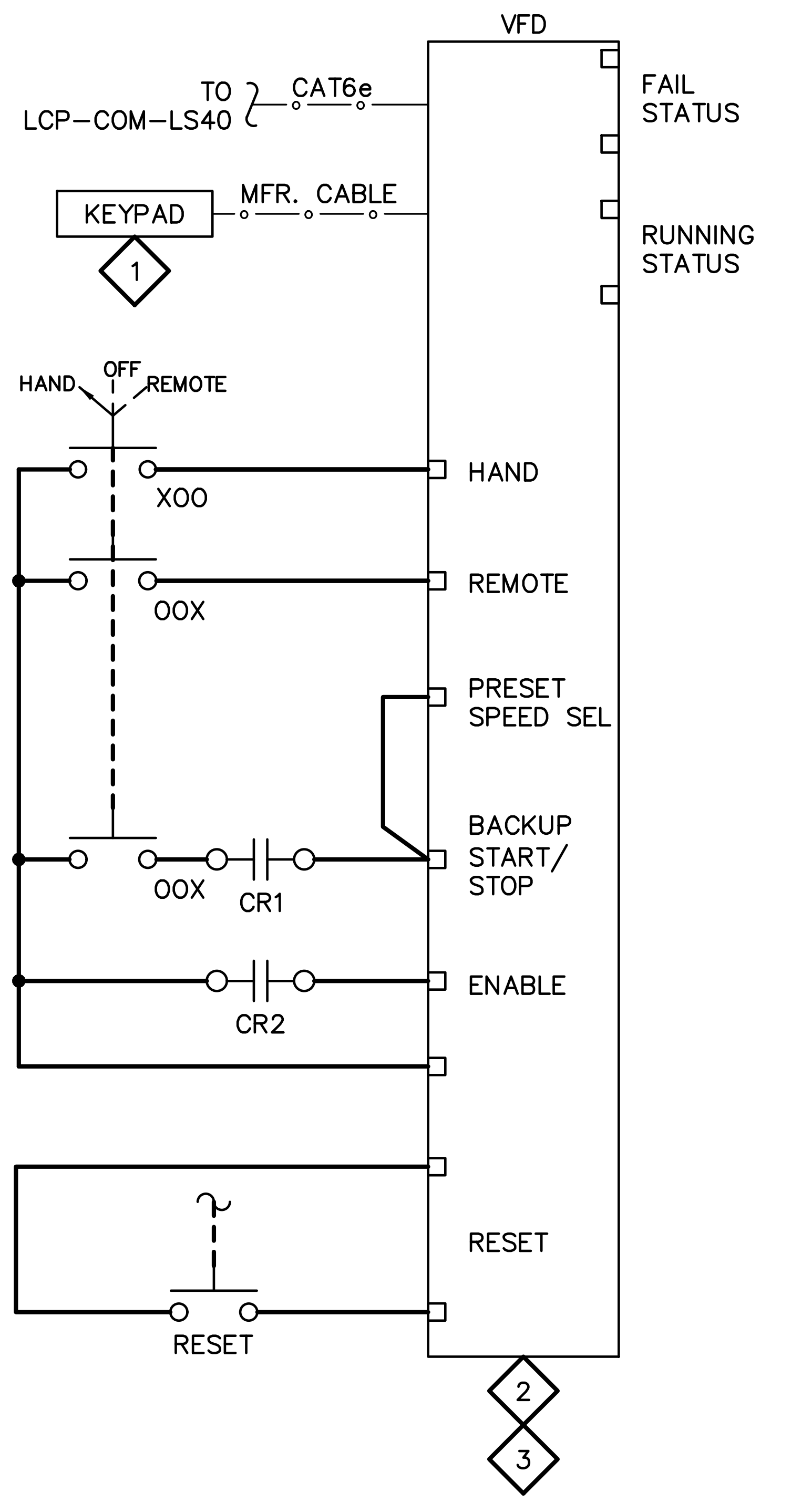
ELECTRICAL

POWER PANEL SCHEDULES

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–18 SHEET 109 OF 134
CAD FILE: CSELS40EL01.dwg


CB
VFD SYSTEM
MCPA
DS
FU
L1
L2
L3
480V, 3 PH
MTR
LIFT PUMP MOTOR
TO BASE UNIT PEM INPUT LCP–PCP–LS40
PEM
DS
TO LCP–PCP–LS40
FU
FU
480V
120V
FU
W
POWER ON LIGHT
BACKUP START
FROM LCP–BACKUP–LS40
CR 1
BACKUP START RELAY
INTERLOCK
FROM LCP–PCP–LS40
DISCH VALVE CLOSED
CR5
VFD STOP DELAY
TR1
CR 2
PUMP ENABLE RELAY
VFD FAIL
CR 3
PUMP FAULT RELAY
ALARM
FROM LCP–PCP–LS40
DISCH VALVE OPEN FAIL
CR9
DISCH VALVE CLOSE FAIL
CR10
DISCH VALVE OPENED
CR 4
DISCH VALVE OPENED RELAY
DISCH VALVE OPENED
CR4
R
DISCH VALVE OPENED LIGHT
DISCH VALVE CLOSED
CR 5
DISCH VALVE CLOSED RELAY
DISCH VALVE CLOSED
CR5
G
DISCH VALVE CLOSED LIGHT
VFD RUNNING
CR 6
VFD RUNNING RELAY
TR 1
VFD STOP DELAY TIMER
TR 2
VFD START DELAY TIMER
DISCH VALVE
LOCAL
REMOTE
OX
CR 7
DISCH VALVE IN REMOTE RELAY
G
DISCH VALVE IN REMOTE LIGHT
OPEN
CLOSE
XO
DISCH VALVE MANUAL OPEN
CR8
CR 8
DISCH VALVE MANUAL OPEN RELAY
DISCH VALVE IN REMOTE
CR7
VFD RUNNING
TR2
DISCH VALVE OPENED
CR4
DISCH VALVE OPEN FAIL
CR9
RESET
CR 9
DISCH VALVE OPEN FAIL RELAY


VFD RUNNING
CR6
TR 3
VFD STOP DELAY TIMER
DISCH VALVE IN REMOTE
CR7
VFD STOP DELAY
TR3
DISCH VALVE CLOSED
CR5
DISCH VALVE CLOSE FAIL
CR10
RESET
CR 10
DISCH VALVE CLOSE FAIL RELAY
DISCH VALVE IN REMOTE
CR7
VFD RUNNING
CR6
TR 4
DISCH VALVE OPEN CMD DELAY
DISCH VALVE OPEN CMD DELAY
TR4
DISCH VALVE MANUAL OPEN
CR8
CR 11
DISCH VALVE OPEN CMD RELAY
PUMP FAULT
CR3
TO LCP–PCP–LS40 (AUTODIALER)
DISCH VALVE IN REMOTE
CR7
TO LCP–PLC–LS40
DISCH VALVE OPENED
CR4
TO LCP–PLC–LS40
DISCH VALVE CLOSED
CR5
TO LCP–PLC–LS40
DISCH VALVE OPEN FAIL
CR9
DISCH VALVE CLOSE FAIL
CR10
TO LCP–PLC–LS40
DISCH VALVE OPEN CMD
CR11
TO LCP–LP–CHK–LS40


VFD
TO LCP–COM–LS40
CAT6e
FAIL STATUS
KEYPAD
MFR. CABLE
1
RUNNING STATUS
HAND
OFF
REMOTE
XOO
HAND
OOX
REMOTE
PRESET SPEED SEL
OOX
CR1
BACKUP START/ STOP
CR2
ENABLE
RESET
RESET
2
3

DETAIL A #|# **LIFT PUMP 1 VFD CONTROL SCHEMATIC (MCP–LP1–LS40)**

TYPICAL PUMPS LP2, LP3, LP4, LP5 AND LP6.

GENERAL NOTES:

1. FOR REFERENCE ONLY. CONTRACTOR TO LAYOUT AND DESCRIBE PER 17260 SPECIFICATIONS.
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4. THE CONTROL SCHEMATICS ARE SHOWN TO FURTHER CONVEY THE DESIGN INTENT AND CONTROL STRATEGY FOR THE SHOWN EQUIPMENT AND DEVICES. THE CONTRACTOR SHALL DESIGN WIRING DIAGRAMS BY INCORPORATING THE CONTROL SCHEMATICS HEREIN, THE P&IDS, CONTROL STRATEGIES, AND INCORPORATING THE ACTUAL SUBMITTED EQUIPMENT AND DEVICES.
5. WHEN THE CONTROL SCHEMATICS ARE EXISTING AND WE ARE MODIFYING THEM: THE CONTRACTOR SHALL ALLOW 16 HOURS BY A PROFICIENT CONTROL ELECTRICIAN TO AS–BUILD THE CONTROLS ASSOCIATED WITH THIS CONTROL SCHEMATIC. THE AS–BUILT CONTROL SCHEMATIC SHOULD BE SKETCHED AND SUBMITTED TO THE ENGINEER FOR FURTHER MODIFICATION IF NECESSARY.
6. THE TEMPORARY CONTROLS WILL HAVE TO BE AS–BUILT BY THE CONTRACTOR AND SHALL BE OF THE EXISTING EQUIPMENT BEING DUPLICATED.

KEY NOTES:

1. MOUNT IN VFD DOOR SUCH THAT KEYPAD IS VISIBLE WHEN VFD DOOR IS CLOS
2. FURNISH AND INSTALL CONTROLS AS NEEDED TO FACILITATE ETHERNET CONTROL AND BACKUP CONTROL. NOT ALL RELAY CONTACTS MAY BE SHOWN.
3. IN BACKUP CONTROL MODE OF OPERATION, PUMP SPEED IS FIXED. FIXED SPEED SETPOINTS TO BE DETERMINED AT STARTUP.

IMPORTANT NOTE:

THE CONTROL SCHEMATICS SHOWN HERE INDICATE THE CONTROL STRATEGY FOR THE SHOWN EQUIPMENT AND DEVICES. THE CONTRACTOR SHALL SUBMIT 17260 WIRING DIAGRAMS INDICATIVE OF THE ACTUAL EQUIPMENT AND DEVICES BEING INSTALLED.

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#							
#							
#							

HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 33468
VAHID BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

CONTROL SCHEMATICS 1

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CITY PROJECT NO. WS90400085
DATE: 08/2024
E–19 SHEET 110 OF 134
CAD FILE: CSELS40ES01.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
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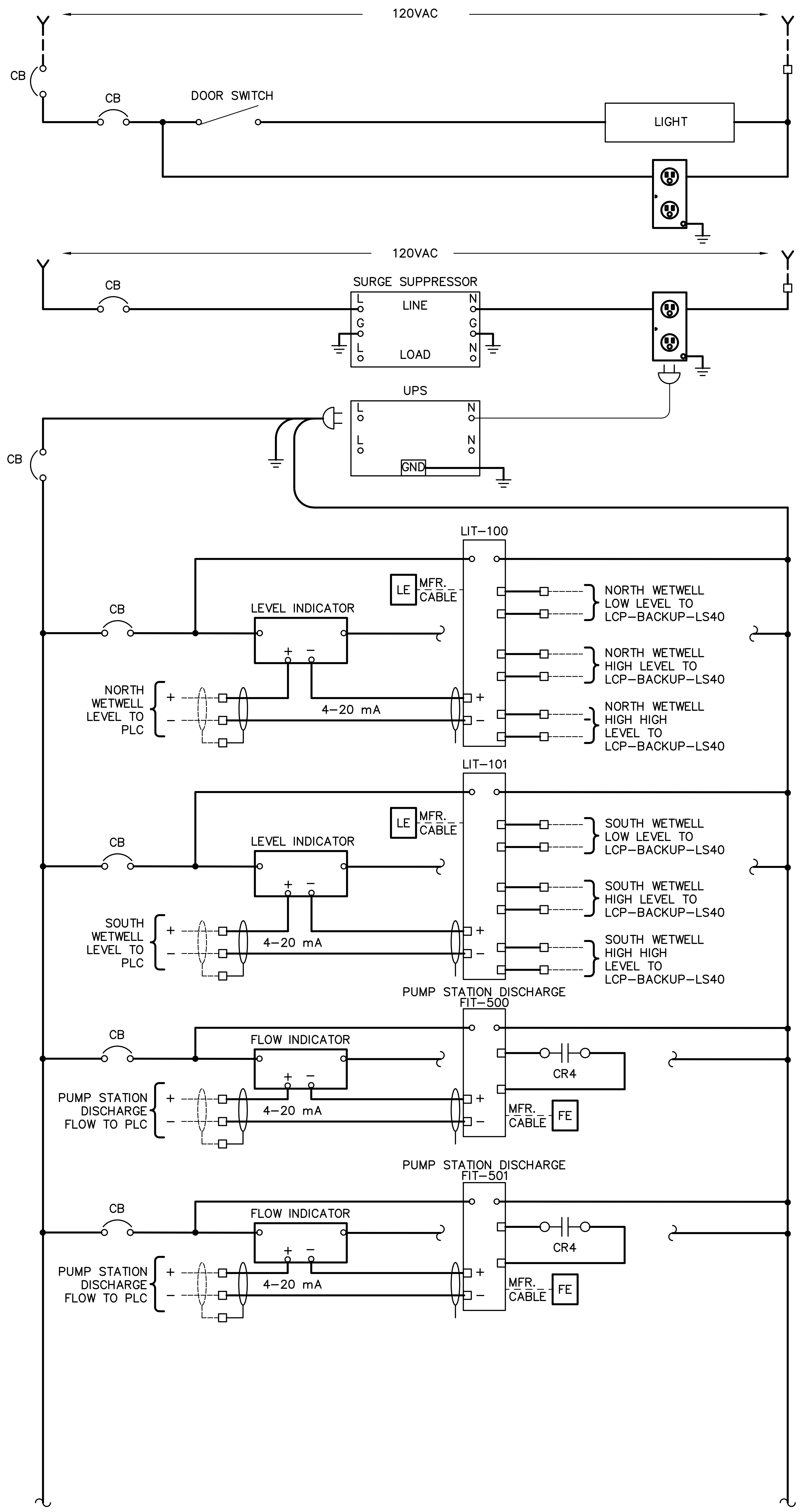
120VAC
CB
CB
DOOR SWITCH
LIGHT
120VAC
CB
SURGE SUPPRESSOR
L
LINE
N
G
G
L
LOAD
N
UPS
L
N
L
N
GND
CB
LIT-100
LE
MFR. CABLE
CB
LEVEL INDICATOR
+ −
NORTH WETWELL LEVEL TO PLC
4-20 mA
NORTH WETWELL LOW LEVEL TO LCP-BACKUP-LS40
NORTH WETWELL HIGH LEVEL TO LCP-BACKUP-LS40
NORTH WETWELL HIGH HIGH LEVEL TO LCP-BACKUP-LS40
LIT-101
LE
MFR. CABLE
CB
LEVEL INDICATOR
SOUTH WETWELL LEVEL TO PLC
4-20 mA
SOUTH WETWELL LOW LEVEL TO LCP-BACKUP-LS40
SOUTH WETWELL HIGH LEVEL TO LCP-BACKUP-LS40
SOUTH WETWELL HIGH HIGH LEVEL TO LCP-BACKUP-LS40
PUMP STATION DISCHARGE
FIT-500
CB
FLOW INDICATOR
CR4
PUMP STATION DISCHARGE FLOW TO PLC
4-20 mA
MFR. CABLE
FE
PUMP STATION DISCHARGE
FIT-501
CB
FLOW INDICATOR
CR4
PUMP STATION DISCHARGE FLOW TO PLC
4-20 mA
MFR. CABLE
FE

GENERAL NOTES:

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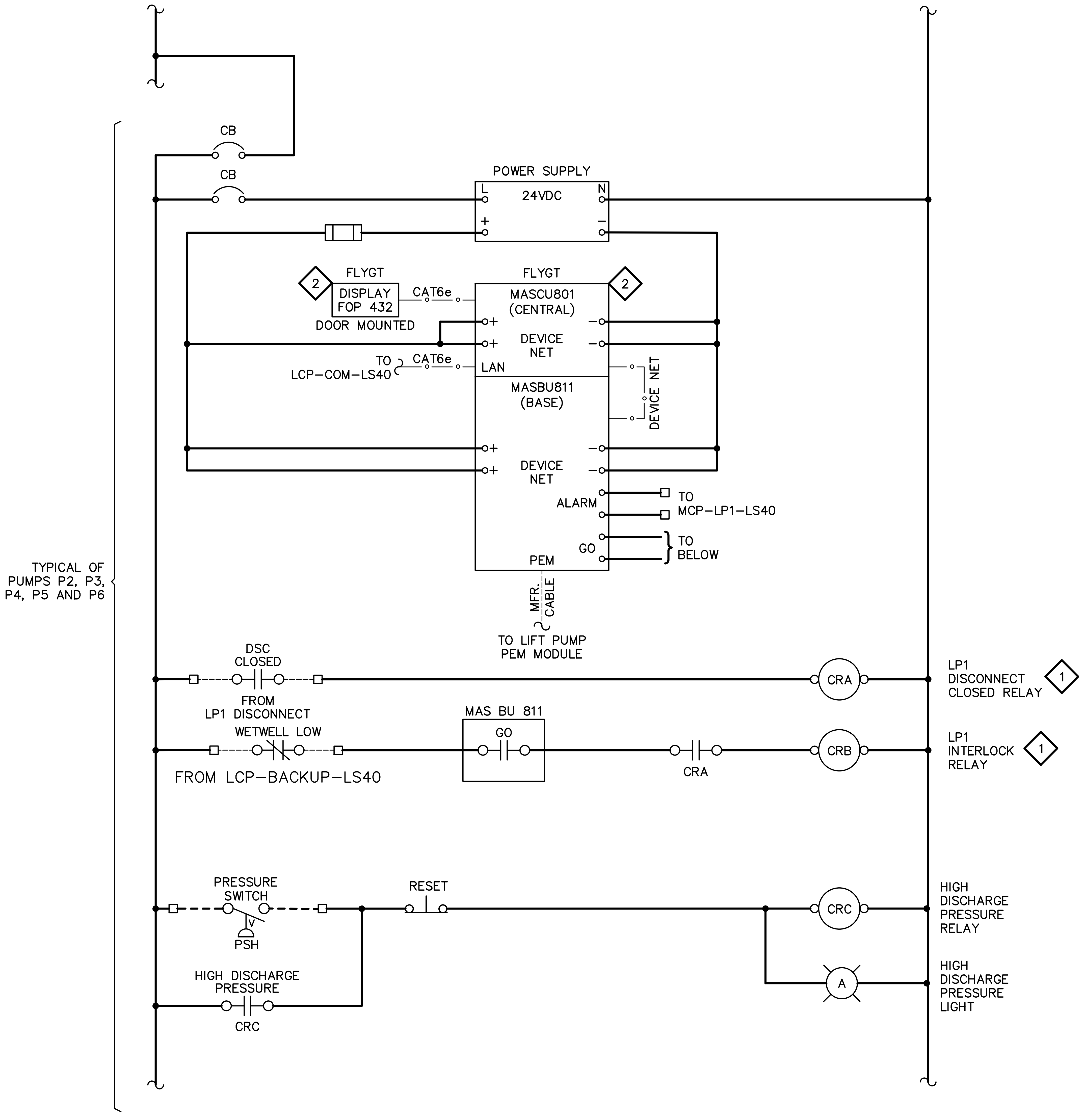
6. THE TEMPORARY CONTROSL WILL HAVE TO BE AS-BUILT BY THE CONTRACTOR AND SHALL BE OF THE EXISTING EQUIPMENT BEING DUPLICATED.

KEYED NOTES:

1. CRA, CRB FOR LP1
CRC, CRD FOR LP2
CRE, CRF FOR LP3
CRG, CRH FOR LP4
CRI, CRJ FOR LP5
CRK, CRL FOR LP6
2. ONLY ONE FLYGT MASCU801 AND ONE FLYGT FOP 402 DISPLAY ARE REQUIRED. THE FLYGT BASE UNITS MASBU811 SHOULD ALL BE CONNETED USING DEVICENET. SEE P&IDS FOR ADDITIONAL DETAILS.


TYPICAL OF PUMPS P2, P3, P4, P5 AND P6
CB
CB
POWER SUPPLY
L
24VDC
N
+
−
2
FLYGT
DISPLAY FOP 432
DOOR MOUNTED
CAT6e
FLYGT
2
MASCU801 (CENTRAL)
DEVICE NET
TO LCP-COM-LS40
CAT6e
LAN
MASBU811 (BASE)
DEVICE NET
DEVICE NET
ALARM
TO MCP-LP1-LS40
GO
TO BELOW
PEM
MFR. CABLE
TO LIFT PUMP PEM MODULE
DSC CLOSED
FROM LP1 DISCONNECT
CRA
LP1 DISCONNECT CLOSED RELAY
1
WETWELL LOW
FROM LCP-BACKUP-LS40
MAS BU 811
GO
CRA
CRB
LP1 INTERLOCK RELAY
1
PRESSURE SWITCH
PSH
RESET
CRC
HIGH DISCHARGE PRESSURE RELAY
HIGH DISCHARGE PRESSURE
CRC
A
HIGH DISCHARGE PRESSURE LIGHT

IMPORTANT NOTE:

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DETAIL A / # # CONTROL SCHEMATIC LCP-PCP-LS40
-

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
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HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

CONTROL SCHEMATIC – 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-20 SHEET 111 OF 134
CAD FILE: CSELS40ES02.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

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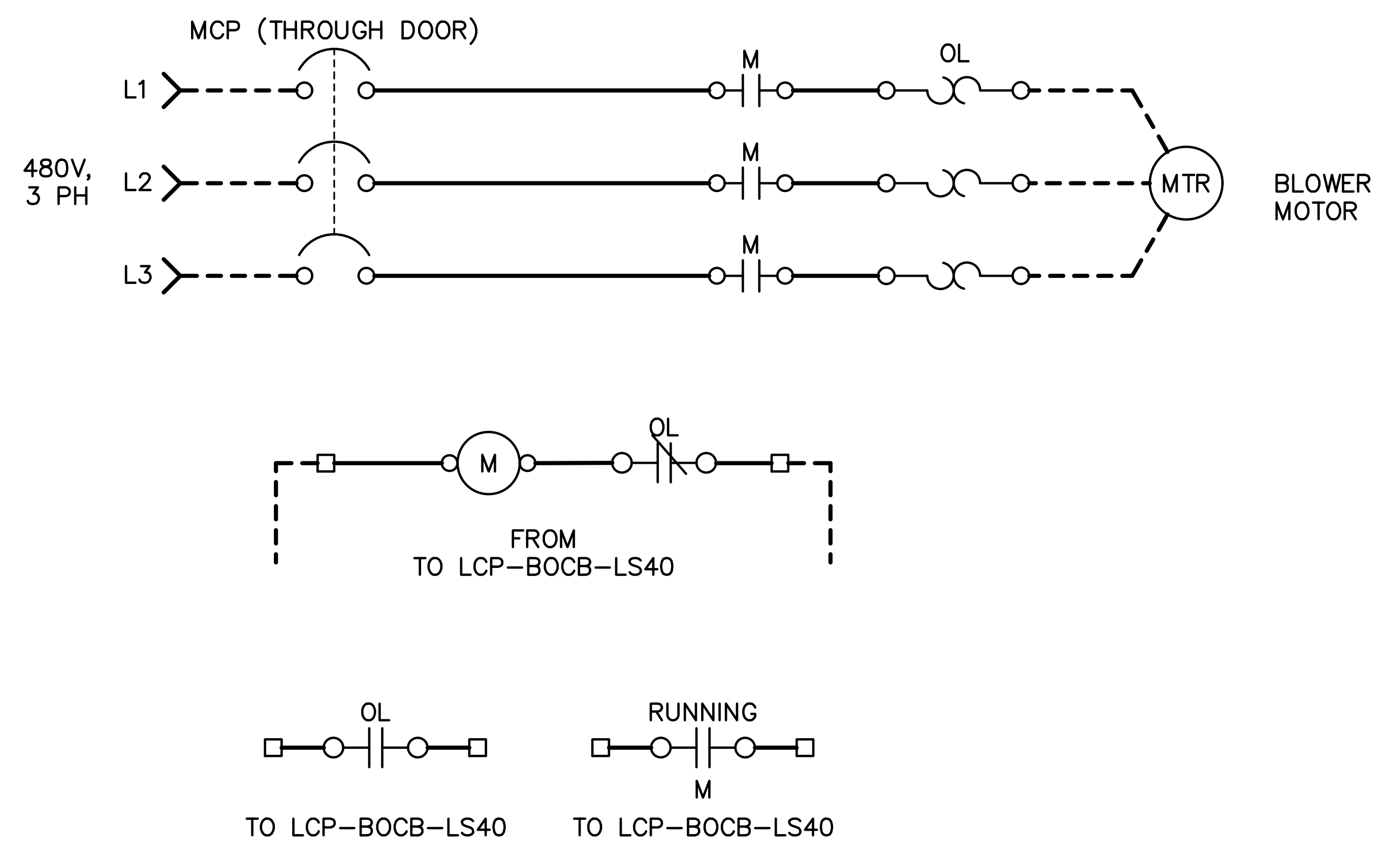
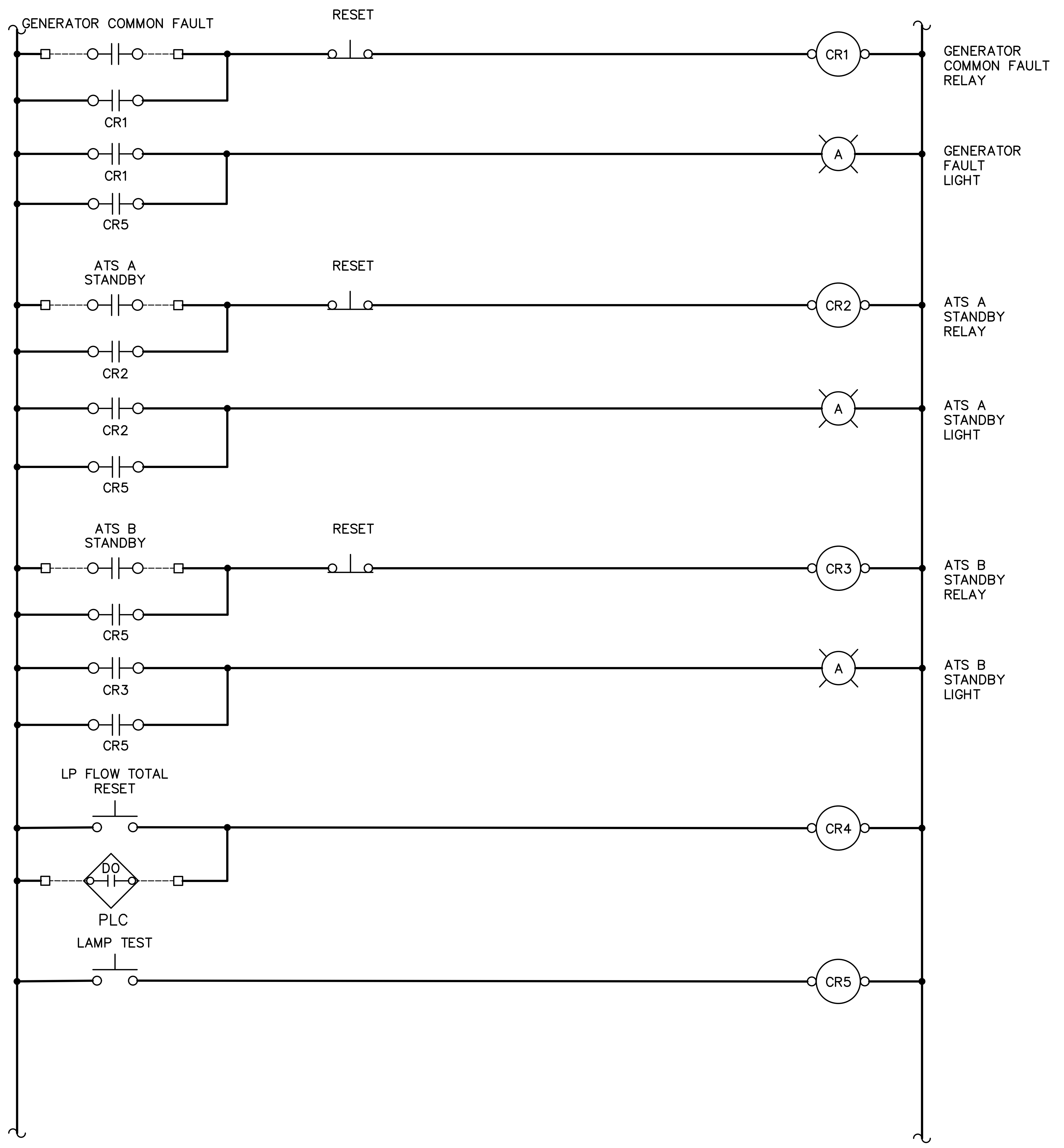

MCP (THROUGH DOOR)
L1
L2
L3
480V, 3 PH
M
M
M
OL
MTR
BLOWER MOTOR
M
OL
FROM
TO LCP-BOCB-LS40
OL
TO LCP-BOCB-LS40
RUNNING
M
TO LCP-BOCB-LS40

DETAIL A #|# MCP-BOCB-LS40 CONTROL SCHEMATIC


GENERATOR COMMON FAULT
RESET
CR1
CR1
GENERATOR COMMON FAULT RELAY
CR1
A
GENERATOR FAULT LIGHT
CR5
ATS A STANDBY
RESET
CR2
CR2
ATS A STANDBY RELAY
CR2
A
ATS A STANDBY LIGHT
CR5
ATS B STANDBY
RESET
CR3
CR5
ATS B STANDBY RELAY
CR3
A
ATS B STANDBY LIGHT
CR5
LP FLOW TOTAL RESET
CR4
DO
PLC
LAMP TEST
CR5

DETAIL B #|# CONTROL SCHEMATIC LCP-PCP-LS40
-

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#	-	-	-	-	-	-	-

HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES
DWN
CKD

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

CONTROL SCHEMATIC – 3

COPYRIGHT © 2007–JANUARY
CITY PROJECT NO. WS90400085
DATE: 08/2024
E-21 SHEET 112 OF 134
CAD FILE: CSELS40ES03.dwg

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FOR CONSTRUCTION

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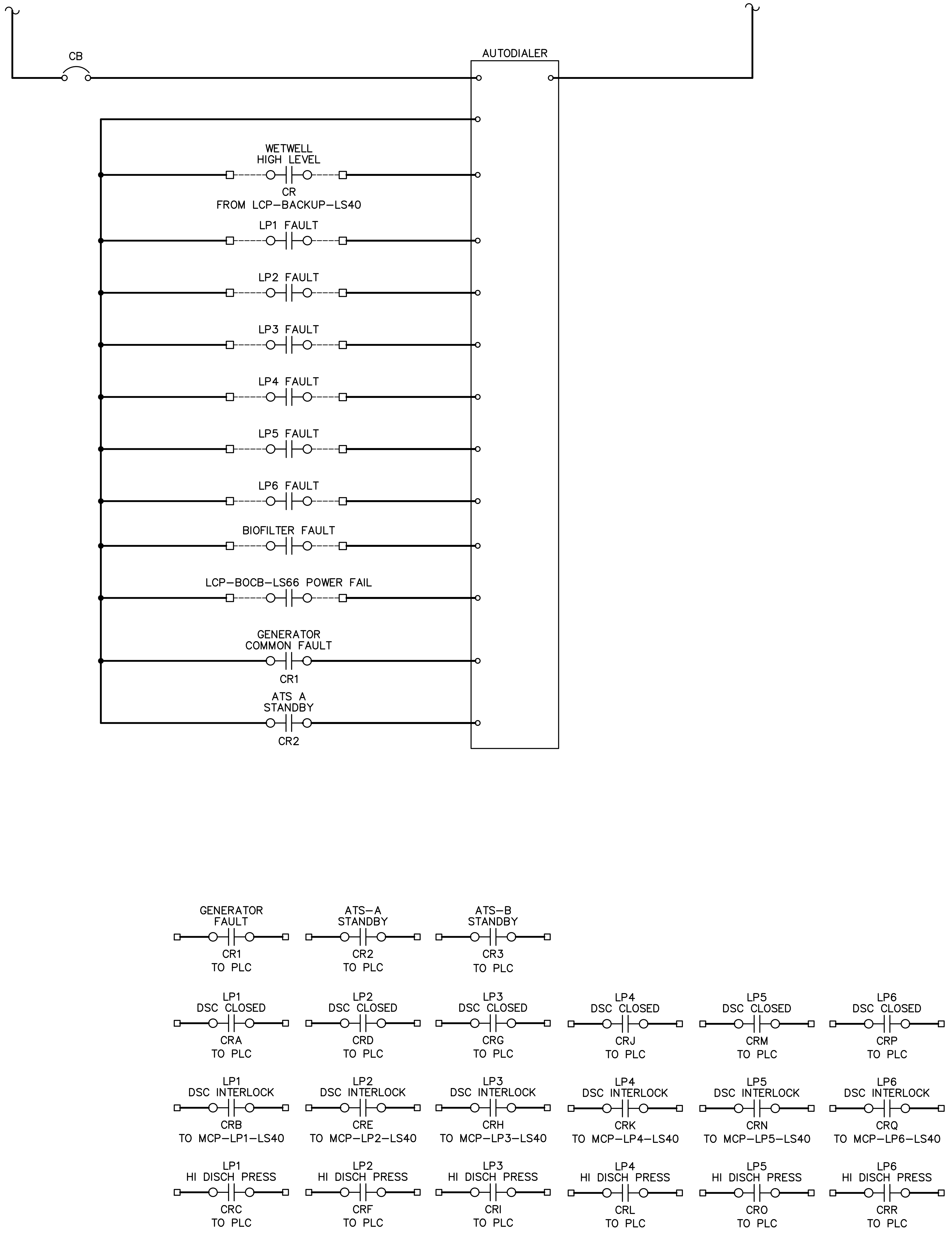
CB
AUTODIALER
WETWELL HIGH LEVEL
CR
FROM LCP–BACKUP–LS40
LP1 FAULT
LP2 FAULT
LP3 FAULT
LP4 FAULT
LP5 FAULT
LP6 FAULT
BIOFILTER FAULT
LCP–BOCB–LS66 POWER FAIL
GENERATOR COMMON FAULT
CR1
ATS A STANDBY
CR2
GENERATOR FAULT
CR1
TO PLC
ATS–A STANDBY
CR2
TO PLC
ATS–B STANDBY
CR3
TO PLC
LP1 DSC CLOSED
CRA
TO PLC
LP2 DSC CLOSED
CRD
TO PLC
LP3 DSC CLOSED
CRG
TO PLC
LP4 DSC CLOSED
CRJ
TO PLC
LP5 DSC CLOSED
CRM
TO PLC
LP6 DSC CLOSED
CRP
TO PLC
LP1 DSC INTERLOCK
CRB
TO MCP–LP1–LS40
LP2 DSC INTERLOCK
CRE
TO MCP–LP2–LS40
LP3 DSC INTERLOCK
CRH
TO MCP–LP3–LS40
LP4 DSC INTERLOCK
CRK
TO MCP–LP4–LS40
LP5 DSC INTERLOCK
CRN
TO MCP–LP5–LS40
LP6 DSC INTERLOCK
CRQ
TO MCP–LP6–LS40
LP1 HI DISCH PRESS
CRC
TO PLC
LP2 HI DISCH PRESS
CRF
TO PLC
LP3 HI DISCH PRESS
CRI
TO PLC
LP4 HI DISCH PRESS
CRL
TO PLC
LP5 HI DISCH PRESS
CRO
TO PLC
LP6 HI DISCH PRESS
CRR
TO PLC

DETAIL A/#|# CONTROL SCHEMATIC LCP–PCP–LS40
TYPICAL

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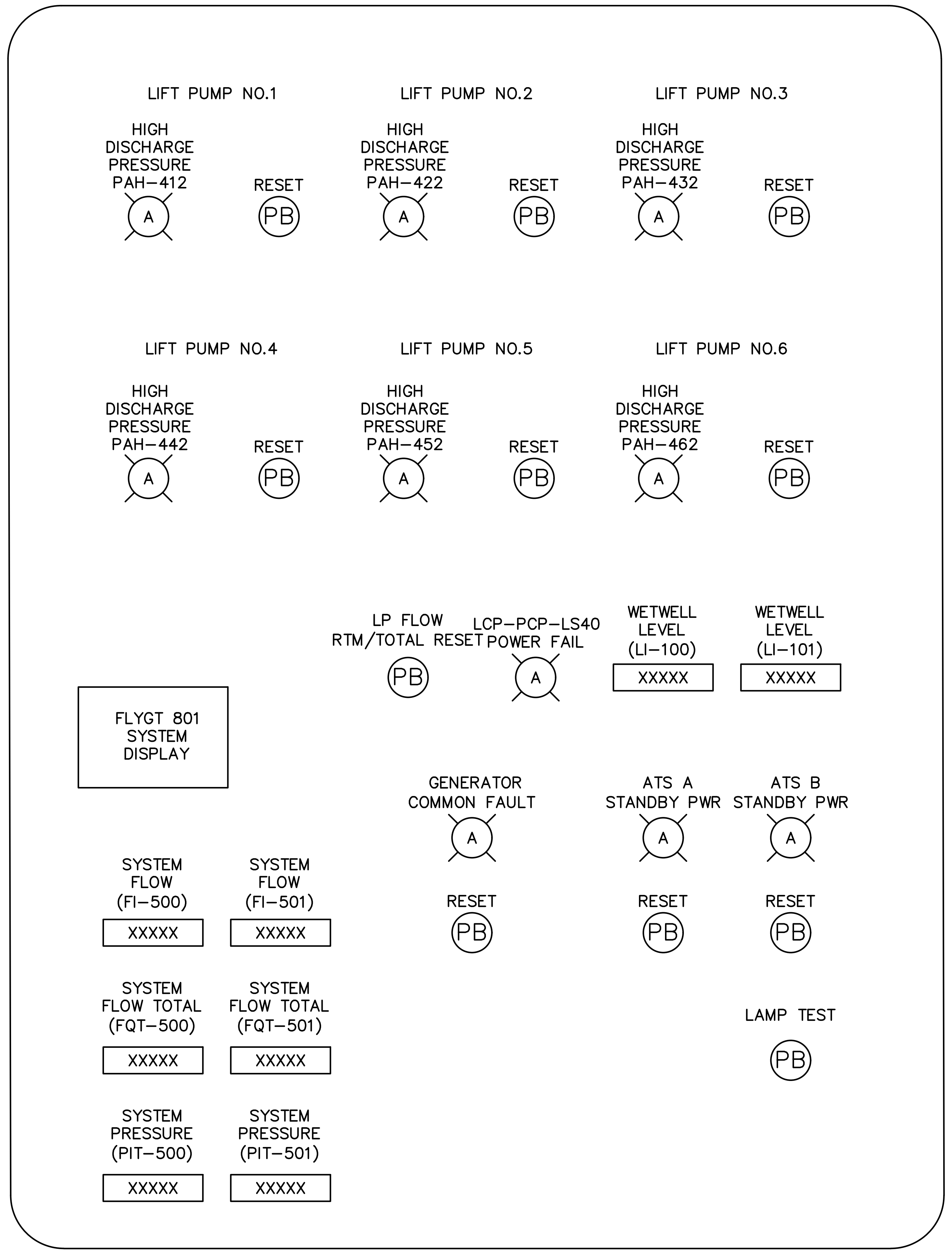
LIFT PUMP NO.1
HIGH DISCHARGE PRESSURE PAH–412
A
RESET
PB
LIFT PUMP NO.2
HIGH DISCHARGE PRESSURE PAH–422
A
RESET
PB
LIFT PUMP NO.3
HIGH DISCHARGE PRESSURE PAH–432
A
RESET
PB
LIFT PUMP NO.4
HIGH DISCHARGE PRESSURE PAH–442
A
RESET
PB
LIFT PUMP NO.5
HIGH DISCHARGE PRESSURE PAH–452
A
RESET
PB
LIFT PUMP NO.6
HIGH DISCHARGE PRESSURE PAH–462
A
RESET
PB
LP FLOW RTM/TOTAL RESET
PB
LCP–PCP–LS40 POWER FAIL
A
WETWELL LEVEL (LI–100)
XXXXX
WETWELL LEVEL (LI–101)
XXXXX
FLYGT 801 SYSTEM DISPLAY
GENERATOR COMMON FAULT
A
RESET
PB
ATS A STANDBY PWR
A
RESET
PB
ATS B STANDBY PWR
A
RESET
PB
SYSTEM FLOW (FI–500)
XXXXX
SYSTEM FLOW (FI–501)
XXXXX
SYSTEM FLOW TOTAL (FQT–500)
XXXXX
SYSTEM FLOW TOTAL (FQT–501)
XXXXX
SYSTEM PRESSURE (PIT–500)
XXXXX
SYSTEM PRESSURE (PIT–501)
XXXXX
LAMP TEST
PB

DETAIL B/#|# LCP–PCP–LS40 SWING–OUT PANEL ELEVATION
SCALE: N.T.S.

IMPORTANT NOTE:

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#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer
CERTIFICATE NO. 33468
VAHID BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

CONTROL SCHEMATIC – 4

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–22 SHEET 113 OF 134
CAD FILE: CSELS40ES04.dwg

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FOR CONSTRUCTION

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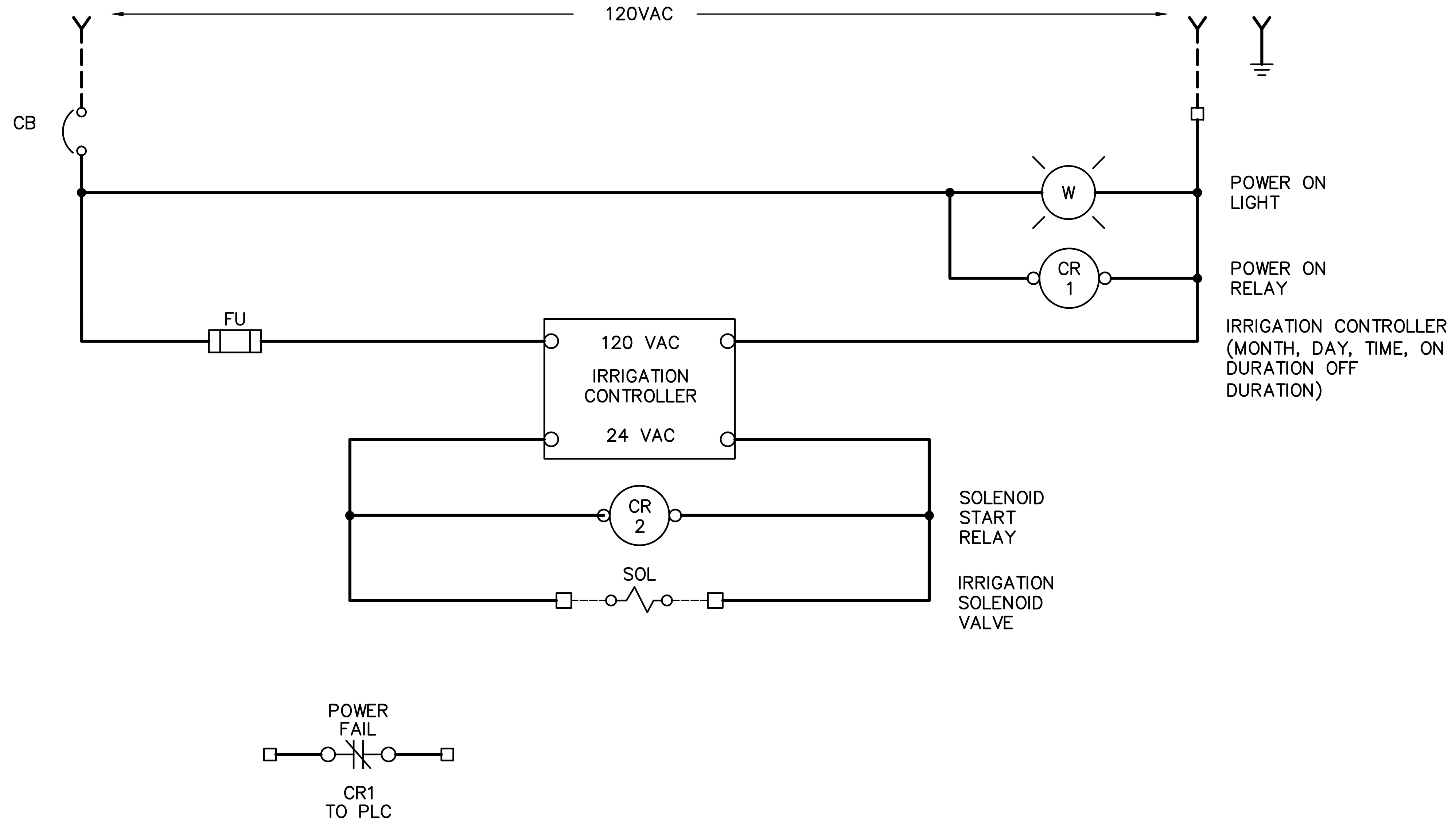
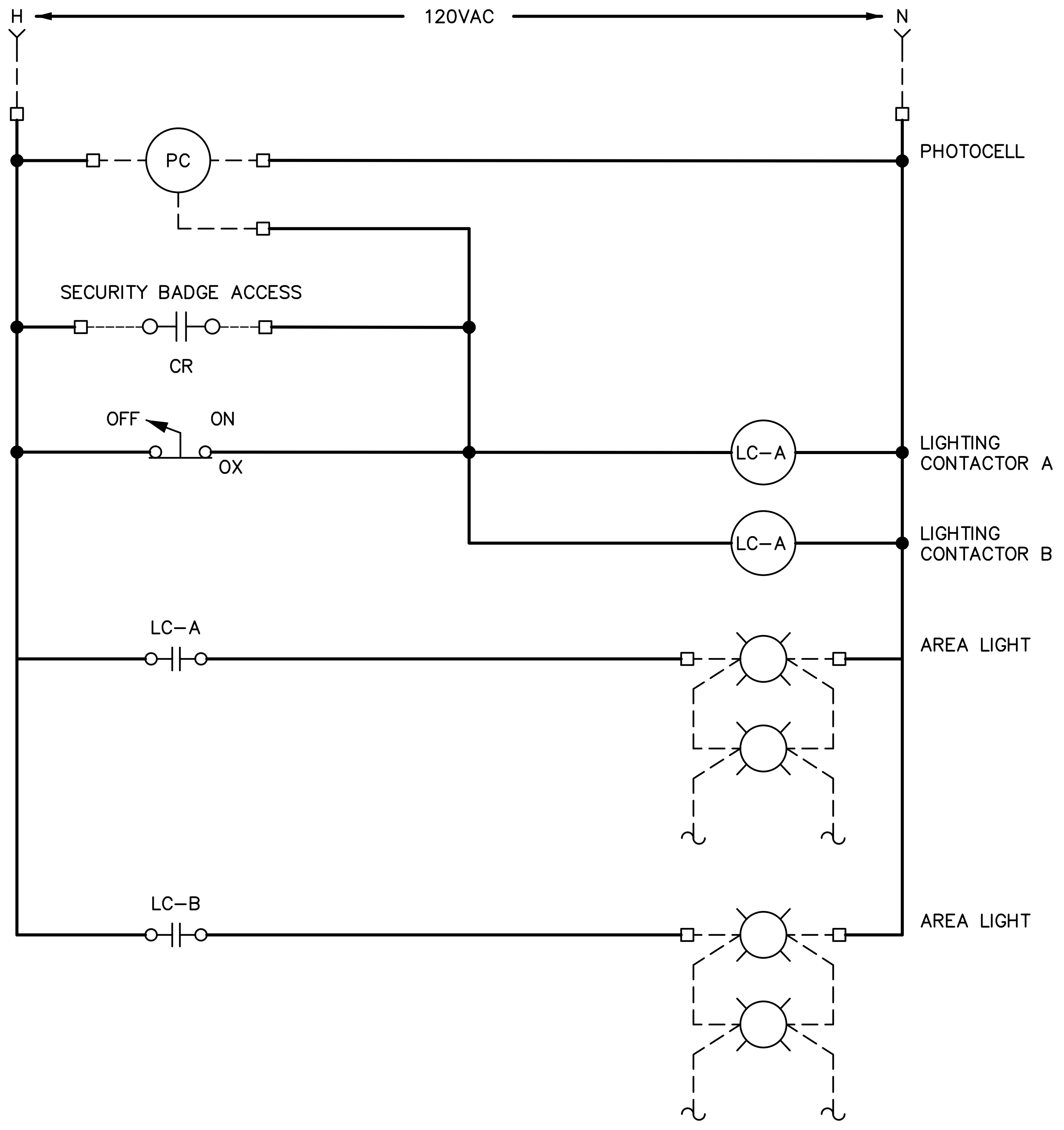

120VAC
CB
W
POWER ON LIGHT
CR 1
POWER ON RELAY
FU
120 VAC
IRRIGATION CONTROLLER
24 VAC
IRRIGATION CONTROLLER (MONTH, DAY, TIME, ON DURATION OFF DURATION)
CR 2
SOLENOID START RELAY
SOL
IRRIGATION SOLENOID VALVE
POWER FAIL
CR1 TO PLC

DETAIL A # # CONTROL SCHEMATIC LCP-IBS-LS40
TYPICAL


H
120VAC
N
PC
PHOTOCELL
SECURITY BADGE ACCESS
CR
OFF
ON
OX
LC-A
LIGHTING CONTACTOR A
LC-A
LIGHTING CONTACTOR B
LC-A
AREA LIGHT
LC-B
AREA LIGHT

DETAIL B # # ALCP-LS40
N.T.S.

