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 **SAL DiCICCIO**
DISTRICT 7 **YASSAMIN ANSARI**
DISTRICT 8 **CARLOS GARCIA**

CITY MANAGER
JEFFREY BARTON

CITY ENGINEER
ERIC J. FROBERG, P.E.

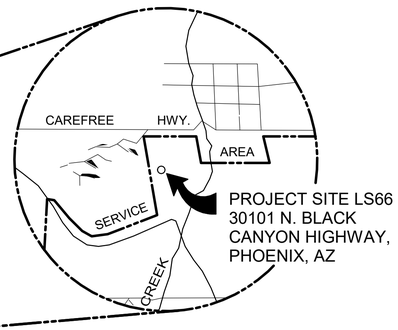
WATER SERVICES DIRECTOR
TROY HAYES, P.E.

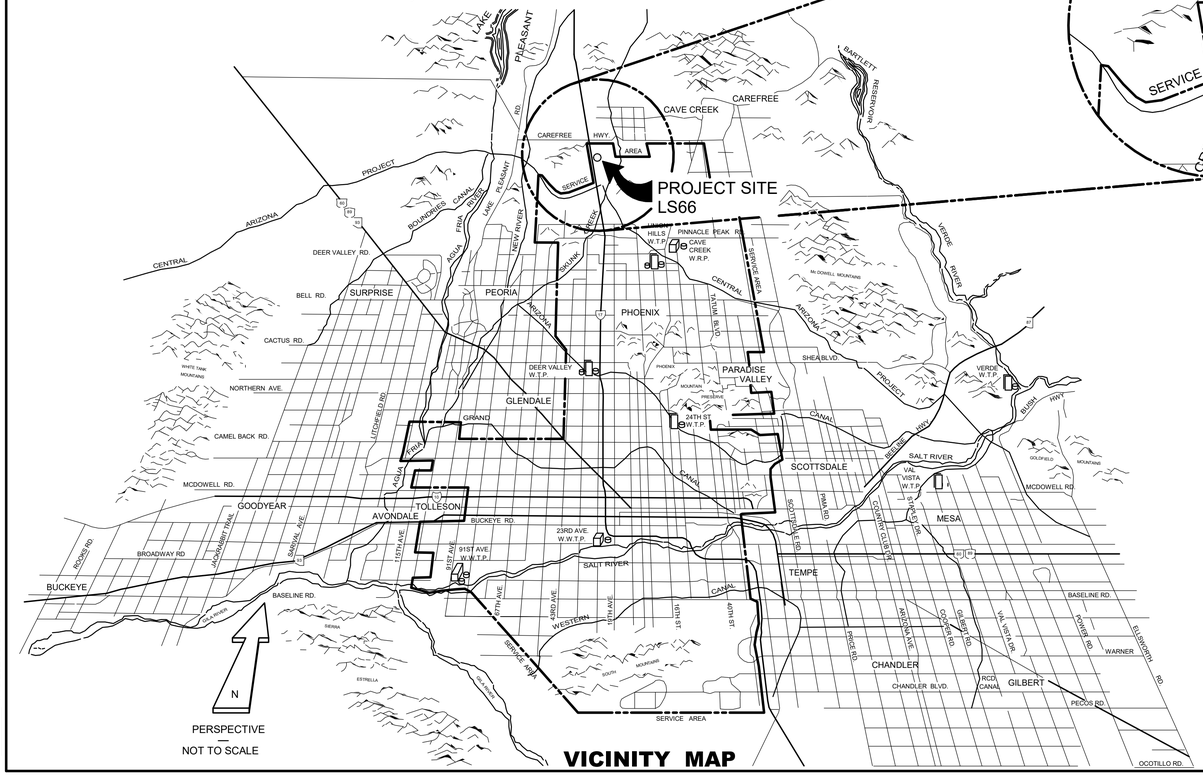
City of Phoenix

WATER SERVICES DEPARTMENT

LIFT STATION NO. 66 REFURBISHMENT

INDEX NO. WS90400084





VICINITY MAP

JANUARY 2023
VOLUME 2 OF 2
DRAWINGS 1 TO 80

GARVER

1620 West Fountainhead Parkway
Suite 503
Tempe, AZ 85282
Phone: 480-646-5366

APPROVALS

Patty Kennedy 01/19/2023

WATER SERVICES DEPARTMENT DATE

1/4/2023

WWR-22-00654 MARICOPA COUNTY ENVIRONMENTAL SERVICES DEPARTMENT DATE

Registered Professional Engineer
CERTIFICATE NO.
60517
JONATHON
CHILL
Date Signed 1/11/23
ARIZONA, U.S.A.

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:38:13 PM

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

FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED OR MADE AVAILABLE TO ANY PERSON EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

GENERAL			
100% SET	DISCIPLINE	SHEET NO.	DESCRIPTION
ISSUED	G	01	COVER SHEET
ISSUED	G	02	INDEX OF DRAWINGS
ISSUED	G	03	GENERAL CONVENTIONS AND ABBREVIATIONS
ISSUED	G	04	CIVIL NOTES, LEGEND, AND ABBREVIATIONS
ISSUED	G	05	PROCESS & INSTRUMENTATION DIAGRAM LEGEND
ISSUED	G	06	STRUCTURAL NOTES, LEGEND, AND ABBREVIATIONS
ISSUED	G	07	PROCESS MECHANICAL NOTES, LEGEND, AND ABBREVIATIONS
ISSUED	G	08	BUILDING MECHANICAL NOTES, LEGEND, AND ABBREVIATIONS
ISSUED	E	09	ELECTRICAL SYMBOLS AND LEGEND I
ISSUED	E	10	ELECTRICAL SYMBOLS AND LEGEND II
ISSUED	E	11	ELECTRICAL SYMBOLS AND LEGEND III
ISSUED	I	12	INSTRUMENTATION LEGEND AND SYMBOLS I
ISSUED	I	13	INSTRUMENTATION LEGEND AND SYMBOLS II
ISSUED	I	14	INSTRUMENTATION LEGEND AND SYMBOLS III
ISSUED	G	15	SURVEY CONTROL SHEET

DEMOLITION			
100% SET	DISCIPLINE	SHEET NO.	DESCRIPTION
ISSUED	C	16	SITE PLAN - EXISTING
ISSUED	C	17	SITE PLAN - DEMOLITION
ISSUED	E	18	ELECTRICAL SITE PLAN DEMOLITION
ISSUED	I	19	P&ID 1 - WET WELL 1 DEMOLITION
ISSUED	I	20	P&ID 2 - WET WELL 2 DEMOLITION
ISSUED	I	21	P&ID 3 - CHEMICAL FEED SYSTEM, AND WET SCRUBBER DEMOLITION
ISSUED	I	22	P&ID 4 - ODOR CONTROL SYSTEM - WET SCRUBBER DEMO
ISSUED	I	23	P&ID 5 - EYEWASH SHOWER AND SPRINKLER DEMO
ISSUED	M	24	EXISTING LIFT STATION DEMOLITION PLAN I
ISSUED	M	25	EXISTING LIFT STATION DEMOLITION PLAN II
ISSUED	M	26	EXISTING LIFT STATION DEMOLITION PLAN III
ISSUED	M	27	EXISTING LIFT STATION DEMOLITION SECTIONS
ISSUED	E	28	LIFT STATION PUMP AREA ELECTRICAL DEMOLITION PLAN
ISSUED	S	29	EXISTING ODOR CONTROL DEMOLITION PLAN
ISSUED	S	30	EXISTING ODOR CONTROL DEMOLITION SECTIONS
ISSUED	E	31	ODOR CONTROL ELECTRICAL DEMOLITION PLAN
ISSUED	M	32	ELECTRICAL BUILDING FIRE SUPPRESSION DEMOLITION

SITE CIVIL			
100% SET	DISCIPLINE	SHEET NO.	DESCRIPTION
ISSUED	E	33	ELECTRICAL BUILDING DEMOLITION PLAN
ISSUED	E	34	SINGLE LINE DIAGRAM I - DEMOLITION
ISSUED	E	35	SINGLE LINE DIAGRAM II - DEMOLITION
ISSUED	C	36	SITE PLAN - PROPOSED
ISSUED	C	37	SITE PLAN - PROPOSED GRADING PLAN
ISSUED	C	38	CONSTRUCTION ACCESS AND STAGING PLAN
ISSUED	C	39	YARD PIPING PLAN
ISSUED	E	40	ELECTRICAL SITE PLAN
ISSUED	E	41	LIGHTING SITE PLAN

INSTRUMENTATION			
100% SET	DISCIPLINE	SHEET NO.	DESCRIPTION
ISSUED	I	42	P&ID 6 - PUMPS WET WELL 1
ISSUED	I	43	P&ID 7 - PUMPS WET WELL 2
ISSUED	I	44	P&ID 8 - LIFT STATION DISCHARGE
ISSUED	I	45	P&ID 9 - BIOLOGICAL ODOR CONTROL SYSTEM
ISSUED	I	46	P&ID 10 - AUTODIALER
ISSUED	I	47	P&ID 11 - COMPRESSED AIR SYSTEM DEMO
ISSUED	I	48	P&ID 12 - NETWORK DIAGRAM

LIFT STATION			
100% SET	DISCIPLINE	SHEET NO.	DESCRIPTION
ISSUED	M	49	LIFT STATION MECHANICAL PLAN I
ISSUED	M	50	LIFT STATION MECHANICAL PLAN II
ISSUED	M	51	LIFT STATION MECHANICAL PLAN III
ISSUED	M	52	LIFT STATION MECHANICAL SECTIONS AND DETAILS I
ISSUED	M	53	LIFT STATION MECHANICAL SECTIONS AND DETAILS II
ISSUED	E	54	LIFT STATION PUMP AREA ELECTRICAL PLAN
ISSUED	M	55	LIFT STATION MECHANICAL ISOMETRIC

ODOR CONTROL FACILITY			
100% SET	DISCIPLINE	SHEET NO.	DESCRIPTION
ISSUED	S	56	ODOR CONTROL STRUCTURAL PLAN
ISSUED	S	57	ODOR CONTROL STRUCTURAL SECTIONS AND DETAILS
ISSUED	M	58	ODOR CONTROL MECHANICAL PLAN
ISSUED	M	59	ODOR CONTROL MECHANICAL SECTIONS AND DETAILS
ISSUED	E	60	ODOR CONTROL PLAN
ISSUED	M	61	ODOR CONTROL MECHANICAL ISOMETRIC

STANDARD CIVIL DETAILS			
100% SET	DISCIPLINE	SHEET NO.	DESCRIPTION
ISSUED	C	62	CIVIL DETAILS I

ELECTRICAL			
100% SET	DISCIPLINE	SHEET NO.	DESCRIPTION
ISSUED	E	63	ELECTRICAL BUILDING PLAN
ISSUED	E	64	SINGLE LINE DIAGRAM I
ISSUED	E	65	SINGLE LINE DIAGRAM II
ISSUED	E	66	PANEL SCHEDULES
ISSUED	E	67	CONTROL SCHEMATICS I
ISSUED	E	68	CONTROL SCHEMATICS II
ISSUED	E	69	CONDUIT BLOCK DIAGRAMS I
ISSUED	E	70	CONDUIT BLOCK DIAGRAMS II
ISSUED	E	71	ELECTRICAL DETAILS I
ISSUED	E	72	ELECTRICAL DETAILS II

ELECTRICAL BUILDING			
100% SET	DISCIPLINE	SHEET NO.	DESCRIPTION
ISSUED	S	73	ELECTRICAL BUILDING REPAIR PLAN
ISSUED	S	74	ELECTRICAL BUILDING SECTIONS AND DETAILS

STANDARD DETAILS			
100% SET	DISCIPLINE	SHEET NO.	DESCRIPTION
ISSUED	S	75	STRUCTURAL DETAILS I
ISSUED	S	76	STRUCTURAL DETAILS II
ISSUED	S	77	STRUCTURAL DETAILS III
ISSUED	S	78	STRUCTURAL DETAILS IV
ISSUED	M	79	MECHANICAL DETAILS I
ISSUED	M	80	MECHANICAL DETAILS II

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/13/2023 8:47:23 AM

GARVER

Registered Professional Engineer (Civil)
CERTIFICATE NO.
60517
JONATHON
O'HILL
Date Signed 1/13/23
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - GENERAL

INDEX OF DRAWINGS

COPYRIGHT © 2007-JANUARY

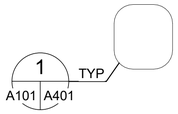
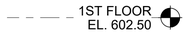
CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
G SHEET 02 OF 80
CAD FILE: CSELS66.RVT

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

FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

GENERAL CONVENTIONS

SYMBOL	DESCRIPTION
	CALLOUT DENOTES A CUT SECTION TYPICAL REFERENCE (THIS EXAMPLE OCCURS ON SHEET A101 REFERENCING SECTION No. 1 ON SHEET A201)
	CALLOUT DENOTES AN ELEVATION REFERENCE (THIS EXAMPLE OCCURS ON SHEET A101 REFERENCING ELEVATION No. 1 ON SHEET A201)
	CALLOUT DENOTES AN ENLARGED AREA TYPICAL REFERENCE (THIS EXAMPLE OCCURS ON SHEET A101 REFERENCING DETAIL No. 1 ON SHEET A401)
	CALLOUT DENOTES A STANDARD DETAIL REFERENCE
	CALLOUT DENOTES A KEYED NOTE REFERENCE
	CLOUDED REGION INDICATES A REVISED AREA
ROOM NAME 101 150 SF	SYMBOL INDICATES A ROOM / AREA DESIGNATION WITH ROOM NUMBER AND SQUARE FOOTAGE
	SYMBOL INDICATES A STRUCTURAL GRIDLINE OR DATUM
	SYMBOL INDICATES A DATUM IN A SECTION OR ELEVATION

ABBREVIATIONS

ABBREV	DESCRIPTION
ABV	ABOVE
AFF	ABOVE FINISH FLOOR
ANSI	AMERICAN NATIONAL STANDARDS INSTITUE
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
AUX	AUXILIARY
AWWA	AMERICAN WATER WORKS ASSOCIATION
BKR	BREAKER
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STRUCTURE
CITY, COP	CITY OF PHOENIX
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CENTERLINE
CMU	CONCRETE MASONRY UNIT
COGEN	COMBINED HEAT AND POWER GENERATION
COL	COLUMN
CONT	CONTINUOUS
DIA	DIAMETER
EA	EXHAUST AIR, EXPANSION ANCHOR, EACH
EL, ELEV	ELEVATION
ELEC	ELECTRICAL
ENCL	ENCLOSURE
FA	FIRE ALARM
FFE	FINISHED FLOOR ELEVATION
FL	FLOW LINE
FLR	FLOOR
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FEET, FOOT
GA	GAUGE, GAGE
GALV	GALVANIZED
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GRND	GROUND
H, HT	HEIGHT
HOA	HAND-OFF-AUTOMATIC
HORIZ	HORIZONTAL
HP	HORSEPOWER, HEAT PUMP
HYD	HYDRANT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
kVA	KILOVOLT-AMPERES
kW	KILOWATTS
LBS, #	POUNDS
LF	LINEAR FEET
MAG	MARICOPA ASSOCIATION OF GOVERNMENTS
MAX	MAXIMUM
N/A	NOT AVAILABLE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED
OH	OVERHEAD
OSHA	OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
PD	PROCESS DRAIN
PIV	POST INDICATOR VALVE
PNL	PANEL
PRV	PRESSURE RELIEVE VALVE

ABBREVIATIONS

ABBREV	DESCRIPTION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
PVC	POLYVINYL CHLORIDE
RE:	REFERENCE, REFER
REINF	REINFORCEMENT
REQD	REQUIRED
RM	ROOM
SEC	SECTION
SF	SQUAURE FEET
SHT	SHEET
SPEC	SPECIFICATIONS
SQ	SQUARE
STA	STATION
STD	STANDARD
SURF	SURFACE
SUSP	SUSPEND, SUSPENDED
T&B	TOP AND BOTTOM
THRU	THROUGH
TYP	TYPICAL
U/F	UNDER FLOOR
U/G	UNDER GROUND
U/S	UNDER SLAB
UL	UNDERWRITERS LABORATORIES, INC.
UNO	UNLESS NOTED OTHERWISE
V	VOLT, VALVE
VA	VOLT-AMPERE
VERT	VERTICAL
W	WATT, WIRE, WIDTH, WINDOW, WATER
W/	WITH
W/O	WITHOUT
WS	WATERSTOP
WT	WATERTIGHT, WEIGHT
XMFR	TRANSFORMER

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:38:17 PM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON O'HILL Date Signed 1/10/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - GENERAL

GENERAL CONVENTIONS AND ABBREVIATIONS

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
G SHEET 03 OF 80
CAD FILE: CSELS66.RVT

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

FOR CONSTRUCTION

GENERAL CIVIL NOTES

1. SAFETY SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR SAFETY, MEANS, OR METHODS OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL APPROPRIATE AGENCIES BEFORE WORK COMMENCES TO VERIFY THE TYPE, LOCATION, PROTECTION REQUIREMENTS, DEPTH OF ALL EXISTING UTILITIES, DRAINAGE FACILITIES, AND OTHER OBSTRUCTIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH REPAIRING AND/OR REPLACING ANY SUCH ITEMS DAMAGED DURING CONSTRUCTION.
3. CAUTION: UNDERGROUND UTILITIES SHOWN ARE TAKEN FROM EXISTING RECORDS AND ARE SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL CONTACT ALL UTILITY OWNERS AND CONFIRM LOCATIONS OF UTILITIES AT LEAST 48 HOURS BEFORE BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL ACCURATELY LOCATE AND UNCOVER ALL EXISTING UTILITIES BEFORE BEGINNING CONSTRUCTION. ANY DAMAGE RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. WHERE CROSSING OF EXISTING UTILITIES OCCUR, PROVIDE 12" MINIMUM CLEARANCE EXCEPT WATER MAINS WHICH SHALL HAVE SEPARATION AS REQUIRED MAG STANDARD DETAIL 404.
4. SEWER AND WATER SERVICE SHALL BE MAINTAINED DURING ENTIRE CONSTRUCTION PERIOD OR TEMPORARY FACILITIES PROVIDED.
5. CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING ACTIVITIES AND ASSOCIATED PERMITS REQUIRED FOR ALL EXCAVATIONS REQUIRED TO COMPLETE THE PROJECT.
6. APPROXIMATE LOCATIONS OF OVERHEAD POWER LINES MAY OR MAY NOT BE SHOWN ON PLANS. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR VERIFYING ALL LOCATIONS IN THE FIELD AND PLAN WORK IN THESE AREAS ACCORDINGLY.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE DRAINAGE AND COMPLIANCE WITH ALL GOVERNMENTAL STORM WATER REGULATIONS AND PERMITS (SWPPP) AS REQUIRED. CONTRACTOR SHALL OBTAIN NOI FROM APPROPRIATE STATE BODY PRIOR TO ANY CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PERMITS REQUIRED FOR WORK WITHIN STREAMS.
8. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROVIDE TRAFFIC CONTROL AND SIGNAGE FOR THE DURATION OF PROJECT AS REQUIRED BY THE NATIONAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES - PART VI, AND/OR ALL OTHER APPLICABLE GUIDELINES OF ADOT, MARICOPA COUNTY, CITY OF PHOENIX OR ANY OTHER AUTHORITIES HAVING JURISDICTION OVER THE PROJECT AREAS. ALL ROAD CLOSURE MUST BE APPROVED BY THE CITY OF PHOENIX TRAFFIC ENGINEER PRIOR TO ANY PUBLIC ROAD CLOSURES.
9. CONTRACTOR SHALL MAINTAIN TRAFFIC FLOW TO RESIDENCES AND BUSINESS WITH MINIMUM DISRUPTION OF ACCESS.
10. ALL STREETS AND DRIVEWAYS SHALL BE OPEN CUT UNLESS NOTED OTHERWISE.
11. ALL EXCAVATION BACKFILL OUTSIDE TRAFFIC WAYS SHALL BE COMPACTED TO MIN 95% STANDARD PROCTOR DENSITY TO PREVENT SETTLEMENT.
12. THE CONTRACTOR SHALL CONFIRM WITH THE CITY IF ANY EQUIPMENT SHALL BE SALVAGED PRIOR TO CONSTRUCTION.

PAVING AND GRADING NOTES

1. ALL PAVING MATERIALS AND CONSTRUCTION SHALL MEET THE MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) STANDARD SPECIFICATIONS WITH CITY OF PHOENIX SUPPLEMENT TO MAG UNLESS OTHERWISE NOTED.
2. ANY PAVEMENT DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED TO EQUAL OR BETTER CONDITION AT THE CONTRACTORS EXPENSE.
3. ANY DISTURBED AREAS NOT SPECIFICALLY DESIGNATED TO BE GRADED SHALL BE RESTORED TO EQUAL OR BETTER CONDITION AND SHALL BE GRADED TO DRAIN AS APPROVED BY THE ENGINEER.
4. FINAL PAVEMENT SURFACES SHALL NOT BE PLACED UNTIL ALL MAJOR CONSTRUCTION ACTIVES HAVE CONCLUDED.
5. ANY CHANGES TO FINAL GRADE ELEVATIONS AS SHOWN ON THE PLANS SHALL BE APPROVED BY THE ENGINEER.
6. ALL ASPHALT AND CONCRETE PAVING REMOVED AND REPLACED SHALL BE NEAT SAW CUT.
7. ALL TRENCHING AND EXCAVATION SHALL BE IN ACCORDANCE WITH CITY OF PHOENIX STANDARD DETAILS, SPECIFICALLY DETAIL P1200 TYPE B FOR PAVED AREAS AND TYPE E FOR UNPAVED AREAS.

CIVIL LEGEND NOTES

1. GRAY SCALED LINE TYPES AND SYMBOLS INDICATE EXISTING ITEMS. BOLD SCALED LINE TYPES AND SYMBOLS INDICATE PROPOSED ITEMS.
2. ADDITIONAL PROCESS LINES MAY BE DENOTED BY A LINE TYPE WITH THE FLOW STREAM IDENTIFIER.
3. LINES OF 12 INCH DIAMETER OR GRATER ARE SHOWN AT NOMINAL DIAMETER . LINES LESS THAN 12 INCH DIAMETER ARE SHOWN AS A SINGLE LINE.

YARD PIPING NOTES

3. MINIMUM COVER OVER PIPING SHALL BE 3'-0", MEASURED FROM FINISHED GRADE.
4. PROVIDE MINIMUM PIPE COVER, AS SPECIFIED. IN GENERAL LAY PIPE TO UNIFORM GRADES BETWEEN THE ELEVATIONS SHOWN, UNLESS OTHERWISE APPROVED. IN SOME CASES, EXISTING CONDITIONS PROHIBIT UNIFORM GRADES BETWEEN THE ELEVATIONS SHOWN, AND FIELD ADJUSTMENTS TO UNIFORM GRADES ARE REQUIRED AS APPROVED BY ENGINEER.
5. SIZE OF FITTINGS SHOWN ON PLANS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE AS SPECIFIED FOR ADJACENT STRAIGHT RUN OF PIPE.
6. ALL JOINTS SHALL BE WATERTIGHT.
7. THRUST AT FITTINGS SHALL BE RESISTED BY RESTRAINED JOINTS AS SPECIFIED AND AS REQUIRED TO RESIST THRUST, UNLESS OTHERWISE APPROVED BY ENGINEER.
8. CONTRACTOR SHALL LOCATE AND UNCOVER ALL CONNECTIONS TO EXISTING LINES, AND ANY POSSIBLE CONFLICTS WITH PROPOSED FACILITIES AND VERIFY LOCATION, ELEVATION, PIPE MATERIAL, AND PIPE O.D. PRIOR TO ANY CONSTRUCTION.
9. CONTRACTOR SHALL MAINTAIN AND PROTECT ALL EXISTING BURIED PIPING AND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGED UNDERGROUND FACILITIES.
10. ALL SMALL DIAMETER PIPING SHALL BE INSTALLED AS SHOWN ON DRAWINGS WITH ALL FITTINGS AND VALVES AS REQUIRED TO PROVIDE A FUNCTIONAL PIPELINE AS SPECIFIED.
11. ALL BURIED VALVES SHALL BE INSTALLED WITH VALVE BOX AS SPECIFIED.
12. ALL PIPELINE SHUTDOWNS SHALL BE COORDINATED WITH THE OPERATORS. A WRITTEN WORK PLAN SHALL BE SUBMITTED AND APPROVED BY THE ENGINEER AND CITY 7 DAYS PRIOR TO ANY SHUTDOWNS.
13. ROCK SHALL BE UNDERCUT A MINIMUM OF 4" AND PIPE BEDDED IN ABC. NO SEPARATE PAY ITEM EXISTS FOR ROCK EXCAVATION. ALL EXCAVATION SHALL BE CONSIDERED TO BE UN-CLASSIFIED EXCAVATION AND SUBSIDIARY TO OTHER BID ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF THE EXISTING PIPE, EXISTING MANHOLES, AND ANY EXCESS MATERIALS RESULTING FROM THE WORK.
15. THE LIFT STATION MUST REMAIN IN SERVICE DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE WITH COP OPERATIONS STAFF TO MANAGE FLOWS BETWEEN THE EXISTING FORCE MAINS TO FACILITATE CONSTRUCTION. THE CONNECTION TO THE EXISTING INFLUENT MH SHALL ALSO BE MADE UNDER LIVE FLOW CONDITIONS. THE CONTRACTOR SHALL PROVIDE A SHUT DOWN/OPERATION PLAN TO COP AND THE ENGINEER 7 DAYS PRIOR TO ANY CHANGE IN OPERATION FOR CONSTRUCTION. IN CASE OF A SPILL ALL SEWAGE SHALL BE CLEANED UP IMMEDIATELY AND THE AFFECTED AREA SHALL BE CLEANED AS REQUIRED IN THE SPECIFICATIONS. IN CASE OF SPILL OR EMMAERGENCY THE CONTRACTOR SHALL NOTIFY CITY OF PHOENIX BY CALLING 602-262-6691, BETWEEN 6 A.M. TO 2:30 P.M., MONDAY THROUGH FRIDAY, AND ON WEEKENDS OR HOLIDAYS, CALL 602-261-8000.
16. CONTRACTOR SHALL PREVENT STORM WATER AND DEBRIS FROM ENTERING PIPES AND MANHOLES AT ALL TIMES. ALL PIPES AND MANHOLES SHALL BE SECURELY PLUGGED AT THE END OF EACH DAY.