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#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

CONTROL SCHEMATIC – 5

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-23 SHEET 114 OF 134
CAD FILE: CSELS40ES05.dwg

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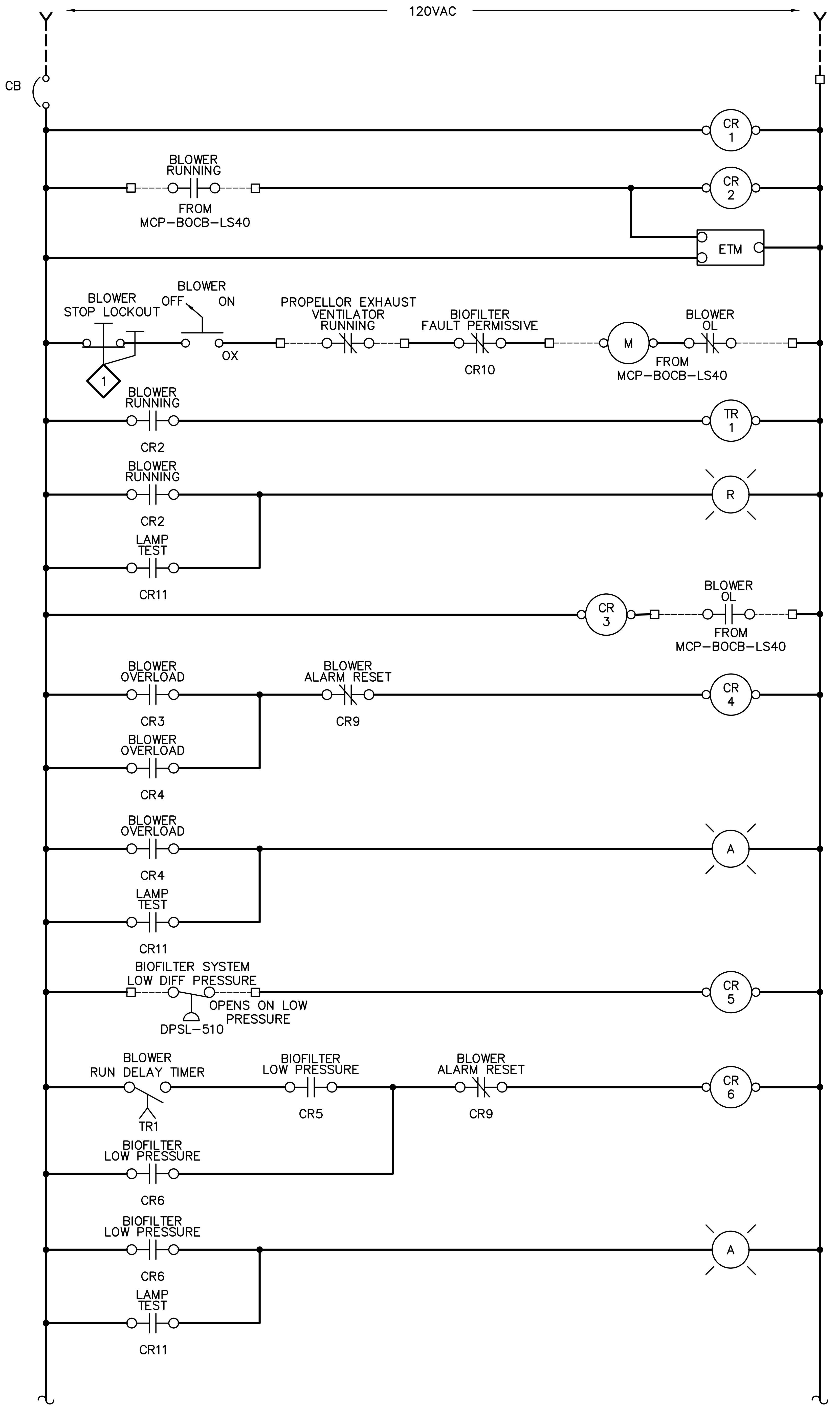
120VAC
CB
CR 1
CONTROL POWER FAIL RELAY
BLOWER RUNNING
FROM MCP–BOCB–LS40
CR 2
BLOWER RUNNING RELAY
ETM
BLOWER RUNTIME METER
BLOWER STOP LOCKOUT
BLOWER OFF ON
OX
PROPELLOR EXHAUST VENTILATOR RUNNING
BIOFILTER FAULT PERMISSIVE
CR10
M
FROM MCP–BOCB–LS40
BLOWER OL
BLOWER RUN
1
BLOWER RUNNING
CR2
TR 1
BLOWER RUN DELAY TIMER
BLOWER RUNNING
CR2
R
BLOWER RUNNING LIGHT
LAMP TEST
CR11
CR 3
BLOWER OL
FROM MCP–BOCB–LS40
BLOWER OVERLOAD RELAY
BLOWER OVERLOAD
CR3
BLOWER ALARM RESET
CR9
CR 4
BLOWER OVERLOAD RELAY
BLOWER OVERLOAD
CR4
BLOWER OVERLOAD
CR4
A
BLOWER OVERLOAD LIGHT
LAMP TEST
CR11
BIOFILTER SYSTEM LOW DIFF PRESSURE
OPENS ON LOW PRESSURE
DPSL–510
CR 5
BIOFILTER LOW PRESSURE RELAY
BLOWER RUN DELAY TIMER
TR1
BIOFILTER LOW PRESSURE
CR5
BLOWER ALARM RESET
CR9
CR 6
BIOFILTER LOW PRESSURE RELAY
BIOFILTER LOW PRESSURE
CR6
BIOFILTER LOW PRESSURE
CR6
A
BIOFILTER LOW PRESSURE LIGHT
LAMP TEST
CR11

KEY NOTES:

1. NEMA 4X RATED NONILLUMINATED PUSH BUTTON COVER TYPE LOCKOUT, CAN BE PADLOCKED.

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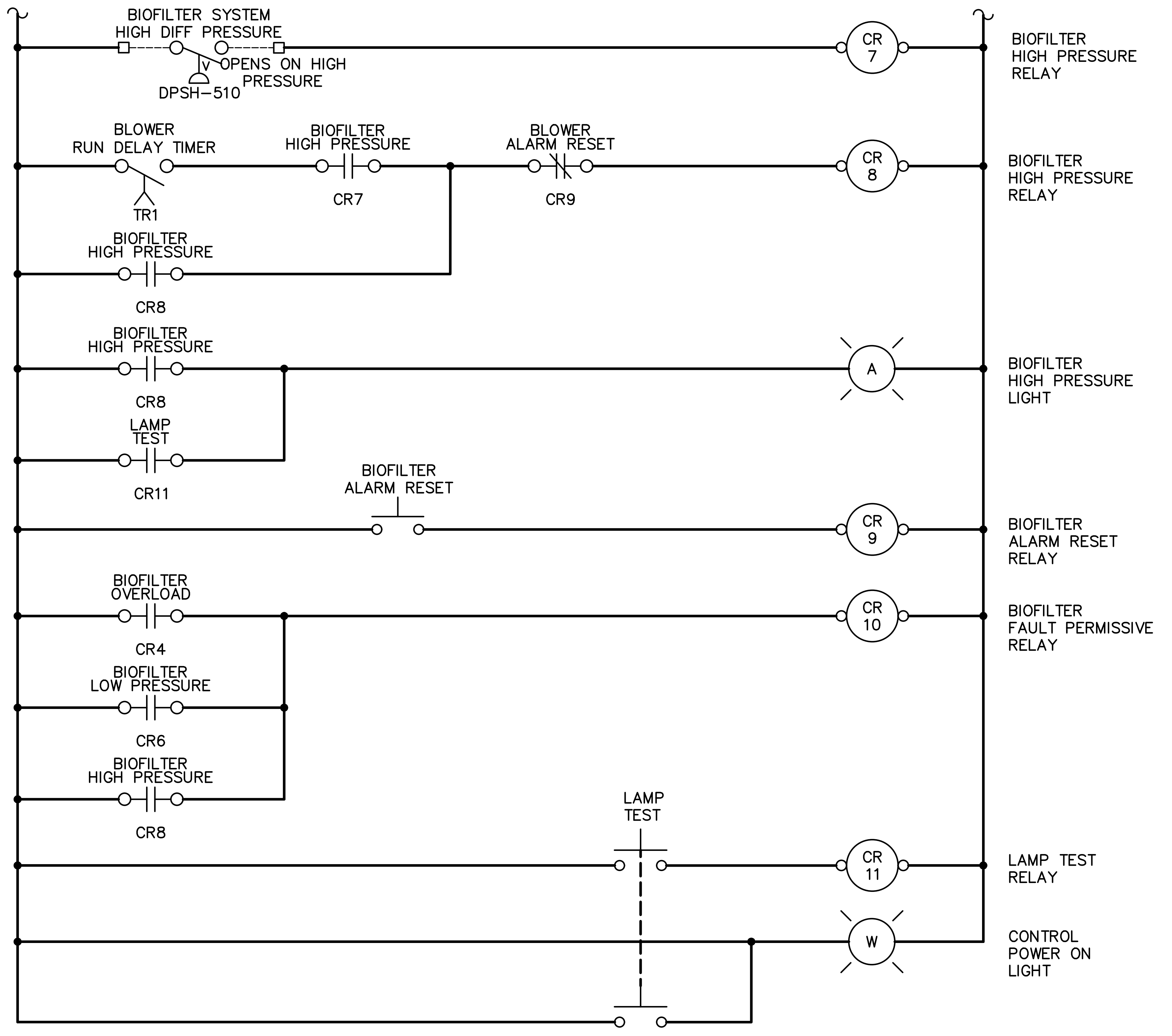
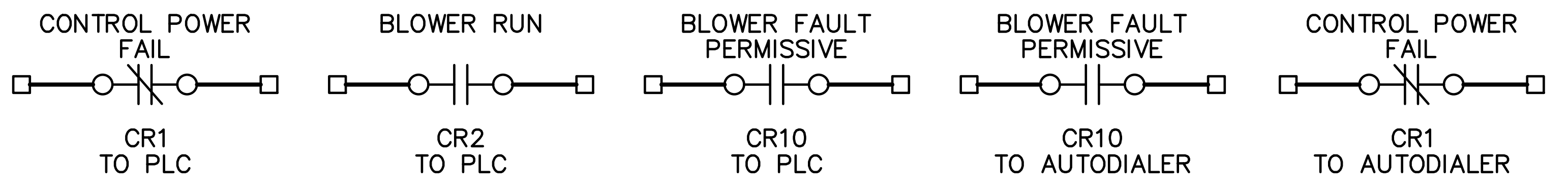

BIOFILTER SYSTEM HIGH DIFF PRESSURE
OPENS ON HIGH PRESSURE
DPSH–510
CR 7
BIOFILTER HIGH PRESSURE RELAY
BLOWER RUN DELAY TIMER
TR1
BIOFILTER HIGH PRESSURE
CR7
BLOWER ALARM RESET
CR9
CR 8
BIOFILTER HIGH PRESSURE RELAY
BIOFILTER HIGH PRESSURE
CR8
BIOFILTER HIGH PRESSURE
CR8
A
BIOFILTER HIGH PRESSURE LIGHT
LAMP TEST
CR11
BIOFILTER ALARM RESET
CR 9
BIOFILTER ALARM RESET RELAY
BIOFILTER OVERLOAD
CR4
CR 10
BIOFILTER FAULT PERMISSIVE RELAY
BIOFILTER LOW PRESSURE
CR6
BIOFILTER HIGH PRESSURE
CR8
LAMP TEST
CR 11
LAMP TEST RELAY
W
CONTROL POWER ON LIGHT


CONTROL POWER FAIL
CR1 TO PLC
BLOWER RUN
CR2 TO PLC
BLOWER FAULT PERMISSIVE
CR10 TO PLC
BLOWER FAULT PERMISSIVE
CR10 TO AUTODIALER
CONTROL POWER FAIL
CR1 TO AUTODIALER

DETAIL A/#|# CONTROL SCHEMATIC LCP–BOCB–LS40
TYPICAL

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#	-	-	-	-	-	-	-

HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

CONTROL SCHEMATIC – 6

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–24 SHEET 115 OF 134
CAD FILE: CSELS40ES06.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
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FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
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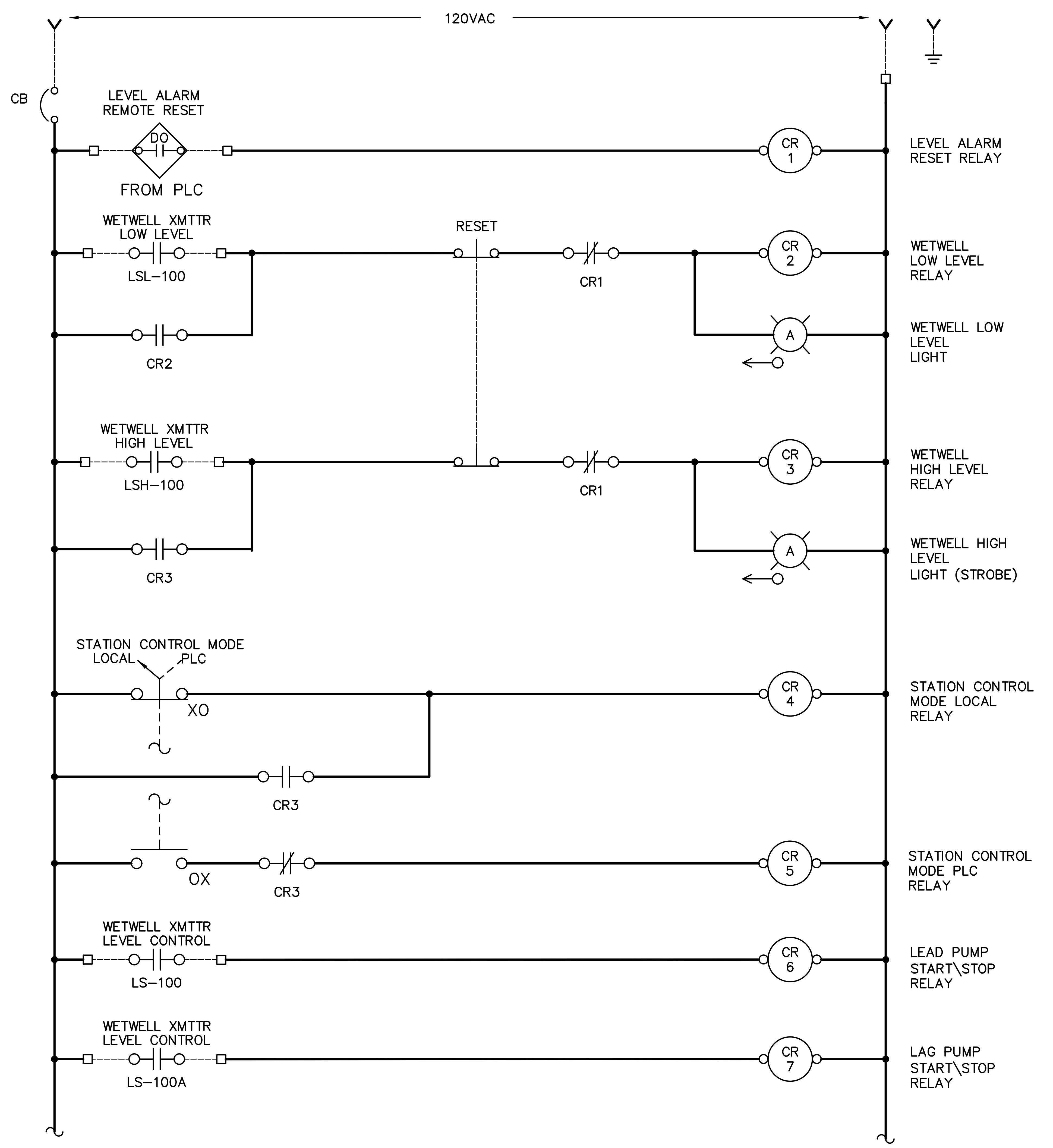
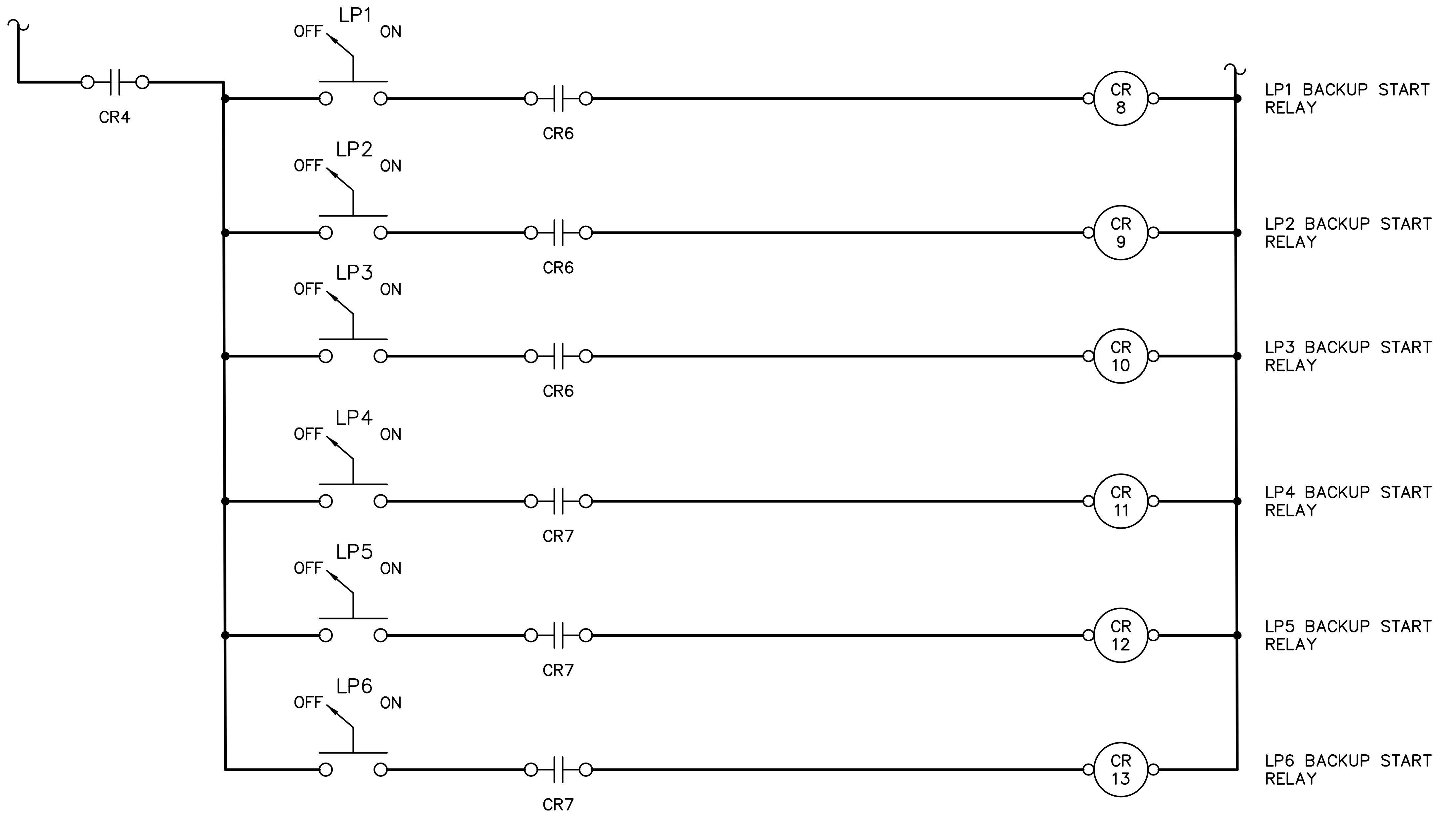
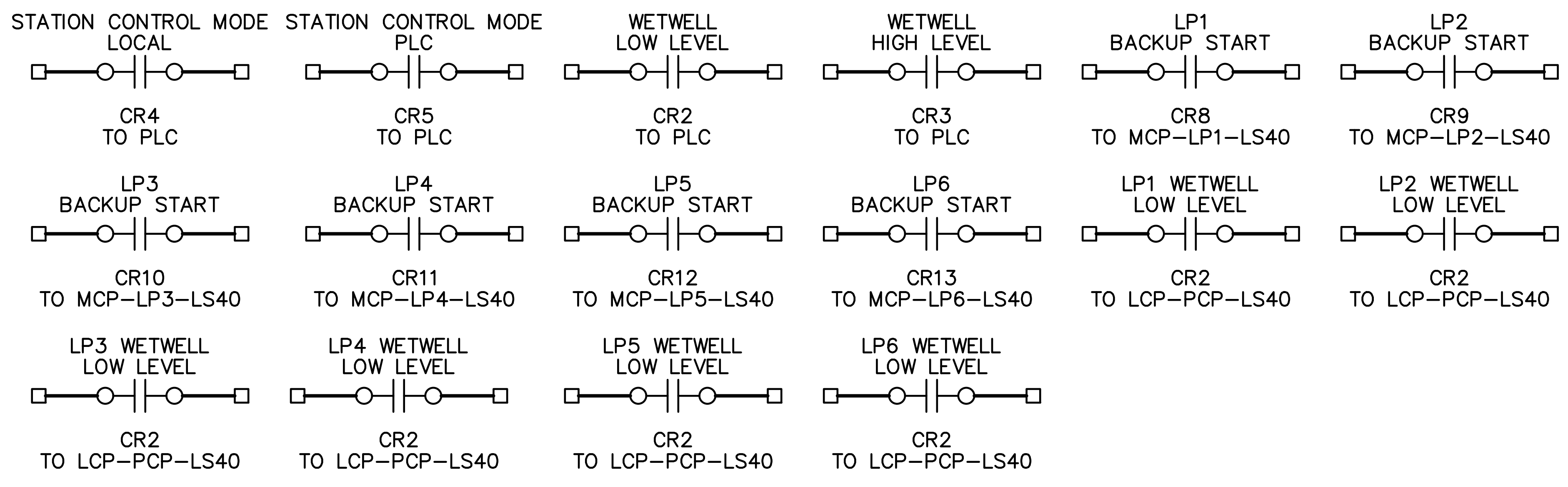

120VAC
CB
LEVEL ALARM REMOTE RESET
DO
FROM PLC
CR 1
LEVEL ALARM RESET RELAY
WETWELL XMTTR LOW LEVEL
LSL–100
RESET
CR1
CR 2
WETWELL LOW LEVEL RELAY
CR2
A
WETWELL LOW LEVEL LIGHT
WETWELL XMTTR HIGH LEVEL
LSH–100
CR1
CR 3
WETWELL HIGH LEVEL RELAY
CR3
A
WETWELL HIGH LEVEL LIGHT (STROBE)
STATION CONTROL MODE
LOCAL
PLC
XO
CR 4
STATION CONTROL MODE LOCAL RELAY
CR3
OX
CR3
CR 5
STATION CONTROL MODE PLC RELAY
WETWELL XMTTR LEVEL CONTROL
LS–100
CR 6
LEAD PUMP START\STOP RELAY
WETWELL XMTTR LEVEL CONTROL
LS–100A
CR 7
LAG PUMP START\STOP RELAY


CR4
LP1 OFF ON
CR6
CR 8
LP1 BACKUP START RELAY
LP2 OFF ON
CR6
CR 9
LP2 BACKUP START RELAY
LP3 OFF ON
CR6
CR 10
LP3 BACKUP START RELAY
LP4 OFF ON
CR7
CR 11
LP4 BACKUP START RELAY
LP5 OFF ON
CR7
CR 12
LP5 BACKUP START RELAY
LP6 OFF ON
CR7
CR 13
LP6 BACKUP START RELAY


STATION CONTROL MODE LOCAL
CR4 TO PLC
STATION CONTROL MODE PLC
CR5 TO PLC
WETWELL LOW LEVEL
CR2 TO PLC
WETWELL HIGH LEVEL
CR3 TO PLC
LP1 BACKUP START
CR8 TO MCP–LP1–LS40
LP2 BACKUP START
CR9 TO MCP–LP2–LS40
LP3 BACKUP START
CR10 TO MCP–LP3–LS40
LP4 BACKUP START
CR11 TO MCP–LP4–LS40
LP5 BACKUP START
CR12 TO MCP–LP5–LS40
LP6 BACKUP START
CR13 TO MCP–LP6–LS40
LP1 WETWELL LOW LEVEL
CR2 TO LCP–PCP–LS40
LP2 WETWELL LOW LEVEL
CR2 TO LCP–PCP–LS40
LP3 WETWELL LOW LEVEL
CR2 TO LCP–PCP–LS40
LP4 WETWELL LOW LEVEL
CR2 TO LCP–PCP–LS40
LP5 WETWELL LOW LEVEL
CR2 TO LCP–PCP–LS40
LP6 WETWELL LOW LEVEL
CR2 TO LCP–PCP–LS40

DETAIL A #|# CONTROL SCHEMATIC LCP–BACKUP–LS40
–

IMPORTANT NOTE:

THE CONTROL SCHEMATICS SHOWN HERE INDICATE THE CONTROL STRATEGY FOR THE SHOWN EQUIPMENT AND DEVICES. THE CONTRACTOR SHALL SUBMIT 17260 WIRING DIAGRAMS INDICATIVE OF THE ACTUAL EQUIPMENT AND DEVICES BEING INSTALLED.

GENERAL NOTES:

1. FOR REFERENCE ONLY. CONTRACTOR TO LAYOUT AND DESCRIBE PER 17260 SPECIFICATIONS.
2. THIS DRAWING DOES NOT INDICATE ALL THE PROJECT REQUIREMENTS. THE PROJECT REQUIREMENTS ARE INDICATED IN VARIOUS ELECTRICAL AND INSTRUMENTATION DRAWINGS AND SPECIFICATIONS. ALL DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
3. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE HIGHER RATING DEVICE AND EQUIPMENT, THE FURTHER DISTANCE, ETC...
4. THE CONTROL SCHEMATICS ARE SHOWN TO FURTHER CONVEY THE DESIGN INTENT AND CONTROL STRATEGY FOR THE SHOWN EQUIPMENT AND DEVICES. THE CONTRACTOR SHALL DESIGN WIRING DIAGRAMS BY INCORPORATING THE CONTROL SCHEMATICS HEREIN, THE P&IDS, CONTROL STRATEGIES, AND INCORPORATING THE ACTUAL SUBMITTED EQUIPMENT AND DEVICES.
5. WHEN THE CONTROL SCHEMATICS ARE EXISTING AND WE ARE MODIFYING THEM: THE CONTRACTOR SHALL ALLOW 16 HOURS BY A PROFICIENT CONTROL ELECTRICIAN TO AS-BUILD THE CONTROLS ASSOCIATED WITH THIS CONTROL SCHEMATIC. THE AS-BUILT CONTROL SCHEMATIC SHOULD BE SKETCHED AND SUBMITTED TO THE ENGINEER FOR FURTHER MODIFICATION IF NECESSARY.
6. THE TEMPORARY CONTROLS WILL HAVE TO BE AS-BUILT BY THE CONTRACTOR AND SHALL BE OF THE EXISTING EQUIPMENT BEING DUPLICATED.

FACILITY DRAWINGS
This drawing was supplied by a Consultant Engineer from a past construction project. The original construction drawing was modified based on information provided by the Contractor to provide the Record Drawing. The City does not warranty this drawing to be a complete and accurate portrayal of facilities as they exist in the field.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer (Electrical) 33468 VAHID BAGHERI Date Signed 7-31-24 ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

CONTROL SCHEMATIC – 7

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CITY PROJECT NO. WS90400085
DATE: 08/2024
E–25 SHEET 116 OF 134
CAD FILE: CSELS40ES07.dwg

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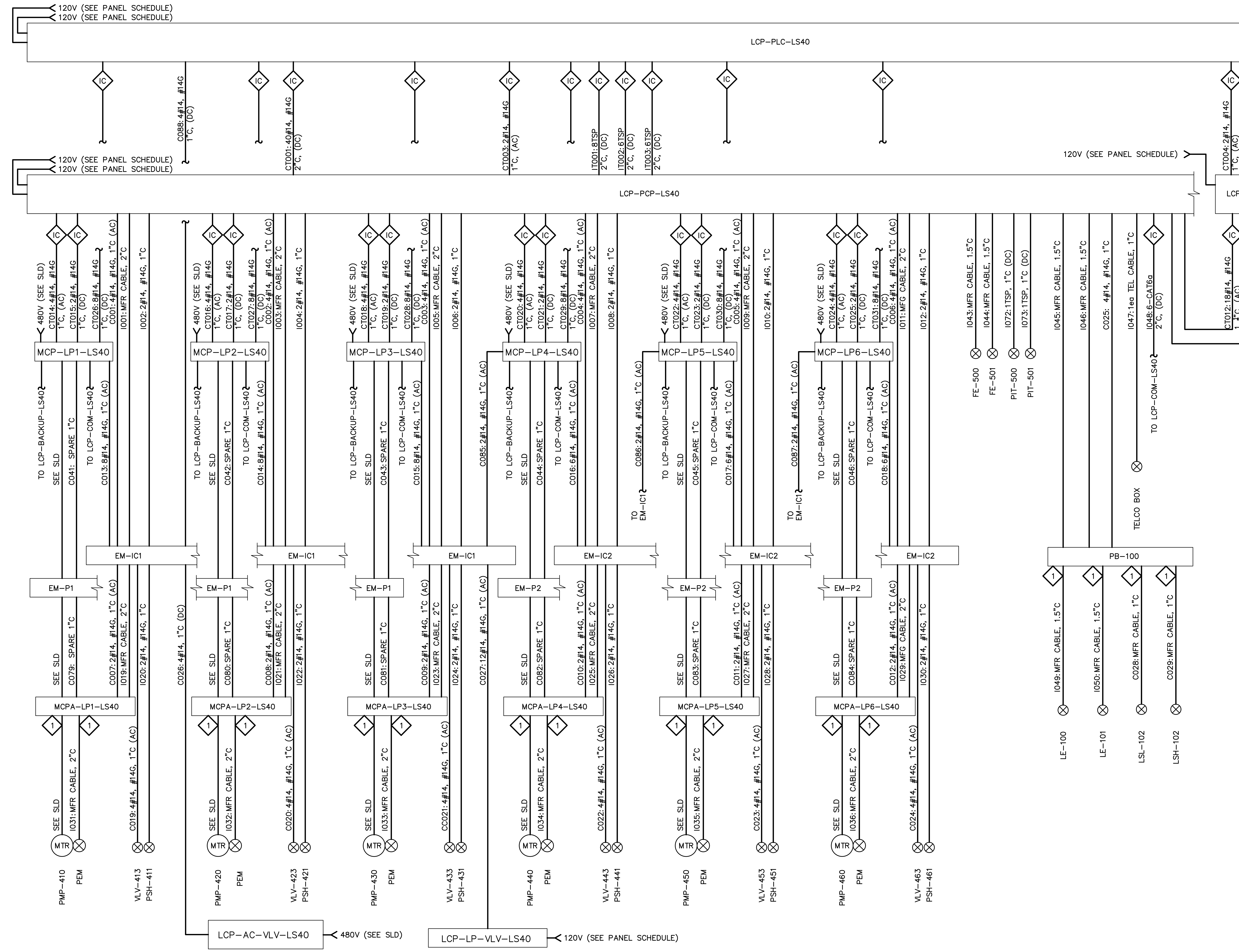
FOR CONSTRUCTION



120V (SEE PANEL SCHEDULE)
120V (SEE PANEL SCHEDULE)
LCP-PLC-LS40
IC
C088:4#14, #14G 1"C, (DC)
CT001:40#14, #14G 2"C, (DC)
CT003:2#14, #14G 1"C, (AC)
IT001:8TSP 2"C, (DC)
IT002:6TSP 2"C, (DC)
IT003:6TSP 2"C, (DC)
CT004:2#14, #14G 1"C, (AC)
CT005:8#14, #14G 1"C, (DC)
120V (SEE PANEL SCHEDULE)
LCP-PCP-LS40
LCP-BACKUP-LS40
CT006:2#14, #14G 1"C, (AC) TO MCP-LP1-LS40
CT007:2#14, #14G 1"C, (AC) TO MCP-LP2-LS40
CT008:2#14, #14G 1"C, (AC) TO MCP-LP3-LS40
CT009:2#14, #14G 1"C, (AC) TO MCP-LP4-LS40
CT010:2#14, #14G 1"C, (AC) TO MCP-LP5-LS40
CT011:2#14, #14G 1"C, (AC) TO MCP-LP6-LS40
480V (SEE SLD)
CT014:4#14, #14G 1"C, (AC)
CT015:2#14, #14G 1"C, (DC)
CT026:8#14, #14G 1"C, (DC)
C001:4#14, #14G, 1"C (AC)
I001:MFR CABLE, 2"C
I002:2#14, #14G, 1"C
MCP-LP1-LS40
TO LCP-BACKUP-LS40
SEE SLD
C041: SPARE 1"C
TO LCP-COM-LS40
C013:8#14, #14G, 1"C (AC)
EM-IC1
EM-P1
SEE SLD
C079: SPARE 1"C
C007:2#14, #14G, 1"C (AC)
I019:MFR CABLE, 2"C
I020:2#14, #14G, 1"C
MCPA-LP1-LS40
1
SEE SLD
I031:MFR CABLE, 2"C
C019:4#14, #14G, 1"C (AC)
MTR
PMP-410
PEM
VLV-413
PSH-411
C026:4#14, #14G, 1"C (DC)
480V (SEE SLD)
CT016:4#14, #14G 1"C, (AC)
CT017:2#14, #14G 1"C, (DC)
CT027:8#14, #14G 1"C, (DC)
C002:4#14, #14G, 1"C (AC)
I003:MFR CABLE, 2"C
I004:2#14, #14G, 1"C
MCP-LP2-LS40
C042:SPARE 1"C
C014:8#14, #14G, 1"C (AC)
C080:SPARE 1"C
C008:2#14, #14G, 1"C (AC)
I021:MFR CABLE, 2"C
I022:2#14, #14G, 1"C
MCPA-LP2-LS40
I032:MFR CABLE, 2"C
C020:4#14, #14G, 1"C (AC)
PMP-420
VLV-423
PSH-421
480V (SEE SLD)
CT018:4#14, #14G 1"C, (AC)
CT019:2#14, #14G 1"C, (DC)
CT028:8#14, #14G 1"C, (DC)
C003:4#14, #14G, 1"C (AC)
I005:MFR CABLE, 2"C
I006:2#14, #14G, 1"C
MCP-LP3-LS40
C043:SPARE 1"C
C015:8#14, #14G, 1"C (AC)
C081:SPARE 1"C
C009:2#14, #14G, 1"C (AC)
I023:MFR CABLE, 2"C
I024:2#14, #14G, 1"C
MCPA-LP3-LS40
I033:MFR CABLE, 2"C
CC021:4#14, #14G, 1"C (AC)
PMP-430
VLV-433
PSH-431
C085:2#14, #14G, 1"C (AC)
C027:12#14, #14G, 1"C (AC)
480V (SEE SLD)
CT020:4#14, #14G 1"C, (AC)
CT021:2#14, #14G 1"C, (DC)
CT029:8#14, #14G 1"C, (DC)
C004:4#14, #14G, 1"C (AC)
I007:MFR CABLE, 2"C
I008:2#14, #14G, 1"C
MCP-LP4-LS40
C044:SPARE 1"C
C016:6#14, #14G, 1"C (AC)
EM-IC2
EM-P2
C082:SPARE 1"C
C010:2#14, #14G, 1"C (AC)
I025:MFR CABLE, 2"C
I026:2#14, #14G, 1"C
MCPA-LP4-LS40
I034:MFR CABLE, 2"C
C022:4#14, #14G, 1"C (AC)
PMP-440
VLV-443
PSH-441
C086:2#14, #14G, 1"C (AC)
TO EM-IC1
480V (SEE SLD)
CT022:4#14, #14G 1"C, (AC)
CT023:2#14, #14G 1"C, (DC)
CT030:8#14, #14G 1"C, (DC)
C005:4#14, #14G, 1"C (AC)
I009:MFR CABLE, 2"C
I010:2#14, #14G, 1"C
MCP-LP5-LS40
C045:SPARE 1"C
C017:6#14, #14G, 1"C (AC)
C083:SPARE 1"C
C011:2#14, #14G, 1"C (AC)
I027:MFR CABLE, 2"C
I028:2#14, #14G, 1"C
MCPA-LP5-LS40
I035:MFR CABLE, 2"C
C023:4#14, #14G, 1"C (AC)
PMP-450
VLV-453
PSH-451
C087:2#14, #14G, 1"C (AC)
TO EM-IC1
480V (SEE SLD)
CT024:4#14, #14G 1"C, (AC)
CT025:2#14, #14G 1"C, (DC)
CT031:8#14, #14G 1"C, (DC)
C006:4#14, #14G, 1"C (AC)
I011:MFG CABLE, 2"C
I012:2#14, #14G, 1"C
MCP-LP6-LS40
C046:SPARE 1"C
C018:6#14, #14G, 1"C (AC)
C084:SPARE 1"C
C012:2#14, #14G, 1"C (AC)
I029:MFG CABLE, 2"C
I030:2#14, #14G, 1"C
MCPA-LP6-LS40
I036:MFR CABLE, 2"C
C024:4#14, #14G, 1"C (AC)
PMP-460
VLV-463
PSH-461
I043:MFR CABLE, 1.5"C
I044:MFR CABLE, 1.5"C
I072:1TSP, 1"C (DC)
I073:1TSP, 1"C (DC)
FE-500
FE-501
PIT-500
PIT-501
I045:MFR CABLE, 1.5"C
I046:MFR CABLE, 1.5"C
C025: 4#14, #14G, 1"C
I047:1ea TEL CABLE, 1"C
I048:6-CAT6a 2"C, (DC)
TO LCP-COM-LS40
TELCO BOX
CT012:18#14, #14G 1 2"C, (AC)
CT013:2#14, #14G 1"C, (DC)
PB-100
I049:MFR CABLE, 1.5"C
I050:MFR CABLE, 1.5"C
C028:MFR CABLE, 1"C
C029:MFR CABLE, 1"C
LE-100
LE-101
LSL-102
LSH-102
LCP-AC-VLV-LS40
480V (SEE SLD)
LCP-LP-VLV-LS40
120V (SEE PANEL SCHEDULE)

GENERAL NOTES:

1. MAINTAIN A MINIMUM OF 12 INCHES OF SEPERATION BETWEEN POWER\CONTROL AND SIGNAL CONDUITS.
2. PULL BOXED, MAN HOLES, AND HAND HOLES NOT SHOW. CONTRACTOR TO FURNISH AND INSTALL AS SPECIFIED AND AS NEEDED.
3. CABLE TRAY SYSTEM TO BE DESIGNED, FURNISHED , AND INSTALLED BY THE CONTRACTOR. SEE SPECIFICATIONS FOR MORE DETAILS.
4. THIS DRAWING DOES NOT INDICATE ALL THE PROJECT REQUIREMENTS. THE PROJECT REQUIREMENTS ARE INDICATED IN VARIOUS ELECTRICAL AND INSTRUMENTATION DRAWINGS AND SPECIFICATIONS. ALL DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
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6. MANHOLES, HANDHOLES, PULL BOXES, JUNCTION BOXES, RACEWAYS, AND FITTINGS ARE NOT ALL SHOWN BUT SHALL BE PROVIDED.
7. ALL CIRCUITRY IS NOT SHOWN INTENTIONALLY. REFER TO OTHER DRAWINGS AND SPECIFICATIONS FOR COMPLETE CONDUIT AND CONDUCTOR REQUIREMENTS, INCLUDING BUT NOT LIMITED TO: SINGLE LINE DIAGRAMS, AND PANEL SCHEDULES.
8. KEEP AC AND DC VOLTAGES SEPARATED A MINIMUM OF 12 INCHES.

KEY NOTES:

1	SEALING FITTING – USE PVC Coated Type ES Sealing Hubs.
P	POWER CABLE TRAY AND CONDUIT.FURNISH AND INSTALL CONDUITS FROM CABLE TRAY TO EQUIPMENT. TYPICAL ALL EQUIPMENT WITH CONNECTIONS TO CABLE TRAY.
IC	INSTRUMENTATION CABLE TRAY AND CONDUIT. FURNISH AND INSTALL METALLIC BARRIER BETWEEN DC AND AC VOLTAGES. FURNISH AND INSTALL CONDUITS FROM CABLE TRAY TO EQUIPMENT. TYPICAL ALL EQUIPMENT WITH CONNECTIONS TO CABLE TRAY.

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer
CERTIFICATE NO. 33468
VAHID BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

CONDUIT BLOCK DIAGRAMS

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-26 SHEET 117 OF 134
CAD FILE: CSELS40EC01.dwg

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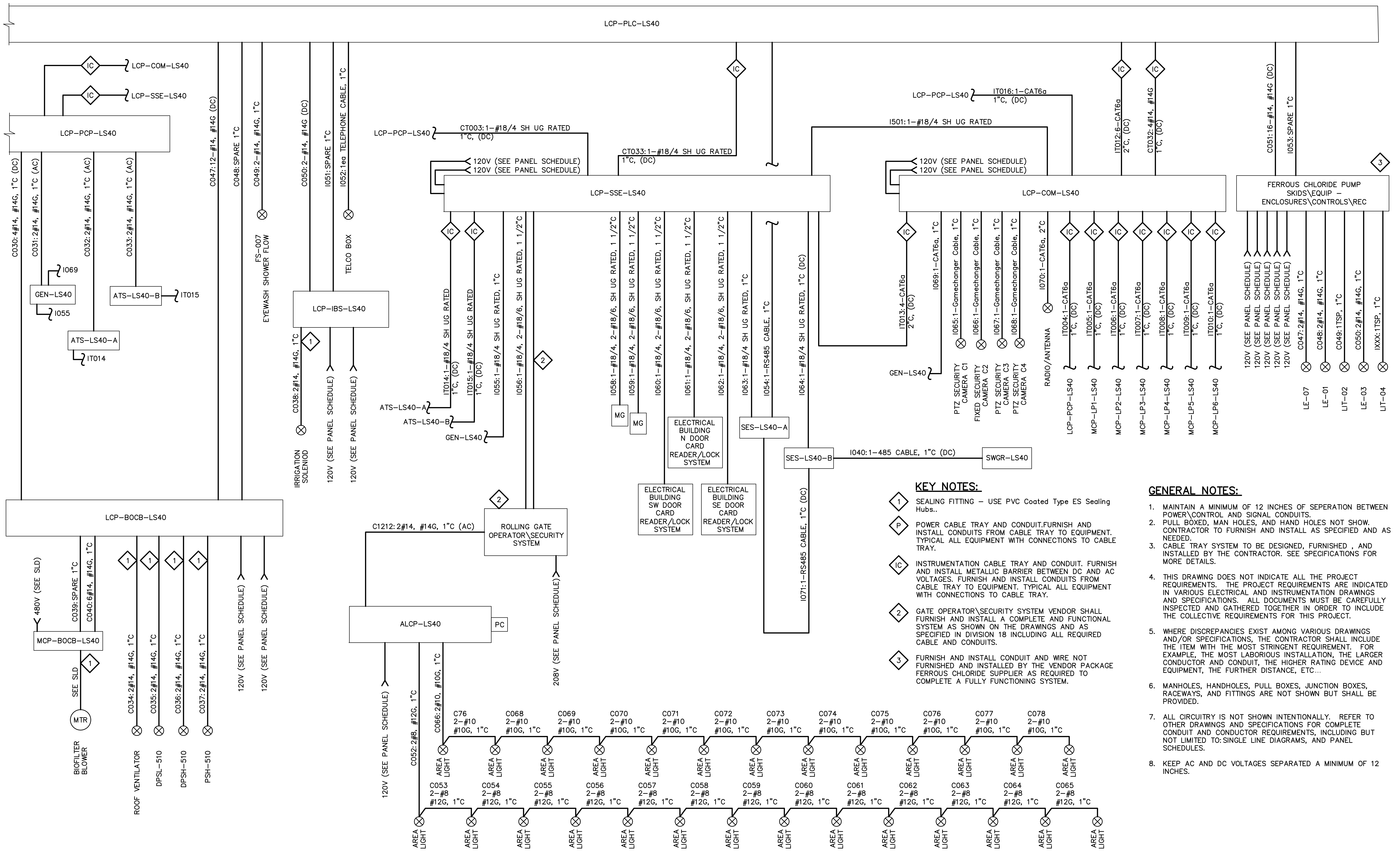
LCP-PLC-LS40
LCP-COM-LS40
LCP-SSE-LS40
LCP-PCP-LS40
IC
C030:4#14, #14G, 1"C (DC)
C031:2#14, #14G, 1"C (AC)
C032:2#14, #14G, 1"C (AC)
C033:2#14, #14G, 1"C (AC)
I069
GEN-LS40
I055
ATS-LS40-B
IT015
ATS-LS40-A
IT014
C047:12-#14, #14G (DC)
C048:SPARE 1"C
C049:2-#14, #14G, 1"C
FS-007
EYEWASH SHOWER FLOW
C050:2-#14, #14G (DC)
I051:SPARE 1"C
I052:1ea TELEPHONE CABLE, 1"C
TELCO BOX
LCP-IBS-LS40
C038:2#14, #14G, 1"C
IRRIGATION SOLENIOD
120V (SEE PANEL SCHEDULE)
CT003:1-#18/4 SH UG RATED
1"C, (DC)
CT033:1-#18/4 SH UG RATED
1"C, (DC)
120V (SEE PANEL SCHEDULE)
IT014:1-#18/4 SH UG RATED
1"C, (DC)
IT015:1-#18/4 SH UG RATED
1"C, (DC)
I055:1-#18/4 SH UG RATED, 1"C
I056:1-#18/4, 2-#18/6, SH UG RATED, 1 1/2"C
ATS-LS40-A
ATS-LS40-B
GEN-LS40
I058:1-#18/4, 2-#18/6, SH UG RATED, 1 1/2"C
I059:1-#18/4, 2-#18/6, SH UG RATED, 1 1/2"C
I060:1-#18/4, 2-#18/6, SH UG RATED, 1 1/2"C
I061:1-#18/4, 2-#18/6, SH UG RATED, 1 1/2"C
I062:1-#18/4, 2-#18/6, SH UG RATED, 1 1/2"C
I063:1-#18/4 SH UG RATED, 1"C
I054:1-RS485 CABLE, 1"C
I064:1-#18/4 SH UG RATED, 1"C (DC)
MG
MG
ELECTRICAL BUILDING N DOOR CARD READER/LOCK SYSTEM
ELECTRICAL BUILDING SW DOOR CARD READER/LOCK SYSTEM
ELECTRICAL BUILDING SE DOOR CARD READER/LOCK SYSTEM
SES-LS40-A
SES-LS40-B
I040:1-485 CABLE, 1"C (DC)
SWGR-LS40
I071:1-RS485 CABLE, 1"C (DC)
LCP-PCP-LS40
IT016:1-CAT6a
1"C, (DC)
I501:1-#18/4 SH UG RATED
IT012:6-CAT6a
2"C, (DC)
CT032:4#14, #14G
1"C, (DC)
C051:16-#14, #14G (DC)
I053:SPARE 1"C
FERROUS CHLORIDE PUMP SKIDS\EQUIP - ENCLOSURES\CONTROLS\REC
IT013:4-CAT6a
2"C, (DC)
GEN-LS40
I069:1-CAT6a, 1"C
I065:1-Gamechanger Cable, 1"C
I066:1-Gamechanger Cable, 1"C
I067:1-Gamechanger Cable, 1"C
I068:1-Gamechanger Cable, 1"C
I070:1-CAT6a, 2"C
PTZ SECURITY CAMERA C1
FIXED SECURITY CAMERA C2
PTZ SECURITY CAMERA C3
PTZ SECURITY CAMERA C4
RADIO/ANTENNA
IT004:1-CAT6a
1"C, (DC)
IT005:1-CAT6a
1"C, (DC)
IT006:1-CAT6a
1"C, (DC)
IT007:1-CAT6a
1"C, (DC)
IT008:1-CAT6a
1"C, (DC)
IT009:1-CAT6a
1"C, (DC)
IT010:1-CAT6a
1"C, (DC)
LCP-PCP-LS40
MCP-LP1-LS40
MCP-LP2-LS40
MCP-LP3-LS40
MCP-LP4-LS40
MCP-LP5-LS40
MCP-LP6-LS40
120V (SEE PANEL SCHEDULE)
C047:2#14, #14G, 1"C
C048:1TSP, 1"C
C049:1TSP, 1"C
C050:2#14, #14G, 1"C
IXXX:1TSP, 1"C
LE-07
LE-01
LIT-02
LE-03
LIT-04
LCP-BOCB-LS40
480V (SEE SLD)
C039:SPARE 1"C
C040:6#14, #14G, 1"C
MCP-BOCB-LS40
SEE SLD
MTR
BIOFILTER BLOWER
C034:2#14, #14G, 1"C
C035:2#14, #14G, 1"C
C036:2#14, #14G, 1"C
C037:2#14, #14G, 1"C
ROOF VENTILATOR
DPSL-510
DPSH-510
PSH-510
120V (SEE PANEL SCHEDULE)
ROLLING GATE OPERATOR\SECURITY SYSTEM
C1212:2#14, #14G, 1"C (AC)
208V (SEE PANEL SCHEDULE)
ALCP-LS40
PC
120V (SEE PANEL SCHEDULE)
C052:2#8, #12G, 1"C
C066:2#10, #10G, 1"C
C76 2-#10 #10G, 1"C
C068 2-#10 #10G, 1"C
C069 2-#10 #10G, 1"C
C070 2-#10 #10G, 1"C
C071 2-#10 #10G, 1"C
C072 2-#10 #10G, 1"C
C073 2-#10 #10G, 1"C
C074 2-#10 #10G, 1"C
C075 2-#10 #10G, 1"C
C076 2-#10 #10G, 1"C
C077 2-#10 #10G, 1"C
C078 2-#10 #10G, 1"C
C053 2-#8 #12G, 1"C
C054 2-#8 #12G, 1"C
C055 2-#8 #12G, 1"C
C056 2-#8 #12G, 1"C
C057 2-#8 #12G, 1"C
C058 2-#8 #12G, 1"C
C059 2-#8 #12G, 1"C
C060 2-#8 #12G, 1"C
C061 2-#8 #12G, 1"C
C062 2-#8 #12G, 1"C
C063 2-#8 #12G, 1"C
C064 2-#8 #12G, 1"C
C065 2-#8 #12G, 1"C
AREA LIGHT
1
2
3

KEY NOTES:

1. SEALING FITTING – USE PVC Coated Type ES Sealing Hubs..
P. POWER CABLE TRAY AND CONDUIT.FURNISH AND INSTALL CONDUITS FROM CABLE TRAY TO EQUIPMENT. TYPICAL ALL EQUIPMENT WITH CONNECTIONS TO CABLE TRAY.
IC. INSTRUMENTATION CABLE TRAY AND CONDUIT. FURNISH AND INSTALL METALLIC BARRIER BETWEEN DC AND AC VOLTAGES. FURNISH AND INSTALL CONDUITS FROM CABLE TRAY TO EQUIPMENT. TYPICAL ALL EQUIPMENT WITH CONNECTIONS TO CABLE TRAY.
2. GATE OPERATOR\SECURITY SYSTEM VENDOR SHALL FURNISH AND INSTALL A COMPLETE AND FUNCTIONAL SYSTEM AS SHOWN ON THE DRAWINGS AND AS SPECIFIED IN DIVISION 18 INCLUDING ALL REQUIRED CABLE AND CONDUITS.
3. FURNISH AND INSTALL CONDUIT AND WIRE NOT FURNISHED AND INSTALLED BY THE VENDOR PACKAGE FERROUS CHLORIDE SUPPLIER AS REQUIRED TO COMPLETE A FULLY FUNCTIONING SYSTEM.

GENERAL NOTES:

1. MAINTAIN A MINIMUM OF 12 INCHES OF SEPERATION BETWEEN POWER\CONTROL AND SIGNAL CONDUITS.
2. PULL BOXED, MAN HOLES, AND HAND HOLES NOT SHOW. CONTRACTOR TO FURNISH AND INSTALL AS SPECIFIED AND AS NEEDED.
3. CABLE TRAY SYSTEM TO BE DESIGNED, FURNISHED , AND INSTALLED BY THE CONTRACTOR. SEE SPECIFICATIONS FOR MORE DETAILS.
4. THIS DRAWING DOES NOT INDICATE ALL THE PROJECT REQUIREMENTS. THE PROJECT REQUIREMENTS ARE INDICATED IN VARIOUS ELECTRICAL AND INSTRUMENTATION DRAWINGS AND SPECIFICATIONS. ALL DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
5. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE HIGHER RATING DEVICE AND EQUIPMENT, THE FURTHER DISTANCE, ETC...
6. MANHOLES, HANDHOLES, PULL BOXES, JUNCTION BOXES, RACEWAYS, AND FITTINGS ARE NOT SHOWN BUT SHALL BE PROVIDED.
7. ALL CIRCUITRY IS NOT SHOWN INTENTIONALLY. REFER TO OTHER DRAWINGS AND SPECIFICATIONS FOR COMPLETE CONDUIT AND CONDUCTOR REQUIREMENTS, INCLUDING BUT NOT LIMITED TO:SINGLE LINE DIAGRAMS, AND PANEL SCHEDULES.
8. KEEP AC AND DC VOLTAGES SEPARATED A MINIMUM OF 12 INCHES.

FACILITY DRAWINGS
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FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-
#	-	-	-	-	-	-	-

HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

CONDUIT BLOCK DIAGRAMS

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-27 SHEET 118 OF 134
CAD FILE: CSELS40EC02.dwg

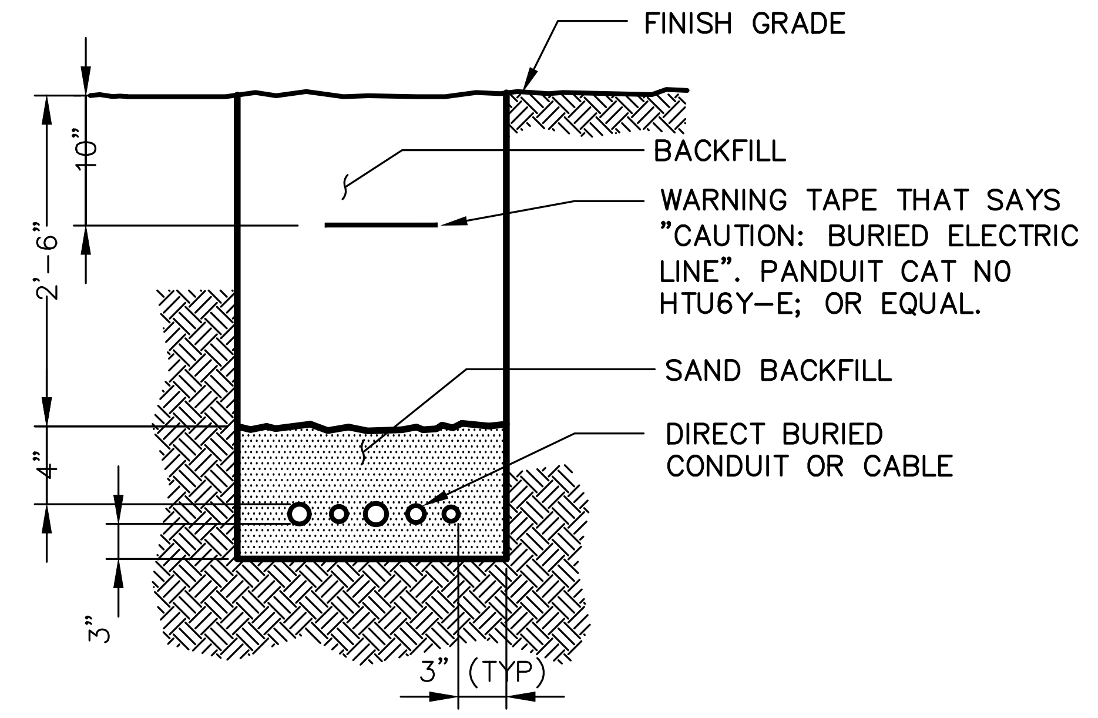
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX.
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

GENERAL NOTES:

1. THE TYPICAL DETAILS ARE NOT REFERENCED ON EACH AND EVERY DRAWING. THE TYPICAL DETAILS ARE NOT REFERENCED ON EACH AND EVERY TYPE OF INSTALLATION. THE TYPICAL DETAILS HOWEVER SHALL BE ADHERED TO WHERE THE INSTALLATION APPLIES.
2. WHERE THE INSTALLATION OF TYPICAL DETAILS CANNOT BE PERFORMED EXACTLY PER THE TYPICAL DETAIL, SIMILAR INSTALLATION DETAIL MAY BE ACCEPTABLE. SUBMIT SIMILAR INSTALLATION DETAIL FOR REVIEW BY THE ENGINEER PRIOR TO ANY WORK.

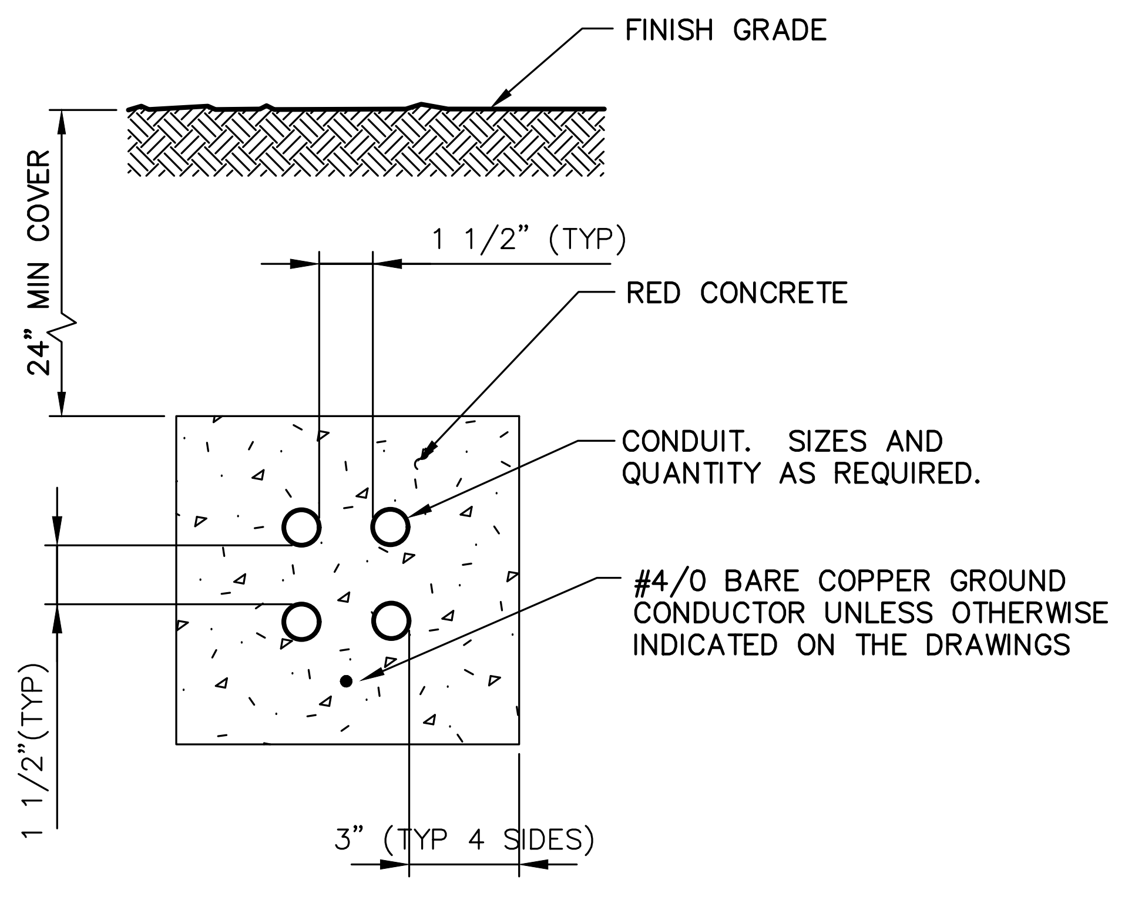

FINISH GRADE
10"
BACKFILL
WARNING TAPE THAT SAYS "CAUTION: BURIED ELECTRIC LINE". PANDUIT CAT NO HTU6Y-E; OR EQUAL.
2'-6"
SAND BACKFILL
4"
DIRECT BURIED CONDUIT OR CABLE
3"
3" (TYP)

NOTES:

1. ALL DIMENSIONS ARE MINIMUM UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. REFER TO SPECIFICATIONS FOR TRENCH BACKFILL REQUIREMENTS.

DETAIL E100 #|# DIRECT BURIED CONDUIT OR CABLE

SCALE = NONE

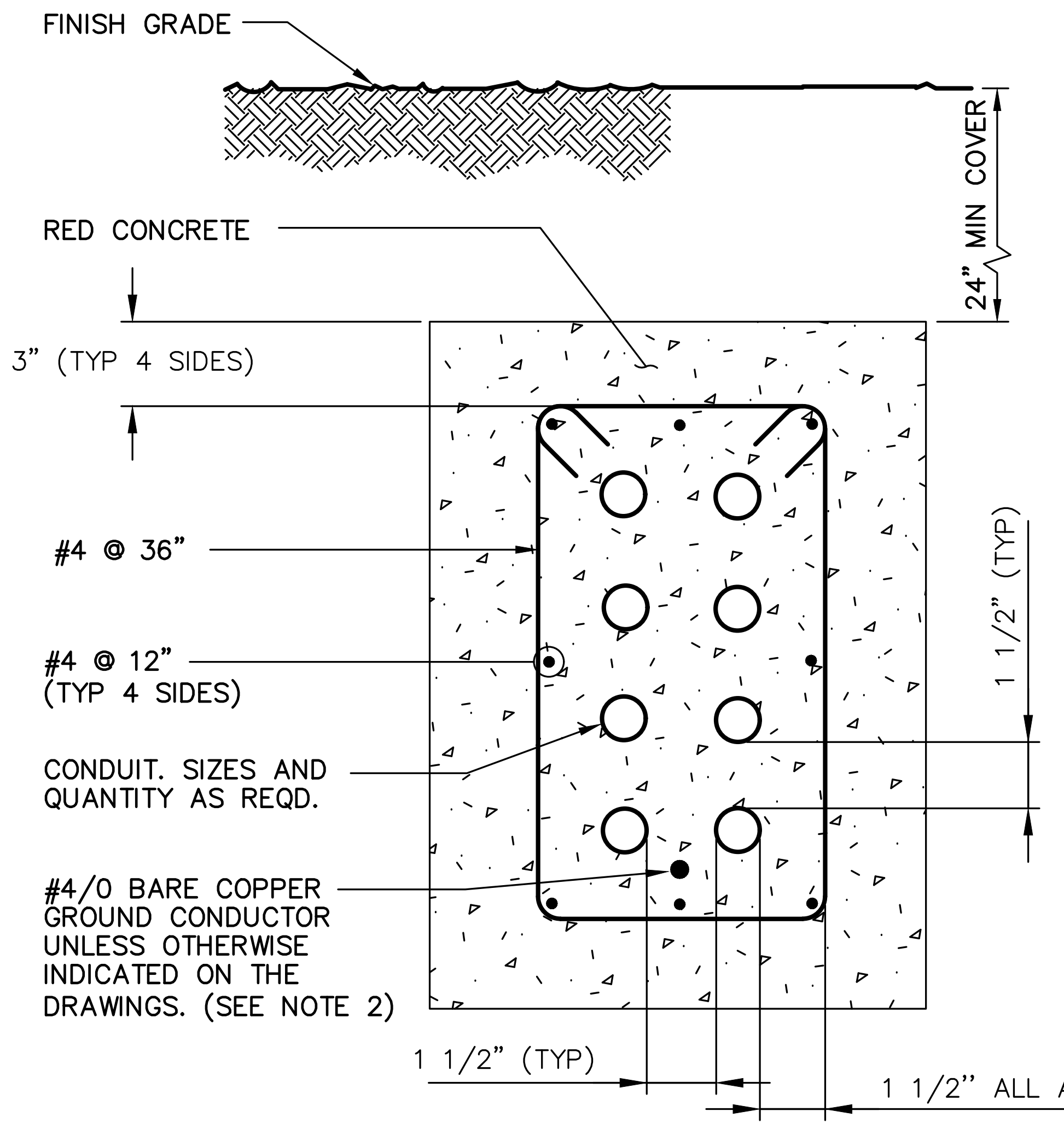

FINISH GRADE
24" MIN COVER
1 1/2" (TYP)
RED CONCRETE
CONDUIT. SIZES AND QUANTITY AS REQUIRED.
#4/0 BARE COPPER GROUND CONDUCTOR UNLESS OTHERWISE INDICATED ON THE DRAWINGS
1 1/2"(TYP)
3" (TYP 4 SIDES)

NOTES:

1. ALL DIMENSIONS ARE MINIMUM UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. THIS ENCASEMENT IS FOR NON-TRAFFIC AREAS ONLY, OR WHERE SPECIFICALLY INDICATED ON THE DRAWINGS.

DETAIL E101 #|# UNREINFORCED ENCASEMENT FOR ELECTRICAL CONDUITS IN NON-TRAFFIC RATED AREAS

SCALE = NONE

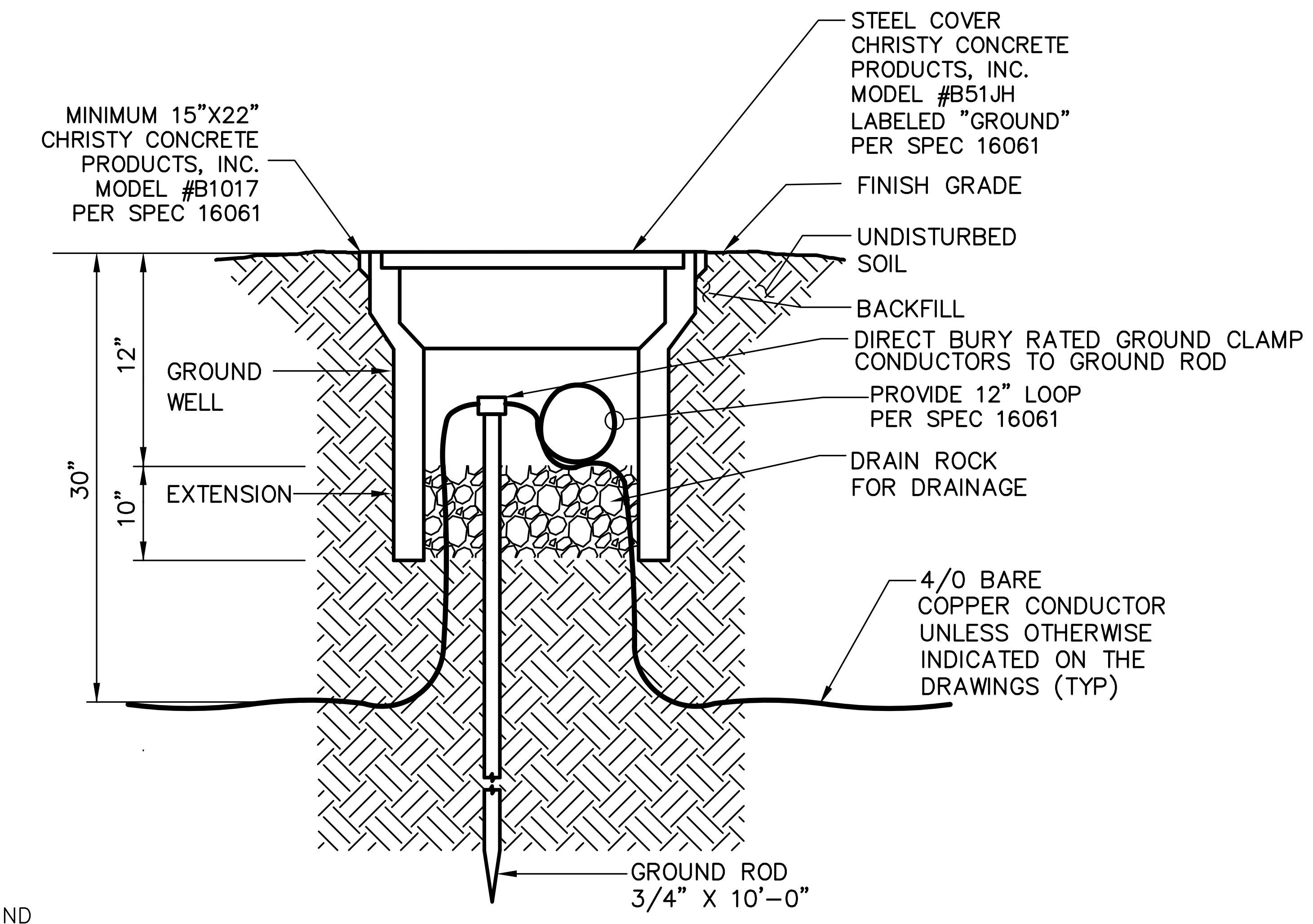

FINISH GRADE
24" MIN COVER
RED CONCRETE
3" (TYP 4 SIDES)
#4 @ 36"
#4 @ 12" (TYP 4 SIDES)
CONDUIT. SIZES AND QUANTITY AS REQD.
#4/0 BARE COPPER GROUND CONDUCTOR UNLESS OTHERWISE INDICATED ON THE DRAWINGS. (SEE NOTE 2)
1 1/2" (TYP)
1 1/2" (TYP)
1 1/2" ALL AROUND

NOTES:

1. ALL DIMENSIONS ARE MINIMUM UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. PROVIDE 250 KCMIL BARE COPPER IN ALL MEDIUM VOLTAGE DUCTBANKS.
3. SPACING SHALL B2 7-1/2"ON CENTER FOR MEDIUM VOLTAGE DUCTBANKS.

DETAIL E102 #|# REINFORCED ENCASEMENT FOR ELECTRICAL CONDUITS IN TRAFFIC RATED AREAS

SCALE = NONE

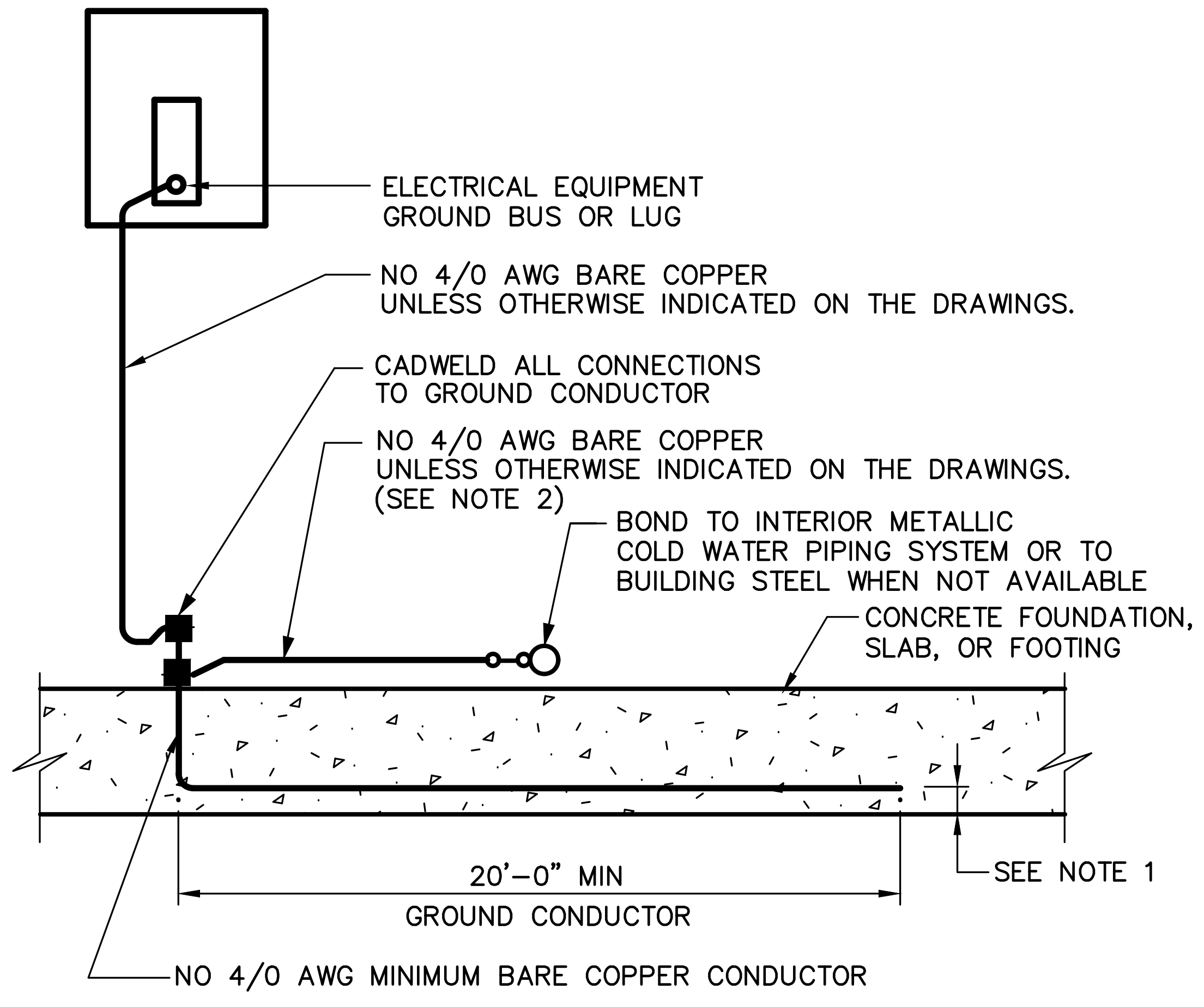

STEEL COVER CHRISTY CONCRETE PRODUCTS, INC. MODEL #B51JH LABELED "GROUND" PER SPEC 16061
MINIMUM 15"X22" CHRISTY CONCRETE PRODUCTS, INC. MODEL #B1017 PER SPEC 16061
FINISH GRADE
UNDISTURBED SOIL
BACKFILL
DIRECT BURY RATED GROUND CLAMP CONDUCTORS TO GROUND ROD
PROVIDE 12" LOOP PER SPEC 16061
DRAIN ROCK FOR DRAINAGE
GROUND WELL
EXTENSION
12"
30"
10"
4/0 BARE COPPER CONDUCTOR UNLESS OTHERWISE INDICATED ON THE DRAWINGS (TYP)
GROUND ROD 3/4" X 10'-0"

NOTES:

1. REFER TO SPECIFICATION 16061.

E103 -|- GROUND ROD INSTALLATION

N.T.S.

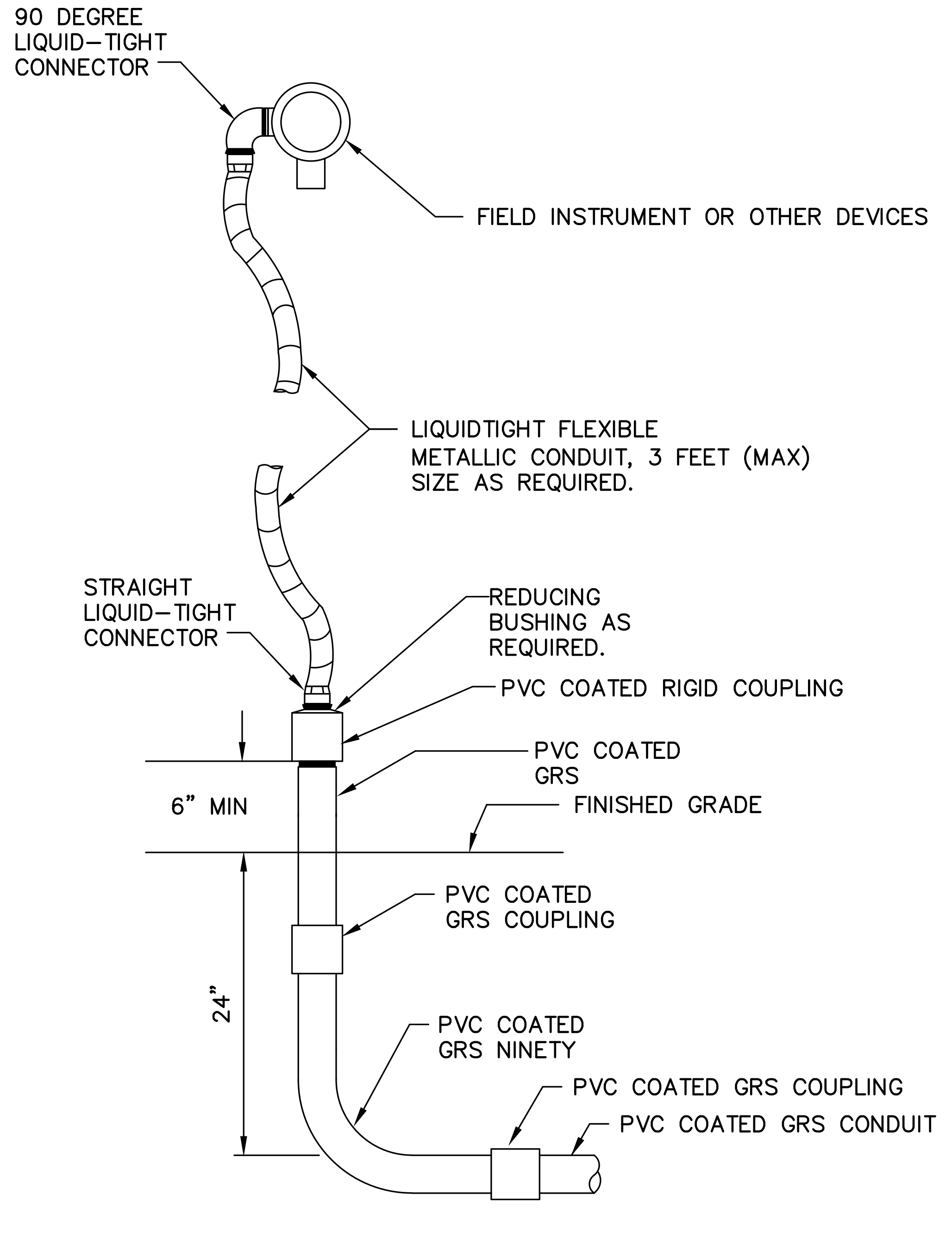

ELECTRICAL EQUIPMENT GROUND BUS OR LUG
NO 4/0 AWG BARE COPPER UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
CADWELD ALL CONNECTIONS TO GROUND CONDUCTOR
NO 4/0 AWG BARE COPPER UNLESS OTHERWISE INDICATED ON THE DRAWINGS. (SEE NOTE 2)
BOND TO INTERIOR METALLIC COLD WATER PIPING SYSTEM OR TO BUILDING STEEL WHEN NOT AVAILABLE
CONCRETE FOUNDATION, SLAB, OR FOOTING
20'-0" MIN GROUND CONDUCTOR
SEE NOTE 1
NO 4/0 AWG MINIMUM BARE COPPER CONDUCTOR

NOTE:

1. 1" CLEAR FOR ELEVATED SLABS. 3" CLEAR FOR SLABS ON GRADE OR FOOTING.
2. PLACE ALL CONDUCTOR IN CONDUIT WHERE EXPOSED TO POSSIBLE PHYSICAL DAMAGE.

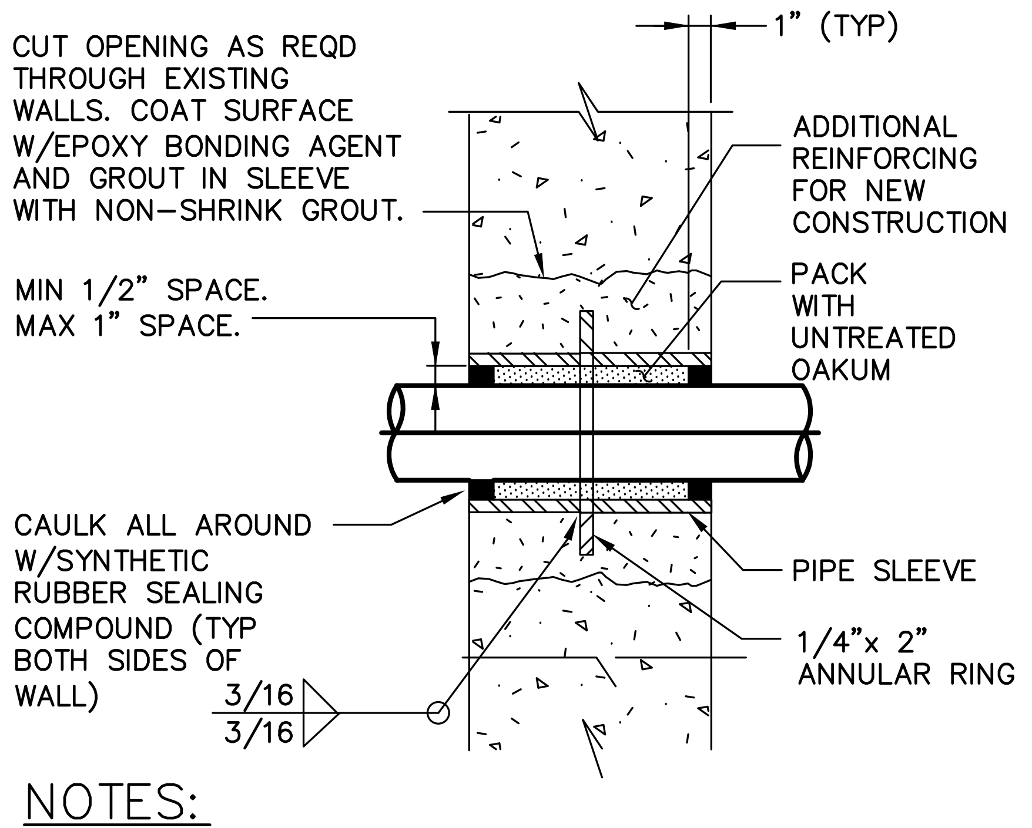
E104 -|- CONCRETE ENCASED GROUND

N.T.S.


90 DEGREE LIQUID-TIGHT CONNECTOR
FIELD INSTRUMENT OR OTHER DEVICES
LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT, 3 FEET (MAX) SIZE AS REQUIRED.
STRAIGHT LIQUID-TIGHT CONNECTOR
REDUCING BUSHING AS REQUIRED.
PVC COATED RIGID COUPLING
PVC COATED GRS
6" MIN
FINISHED GRADE
PVC COATED GRS COUPLING
24"
PVC COATED GRS NINETY
PVC COATED GRS COUPLING
PVC COATED GRS CONDUIT

E200 -|- PVC-COATED-GRS STUB UPS

N.T.S.

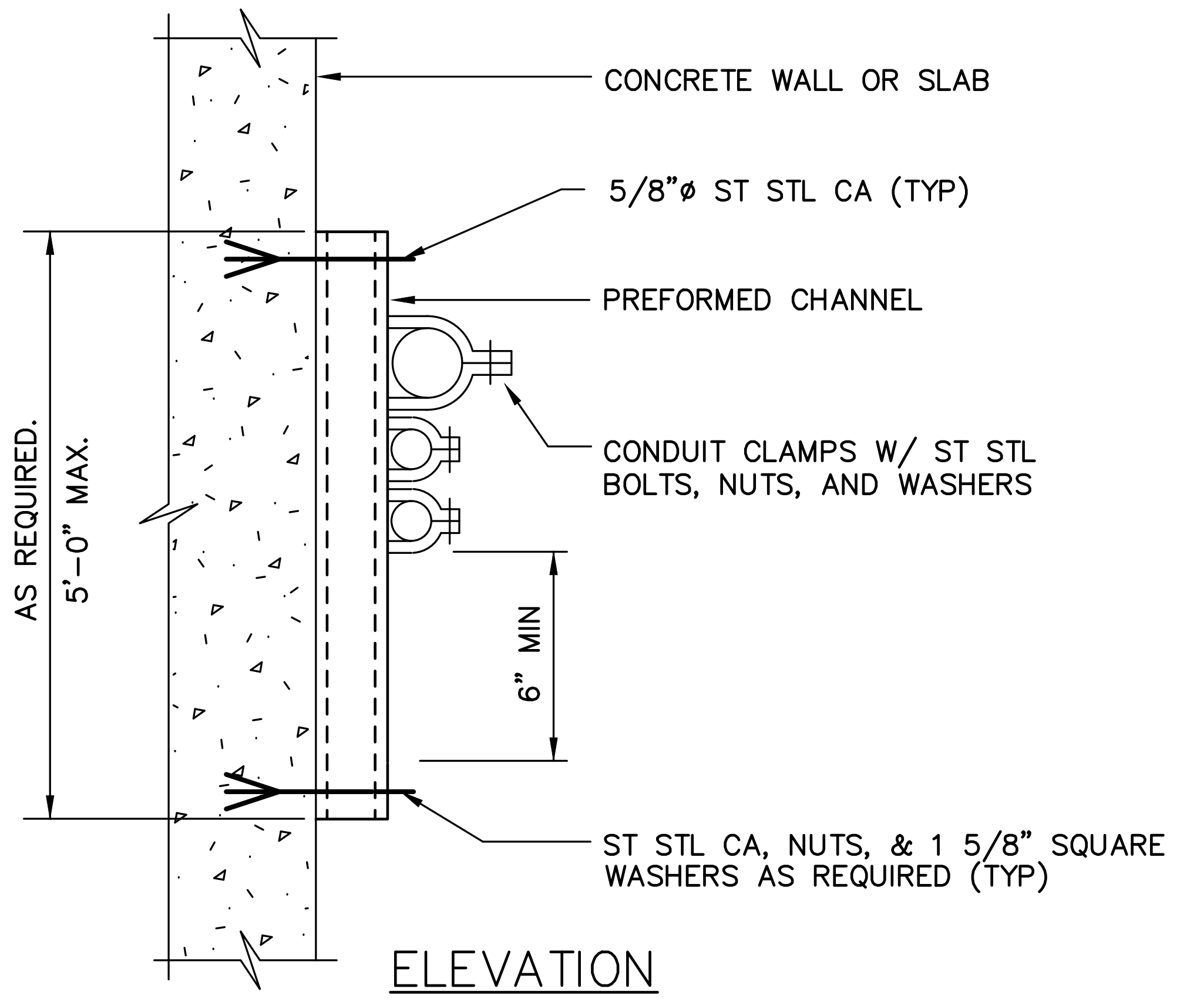

1" (TYP)
CUT OPENING AS REQD THROUGH EXISTING WALLS. COAT SURFACE W/EPOXY BONDING AGENT AND GROUT IN SLEEVE WITH NON-SHRINK GROUT.
ADDITIONAL REINFORCING FOR NEW CONSTRUCTION
MIN 1/2" SPACE. MAX 1" SPACE.
PACK WITH UNTREATED OAKUM
CAULK ALL AROUND W/SYNTHETIC RUBBER SEALING COMPOUND (TYP BOTH SIDES OF WALL)
3/16
3/16
PIPE SLEEVE
1/4"x 2" ANNULAR RING

NOTES:

1. FOR NEW CONSTRUCTION, SLEEVES SHALL BE CAST INTO WALL. BLOCKOUTS AND SUBSEQUENT GROUTING IN SLEEVES WILL NOT BE PERMITTED UNLESS A KEYED WATERSTOP JOINT IS PROVIDED.
2. 6"ø SLEEVES AND SMALLER SHALL BE SCH 40 STL PIPE.
3. SLEEVES LARGER THAN 6"ø SHALL BE 1/4" THICK STL PIPE.
4. NEOPRENE LINK SEAL W/ST STL BOLTS MAY BE SUBSTITUTED FOR OAKUM & SYNTHETIC RUBBER SEAL. IF LINK SEALS ARE USED IN WALLS THICKER THAN 12", LINK SEAL SHALL BE INSTALLED AT BOTH ENDS OF WALL SLEEVE. SLEEVE DIAMETER SHALL BE PER LINK SEAL MANUFACTURER'S RECOMMENDATION.
5. SLEEVE SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.