CIVIL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
C	COMMUNICATION	TOS	TOE OF SLOPE
CATV	CABLE TV		TREE LINE
	EASEMENT LINE	UGE	UNDERGROUND ELECTRIC
X	FENCE	UGT	UNDERGROUND TELEPHONE
FP	FLOODPLAIN		WATER EDGE
	FLOODWAY	W	WATER LINE
	FLOWLINE	WSL	WATER SERVICE LINE
G	GAS LINE	W1	POTABLE WATER
OHE	OVERHEAD ELECTRIC	W2	NON-POTABLE WATER
PD	PROCESS DRAIN	(A)	INDICATES ABANDONED LINE
PL	PROPERTY LINE	12"	12" INDICATES SIZE OF LINE
R/W	RIGHT-OF-WAY		EXISTING PIPE TO BE ABANDONED
SS	SANITARY SEWER		EXISTING PIPE TO BE REMOVED
SSL	SEWER SERVICE LINE		SHRUB/BUSH
SD	STORM DRAIN		
SF	SILT FENCE		TREE
TOB	TOP OF BANK		

CIVIL LEGEND (CONT'D)

SYMBOL	DESCRIPTION
	BENCH MARK
	BOLLARD
	CATCH BASIN/JUNCTION BOX
CO	CLEANOUT
	CONCRETE HEADWALL
EB	ELECTRIC BOX
EDM	ELECTRIC DUCT MARKER
EMH	ELECTRIC MANHOLE
EM	ELECTRIC METER
FOC	FIBER OPTIC BOX
FOC	FIBER OPTIC CABLE RISER/PEDESTAL
FOMH	FIBER OPTIC MANHOLE
	FIRE HYDRANT
	FLARED END SECTION (FES)
GM	GAS METER
	GAS REGULATOR
	GUY WIRE ANCHOR
ICV	IRRIGATION CONTROL VALVE
	LIGHT POLE
MH	MANHOLE
MW	MONITORING WELL
PD	PROCESS DRAIN MANHOLE
	PROPERTY PIN
	RIP RAP
SS	SANITARY SEWER MANHOLE
	SIGN
	SLOPE DIRECTION INDICATOR
	SPRINKLER HEAD
SD	STORM DRAIN MANHOLE
	SURVEY CONTROL POINT
TELE	TELEPHONE JUNCTION BOX
TELE MH	TELEPHONE MANHOLE
	TELEPHONE PEDESTAL
CABLE	TELEVISION PEDESTAL
	UTILITY POLE
	VALVE
WM	WATER METER
	YARD HYDRANT/SPIGOT

SYMBOL	DESCRIPTION
	DEMOLISH
	EXISTING ASPHALT
	PROPOSED ASPHALT
	EXISTING CONCRETE
	PROPOSED CONCRETE
	GRAVEL ROAD OR DRIVE

N — SYMBOL INDICATES NORTH DIRECTION

0 10' 20' 40' 60' (IN FEET) — SYMBOL INDICATES A GRAPHICAL BAR SCALE

ABBREVIATIONS

ABBREV	DESCRIPTION
ABDN	ABANDON
ADOT	ARIZONA DEPARTMENT OF TRANSPORTATION
AFF	ABOVE FINISHED FLOOR
ALUM	ALUMINUM SULFATE
APPROX	APPROXIMATE
ASPH	ASPHALT
ASSY	ASSEMBLY
BC	BACK OF CURB
BLDG	BUILDING
BLK	BLOCK
BM	BENCHMARK
BOT	BOTTOM
C	CONDUIT
CAV	COMBINATION AIR RELEASE VALVE
CI	CAST IRON
CIP	CAST IRON PIPE
CJ	CONSTRUCTION JOINT
CL	CENTERLINE, CLASS
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS
COP	CITY OF PHOENIX
CP	CONTROL POINT
D	DRAIN
DCCN	DUAL CONTAINED CALCIUM NITRATE
DI	DUCTILE IRON
DIA	DIAMETER
DIPS	DUCTILE IRON PIPE SIZE
DIP	DUCTILE IRON PIPE
EA	EACH
EFF	EFFLUENT
EJ	ELECTRICAL JUNCTION BOX
EL, ELEV	ELEVATION
ELEC	ELECTRICAL
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EX	EXISTING
EXP	EXPANSION
FA	FOUL AIR
FCJ	FLOOR CONSTRUCTION JOINT
FES	FLARED END SECTION
FFE	FINISHED FLOOR ELEVATION
FH	FIRE HYDRANT
FG, FIN GR	FINISH GRADE
FL	FLOWLINE
FLG	FLANGED
FRP	FIBERGLASS REINFORCED PIPE
FT	FEET, FOOT
FTG	FOOTING
G	GUTTER
GL	GAS LINE
GR	GRADE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HWY	HIGHWAY
ID	INSIDE DIAMETER
IN	INCHES
INF	INFLUENT
INV	INVERT
JT	JOINT
LEN	LENGTH
LF	LINEAR FEET
LG	LONG
LIN	LINEAL, LINEAR
LOC	LOCATION
LT	LEFT
MANUF	MANUFACTURER
MAX	MAXIMUM
MGD	MILLION GALLONS PER DAY

ABBREV	DESCRIPTION
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
N	NORTH
NE	NORTHEAST
NG	NATURAL GAS
NW	NORTHWEST
NIC	NOT IN CONTRACT
NO,#	NUMBER
NPW	NON-POTABLE WATER
NTS	NOT TO SCALE
NWSL	NORMAL WATER SURFACE LEVEL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OVF	OVERFLOW
PC	POINT OF CURVE
PD	PROCESS DRAIN
PE	PLAIN END
PI	POINT OF INTERSECTION
PL, PLS	PLATE, PLACES
PO	PUSH ON
PP	POWER POLE
PRC	POINT OF REVERSE CURVE
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENT
PVC	POLYVINYL CHLORIDE
PW	POTABLE WATER
R, RAD	RADIUS
RCP	REINFORCED CONCRETE PIPE
RED	REDUCER
REINF	REINFORCEMENT
REQD	REQUIRED
RJ	RESTRAINED JOINT
ROW, R/W	RIGHT-OF-WAY
RP	RADIUS POINT
RS	RESILIENT SEAT
RT	RIGHT
RWW	RAW WASTEWATER
S	SOUTH, SLUDGE
SCH	SCHEDULE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SE	SOUTHEAST
SECT	SECTION
SF	SQUARE FEET
SHT	SHEET
SPEC	SPECIFICATIONS
SQ	SQUARE
SS	SANITARY SEWER
STA	STATION
STD	STANDARD
SW	SIDEWALK, SOUTHWEST
T&B	TOP AND BOTTOM
TBM	TEMPORARY BENCHMARK
TC	TIME CLOCK, TOP OF CURB
TEMP	TEMPORARY, TEMPERED
THK	THICKNESS
TS	TOP OF SIDEWALK
TOC	TOP OF CONCRETE
TOP	TOP OF PAVEMENT
TOS	TOP OF SLAB
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V	VOLT, VALVE
VERT	VERTICAL
VT	VENTILATOR
W	WIDTH, WATER
W/	WITH
W/O	WITHOUT
WL	WATER LINE
WS	WATERSTOP
WTM	WATER TRANSMISSION MAIN
WWF	WELDED WIRE FABRIC
X	BY

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY AUTHORIZED BY THE CITY OF PHOENIX OR REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
REVISION | ENGINEERING COMPANY | PROJECT NO. | PROJECT NAME | DATE | CAD FILE NAME | DWG NUMBER | REMARKS

Dwg File: L:\2019\19W11040 - PHX Lift Station 66 Refurbishment\Drawings\PHXLS66-01-G04
Plot Date: 1/13/2023 11:21:07 AM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON CHILL Date Signed 1/13/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JMC
DWN LAR
CKD CDG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - GENERAL

CIVIL NOTES, LEGEND, AND ABBREVIATIONS

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
G SHEET 04 OF 80
CAD FILE: PHXLS66-01-G04.dwg

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

FOR CONSTRUCTION

IDENTIFICATION, GENERAL

SYMBOL	DESCRIPTION
20FCV13	EQUIPMENT TAG
08-I-501	SHEET INTERFACE SHEET NUMBER DRAWING TYPE SEQUENCE NUMBER
08-I-501 XXXX	SHEET INTERFACE WITH PROCESS FLAG PROCESS

PIPING LINE TYPES

LINE	DESCRIPTION
	PROCESS LINE - PRIMARY
	PROCESS LINE - SECONDARY
	PACKAGE BOUNDARY
	AREA/BUILDING BOUNDARY
	SHOWN ELSEWHERE
//	AIR

PIPING, MISCELLANEOUS

SYMBOL	DESCRIPTION
	SLOPE ARROW ARROW DIRECTION DOWN
ST	LINE HEAT TRACED AND INSULATED ST = STEAM TRACED ET = ELECTRIC TRACED
	OUTSIDE GRADE LEVEL

ACCESSORIES AND APPURTENANCES

SYMBOL	DESCRIPTION
	UNION
	PLUG
	BLIND FLANGE
	HOSE CONNECTION
	SPRAY NOZZLE
	DRAIN
	FLEXIBLE CONNECTION, GENERAL
	FLEXIBLE HOSE
	QUICK CONNECTOR
1"	THREADED TAP
	FILTER
	`Y' TYPE STRAINER
	STRAINER
	EXPANSION JOINT
FCO	FLOOR CLEANOUT
P	GAUGE P = PRESSURE V = VACUUM T = TEMPERATURE dP = PRESSURE DIFFERENTIAL
	SLIDE GATE

VALVES

SYMBOL	DESCRIPTION
	CHECK VALVE
	GATE VALVE
	BUTTERFLY VALVE
	BALL CHECK
	BALL VALVE
	PLUG VALVE
	NEEDLE VALVE
	ROTARY VALVE
	KNIFE GATE VALVE
	MUD VALVE
	PINCH VALVE
	THREE-WAY VALVE
	FOUR-WAY VALVE
	GLOBE VALVE
	CHARACTERIZED OR VEE-BALL VALVE
	STOP CHECK VALVE
	DIAPHRAGM VALVE (SELF CONTAINED)
	AIR RELIEF
	PRESSURE CONTROL
	PRESSURE RELIEF VALVE
	VACUUM RELIEF VALVE
	STOP GATE
	SLIDE GATE
	HOSE VALVE (HV-X) OR (V-X) X = NO. IN SPECS
S	SAMPLE
	TELESCOPING VALVE

VALVE OPERATORS

SYMBOL	DESCRIPTION
	HAND OPERATOR
	HAND OPERATOR (LONG)
	CHAIN OPERATOR
F	FLOAT OPERATOR
	AIR DIAPHRAGM OPERATOR
	POSITIONER
S	SOLENOID OPERATOR
	CYLINDER OPERATOR
	PRESSURE BALANCED DIAPHRAGM OPERATOR
M	MOTOR OPERATOR
D	DIGITAL OPERATOR
EH	ELECTRO-HYDRAULIC OPERATOR
	FAIL ARROWS INDICATE OPEN PORTS
	LIMIT SWITCH

PROCESS EQUIPMENT

SYMBOL	DESCRIPTION
M	ELECTRIC MOTOR
V	VARIABLE SPEED DRIVE
RV SS	REDUCED VOLTAGE SOFT STARTER
FV NR	FULL VOLTAGE NON-REVERSING STARTER
CAS	CONTROL AND STATUS
G	ELECTRIC GENERATOR
	HYDRAULIC MOTOR
	AIR MOTOR
	SHAFT
	COUPLING
	DYNAMIC PUMP
	DYNAMIC COMPRESSOR
	POSITIVE DISPLACEMENT PUMP
	POSITIVE DISPLACEMENT COMPRESSOR
	EDUCTOR/EJECTOR
	HEATER, GENERAL
	HEATER W/FAN (INDUCED DRAFT)
	HEATER W/FAN (FORCED DRAFT)
	HEAT EXCHANGER, GENERAL
	HYDRAULIC CYLINDER
	AIR CYLINDER

INSTRUMENT PRIMARY ELEMENTS

SYMBOL	DESCRIPTION
	THREADED TAP
	THERMOWELL
	SIGHT FLOW INDICATOR
	ROTAMETER
	FLOW ORIFICE
	FLOW ORIFICE IN QUICK CHANGE FITTING
	SINGLE PORT PITOT
	VENTURI TUBE
	AVERAGING PITOT STATION
	FLUME
	WEIR
	TURBINE ELEMENT
	POSITIVE DISPLACEMENT FLOWMETER
	VORTEX SENSOR
	TARGET ELEMENT
MASS	MASS FLOWMETER
	SONIC FLOWMETER
M	MAGNETIC FLOWMETER
	pH ELECTRODE ASSEMBLY
P	PRESSURE SENSOR
	WATER HAMMER ARRESTER
	ULTRASONIC LEVEL TRANSMITTER
R	RADAR LEVEL TRANSMITTER
	FLOAT SWITCH

MEANING OF FUNCTIONAL INSTRUMENT IDENTIFICATION LETTERS

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME		USER CHOICE	USER CHOICE	USER CHOICE
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO(FRACTION)			
G	GAUGING(DIMENSIONAL)		GLASS		
H	HAND(MANUALLY INITIATED)				HIGH
I	CURRENT(ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME-SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT(PILOT)		LOW
M	MOTION	MOMENTARY			MIDDLE OR INTERMEDIATE
N	USER CHOICE		USER CHOICE	USER CHOICE	USER CHOICE
O	USER CHOICE		ORIFICE(RESTRICTION)		
P	PRESSURE OR VACUUM		POINT(TEST POINT)		
Q	QUANTITY OR EVENT	INTEGRATE OR TOTALIZE			
R	RADIATION		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNC.	MULTIFUNCTION
V	VIBRATION OR MECHANICAL ANALYSIS			VALVE, DAMPER, OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE			RELAY OR COMPUTE	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	
JI	SURGE ARRESTOR, SEE SPECIFICATIONS				

INSTRUMENTS OR FUNCTIONS

KEY SYMBOL BLOCK TAG	PRIMARY LOCATION; OPERATOR ACCESSIBLE	AUXILIARY LOCATION; OPERATOR ACCESSIBLE	LOCATION NOT NORMALLY OPERATOR ACCESSIBLE	FIELD MOUNTED
DISCRETE INSTRUMENTS				
SHARED DISPLAY SHARED CONTROL				
COMPUTER FUNCTION				
PROGRAMMABLE LOGIC CONTROLLER				

SIGNAL CONDITIONERS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
A/D	ANALOG TO DIGITAL	Σ	SUM
D/A	DIGITAL TO ANALOG	△	DIFFERENCE
I/P	CURRENT TO PRESSURE	√	SQUARE ROOT
P/I	PRESSURE TO CURRENT	f(x)	CHARACTERIZATION
F/I	FREQUENCY TO CURRENT	∫	INTEGRATION
I/I	CURRENT BOOST/ REPEATER		

INSTRUMENT POWER SUPPLY

120 PSIG IA - POWER SUPPLY, TYPE AND LEVEL SHOWN, ABBREVIATIONS AS FOLLOWS:
AS - AIR SUPPLY
IA - INSTRUMENT AIR
PA - PLANT AIR
ES - ELECTRIC SUPPLY
GS - GAS SUPPLY

INSTRUMENT LINE TYPES

LINE	DESCRIPTION
	PROCESS CONNECTION
	UNDEFINED SIGNAL
// // //	PNEUMATIC SIGNAL
	ELECTRIC SIGNAL
L L L	HYDRAULIC SIGNAL
X X X	CAPILLARY OR FILLED TUBE
	ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)
	ELECTROMAGNETIC OR SONIC SIGNAL (UNGUIDED)
	INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)
	MECHANICAL LINK
// // //	PNEUMATIC BINARY (ON-OFF) SIGNAL
	ELECTRIC BINARY (ON-OFF) SIGNAL

EQUIPMENT LINE TYPES

LINE	DESCRIPTION
	PROPOSED OR NEW EQUIPMENT
	EXISTING EQUIPMENT

AUX INSTRUMENTS OR FUNCTIONS

SYMBOL	DESCRIPTION
	TEST POINT, TERMINAL BLOCK WITH SLIDING LINK AND MINI-BANANA SOCKETS
P	PURGE OR FLUSHING DEVICE
I	INTERLOCK LOGIC WITH REFERENCE
	ANNULAR SEAL
	DIAPHRAGM SEAL
R	RESET FOR LATCH TYPE OPERATOR
	PANEL MOUNTED PATCHBOARD POINT
	PILOT LIGHT FOR PROCESS SIGNALS
	INSTRUMENTS SHARING COMMON HOUSING
+ - PS	LOOP POWER SUPPLY
pH	POWER OF HYDROGEN
TURB.	TURBIDITY

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR USE OTHER THAN AS CONTRACTED FOR EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:38:18 PM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON CHILL Date Signed 1/10/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - GENERAL

PROCESS & INSTRUMENTATION DIAGRAM LEGEND

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
G SHEET 05 OF 80
CAD FILE: CSELS66.RVT

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
PROJECT NAME
PROJECT NO.
ENGINEERING COMPANY
REVISION | DATE | CAD FILE NAME | DWG NUMBER | REMARKS

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

FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR CONSTRUCTION PURPOSES, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:38:19 PM

GENERAL NOTES:

1. GENERAL NOTES AND STANDARD DETAILS SHALL NOT REPLACE OR OVER RULE ANY STRUCTURE SPECIFIC NOTE, DETAIL, OR SPECIFICATION. STRUCTURE SPECIFIC NOTES AND DETAILS SHALL GOVERN OVER GENERAL NOTES AND STANDARD DETAILS.
2. BUILDING OCCUPANCY CATEGORY---------- III
3. DESIGN LIVE LOADS - 2018 IBC
   - ROOF WITHOUT REDUCTION---------- 20 PSF
   - FLOORS:
   - RESTROOMS---------- 80 PSF
   - STAIRS---------- 100 PSF
   - INDUSTRIAL AREAS---------- 250 PSF
   - AREAS WITH UNRESTRICTED VEHICULAR ACCESS----- AASHTO HS20
4. WIND LOAD PARAMETERS - ASCE 7-16
   - BASIC WIND SPEED---------- 108 MPH
   - EXPOSURE CATEGORY----------C
   - GCPI +/- 0.18 (ENCLOSED BUILDINGS)
5. SEISMIC DESIGN PARAMETERS - IBC 2018
   IMPORTANCE FACTOR, I--------1.25
   SITE CLASS----------D
   - SEISMIC SPECTRAL ACCELERATIONS
   - S_S ----------0.232 s
   - S^1 ----------0.075 s
   - SDC ----------B
   - DESIGN SPECTRAL ACCELERATIONS
   - S^{DS} ----------0.247 s
   - S^{D1} ----------0.121 s
6. THE STRUCTURE SHOULD NOT BE CONSIDERED TO BE STABLE DURING CONSTRUCTION UNTIL ALL ELEMENTS ARE IN PLACE AND CONNECTED. THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING ALL TEMPORARY CONSTRUCTION BRACING, AS REQUIRED.
7. CONSTRUCTION METHODS, PROCEDURES, AND SEQUENCES ARE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL TAKE THE ALL NECESSARY MEANS TO MAINTAIN AND PROTECT THE STRUCTURAL INTEGRITY OF ALL CONSTRUCTION, NEW AND EXISTING, AT ALL STAGES.
8. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO ANY PERTINENT WORK. ALL EXISTING CONDITIONS AND DIMENSIONS SHALL BE NOTED ON THE SHOP DRAWINGS.
9. COORDINATE WITH THE ARCHITECTURAL, CIVIL, MECHANICAL, STRUCTURAL, AND ELECTRICAL DRAWINGS, AND VERIFY THE LOCATIONS AND SIZES OF THE CHASES, OPENING, INSERTS, SLEEVES, FINISHES, CONDUITS, DEPRESSIONS AND OTHER PROJECT REQUIREMENTS.
10. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE DRAWINGS AND EXISTING CONDITIONS TO DETERMINE WHERE OPENINGS ARE REQUIRED IN WALLS AND SLABS.
12. STANDARD DETAILS APPLY UNLESS INDICATED OTHERWISE ON SPECIFIC STRUCTURE DRAWINGS.

GENERAL CONCRETE NOTES:

1. STRUCTURAL CONCRETE FOR BUILDING MEMBERS SHALL HAVE A SPECIFIED COMPRESSIVE STRENGTH OF 4,500 PSI UNO.
2. CONCRETE FOR SLABS SUBJECTED TO VEHICULAR WHEEL LOADS SHALL HAVE A SPECIFIED COMPRESSIVE STRENGTH OF 4,500 PSI.
3. HOLD SLUMP TO 3 TO 4 INCHES IN ALL FLOOR SLABS.
4. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4".
5. NON-PRESTRESSED CONCRETE REINFORCEMENT SHALL CONFORM TO ASTM A 615 GRADE 60.
6. REINFORCEMENT LAP SPLICES SHALL CONFORM TO ACI 318 AND ACI 350.
7. CONCRETE COVER OVER REINFORCEMENT SHALL CONFORM TO THE MINIMUM REQUIRED BY ACI 318 AND ACI 350, UNO.
8. REINFORCEMENT DETAILING AND PLACEMENT SHALL CONFORM TO ACI 318 AND ACI 315.
9. NO REINFORCING BAR SHALL BE WELDED OR FIELD BENT IN ANY MANNER, UNLESS SPECIFICALLY SHOWN OR NOTED ON THE DRAWINGS.
10. PROVIDE FULL EMBEDMENT FOR ALL DOWELS. IF NOT OTHERWISE SPECIFIED, DOWEL SIZE AND SPACING SHALL BE THE SAME AS MAIN REINFORCING.
11. MECHANICAL EQUIPMENT PADS ON FLOOR SLABS SHALL BE 6" THICK AND REINFORCED WITH #4 @ 12" EW, UNO.
12. TREMIES REQUIRED ON ALL POURS DEEPER THAN 5 FEET.
13.. CONTRACTOR SHALL SUBMIT TO ENGINEER FOR APPROVAL A SCHEDULE AND SEQUENCE OF CONCRETE PLACEMENT. SEQUENCE SHALL INCLUDE PERMITTING CURE TIME BETWEEN PLACEMENTS AT ADJACENT PROPOSED PLACEMENTS.
14. ALL CONSTRUCTION JOINTS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE INCORPORATED INTO THE STRUCTURE. ADDITIONAL CONSTRUCTION JOINTS TO FACILITATE CONSTRUCTION SHALL BE LOCATED AND DETAILED ON THE SHOP DRAWINGS FOR REVIEW. HORIZONTAL CONSTRUCTION JOINTS SHALL NOT BE PERMITTED IN WALLS AND BEAMS, UNLESS SHOWN ON THE STRUCTURAL DRAWINGS.
15. SUBSTITUTION OF EXPANSION OR DRILLED AND GROUTED-IN ANCHORS FOR EMBEDDED ANCHORS SHOWN ON THE DRAWINGS WILL NOT BE PERMITTED UNLESS APPROVED BY ENGINEER.
16. USE MANUFACTURER'S CERTIFIED DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT ANCHORAGE AND DETAILS. VERIFY EQUIPMENT SIZE AND WEIGHTS WITH ENGINEER PRIOR TO CONSTRUCTION OF ANY AND ALL EQUIPMENT PADS.

STRUCTURAL METAL NOTES:

1. WELDING SHALL CONFORM WITH AWS D1.1 OR D1.2 STRUCTURAL WELDING CODE.
2. ALL BOLTS FOR BEAM CONNECTIONS SHALL BE ASTM A325 WITH MINIMUM DIAMETER OF 1/2" UNO. ALL BOLTED CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS UNLESS NOTED AS SLIP CRITICAL. WASHERS SHALL BE INSTALLED UNDER NUTS OF FASTENERS WHEN REQUIRED BY THE SPECIFICATION FOR STRUCTURAL JOINTS.

FOUNDATION NOTES:

1. FLOOR SLAB CONSTRUCTION JOINTS (C.J.) SHALL BE PLACED AS SHOWN ON FOUNDATION PLANS AND SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO CONCRETE PLACEMENT.
2. FLOOR SLAB ISOLATION JOINTS SHALL BE 30# FELT UNO.
3. CONCRETE FLOOR AND SLAB ON GRADE MAY BE PLACED IN LANES. SPACING OF JOINTS SHALL BE AS SHOWN ON THE FOUNDATION PLAN. WHEN LANE PLACEMENT IS USED, CONSTRUCTION JOINTS SHALL BE USED FOR THE JOINTS BETWEEN LANES. SAW CUT CRACK CONTROL JOINTS SHALL BE PROVIDED ACROSS EACH LANE AT SPACING SHOWN ON PLANS.

ABBREVIATIONS

ABBREV	DESCRIPTION
AL	ALUMINUM
ARCH	ARCHITECT, ARCHITECTURAL
BG	BACK GOUGE
CCJ	CRACK CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
EF	EACH FACE
EJ	EXPANSION JOINT
ES	EVENLY SPACED, EACH SIDE
EW	EACH WAY
EXST	EXISTING
EXT	EXTERIOR
FD	FLOOR DRAIN
FND	FOUNDATION
FS	FOOTING STEP, FAR SIDE
IJ	ISOLATION JOINT
INT	INTERIOR
KIP	1,000 POUNDS
KLF	KIPS PER LINEAR FOOT
KSF	KIPS PER SQUARE FOOT
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL

ABBREVIATIONS

ABBREV	DESCRIPTION
LSL	LONG SLOT
MECH	MECHANICAL
NS	NEAR SIDE
OH	OPPOSITE HAND
OVS	OVERSIZED
PCF	POUNDS PER CUBIC FOOT
PJP	PARTIAL JOINT PENETRATION
PLF	POUNDS PER LINEAR FOOT
SIM	SIMILAR
SSL	SHORT SLOT
STL	STEEL
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOS	TOP OF STEEL
VCJ	VERTICAL CONSTRUCTION JOINT

LEGEND:

℄	CENTERLINE	%	PERCENT		WATERSTOP
°	DEGREES	PL	PLATE		DIRECTION OF DECK SPAN
FL	FLANGE	±	PLUS / MINUS		
GL	GRIDLINE				

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
PROJECT NAME
PROJECT NO.
ENGINEERING COMPANY
REVISION | DATE | CAD FILE NAME | DWG NUMBER | REMARKS

GARVER

Registered Professional Engineer (Texas)
CERTIFICATE NO.
70373
HARRY W. ELLIOTT
Digitally Signed 01/13/2023

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - GENERAL

STRUCTURAL NOTES, LEGEND, AND ABBREVIATIONS

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
G SHEET 06 OF 80
CAD FILE: CSELS66.RVT

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

FOR CONSTRUCTION

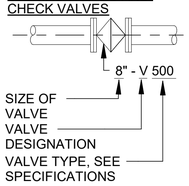
"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND ARE NOT TO BE FURNISHED TO ANY PERSON OR AGENCY, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

VALVE SYMBOLS

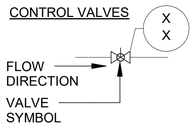
- GATE
- KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- VEE-BALL
- PLUG OR COCK
- NEEDLE
- DIAPHRAGM
- PINCH
- SWING CHECK
- BALL CHECK
- ROTARY
- HOSE VALVE (HV-X) OR (V-X) X = NO. IN SPECS
- SAMPLE (S)
- MUD
- PRESSURE RELIEF
- AIR RELEASE
- VACUUM RELIEF
- PRESSURE CONTROL
- TELESCOPING
- SLIDE GATE
- STOP GATE
- THREE-WAY / FOUR-WAY VALVE

VALVE DESIGNATIONS

MANUAL VALVES AND CHECK VALVES



CONTROL VALVES



BUBBLE WITH FUNCTION AND THE TAG NUMBER DESIGNATION (SEE I&C LEGEND FOR TAGGING INSTRUMENT IDENTIFICATION)

ACTUATOR SYMBOLS

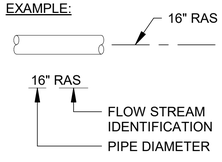
- PNEUMATIC DIAPHRAGM SPRING-OPPOSED, SINGLE OR DOUBLE ACTING
- PNEUMATIC CYLINDER SINGLE OR DOUBLE ACTING ACTUATED BY ONE INPUT
- (M) ELECTRIC MOTOR
- (H) HYDRAULIC
- MANUAL
- [S] SOLENOID

MISCELLANEOUS PIPING SYMBOLS

- STRAINER
- SIGHT GLASS
- FLEXIBLE (ELASTOMER) PIPE CONNECTION
- GAUGE WITH COCK
- THERMOMETER
- ROTAMETER
- PIG LAUNCHER
- PIG CATCHER
- BACKFLOW PREVENTER
- REDUCER
- FLEXIBLE HOSE
- FLEXIBLE CONNECTOR
- PS 26-1-2 TYPICAL INSTRUMENT SYMBOL (SEE I&C LEGEND)

PIPING DESIGNATION

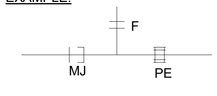
EXAMPLE:



PIPE FITTING AND END PATTERNS

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

EXAMPLE:



PIPE AND FITTING SYMBOLS

DOUBLE LINE	SINGLE LINE	
		EXISTING PIPE
		NEW PIPE
		EXISTING PIPE TO BE ABANDONED
		EXISTING PIPE TO BE REMOVED
		WELDED JOINT
		GROOVED END JOINT
		FLANGED JOINT
		MECHANICAL JOINT
		BELL & SPIGOT JOINT (LEADED)
		HUB & SPIGOT JOINT (RUBBER GASKET)
		BALL JOINT
		ADAPTER SIDE GROOVED END ADAPTER FLANGE
		FLANGED COUPLING ADAPTER
		FLANGED COUPLING ADAPTER WITH THRUST TIES
		FLEXIBLE COUPLING
		FLEXIBLE COUPLING WITH THRUST TIES
		STEEL BELLOWS EXP. JOINT
		ELASTOMER BELLOWS EXP. JOINT

DOUBLE LINE	SINGLE LINE	
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		LATERAL UP
		LATERAL DOWN
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		REDUCING BUSHING
		UNION
		CAP
		ANCHOR
		ELBOW, 90 DEGREE
		CROSS
		TEE
		ELBOW, 45 DEGREE
		LATERAL

NOTES:

1. ONLY FLANGED END CONNECTIONS ARE SHOWN HERE FOR DOUBLE LINE FITTINGS; FITTINGS WITH OTHER END PATTERNS ARE SHOWN SIMILARLY ON THE CONSTRUCTION DRAWINGS.
2. SYMBOLS SHOWN HERE FOR SINGLE LINE FITTINGS ARE GENERIC ONLY.
3. EXISTING PIPE AND EQUIPMENT IS SHOWN WITH A DASHED LINE AND/OR SCREENED AND IS NOTED AS EXISTING. NEW PIPING AND EQUIPMENT IS SHOWN WITH A HEAVY LINE.

GENERAL PIPING NOTES:

1. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
2. SIZE OF FITTINGS SHOWN ON PLANS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
3. LOCATION AND NUMBER OF PIPE SUPPORTS SHOWN IS ONLY APPROXIMATE. FINAL SUPPORT REQUIREMENTS SHALL BE DETERMINED IN THE FIELD AND REVIEWED BY THE ENGINEER PRIOR TO INSTALLATION.
4. ALL JOINTS SHALL BE WATERTIGHT. WALL PIPES OR PENETRATION SEALS SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO BACKFILL.
5. ALL FLEXIBLE CONNECTORS OR FLANGED COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST TIES, BLOCKS, OR ANCHORS, UNLESS OTHERWISE NOTED. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
6. SYMBOLS, LEGENDS, AND PIPE USE IDENTIFICATIONS SHOWN SHALL BE FOLLOWED THROUGHOUT THE PLANS, WHEREVER APPLICABLE. NOT ALL OF THE VARIOUS PIPING COMPONENTS ARE NECESSARILY USED IN THE PROJECT.
7. WHERE A GROOVED END COUPLING IS SHOWN, IT SHALL BE THE RIGID JOINT TYPE, UNLESS OTHERWISE SPECIFIED. WHERE A FLANGED COUPLING ADAPTER IS SHOWN, A STANDARD FLANGE SHALL BE JOINED TO THE COUPLING ADAPTER.

FLOW STREAM IDENTIFICATION

ABBREV	DESCRIPTION
D	DRAIN
DCCN	DUAL CONTAINED CALCIUM NITRATE
FA	FOUL AIR
FM	FORCE MAIN
NG	NATURAL GAS
NPW	NON-POTABLE WATER
OCD	ODOR CONTROL
PD	PLANT/PROCESS DRAIN
PW	POTABLE WATER
RW	RAW WASTEWATER
SS	SANITARY SEWER

GATE SYMBOLS

ELEVATION VIEW	PLAN VIEW	
		SLUICE
		BUTTERFLY
		FLAP
		SHEAR
		FABRICATED SLIDE
		STOP LOG

ABBREVIATIONS

ABBREV	DESCRIPTION
AWWA	AMERICAN WATER WORKS ASSOCIATION
CAV	COMBINATION AIR RELIEF VALVE
CPVC	CHLORINATED POLYVINYL CHLORIDE
DX	DIRECT EXPANSION
ECC	ECCENTRIC
EQUIP	EQUIPMENT
FLEX	FLEXIBLE
FOB	FLAT ON BOTTOM
FPM	FEET PER MINUTE
GAL	GALLON
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
N.O.	NORMALLY OPEN
NC	NORMALLY CLOSED
OS&Y	OUSIDE STEM AND YOKE
RPM	REVOLUTIONS PER MINUTE
SP	STATIC PRESSURE
VAC	VACUUM
VTR	VENT THROUGH ROOF
WC	WATER COLUMN
WPD	WATER PRESSURE DROP

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:38:20 PM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON CHILL Not Valid Unless Signed 1/13/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - GENERAL

PROCESS MECHANICAL NOTES, LEGEND, AND ABBREVIATIONS

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
G SHEET 07 OF 80
CAD FILE: CSELS66.RVT

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

FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR CONSTRUCTION PURPOSES EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

HVAC SYMBOLS:

- SUPPLY AIR DIFFUSER ARROWS INDICATE PATTERN. NO PATTERN INDICATES 4-WAY.
- RETURN AIR GRILL
- SUPPLY AIR SLOT
- RETURN AIR SLOT
- 12"ø — ROUND DUCTWORK, DIAMETER IN INCHES
- 20x12 — RECTANGULAR DUCTWORK, SIZE IN INCHES, FIRST NUMBER IS SIDE SHOWN, NET FREE AREA
- SUPPLY OR OUTSIDE AIR DUCT
- RETURN OR EXHAUST AIR DUCT
- D-1 / 500 — DIFFUSER/GRILL LABEL - TYPE DESIGNATION - AIRFLOW (CFM)
- RECTANGULAR DUCT BRANCH TAKEOFF WITH 45° BRANCH INLET
- ROUND DUCT BRANCH TAKEOFF WITH CONICAL INLET
- TURNING VANES
- POINT OF CONNECTION - NEW TO EXISTING
- M — MOTORIZED DAMPER
- MANUEL BALANCING DAMPER
- FIRE DAMPER
- T — THERMOSTAT
- H — HUMIDISTAT
- F — FIRESTAT
- T — TEMPERATURE SENSOR
- H — HUMIDITY SENSOR
- T — DUCT MOUNTED TEMPERATURE SENSOR
- H — DUCT MOUNTED HUMIDITY SENSOR
- F D — DUCT MOUNTED SMOKE DETECTOR
- SP — STATIC PRESSURE SENSOR
- 1 — KEYED NOTE REFERENCE

VALVE SYMBOLS:

- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- GATE VALVE
- GLOBE VALVE
- ANGLE GLOBE VALVE
- KNIFE VALVE
- NEEDLE VALVE
- PLUG VALVE
- PINCH VALVE
- PRESSURE CONTROL
- VACUUM RELIEF
- VEEBALL VALVE
- DIAPHRAGM VALVE
- THREE-WAY / FOUR-WAY VALVE
- M — MOTORIZED VALVE
- S — SOLENOID VALVE

PIPING SYMBOLS:

- CHS — CHILLED WATER SUPPLY
- CHR — CHILLED WATER RETURN
- HWS — HEATING HOT WATER SUPPLY
- HWR — HEATING HOT WATER RETURN
- LPS — LOW PRESSURE STEAM (15 PSI)
- PC — PUMPED CONDENSATE RETURN
- CR — CONDENSATE RETURN
- CD — CONDENSATE DRAIN
- D — DRAIN
- AHP — COMPRESSED AIR
- MU — MAKE-UP WATER
- RHG — REFRIGERANT HOT GAS LINE
- RS — REFRIGERANT SUCTION LINE
- RL — REFRIGERANT LIQUID LINE
- AAA — EXISTING PIPE, "AAA" DENOTES TYPE
- AAA — EXISTING PIPE TO BE REMOVED, "AAA" DENOTES TYPE
- ELBOW UP
- ELBOW DOWN
- TEE OUTLET UP
- TEE OUTLET DOWN
- VALVE IN DROP
- VALVE IN CENTER DROP
- VALVE IN RISE
- DIRECTION OF FLOW
- UNION
- STRAINER WITH BLOWDOWN VALVE
- CONCENTRIC REDUCER
- PIPE FLANGE
- THERMOMETER WELL
- FLEXIBLE CONNECTION

HVAC NOTES:

1. PROVIDE ACCESS DOORS TO ALL FIRE DAMPERS, SMOKE DAMPERS, EQUIPMENT, COILS, ETC. WHERE NOT DIRECTLY ACCESSIBLE THOROUGH AIR DEVICES OR REMOVABLE CEILING GRID. MINIMUM SIZE SHALL BE 18" X 10" UNLESS NOTED OTHERWISE.
2. ALL EQUIPMENT AND MATERIAL SHALL BE SUITABLE FOR ELEVATED TEMPERATURES INDICATED.
3. SEE STRUCTURAL PLANS FOR EXACT DIMENSIONS AND DETAILS OF THE BUILDING.
4. ALL HVAC WORK TO BE PER SMACNA AND ALL APPLICABLE CODES.
5. ALL DUCTS SHALL BE MOUNTED HIGH AS POSSIBLE AGAINST BOTTOM OF BEAMS EXCEPT AS REQUIRED TO AVOID CONFLICTS WITH INTERSECTING DUCTS. DIAGONALLY OFFSET DUCTS IMMEDIATELY BEFORE AND AFTER PASSING UNDER INTERSECTING DUCTS OR LARGE STRUCTURAL MEMBERS TO MAINTAIN DUCT TIGHT TO STRUCTURE.
6. PROVIDE TURNING VANES AT ALL ELBOWS GREATER THAN 45°. TURNING VANES SHALL BE SINGLE THICKNESS.
7. EXPOSED DUCTWORK, ETC. SHALL BE FURNISHED FREE OF VISUAL DEFECTS, SUITABLE FOR PAINTING AND SHALL BE PAINTED AS REQUIRED BY ARCHITECTURAL SPECIFICATIONS.
8. ALL RECTANGULAR SUPPLY AND RETURN DUCTS SHALL BE INTERNALLY LINED WITH 1" INSULATION. SEE SPECIFICATIONS FOR DETAILED INSULATION REQUIREMENTS.
9. DUCT SIZES SHOWN ON PLANS INDICATE NET FREE AREA.
10. DURING CONSTRUCTION, AFTER START-UP OF HVAC SYSTEMS, CONTRACTOR MUST MAINTAIN AND/OR REPLACE ON A REGULAR SCHEDULE ALL FILTERS IN THE HVAC SYSTEM. ONE (1) WEEK BEFORE THE FACILITY IS OCCUPIED, THE CONTRACTOR MUST REPLACE ALL AIR FILTERS WITH NEW FILTERS. DO NOT OPERATE HVAC SYSTEMS WITHOUT FILTERS IN PLACE.
11. BALANCE AIR SYSTEM TO PROVIDE INDICATED AIR FLOWS. SEE SPECIFICATIONS FOR OTHER TEST AND BALANCE REQUIREMENTS. SUBMIT TO ENGINEER FINAL BALANCE OF AIR AND WATER SYSTEMS (FLOW AND TEMPERATURE) FOR REVIEW.
12. THE CONTRACTOR SHALL COORDINATE AND VERIFY THE FOLLOWING WITH DIVISIONS 23 AND 26 PRIOR TO BID:

    DISCONNECTS:
    WHERE NOT FURNISHED WITH EQUIPMENT:
    FURNISHED UNDER DIVISION 26, INSTALLED UNDER DIVISION 26. WHERE FURNISHED WITH EQUIPMENT:
    FURNISHED UNDER DIVISION 23, INSTALLED UNDER DIVISION 26.

GENERAL MECHANICAL NOTES:

1. REFER TO SPECIFICATIONS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. REFER TO ALL PROJECT DRAWINGS FOR DETAILS OF CONSTRUCTION AND INSTALLATION REQUIREMENTS.
3. REFER TO GENERAL CONDITIONS AND SUPPLEMENTARY GENERAL CONDITIONS FOR THE CONTRACT. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR FULL COORDINATION OF PROJECT INCLUDING THE EQUIPMENT AND INSTALLATION OF THE MECHANICAL WORK.
4. CONTRACTOR SHALL BECOME, PRIOR TO BID, THOROUGHLY FAMILIAR WITH THE REQUIREMENTS OF THESE NOTES AS WELL AS OTHER REQUIREMENTS SHOWN ON THE CONTRACT DOCUMENTS.
5. ALL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENTS OR GEOMETRICAL RELATIONSHIPS OF EQUIPMENT AND SERVICES. THEY ARE NOT INTENDED TO SPECIFY OR SHOW EVERY OFFSET, SEQUENCE, DEVICE, OPTION, FITTING, OR COMPONENT.
6. INFORMATION AND COMPONENTS SHOWN ON RISER DIAGRAMS OR DETAILS, BUT NOT SHOWN ON PLANS, AND VICE VERSA, SHALL BE PROVIDED AS IF EXPRESSLY REQUIRED BY BOTH.
7. CONTRACTOR SHALL NOT SCALE DRAWINGS. DRAWINGS SPECIFIC TO THIS DISCIPLINE DO NOT LIMIT THE RESPONSIBILITY OF WORK REQUIRED BY THE CONTRACT DOCUMENTS.
8. UNLESS NOTED OTHERWISE, THE INDICATION AND/OR DESCRIPTION OF ANY ITEM, IN THE DRAWINGS OR SPECIFICATIONS CARRIES WITH IT THE INSTRUCTION TO FURNISH AND INSTALL THE ITEM.
9. EXACT LOCATIONS OF ALL EQUIPMENT, THERMOSTATS, SWITCHES, DUCTS, DIFFUSERS, ETC. SHALL BE COORDINATED WITH OTHER TRADES. CEILING MOUNTED LIGHTING AND ELECTRICAL REQUIREMENTS TAKE PRECEDENCE OVER CEILING MOUNTED MECHANICAL REQUIREMENTS.
10. SEE STRUCTURAL DRAWINGS FOR BUILDING DETAILS AND DIMENSIONS. COORDINATE PLACEMENT OF ALL THERMOSTATS, ROOF MOUNTED EQUIPMENT, ETC. WITH STRUCTURAL TRADES.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK WITH THAT OF OTHER TRADES. REFER TO STRUCTURAL, ELECTRICAL, AND OTHER DRAWINGS FOR COMPLETE INFORMATION PRIOR TO BID.
12. NO OTHER TRADES, I.E., ELECTRICAL, CEILING, PLUMBING, ETC., SHALL BE SUSPENDED, HUNG, OR SUPPORTED FROM DUCTWORK OR PIPING.
13. REPLACE ALL FEATURES REMOVED OR DAMAGED DURING THE COURSE OF THE WORK.
14. ALL WORK MUST COMPLY WITH THE REQUIREMENTS OF LOCAL CODES AND ORDINANCES. WHERE INSPECTIONS ARE REQUIRED BY AUTHORITIES HAVING JURISDICTION, WORK MUST NOT BE CONCEALED UNTIL INSPECTIONS AND TESTING ARE COMPLETED AND ACCEPTED.
15. HOUSEKEEPING PADS: EXCEPT WHERE STRUCTURAL EQUIPMENT SUPPORT PADS ARE CALLED FOR ON THE PLANS, PROVIDE CONCRETE HOUSEKEEPING PADS FOR ALL GROUND AND/OR FLOOR MOUNTED EQUIPMENT. UNLESS OTHERWISE INDICATED, PADS MUST BE MINIMUM OF 4 INCHES THICK WITH CHAMFERED EDGES. WHERE PADS ARE INSTALLED ON CONCRETE FLOORS, DOWEL RODS PENETRATING INTO BOTH THE PAD AND THE FLOOR (MINIMUM 4 RODS PER PAD) MUST BE USED TO ANCHOR PADS IN POSITION.
16. ALL WIRING INSTALLED FOR CONTROLS, POWER, INTERLOCKS, ETC. WHICH ARE TO BE INSTALLED IN OCCUPIED SPACES OR IN RETURN AIR PLENUMS MUST BE PLENUM RATED OR INSTALLED IN CONDUIT UNLESS OTHERWISE INDICATED. ALL SUCH INSTALLATIONS MUST MEET NFPA AND NEC REQUIREMENTS AND LOCAL CODES.
17. SEAL ALL ROOF AND WALL PENETRATIONS. FLASH AND COUNTER-FLASH ALL ROOF PENETRATIONS. MINIMUM ACCEPTABLE HEIGHT OF FLASHING IS EIGHT (8) INCHES ABOVE ROOF.
18. EXTERIOR DUCTWORK EXPOSED TO WEATHER: CROWN TOP SURFACE FOR WATER RUNOFF AND COMPLETELY SEAL ALL JOINTS WITH UV RESISTANT WEATHERPROOF SEALANT.