E300 -|- SLEEVE - INSTALLATION THROUGH WALLS AND FLOOR SLABS

N.T.S.


CONCRETE WALL OR SLAB
5/8"ø ST STL CA (TYP)
PREFORMED CHANNEL
AS REQUIRED.
5'-0" MAX.
CONDUIT CLAMPS W/ ST STL BOLTS, NUTS, AND WASHERS
6" MIN
ST STL CA, NUTS, & 1 5/8" SQUARE WASHERS AS REQUIRED (TYP)
ELEVATION

NOTES:

1. THIS DETAIL TYPICAL FOR BOTH VERTICAL AND HORIZONTAL MOUNTING.
2. PREFORMED CHANNEL, FITTINGS, AND CLAMPS SHALL BE STAINLESS STEEL. FIELD COAT ALL CUTS PER SPECIFICATIONS.
3. CHANNELS TO BE SPACED AT 5'-0" OC MAXIMUM.
4. PROVIDE STAINLESS STEEL CHANNEL AND MOUNTING HARDWARE.

E301 -|- CONDUIT SUPPORT

N.T.S.

FACILITY DRAWINGS
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#	| |	| |	| |	| |	| |	| |	| |

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
33468
VAHID
BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

ELECTRICAL DETAILS 1

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CITY PROJECT NO. WS90400085
DATE: 08/2024
E-28 SHEET 119 OF 134
CAD FILE: CSELS40ED01.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX.
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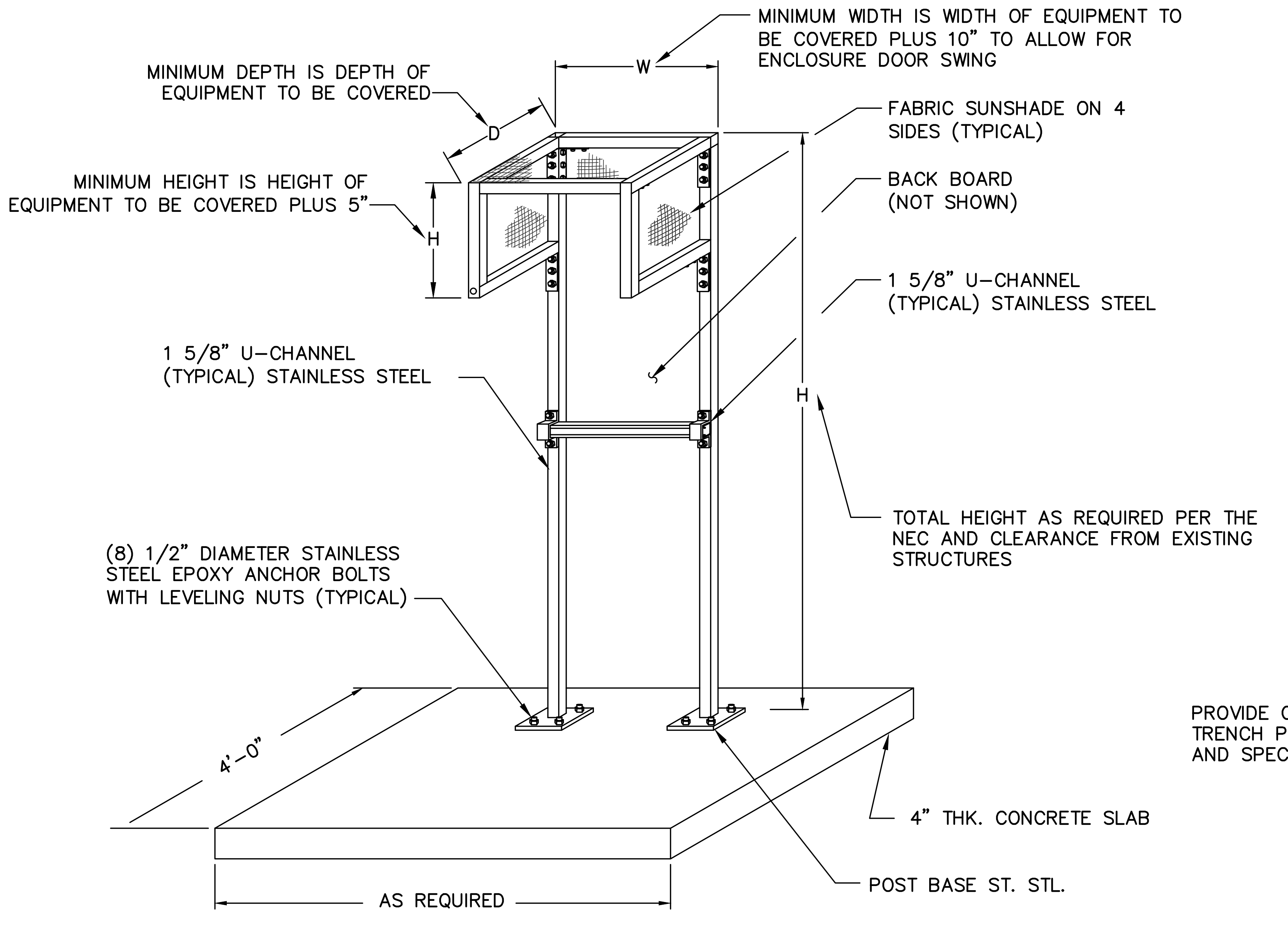
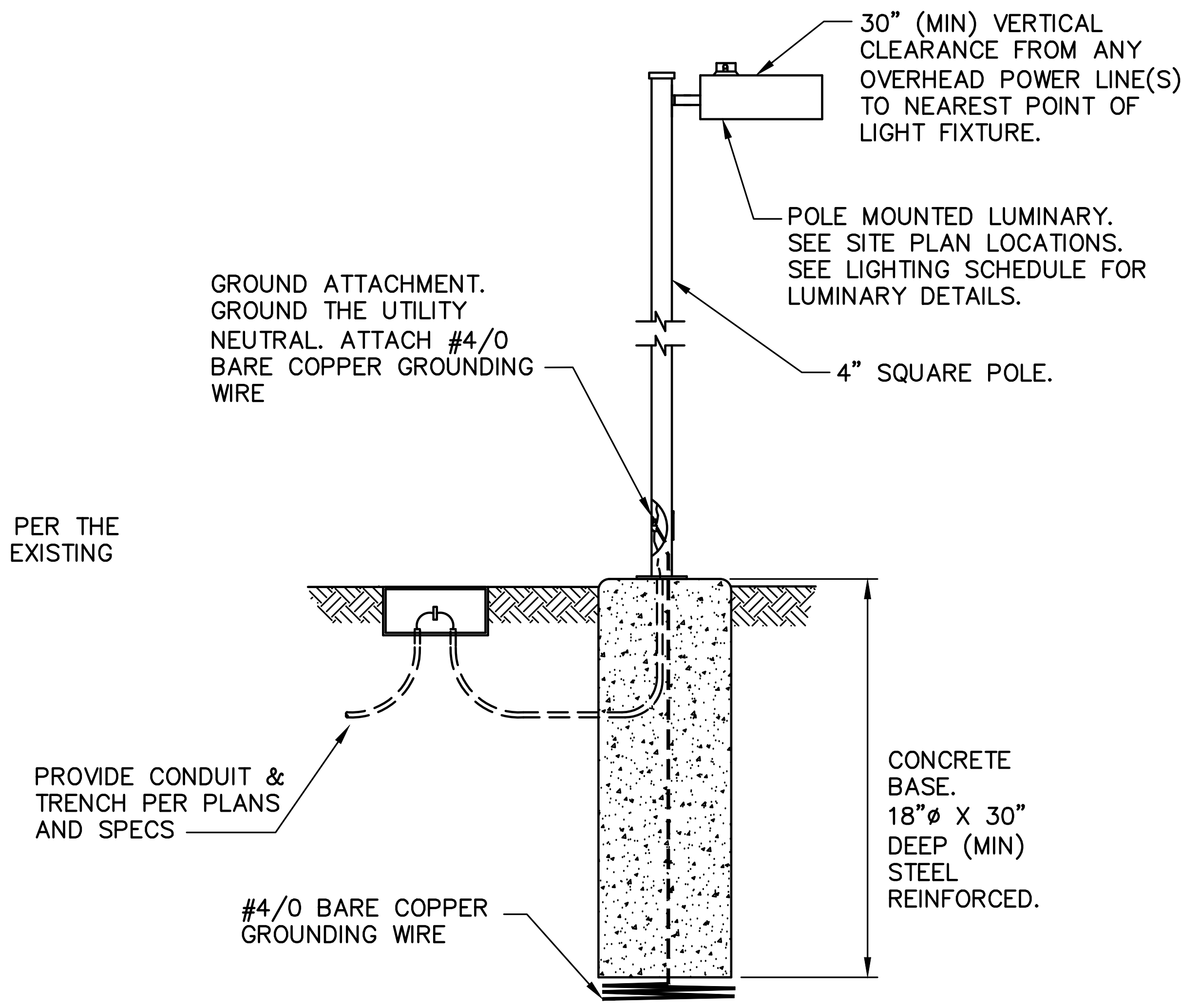

MINIMUM WIDTH IS WIDTH OF EQUIPMENT TO BE COVERED PLUS 10" TO ALLOW FOR ENCLOSURE DOOR SWING
W
MINIMUM DEPTH IS DEPTH OF EQUIPMENT TO BE COVERED
D
FABRIC SUNSHADE ON 4 SIDES (TYPICAL)
MINIMUM HEIGHT IS HEIGHT OF EQUIPMENT TO BE COVERED PLUS 5"
H
BACK BOARD (NOT SHOWN)
1 5/8" U-CHANNEL (TYPICAL) STAINLESS STEEL
1 5/8" U-CHANNEL (TYPICAL) STAINLESS STEEL
H
TOTAL HEIGHT AS REQUIRED PER THE NEC AND CLEARANCE FROM EXISTING STRUCTURES
(8) 1/2" DIAMETER STAINLESS STEEL EPOXY ANCHOR BOLTS WITH LEVELING NUTS (TYPICAL)
4'-0"
4" THK. CONCRETE SLAB
AS REQUIRED
POST BASE ST. STL.

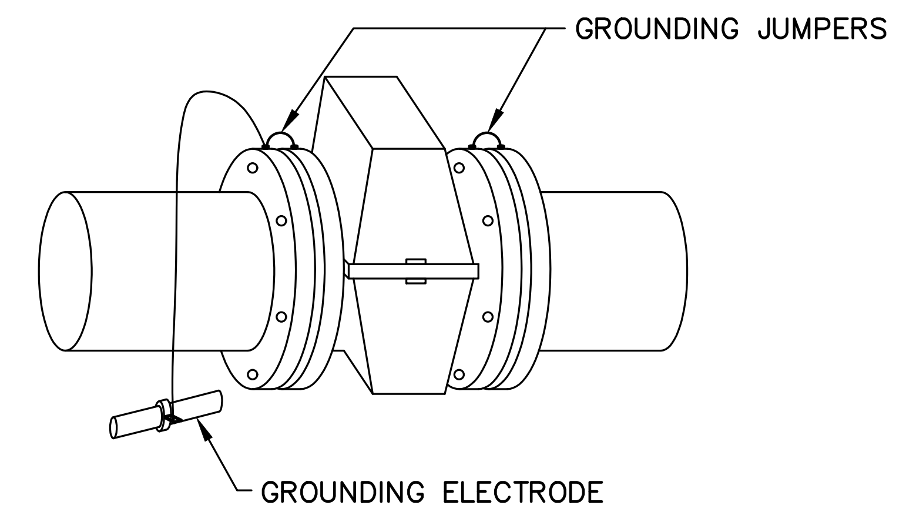
E400 EQUIPMENT SUNSHADE
–|–
N.T.S.


30" (MIN) VERTICAL CLEARANCE FROM ANY OVERHEAD POWER LINE(S) TO NEAREST POINT OF LIGHT FIXTURE.
POLE MOUNTED LUMINARY. SEE SITE PLAN LOCATIONS. SEE LIGHTING SCHEDULE FOR LUMINARY DETAILS.
GROUND ATTACHMENT. GROUND THE UTILITY NEUTRAL. ATTACH #4/0 BARE COPPER GROUNDING WIRE
4" SQUARE POLE.
PROVIDE CONDUIT & TRENCH PER PLANS AND SPECS
CONCRETE BASE. 18"ø X 30" DEEP (MIN) STEEL REINFORCED.
#4/0 BARE COPPER GROUNDING WIRE

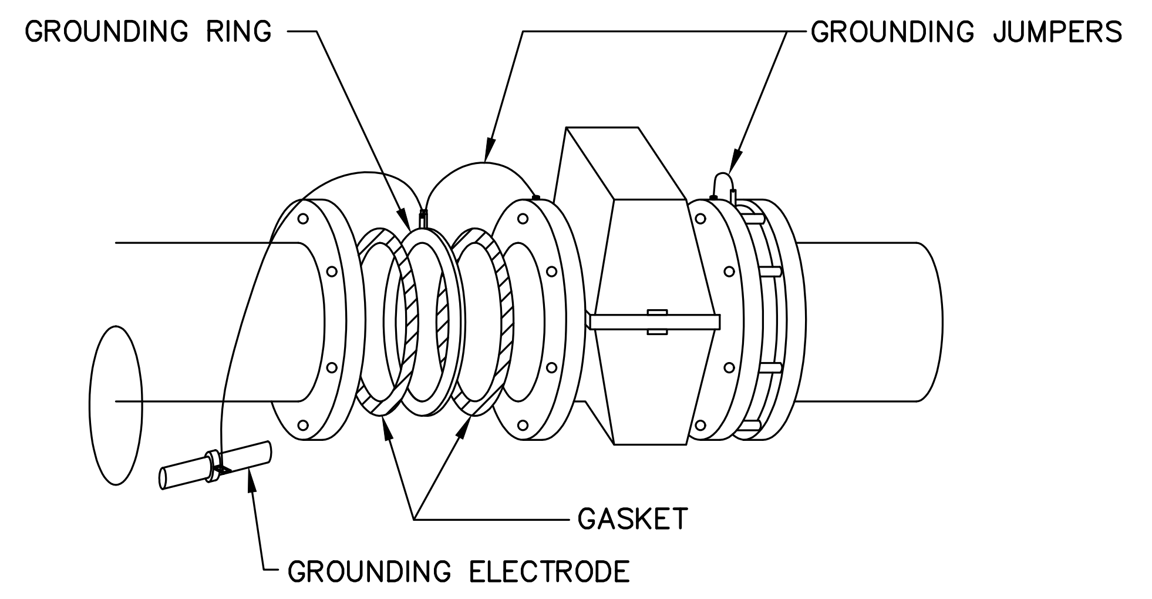
IMPORTANT NOTE:

1. TOP OF POLE SHALL BE LOWER THAN THE ELEVATION OF THE TOP OF THE SITE PERIMETER WALL.

E500 POLE MOUNTED LIGHT DETAIL
#|#
N.T.S.


GROUNDING JUMPERS
GROUNDING ELECTRODE

a) ELECTRICALLY CONDUCTIVE PIPE


GROUNDING RING
GROUNDING JUMPERS
GASKET
GROUNDING ELECTRODE

b) ELECTRICALLY INSULATING PIPE

E501 FLOWMETER GROUNDING
–|–
N.T.S.

GENERAL NOTES:

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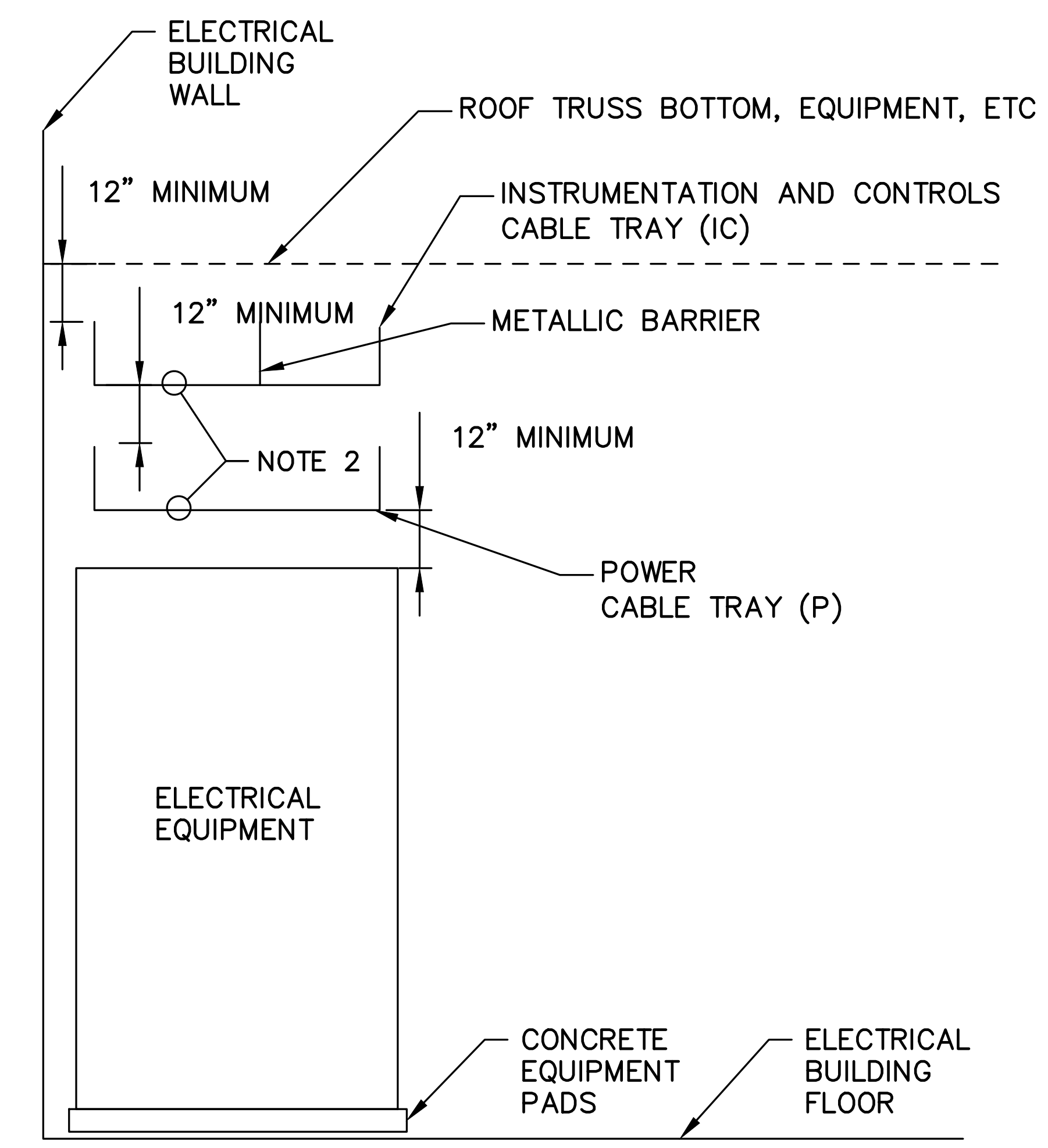
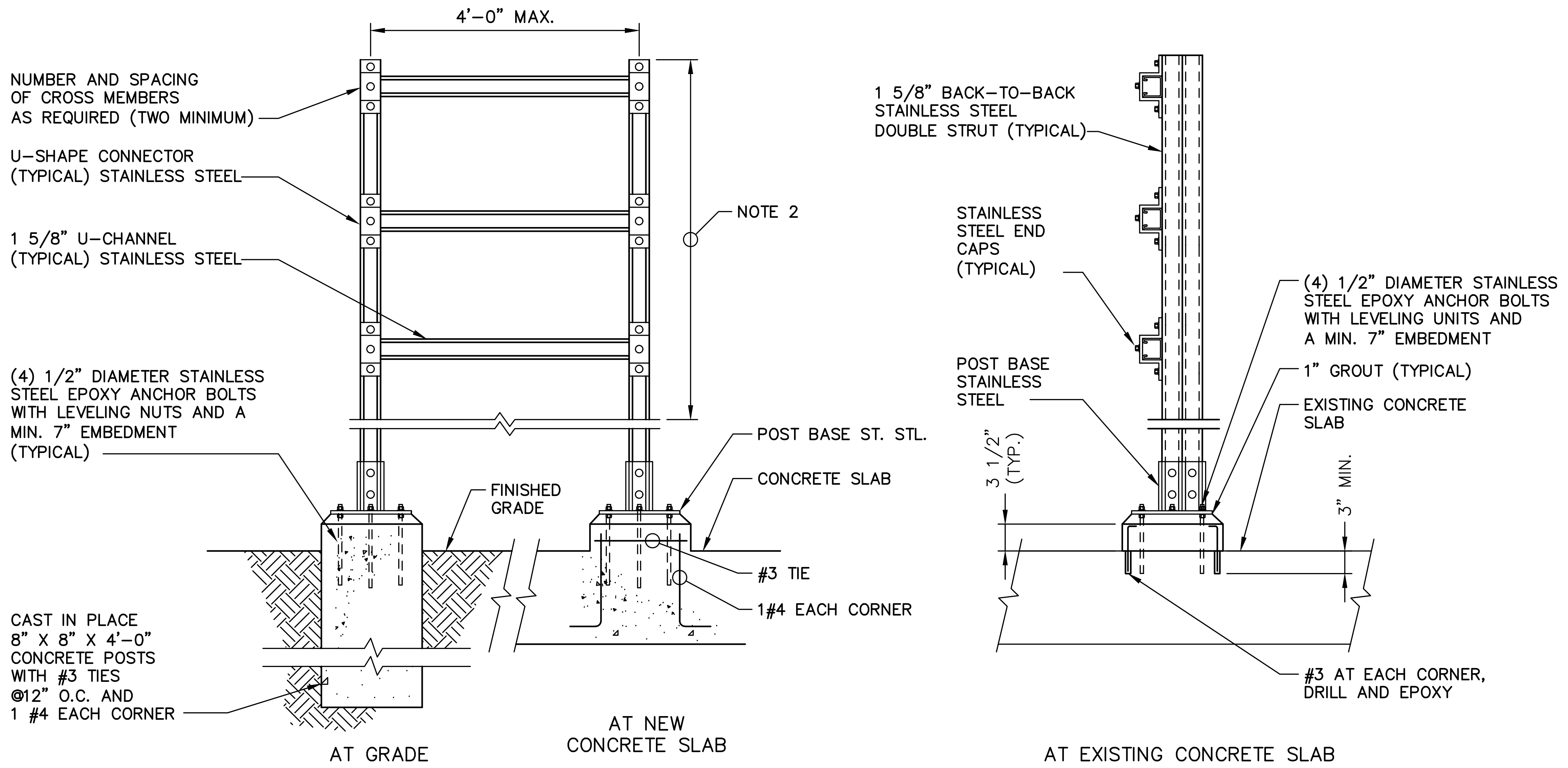

ELECTRICAL BUILDING WALL
ROOF TRUSS BOTTOM, EQUIPMENT, ETC
12" MINIMUM
INSTRUMENTATION AND CONTROLS CABLE TRAY (IC)
12" MINIMUM
METALLIC BARRIER
NOTE 2
12" MINIMUM
POWER CABLE TRAY (P)
ELECTRICAL EQUIPMENT
CONCRETE EQUIPMENT PADS
ELECTRICAL BUILDING FLOOR

NOTES:

1. CABLE TRAY SYSTEM TO BE DESIGNED, FURNISHED, AND INSTALLED BY THE CONTRACTOR. SEE SPECIFICATIONS FOR MORE DETAILS.
2. CABLE TRAY SHALL BE A MINIMUM OF 6" HIGH AND 36" WIDE.
3. KEEP AC AND DC IN (IC) TRAY SEPARATED USING METALLIC BARRIERS.

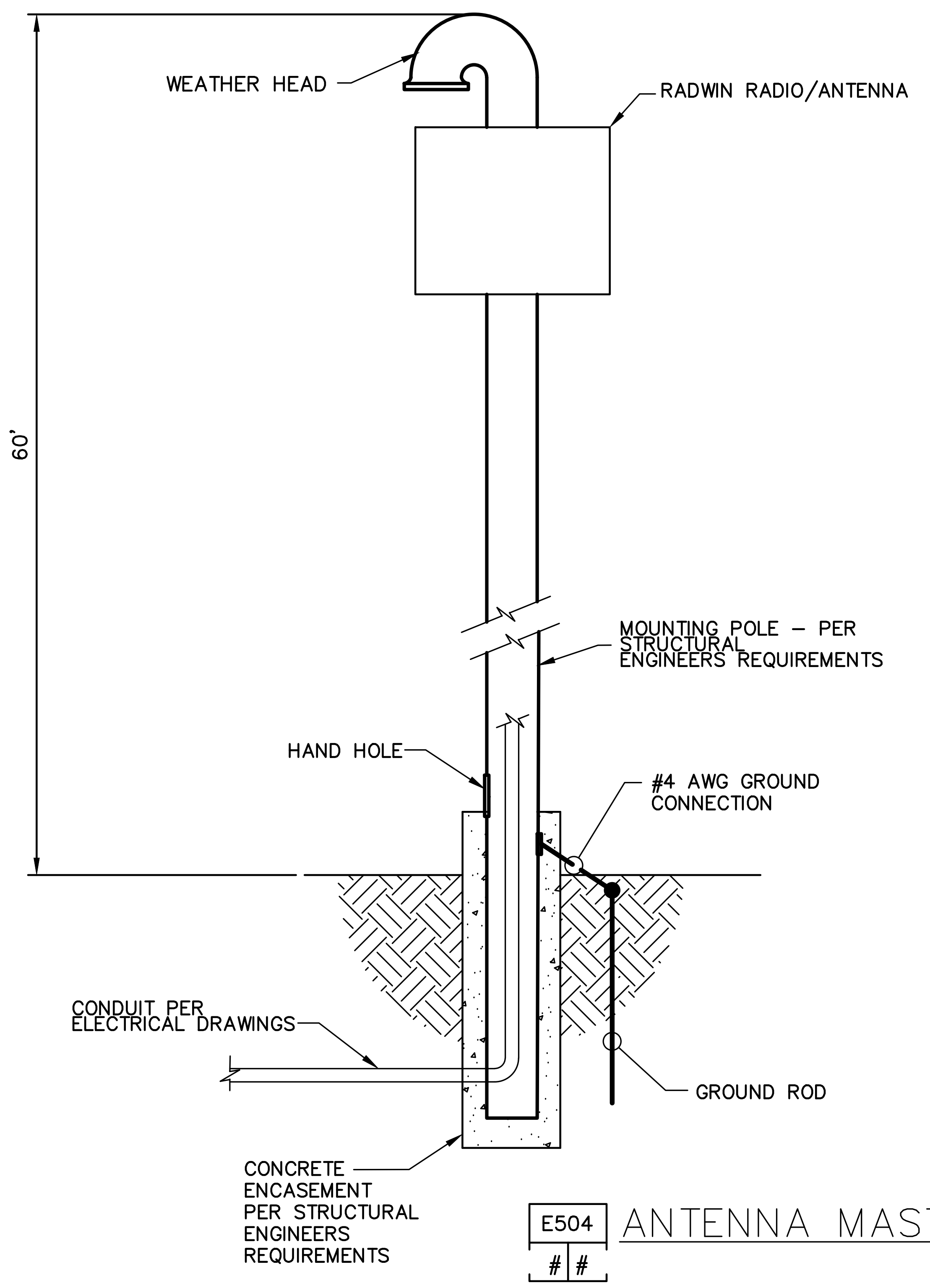
E525 CABLE TRAY DETAIL
–|–
N.T.S.


4'-0" MAX.
NUMBER AND SPACING OF CROSS MEMBERS AS REQUIRED (TWO MINIMUM)
U-SHAPE CONNECTOR (TYPICAL) STAINLESS STEEL
1 5/8" U-CHANNEL (TYPICAL) STAINLESS STEEL
NOTE 2
(4) 1/2" DIAMETER STAINLESS STEEL EPOXY ANCHOR BOLTS WITH LEVELING NUTS AND A MIN. 7" EMBEDMENT (TYPICAL)
POST BASE ST. STL.
FINISHED GRADE
CONCRETE SLAB
#3 TIE
1#4 EACH CORNER
CAST IN PLACE 8" X 8" X 4'-0" CONCRETE POSTS WITH #3 TIES @12" O.C. AND 1 #4 EACH CORNER
AT GRADE
AT NEW CONCRETE SLAB
1 5/8" BACK-TO-BACK STAINLESS STEEL DOUBLE STRUT (TYPICAL)
STAINLESS STEEL END CAPS (TYPICAL)
POST BASE STAINLESS STEEL
3 1/2" (TYP.)
(4) 1/2" DIAMETER STAINLESS STEEL EPOXY ANCHOR BOLTS WITH LEVELING UNITS AND A MIN. 7" EMBEDMENT
1" GROUT (TYPICAL)
EXISTING CONCRETE SLAB
3" MIN.
#3 AT EACH CORNER, DRILL AND EPOXY
AT EXISTING CONCRETE SLAB

NOTES:

1. EQUIPMENT FOOTPRINT AREAS ARE MOUNTED ON THE RACK, 1/4" PLATE CAN BE UTILIZED SPANNING FROM THE TOP TO THE BOTTOM CROSS MEMBER IN LIEU OF MULTIPLE CROSS MEMBERS.
2. EQUIPMENT SHALL BE MOUNTED SO THAT INDICATION, ADJUSTMENTS, OR OPERATING HANDLES ARE FOUR TO FIVE FEET ABOVE FLOOR OR PLATFORM.
3. ANCHORAGE MATERIALS AND METHODS AS REQUIRED.
4. MATERIALS AND HARDWARE SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS AND INDUSTRY ESTABLISHED STANDARDS.

E502 EQUIPMENT SUPPORT STRUCTURE
–|–
N.T.S.


WEATHER HEAD
RADWIN RADIO/ANTENNA
60'
MOUNTING POLE – PER STRUCTURAL ENGINEERS REQUIREMENTS
HAND HOLE
#4 AWG GROUND CONNECTION
CONDUIT PER ELECTRICAL DRAWINGS
GROUND ROD
CONCRETE ENCASEMENT PER STRUCTURAL ENGINEERS REQUIREMENTS

E504 ANTENNA MAST DETAIL
#|#
SCALE = NONE

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#	-	-	-	-	-	-	-
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HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

ELECTRICAL DETAILS 2

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CITY PROJECT NO. WS90400085
DATE: 08/2024
E-29 SHEET 120 OF 134
CAD FILE: CSELS40ED02.dwg

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FOR CONSTRUCTION

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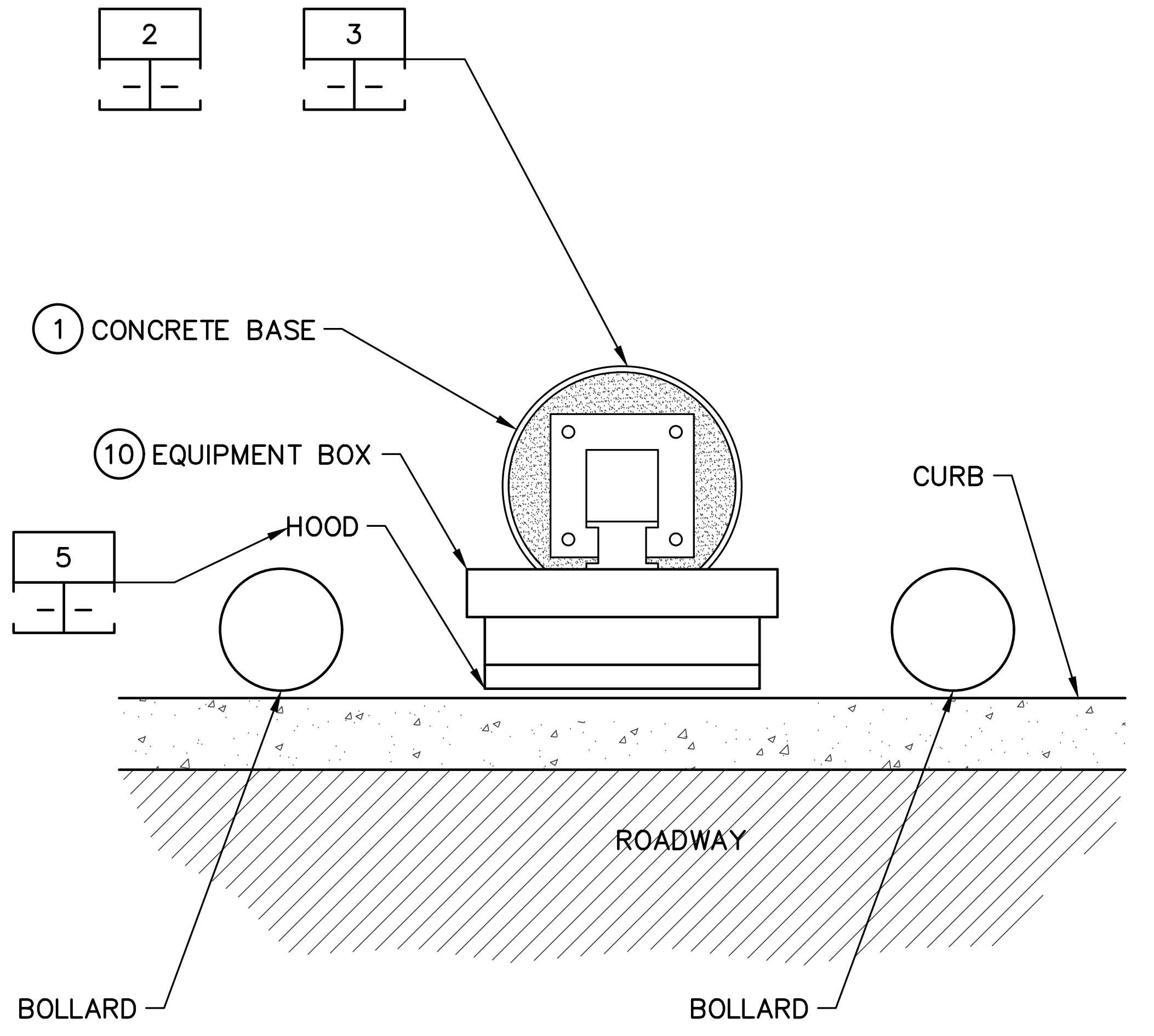

2
3
①CONCRETE BASE
⑩EQUIPMENT BOX
HOOD
5
CURB
ROADWAY
BOLLARD
BOLLARD

CARD READER PEDESTAL – TOP VIEW
DETAIL 1
NOT TO SCALE

ITEM	QTY.	DESCRIPTION	MANUFACTURER	PART NUMBER	NOTES
1	1	CONCRETE BASE	-----	3000 PSI	
2	4	ANCHOR BOLTS	-----	0.75" GRADE 5	
3	6	REINFORCING BAR	-----	#6	
4	3	REINFORCING BAR	-----	#4	
5	1	BASE PLATE	-----	0.50" STEEL	
6	1	MAIN TUBE	-----	6" X 6" X 0.125" TUBE STEEL	
7	1	LOWER TUBE	-----	4" X 4" X 0.125" TUBE STEEL	
8	1	MIDDLE TUBE	-----	4" X 4" X 0.125" TUBE STEEL	"T" SHAPE TUBE
9	1	UPPER TUBE	-----	4" X 4" X 0.125" TUBE STEEL	
10	2	EQUIPMENT BOX	-----	3/16" STEEL	
11	2	HINGE	-----	316 STAINLESS STEEL	
12	2	LOCK SET, CAM TYPE	COMPX	C4152	WWW.COMPXNET.COM
13	2	CARD READER	INDALA	ASR 620	
14	2	STANDOFF, CARD READER	-----	12" H X 12"W X 4"D PLASTIC	
15	0	CCTV CAMERA	HONEYWELL	V60 CCTV	
16	1	SWITCH BOX	THOMAS & BETTS	IH3-1-LM	WWW.TNB.COM
17	1	FIRE DEPT. KEYED SWITCH	KNOX COMPANY	MODEL 3502 SINGLE SWITCH	WWW.KNOXBOX.COM
18	1	KNOX BOX, HINGED DOOR	KNOX COMPANY	3200 SERIES SURFACE MOUNTED	WWW.KNOXBOX.COM
19	0	CARD READER	INDALA	FP5067B	
20	2	BOX, RECEPTACLE	THOMAS & BETTS	IH3-1	WWW.TNB.COM
21	2	COVER, RECEPTACLE	THOMAS & BETTS	CCG	WWW.TNB.COM
22	2	RECEPTACLE	HUBBEL INC	GF5362	WWW.HUBBEL-WIRING.COM
23	2	PLUNGER, TAMPER	GE (SENTROL)	3015	WWW.GEINDUSTRIAL.COM
24	2	TERMINAL BLOCK, 10 POLE	MARATHON	KULKA 100 SERIES	WWW.MARATHONSP.COM
25	–	NOT USED	–	–	
26	2	POWER SUPPLY, 12VDC	OMRON (OR EQUAL)	S82K-00712 (OR EQUAL)	WWW.OMRON.CA
27	2	LIGHT FIXTURE	TBD		

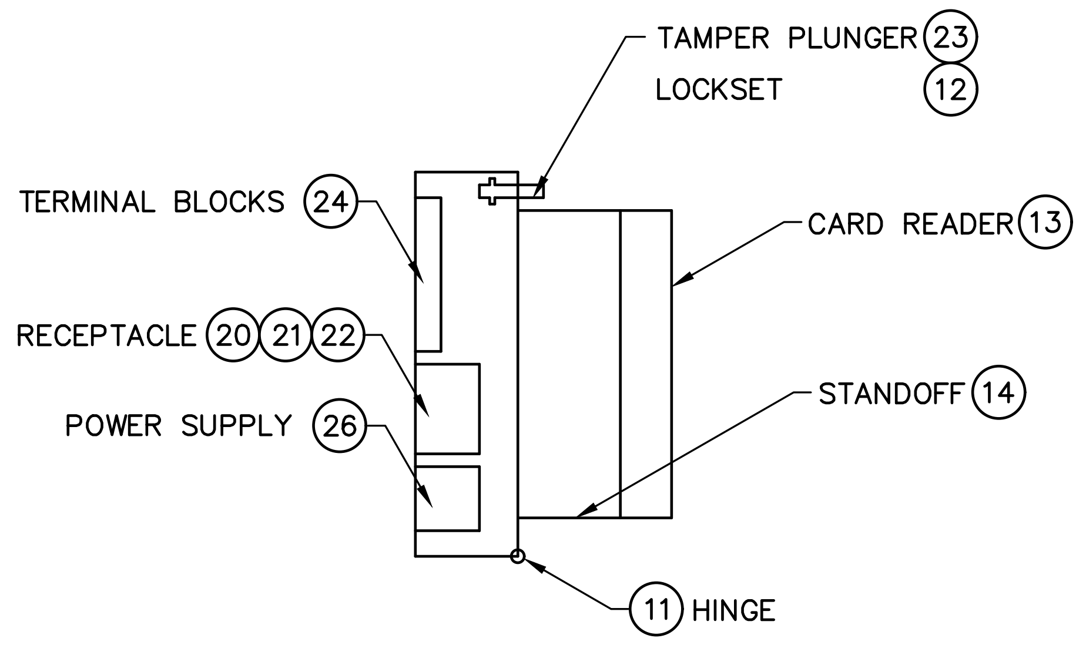
CARD READER PEDESTAL – LIST OF ITEMS

NOTES

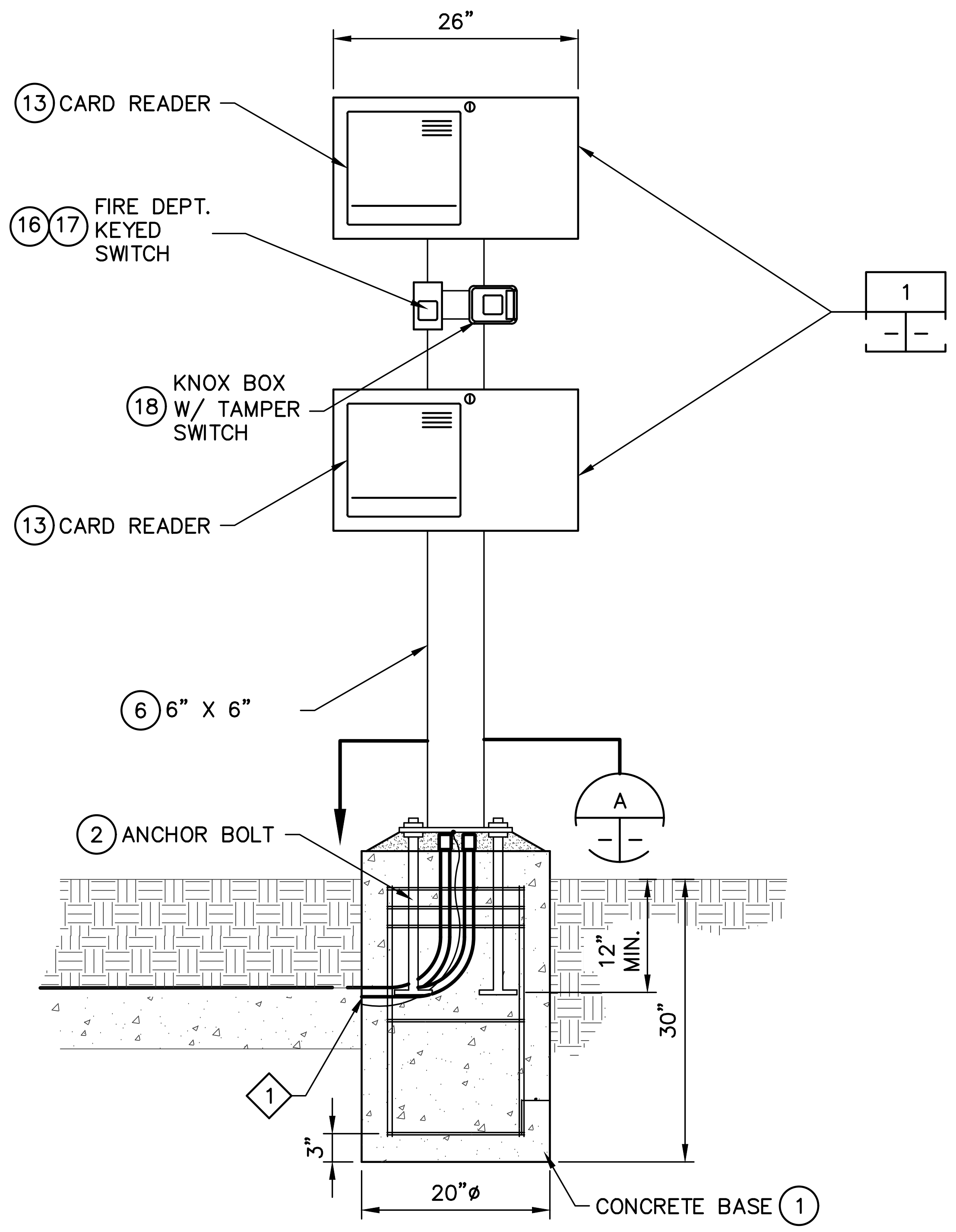
① REFER TO SITE PLANS FOR CONDUIT ORIENTATION

GENERAL NOTES:

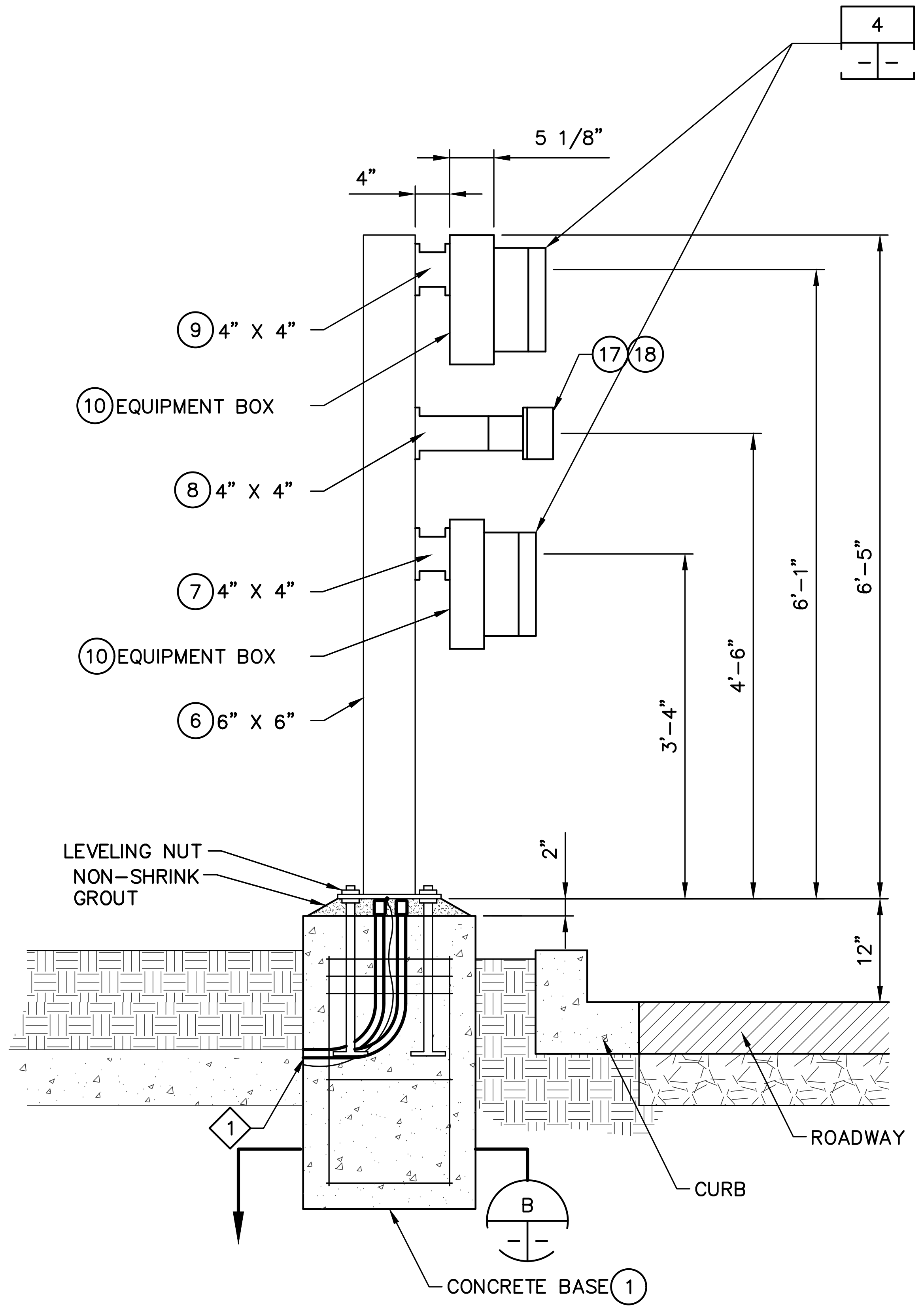
1. THE TYPICAL DETAILS ARE NOT REFERENCED ON EACH AND EVERY DRAWING. THE TYPICAL DETAILS ARE NOT REFERENCED ON EACH AND EVERY TYPE OF INSTALLATION. THE TYPICAL DETAILS HOWEVER SHALL BE ADHERED TO WHERE THE INSTALLATION APPLIES.
2. WHERE THE INSTALLATION OF TYPICAL DETAILS CANNOT BE PERFORMED EXACTLY PER THE TYPICAL DETAIL, SIMILAR INSTALLATION DETAIL MAY BE ACCEPTABLE. SUBMIT SIMILAR INSTALLATION DETAIL FOR REVIEW BY THE ENGINEER PRIOR TO ANY WORK.