ABBREVIATIONS

ABBREV	DESCRIPTION
A/C	AIR CONDITIONER, AIR CONDITIONING
ABV	ABOVE
ACC	AIR COOLED CHILLER
AMP	AMPERES
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APD	AIR PRESSURE DROP
ARI	AIR CONDITIONING & REFRIGERATION INSTITUTE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION & AIR CONDITIONING ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
AWWA	AMERICAN WATER WORKS ASSOCIATION
BD	BACKDRAFT DAMPER
BFW	BOILER FEED WATER
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STRUCTURE
BTU	BRITISH THERMAL UNIT
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CIRC	CIRCULATING
CLG	CEILING
COL	COLUMN
CPVC	CHLORINATED POLYVINYL CHLORIDE
CU	COPPER
CW	COLD WATER
DB	DRY BULB
dB	DECIBEL
DDC	DIRECT DIGITAL CONTROL(S)
DISC	DISCONNECT
DX	DIRECT EXPANSION
EAT	ENTERING AIR TEMPATURE
ECC	ECCENTRIC
EDB	ENTERING DRY BULB
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
FLA	FULL LOAD AMPERES
FLEX	FLEXIBLE
FOB	FLAT ON BOTTOM
FPM	FEET PER MINUTE
GAL	GALLON
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRND	GROUND
H, HT	HEIGHT
HD	HEAD, HUB DRAIN
HSTAT	HUMIDISTAT
HTG	HEATING
HTR	HEATER
HW	HOT WATER
Hz	HERTZ
IN WC	INCHES OF WATER COLUMN
kWH	KILOWATT-HOUR
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB

ABBREVIATIONS

ABBREV	DESCRIPTION
LP	LOW PRESSURE
LRA	LOCKED ROTOR AMPERES
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MBTU, MBH	1000 BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MD	MOTORIZED DAMPER
MOCP	MAXIMUM OVER CURRENT PROTECTION
N.O.	NORMALLY OPEN
NC	NOISE CRITERIA, NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OS&Y	OUSIDE STEM AND YOKE
PH, Ø	PHASE
RA	RETURN AIR
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
RECIRC	RECIRCULATE
RH	RELATIVE HUMIDITY
RHG	REFRIGEREANT LIQUID
RLA	RUNNING LOAD AMPERES
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
SA	SUPPLY AIR
SD	SMOKE DAMPER, STORM DRAIN
SEC	SECTION
SP	STATIC PRESSURE
ST	SOUND TRAP, STEAM TRAP
SURF	SURFACE
SUSP	SUSPEND, SUSPENDED
THRU	THROUGH
TOD	TOP OF DUCT
TP	TOTAL PRESSURE
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
U/F	UNDER FLOOR
U/S	UNDER SLAB
UL	UNDERWRITERS LABORATORIES, INC.
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VTR	VENT THROUGH ROOF
WB	WET BULB
WC	WATER COLUMN
WPD	WATER PRESSURE DROP
WT	WATERTIGHT, WEIGHT
°C	DEGREES CELSUIS
°F	DEGREES FAHRENHEIT

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
PROJECT NAME
PROJECT NO.
ENGINEERING COMPANY
DATE
CAD FILE NAME
DWG NUMBER
REVISION
REMARKS

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:38:21 PM

GARVER

Registered Professional Engineer (City) CERTIFICATE NO. 60517 JONATHON CHILL Date Signed 1/10/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - GENERAL

BUILDING MECHANICAL NOTES, LEGEND, AND ABBREVIATIONS

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
G SHEET 08 OF 80
CAD FILE: CSELS66.RVT

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

A

A	ARCHITECTURAL
AB	ANCHOR BOLT
ABC	AGGREGATE BASE COURSE ASPHALTIC
AC	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 TEMPERATURE CONTROL
ATM	ASYNCHRONOUS 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 BYPASS
BP	BUSHING
BUSH	BEGIN VERTICAL CURVE
BVC	

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 CONTRACTION JOINT
CLR	CLEAR OR CLEARANCE
CMMS	COMPUTER MAINTENANCE MANAGEMENT SYSTEM
CMP	COMPUTER
CMU	CEMENT MASONRY UNIT
CNR	CONRNER
CODP	CLEAN OUT DECK PLATE
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS OR CONTINUATION
COP	CITY OF PHOENIX
CPLG	COUPLING
CTR	CENTER

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
DMH	DRAINAGE MANHOLE
DT	DAY TANK
DTL	DETAIL
DWG	DRAWING
DWG	DRAWING WEB FORMAT
DWL	DOWEL

E

(E)	EXISTING
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, B...)
EVC	EACHWAY
EW	EACH WAY
EWS	ENGINEERING WORK STATION
EXIST	EXISTING

F

FAB	FABRICATED, FABRICATOR
FC	FLEXIBLE CONNECTOR
FCU	FIELD CONTROL UNIT
FCP	FIELD CONTROL PANEL
FD	FLOOR DRAIN
FDDI	FIELD DISTRIBUTED 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
FJ	FORMED JOINT

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
HP	HIGH POINT
H1E	(STD) HOOK ONE END
H2E	(STD) HOOK TWO ENDS
HK,HKS	HOOK OR HOOKS
HORIZ	HORIZONTAL

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
IF	INSIDE FACE

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
LONG.	LONGITUDINAL
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
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
(N)	NEW

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
OF	OUTSIDE FACE

P

P–#	PUMP NO. #
PC	PIECE
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
PL	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
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 GALVANIZED 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
SJ	SAWN JOINT
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
TOM	TOP OF MASONARY
TOR	TOP OF REGISTER
TOW/TW	TOP OF WALL
TOS	TOP OF STEEL
TPH	TONS PER HOUR
TR	TRANSDUCER
TRANSV.	TRANSVERSE
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 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

ELECTRICAL ABBREVIATIONS

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 CONTROL
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	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
EMERG	EMERGENCY
EMH	ELECTRICAL MANHOLE
EP	ELECTROPNEUMATIC

F

FBO	FURNISHED BY OTHERS
FE	FLOW ELEMENT
FIT	FLOW INDICATING TRANSMITTER
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	INSTRUMENTATION
IHH	INSTRUMENTATION HANDHOLE
IMH	INSTRUMENTATION MANHOLE
IN	INCH
INST	INSTANTANEOUS
INSTR	INSTRUMENT
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
PD	PLATE DESIGNATION
PF	POWER FACTOR
PFM	POWER FACTOR METER
PH	PHASE
PNL	PANEL
PP	POWER PANEL
PR	PAIR
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	WATT–HOUR DEMAND METER
WHDR	WATT–HOUR DEMAND
WHM	RECORDER WATT–HOUR METER
WM	WATT METER
WP	WATER PROOF
WX	WATT TRANSDUCER

X

XFMR	TRANSFORMER

Z

ZD	CIRCUIT BREAKER AUXILIARY CONTACT
ZM	ISOLATION SWITCH AUXILIARY CONTACT

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

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

USER:bbence FILE:C:\Users\bbence\appdata\local\temp\AcPublish_3408\E–01 ELECTRICAL SYMBOLS AND LEGEND 1 (NG–E–LS66A–01).dwg DATE:1/10/23 TIME:12:33pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 – GENERAL

ELECTRICAL SYMBOLS AND LEGEND 1

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

E–01 SHEET 9 OF 80

CAD FILE: NG–E–LS66A–01.dwg

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

CONSTRUCTION

FOR

"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.

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 CLAS-SIFICATION SHOWN.

BREAKERS

SINGLE LINE	PLAN	
52 XXXX/XXXX	——	DRAWOUT MEDIUM VOLTAGE POWER BREAKER UPPER NUMBER INDICATES LONG TIME TRIP SETTING LOWER NUMBER INDICATES BREAKER CONTINUOUS CURRENT RATING
XP XAT/XAF	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, Z		COMBINATION MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR, MAGNETIC CONTACTOR AND OVERLOAD PROTECTION X= AMPERE SIZE Z= NEMA SIZE
Z	Z	MOTOR STARTER WITH MAGNETIC CONTACTOR AND OVERLOAD PROTECTION 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	PAGING SPEAKER, WALL MOUNTED, BI-DIRECTIONAL NOTATIONS SAME AS ABOVE
(S) H3	
(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

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
	SEPARABLE CONNECTOR SIFICATION SHOWN.

CONTROL DIAGRAM COMPUTER CONTOL SYSTEM INPUT\OUTPUT

DI #	DISCRETE INPUT
DO #	DISCRETE OUTPUT
AI #	ANALOG INPUT
AO #	ANALOG OUTPUT

ELEMENTS

	RESISTOR OR RESISTIVE ELEMENT
	OVERLOAD RELAY THERMAL ELEMENT (HEATER)
	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
ITP	ITP	INTERMEDIATE TERMINAL PANEL

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.
I	FIRE ALARM DUCT SMOKE DETECTOR PHOTOCELL TYPE UNLESS OTHERWISE NOTED: "I" DENOTES IONIZATION TYPE.
	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 ROD IN TEST 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 P	SINGLE POLE, DOUBLE THROW MOMENTARY CONTACT SWITCH, CENTER OFF
$P	SINGLE POLE SWITCH AND PILOT LIGHT
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 X= PANELBOARD NAME "b"-CONTROLLED BY SWITCH "b" 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 X/Y/a NL	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
	INFARED LIGHT

MISCELLANEOUS

SINGLE LINE	PLAN	
	——	CONDUCTORS OR CONDUITS CROSSING PATHS BUT NOT CONNECTED
	——	CONDUCTORS ELECTRICALLY CONNECTED
	——	INDICATES LIMITS OF EQUIPMENT OR WIRING ENCLOSURE
FU# AMPS	——	FUSE, AMPERE RATING AS NOTED
FU# AMPS	——	FUSE DISCONNECT
	——	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)
XXX		MOTOR SWITCH
		DEMOLITION

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

USER:bbence FILE:Y:\66-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-02 ELECTRICAL SYMBOLS AND LEGEND II (NG-E-LS66A-02).dwg DATE:1/18/23 TIME:12:33pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 - GENERAL

ELECTRICAL SYMBOLS AND LEGEND II

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

E-02 SHEET 10 OF 80

CAD FILE: NG-E-LS66A-02.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.

POWER SWITCHES

SINGLE LINE	PLAN	DESCRIPTION
		NON–FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, * AMPERE RATING
	F	FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, AMPERE RATING AND FUSE SIZE AS NOTED *AMPERE RATING *FUSE RATING
	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
TAG KVA PRIMARY SECONDARY PHASE	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
RATE ATS–# S N	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 SV	SOLENOID OPERATED VALVE
ETM		ELAPSED TIME METER

PUSH BUTTONS

SINGLE LINE	DESCRIPTION
	EMERGENCY STOP PUSHBUTTON WITH RED MUSHROOM HEAD OPERATOR (MAINTAINED CONTACT)
	PUSHBUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY CLOSED
	PUSHBUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY OPEN
	START–STOP PUSHBUTTON CONTROL STATION, MAINTAINED CONTACT WITH LOCKOUT DEVICE ON STOP
	2 POSITION SELECTOR SWITCH, NORMALLY CLOSED
	2 POSITION SELECTOR SWITCH, NORMALLY OPEN
	2 POSITION 2 POLE SELECTOR SWITCH
LOCAL COMPUTER	
	2 POSITION 3 POLE SELECTOR SWITCH
	3 POSITION SELECTOR SWITCH, NORMALLY CLOSED
	3 POSITION SELECTOR SWITCH, NORMALLY OPEN
	3 POSITION 3 POLE SELECTOR SWITCH
	4 POSITION SELECTOR SWITCH, NORMALLY OPEN

PUSH BUTTONS CONT.

	4 POSITION SELECTOR SWITCH, NORMALLY CLOSED
	4 POSITION 4 POLE SELECTOR SWITCH

RELAY CONTACTS

	MOTOR STARTER, TIMING, OR CONTROL RELAY COIL NUMBER AS INDICATED
ON/OFF DELAY	0–## MIN RUNG1 RED RUNG2 RED
	NORMALLY OPEN RELAY CONTACT
	NORMALLY CLOSED RELAY CONTACT
	NOTC–NORMALLY OPEN TIMED CLOSING, WHEN ENERGIZED
	NCTO–NORMALLY CLOSED TIMED OPENING, WHEN ENERGIZED
	NOTO–NORMALLY OPEN, TIMED OPENING WHEN DE–ENERGIZED
	NCTC–NORMALLY CLOSED, TIMED CLOSING WHEN DE–ENERGIZED

SWITCH CONTACTS

SINGLE LINE	
TAGNUMBER OR	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
	NORMALLY OPEN SWITCH
	NORMALLY CLOSED SWITCH
	LIQUID LEVEL (FLOAT) NORMALLY CLOSED, OPENS ON RISING LEVEL
	LIQUID LEVEL (FLOAT) SWITCH NORMALLY OPEN, CLOSES ON RISING LEVEL
	PRESSURE SWITCH NORMALLY OPEN, CLOSES ON RISING PRESSURE
	PRESSURE SWITCH NORMALLY CLOSED, OPENS ON DROPPING PRESSURE
V	VACUUM SWITCH NORMALLY OPEN, CLOSES ON RISING PRESSURE
V	VACUUM SWITCH NORMALLY CLOSED, OPENS ON DROPPING PRESSURE
	DIFFERENTIAL PRESSURE SWITCH NORMALLY OPEN, CLOSES ON RISING DIFFERENTIAL PRESSURE
	DIFFERENTIAL PRESSURE SWITCH NORMALLY CLOSED, OPENS ON RISING DIFFERENTIAL PRESSURE
	TEMPERATURE SWITCH NORMALLY OPEN, CLOSES ON RISING TEMPERATURE
	TEMPERATURE SWITCH NORMALLY CLOSED, OPENS ON RISING TEMPERATURE
	FLOW SWITCH (AIR, WATER, ETC.,) NORMALLY OPEN, CLOSES ON INCREASED FLOW
	FLOW SWITCH (AIR, WATER, ETC.,) NORMALLY CLOSED, OPENS ON INCREASED FLOW
	POSITION (LIMIT) SWITCH NORMALLY OPEN

SWITCH CONTACTS CONT.

SINGLE LINE	
	POSITION (LIMIT) SWITCH NORMALLY CLOSED
	POSITION (LIMIT) SWITCH NORMALLY OPEN–HELD CLOSED
	POSITION (LIMIT) SWITCH NORMALLY CLOSED–HELD OPEN
	TORQUE SWITCH NORMALLY OPEN, CLOSES ON HIGH TORQUE
	TORQUE SWITCH NORMALLY CLOSED, OPENS ON HIGH TORQUE
	PUSH–TEST, 110V S6 LAMP UNLESS NOTED, LETTER IS LENS COLOR * R–RED G–GREEN B–BLUE

RECEPTACLES

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

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

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER:

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

USER:bbence FILE:Y:\66-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-03 ELECTRICAL SYMBOLS AND LEGEND III (NG-E-LS66A-03).dwg DATE:1/18/23 TIME:12:33pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 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 66
REFURBISHMENT

LIFT STATION NO. 66 – GENERAL

ELECTRICAL SYMBOLS AND LEGEND III

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

E-03 SHEET 11 OF 80

CAD FILE: NG-E-LS66A-03.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.

INSTRUMENT IDENTIFICATION TABLE

LETTER	FIRST LETTER — MEASURED OR INITIATING VARIABLE	SUCCEEDING LETTERS — 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

XXXX / # * — FACE OF MCC OR PANEL MOUNTED

XXXX / # * — INTERIOR OF PANEL MOUNTED

XXXX / # * — FIELD INDICATOR

XXXX / # * — PANEL INDICATOR

X / # * — OPERATOR INTERFACE FUNCTION

X / # * — AUXILIARY INTERFACE FUNCTION

X / # * — PLC FUNCTION

XXXX / # * — IN-LINE

XXXX / # * — TAPPED OR SAMPLED

XXXX / # * — EXPOSED, SUBMERGED PROBE OR GAS DETECTOR

ANALYSIS INSTRUMENTS

XXXX / # *

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
ETM = ELAPSED TIME METER
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
ROA = RUN/OFF/AUTO
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

XXXX / # *

* = 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
$\sqrt{}$ = 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

XXXX

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

ELECTRIC SIGNAL
HYDRAULIC SIGNAL
PNEUMATIC SIGNAL
FIBER OPTIC MEDIUM
SOFTWARE LINK (E.G. RS232, 485)
CAPILLARY TUBE

CONTROL SYSTEM INPUTS & OUTPUTS

PULSE INPUT
PULSE OUTPUT
ANALOG INPUT
ANALOG OUTPUT
DIGITAL INPUT
DIGITAL OUTPUT

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.

R — NOHC

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

V* — DENOTES VENDOR PACKAGE BOUNDARY

V* = VENDOR PROVIDED INDIVIDUAL PIECE OF EQUIPMENT
O* = OWNER PROVIDED INDIVIDUAL PIECE OF EQUIPMENT

FLOW STREAM LINE LEGEND

XXXX-YY" — PRIMARY FLOW STREAM
XXXX-YY" — SECONDARY FLOW STREAM
XXXX-YY" — TERTIARY FLOW STREAM

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

NN/XX — TO PROC/EQP — FLOW STREAM NO. NN TO DWG. NO. XX

FROM PROC/EQP — NN/XX — SIGNAL NO. NN FROM DWG. NO. XX

FROM PROC/EQP — TO PROC/EQP — 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

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

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

USER:bbence FILE:Y:\066-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Instrumentation\I-01 INSTRUMENTATION LEGEND AND SYMBOLS I (NG-I-LS66A-01).dwg DATE:1/18/23 TIME:12:35pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 - INSTRUMENTATION

INSTRUMENTATION LEGEND AND SYMBOLS I

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

I-01 SHEET 12 OF 80

CAD FILE: NG-I-LS66A-01.dwg

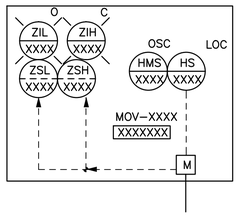
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

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.

ACTUATOR SYMBOLS

- XX — CYLINDER ACTUATOR
- XX — DIAPHRAGM ACTUATOR (PRESSURE BALANCED)
- XX — DIAPHRAGM ACTUATOR (SPRING OPPOSED)
- E/H XX — ELECTROHYDRAULIC ACTUATOR
- E/P XX — ELECTROPNEUMATIC ACTUATOR
- E XX — ELECTRIC ACTUATOR
- MANUAL ACTUATOR
- Z XX — POSITIONER
- PRESSURE RELIEF
- S XX — SOLENOID ACTUATOR



MOTOR OPERATED 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
- YS XXXX XXXV — DISCONNECT SWITCH
  YS = AUXILIARY CONTACT
  XXXX = LOOP NO.
  XXXV = VOLTAGE
- DRAIN
- EJECTOR
- EMERGENCY EYEWASH & SHOWER
- EVAPORATOR
- F — FILTER
- FLEXIBLE HOSE
- GRINDER
- HEAT EXCHANGER
- LOAD CELL
- MIXER (STATIC)
- MIXER
- LARGE MOTOR
- M — SMALL MOTOR
- OIL EXPANSION CHAMBER
- PULSATION DAMPENER
- REDUCER
- ROTARY CHEMICAL FEEDER
- SEPARATOR
- SILENCER
- STRAINER
- TURBINE
- V — VENT TO ATMOSPHERE
- D — CONDENSATION DRAIN
- OIT — OPERATOR INTERFACE TERMINAL
- Y — ALARM SIREN
  Y = H-PROCESS ALARM HORN
  S-PERSONNEL SAFETY SIREN
- AHH XXXX — STROBE
  AAH = ALARM STROBE
  XXXX = LOOP NO.

FLOW ELEMENTS

- ADFM — ACOUSTIC DOPPLER FLOW METER
- BATCHMETER (PROPELLER/VALVE)
- DENSITY (MICROWAVE)
- FLUME FLOW ELEMENT
- M — MAGNETIC FLOW ELEMENT (IN LINE)
- M — MAGNETIC FLOW ELEMENT (INSERTION)
- MASS FLOW CORIOLIS TYPE
- T — 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
- SG — SIGHT GLASS

PUMP SYMBOLS

* INDICATES SPEED
CS = CONSTANT 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
- K — 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

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

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

GARVER

EIC ENGINEERS

Registered Professional Engineers Exam (Civil) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 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 66
REFURBISHMENT

LIFT STATION NO. 66 – INSTRUMENTATION

INSTRUMENTATION LEGEND AND SYMBOLS II

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

I-02 SHEET 13 OF 80

CAD FILE: NG-I-LS66A-02.dwg

USER:bbence FILE:Y:\66-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Instrumentation\I-02 INSTRUMENTATION LEGEND AND SYMBOLS II (NG-I-LS66A-02).dwg DATE:1/18/23 TIME:12:35pm

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
Disconnect Opened	DiscOpned
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
Suction Pressure	SctnPress
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

FOR CONSTRUCTION

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

"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.

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

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	REMARKS
#	X	#	X	X	X	X
#	X	#	X	X	X	X
#	X	#	X	X	X	X

DWG NUMBER

USER:bbence FILE:Y:\66–Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Instrumentation\I–03 INSTRUMENTATION LEGEND AND SYMBOLS III.dwg DATE:1/10/23 TIME:12:35pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Civil) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 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 66
REFURBISHMENT

LIFT STATION NO. 66 – INSTRUMENTATION

INSTRUMENTATION LEGEND AND SYMBOLS III

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

I–03 SHEET 14 OF 80

CAD FILE: NG–I–LS66A–03.dwg

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

FOR CONSTRUCTION

SURVEY NOTES:

1. CHISELED SQUARE ON TOP OF CURB AT NORTHEAST RETURN AT NORTH VALLEY PKWY AND SONORAN DESERT HAVING AN ELEVATION OF 1580.567 FEET (CITY OF PHOENIX DATUM, NGVD29).
2. VERTICAL DATUM FOR THIS SITE IS ON CITY OF PHOENIX DATUM, NGVD29.
3. HORIZONTAL CONTROL FOR THIS SITE IS ON NAD 83 DATUM.

GENERAL NOTES:

1. ALL INFORMATION PRESENTED ON THIS SHEET WAS PROVIDED TO GARVER BY THE SURVEYOR. ALL QUESTIONS, CONCERNS OR DISCREPANCIES RELATED TO THE SURVEY SHALL BE COORDINATED WITH THE SURVEYOR.
2. SURVEY CONDUCTED BY:

HERSEY, AERNI AND ASSOCIATES
5025 S. ASH AVE., SUITE B-3
Tempe, AZ 85282
Phone: 480.897.0018
Fax: 480.897.9688
E-mail: hjohnson@herseyaerni.com

3. The parcel boundary is shown for informational purposes only, there has not been any boundary survey work performed for this parcel as part of this project.
4. Survey information was provided to Garver by Hersey, Aerni & Associates (HAA) and was not verified by the Engineer. All existing surface features and grades are based on data provided by HAA.
5. Data provided by HAA is assumed to be reliable but is subject to verification by the Contractor. The Contractor shall notify Engineer of any discrepancy between the data provided by HAA and what is observed in the field that may impact the design or construction prior to the start of Construction.

LEGEND:
△ BENCHMARK

SURVEY CONTROL			
POINT #	NORTHING	EASTING	ELEVATION
10001	1007622.61	640421.80	1580.57

0 150' 300' 600' 900'
(IN FEET)

BENCHMARK NOTE:

BASED ON DATA PROVIDED BY HAA, BENCHMARK IS ASSUMED TO BE CITY OF PHOENIX BENCHMARK 1574 WITH THE FOLLOWING PROPERTIES:
LATITUDE: 33769684
LONGITUDE: - 112112732
LOCATION: 25 AVE (NORTH VALLEY PKWY) AND SONORAN
ELEVATION: 1580.567
DESCRIPTION: CHISELED SQUARE ON TOP OF CURB AT NORTH END OF NORTHEAST RETURN (SONORAN PARKWAY IS LONE MOUNTAIN ALIGNMENT.)

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY STATED IN THE CODE, OR AS REQUIRED BY LAW.
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

GARVER

Registered Professional Engineer (Civil)
CERTIFICATE NO.
60517
JONATHON
DHILLON
Date Signed 1/13/23
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JMC
DWN LAR
CKD CDG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - SITE CIVIL

CONTROL SITE PLAN

COPYRIGHT © 2007-JANUARY

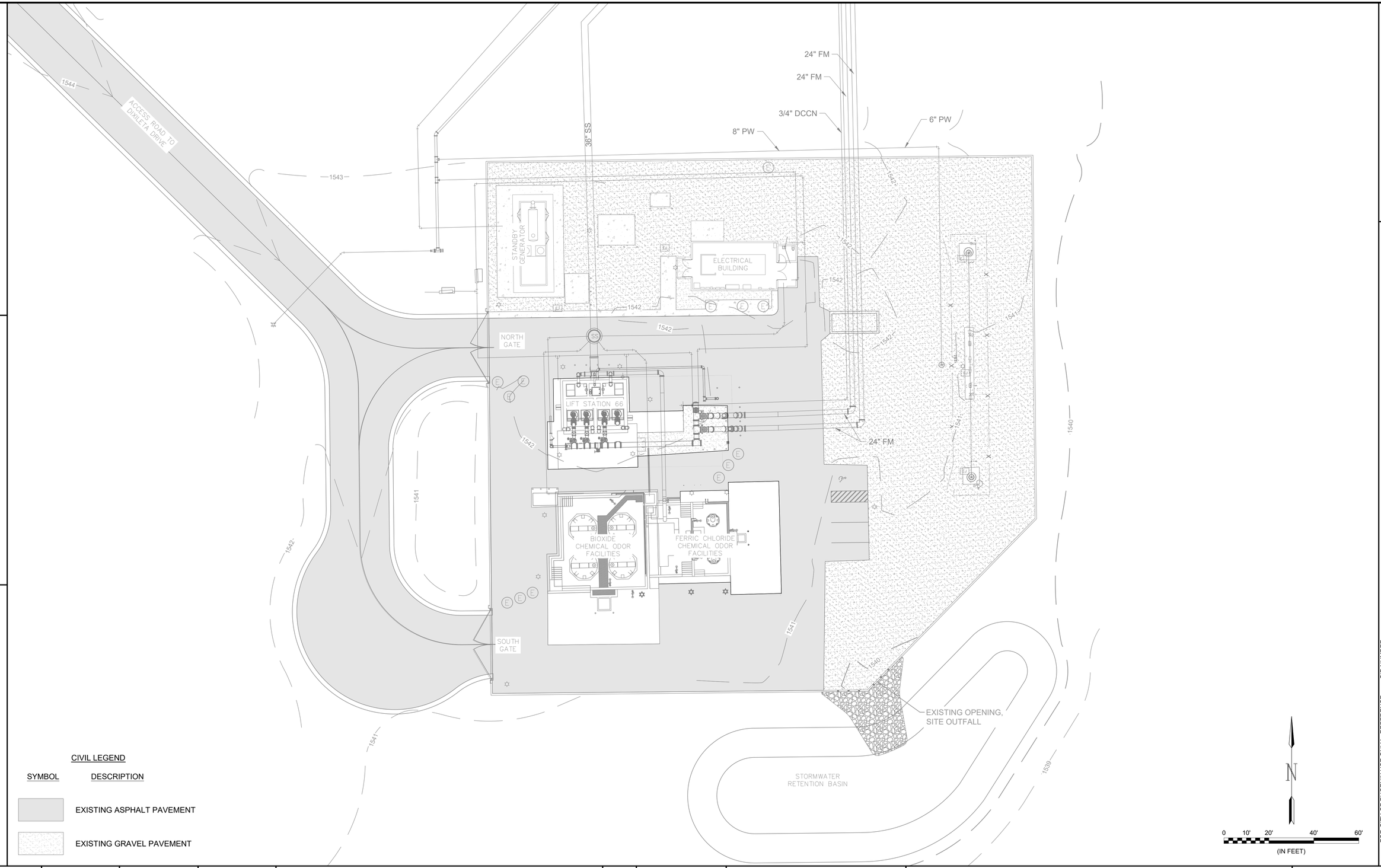
CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
G SHEET 15 OF 80
CAD FILE: PHXLS66-01-G05.dwg

Dwg File: L:\20191\W11040 - PHX Lift Station 66 Refurbishment\Drawings\PHXLS66-01-G05
Plot Date: 1/13/2023 11:21:15 AM

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

FOR CONSTRUCTION

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW. THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



CIVIL LEGEND

SYMBOL	DESCRIPTION
	EXISTING ASPHALT PAVEMENT
	EXISTING GRAVEL PAVEMENT

FOR CITY OF PHOENIX USE ONLY - REFERENCE

CID NUMBER:

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

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON O'HILL Date Signed 1/13/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JMC
DWN LAR
CKD CDG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - SITE CIVIL

SITE PLAN - EXISTING

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

C SHEET 16 OF 80

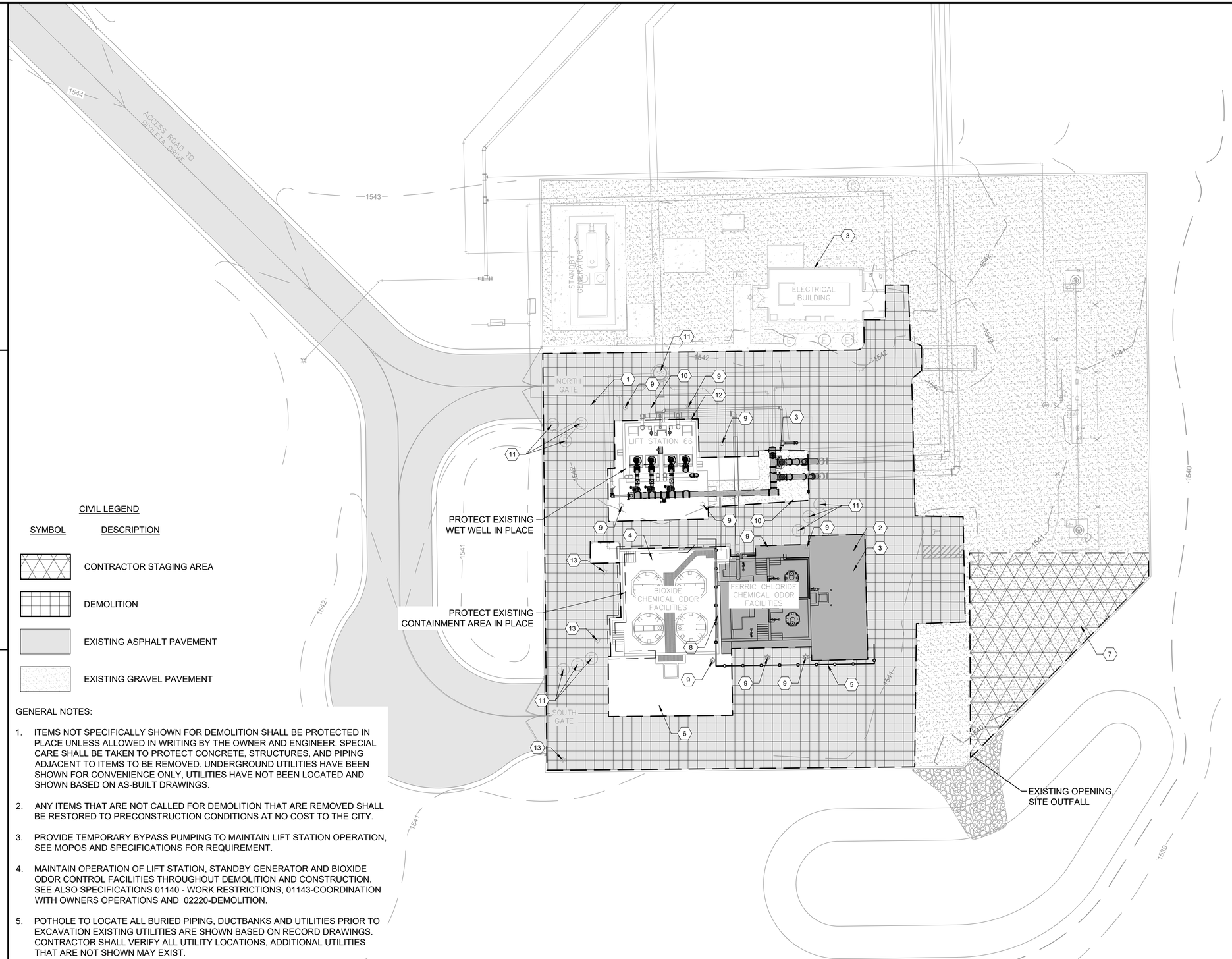
CAD FILE: PHXLS66-05-C01.dwg

Dwg File: L:\2019\19W11040 - PHX Lift Station 66 Refurbishment\Drawings\PHXLS66-05-C01
Plot Date: 1/13/2023 11:21:54 AM

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

FOR CONSTRUCTION

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY AUTHORIZED BY THE CITY MANAGER OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



CIVIL LEGEND

SYMBOL	DESCRIPTION
	CONTRACTOR STAGING AREA
	DEMOLITION
	EXISTING ASPHALT PAVEMENT
	EXISTING GRAVEL PAVEMENT

GENERAL NOTES:

1. ITEMS NOT SPECIFICALLY SHOWN FOR DEMOLITION SHALL BE PROTECTED IN PLACE UNLESS ALLOWED IN WRITING BY THE OWNER AND ENGINEER. SPECIAL CARE SHALL BE TAKEN TO PROTECT CONCRETE, STRUCTURES, AND PIPING ADJACENT TO ITEMS TO BE REMOVED. UNDERGROUND UTILITIES HAVE BEEN SHOWN FOR CONVENIENCE ONLY, UTILITIES HAVE NOT BEEN LOCATED AND SHOWN BASED ON AS-BUILT DRAWINGS.
2. ANY ITEMS THAT ARE NOT CALLED FOR DEMOLITION THAT ARE REMOVED SHALL BE RESTORED TO PRECONSTRUCTION CONDITIONS AT NO COST TO THE CITY.
3. PROVIDE TEMPORARY BYPASS PUMPING TO MAINTAIN LIFT STATION OPERATION, SEE MOPOS AND SPECIFICATIONS FOR REQUIREMENT.
4. MAINTAIN OPERATION OF LIFT STATION, STANDBY GENERATOR AND BIOXIDE ODOR CONTROL FACILITIES THROUGHOUT DEMOLITION AND CONSTRUCTION. SEE ALSO SPECIFICATIONS 01140 - WORK RESTRICTIONS, 01143-COORDINATION WITH OWNERS OPERATIONS AND 02220-DEMOLITION.
5. POTHOLE TO LOCATE ALL BURIED PIPING, DUCTBANKS AND UTILITIES PRIOR TO EXCAVATION EXISTING UTILITIES ARE SHOWN BASED ON RECORD DRAWINGS. CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS, ADDITIONAL UTILITIES THAT ARE NOT SHOWN MAY EXIST.

KEYED NOTES:

1. REMOVE AND DISPOSE OF EXISTING PAVEMENT AS NEEDED. COORDINATE WITH LIMITS OF NEW FACILITIES. MAINTAIN ACCESS TO NORTH GATE AND AREA TO THE WEST OF THE LIFT STATION FOR ACCESS TO THE PUMPS.
2. REMOVE AND DISPOSE OF EXISTING FERRIC CHLORIDE FEED TANKS AND EQUIPMENT, CONTAINMENT CONCRETE WALLS, CONCRETE SLAB AND GRATING. COORDINATE LIMITS OF DEMOLITION WITH NEW CONSTRUCTION FOR CONNECTIONS TO EXISTING PIPING. OVER EXCAVATE BENEATH CONCRETE SLAB PER STRUCTURAL DRAWINGS AND SPECIFICATION 02315.
3. SEE P&ID'S, MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION DETAIL.
4. MAINTAIN SERVICE FOR BIOXIDE ODOR CONTROL FACILITIES AND ASSOCIATED ACCESSORIES INCLUDING CHEMICAL STORAGE TANKS, METERING PUMPS, PIPING, INSTRUMENTATION, EYEWASH STATIONS, SHOWER STATIONS AND POWER. COORDINATE RELOCATION OF ANY PIPING OR UTILITIES WITH THE CITY.
5. PROVIDE SHORING AS REQUIRED TO PROTECT BIOXIDE CHEMICAL FEED FACILITIES. COORDINATE LIMITS OF SHORING WITH EXCAVATION AND NEW FACILITIES. SHORING SHALL BE REMOVED AFTER CONSTRUCTION OR SHALL BE ABANDONED ON PLACE AND CUT OFF MINIMUM OF 24" BELOW GRADE. CONTRACTOR SHALL SHOW ANY SHORING ABANDONED IN PLACE ON THE AS-BUILT DRAWINGS.
6. MAINTAIN CHEMICAL TRUCK ACCESS THROUGHOUT CONSTRUCTION. COORDINATE WITH CITY TO PROVIDE APPROPRIATE SUFFICIENT SPACE FOR OFFLOADING CHEMICAL AND ACCESS ASSUMING ENTERING AT THE SOUTH GATE AND EXITING AT THE NORTH GATE.
7. COORDINATE EXACT LOCATION AND FOOTPRINT OF CONTRACTOR STAGING AREA WITH CITY.
8. SAWCUT CONCRETE FROM EXISTING BIOXIDE ODOR CONTROL CONTAINMENT WALL. DEMOLISH ALL CONCRETE, GRATING AND EQUIPMENT TO THE EAST OF THE SAWCUT JOINT. PROTECT THE EXISTING NORTH CONTAINMENT SUMP.
9. REMOVE EXISTING LIGHT POLES.
10. REMOVE EXISTING BOLLARDS.
11. PROTECT EXISTING RING AND COVER IN PLACE.
12. REMOVE EXISTING PIPING BACK TO TEE, CAP WATERLINE AT TEE.
13. PROTECT EXISTING LIGHT POLE IN PLACE.

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

GARVER

Registered Professional Engineer (Civil)
CERTIFICATE NO. 60517
JONATHON GHILL
Not Valid Unless Signed
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JMC
DWN LAR
CKD JFM

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - SITE CIVIL

SITE PLAN - DEMOLITION

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

C SHEET 17 OF 80

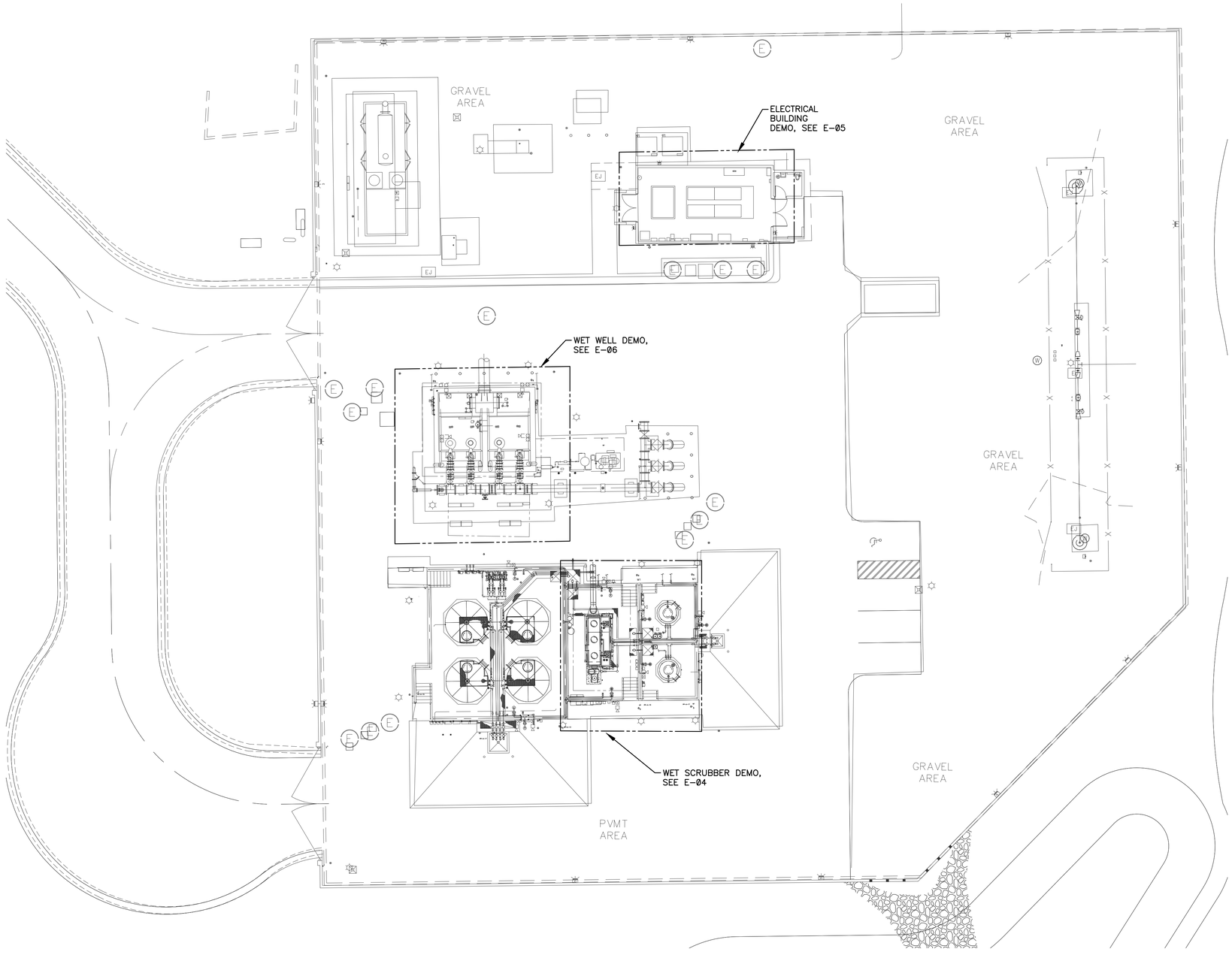
CAD FILE: PHXLS66-05-C02.dwg

Dwg File: L:\2019\19W11040 - PHX Lift Station 66 Refurbishment\Drawings\PHXLS66-05-C02
Plot Date: 1/13/2023 11:22:38 AM

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. 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. 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.
8. COORDINATE WITH CITY OF PHOENIX OPERATIONS TO IDENTIFY ITEMS THAT OPERATIONS WOULD LIKE TO SALVAGE PRIOR TO CONSTRUCTION.

FOR CITY OF PHOENIX USE ONLY – REFERENCE OID NUMBER:

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

USER:bbence FILE:Y:\666-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-04 ELECTRICAL SITE PLAN DEMOLITION (NG-E-LS66M-01).dwg DATE:1/10/23 TIME:12:33pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 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 66
REFURBISHMENT

LIFT STATION NO. 66 – SITE CIVIL

ELECTRICAL SITE PLAN DEMOLITION

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

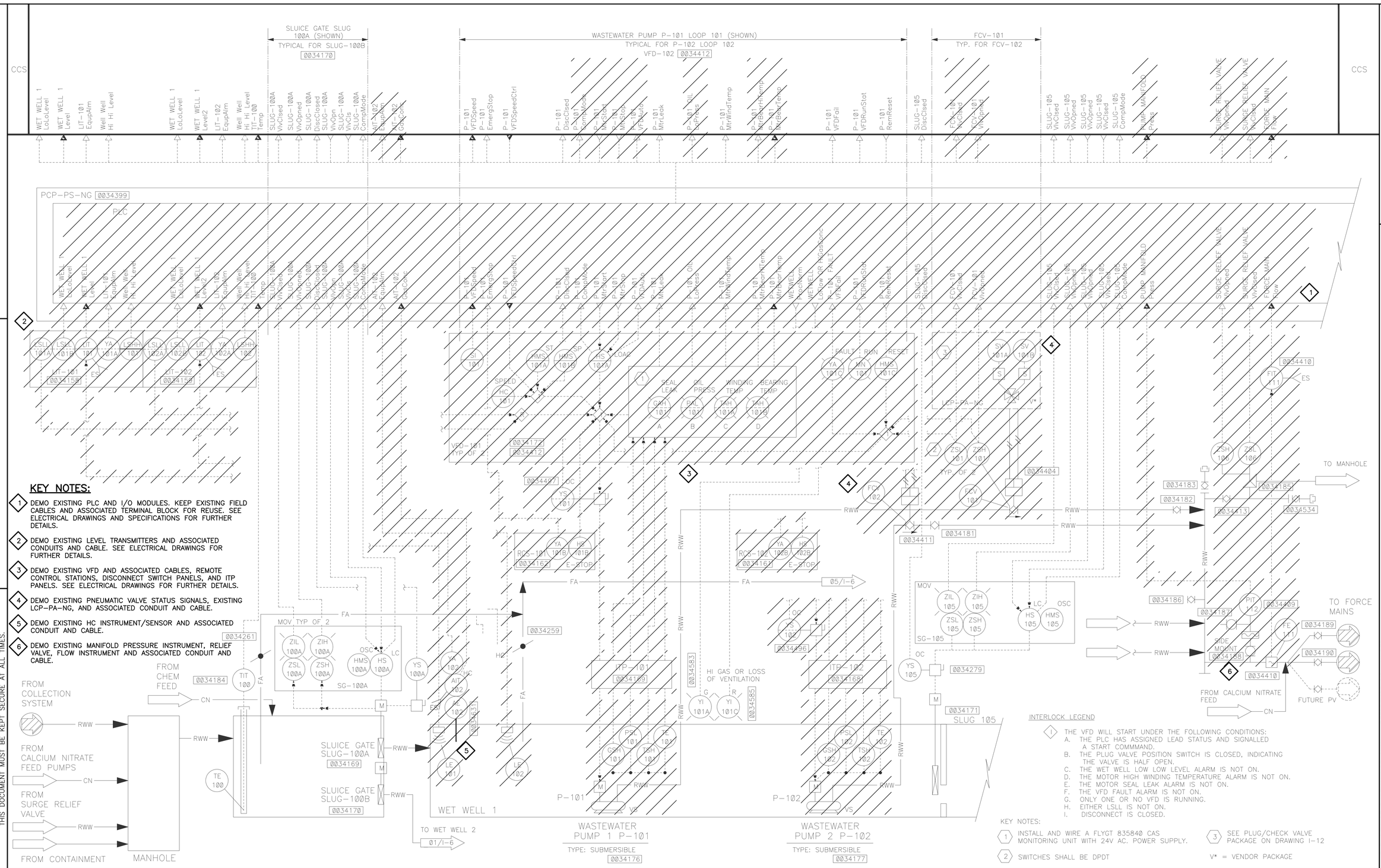
E-04 SHEET 18 OF 80

CAD FILE: NG-E-LS66M-01.dwg

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

FOR CONSTRUCTION

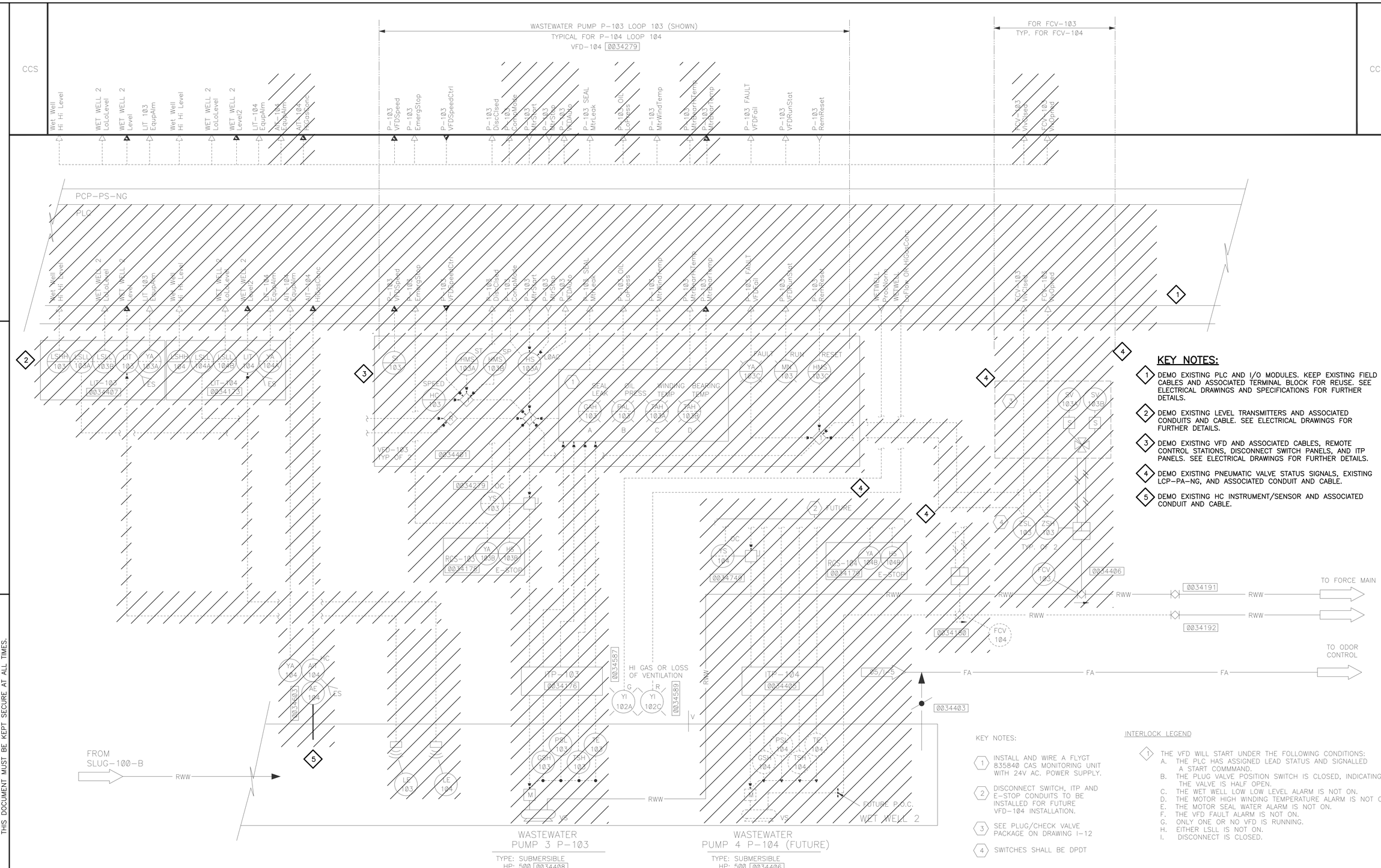
"PER CITY OF PHOENIX CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.


SLUICE GATE SLUG 100A (SHOWN)
TYPICAL FOR SLUG-100B
00341700
WASTEWATER PUMP P-101 LOOP 101 (SHOWN)
TYPICAL FOR P-102 LOOP 102
VFD-102 00344120
FCV-101
TYP. FOR FCV-102
CCS
PCP-PS-NG 00343990
PLC
WET WELL 1 LoLoLevel
WET WELL 1 Level
LIT-101 EquipAlm
Wet Well Hi Hi Level
WET WELL 1 LoLoLevel
WET WELL 1 Level2
LIT-102 EquipAlm
Wet Well Hi Hi Level
TIT-100 Temp
SLUG-100A VlvClsed
SLUG-100A VlvOpned
SLUG-100A DiscClosed
SLUG-100A VlvOpn
SLUG-100A VlvCls
SLUG-100A CompMode
AIT-102 GasConc
P-101 VFDSpeed
P-101 EmergStop
P-101 VFDSpeedCtrl
P-101 DiscClosed
P-101 CompMode
P-101 MtrStart
P-101 MtrStop
P-101 VFDAuto
P-101 MtrLeak
P-101 OilLvlGas
P-101 OilPress
P-101 MtrWindTemp
P-101 MtrBearHiTemp
P-101 MtrBearTemp
P-101 VFDFail
P-101 VFDRunStat
P-101 RemReset
SLUG-105 DiscClosed
FCV-101 VlvClsed
FCV-101 VlvOpned
SLUG-105 VlvClsed
SLUG-105 VlvOpned
SLUG-105 VlvOpned
SLUG-105 VlvClsed
SLUG-105 CompMode
PUMP MANIFOLD Press
SURGE RELIEF VALVE VlvOpned
SURGE RELIEF VALVE VlvClsed
FORCE MAIN Flow
LSLL 101A
LSLL 101B
LIT 101
YA 101A
LSHH 101
LIT-101 00341581
LSLL 102A
LSLL 102B
LIT 102
YA 102A
LSHH 102
LIT-102 00341591
ES
SI 101
HMS 101A
ST
HMS 101B
SP
HS 101A
LOAD
SPEED
HC 101
SEAL LEAK
OIL PRESS
WINDING TEMP
BEARING TEMP
QAH 101
PAL 101
TAH 101A
TAH 101B
A
B
C
D
FAULT
RUN
RESET
YA 101C
MN 101
HMS 101C
VFD-101 TYP. OF 2
00341721
00341721
00344577
OC
YS 101
RCS-101 00341621
YA 101B
HS 101B
E-STOP
RCS-102 00341611
YA 102B
HS 102B
E-STOP
FA
RWW
05/I-6
SV 101A
SV 101B
S
LCP-PA-NG
TYP. OF 2
ZSL 101
ZSH 101
FCV 101
00344404
FO 102
00341411
00341811
MOV
ZIL 105
ZIH 105
ZSL 105
ZSH 105
SG-105
LC
OSC
HS 105
HMS 105
YS 105
00342791
M
00341711
SLUG 105
00342611
00342611
00342611

FOR CONSTRUCTION

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

"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. DEMO EXISTING PLC AND I/O MODULES. KEEP EXISTING FIELD CABLES AND ASSOCIATED TERMINAL BLOCK FOR REUSE. SEE ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR FURTHER DETAILS.
2. DEMO EXISTING LEVEL TRANSMITTERS AND ASSOCIATED CONDUITS AND CABLE. SEE ELECTRICAL DRAWINGS FOR FURTHER DETAILS.
3. DEMO EXISTING VFD AND ASSOCIATED CABLES, REMOTE CONTROL STATIONS, DISCONNECT SWITCH PANELS, AND ITP PANELS. SEE ELECTRICAL DRAWINGS FOR FURTHER DETAILS.
4. DEMO EXISTING PNEUMATIC VALVE STATUS SIGNALS, EXISTING LCP-PA-NG, AND ASSOCIATED CONDUIT AND CABLE.
5. DEMO EXISTING HC INSTRUMENT/SENSOR AND ASSOCIATED CONDUIT AND CABLE.