TAMPER PLUNGER㉓
LOCKSET ⑫
TERMINAL BLOCKS ㉔
CARD READER⑬
RECEPTACLE ⑳㉑㉒
STANDOFF⑭
POWER SUPPLY ㉖
⑪HINGE

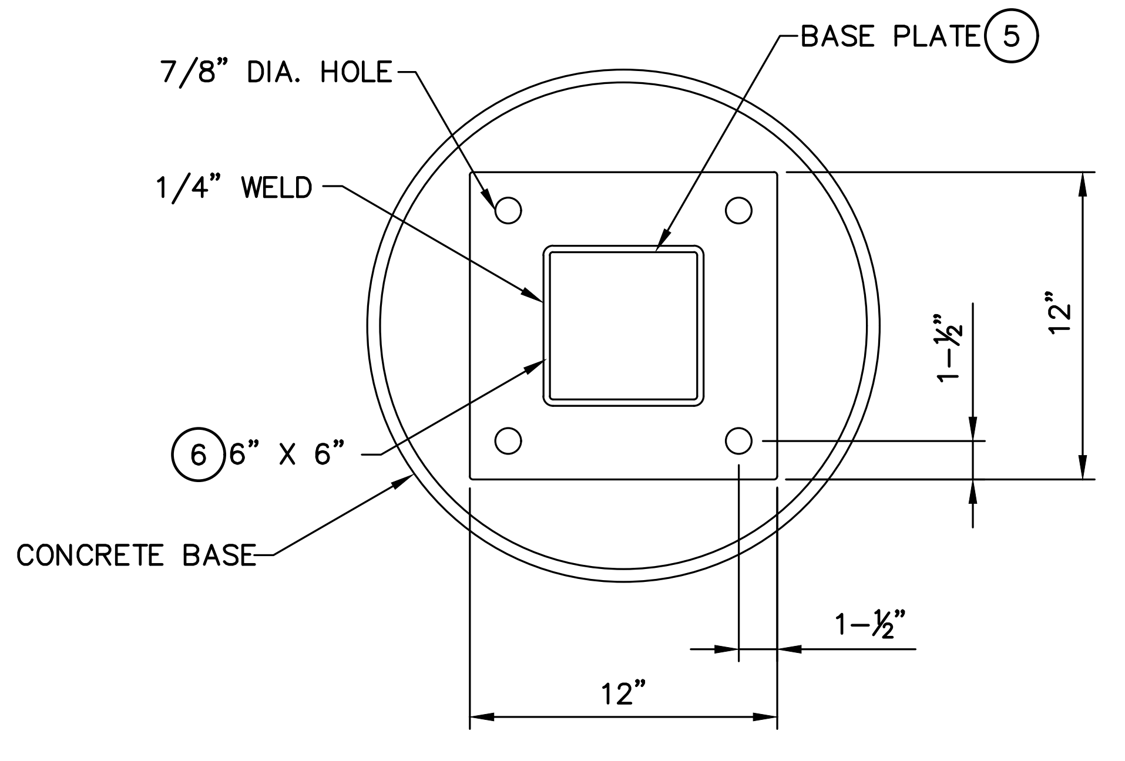
EQUIPMENT BOX – SIDE VIEW
DETAIL 4
NOT TO SCALE


26"
⑬CARD READER
⑯⑰ FIRE DEPT. KEYED SWITCH
1
⑱ KNOX BOX W/ TAMPER SWITCH
⑬CARD READER
⑥6" X 6"
A
②ANCHOR BOLT
12" MIN.
30"
1
3"
20"ø
CONCRETE BASE①

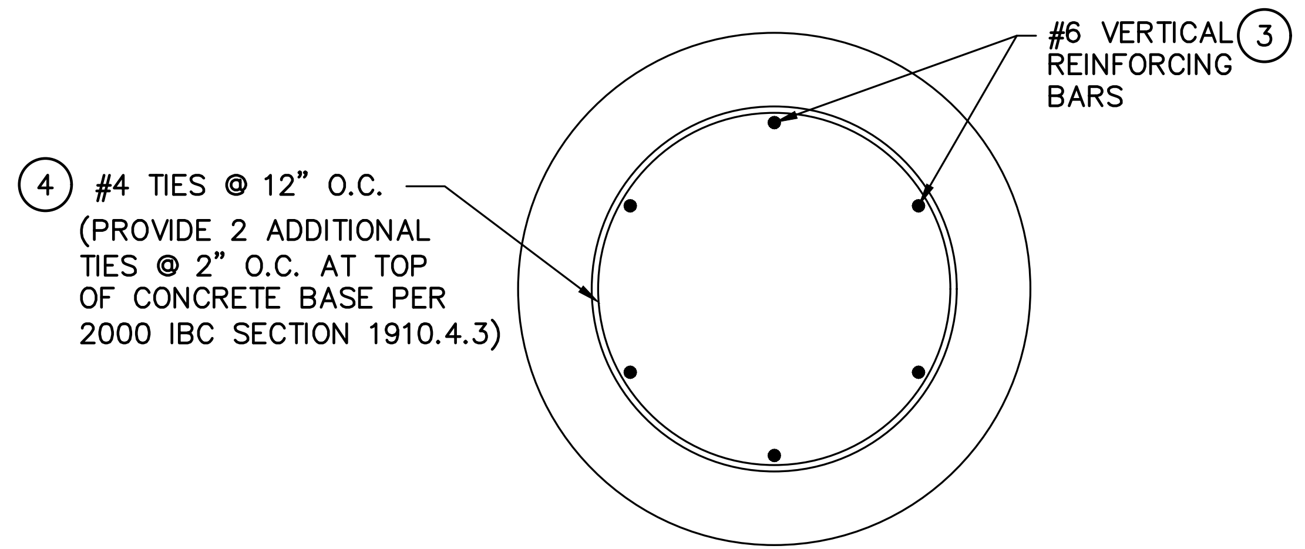
CARD READER PEDESTAL – FRONT VIEW
DETAIL 2
NOT TO SCALE


4
5 1/8"
4"
⑨4" X 4"
⑰⑱
⑩EQUIPMENT BOX
⑧4" X 4"
⑦4" X 4"
⑩EQUIPMENT BOX
⑥6" X 6"
6'-5"
6'-1"
4'-6"
3'-4"
2"
12"
LEVELING NUT
NON-SHRINK GROUT
1
ROADWAY
CURB
B
CONCRETE BASE①

CARD READER PEDESTAL – SIDE VIEW
DETAIL 3
NOT TO SCALE


BASE PLATE⑤
7/8" DIA. HOLE
1/4" WELD
⑥6" X 6"
CONCRETE BASE
1-½"
12"
1-½"
12"

SECTION A
NOT TO SCALE


#6 VERTICAL REINFORCING BARS ③
④ #4 TIES @ 12" O.C. (PROVIDE 2 ADDITIONAL TIES @ 2" O.C. AT TOP OF CONCRETE BASE PER 2000 IBC SECTION 1910.4.3)

SECTION B
NOT TO SCALE

FACILITY DRAWINGS
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FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	*	#	*	*	*	*	*
#	*	#	*	*	*	*	*
#	*	#	*	*	*	*	*

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer
CERTIFICATE NO. 33468
VAHID BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS
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•				
•				
•				

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

ELECTRICAL DETAILS 3

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-30 SHEET 121 OF 134
CAD FILE: CSELS40ED03.dwg

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DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
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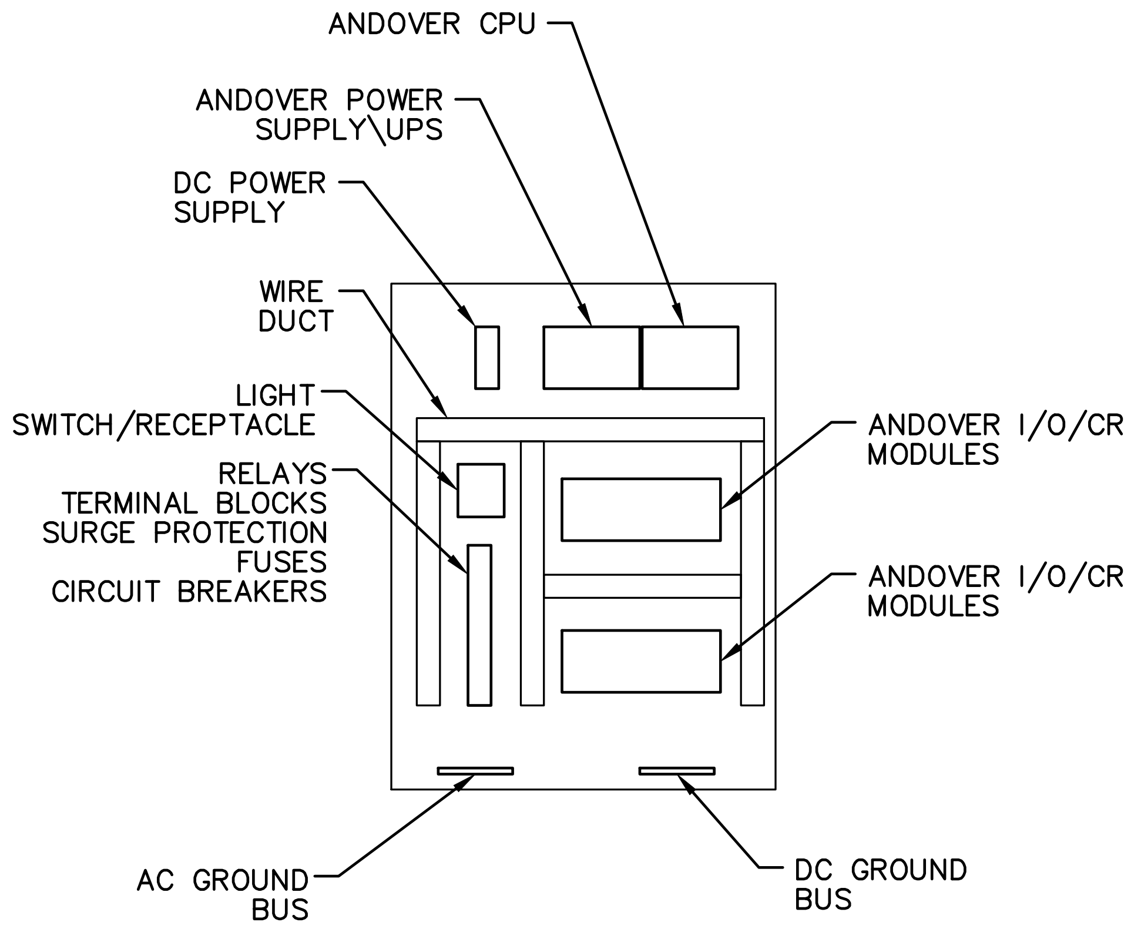
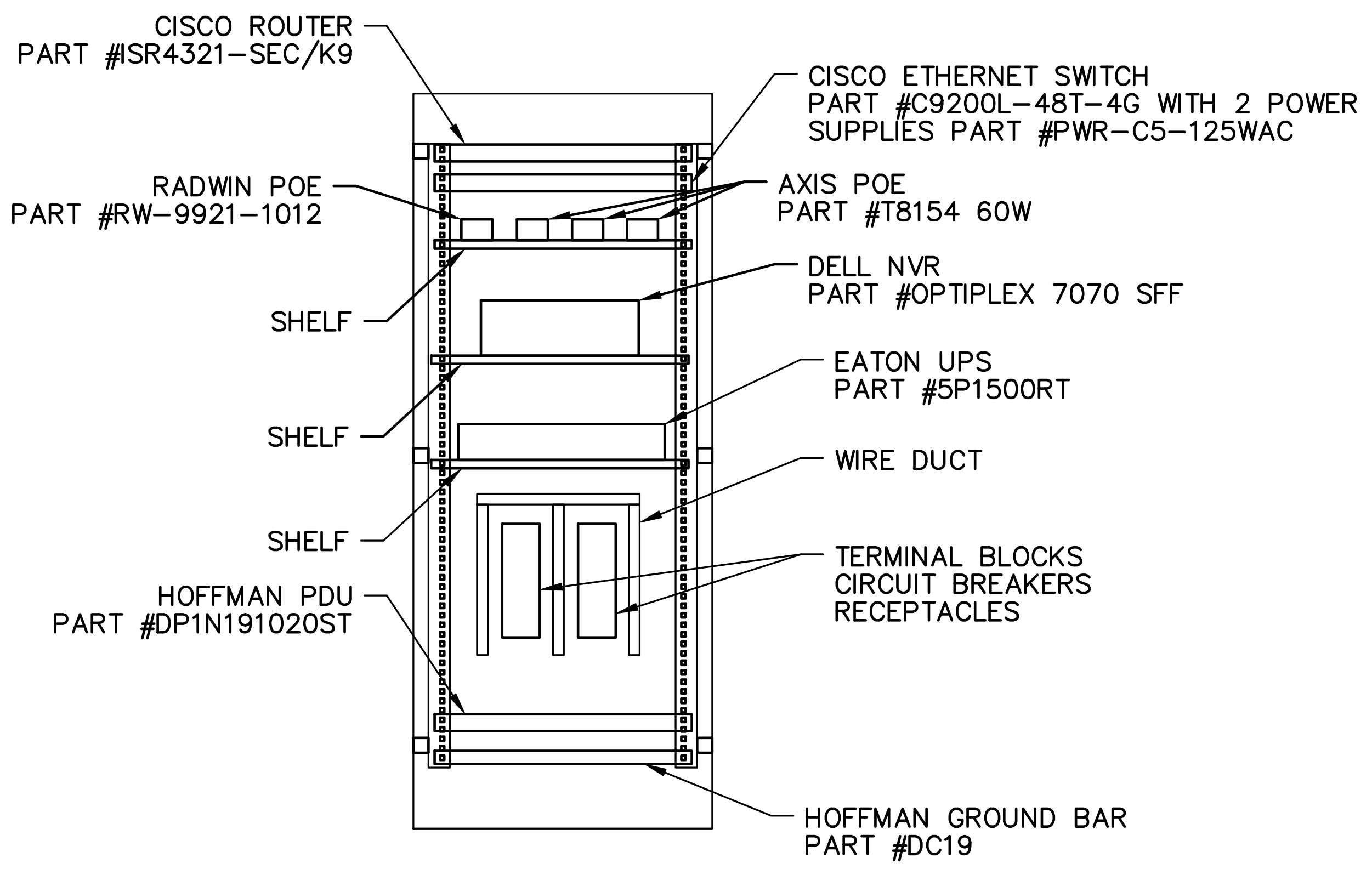
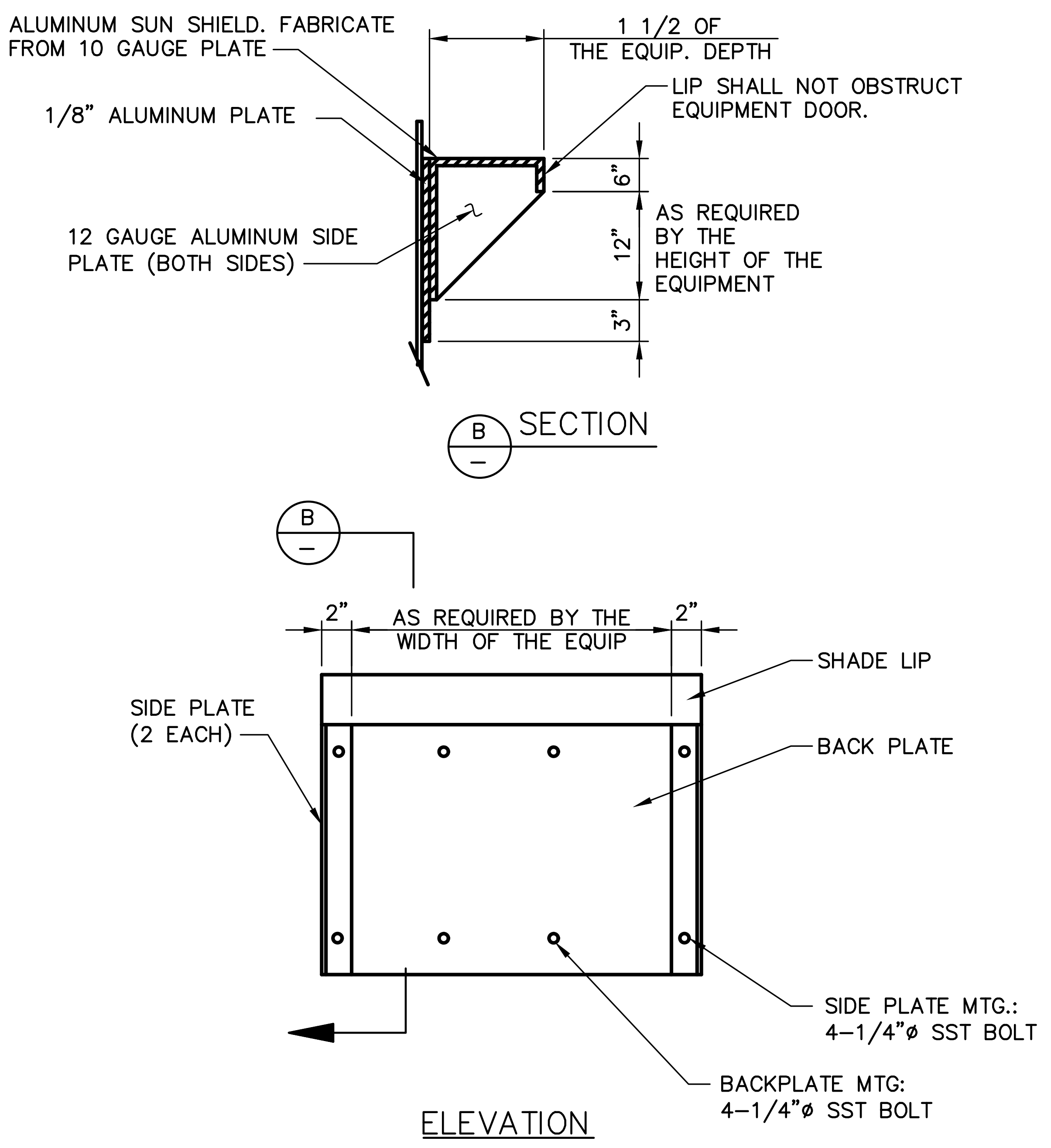

ANDOVER CPU
ANDOVER POWER SUPPLY\UPS
DC POWER SUPPLY
WIRE DUCT
LIGHT SWITCH/RECEPTACLE
RELAYS
TERMINAL BLOCKS
SURGE PROTECTION
FUSES
CIRCUIT BREAKERS
ANDOVER I/O/CR MODULES
ANDOVER I/O/CR MODULES
AC GROUND BUS
DC GROUND BUS

LCP–SSE–LS40
DETAIL E800 –|–
N.T.S.


CISCO ROUTER
PART #ISR4321–SEC/K9
RADWIN POE
PART #RW–9921–1012
SHELF
SHELF
SHELF
HOFFMAN PDU
PART #DP1N191020ST
CISCO ETHERNET SWITCH
PART #C9200L–48T–4G WITH 2 POWER SUPPLIES PART #PWR–C5–125WAC
AXIS POE
PART #T8154 60W
DELL NVR
PART #OPTIPLEX 7070 SFF
EATON UPS
PART #5P1500RT
WIRE DUCT
TERMINAL BLOCKS
CIRCUIT BREAKERS
RECEPTACLES
HOFFMAN GROUND BAR
PART #DC19

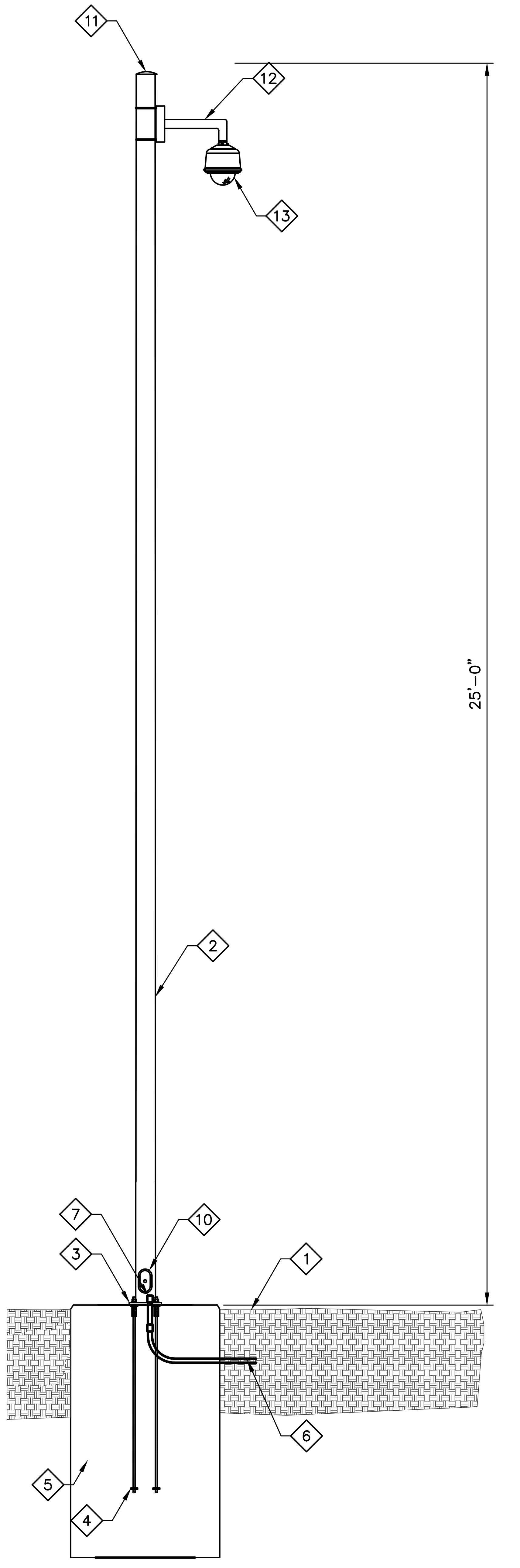
LCP–COM–LS40
DETAIL E801 –|–
N.T.S.


ALUMINUM SUN SHIELD. FABRICATE FROM 10 GAUGE PLATE
1 1/2 OF THE EQUIP. DEPTH
LIP SHALL NOT OBSTRUCT EQUIPMENT DOOR.
1/8" ALUMINUM PLATE
6"
12"
3"
AS REQUIRED BY THE HEIGHT OF THE EQUIPMENT
12 GAUGE ALUMINUM SIDE PLATE (BOTH SIDES)
B –
SECTION
B –
2"
AS REQUIRED BY THE WIDTH OF THE EQUIP
2"
SHADE LIP
SIDE PLATE (2 EACH)
BACK PLATE
SIDE PLATE MTG.: 4–1/4"ø SST BOLT
BACKPLATE MTG: 4–1/4"ø SST BOLT
ELEVATION

NOTE:

SUBMIT FABRICATION DRAWINGS FOR EACH SUN SHIELD FOR ENGINEER'S APPROVAL PRIOR TO MANUFACTURING THE SUN SHIELDS.

DETAIL 803 #|# SUN SHIELD FOR ELECTRICAL EQUIPMENT AND INSTRUMENTS
SCALE = NONE


11
12
13
2
25'–0"
7
3
10
1
6
5
4

E802 –|– SECURITY CAMERA AND POLE
N.T.S.

CONSTRUCTION NOTES

1. FINISHED GRADE – SLOPE AWAY FROM FOUNDATION.
2. MANUFACTURER'S SHOP DRAWING SHALL CONFIRM THAT THE POLE WILL DEFLECT NO MORE THAN ONE (1) INCH AT THE TOP OF THE POLE GIVEN A MAXIMUM WIND VELOCITY OF 30 MPH (WITH 1.3 GUST FACTOR).
3. BASE PLATE LAYOUT AND BOLT CIRCLE TO BE AS SHOWN ON MANUFACTURER'S SHOP DRAWINGS.
4. ANCHOR BOLTS FABRICATED AND INSTALLED PER MANUFACTURER'S SHOP DRAWINGS.
5. CONCRETE FOUNDATION. REFER TO SPECIFICATIONS AND DETAILS 1 ON E SHEET 015 FOR DETAILS.
6. SEE ELECTRICAL PLANS FOR CONDUIT SIZE AND QUANTITY.
9. CONDUIT END BELL. CONDUIT SHALL PROJECT A MINIMUM OF 2" AND A MAXIMUM OF 4" ABOVE BOTTOM OF BASE PLATE.
10. HAND HOLE PER MANUFACTURER'S DESIGN WITH MINIMUM DIMENSIONS OF 4" X 6–1/2".
11. REMOVABLE POLE CAP SECURED WITH SET SCREWS.
12. AXIS T91B67.
13. PTZ/FIXED CAMERA. SEE SPECIFICATION SECTION 18930 FOR CAMERA DETAILS. SEE DRAWINGS FOR CAMERA QUANTITIES ON POLE.

NOTES

1. PROVIDE ALL WORK IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. THE EXACT LOCATION OF ALL EQUIPMENT SHALL BE VERIFIED IN THE FIELD WITH THE OWNER PRIOR TO ROUGH–IN.
3. ALL MOUNTING EQUIPMENT AND HARDWARE SHALL BE GRADE 316 STAINLESS STEEL.
4. ALL WORK SHALL COMPLY WITH CITY OF PHOENIX DEVELOPMENT SERVICES DEPARTMENT ACCESS CONTROL SYSTEM TECHNICAL GUIDELINE. OBTAIN A COPY AS NEEDED.
5. NOT ALL DETAILS NECESSARILY USED.
6. DIMENSIONS NOT SHOWN SHALL BE AS DETERMINED BY THE MANUFACTURER AND OR SPECIFICATIONS AND OTHER DRAWINGS. CONTRACTOR TO SUPPLY SHOP DRAWINGS AT LEAST 3 WEEKS PRIOR TO ORDERING MATERIALS. SHOP DRAWINGS SHALL BE SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF ARIZONA, AND SHALL BE APPROVED IN WRITING BY THE OWNER PRIOR TO ORDERING MATERIALS.
7. PANEL LAYOUT IS FOR REFERENCE ONLY. NOT ALL COMPONENTS ARE SHOWN. CONTRACTOR TO FURNISH AND INSTALL PANELS AS REQUIRED BY THE SPECIFICATIONS AND DRAWINGS.

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#	*	#	*	*	*	*	*
#	*	#	*	*	*	*	*
#	*	#	*	*	*	*	*

HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS
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DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

ELECTRICAL DETAILS 4

COPYRIGHT © 2007–JANUARY
CITY PROJECT NO. WS90400085
DATE: 08/2024
E–31 SHEET 122 OF 134
CAD FILE: CSELS40ED04.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

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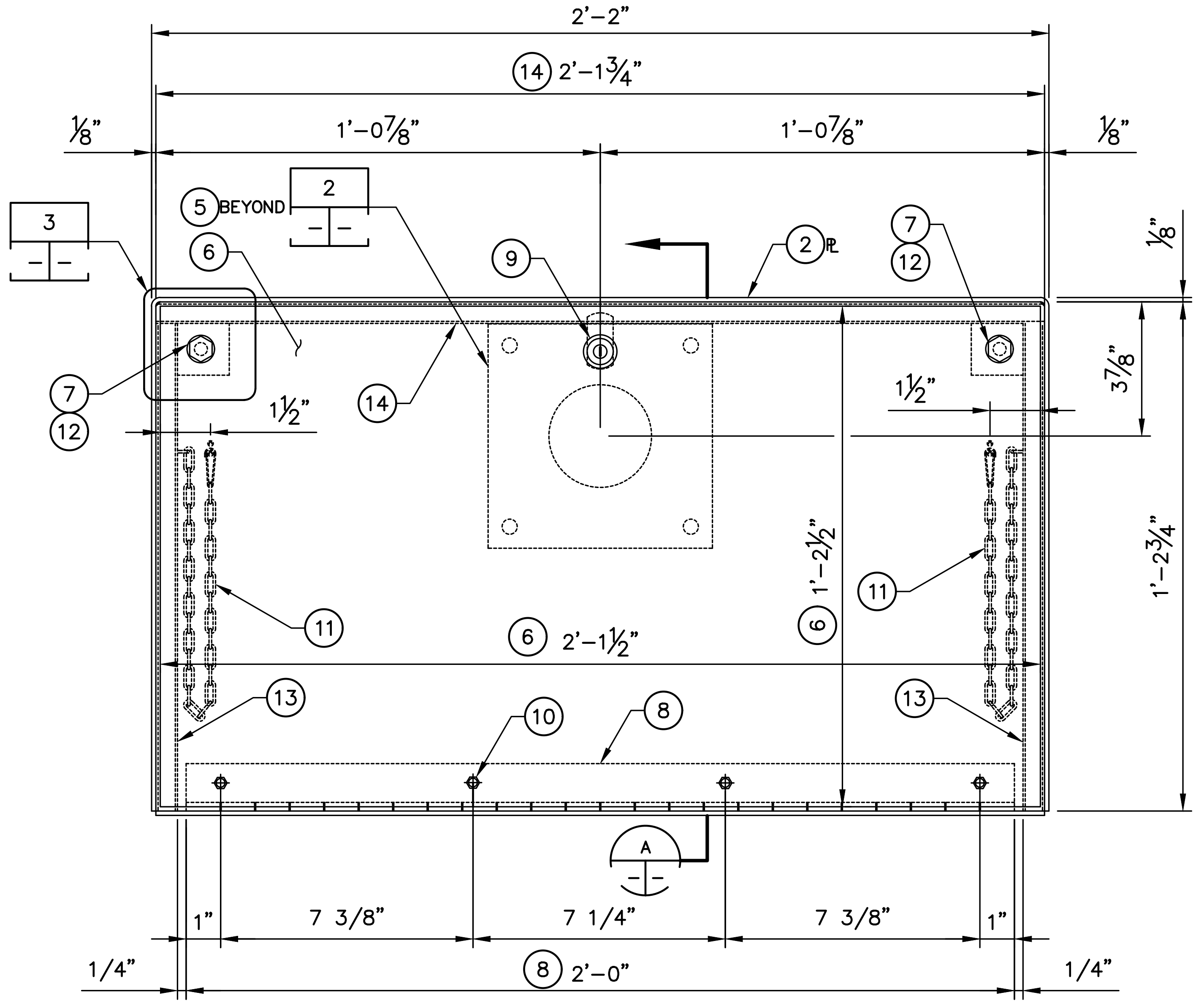
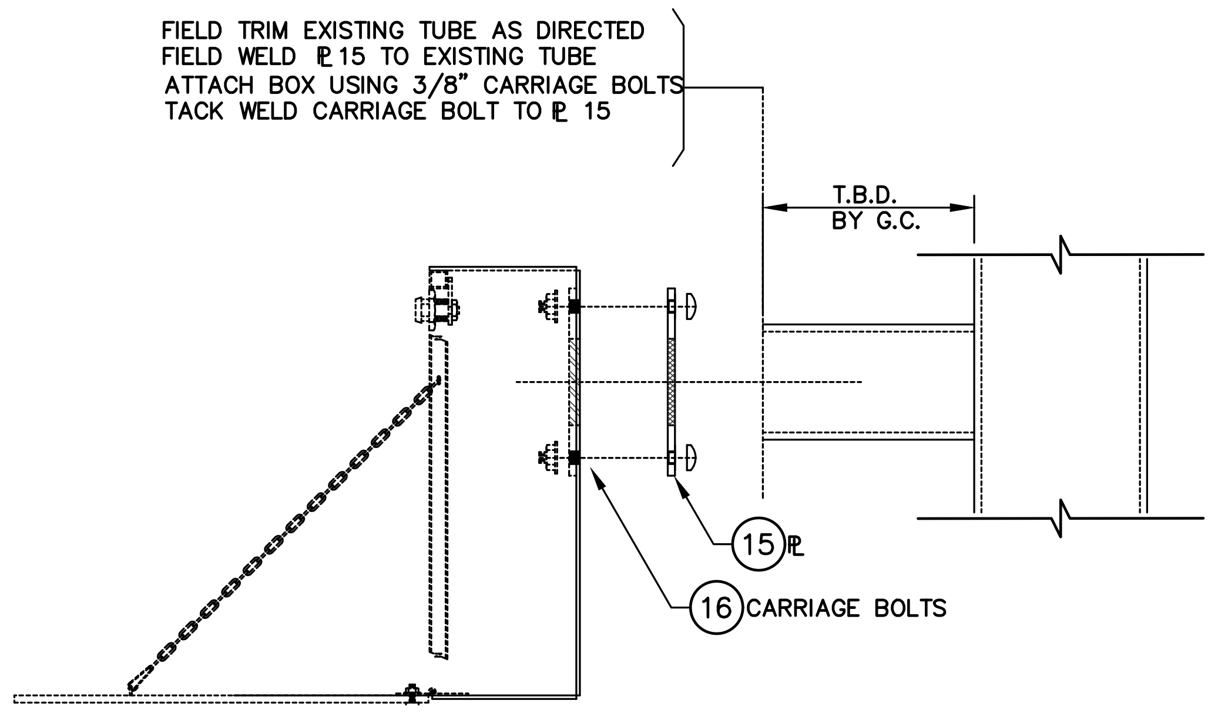

2'-2"
14 2'-1¾"
⅛"
1'-0⅞"
1'-0⅞"
⅛"
3
5 BEYOND
2
6
9
2 ℙ
7
12
⅛"
7
12
1½"
14
1½"
3⅞"
1'-2¾"
6 1'-2½"
11
11
6 2'-1½"
13
10
8
13
A
1"
7 3/8"
7 1/4"
7 3/8"
1"
1/4"
8 2'-0"
1/4"

READER BOX
DETAIL 1
NOT TO SCALE


FIELD TRIM EXISTING TUBE AS DIRECTED
FIELD WELD ℙ 15 TO EXISTING TUBE
ATTACH BOX USING 3/8" CARRIAGE BOLTS
TACK WELD CARRIAGE BOLT TO ℙ 15
T.B.D.
BY G.C.
15 ℙ
16 CARRIAGE BOLTS

INSTALLATION NOTES

GENERAL NOTES:

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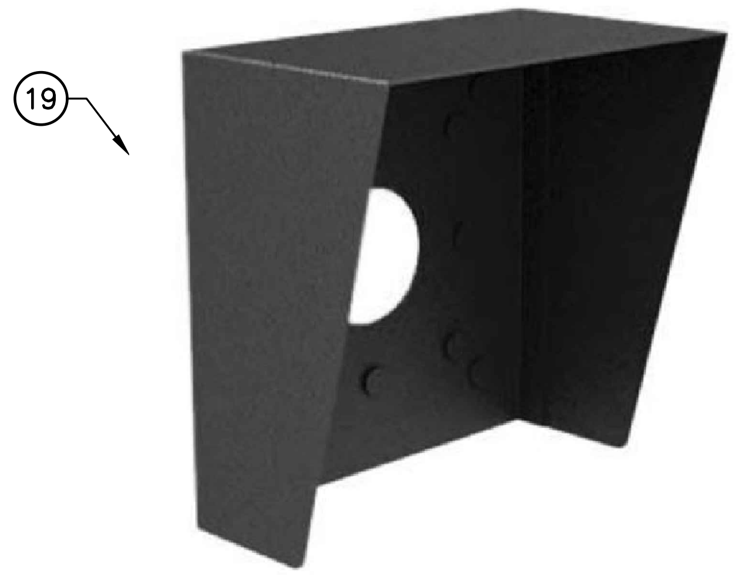
READER BOX AND PEDESTAL HOOD BILL OF MATERIALS (TYP.)

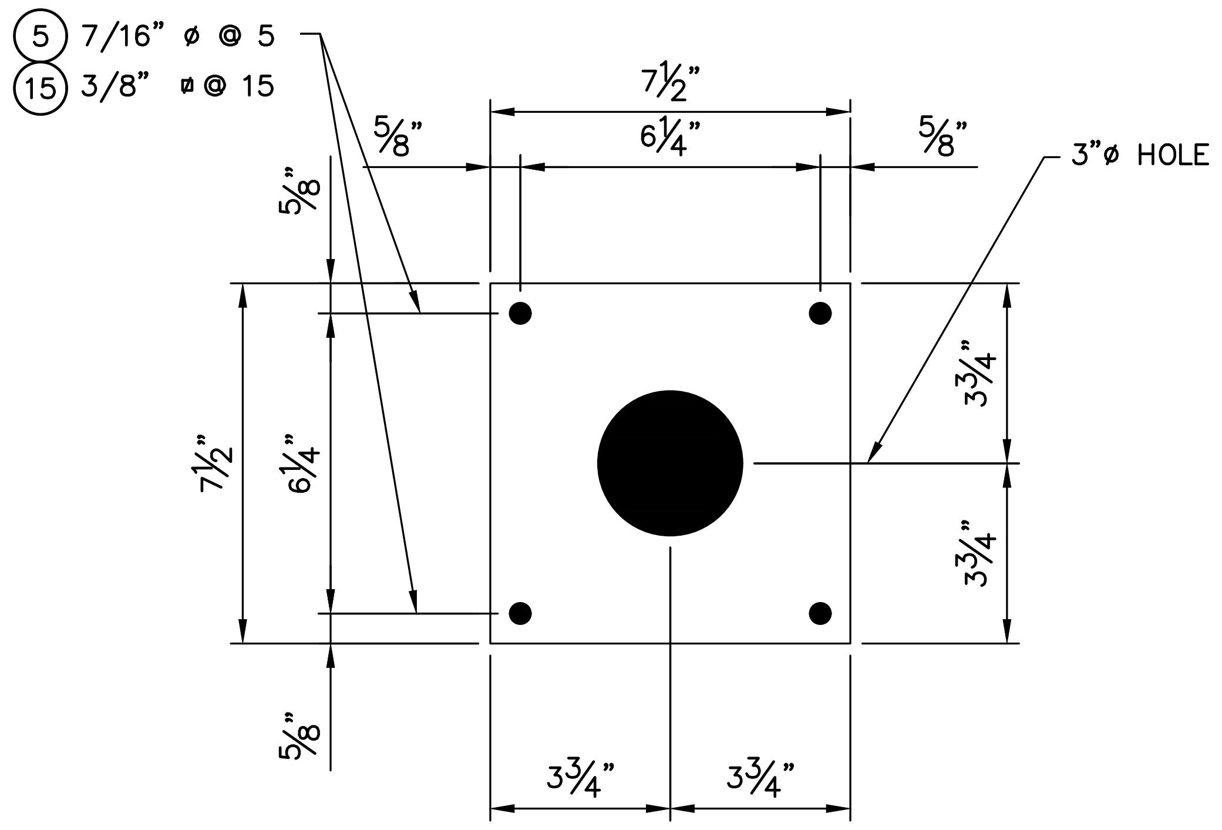
ITEM ○	QTY.	DESCRIPTION	LENGTH	REMARKS
1	1	READER BOX		
2	1	ℙ 10 GA X 11 7/8"	4'-7 1/4"	BEND
3	1	ℙ 10 GA X 14 3/4"	2'-1 3/4"	
4	1	ℙ 10 GA X 5	2'-1 3/4"	
5	1	ℙ 1/4" X 7 1/2"	7 1/2"	
6	1	ALUM. 'D 3/16" X 14 1/2"	2'-1 1/2"	
7	2	ℙ 3/8" X 1 1/2"	1 1/2"	DRILL & TAP
8	1	2 1/2" X .073 PIANO HINGE	2'-0"	MCMASTER 15665A355
9	1	COMP-X CAMLOCK		CHICAGO PART 4152
10	4	3/16" X 5/8" TAMPER PROOF SCREW W/ LOCKNUT AND S.S. WASH.		
11	2	1/8" CHAIN W/ SNAP HOOK	1'-4"	W/ EYE BOLTS 1 STEEL 1 ALUM.
12	2	3/8" X 1 1/2" S.S. BOLT		
13	2	TS '0 X '0 X .063	1'-2 1/16"	
14	1	TS '0 X '0 X .063	2'-1 3/4"	
		FIELD PARTS		
15	1	ℙ 1/4" X 7 1/2"	7 1/2"	
16	4	3/8" X 1 1/4" CARRIAGE BOLTS		W/ LOCKNUT
17	1	PEDESTAL HOOD	PEDESTAL PRO MODEL HOOD-CS-06X6	

NOTES

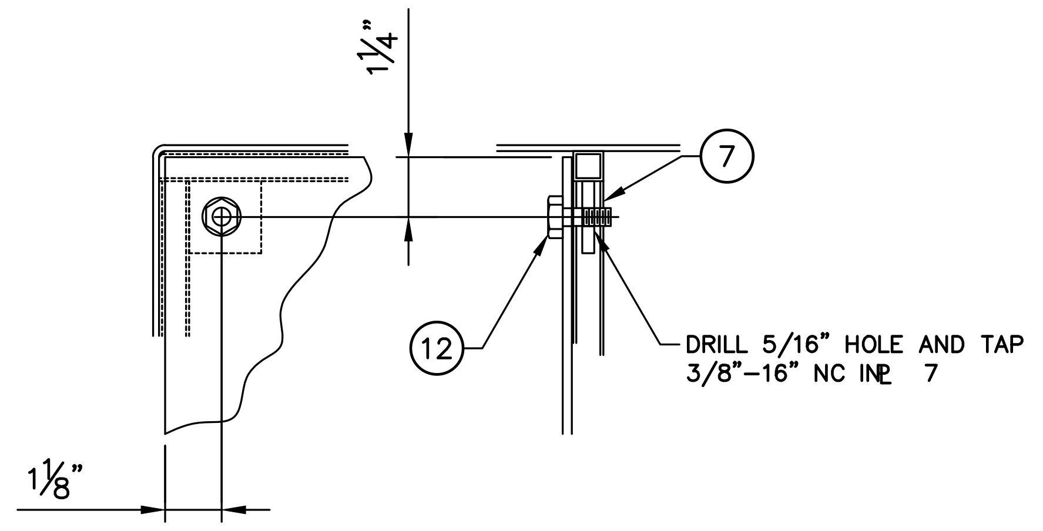
1. ALL HARDWARE SHALL BE STAINLESS STEEL
2. EASE ALL CORNERS AND EDGES
3. PC MK LEFT END NEAR SIDE AS DETAILED UNLESS NOTED OTHERWISE, THE FOLLOWING SHALL APPLY:
4. MATERIAL TO BE : ASTM: PIPE: TUBE: REBAR A 706 GR 60
5. WELD ROD ~ REBAR E90XX SERIES ~~ OTHER E70XX SERIES OR WIRE EQUIVALENT PER AWS
6. CLEANING: SSPC-SP2~~ PAINT 1 S/C STD PRIMER
7. OPEN HOLES ARE NOTED



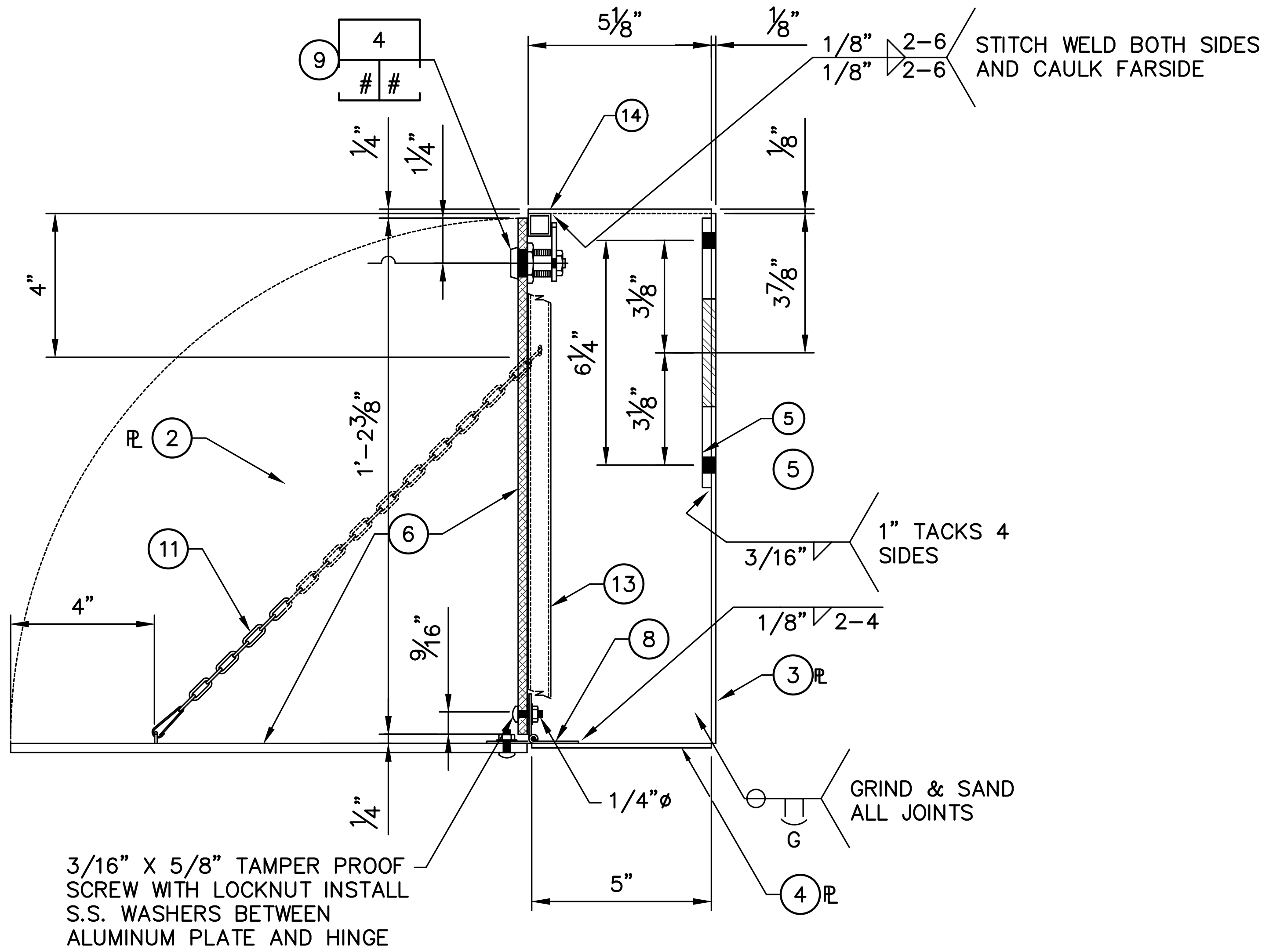
DETAIL 5
DETAIL 5
NOT TO SCALE


5 7/16" ø @ 5
15 3/8" ø @ 15
7½"
6¼"
⅝"
⅝"
3"ø HOLE
⅝"
7½"
6¼"
3¾"
3¾"
⅝"
3¾"
3¾"

DETAIL 2
SUPPORT ℙ'S
DETAIL 2
NOT TO SCALE

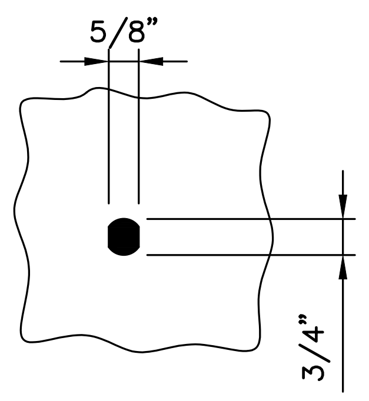

1¼"
7
12
DRILL 5/16" HOLE AND TAP 3/8"-16" NC INℙ 7
1⅛"

DETAIL 3
DETAIL 3
NOT TO SCALE


9
4
# #
5⅛"
⅛"
1/8" 2-6
1/8" 2-6
STITCH WELD BOTH SIDES AND CAULK FARSIDE
14
¼"
1¼"
⅛"
4"
3⅛"
3⅞"
6¼"
3⅛"
1'-2⅜"
ℙ 2
5
5
6
11
1" TACKS 4 SIDES
3/16"
13
4"
9/16"
8
1/8" 2-4
3 ℙ
¼"
1/4"ø
GRIND & SAND ALL JOINTS
G
5"
4 ℙ

3/16" X 5/8" TAMPER PROOF SCREW WITH LOCKNUT INSTALL S.S. WASHERS BETWEEN ALUMINUM PLATE AND HINGE

SECTION A-A
SECTION A
NOT TO SCALE



DETAIL 4
DETAIL 4
NOT TO SCALE

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	*	#	*	*	*	*	*
#	*	#	*	*	*	*	*
#	*	#	*	*	*	*	*

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 33468
VAHID BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

NO.	BY	DATE	CKD	REMARKS
*				
*				
*				
*				
*				
*				
*				

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

ELECTRICAL DETAILS 5

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-32 SHEET 123 OF 134
CAD FILE: CSELS40ED05.dwg

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FOR CONSTRUCTION

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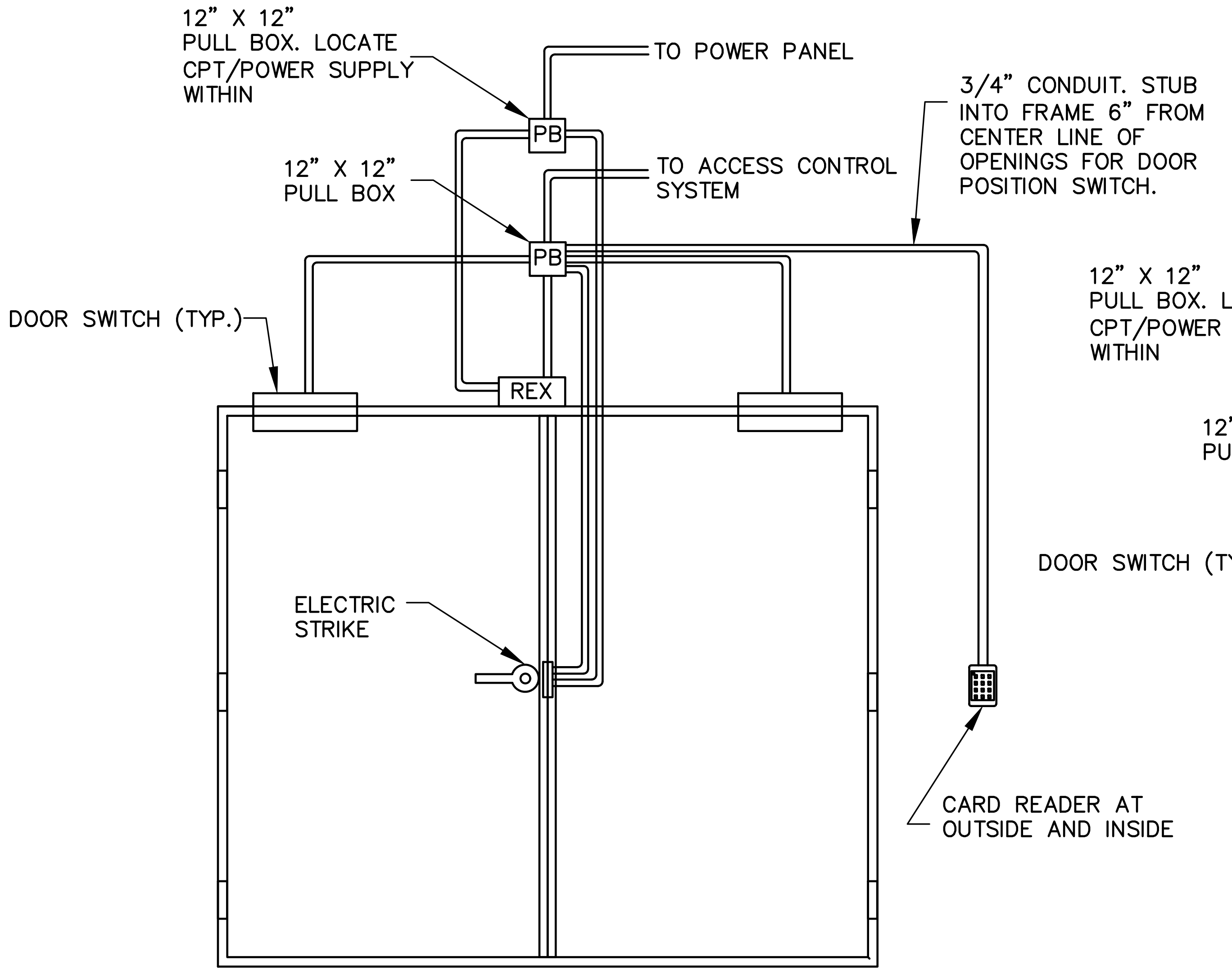
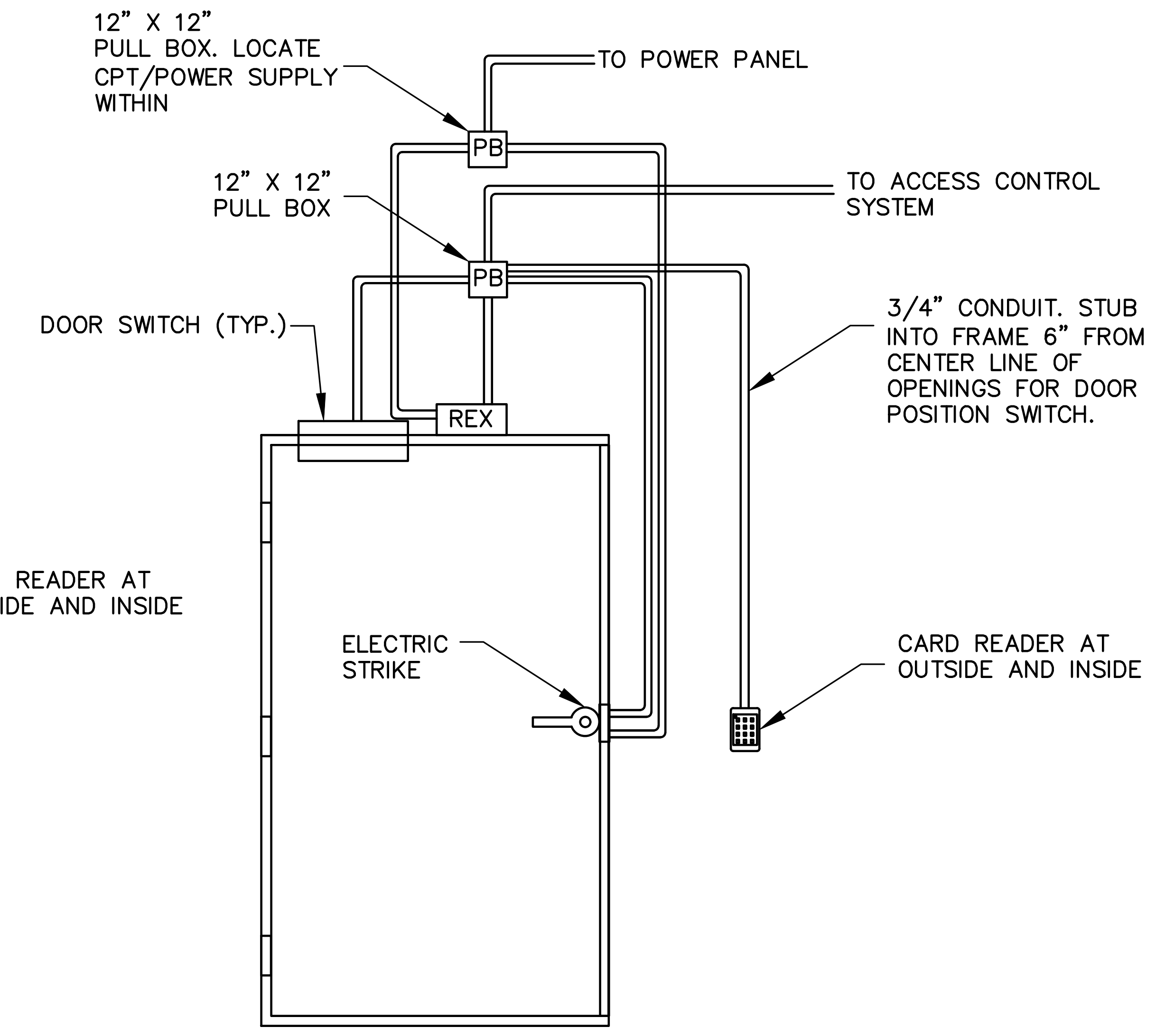

12" X 12"
PULL BOX. LOCATE
CPT/POWER SUPPLY
WITHIN
TO POWER PANEL
PB
12" X 12"
PULL BOX
TO ACCESS CONTROL
SYSTEM
3/4" CONDUIT. STUB
INTO FRAME 6" FROM
CENTER LINE OF
OPENINGS FOR DOOR
POSITION SWITCH.
DOOR SWITCH (TYP.)
REX
ELECTRIC
STRIKE
CARD READER AT
OUTSIDE AND INSIDE

DOUBLE DOOR DETAIL

DETAIL 900 –|–

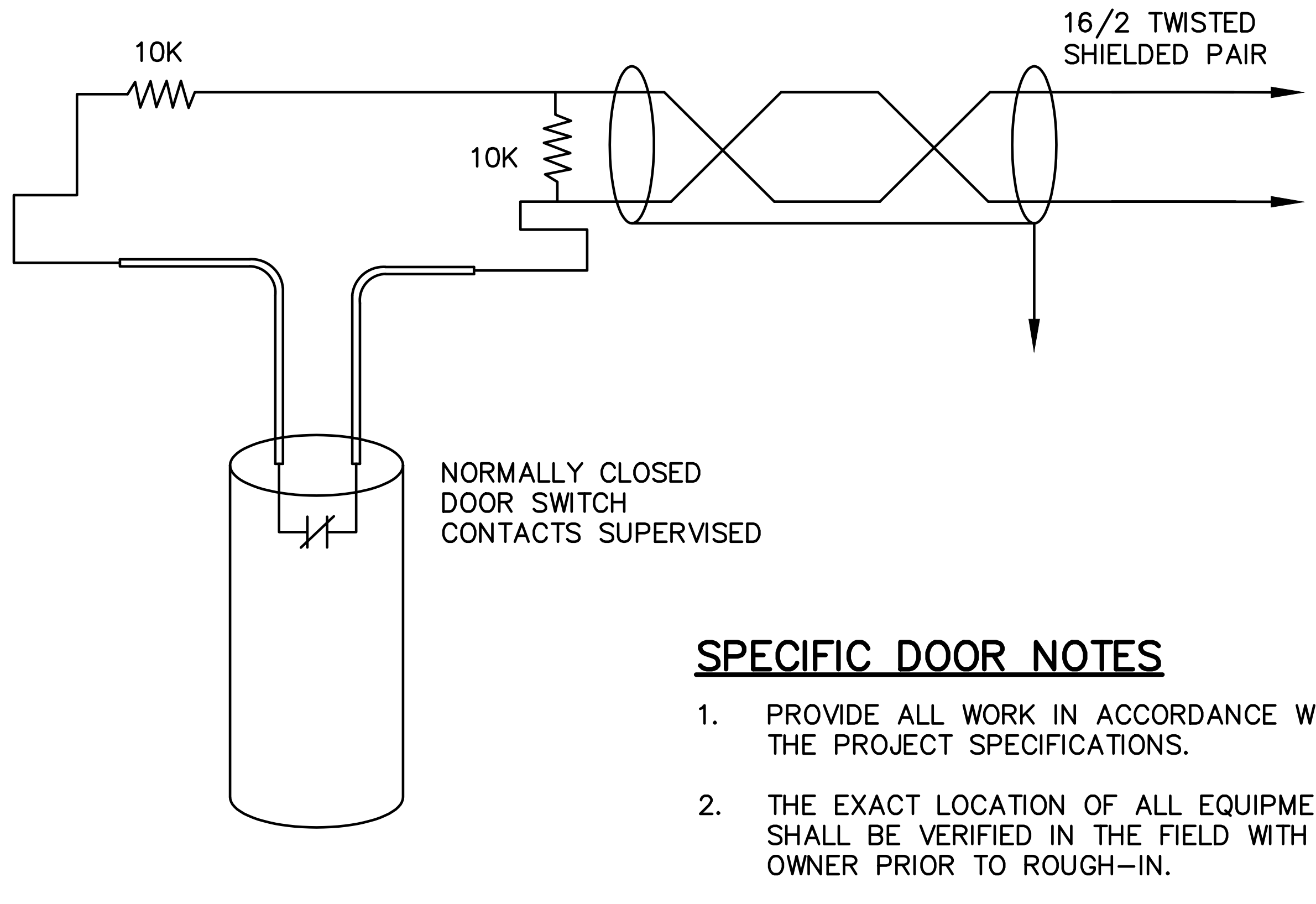
NTS


12" X 12"
PULL BOX. LOCATE
CPT/POWER SUPPLY
WITHIN
TO POWER PANEL
PB
12" X 12"
PULL BOX
TO ACCESS CONTROL
SYSTEM
DOOR SWITCH (TYP.)
REX
3/4" CONDUIT. STUB
INTO FRAME 6" FROM
CENTER LINE OF
OPENINGS FOR DOOR
POSITION SWITCH.
ELECTRIC
STRIKE
CARD READER AT
OUTSIDE AND INSIDE

SINGLE DOOR DETAIL

DETAIL 901 –|–

NTS


10K
16/2 TWISTED
SHIELDED PAIR
10K
NORMALLY CLOSED
DOOR SWITCH
CONTACTS SUPERVISED

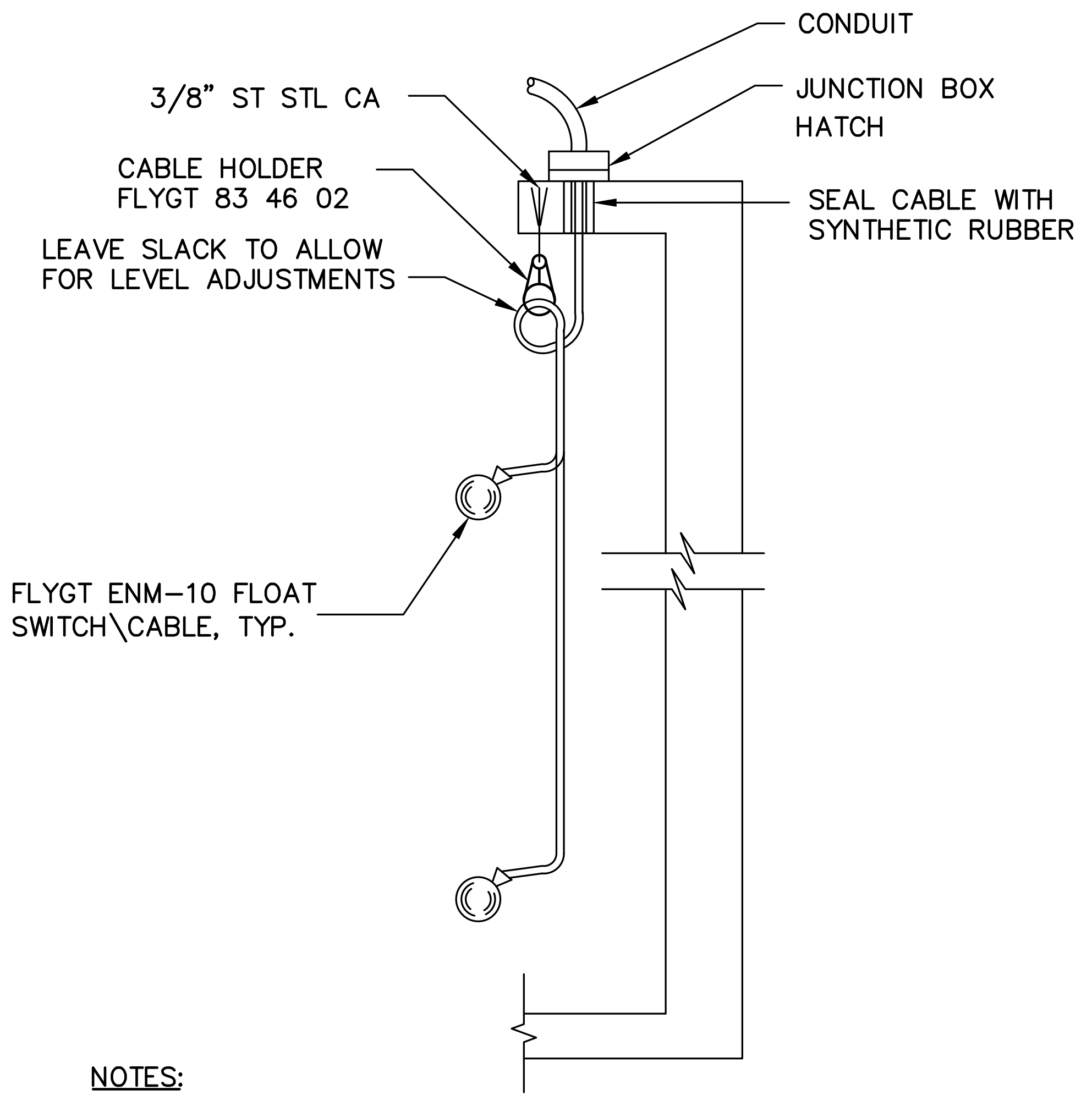
TYPICAL DOOR SWITCH

DETAIL 6 –|–

NTS

SPECIFIC DOOR NOTES

1. PROVIDE ALL WORK IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. THE EXACT LOCATION OF ALL EQUIPMENT SHALL BE VERIFIED IN THE FIELD WITH THE OWNER PRIOR TO ROUGH–IN.
3. ALL MOUNTING EQUIPMENT AND HARDWARE SHALL BE STAINLESS STEEL.
4. ALL WORK SHALL COMPLY WITH CITY OF PHOENIX DEVELOPMENT SERVICES DEPARTMENT ACCESS CONTROL SYSTEM TECHNICAL GUIDELINE. OBTAIN A COPY AS NEEDED.
5. NOT ALL DETAILS NECESSARILY USED.

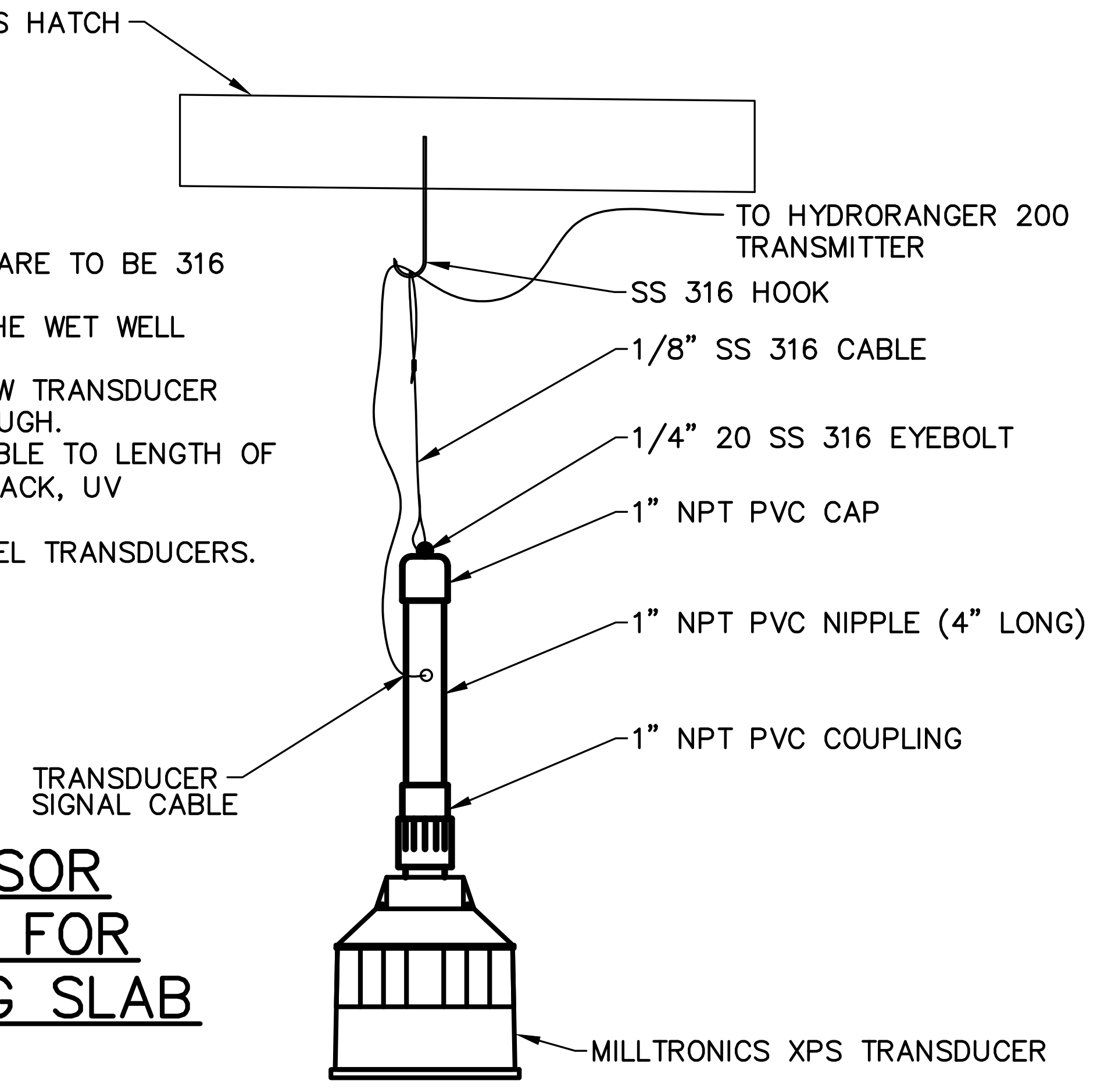

CONDUIT
3/8" ST STL CA
JUNCTION BOX
HATCH
CABLE HOLDER
FLYGT 83 46 02
SEAL CABLE WITH
SYNTHETIC RUBBER
LEAVE SLACK TO ALLOW
FOR LEVEL ADJUSTMENTS
FLYGT ENM–10 FLOAT
SWITCH\CABLE, TYP.

NOTES:

1. ATTACH CABLES TO JUNCTION BOX WITH NYLON FITTING, STAINLESS STEEL CORD GRIP: HUBBELL SERIES 74 OR EQUAL.

DETAIL 922 #|# **WETWELL FLOAT SWITCH MOUNTING**

SCALE = NONE


WET WELL ACCESS HATCH
TO HYDRORANGER 200
TRANSMITTER
SS 316 HOOK
1/8" SS 316 CABLE
1/4" 20 SS 316 EYEBOLT
1" NPT PVC CAP
1" NPT PVC NIPPLE (4" LONG)
TRANSDUCER
SIGNAL CABLE
1" NPT PVC COUPLING
MILLTRONICS XPS TRANSDUCER

GENERAL NOTES:

1. CABLE AND MOUNTING HARDWARE TO BE 316 SS.
2. 316 SS HOOK MOUNTED AT THE WET WELL ACCESS HATCH.
3. PVC NIPPLE DRILLED TO ALLOW TRANSDUCER SIGNAL CABLE TO PASS THROUGH.
4. BIND TRANSDUCER SIGNAL CABLE TO LENGTH OF 1/8" 316 SS CABLE USING BLACK, UV RESISTANT CABLE TIES.
5. DETAIL TYPICAL FOR TWO LEVEL TRANSDUCERS.

DETAIL 902 #|#

SCALE = NONE

SONIC LEVEL SENSOR MOUNTING DETAIL FOR CONCRETE CEILING SLAB

LUMINAIRE SCHEDULE

SYMBOL	VOLTAGE/WATTAGE	LAMP TYPE	MOUNTING	DESCRIPTION	MANUFACTURER	REMARKS
A1	120V/54W	LED	CEILING 8' AFF	POLYESTER FIBERGLASS NON–CORROSIVE HOUSING WITH ACRYLIC LENS, WEATHER TIGHT WET LOCATION LISTED, IP65 OUTDOOR RATED	LITHONIA # FEM L48 4000LM IMAFM MD MVOLT GZ 30K 80CRI	LUMINARIES IN CHEMICAL ROOM
A2	120V/54W	LED	CEILING 8' AFF	POLYESTER FIBERGLASS NON–CORROSIVE HOUSING WITH ACRYLIC LENS, WEATHER TIGHT WET LOCATION LISTED, IP65 OUTDOOR RATED. SAME AS A1 EXCEPT WITH BATTERY BACK UP AND NIGHT LIGHT WIRED.	LITHONIA # FEM L48 4000LM IMAFM MD MVOLT GZ 30K 80CRI E10WMCP	LUMINARIES IN CHEMICAL ROOM
A3	120V/32W	LED	CEILING 8' AFF	4', 3500K LED WHITE LIGHTING STRIPS. UL LISTED. PENDANT AND SURFACE MOUNTED, INDOOR LOCATION.	LITHONIA LIGHTING, CLX LED STRIP LIGHTING CLX–L48–5000–HFE–SBLW–WDL–MVOLT–35K–80CRI	LUMINARIES IN ELECTRICAL ROOM
A4	120V/32W	LED	CEILING 8' AFF	4', 3500K LED WHITE LIGHTING STRIPS. UL LISTED. PENDANT AND SURFACE MOUNTED, INDOOR LOCATION. SAME AS A3 EXCEPT WITH BATTERY BACK UP AND NIGHT LIGHT WIRED.	LITHONIA LIGHTING, CLX LED STRIP LIGHTING CLX–L48–5000–HFE–SBLW–WDL–MVOLT–35K–80CRI	LUMINARIES IN ELECTRICAL ROOM
B	120V/12W	LED	WALL	WST LED, PERFORMANCE PACKAGE 1, 40000 K, VISIOAL COMFORT FORWARD THROW, MVOLT	LITHONIA WST LED P1 40K VF MVOLT PE (FINISH)	TASK LUMINARIES 10' AFF ABOVE DOOR TRANSOM
C	120V/1W	LED	WALL	RED LED, 1W, 120V, NICKEL CADMIUM BATTERY, UL DAMP LOCATION LISTED	LITHONIA LQM–S–W–3–R–120/277–EL–N	EXIT SIGN LUMINARIES ABOVE DOORS
D $ D	120V/49W EACH	LED	4" SQ. POLE	DSX0 LED P2 40K TSW MVOLT FOR TWIN HEADS NOTE: USE "TFTM" DISTRIBUTION IN PLACE OF "TSW" FOR NON–TWIN HEAD	LITHONIA DSX0 LED P2 40K TFTM MVOLT SPA (FINISH) / SSS 12.5' W/2.5' BASE	HEIGHT OF POLE NOT TO EXCEED HEIGHT OF WALL. NOTE EACH POLE HAS A MANUAL ON/OFF TOGGLE SWITCH TO OPERATE ASSOCIATED LIGHTS.

LUMINAIRE SCHEDULE

DETAIL 1000 –|–

NTS

GENERAL NOTES:

1. THIS DRAWING DOES NOT INDICATE ALL THE PROJECT REQUIREMENTS. THE PROJECT REQUIREMENTS ARE INDICATED IN VARIOUS ELECTRICAL AND INSTRUMENTATION DRAWINGS AND SPECIFICATIONS. ALL DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
2. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE HIGHER RATING DEVICE AND EQUIPMENT, THE FURTHER DISTANCE, ETC...
3. INSTALL RECEPTACLES AND DATA OUTLETS AT 18 INCHES ABOVE FINISHED FLOOR.
4. FURNISH AND INSTALL A 20–AMP, 120V, WEATHERPROOF, GFCI RECEPTACLE WITHIN 25 FEET OF ALL HVAC EQUIPMENT EVEN IF THEY ARE NOT INDICATED ON THE DRAWINGS.
5. INSTALL RECEPTACLES AT 18 INCHES ABOVE FINISHED FLOOR.
6. INSTALL LIGHT SWITCHES AT 42 INCHES ABOVE FINISHED FLOOR.
7. INSTALL WALL MOUNTED LIGHT FIXTURES AT 8 FEET ABOVE FINISHED FLOOR.
8. ALL OUTDOOR LIGHT FIXTURES SHALL BE EQUIPPED WITH FULL CUT–OFF SHIELDS EVEN IF IT IS NOT INDICATED ON THE LIGHT FIXTURE SCHEDULE OR ELSEWHERE ON THE DRAWINGS AND/OR SPECIFICATIONS.
9. INSTALL CEILING MOUNTED LIGHT FIXTURES AT 12 FEET ABOVE FINISHED FLOOR.
10. FURNISH AND INSTALL LIGHTING CONTROL PANEL FOR ALL OUTDOOR LIGHTS. THE CONTROL PANEL SHALL MEET OR EXCEED THE FOLLOWING REQUIREMENTS
    a. BE EQUIPPED WITH A MAIN CIRCUIT BREAKER RATED 65AIC
    b. BE EQUIPPED WITH A CONTACTOR RATED FOR 30 AMPS
    c. HAVE A VOLTAGE RATING AS INDICATED BY ITS FEEDER
    d. TURN LIGHTS ON AND OFF BY A PHOTOCELL REMOTELY LOCATED OUTSIDE THE BUILDING.
    e. BE EQUIPPED WITH A TIMER THAT LIMITS THE HOURS OF OPERATION DURING PHOTOCELL OPERATION
    f. HAVE OVERRIDE CAPABILITY TO TURN LIGHTS ON AND OFF REGARDLESS OF PHOTOCELL
    g. BE EQUIPPED WITH A NEMA 12 ENCLOSURE
    h. LOCATION OF THE LIGHTING CONTROL PANEL WILL BE DETERMINED DURING CONSTRUCTION. ALLOW FOR 30 FEET OF DISTANCE BETWEEN THE POWER SOURCE AND THE LIGHTING CONTROL PANEL
    i. LOCATION OF THE PHOTOCELL WILL BE DETERMINED DURING CONSTRUCTION. ALLOW FOR 100 FEET OF DISTANCE BETWEEN THE LIGHTING CONTROL PANEL AND THE PHOTOCELL

FACILITY DRAWINGS

This drawing was supplied by a Consultant Engineer from a past construction project. The original construction drawing was modified based on information provided by the Contractor to provide the Record Drawing. The City does not warrant this drawing to be a complete and accurate portrayal of facilities as they exist in the field.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	*	#	*	*	*	*	*
#	*	#	*	*	*	*	*
#	*	#	*	*	*	*	*

ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID
BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS
•				
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DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

ELECTRICAL DETAILS 6

CITY PROJECT NO. WS90400085
DATE: 08/2024
E–33 SHEET 124 OF 134
CAD FILE: CSELS40ED05.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

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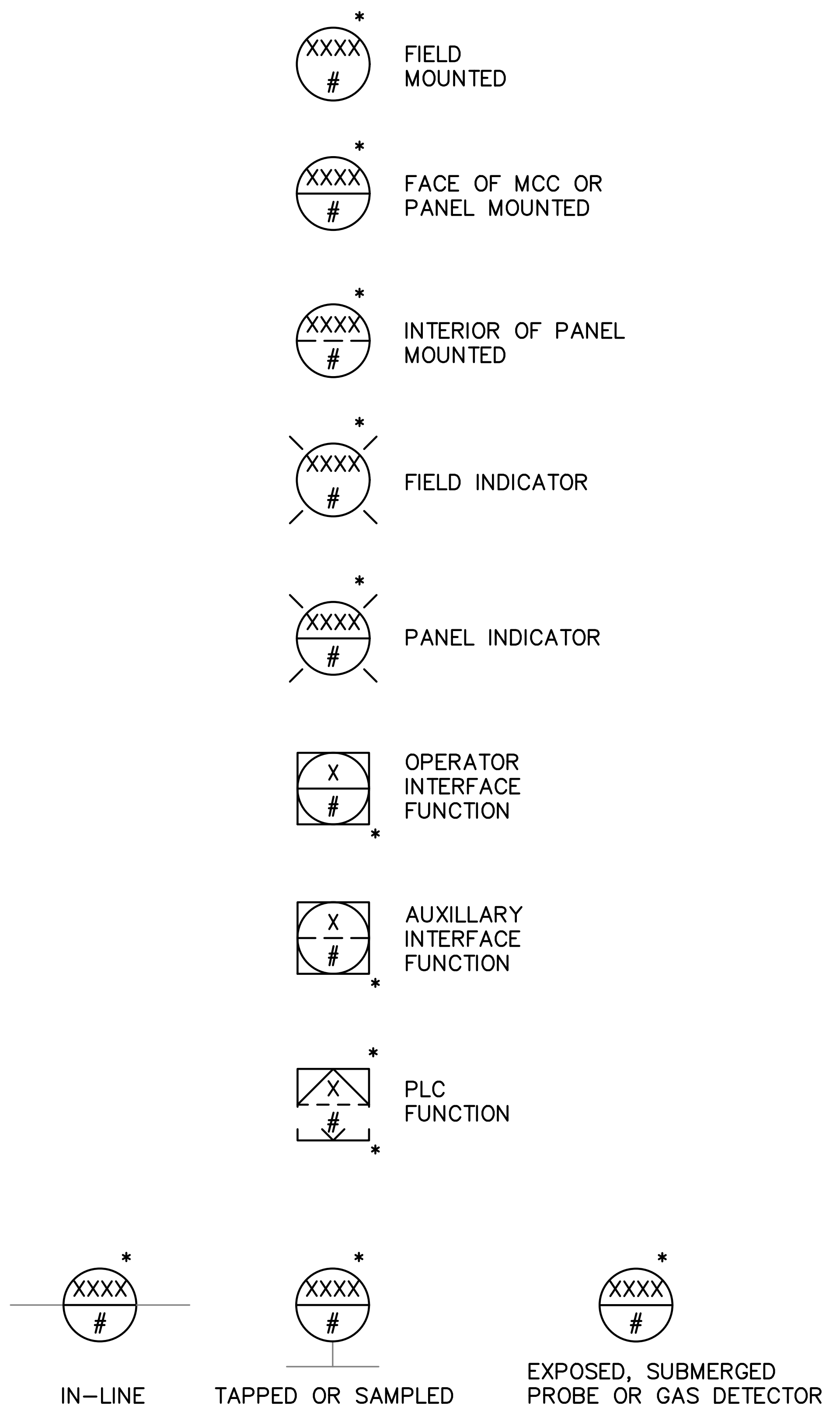
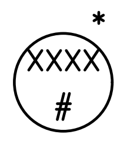
INSTRUMENT IDENTIFICATION TABLE

LETTER	FIRST LETTER	SUCCEEDING LETTERS
	MEASURED OR INITIATING VARIABLE	READOUT OUTPUT OR PASSIVE FUNCTION
A	ANALYSIS	ALARM
B	BURNER, COMBUSTION	CLOSE, STOP, DECREASE
C	CONDUCTIVITY, COMPUTER	CONTROL
D	DENSITY, DIFFERENTIAL	OPEN, START, INCREASE
E	VOLTAGE (EMP)	SENSOR (PRIMARY ELEMENT)
F	FLOW RATE, RATIO (FRACTION)	FORWARD
G	MOISTURE	GLASS, GAUGE, GATE
H	HAND	HIGH, OPENED
I	CURRENT (ELECTRICAL)	INDICATE
J	POWER, SCAN	–
K	TIME, TIME SCHEDULE, TIME RATE OF CHANGE	CONTROL STATION
L	LEVEL	LOW, CLOSED
M	MOTOR, MANUAL	MOMENTARY, MIDDLE, INTERMEDIATE
N	INTRUSION	ON OPERATE, RUNNING
O	–	ORIFICE, RESTRICTION, OVERLOAD
P	PRESSURE, VACUUM	POINT (TEST) CONNECTION
Q	QUANTITY, INTEGRATE, TOTALIZE	–
R	RADIATION	RECORD
S	SPEED, FREQUENCY, MOTION, SAFETY	SWITCH
T	TEMPERATURE	TRANSMIT
U	MULTIVARIABLE	MULTIFUNCTION
V	VIBRATION, VALVE	VALVE, DAMPER, LOUVER
W	WEIGHT, FORCE, TORQUE	WELL
X	UNCLASSIFIED, X–AXIS	UNCLASSIFIED
Y	EVENT, STATE, PRESENCE, Y–AXIS	RELAY, COMPUTE, CONVERT
Z	POSITION, DIMENSION, Z–AXIS	DRIVER, ACTUATOR, OR UNCLASSIFIED FINAL CONTROL ELEMENT

▨ DEMOLITION

BASE INSTRUMENTATION SYMBOLS


*
XXXX
#
FIELD MOUNTED
FACE OF MCC OR PANEL MOUNTED
INTERIOR OF PANEL MOUNTED
FIELD INDICATOR
PANEL INDICATOR
X
OPERATOR INTERFACE FUNCTION
AUXILLARY INTERFACE FUNCTION
PLC FUNCTION
IN–LINE
TAPPED OR SAMPLED
EXPOSED, SUBMERGED PROBE OR GAS DETECTOR



ANALYSIS INSTRUMENTS

ALKY = ALKALINITY
BOD = BIOCHEMICAL OXYGEN DEMAND
CH_4 = METHANE
CO_2 = CARBON DIOXIDE
COMB = COMBUSTIBLE GAS
CL_2 = CHLORINE
CLTR = CHLORINE TOTAL RESIDUAL
CLFR = CHLORINE FREE RESIDUAL
CO = CARBON MONOXIDE

DE = DENSITY
DO = DISSOLVED OXYGEN

F = FLUORIDE
$FeCL_3$ = FERRIC CHLORIDE

H_2S = HYDROGEN SULFIDE
H_2SO_4 = SULFURIC ACID
H_3PO_4 = PHOSPHORIC ACID
HC = HYDROCARBONS
HDNS = HARDNESS
HUM = HUMIDITY

MOH = METHANOL

NH = AMMONIA
NO^4 = NITRIC OXIDE
N2 = NITROGEN

O_2 = OXYGEN
OP = ORTHO PHOSPHATE
ORP = OXIDATION REDUCTION POTENTIAL
OUR = OXYGEN UPTAKE RATE
OZ = OZONE

PH = pH

SD = SOLIDS DENSITY
SO2 = SULPHUR DIOXIDE

TOC = TOTAL ORGANIC CARBON
TOD = TOTAL OXYGEN DEMAND
TRB = TURBIDITY
TSS = TOTAL SUSPENDED SOLIDS

LEL = LOWER EXPLOSIVE LIMIT

HAND SWITCHES/PUSHBUTTONS

ACK = ACKNOWLEDGE
AM = AUTO/MANUAL
CAM = COMPUTER/AUTO/MANUAL
CLM = COMPUTER/LOCAL/MANUAL
CM = COMPUTER /MANUAL
COC = CLOSE/OPEN/COMPUTER

ESP = EMERGENCY STOP
ELOS = EMERGENCY LOCKOUT STOP

FJ = FORWARD JOG
FR = FORWARD/REVERSE
FS = FAST/SLOW
FOR = FORWARD/OFF/REVERSE
FOS = FAST/OFF/SLOW
FWD = FORWARD

HO = HAND/OFF
HOA = HAND/OFF/AUTO
HOC = HAND/OFF/COMPUTER
HOR = HAND/OFF/REMOTE
HOAR = HAND/OFF/AUTO/REMOTE

LC = LOCAL/COMPUTER
LT = LAMP TEST
LOC = LOCAL/OFF/COMPUTER
LOR = LOCAL/OFF/REMOTE
LOS = LOCKOUT STOP
LR = LOCAL/REMOTE

OAC = OPEN/AUTO/CLOSE
OC = OPEN/CLOSE
OCC = OPEN/CLOSE/COMPUTER
OO = ON/OFF
OSC = OPEN/STOP/CLOSE

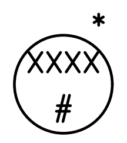
POT = POTENTIOMETER

REV = REVERSE
RJ = REVERSE JOG
ROT = RUN/OFF/TEST
RS = RESET

SEL = SELECT
SIL = SILENCE
SLOS = START/LOCKOUT STOP
SM = SYSTEM/MANUAL
SP = STOP
SS = START/STOP
ST = START

TST = TEST

UD = UP/DOWN



SIGNAL CONDITIONERS

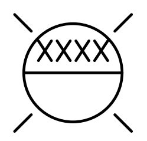
* = FUNCTION

AVG = AVERAGE
1:1 = REPEAT
1:X = BOOST (X=MULTIPLIER)
> = SELECT HIGHEST SIGNAL
< = SELECT LOWEST SIGNAL
X = BIAS
% = GAIN ATTENUATE
Δ = DIFFERENCE
Σ = SUM
× = MULTIPLY
÷ = DIVIDE
F(x) = CHARACTERIZED
√ = SQUARE ROOT
X^N = RAISED TO THE NTH POWER

SIGNAL CONVERTERS

* = INITIAL VARIABLE/CONVERTED VARIABLE

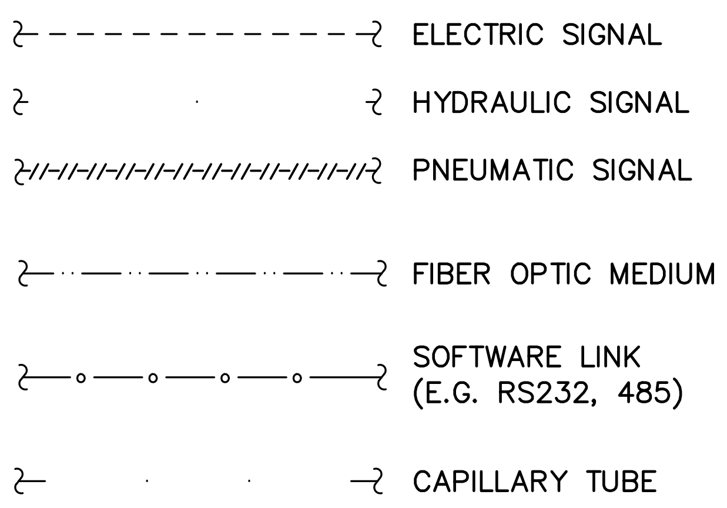
E = VOLTAGE
F = FREQUENCY
I = CURRENT
M = MOTOR
P = PNEUMATIC
PF = PULSE FREQUENCY
PD = PULSE DURATION
R = RESISTANCE



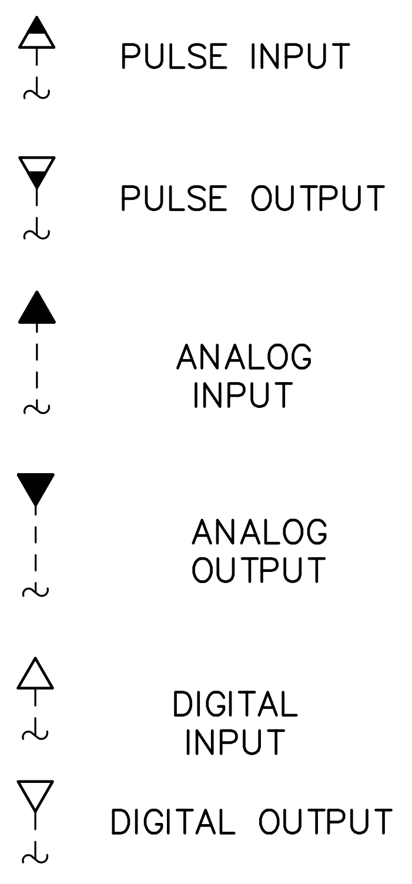
INDICATOR LIGHTS

LAH = LEVEL ALARM HIGH
MA = MOTOR OVERLOAD ALARM
MN = MOTOR RUN STATUS
PAH = PRESSURE ALARM HIGH
SA = STROBE ALARM
YA = VFD FAULT

SIGNAL LINE LEGEND



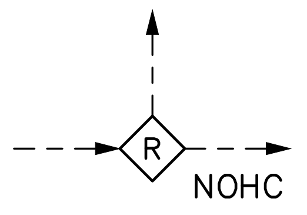
CONTROL SYSTEM INPUTS & OUTPUTS



ELECTRICAL INTERLOCKS

= A UNIQUE NUMBER (1 OR 2 DIGITS) ASSIGNED AS REFERENCE TO THE PARTICULAR INTERLOCK

NOTE: IN THE INTERLOCK LEGEND, LOCATED AT THE BOTTOM OF A P&ID, A BRIEF DESCRIPTION OF THE INTERLOCK'S FUNCTION IS PROVIDED AS WELL AS A REFERENCE TO THE CONTROL SCHEMATIC DRAWING NUMBER WHICH REFERENCES THE INTERLOCK.