KEY NOTES:

1. INSTALL AND WIRE A FLYGT 835840 CAS MONITORING UNIT WITH 24V AC. POWER SUPPLY.
2. DISCONNECT SWITCH, ITP AND E-STOP CONDUITS TO BE INSTALLED FOR FUTURE VFD-104 INSTALLATION.
3. SEE PLUG/CHECK VALVE PACKAGE ON DRAWING I-12
4. SWITCHES SHALL BE DPDT

INTERLOCK LEGEND

1. THE VFD WILL START UNDER THE FOLLOWING CONDITIONS:
   - A. THE PLC HAS ASSIGNED LEAD STATUS AND SIGNALLED A START COMMMAND.
   - B. THE PLUG VALVE POSITION SWITCH IS CLOSED, INDICATING THE VALVE IS HALF OPEN.
   - C. THE WET WELL LOW LOW LEVEL ALARM IS NOT ON.
   - D. THE MOTOR HIGH WINDING TEMPERATURE ALARM IS NOT ON.
   - E. THE MOTOR SEAL WATER ALARM IS NOT ON.
   - F. THE VFD FAULT ALARM IS NOT ON.
   - G. ONLY ONE OR NO VFD IS RUNNING.
   - H. EITHER LSLL IS NOT ON.
   - I. DISCONNECT IS CLOSED.

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

USER:bence FILE:Y:\066-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Instrumentation\I-05 P&ID 2 WET WELL 2 DEMOLITION (NG-I-LS66M-02).dwg DATE:1/10/23 TIME:12:35pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 - INSTRUMENTATION

P&ID 2 WET WELL 2 DEMOLITION

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

I-05 SHEET 20 OF 80

CAD FILE: NG-I-LS66M-02.dwg

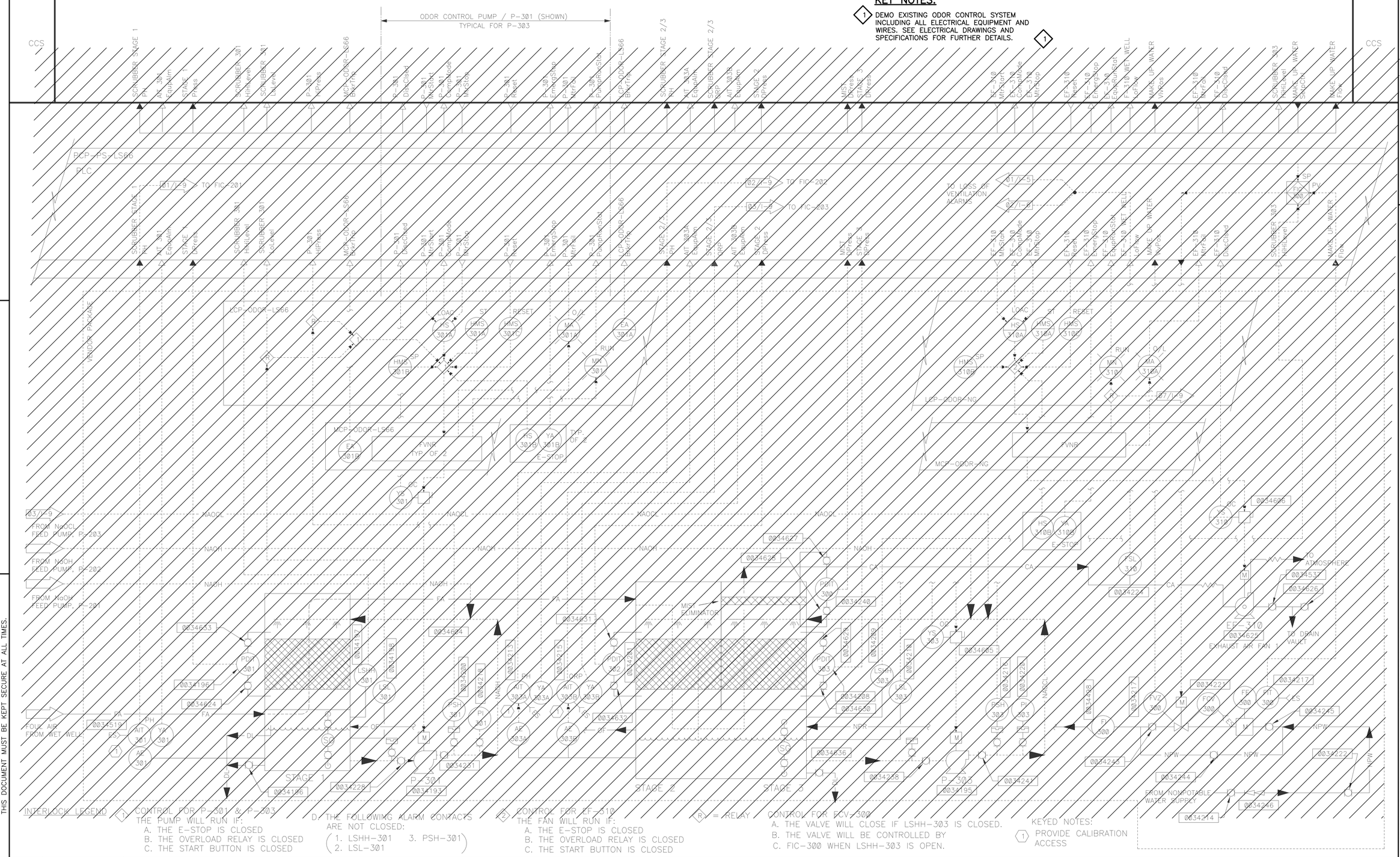
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

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. DEMO EXISTING ODOR CONTROL SYSTEM INCLUDING ALL ELECTRICAL EQUIPMENT AND WIRES. SEE ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR FURTHER DETAILS.



INTERLOCK LEGEND

1. CONTROL FOR P-301 & P-303
   THE PUMP WILL RUN IF:
   A. THE E-STOP IS CLOSED
   B. THE OVERLOAD RELAY IS CLOSED
   C. THE START BUTTON IS CLOSED
   D. THE FOLLOWING ALARM CONTACTS ARE NOT CLOSED:
   (1. LSHH-301 3. PSH-301
   2. LSL-301)

2. CONTROL FOR EF-310
   THE FAN WILL RUN IF:
   A. THE E-STOP IS CLOSED
   B. THE OVERLOAD RELAY IS CLOSED
   C. THE START BUTTON IS CLOSED

R = RELAY

CONTROL FOR FCV-300
A. THE VALVE WILL CLOSE IF LSHH-303 IS CLOSED.
B. THE VALVE WILL BE CONTROLLED BY
C. FIC-300 WHEN LSHH-303 IS OPEN.

KEYED NOTES:
1. PROVIDE CALIBRATION ACCESS

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER:

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME

DWG NUMBER	REMARKS

USER:bbence FILE:Y:\066-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Instrumentation\I-06 P&ID 3 CHEMICAL FEED SYSTEM, AND WET SCRUBBER DEMOLITION (NG-I-LS66M-03).dwg DATE:1/10/23 TIME:12:35pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 – INSTRUMENTATION

P&ID 3 – CHEM FEED SYS, AND WET SCRUBBER DEMOLITION

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

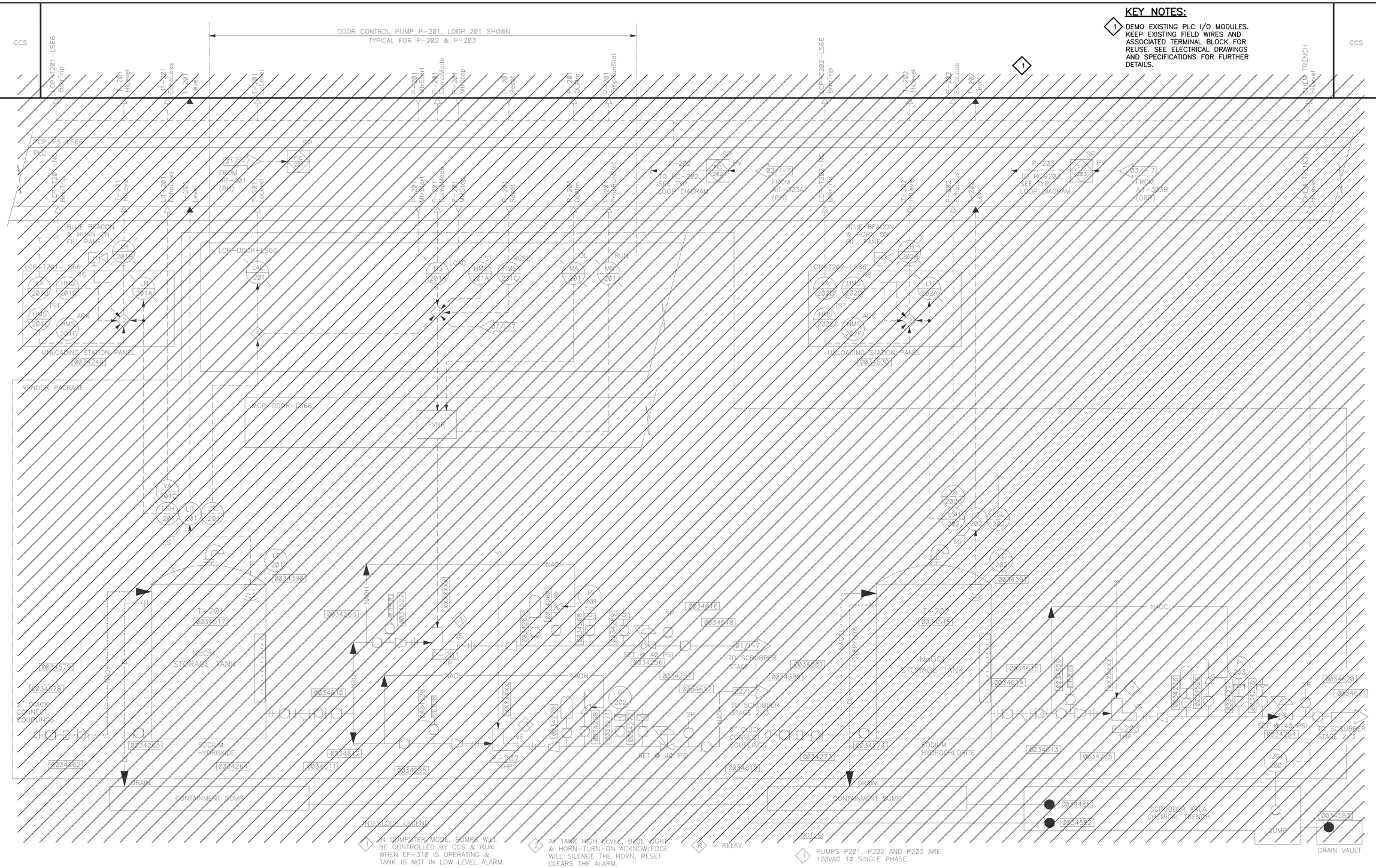
I-06 SHEET 21 OF 80

CAD FILE: LS66IM03.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.



FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER:				
REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
---	---	---	---	---	---	---	---

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 – INSTRUMENTATION

P&ID 4 (ODOR CONTROL SYSTEM – WET SCRUBBER DEMO)

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

I-07 SHEET 22 OF 80

CAD FILE: LS66IM04.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.

CCS

CCS

EMERGENCY EYE WASH STATION (ESA-801 SHOWN)
TYPICAL FOR ESA-802 THROUGH ESA-808

PCP-PS-NG

PLC

LCP-ESA1-NG BkrTrip

ESA-801 EyewashAct

Supervisory

Alarm

Trouble

1

LCP-SPKL-NG (SPRINKLERS)
0034500

EA 720

YA 720-1 ALARM

YA 720-2 TROUBLE

SD

SD

LCP-EAS1-NG

EA 801

ACK

HMS 801

FA 801

0035034

S

FA 801S

0035033

AMBER BEACON

HR-801

FS 801

NPW

PW

POTABLE WATER

NON-POTABLE WATER

INTERLOCK LEGEND

1 THE HORN AND STROBE WILL ACTIVATE AND SEND A SIGNAL TO THE CCS IF EITHER FLOW SWITCH CLOSES. THE HORN WILL SHUT OFF IF THE BMS IS ON.

KEYED NOTES:

1 PROXIMITY TYPE SWITCHES WIRED N.O.

2 INSERT LOOP NUMBERS PER TABLES BELOW

2

EYE WASH / SHOWER TAG NO.	SERIAL KEY	MOUNTING LOCATION	PANEL TAG NO.	SERIAL KEY
ESA-801	0034501	SEE DWG M-6	LCP-ESA1-NG	0034509
ESA-802	0034502	SEE DWG M-6	LCP-ESA2-NG	0034510
ESA-803	0034503	SEE DWG M-6	LCP-ESA3-NG	0034511
ESA-804	0034504	SEE DWG M-6	LCP-ESA4-NG	0034512
ESA-805	0034505	SEE DWG M-6	LCP-ESA5-NG	0034513
ESA-806	0034506	SEE DWG M-6	LCP-ESA6-NG	0034514
ESA-807	0034507	SEE DWG M-6	LCP-ESA7-NG	0034515
ESA-808	0034508	SEE DWG M-6	LCP-ESA8-NG	0034516

2

HOSEBIB TAG NO.	SERIAL KEY
HB-801	0034633
HB-802	0034634
HB-803	0034635
HB-804	0034636
HB-805	0034637
HB-806	0034638
HB-807	0034639
HB-808	0034640

KEY NOTES:

1 DEMO EXISTING PLC I/O MODULES. KEEP EXISTING FIELD WIRES AND ASSOCIATED TERMINAL BLOCK FOR REUSE. SEE ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR FURTHER DETAILS.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER:

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

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 – INSTRUMENTATION

P&ID 5 (EYEWASH–SHOWER AND SPRINKLER DEMO)

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

I–08 SHEET 23 OF 80

CAD FILE: LS66IM05.dwg

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

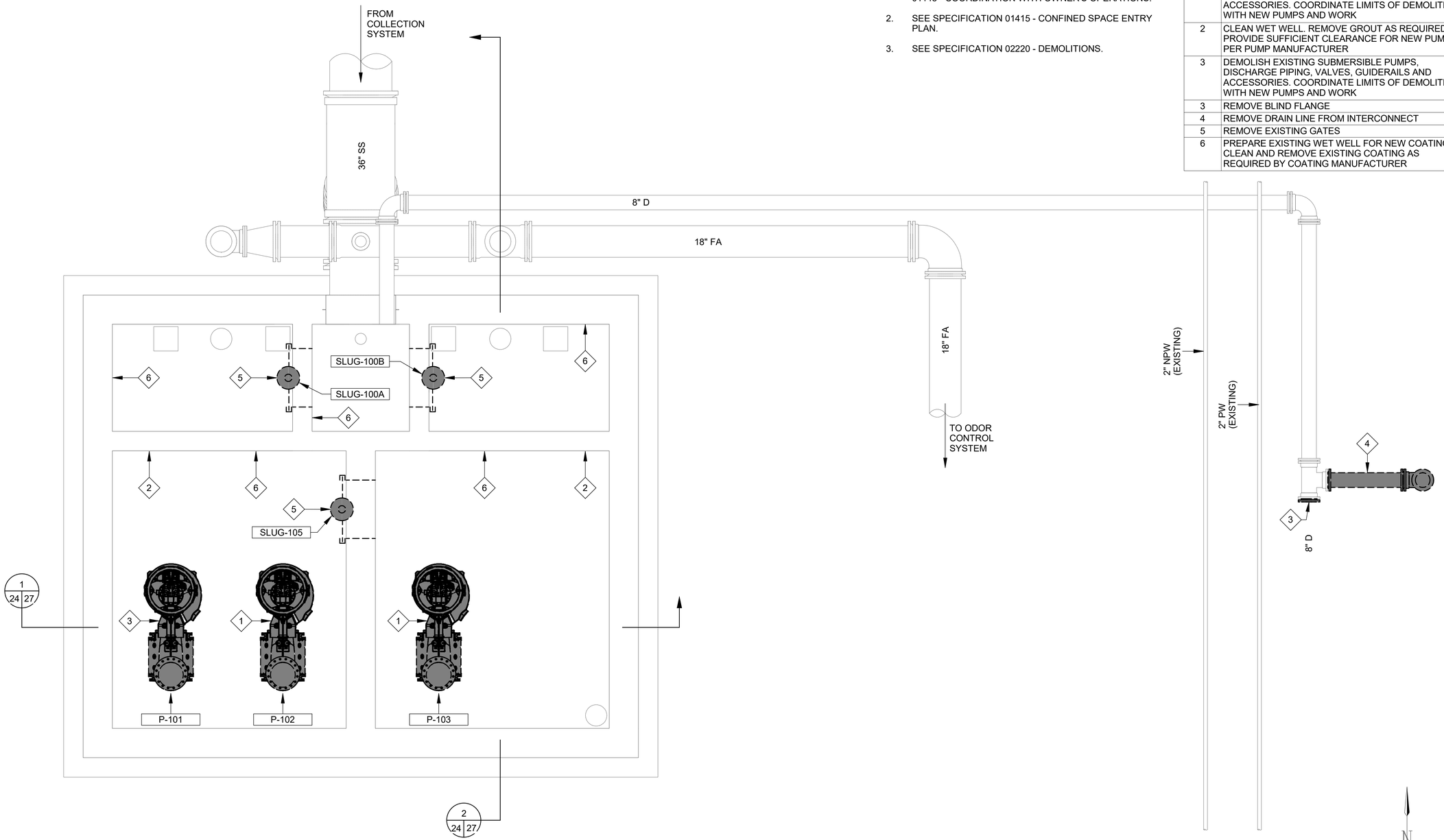
FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED OR USED FOR ANY PURPOSE OTHER THAN AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

NOTES:

1. SEE SPECIFICATIONS 01140 - WORK RESTRICTIONS, 01143 - COORDINATION WITH OWNER'S OPERATIONS.
2. SEE SPECIFICATION 01415 - CONFINED SPACE ENTRY PLAN.
3. SEE SPECIFICATION 02220 - DEMOLITIONS.

KEYNOTES:	DENOTED BY SYMBOL ◇X
1	DEMOLISH EXISTING SUBMERSIBLE PUMPS, DISCHARGE PIPING, VALVES, GUIDERAILS AND ACCESSORIES. COORDINATE LIMITS OF DEMOLITION WITH NEW PUMPS AND WORK
2	CLEAN WET WELL. REMOVE GROUT AS REQUIRED TO PROVIDE SUFFICIENT CLEARANCE FOR NEW PUMPS PER PUMP MANUFACTURER
3	DEMOLISH EXISTING SUBMERSIBLE PUMPS, DISCHARGE PIPING, VALVES, GUIDERAILS AND ACCESSORIES. COORDINATE LIMITS OF DEMOLITION WITH NEW PUMPS AND WORK
3	REMOVE BLIND FLANGE
4	REMOVE DRAIN LINE FROM INTERCONNECT
5	REMOVE EXISTING GATES
6	PREPARE EXISTING WET WELL FOR NEW COATING, CLEAN AND REMOVE EXISTING COATING AS REQUIRED BY COATING MANUFACTURER



EXISTING LIFT STATION DEMOLITION PLAN - LOWER

3/8" = 1'-0"

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON CHILL Date Signed 1/3/23 ARIZONA, U.S.A.

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - LIFT STATION

EXISTING LIFT STATION DEMOLITION PLAN I

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

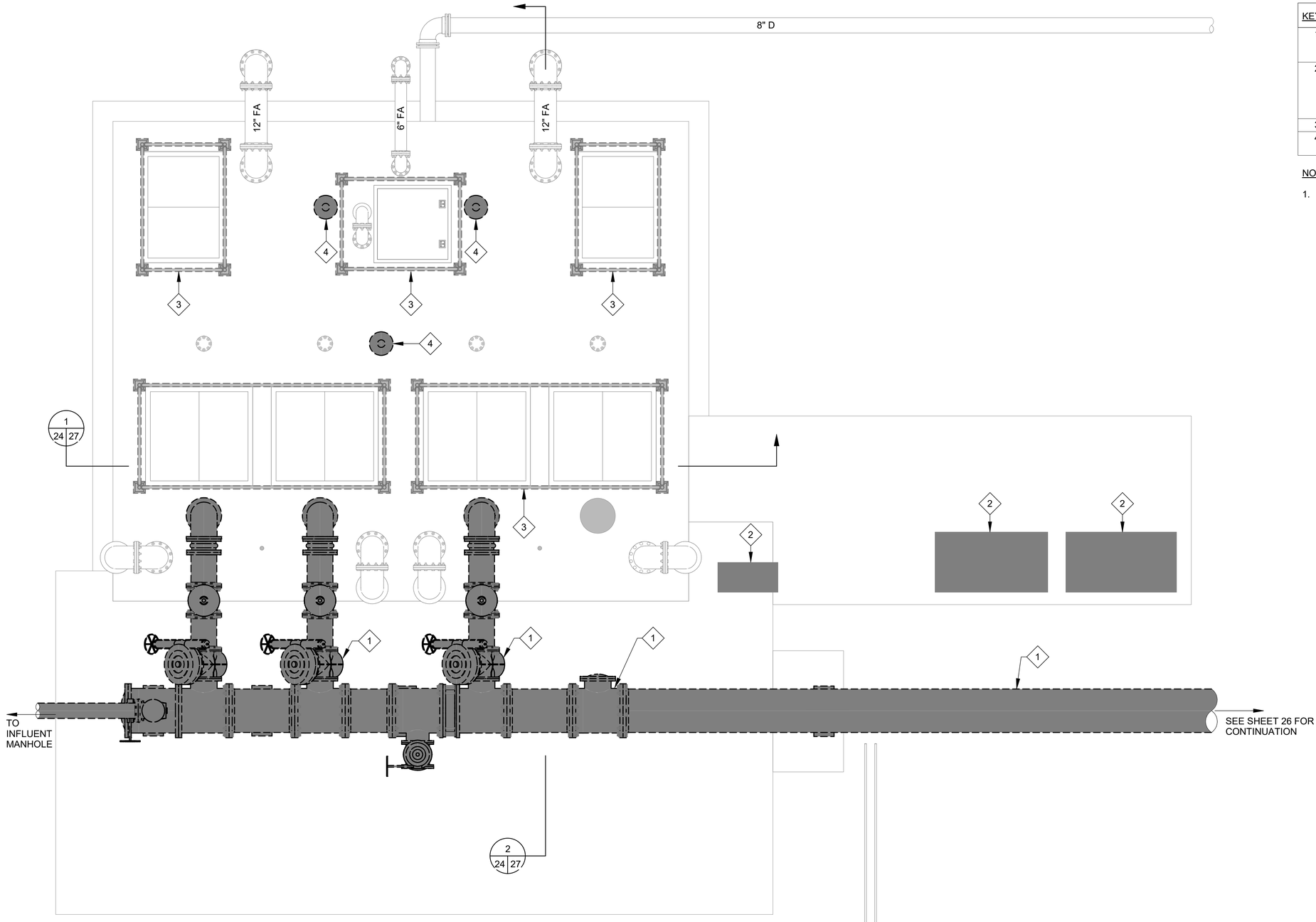
DATE: JANUARY 2023

M SHEET 24 OF 80

CAD FILE: CSELS66.RVT

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
REVISION | ENGINEERING COMPANY | PROJECT NO. | PROJECT NAME | DATE | CAD FILE NAME | DWG NUMBER | REMARKS