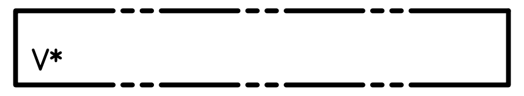
NC = NORMALLY CLOSED
NO = NORMALLY OPEN
NOHC = NORMALLY OPEN HELD CLOSED
R = RELAY WITH EACH SIGNAL LINE LEAVING DENOTING A POLE
R = RELAY WITH EACH SIGNAL LINE LEAVING DENOTING A POLE

7–DIGIT SERIALIZED KEY

XXXXXXX

NOTE: ALL VALVES, INSTRUMENTS, MOTORS, EQUIPMENT, ETC. ARE TO HAVE A FIXED 7–DIGIT SERIAL NUMBER. THIS NUMBER IS TO BE ASSIGNED TO THE PROJECT BY THE CITY'S PROJECT MANAGER.

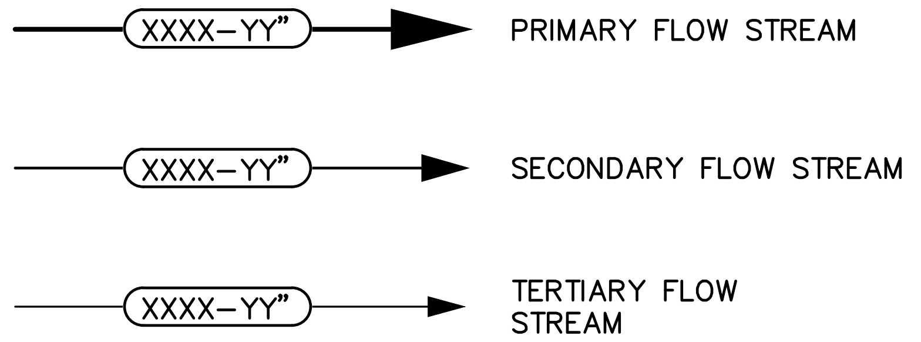
EQUIPMENT PROVIDED BY OTHERS



DENOTES VENDOR PACKAGE BOUNDARY

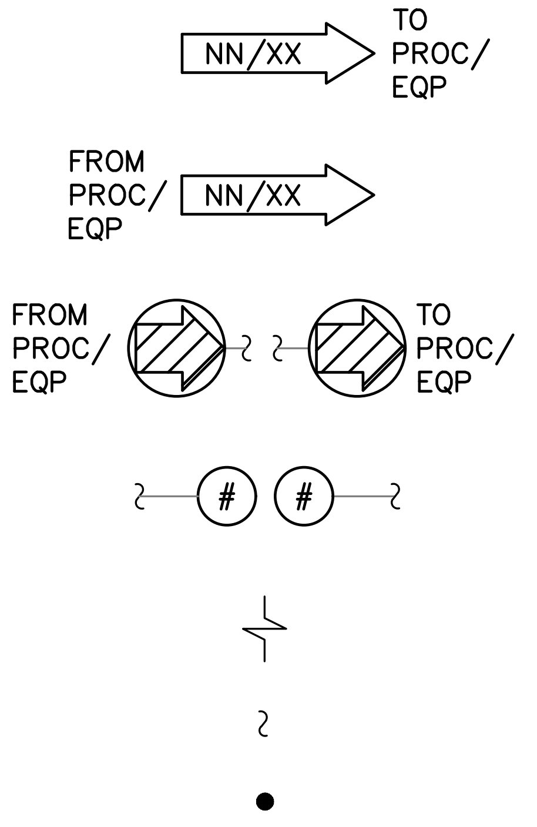
V* = VENDOR PROVIDED INDIVISUAL PIECE OF EQUIPMENT
O* = OWNER PROVIDED INDIVISUAL PIECE OF EQUIPMENT

FLOW STREAM LINE LEGEND



NOTE: XX IDENTIFIES THE FLOWSTREAM. SEE ABBREVIATIONS BELOW. ARROWS AND FLOW STREAM IDENTIFICATION TO BE LOCATED BEFORE AND AFTER EACH PIECE OF EQUIPMENT ON P&ID AS SPACE PERMITS.
YY DENOTES LINE SIZE IN INCHES

DRAWING CONTINUATION LEGEND



FLOW STREAM NO. NN TO DWG. NO. XX

SIGNAL NO. NN FROM DWG. NO. XX

FLOW STREAM TO OR FROM EQUIPMENT NOT SHOWN ON OTHER DRAWINGS.

FLOW STREAM OR SIGNAL LINE CONTINUATION ON SAME DRAWING.

LARGE BREAK

SIGNAL LINE BREAK

CONNECTION POINT

FACILITY DRAWINGS
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FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER: #

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID
BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS
*				
*				
*				
*				
*				
*				
*				

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

INSTRUMENTATION

SYMBOLS AND LEGENDS 1

CITY PROJECT NO. WS90400085
DATE: 08/2024
I–01

CAD FILE: CSILS40IA01.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

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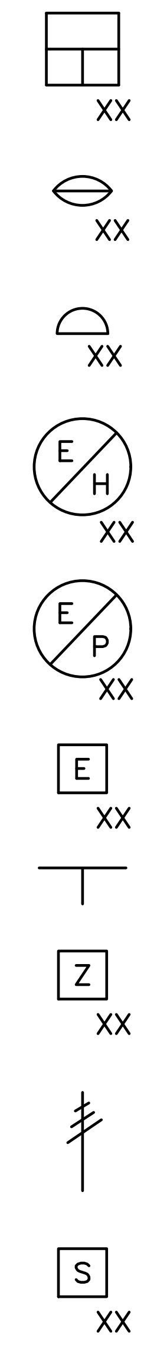
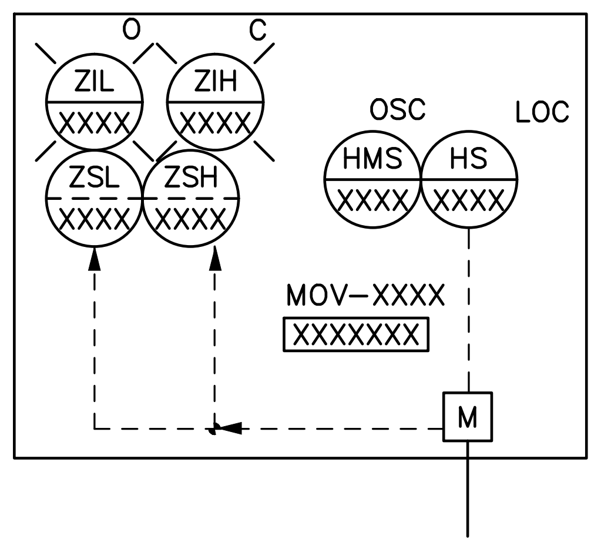
ACTUATOR SYMBOLS



CYLINDER ACTUATOR
DIAPHRAGM ACTUATOR (PRESSURE BALANCED)
DIAPHRAGM ACTUATOR (SPRING OPPOSED)
ELECTROHYDRAULIC ACTUATOR
ELECTROPNEUMATIC ACTUATOR
ELECTRIC ACTUATOR
MANUAL ACTUATOR
POSITIONER
PRESSURE RELIEF
SOLENOID ACTUATOR

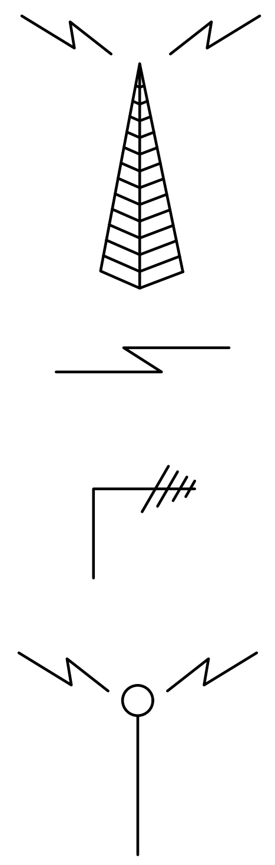


MOTOR OPPERATED VALVE

ACTUATOR LEGEND: XX INDICATES STATUS OF ACTUATOR ON LOSS OF POWER WITH THE FOLLOWING OPTIONS:

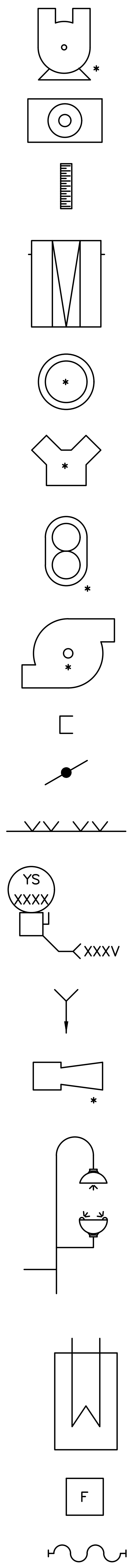
FO = FAIL OPEN,
FC = FAIL CLOSED,
FP = FAIL TO PRE–SET POSITION, AND
BLANK = FAIL TO LAST POSITION.

COMMUNICATION SYMBOLS



RADIO TOWER
RADIO WAVE PROPAGATION
YAGI ANTENNA
OMNIDIRECTIONAL ANTENNA

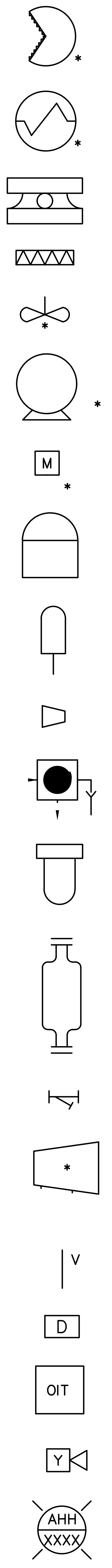
EQUIPMENT SYMBOLS



BLOWER
BURNER
CALIBRATION COLUMN
CHLORINATOR
COMPRESSOR (CENTRIFUGAL)
COMPRESSOR (RECIPROCATING, POSITIVE DISPLACEMENT)
COMPRESSOR (ROTARY, POSITIVE DISPLACEMENT)
COMPRESSOR
COUPLING CONNECTION
DAMPER
DIFFUSER

DISCONNECT SWITCH
YS = AUXILLARY
CONTACT XXXX = LOOP NO.
XXXV = VOLTAGE

DRAIN
EJECTOR
EMERGENCY EYEWASH & SHOWER
EVAPORATOR
FILTER
FLEXIBLE HOSE

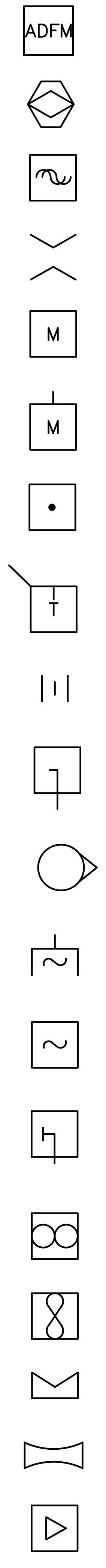


GRINDER
HEAT EXCHANGER
LOAD CELL
MIXER (STATIC)
MIXER
LARGE MOTOR
SMALL MOTOR
OIL EXPANSION CHAMBER
PULSATION DAMPENER
REDUCER
ROTARY CHEMICAL FEEDER
SEPARATOR
SILENCER
STRAINER
TURBINE
VENT TO ATMOSPHERE
CONDENSATION DRAIN
OPERATOR INTERFACE TERMINAL

ALARN SIREN
Y = H–PROCESS ALARM HORN
S–PERSONNEL SAFTEY SIREN

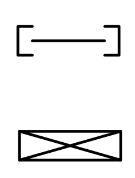
STROBE
AAH = ALARM STROBE
XXXX = LOOP NO.

FLOW ELEMENTS



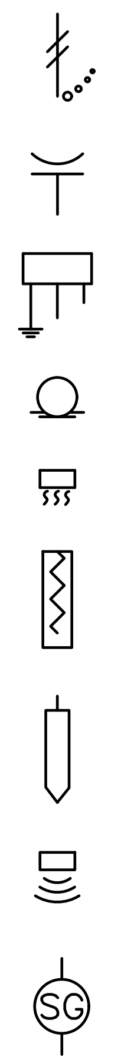
ACOUSTIC DOPPLER FLOW METER
BATCHMETER (PROPELLER/VALVE)
DENSITY (MICROWAVE)
FLUME FLOW ELEMENT
MAGNETIC FLOW ELEMENT (IN LINE)
MAGNETIC FLOW ELEMENT (INSERTION)
MASS FLOW CORIOLIS TYPE
MASS FLOW THERMAL METER
ORIFICE PLATE FLOW ELEMENT
PRIMARY FLOW ELEMENT: PILOT TUBE
ROTAMETER FLOW ELEMENT
SONIC (CLAMP ON)
SONIC FLOW ELEMENT (IN LINE)
TARGET TYPE FLOW ELEMENT
TOTALIZING ELEMENT: POSITIVE DISPLACEMENT FLOW
TURBINE OR PROPELLER FLOW ELEMENT
V–NOTCH WEIR
VENTURI TUBE FLOW ELEMENT
VORTEX FLOW ELEMENT

GATE SYMBOLS



SLIDE GATE
SLUICE GATE

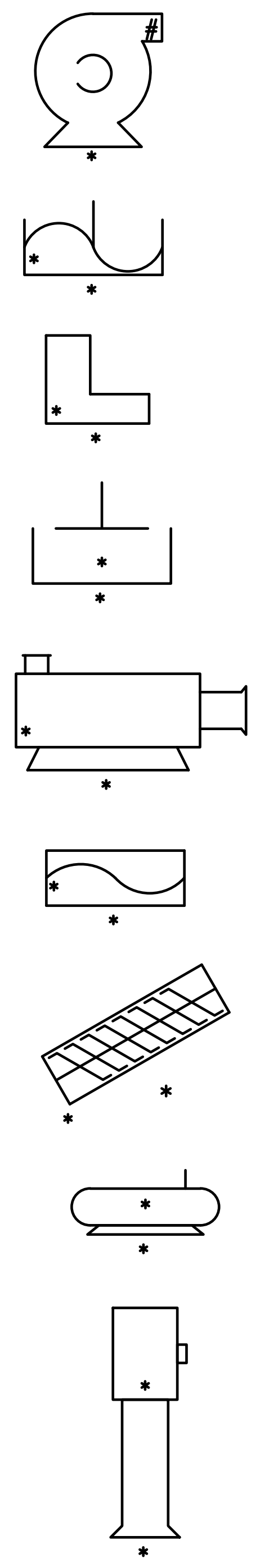
LEVEL ELEMENTS



BUBBLER LEVEL ELEMENT
CAPACITANCE LEVEL ELEMENT
CONDUCTIVITY LEVEL ELEMENT
FLOAT LEVEL ELEMENT
RADAR LEVEL ELEMENT
RESISTIVE TAPE LEVEL ELEMENT
SUBMERSIBLE LEVEL
ULTRASONIC LEVEL ELEMENT
SIGHT GLASS

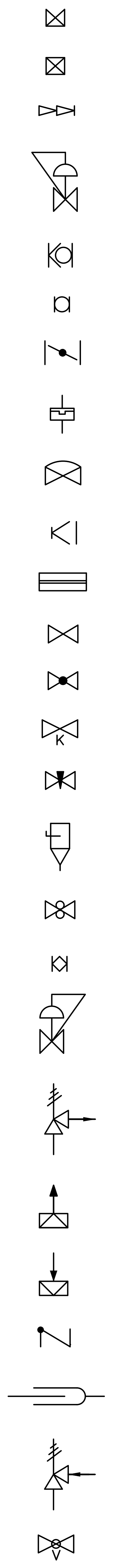
PUMP SYMBOLS

* INDICATES SPEED
CS = COSTANT SPEED
2S = TWO SPEED
VS = VARIABLE SPEED
VT = VARIABLE STROKE
(PER METERING PUMPS ONLY)
BLANK = UNKNOWN



CENTRIFUGAL PUMP
DIAPHRAGM PUMP
METERING, PERISTALTIC, OR PROPORTIONING PUMP
PISTON PUMP
PROGRESSIVE CAVITY PUMP
ROTARY PUMP
SCREW (LIFT) PUMP POSITIVE DISPLACEMENT
SUBMERSIBLE SUMP PUMP
VERTICAL TURBINE PUMP

VALVE SYMBOLS



3–WAY VALVE
4–WAY VALVES
BACKFLOW PREVENTER
BACKPRESSURE REGULATOR SELF CONTAINED
BALL CHECK VALVE
BALL VALVE
BUTTERFLY VALVE
DIAPHRAGM SEAL
DIAPHRAGM VALVE
FLAPPER CHECK VALVE
FLOW STRAIGHTENER
GATE VALVE
GLOBE VALVE
KNIFE VALVE
NEEDLE VALVE
PETCOCK
PINCH VALVE
PLUG VALVE
PRESSURE REGULATING VALVE SELF CONTAINED
PRESSURE RELIEF VALVE
RUPTURE DISK (PRESSURE RELIEF)
RUPTURE DISK (VACUUM RELIEF)
SWING CHECK VALVE
TELESCOPING VALVE
VACUUM RELIEF VALVE
VEE BALL VALVE

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
Date Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS
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DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

INSTRUMENTATION

SYMBOLS AND LEGENDS 2

CITY PROJECT NO. WS90400085
DATE: 08/2024
I–02
SHEET 126 OF 134
CAD FILE: CSILS40IA02.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

COMPUTER CONTROL SYSTEM TAG EXTENSIONS

DIGITAL INPUT (STATUS)	DESCRIPTION
ATS Switch Activated	ATSActive
ATS Switch Disabled	ATSDisabled
ATS Switch in Normal Status	ATSNormal
Breaker Closed Status	BrkrClsed
Breaker Open Status	BrkrOpned
Disconnect Closed	DiscClsed
Emergency Lockout Stop Switch Status	ELOS
Emergency Mushroom Switch	EmergStop
Equipment Closed (Generic)	EqupClsed
Equipment Hand–Off–Auto Switch Status	EqupInAuto
Equipment at Maximum Capacity	MaxCap
Equipment at Minimum Capacity	MinCap
Equipment Opened (Generic)	EqupOpned
Equipment Ready	EqupReady
Equipment Running Status (Generic)	EqupRunStat
Equipment 1/2 Select Switch Status	SelectEqupOne
Equipment Start Active	EqupStart
Equipment Stop Active	EqupStop
Equipment in Test Mode	EqupTestMd
Flow Switch Status	FlowPresent
Forward Motion Status	FwdMotion
Gate Open Status	GateOpned
Gate Close Status	GateClsed
Local/Computer Switch Status	CompMode
Local/Remote Switch Status	RemMode
Panel Ready (circuit breaker common signal)	PwrFail
Pump Lead/Lag Switch Status	PumpInLead
Pump Running Status	PumpRunStat
Reverse Motion Status	RevMotion
Valve Open Status	VlvOpned
Valve Close Status	VlvClsed
VFD Bypass Mode Selected	VFDBypass
VFD Running Status	VFDRunStat

NOTE: THESE TAG EXTENSIONS ARE THE CURRENT STANDARD. THEY ARE IN USE AT THE CAVE CREEK, UNION HILLS, AND NORTH GATEWAY FACILITIES.

DIGITAL INPUT (ALARM)	DESCRIPTION
ATS Low Voltage (Voltage Loss)	ATSLoVolt
Blower in Surge Condition	BlwrSurge
Blower Shutdown due to Surge Condition	BlwrHiSurge
Building Smoke Detector Alarm	SmokeDet
Chemical Eyewash Activated	EyewashAct
Door Intrusion Switch Alarm	Intrusion
Electrical Breaker Tripped	BrkrTrip
Equipment Alarm (Common or Generic)	EqupAlm
Equipment Low Battery	LoBatt
Feed Pump Diaphragm Leak	DiaphLeak
Generator Battery Low Voltage	GenLoVolt
Generator Battery High Voltage	GenHiVolt
Generator Overcrank Detected	GenOvrcrank
Generator Overspeed Detected	GenOvrspeed
Generic System Fail	SysFail
High High Density	HiHiDensity
High High Torque Alarm	HiHiTorq
High High Vibration	HiHiVib
High High Vibration in X Direction	HiHiXVib
High High Vibration in Y Direction	HiHiYVib
High High Vibration in Z Direction	HiHiZVib
High Density	HiDensity
High Speed	HiSpd
High Torque Alarm	HiTorq
High Vibration	HiVib
High Vibration in X Direction	HiXVib
High Vibration in Y Direction	HiYVib
High Vibration in Z Direction	HiZVib
Low Speed Switch Activated	LowSpd
Main Power Failure	PwrFail
Maintenance Mode	MaintMde
Motor Amperage Low	LoMtrAmps
Motor Amperage High	HiMtrAmps
Motor Bearing High Temperature	MtrBearHiTemp
Motor Failure	MtrFail
Motor Overload Alarm	MtrOL
Motor Stator Moisture Detect	MtrLeak
Motor Winding High Temperature	MtrWindHiTemp
No Seal Water Present	NoSealWtr
Pipe Leak Detect	PipeLeak
Process Chem Concentration Low Low Level	LoLoChemConc
Process Chem Concentration Low Level	LoChemConc
Process Chem Concentration High High Level	HiHiChemConc
Process Chem Concentration High Level	HiChemConc
Process Gas Concentration Low Level	LoGasConc
Process Gas Concentration Low Low Level	LoLoGasConc
Generator Low Oil Pressure	GenLoOilPress
Generator Low Low Oil Pressure	GenLoLoOilPress
Generator High High Coolant Temperature	GenHiHiCoolTemp
Generator High Coolant Temperature	GenHiCoolTemp
Generator Low Coolant Temperature	GenLoCoolTemp
Generator Low Fuel Pressure	GenLoFuelPress
Generator Battery Charger Fault	GenBattChargFault
Generator Emergency Stop	GenEmergStop
Generator High Temperature	GenHiTemp
Generator Ready	GenReady

DIGITAL INPUT (ALARM) (CONTINUED)	DESCRIPTION
Process Gas Concentration High High Level	HiHiGasConc
Process Gas Concentration High Level	HiGasConc
Process Low Low Level	LoLoLevel
Process Low Low Press	LoLoPress
Process Low Low Temp	LoLoTemp
Process Low Flow	LoFlow
Process Low Level	LoLevel
Process Low Press	LoPress
Process Low Temp	LoTemp
Process High High DPress	HiHiDPress
Process High High Level	HiHiLevel
Process High High Press	HiHiPress
Process High High Temp	HiHiTemp
Process High DPress	HiDPress
Process High Flow	HiFlow
Process High Level	HiLevel
Process High Press	HiPress
Process High Temp	HiTemp
SCR Drive Fail	SCRDFail
Tank Leak Detect	TankLeak
Ultrasonic Meter Loss of Echo	EchoLoss
Valve Failed Open	OpenFail
Valve Failed Close	CloseFail
Variable Frequency Drive Fail	VFDFail
Sprinkler Water Flow	Sprklrflow

DIGITAL OUTPUT	DESCRIPTION
Gate Close Command	GateCls
Gate Open Command	GateOpn
Motor Forward Command	MtrFwd
Motor Reverse Command	MtrRev
Motor Start Command	MtrStart
Motor Start/Stop Command	MtrSS
Motor Stop Command	MtrStop
PLC/Serial Watchdog Bit Active	WtchDogbit
Process Normal	ProcNorm
Remote Alarm Acknowledge	RemAlmAck
Remote Chlorine Alarm	RemClAlm
Remote Common Alarm	RemCmnAlm
Remote Over–ride	RemOvride
Remote Shutdown Reset	RemReset
Remote Timer Start	TimerStart
Remote Timer Stop	TimerStop
Valve Close Command	VlvCls
Valve Open Command	VlvOpn

ANALOG INPUT	DESCRIPTION
Counter in Time	Time
Engine RPM	RPM
Equipment Position (Generic)	EqupPos
Gate Position (0–100%)	GatePos
Generator Coolant Temperature	GenCoolTemp
Generator Oil Pressure	GenOilPress
Generator Speed	Genspeed
Lamp Intensity	Intensity
Lamp Transmittance	Transmittance
MCC or Switchgear AMPS AC	Amps
MCC or Switchgear KW hours	KWH
MCC or Switchgear Power Factor	PwrFactor
MCC or Switchgear VAR–hours	VARH
MCC or Switchgear Volts AC	Volts
MCC or Switchgear Volt–Amps	Volt–Amps
MCC or Switchgear Volt–Amps Reactive	KVARS
MCC or Switchgear Watts	KW
Motor Bearing Temperature	MtrBearTemp
Motor AC Amperage	MtrAmps
Peristaltic Pump Speed	PmpSpeed
Process Chemical Concentration Measurement	ChemConc
Process Density or TSS Measurement	Density
Process Differential Pressure	DPress
Process Dissolved Oxygen Measurement	DissOxy
Process Flow Rate	Flow
Process Gas Concentration Measurement	GasConc
Process Level Measurement	Level
Process Oxidation Reduction Potential	ORP
Process pH	PH
Process Pressure Measurement	Press
Process Temperature Measurement	Temp
Process Turbidity Measurement	Turbidity
SCR Drive Speed Feedback	SCRDSpeed
Valve Position (0–100%)	VlvPos
Variable Frequency Drive AMPS	VFDAmps
Variable Frequency Drive Frequency	VFDFreq
Variable Frequency Drive Speed Feedback	VFDSpeed
Variable Frequency Drive Volts	VFDVolts
Vibration (Generic)	Vib
Vibration in X Direction	XVib
Vibration in Y Direction	YVib
Vibration in Z Direction	ZVib
Water Hardness Measurement	Hardness

ANALOG OUTPUT	DESCRIPTION
Equipment Position Control	EqupPosCtrl
Flow Pacing Control	FlowPaceCtrl
Generic Process Setpoint Control	SetpCtrl
Peristaltic Pump Speed Control	PmpSpdCtrl
SCR Drive Speed Control	SCRDSpeedCtrl
SCR Drive Stroke Control	SCRDStrokeCtrl
Valve Positioning Control	VlvPosCtrl
Variable Frequency Drive Control	VFDSpeedCtrl

COMMON SOFTWARE GENERATED TAGS	DESCRIPTION
PLC/Serial Equipment Communication Failed	CommFail
Pump or Equipment Accumulated Running Hours	Runtime

FACILITY DRAWINGS
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COMPUTER CONTROL SYSTEM TAG EXTENSIONS

DIGITAL INPUTS	DESCRIPTION	MISC. USES
AH	ALARM HIGH	
AL	ALARM LOW	
EH	VOLTAGE HIGH	
EL	VOLTAGE LOW	
FA	FLOW ALARM	FLOW HIGH HIGH, FLOW LOW LOW
FH	FLOW HIGH	
FL	FLOW LOW	
HA	HORN ALARM	
IA	CURRENT ALARM	
IH	CURRENT HIGH	
IL	CURRENT LOW	SURGE ALARM
JN	POWER ON	
JB	POWER OFF	
LA	LEVEL ALARM	LEVEL HIGH HIGH, LEVEL LOW LOW, LEVEL DIFFERENTIAL, RAIN HAUHE INPUT
LH	LEVEL HIGH	
LL	LEVEL LOW	
MA	MOTOR ALARM	OVERLOADS, DIAPHRAGM FAILURE
MB	MOTOR OFF	
MF	MOTOR FORWARD	
MN	MOTOR ON	
MR	MOTOR REVERSE	
MX	MOTOR UNCLASSIFIED	MOTOR ON–LINE, MOTOR IN STARTUP SEQUENCE, MOTOR OVERCRANK, LOAD SHED ACTIVE

NOTE: THESE TAG EXTENSIONS ARE BEING PHASED OUT. HOWEVER, THEY ARE STILL IN USE AT THE 23RD AND 91ST AVENUE FACILITIES.

DIGITAL INPUTS	DESCRIPTION	MISC. USES
PA	PRESSURE ALARM	PRESS. HIGH HIGH, PRESS. LOW LOW, PRESS. DIFFERENTIAL
PH	PRESSURE HIGH	
PL	PRESSURE LOW	
SA	SPEED ALARM	SPEED HIGH HIGH, SPEED LOW LOW
SH	SPEED HIGH	
SL	SPEED LOW	MOTOR WINDINGS, TEMP, HIGH HIGH, TEMP, LOW LOW
TA	TEMPERATURE ALARM	
TH	TEMPERATURE HIGH	MOTOR BEARINGS
TL	TEMPERATURE LOW	
UA	MULTI–VARIABLE ALARM	EYEWASH, VFD DRIVE FAULT, SYSTEM FAIL ALARM, GRINDER JAMMED, HVAC ALARM HAZ/MAT ALARM, FAIL TO START, FIRE ALARM, MODULE FAILURE
VA	VIBRATION ALARM	VIBRATION HIGH HIGH, VIBRATION LOW LOW
VH	VIBRATION HIGH	
WA	TORQUE ALARM	TORQUE HIGH HIGH, TORQUE LOW LOW
WL	TORQUE LOW	
WH	TORQUE HIGH	
XA	UNCLASSIFIED ALARM	INTRUSION ALARM, SENSOR FAILURE, MEDIA FAILURE, PULL CORD, FIRE ALARM, LEAK ALARM
XH	UNCLASSIFIED PREALARM	
XR	UNCLASSIFIED RECORD	TRUCK DRIVER ID

DIGITAL INPUTS	DESCRIPTION	MISC. USES
YA	SWITCH POSITION AUTO	MOISTURE DETECTION, SWITCH POSITION 1, SWITCH TO EMERGENCY
YB	LOCK OUT STOP	SWITCH POSITION 2, SWITCH TO NORMAL
YC	SWITCH POSITION	SWITCH POSITION 3, SWITCH TO NORMAL
YD	SWITCH POSITION	SWITCH POSITION 4
YF	SWITCH POSITION FORWARD	
YM	SWITCH POSITION REMOTE	
YN	SWITCH POSITION	IN COMPUTER, EMERGENCY STOP, IN REMOTE, IN AUTO
YR	SWITCH POSITION REVERSE	
YX	SWITCH POSITION UNCLASSIFIED	IN MANUAL, NORMAL MODE, L.O. STOP READY
ZA	POSITION A	USED FOR 3 WAY VALVES, FAIL TO OPEN
ZB	POSITION B	USED FOR 3 WAY VALVES, FAIL TO CLOSED
ZC	POSITION C	FAIL TO MOVE TO THE OPEN POSITION
ZD	POSITION D	FAIL TO MOVE TO THE CLOSE POSITION
ZH	POSITION HIGH	ON, OPENED
ZL	POSITION LOW	OFF, CLOSED

DIGITAL OUTPUTS	DESCRIPTION	MISC. USES
DD	AUTODIALER ON	
LD	LIGHTS ON	
MB	MOTOR STOP	
MD	MOTOR START	
ME	MOTOR EMERGENCY STOP	
MF	MOTOR FORWARD	
MR	MOTOR REVERSE	
SD	SYSTEM START	
UT	RESET	ACKNOWLEDGE ANNUNCIATOR
VA	VALVE POSITION A	USED FOR 3 WAY VALVES
VB	VALVE CLOSE	POSITION B (USED FOR 3 WAY VALVES)
VC	VALVE CONTROL	DIGITAL CONTROL OF VALVES
VD	VALVE OPEN	
UD	MULTIVARIABLE ALARM	ACTIVATES LOCAL ANNUNCIATOR

ANALOG OUTPUTS	DESCRIPTION	MISC. USES
FA	FLOW CONTROL	FLOW RATE A–USED WHEN MAPPING A REGISTER IN PLC
FB	FLOW CONTROL	FLOW RATE B–USED WHEN MAPPING A REGISTER IN PLC
FC	FLOW CONTROL	
KC	TIME CONTROL	
LC	LEVEL CONTROL	
VA	VALVE CONTROL	POSITION A–USED WHEN MAPPING A REGISTER IN PLC
VB	VALVE CONTROL	POSITION B–USED WHEN MAPPING A REGISTER IN PLC
VC	VALVE CONTROL	
SC	SPEED CONTROL	

ANALOG INPUTS	DESCRIPTION	MISC. USES
AI	ANALYSIS INDICATION	WIND DIRECTION
EI	VOLTAGE INDICATION	
FI	FLOW INDICATION	
II	CURRENT INDICATION	
JI	POWER INDICATION	POWER FACTOR INDICATION, VARS. FREQUENCY, WATTS
LI	LEVEL INDICATION	
PI	PRESSURE INDICATION	
SI	SPEED INDICATION	
TI	TEMPERATURE INDICATION	
VI	VIBRATION INDICATION	
WI	WEIGHT INDICATION	TORQUE INDICATION
ZI	POSITION INDICATION	

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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–
#	–	–	–	–	–	–	–

33468
VAHID BAGHERI
7-31-24

NO.	BY	DATE	CKD	REMARKS
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REVISIONS

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ABBREVIATIONS

CITY PROJECT NO. WS90400085
DATE: 08/2024
I–03
SHEET 127 OF 134
CAD FILE: CSILS40IA03.dwg

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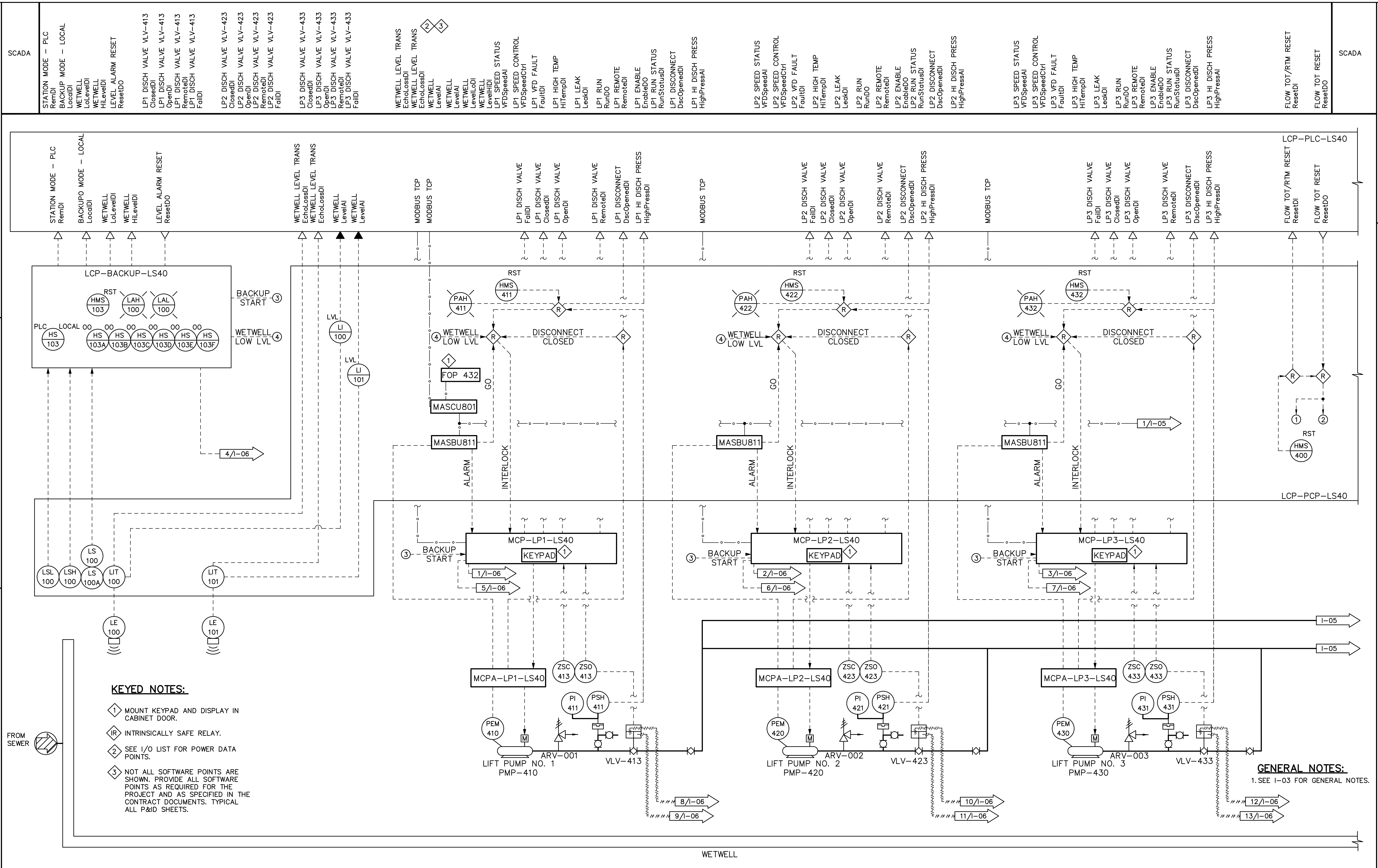
SCADA
STATION MODE - PLC RemDI
BACKUP MODE - LOCAL LocalDI
WETWELL LoLevelDI
WETWELL HiLevelDI
LEVEL ALARM RESET ResetDO
LP1 DISCH VALVE VLV-413 ClosedDI
LP1 DISCH VALVE VLV-413 OpenDI
LP1 DISCH VALVE VLV-413 RemoteDI
LP1 DISCH VALVE VLV-413 FailDI
LP2 DISCH VALVE VLV-423 ClosedDI
LP2 DISCH VALVE VLV-423 OpenDI
LP2 DISCH VALVE VLV-423 RemoteDI
LP2 DISCH VALVE VLV-423 FailDI
LP3 DISCH VALVE VLV-433 ClosedDI
LP3 DISCH VALVE VLV-433 OpenDI
LP3 DISCH VALVE VLV-433 RemoteDI
LP3 DISCH VALVE VLV-433 FailDI
WETWELL LEVEL TRANS EchoLossDI
WETWELL LEVEL TRANS EchoLossDI
WETWELL LevelAI
WETWELL LevelAI
WETWELL LevelLoDI
WETWELL LevelHiDI
2 3
LP1 SPEED STATUS VFDSpeedAI
LP1 SPEED CONTROL VFDSpeedCtrl
LP1 VFD FAULT FaultDI
LP1 HIGH TEMP HiTempDI
LP1 LEAK LeakDI
LP1 RUN RunDO
LP1 REMOTE RemoteDI
LP1 ENABLE EnableDO
LP1 RUN STATUS RunStatusDI
LP1 DISCONNECT DscOpenedDI
LP1 HI DISCH PRESS HighPressAI
LP2 SPEED STATUS VFDSpeedAI
LP2 SPEED CONTROL VFDSpeedCtrl
LP2 VFD FAULT FaultDI
LP2 HIGH TEMP HiTempDI
LP2 LEAK LeakDI
LP2 RUN RunDO
LP2 REMOTE RemoteDI
LP2 ENABLE EnableDO
LP2 RUN STATUS RunStatusDI
LP2 DISCONNECT DscOpenedDI
LP2 HI DISCH PRESS HighPressAI
LP3 SPEED STATUS VFDSpeedAI
LP3 SPEED CONTROL VFDSpeedCtrl
LP3 VFD FAULT FaultDI
LP3 HIGH TEMP HiTempDI
LP3 LEAK LeakDI
LP3 RUN RunDO
LP3 REMOTE RemoteDI
LP3 ENABLE EnableDO
LP3 RUN STATUS RunStatusDI
LP3 DISCONNECT DscOpenedDI
LP3 HI DISCH PRESS HighPressAI
FLOW TOT/RTM RESET ResetDI
FLOW TOT RESET ResetDO
SCADA
LCP-PLC-LS40
STATION MODE - PLC RemDI
BACKUPO MODE - LOCAL LocalDI
WETWELL LoLevelDI
WETWELL HiLevelDI
LEVEL ALARM RESET ResetDO
WETWELL LEVEL TRANS EchoLossDI
WETWELL LEVEL TRANS EchoLossDI
WETWELL LevelAI
WETWELL LevelAI
MODBUS TCP
MODBUS TCP
LP1 DISCH VALVE FailDI
LP1 DISCH VALVE ClosedDI
LP1 DISCH VALVE OpenDI
LP1 DISCH VALVE RemoteDI
LP1 DISCONNECT DscOpenedDI
LP1 HI DISCH PRESS HighPressDI
MODBUS TCP
LP2 DISCH VALVE FailDI
LP2 DISCH VALVE ClosedDI
LP2 DISCH VALVE OpenDI
LP2 DISCH VALVE RemoteDI
LP2 DISCONNECT DscOpenedDI
LP2 HI DISCH PRESS HighPressDI
MODBUS TCP
LP3 DISCH VALVE FailDI
LP3 DISCH VALVE ClosedDI
LP3 DISCH VALVE OpenDI
LP3 DISCH VALVE RemoteDI
LP3 DISCONNECT DscOpenedDI
LP3 HI DISCH PRESS HighPressDI
FLOW TOT/RTM RESET ResetDI
FLOW TOT RESET ResetDO
LCP-BACKUP-LS40
RST
HMS 103
LAH 100
LAL 100
PLC
LOCAL
HS 103
OO OO OO OO OO OO
HS 103A
HS 103B
HS 103C
HS 103D
HS 103E
HS 103F
BACKUP START 3
WETWELL LOW LVL 4
LVL
LI 100
LVL
LI 101
4/I-06
RST
PAH 411
HMS 411
R
4 WETWELL LOW LVL
R
DISCONNECT CLOSED
R
1
FOP 432
MASCU801
GO
MASBU811
ALARM
INTERLOCK
RST
PAH 422
HMS 422
R
4 WETWELL LOW LVL
R
DISCONNECT CLOSED
R
GO
MASBU811
ALARM
INTERLOCK
RST
PAH 432
HMS 432
R
4 WETWELL LOW LVL
R
DISCONNECT CLOSED
R
GO
MASBU811
1/I-05
ALARM
INTERLOCK
R
R
1
2
RST
HMS 400
LCP-PCP-LS40
LS 100
LSL 100
LSH 100
LS 100A
LIT 100
LIT 101
LE 100
LE 101
3 BACKUP START
MCP-LP1-LS40
KEYPAD 1
1/I-06
5/I-06
3 BACKUP START
MCP-LP2-LS40
KEYPAD 1
2/I-06
6/I-06
3 BACKUP START
MCP-LP3-LS40
KEYPAD 1
3/I-06
7/I-06
I-05
I-05
MCPA-LP1-LS40
ZSC 413
ZSO 413
PI 411
PSH 411
PEM 410
M
ARV-001
LIFT PUMP NO. 1
PMP-410
VLV-413
8/I-06
9/I-06
MCPA-LP2-LS40
ZSC 423
ZSO 423
PI 421
PSH 421
PEM 420
M
ARV-002
LIFT PUMP NO. 2
PMP-420
VLV-423
10/I-06
11/I-06
MCPA-LP3-LS40
ZSC 433
ZSO 433
PI 431
PSH 431
PEM 430
M
ARV-003
LIFT PUMP NO. 3
PMP-430
VLV-433
12/I-06
13/I-06
FROM SEWER
WETWELL

KEYED NOTES:

- ① MOUNT KEYPAD AND DISPLAY IN CABINET DOOR.
- IR INTRINSICALLY SAFE RELAY.
- ② SEE I/O LIST FOR POWER DATA POINTS.
- ③ NOT ALL SOFTWARE POINTS ARE SHOWN. PROVIDE ALL SOFTWARE POINTS AS REQUIRED FOR THE PROJECT AND AS SPECIFIED IN THE CONTRACT DOCUMENTS. TYPICAL ALL P&ID SHEETS.

GENERAL NOTES:

1. SEE I-03 FOR GENERAL NOTES.

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS

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ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID
BAGHERI
Date Signed 7-31-24

NO.	BY	DATE	CKD	REMARKS
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REVISIONS

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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

INSTRUMENTATION

P&ID SHEET 1

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CITY PROJECT NO. WS90400085
DATE: 08/2024
I-04
SHEET 128 OF 134
CAD FILE: CSILS40IN01.dwg

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FOR CONSTRUCTION

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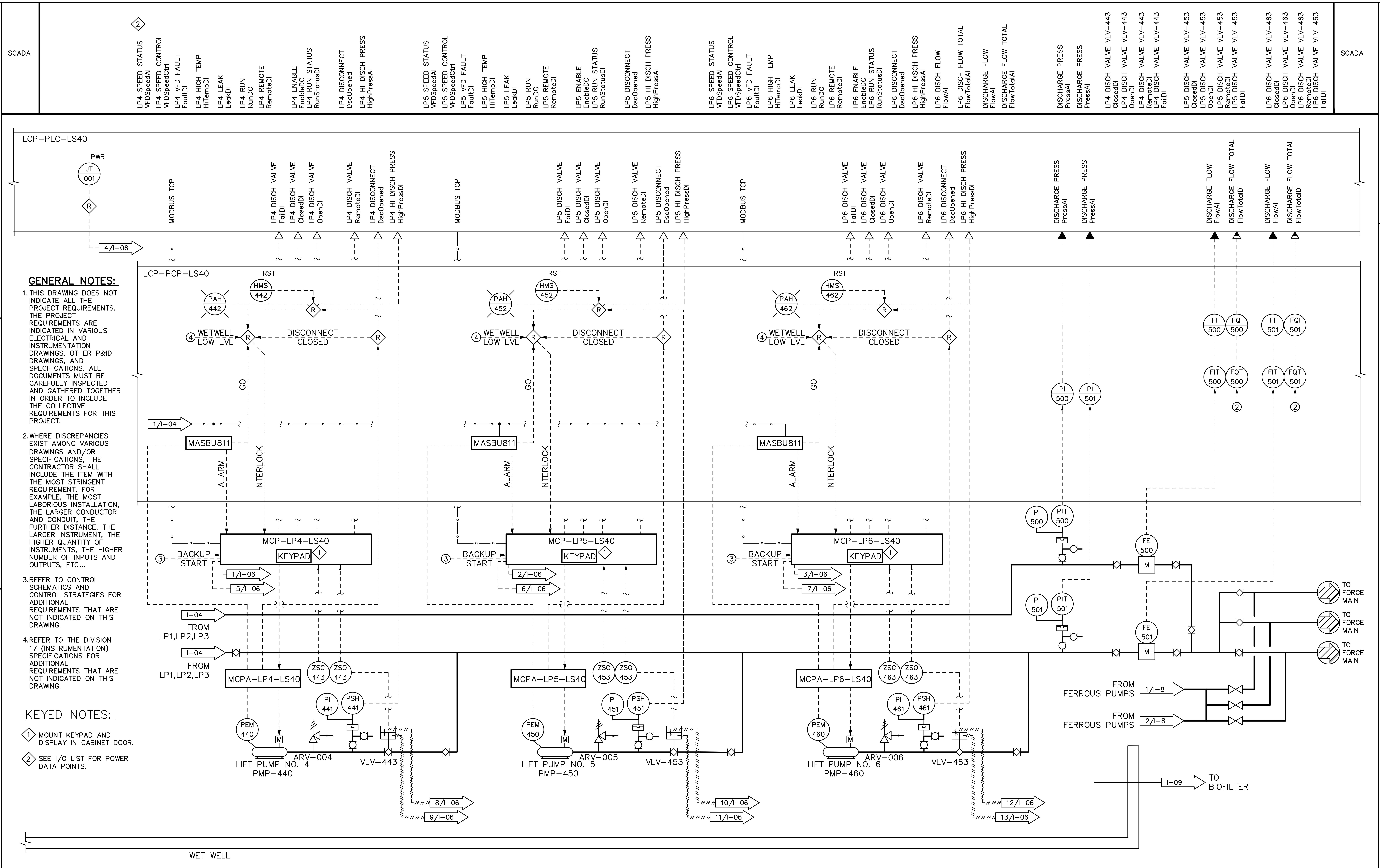
SCADA
LP4 SPEED STATUS VFDSpeedAI
LP4 SPEED CONTROL VFDSpeedCtrl
LP4 VFD FAULT FaultDI
LP4 HIGH TEMP HiTempDI
LP4 LEAK LeakDI
LP4 RUN RunDO
LP4 REMOTE RemoteDI
LP4 ENABLE EnableDO
LP4 RUN STATUS RunStatusDI
LP4 DISCONNECT DscOpened
LP4 HI DISCH PRESS HighPressAI
LP5 SPEED STATUS VFDSpeedAI
LP5 SPEED CONTROL VFDSpeedCtrl
LP5 VFD FAULT FaultDI
LP5 HIGH TEMP HiTempDI
LP5 LEAK LeakDI
LP5 RUN RunDO
LP5 REMOTE RemoteDI
LP5 ENABLE EnableDO
LP5 RUN STATUS RunStatusDI
LP5 DISCONNECT DscOpened
LP5 HI DISCH PRESS HighPressAI
LP6 SPEED STATUS VFDSpeedAI
LP6 SPEED CONTROL VFDSpeedCtrl
LP6 VFD FAULT FaultDI
LP6 HIGH TEMP HiTempDI
LP6 LEAK LeakDI
LP6 RUN RunDO
LP6 REMOTE RemoteDI
LP6 ENABLE EnableDO
LP6 RUN STATUS RunStatusDI
LP6 DISCONNECT DscOpened
LP6 HI DISCH PRESS HighPressAI
LP6 DISCH FLOW FlowAI
LP6 DISCH FLOW TOTAL FlowTotalAI
DISCHARGE FLOW FlowAI
DISCHARGE FLOW TOTAL FlowTotalAI
DISCHARGE PRESS PressAI
DISCHARGE PRESS PressAI
LP4 DISCH VALVE VLV-443 ClosedDI
LP4 DISCH VALVE VLV-443 OpenDI
LP4 DISCH VALVE VLV-443 RemoteDI
LP4 DISCH VALVE VLV-443 FailDI
LP5 DISCH VALVE VLV-453 ClosedDI
LP5 DISCH VALVE VLV-453 OpenDI
LP5 DISCH VALVE VLV-453 RemoteDI
LP5 DISCH VALVE VLV-453 FailDI
LP6 DISCH VALVE VLV-463 ClosedDI
LP6 DISCH VALVE VLV-463 OpenDI
LP6 DISCH VALVE VLV-463 RemoteDI
LP6 DISCH VALVE VLV-463 FailDI
SCADA
2
LCP-PLC-LS40
PWR
JT 001
R
4/I-06
MODBUS TCP
LP4 DISCH VALVE FailDI
LP4 DISCH VALVE ClosedDI
LP4 DISCH VALVE OpenDI
LP4 DISCH VALVE RemoteDI
LP4 DISCONNECT DscOpened
LP4 HI DISCH PRESS HighPressDI
MODBUS TCP
LP5 DISCH VALVE FailDI
LP5 DISCH VALVE ClosedDI
LP5 DISCH VALVE OpenDI
LP5 DISCH VALVE RemoteDI
LP5 DISCONNECT DscOpened
LP5 HI DISCH PRESS HighPressDI
MODBUS TCP
LP6 DISCH VALVE FailDI
LP6 DISCH VALVE ClosedDI
LP6 DISCH VALVE OpenDI
LP6 DISCH VALVE RemoteDI
LP6 DISCONNECT DscOpened
LP6 HI DISCH PRESS HighPressDI
DISCHARGE PRESS PressAI
DISCHARGE PRESS PressAI
DISCHARGE FLOW FlowAI
DISCHARGE FLOW TOTAL FlowTotalDI
DISCHARGE FLOW FlowAI
DISCHARGE FLOW TOTAL FlowTotalDI
LCP-PCP-LS40
RST
PAH 442
HMS 442
4 WETWELL LOW LVL
DISCONNECT CLOSED
GO
1/I-04
MASBU811
ALARM
INTERLOCK
RST
PAH 452
HMS 452
4 WETWELL LOW LVL
DISCONNECT CLOSED
GO
MASBU811
ALARM
INTERLOCK
RST
PAH 462
HMS 462
4 WETWELL LOW LVL
DISCONNECT CLOSED
GO
MASBU811
ALARM
INTERLOCK
FI 500
FQI 500
FI 501
FQI 501
FIT 500
FQT 500
FIT 501
FQT 501
2
2
PI 500
PI 501
MCP-LP4-LS40
KEYPAD 1
3 BACKUP START
1/I-06
5/I-06
MCP-LP5-LS40
KEYPAD 1
3 BACKUP START
2/I-06
6/I-06
MCP-LP6-LS40
KEYPAD 1
3 BACKUP START
3/I-06
7/I-06
PI 500
PIT 500
PI 501
PIT 501
FE 500
FE 501
M
M
I-04
FROM LP1,LP2,LP3
I-04
FROM LP1,LP2,LP3
MCPA-LP4-LS40
ZSC 443
ZSO 443
MCPA-LP5-LS40
ZSC 453
ZSO 453
MCPA-LP6-LS40
ZSC 463
ZSO 463
PI 441
PSH 441
PI 451
PSH 451
PI 461
PSH 461
PEM 440
PEM 450
PEM 460
M
LIFT PUMP NO. 4
PMP-440
ARV-004
VLV-443
LIFT PUMP NO. 5
PMP-450
ARV-005
VLV-453
LIFT PUMP NO. 6
PMP-460
ARV-006
VLV-463
8/I-06
9/I-06
10/I-06
11/I-06
12/I-06
13/I-06
TO FORCE MAIN
TO FORCE MAIN
TO FORCE MAIN
FROM FERROUS PUMPS 1/I-8
FROM FERROUS PUMPS 2/I-8
I-09
TO BIOFILTER
WET WELL

GENERAL NOTES:

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KEYED NOTES:

1. MOUNT KEYPAD AND DISPLAY IN CABINET DOOR.
2. SEE I/O LIST FOR POWER DATA POINTS.

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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS

33468
VAHID
BAGHERI
Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS
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DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

INSTRUMENTATION

P&ID SHEET 2

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CITY PROJECT NO. WS90400085
DATE: 08/2024
I-05 SHEET 129 OF 134
CAD FILE: CSILS40IN02.dwg

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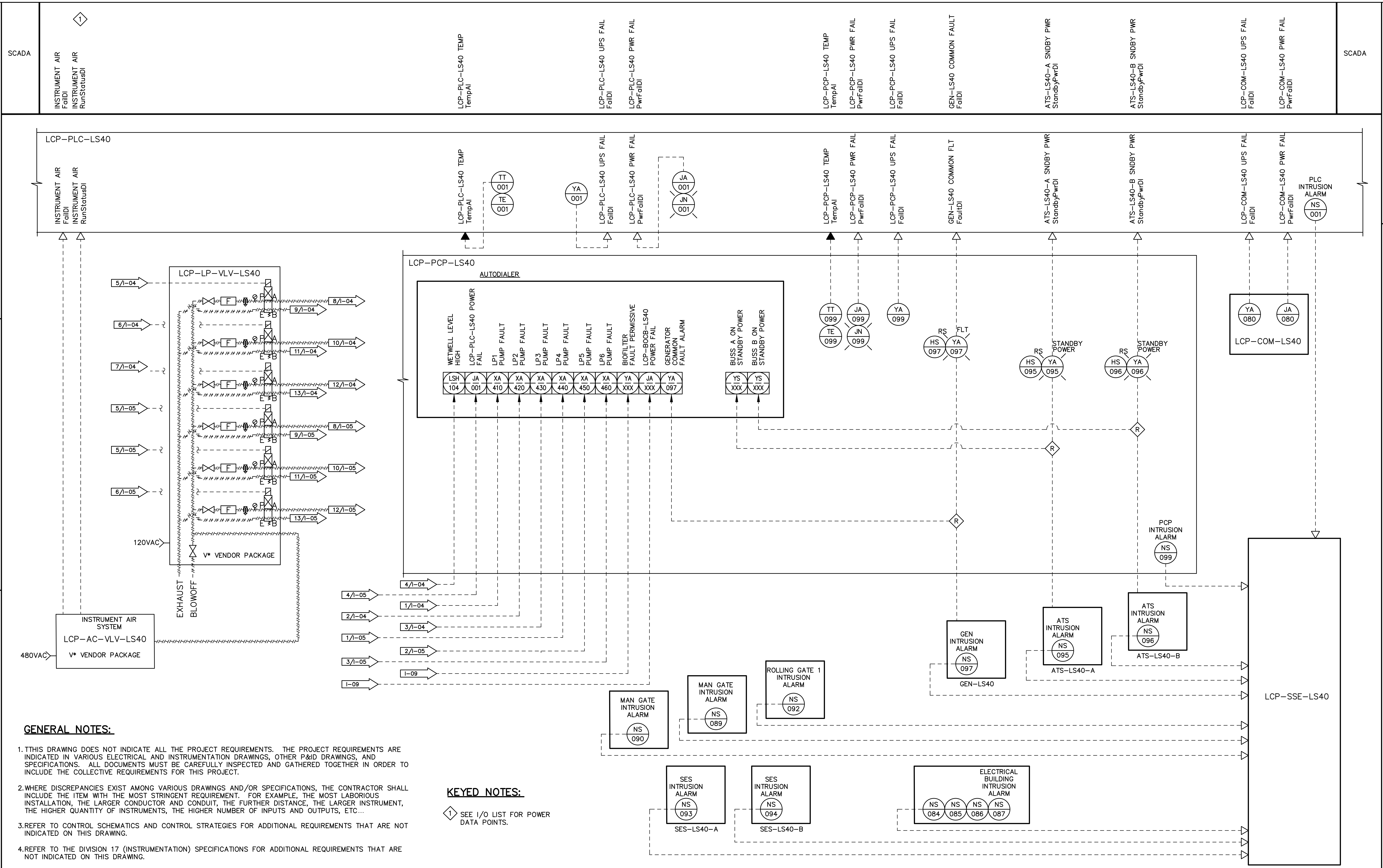
SCADA
1
INSTRUMENT AIR FailDI
INSTRUMENT AIR RunStatusDI
LCP–PLC–LS40 TEMP TempAI
LCP–PLC–LS40 UPS FAIL FailDI
LCP–PLC–LS40 PWR FAIL PwrFailDI
LCP–PCP–LS40 TEMP TempAI
LCP–PCP–LS40 PWR FAIL PwrFailDI
LCP–PCP–LS40 UPS FAIL FailDI
GEN–LS40 COMMON FAULT FailDI
ATS–LS40–A SNDBY PWR StandbyPwrDI
ATS–LS40–B SNDBY PWR StandbyPwrDI
LCP–COM–LS40 UPS FAIL FailDI
LCP–COM–LS40 PWR FAIL PwrFailDI
SCADA
LCP–PLC–LS40
INSTRUMENT AIR FailDI
INSTRUMENT AIR RunStatusDI
LCP–PLC–LS40 TEMP TempAI
TT 001
TE 001
YA 001
LCP–PLC–LS40 UPS FAIL FailDI
LCP–PLC–LS40 PWR FAIL PwrFailDI
JA 001
JN 001
LCP–PCP–LS40 TEMP TempAI
LCP–PCP–LS40 PWR FAIL PwrFailDI
LCP–PCP–LS40 UPS FAIL FailDI
GEN–LS40 COMMON FLT FaultDI
ATS–LS40–A SNDBY PWR StandbyPwrDI
ATS–LS40–B SNDBY PWR StandbyPwrDI
LCP–COM–LS40 UPS FAIL FailDI
LCP–COM–LS40 PWR FAIL PwrFailDI
PLC INTRUSION ALARM
NS 001
LCP–LP–VLV–LS40
5/I–04
6/I–04
7/I–04
5/I–05
5/I–05
6/I–05
F
P
A
E
B
8/I–04
9/I–04
10/I–04
11/I–04
12/I–04
13/I–04
8/I–05
9/I–05
10/I–05
11/I–05
12/I–05
13/I–05
120VAC
V* VENDOR PACKAGE
EXHAUST
BLOWOFF
INSTRUMENT AIR SYSTEM
LCP–AC–VLV–LS40
V* VENDOR PACKAGE
480VAC
LCP–PCP–LS40
AUTODIALER
WETWELL LEVEL HIGH
LCP–PLC–LS40 POWER FAIL
LP1 PUMP FAULT
LP2 PUMP FAULT
LP3 PUMP FAULT
LP4 PUMP FAULT
LP5 PUMP FAULT
LP6 PUMP FAULT
BIOFILTER FAULT PERMISSIVE
LCP–BOCB–LS40 POWER FAIL
GENERATOR COMMON FAULT ALARM
BUSS A ON STANDBY POWER
BUSS B ON STANDBY POWER
LSH 104
JA 001
XA 410
XA 420
XA 430
XA 440
XA 450
XA 460
YA XXX
JA XXX
YA 097
YS XXX
YS XXX
4/I–04
4/I–05
1/I–04
2/I–04
3/I–04
1/I–05
2/I–05
3/I–05
I–09
I–09
TT 099
TE 099
JA 099
JN 099
YA 099
RS
FLT
HS 097
YA 097
RS
STANDBY POWER
HS 095
YA 095
RS
STANDBY POWER
HS 096
YA 096
R
R
R
R
YA 080
JA 080
LCP–COM–LS40
PCP INTRUSION ALARM
NS 099
GEN INTRUSION ALARM
NS 097
GEN–LS40
ATS INTRUSION ALARM
NS 095
ATS–LS40–A
ATS INTRUSION ALARM
NS 096
ATS–LS40–B
ROLLING GATE 1 INTRUSION ALARM
NS 092
MAN GATE INTRUSION ALARM
NS 089
MAN GATE INTRUSION ALARM
NS 090
SES INTRUSION ALARM
NS 093
SES–LS40–A
SES INTRUSION ALARM
NS 094
SES–LS40–B
ELECTRICAL BUILDING INTRUSION ALARM
NS 084
NS 085
NS 086
NS 087
LCP–SSE–LS40

GENERAL NOTES:

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KEYED NOTES:

◇1 SEE I/O LIST FOR POWER DATA POINTS.

FACILITY DRAWINGS
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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
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HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS
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DWN BB
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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

INSTRUMENTATION

P&ID SHEET 3

CITY PROJECT NO. WS90400085
DATE: 08/2024
I–06

CAD FILE: CSILS40IN03.dwg

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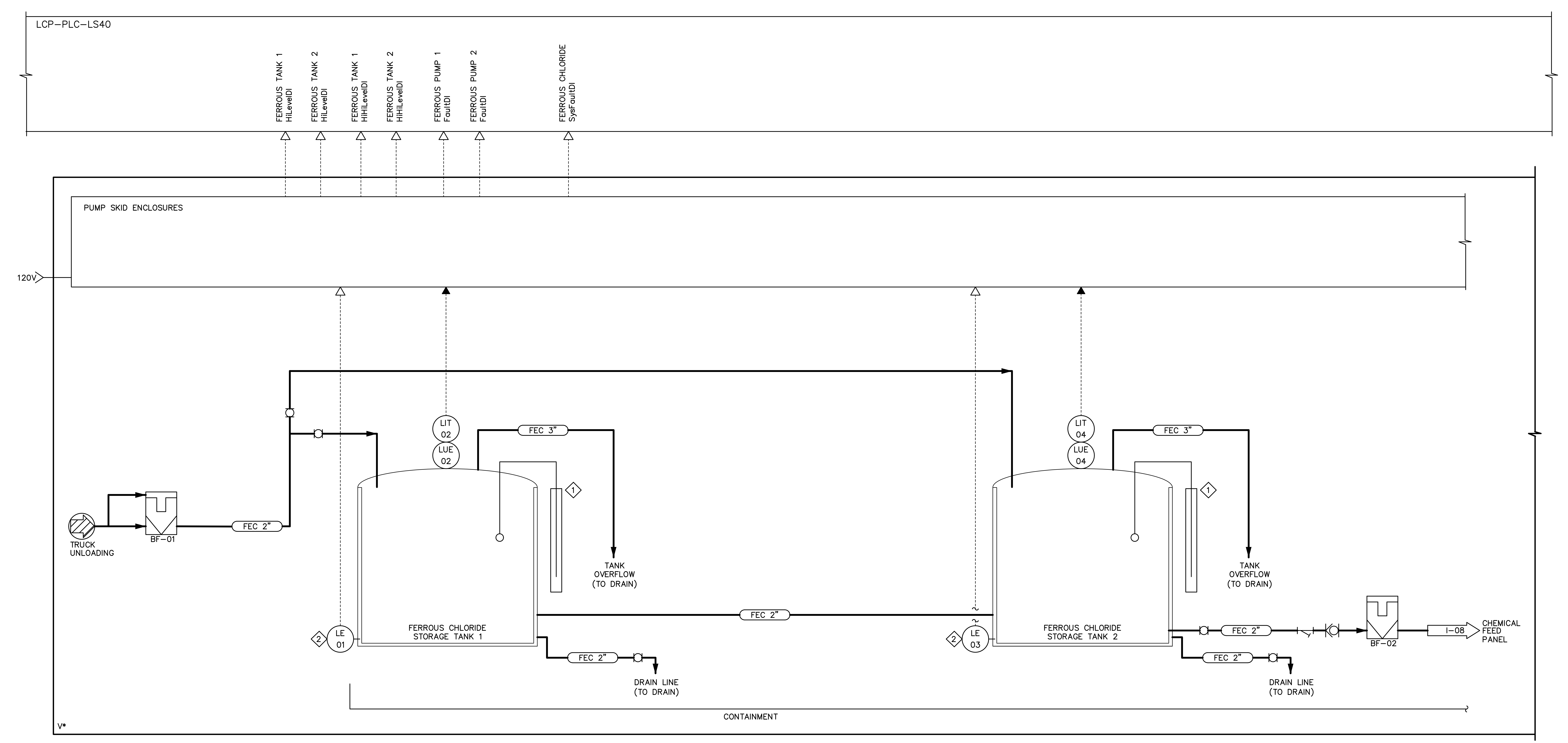
SCADA
FERROUS CHLORIDE TANK 1 HiLevelDI
FERROUS CHLORIDE TANK 2 HiLevelDI
FERROUS CHLORIDE TANK 1 HiHiLevelDI
FERROUS CHLORIDE TANK 2 HiHiLevelDI
FERROUS PUMP 1 FaultDI
FERROUS PUMP 2 FaultDI
FERROUS CHLORIDE SysFaultDI
SCADA
LCP-PLC-LS40
FERROUS TANK 1 HiLevelDI
FERROUS TANK 2 HiLevelDI
FERROUS TANK 1 HiHiLevelDI
FERROUS TANK 2 HiHiLevelDI
FERROUS PUMP 1 FaultDI
FERROUS PUMP 2 FaultDI
FERROUS CHLORIDE SysFaultDI
PUMP SKID ENCLOSURES
120V
LIT 02
LUE 02
FEC 3"
1
TRUCK UNLOADING
BF-01
FEC 2"
TANK OVERFLOW (TO DRAIN)
2
LE 01
FERROUS CHLORIDE STORAGE TANK 1
FEC 2"
FEC 2"
DRAIN LINE (TO DRAIN)
LIT 04
LUE 04
FEC 3"
1
TANK OVERFLOW (TO DRAIN)
2
LE 03
FERROUS CHLORIDE STORAGE TANK 2
FEC 2"
BF-02
I-08
CHEMICAL FEED PANEL
FEC 2"
DRAIN LINE (TO DRAIN)
CONTAINMENT
V*

GENERAL NOTES:

1. STORAGE TANK IS DOUBLE CONTAINED.

INTERLOCKS:

① REVERSE LEVEL INDICATOR
② TANK CONTAINMENT LEAK DETECTOR

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#	-	-	-	-	-	-	-

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID
BAGHERI
Date Signed 7-31-24

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
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DES
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City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

INSTRUMENTATION

P&ID SHEET 4

CITY PROJECT NO. WS90400085
DATE: 08/2024
I–07 SHEET 131 OF 134
CAD FILE: CSILS40IA04.dwg

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SCADA

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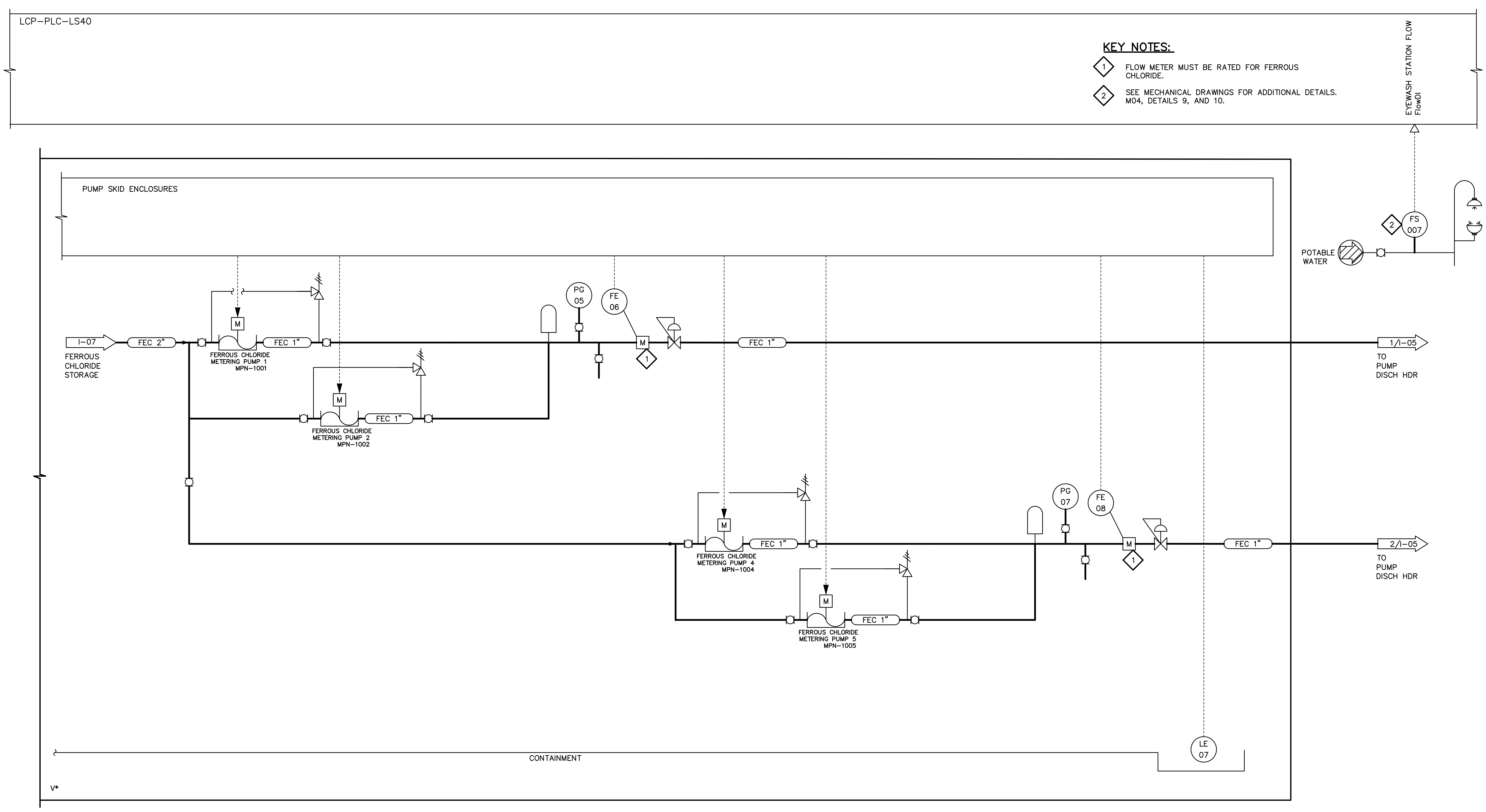
FERROUS CHLORIDE
SysFault

SCADA

KEY NOTES:

1. FLOW METER MUST BE RATED FOR FERROUS CHLORIDE.
2. SEE MECHANICAL DRAWINGS FOR ADDITIONAL DETAILS. M04, DETAILS 9, AND 10.


LCP-PLC-LS40
EYEWASH STATION FLOW
FlowDI
PUMP SKID ENCLOSURES
POTABLE WATER
2
FS 007
PG 05
FE 06
M
1
I-07
FEC 2"
FEC 1"
FERROUS CHLORIDE STORAGE
FERROUS CHLORIDE METERING PUMP 1 MPN-1001
FERROUS CHLORIDE METERING PUMP 2 MPN-1002
1/I-05
TO PUMP DISCH HDR
PG 07
FE 08
FERROUS CHLORIDE METERING PUMP 4 MPN-1004
FERROUS CHLORIDE METERING PUMP 5 MPN-1005
2/I-05
TO PUMP DISCH HDR
CONTAINMENT
LE 07
V*

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REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
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HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
33468
VAHID
BAGHERI
Date Signed 7-31-24
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
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DES
RB
DWN
BB
CKD
VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

INSTRUMENTATION

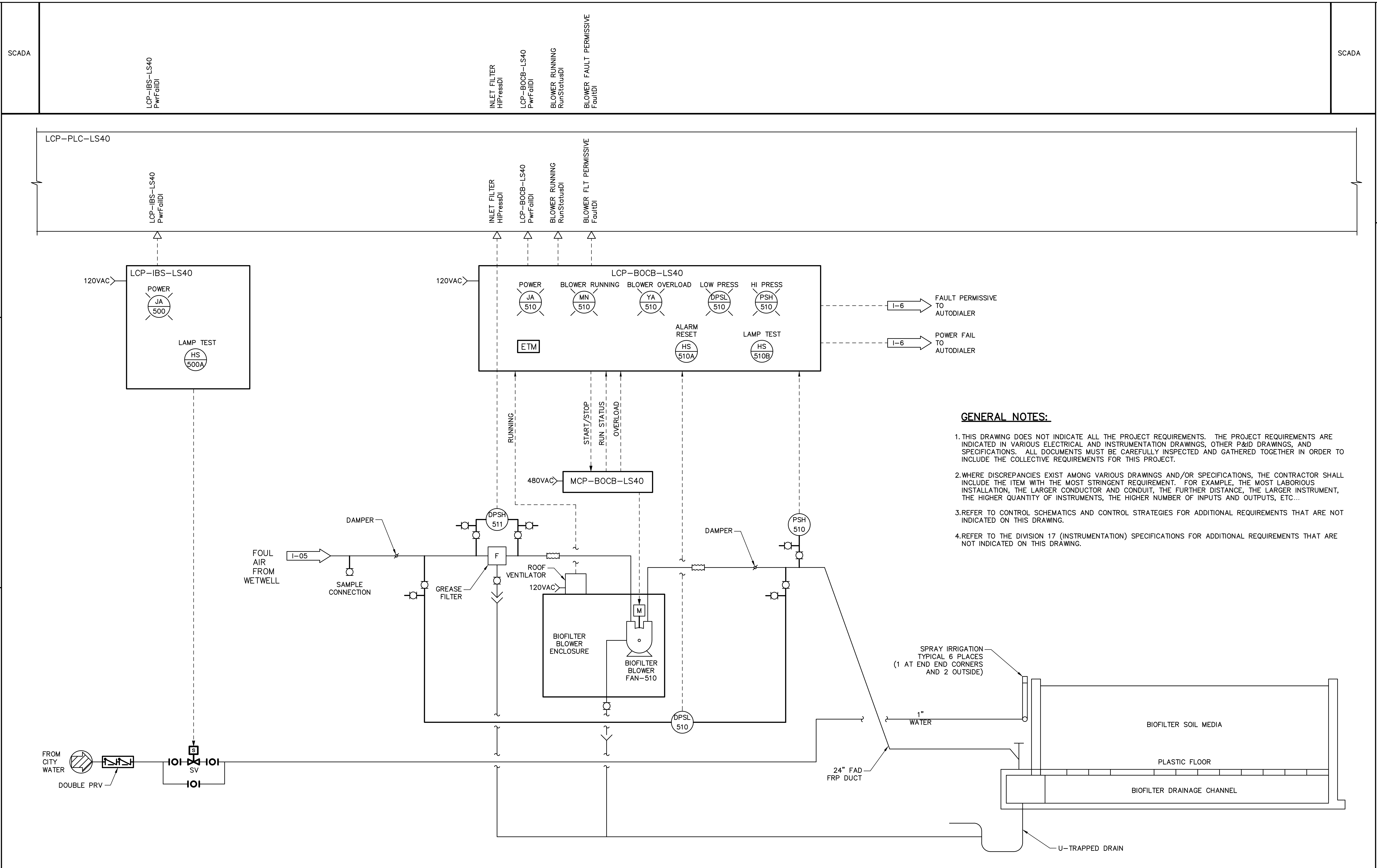
P&ID SHEET 5

CITY PROJECT NO. WS90400085
DATE: 08/2024
I-08 SHEET 132 OF 134
CAD FILE: CSILS40IA05.dwg

THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.


SCADA
LCP–IBS–LS40 PwrFailDI
INLET FILTER HiPressDI
LCP–BOCB–LS40 PwrFailDI
BLOWER RUNNING RunStatusDI
BLOWER FAULT PERMISSIVE FaultDI
SCADA
LCP–PLC–LS40
LCP–IBS–LS40 PwrFailDI
INLET FILTER HiPressDI
LCP–BOCB–LS40 PwrFailDI
BLOWER RUNNING RunStatusDI
BLOWER FLT PERMISSIVE FaultDI
120VAC
LCP–IBS–LS40
POWER
JA 500
LAMP TEST
HS 500A
120VAC
LCP–BOCB–LS40
POWER
JA 510
BLOWER RUNNING
MN 510
BLOWER OVERLOAD
YA 510
LOW PRESS
DPSL 510
HI PRESS
PSH 510
ETM
ALARM RESET
HS 510A
LAMP TEST
HS 510B
I–6
FAULT PERMISSIVE TO AUTODIALER
I–6
POWER FAIL TO AUTODIALER
RUNNING
START/STOP
RUN STATUS
OVERLOAD
480VAC
MCP–BOCB–LS40
DAMPER
DPSH 511
FOUL AIR FROM WETWELL
I–05
F
SAMPLE CONNECTION
GREASE FILTER
ROOF VENTILATOR
120VAC
DAMPER
PSH 510
M
BIOFILTER BLOWER ENCLOSURE
BIOFILTER BLOWER FAN–510
DPSL 510
SPRAY IRRIGATION TYPICAL 6 PLACES (1 AT END END CORNERS AND 2 OUTSIDE)
1" WATER
BIOFILTER SOIL MEDIA
PLASTIC FLOOR
BIOFILTER DRAINAGE CHANNEL
24" FAD FRP DUCT
U–TRAPPED DRAIN
FROM CITY WATER
DOUBLE PRV
S
SV

GENERAL NOTES:

1. THIS DRAWING DOES NOT INDICATE ALL THE PROJECT REQUIREMENTS. THE PROJECT REQUIREMENTS ARE INDICATED IN VARIOUS ELECTRICAL AND INSTRUMENTATION DRAWINGS, OTHER P&ID DRAWINGS, AND SPECIFICATIONS. ALL DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
2. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE FURTHER DISTANCE, THE LARGER INSTRUMENT, THE HIGHER QUANTITY OF INSTRUMENTS, THE HIGHER NUMBER OF INPUTS AND OUTPUTS, ETC...
3. REFER TO CONTROL SCHEMATICS AND CONTROL STRATEGIES FOR ADDITIONAL REQUIREMENTS THAT ARE NOT INDICATED ON THIS DRAWING.
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FACILITY DRAWINGS
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HDR

EiC ENGINEERING
POWERING SUSTAINABLE WATER

33468
VAHID BAGHERI
7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS
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DWN	BB
CKD	VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

INSTRUMENTATION

P&ID SHEET 6

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CITY PROJECT NO. WS90400085
DATE: 08/2024
I–09 SHEET 133 OF 134
CAD FILE: CSILS40IN06.dwg

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FOR CONSTRUCTION

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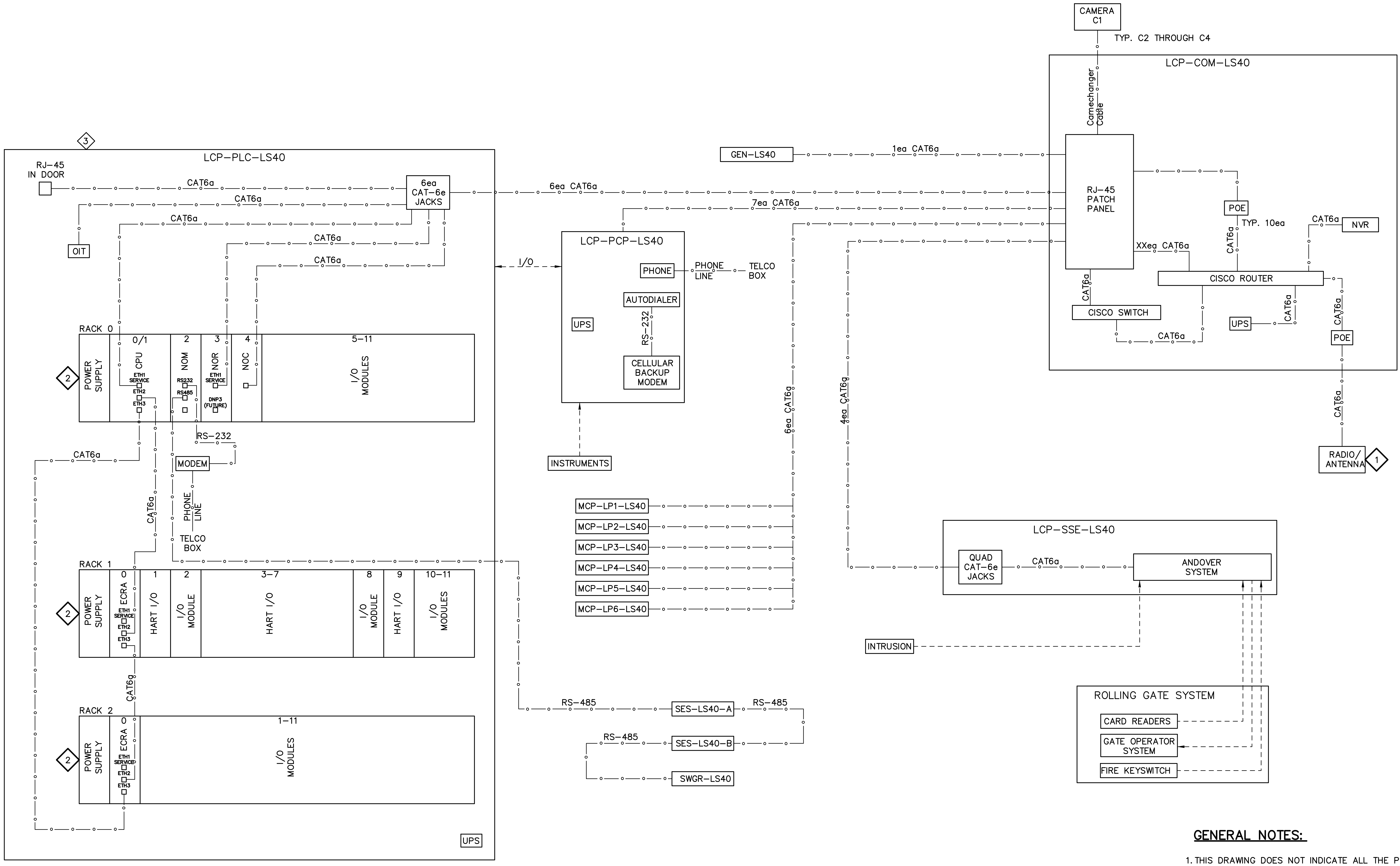
CAMERA C1
TYP. C2 THROUGH C4
LCP–COM–LS40
Camechanger Cable
GEN–LS40
1ea CAT6a
RJ–45 PATCH PANEL
POE
TYP. 10ea
CAT6a
NVR
XXea CAT6a
CISCO ROUTER
CISCO SWITCH
UPS
POE
RADIO/ ANTENNA
1
3
LCP–PLC–LS40
RJ–45 IN DOOR
CAT6a
6ea CAT–6e JACKS
6ea CAT6a
7ea CAT6a
OIT
LCP–PCP–LS40
I/O
PHONE
PHONE LINE
TELCO BOX
AUTODIALER
RS–232
UPS
CELLULAR BACKUP MODEM
INSTRUMENTS
6ea CAT6a
4ea CAT6a
RACK 0
POWER SUPPLY
0/1
CPU
ETH1 SERVICE
ETH2
ETH3
2
NOM
RS232
RS485
3
NOR
ETH1 SERVICE
DNP3 (FUTURE)
4
NOC
5–11
I/O MODULES
RS–232
MODEM
PHONE LINE
TELCO BOX
RACK 1
ECRA
HART I/O
I/O MODULE
3–7
8
9
10–11
I/O MODULES
RACK 2
1–11
UPS
MCP–LP1–LS40
MCP–LP2–LS40
MCP–LP3–LS40
MCP–LP4–LS40
MCP–LP5–LS40
MCP–LP6–LS40
LCP–SSE–LS40
QUAD CAT–6e JACKS
ANDOVER SYSTEM
INTRUSION
ROLLING GATE SYSTEM
CARD READERS
GATE OPERATOR SYSTEM
FIRE KEYSWITCH
RS–485
SES–LS40–A
SES–LS40–B
SWGR–LS40

COMMUNICATIONS DIAGRAM

KEY NOTES:

1. MOUNTED ON ANTENNA POLE. SEE PLAN VIEWS FOR MORE DETAILS. Radwin Model RW–55A0–0150.
2. FURNISH ALL PLC RACKS AND PLC MODULES TO MEET THE REQUIREMENTS OF THIS PROJECT. NOT ALL MODULES AND RACKS ARE SHOWN. MODULE PLACEMENT SHALL BE AS INDICATED AND AS REQUIRED BY THE SPECIFICATIONS.

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DES RB
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CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

INSTRUMENTATION

P&ID SHEET 7

CITY PROJECT NO. WS90400085
DATE: 08/2024
I–10 SHEET 134 OF 134
CAD FILE: CSILS40IN07.dwg