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:41:31 PM



WET WELL - TOC PLAN

3/8" = 1'-0"

KEYNOTES:	DENOTED BY SYMBOL ◇X
1	DEMOLISH EXISTING PIPING, FITTINGS, VALVES AND SUPPORTS. COORDINATE LIMITS AND CONNECTIONS WITH NEW PIPING
2	DEMOLISH EXISTING AIR COMPRESSOR, DRYER, RECEIVER TANK, ASSOCIATED PIPING, VALVES AND ACCESSORIES. CONTRACTOR TO SALVAGE AND LEAVE COMPRESSOR AND PANEL ON SITE FOR PICK UP BY THE CITY
3	DEMOLISH EXISTING HANDRAIL
4	REMOVE AND REPLACE GATES PER SPECIFICATION 11287

NOTE:

1. SEE NOTES ON OTHER DEMOLITION PLANS.

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

FOR CONSTRUCTION

PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR PERMIT PURPOSES EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW.
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

FOR CITY OF PHOENIX USE ONLY - REFERENCE

REVISION	ENGINEERING COMPANY	PROJECT NO	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS
			CID NUMBER:				

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:41:35 PM

GARVER

Registered Professional Engineer (Civil)
CERTIFICATE NO.
60517
JONATHON
DHILL
Date Signed 1/10/23
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - LIFT STATION

EXISTING LIFT STATION DEMOLITION PLAN II

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

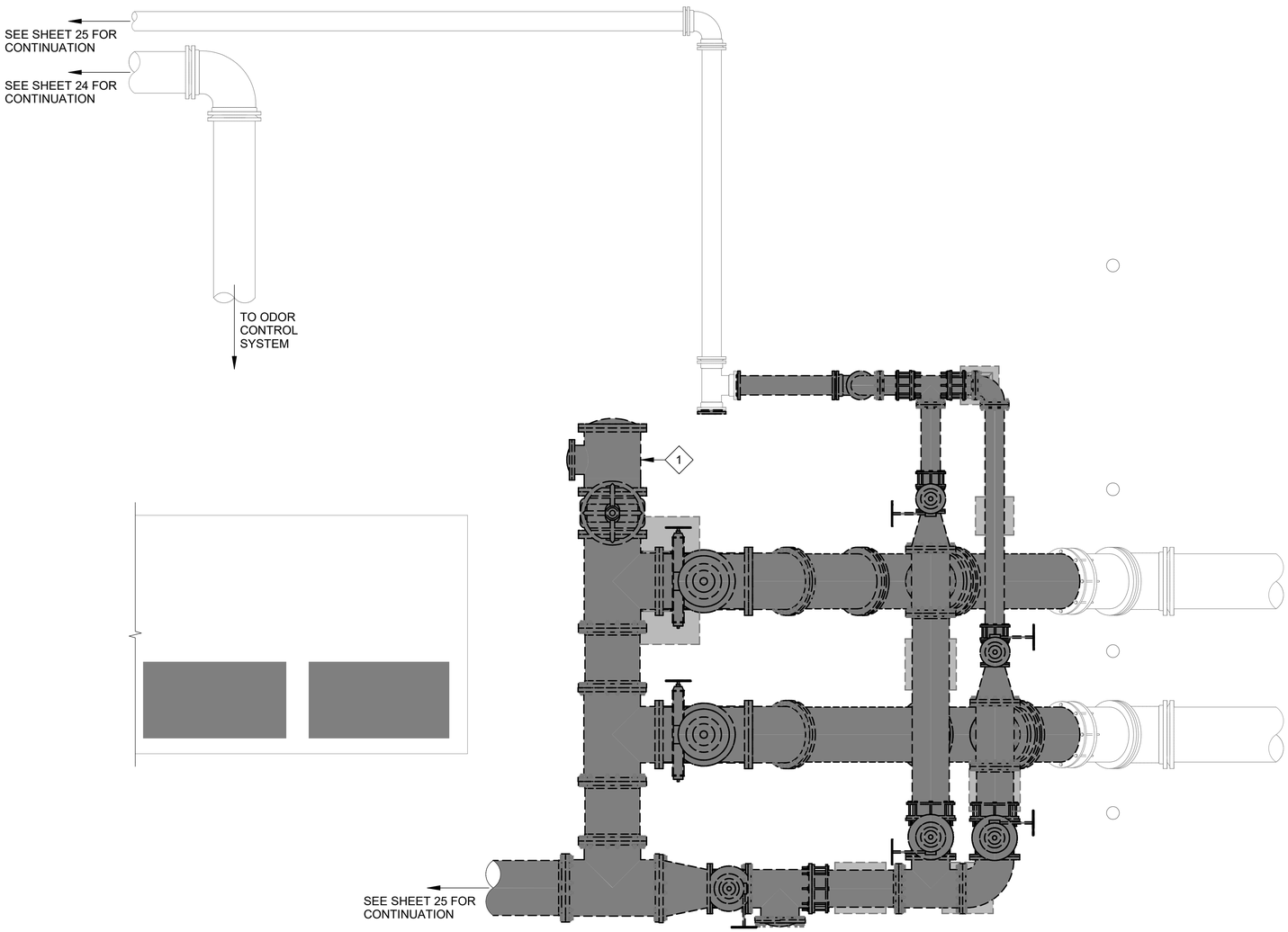
M SHEET 25 OF 80

CAD FILE: CSELS66.RVT

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

FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED OR DISCLOSED TO ANY OTHER PERSONS EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



KEYNOTES:	DENOTED BY SYMBOL X
1	DEMOLISH EXISTING PIPING, FITTINGS, VALVES AND SUPPORTS. COORDINATE LIMITS AND CONNECTIONS WITH NEW PIPING

NOTE:

1. SEE NOTES ON OTHER DEMOLITION PLANS.

PROTECT EXISTING ELECTRICAL MANHOLES

N

WET WELL - TOC PLAN

3/8" = 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

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:41:39 PM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON C. HILL Date Signed 1/10/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN JAG
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - LIFT STATION

EXISTING LIFT STATION DEMOLITION PLAN III

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
M SHEET 26 OF 80
CAD FILE: CSELS66.RVT

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

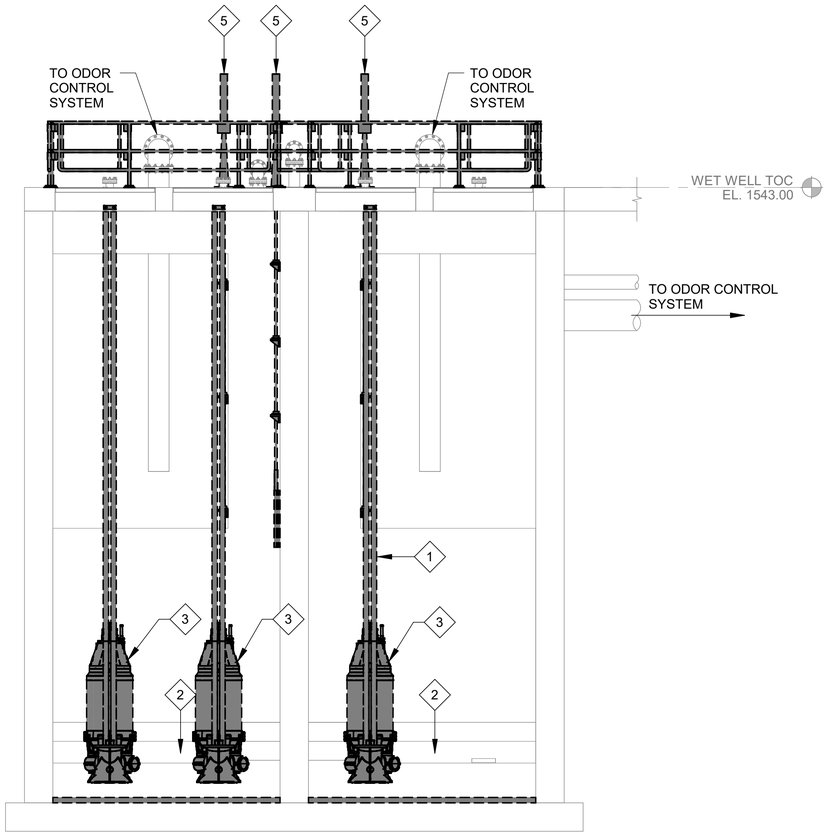
FOR CONSTRUCTION

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR SALE. "IT SHALL BE UNLAWFUL, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW:" THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

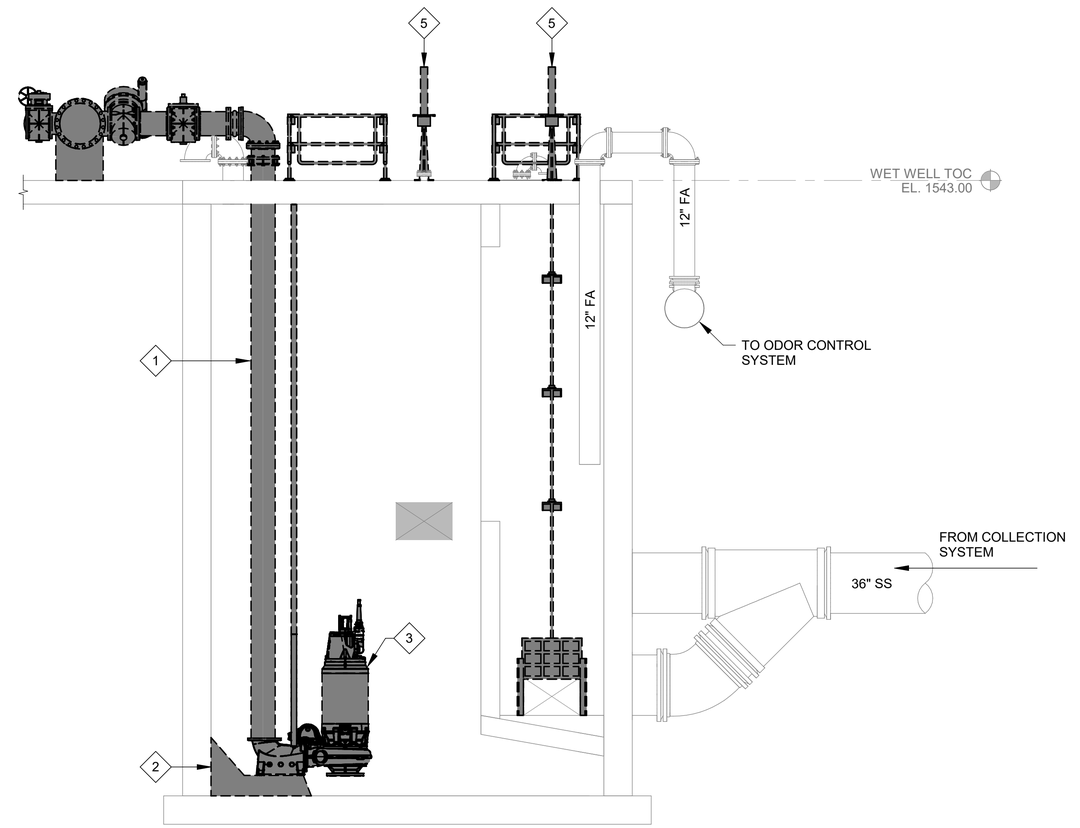
KEYNOTES:	DENOTED BY SYMBOL ◇X
1	DEMOLISH EXISTING PIPING, FITTINGS, VALVES AND SUPPORTS. COORDINATE LIMITS AND CONNECTIONS WITH NEW PIPING.
2	CLEAN WET WELL. REMOVE GROUT AS REQUIRED TO PROVIDE SUFFICIENT CLEARANCE FOR NEW PUMPS PER PUMP MANUFACTURER .
3	DEMOLISH EXISTING SUBMERSIBLE PUMPS, DISCHARGE PIPING, VALVES, GUIDERAILS AND ACCESSORIES. COORDINATE LIMITS OF DEMOLITION WITH NEW PUMPS AND WORK.
5	REMOVE EXISTING GATES

NOTE:

1. SEE NOTES ON OTHER DEMOLITION PLANS.



SECTION 1 (24 | 27)
1/4" = 1'-0"



SECTION 2 (24 | 27)
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

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON DHILL Date Signed 1/10/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - LIFT STATION

EXISTING LIFT STATION DEMOLITION SECTIONS

COPYRIGHT © 2007-JANUARY

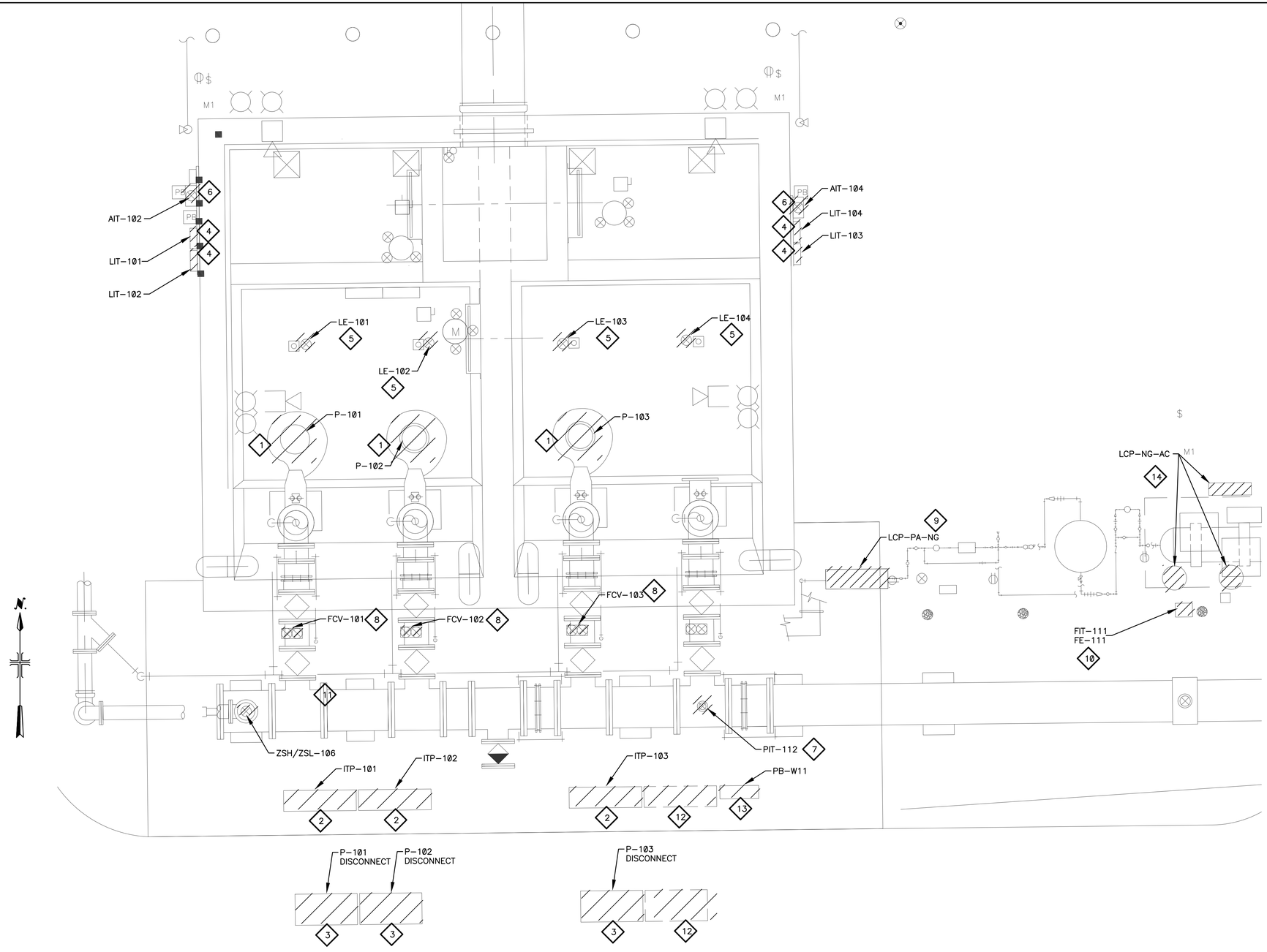
CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
M SHEET 27 OF 80
CAD FILE: CSELS66.RVT

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:43:38 PM

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.



LIFT STATION PUMP AREA ELECTRICAL DEMOLITION PLAN

0 1 2 4
3/8" = 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) UNLESS INDICATED OTHERWISE, AND ABANDON BELOW GRADE CONDUITS IN PLACE UNLESS INDICATED OTHERWISE. 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. 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.
8. COORDINATE WITH CITY OF PHOENIX OPERATIONS TO IDENTIFY ITEMS THAT OPERATIONS WOULD LIKE TO SALVAGE PRIOR TO CONSTRUCTION.

KEYED NOTES:

1. DEMO EXISTING PUMP MOTOR AND ASSOCIATED INSTRUMENTATION AND WIRES. REUSE EXISTING CONDUITS.
2. DEMO EXISTING TERMINATION PANEL AND ASSOCIATED WIRES. SAWCUT EXISTING CONDUITS BELOW GRADE.
3. DEMO EXISTING DISCONNECT SWITCHES AND ASSOCIATED WIRES. SAWCUT EXISTING CONDUITS BELOW GRADE.
4. DEMO EXISTING LEVEL TRANSMITTER AND ASSOCIATED WIRES. REUSE EXISTING CONDUITS.
5. DEMO EXISTING LEVEL TRANSDUCERS AND ASSOCIATED WIRES, FLANGES, AND CONDUITS. CAP AND SEAL HOLE FROM REMOVED FLANGES SUCH THAT IT IS NOT A TRIPPING HAZARD.
6. DEMO EXISTING HC GAS MONITORS AND ASSOCIATED WIRE AND CONDUITS, AND BOXES.
7. DEMO EXISTING PRESSURE TRANSMITTER AND ASSOCIATED WIRE AND CONDUIT, AND BOXES.
8. DEMO EXISTING FLOW CONTROL VALVE POSITION SENSORS AND ASSOCIATED WIRE AND CONDUIT, AND BOXES,
9. DEMO EXISTING PANEL LCP-PA-NG AND ASSOCIATED WIRE AND CONDUIT, AND BOXES,
10. DEMO EXISTING FLOW METER ELEMENT (NOT SHOWN), TRANSMITTER AND ASSOCIATED WIRES AND CONDUITS.
11. DEMO EXISTING RELIEF VALVE POSITION SENSORS AND ASSOCIATED WIRE AND CONDUIT, AND BOXES,
12. SAWCUT EXISTING CONDUITS BELOW GRADE.
13. DEMO EXISTING PB-W11 AND ASSOCIATED WIRES. SAWCUT EXISTING CONDUITS BELOW GRADE. IF AN EXISTING CIRCUIT IS STILL NEEDED DUE TO UNFORESEEN CONDITIONS, CONTRACTOR SHALL FURNISH AND INSTALL CONDUIT AND WIRE AS NEEDED FOR SUCH CIRCUITS.
14. DEMO EXISTING LCP-AC-NG PANEL AND ASSOCIATED WIRES AND CONDUIT. DEMO AIR COMPRESSOR NO. 1 AND NO 2. SALVAGE EQUIPMENT AND GIVE TO THE CITY OF PHOENIX.

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

USER:bbience FILE:Y:\666-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-06 LIFT STATION PUMP AREA DEMOLITION PLAN (NG-E-LS66M-#3).dwg DATE:1/10/23 TIME:12:33pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 – LIFT STATION

LIFT STATION PUMP AREA ELECTRICAL DEMOLITION PLAN

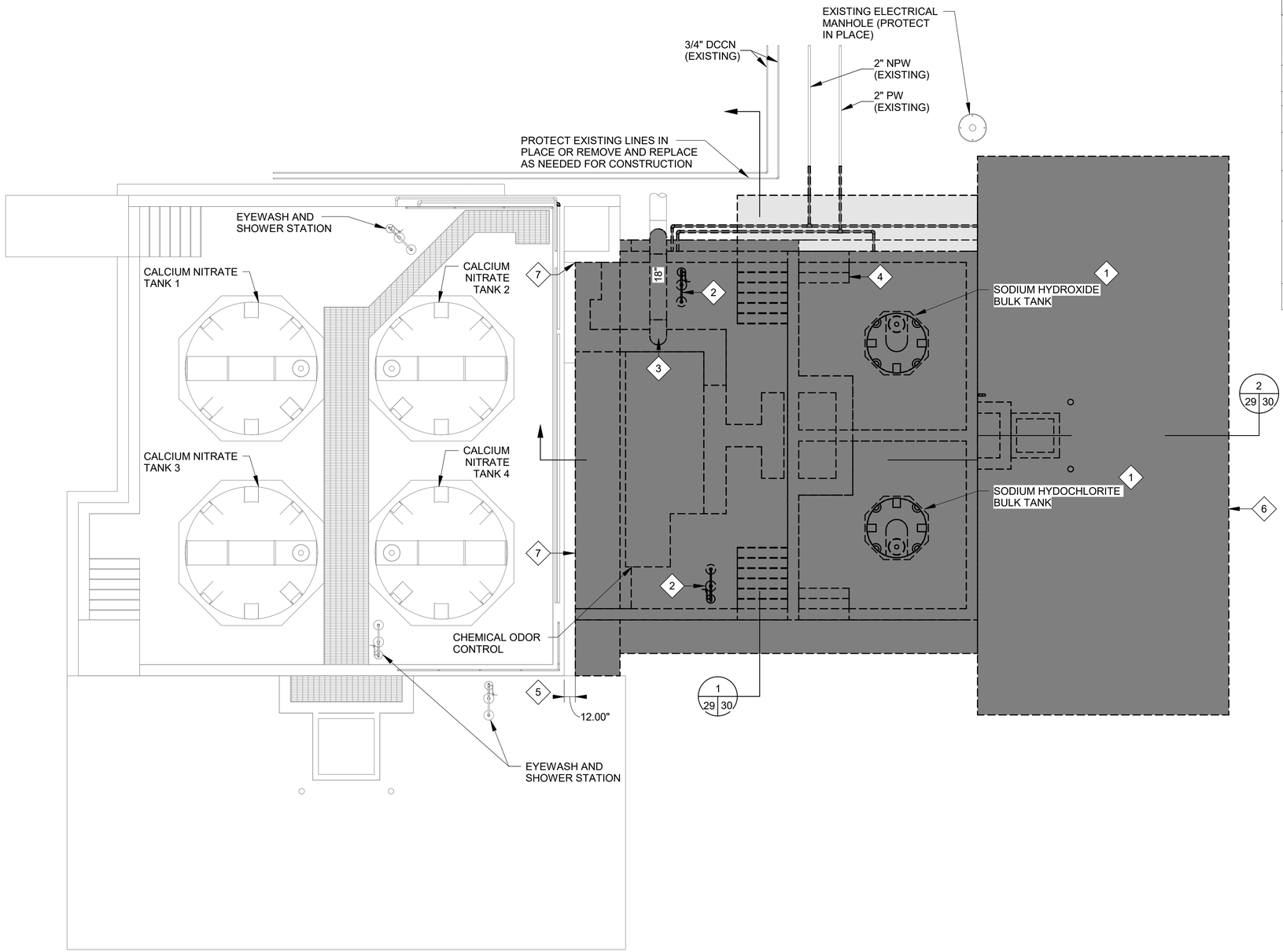
COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

E-06 SHEET 28 OF 80

CAD FILE: NG-E-LS66M-03.dwg



KEYNOTES:	DENOTED BY SYMBOL ◇X
1	DEMOLISH EXISTING ODOR CONTROL SYSTEM, SODIUM HYDROXIDE BULK TANK, SODIUM HYPOCHLORITE BULK TANK, AND ASSOCIATED CHEMICAL PIPING.
2	DEMOLISH EYEWASH AND SHOWER STATIONS WITHIN ODOR CONTROL CONTAINMENT AREA.
3	DEMOLISH GOOSE NECK AIR PIPING AS SHOWN.
4	DEMOLISH STAIRWELL, GRATING, CONTAINMENT WALLS AND FLOOR SLAB.
5	SAWCUT ALONG EXISTING CONCRETE. COORDINATE LOCATION WITH NEW CONSTRUCTION. REPAIR CUT STEEL REINFORCEMENT WITH EPOXY GROUT.
6	DEMOLISH EXISTING CONCRETE PAD AND CHEMICAL UNLOADING STATION, CONDUIT ASSOCIATED WITH SODIUM HYDOROXIDE AND SODIUM HYPOCHLORITE CHEMICAL FEED SYSTEMS.
7	SAWCUT CONCRETE AWAY FROM EXISTING BIOXIDE ODOR CONTROL CONTINMENT WALL. DEMOLISH ALL CONCRETE, GRATING AND EQUIPMENT TO THE EAST OF THE SAWCUT JOINT. PROTECT THE EXISTING NORTH CONTAINMENT SUMP.
8	REMOVE EXISTING NPW TO EXTENTS REQUIRED FOR CONSTRUCTION

NOTES:

1. SEE SPECIFICATIONS 01140 - WORK RESTRICTIONS, 01143 - COORDINATION WITH OWNER'S OPERATIONS.
2. SEE SPECIFICATION 01415 - CONFINED SPACE ENTRY PLAN.
3. SEE SPECIFICATION 02220 - DEMOLITIONS.

EXISTING ODOR CONTROL DEMOLITION PLAN

3/16" = 1'-0"

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

FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED OR USED FOR ANY PURPOSE EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:43:40 PM

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON CHILL Date Signed 1/10/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - ODOR CONTROL

EXISTING ODOR CONTROL DEMOLITION PLAN

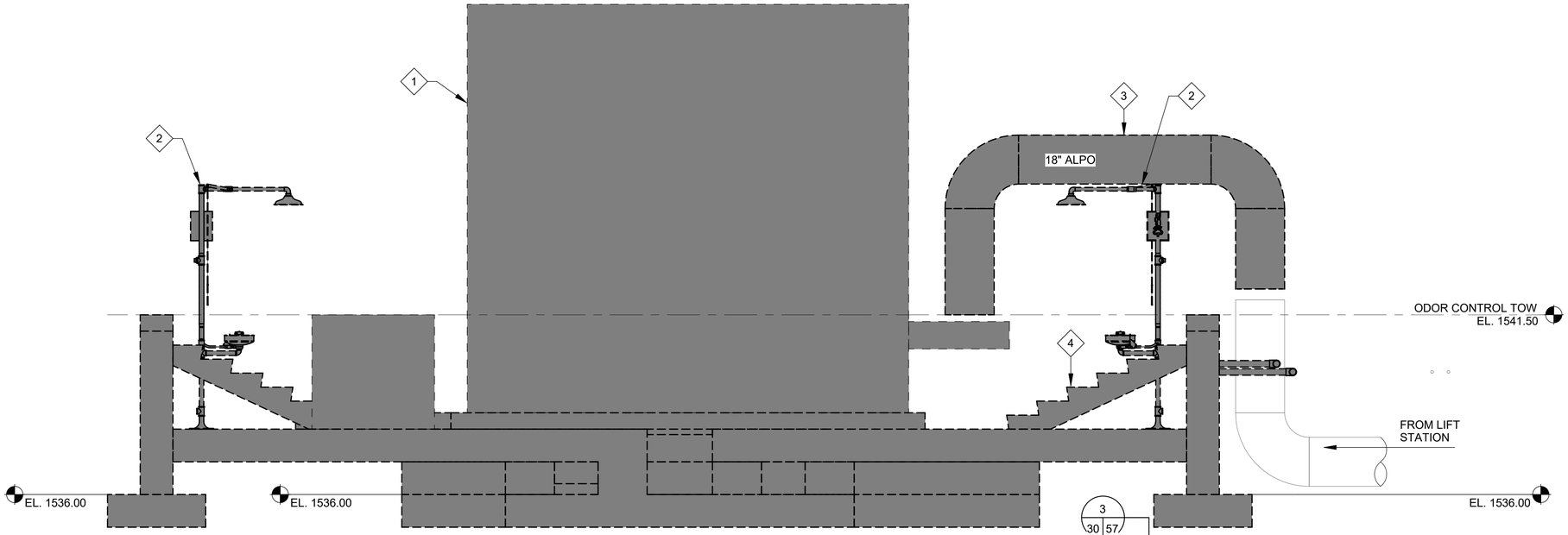
COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
S SHEET 29 OF 80
CAD FILE: CSELS66.RVT

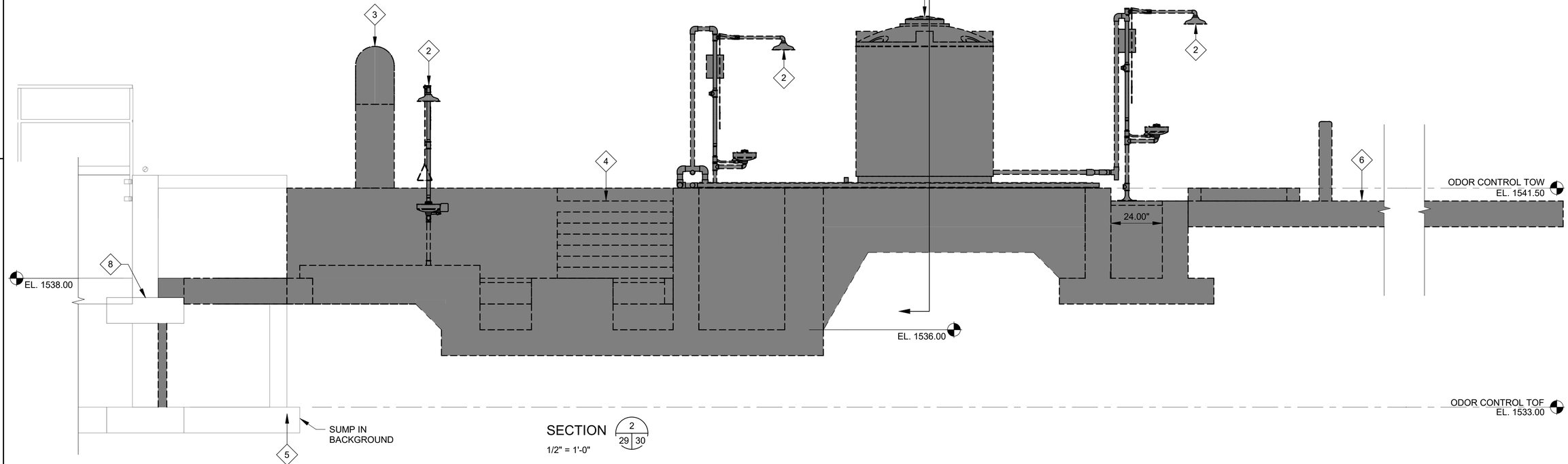
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR PURPOSES OTHER THAN CONSTRUCTION EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



SECTION 3 / 30 | 57
1/2" = 1'-0"



SECTION 1 / 29 | 30
1/2" = 1'-0"

KEYNOTES:	DENOTED BY SYMBOL ◇X
1	DEMOLISH EXISTING ODOR CONTROL SYSTEM, SODIUM HYDROXIDE BULK TANK, SODIUM HYPOCHLORITE BULK TANK, AND ASSOCIATED CHEMICAL PIPING.
2	DEMOLISH EYEWASH AND SHOWER STATIONS WITHIN ODOR CONTROL CONTAINMENT AREA.
3	DEMOLISH GOOSE NECK AIR PIPING AS SHOWN.
4	DEMOLISH STAIRWELL, GRATING, CONTAINMENT WALLS AND FLOOR SLAB.
5	SAWCUT ALONG EXISTING CONCRETE. COORDINATE LOCATION WITH NEW CONSTRUCTION. REPAIR CUT STEEL REINFORCEMENT WITH EPOXY GROUT.
6	DEMOLISH EXISTING CONCRETE PAD AND CHEMICAL UNLOADING STATION, CONDUIT ASSOCIATED WITH SODIUM HYDOROXIDE AND SODIUM HYPOCHLORITE CHEMICAL FEED SYSTEMS.
7	SAWCUT CONCRETE AWAY FROM EXISTING BIOXIDE ODOR CONTROL CONTINMENT WALL. DEMOLISH ALL CONCRETE, GRATING AND EQUIPMENT TO THE EAST OF THE SAWCUT JOINT. PROTECT THE EXISTING NORTH CONTAINMENT SUMP.
8	PROTECT EXISTING LIMITS OF ALL WALLS THAT ⁼OR NEED TO REMAIN

NOTES:

1. SEE SPECIFICATIONS 01140 - WORK RESTRICTIONS, 01143 - COORDINATION WITH OWNER'S OPERATIONS.
2. SEE SPECIFICATION 01415 - CONFINED SPACE ENTRY PLAN.
3. SEE SPECIFICATION 02220 - DEMOLITIONS.

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
REVISION | ENGINEERING COMPANY | PROJECT NO | PROJECT NAME | DATE | CAD FILE NAME | DWG NUMBER | REMARKS

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:43:43 PM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE No. 60517 JONATHON CHILL Date Signed 1/13/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - ODOR CONTROL

EXISTING ODOR CONTROL DEMOLITION SECTIONS

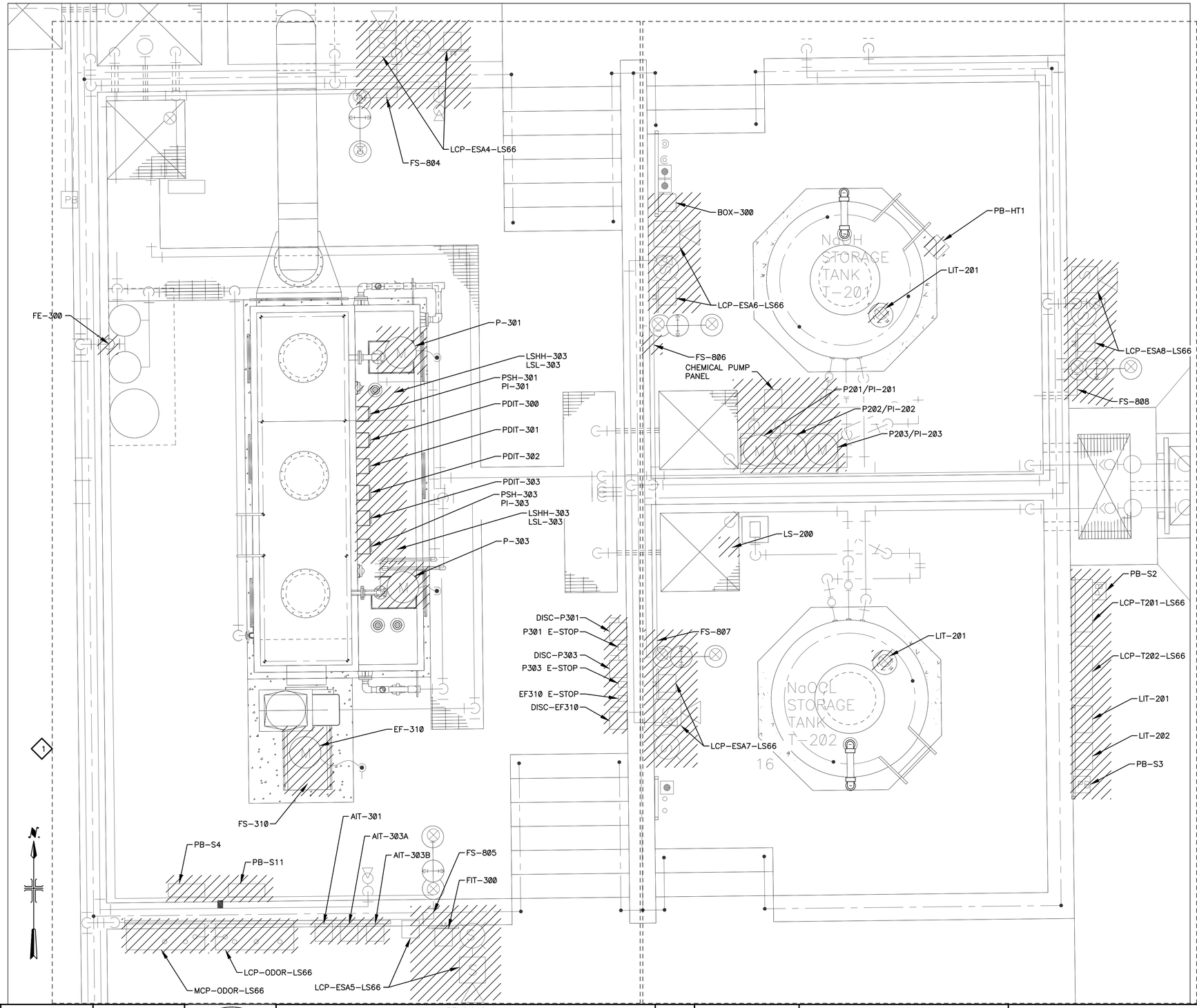
COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
S SHEET 30 OF 80
CAD FILE: CSELS66.RVT

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. 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) UNLESS INDICATED OTHERWISE, AND ABANDON BELOW GRADE CONDUITS IN PLACE UNLESS INDICATED OTHERWISE. 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. 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.
8. COORDINATE WITH CITY OF PHOENIX OPERATIONS TO IDENTIFY ITEMS THAT OPERATIONS WOULD LIKE TO SALVAGE PRIOR TO CONSTRUCTION.

KEYED NOTES:

1. REMOVE ALL ELECTRICAL EQUIPMENT AND WIRES. NOT ALL ELECTRICAL EQUIPMENT IS SHOWN. CONTRACTOR TO FIELD INVESTIGATE PRIOR TO BID TO OBTAIN COMPREHENSIVE DEMO PLAN. WHERE ELECTRICAL CONDUIT IS ABANDONED AND LEFT IN PLACE, SAW CUT TO 12" ABOVE FINISHED GRADE AND CAP. REUSE EXISTING CONDUITS AS NOTED IN THE SINGLE LINE DIAGRAM, CONDUIT BLOCK DIAGRAMS, AND OTHER DRAWINGS.

ODOR CONTROL AREA DEMO

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

FOR CITY OF PHOENIX USE ONLY - REFERENCE OID NUMBER:

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

USER:rbence FILE:Y:\866-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-07 ODOR CONTROL DEMOLITION PLAN (NG-E-LS66M-04).dwg DATE:1/18/23 TIME:12:33pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 Renewal 12-31-24

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
•				
•				
•				
•				
•				
•				
•				

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 66
REFURBISHMENT

LIFT STATION – LS-66

ODOR CONTROL ELECTRICAL DEMOLITION PLAN

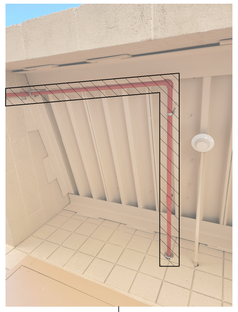
COPYRIGHT © 2007-JANUARY

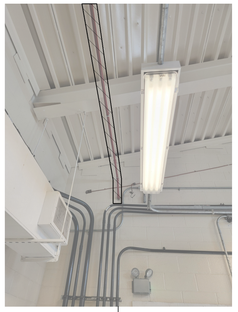
CITY PROJECT NO. WS90400084

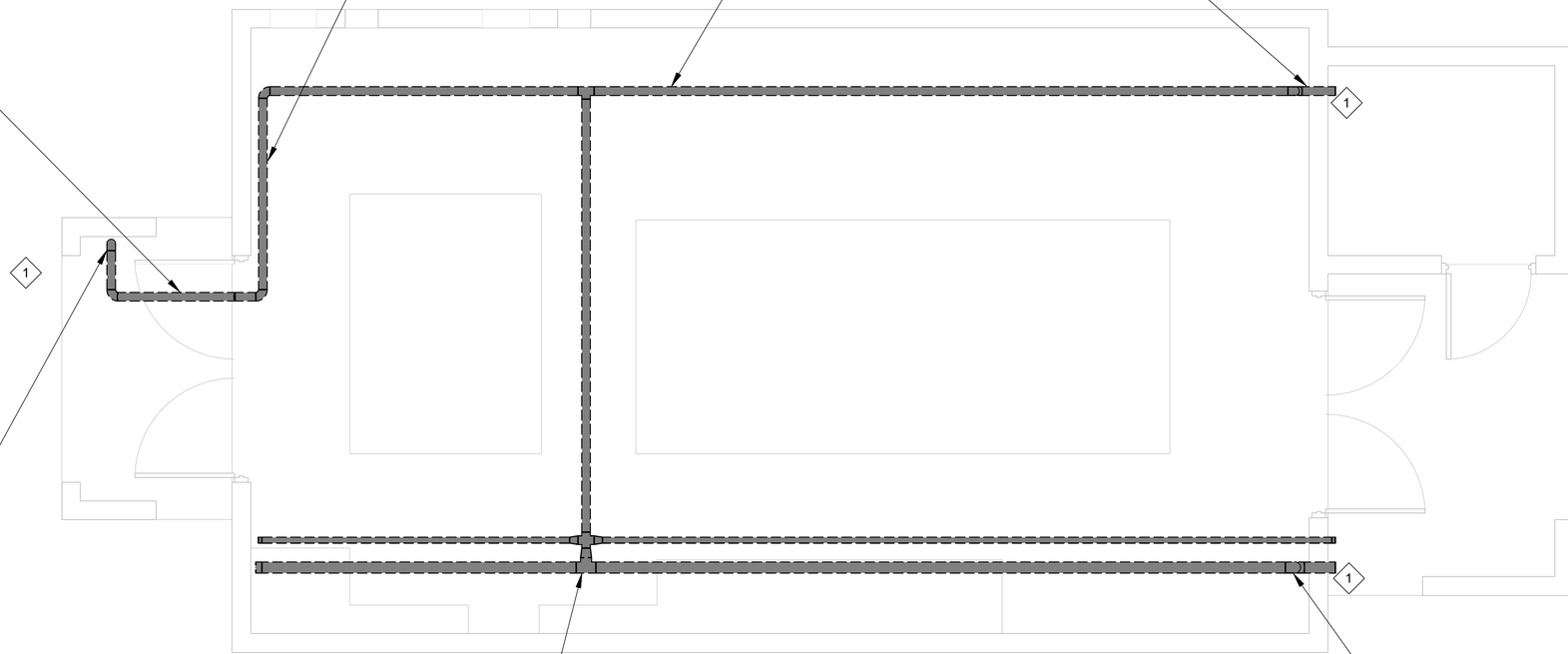
DATE: JANUARY 2023

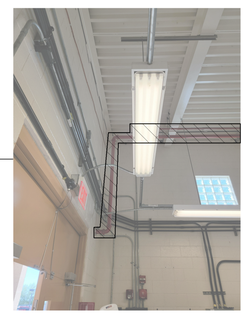
E-07 SHEET 31 OF 80

CAD FILE: NG-E-LS55M-04.dwg









ELECTRICAL BUILDING PLAN

3/8" = 1'-0"

KEYNOTES:	DENOTED BY SYMBOL X
	HOLES IN THE WALL OF THESE LOCATIONS SHALL BE FILLED WITH FOAM AND CAPPED WITH METAL PLATES ON BOTH SIDES AFTER THE FIRE SUPPRESSION SYSTEM IS REMOVED. METAL PLATES SHALL BE PAINTED TO MATCH EXISTING WALL COLOR.
1	HOLES IN THE WALL OF THESE LOCATIONS SHALL BE FILLED WITH FOAM AND CAPPED WITH METAL PLATES ON BOTH SIDES AFTER THE FIRE SUPPRESSION SYSTEM IS REMOVED. METAL PLATES SHALL BE PAINTED TO MATCH

CODE DATA

CODE: 1997 UNIFORM BUILDING CODE WITH CITY OF PHOENIX AMENDMENTS

OCCUPANCY:	GROUP F, DIVISION 2 (SECTION 306)
CONSTRUCTION TYPE:	V-N (SECTION 606)
FIRE SUPPRESSION:	SUPERVISED FIRE SUPPRESSION SYSTEM PROVIDED
ALLOWABLE AREA:	12,00 S.F. (TABLE 5B)
ACTUAL GROSS AREA :	941 S.F.
STRUCTURAL FRAME:	NONE
PARTITIONS:	NONE
FLOORS AND CEILINGS:	NONE
ROOFS AND CEILINGS:	NONE
NUMBER OF OCCUPANTS:	1 OCCUPANT/100 S.F. EQUALS 9 OCCUPANTS (TABLE 10A)
ACTUAL OCCUPANTS:	NO PERMANENT OCCUPANTS

THE NORTH GATEWAY WRP ELECTRICAL BUILDING LOCATED AT LIFT STATION 66 SITE

CURRENT BUILDING CLASSIFICATION: F-2 (FACTORY) OCCUPANCY

- AN F-2 OCCUPANCY PER THE IBC IS AN OCCUPIED SPACE FOR THE PURPOSE OF FABRICATION, FINISHING, MANUFACTURING, PACKAGING, ASSEMBLY OR PROCESSING OF MATERIALS THAT ARE COMBUSTIBLE OR THAT USE COMBUSTIBLE PRODUCTS IN THE PRODUCTION PROCESS.

REQUESTED BUILDING CLASSIFICATION: U (UTILITY) NON-OCCUPIED BUILDING

- A UTILITY OCCUPANCY PER THE IBC IS DEFINED AS A BUILDING OR STRUCTURE OF AN ACCESSORY CHARACTER NOT CLASSIFIED IN ANY OTHER SPECIFIC OCCUPANCY. SINCE THE BUILDING IS UNOCCUPIED AND FUNCTIONS AS AN ACCESSORY TO THE LIFT STATION, A UTILITY OCCUPANCY CLASSIFICATION IS ACCEPTABLE.

ORIGINAL LIFE SAFETY PLAN: DATED 2006 CLASSIFIED THE BUILDING AS A TYPE V-N CONSTRUCTION

- MAXIMUM ALLOWED BUILDING AREA FOR A UTILITY OCCUPANCY OF TYPE V-N CONSTRUCTION IS 5,500 FT2 FOR A NON-SPRINKLERED BUILDING. THE EXISTING BUILDING IS LISTED AT 941 FT2 WHICH IS UNDER THE MAXIMUM ALLOWED SQUARE FOOTAGE PER CODE.

GARVER RECOMMENDATION: RECLASSIFY THE ELECTRICAL BUILDING AT LIFT STATION 66 TO UTILITY (U) OCCUPANCY CLASSIFICATION. UNDER THE UTILITY OCCUPANCY CLASSIFICATION FIRE SPRINKLERS ARE NO LONGER REQUIRED IN THE ELECTRICAL BUILDING

N

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

FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-238, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR USE BY ANY PERSON OR COMPANY EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/13/2023 12:51:44 PM

GARVER

Registered Professional Engineer Certificate No. 60517 JONATHON CHILL Date Signed 1/13/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN JAG
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - ELECTRICAL BUILDING

ELECTRICAL BUILDING FIRE SUPPRESSION DEMOLITION

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
M SHEET 32 OF 80
CAD FILE: CSELS66.RVT

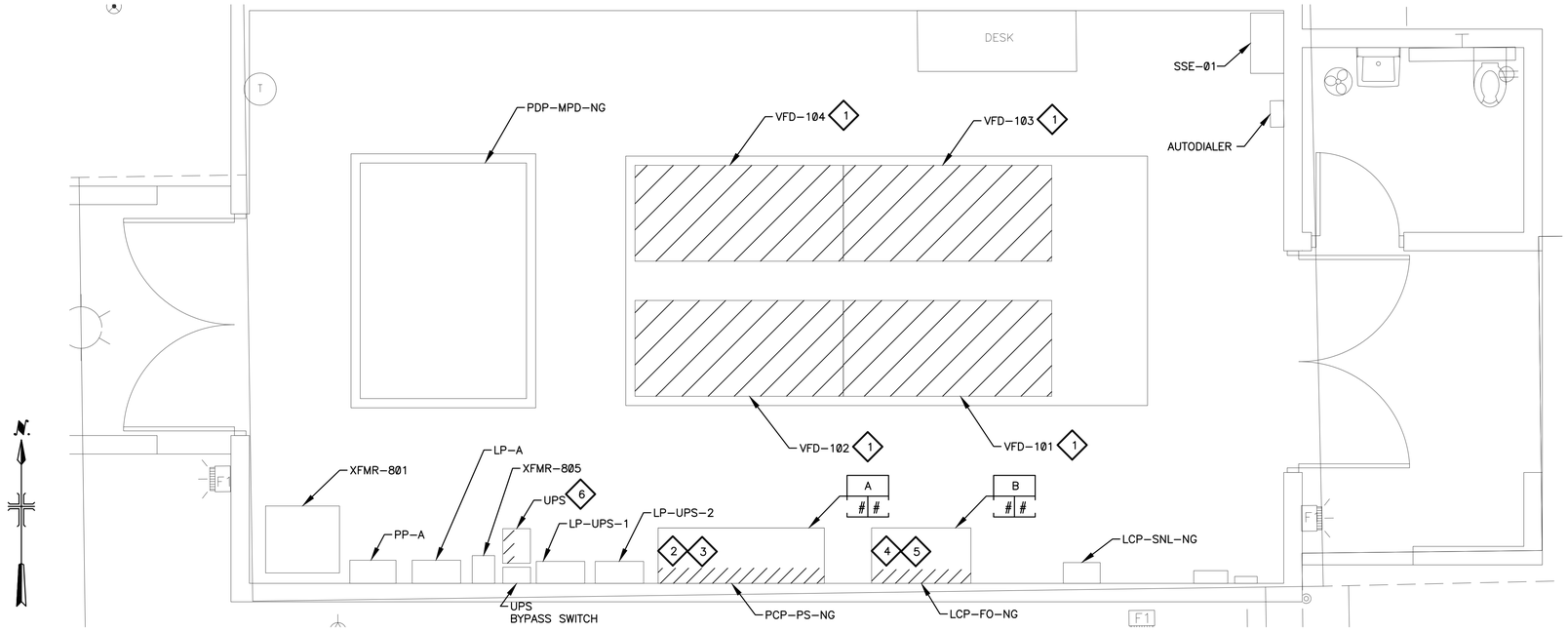
FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

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

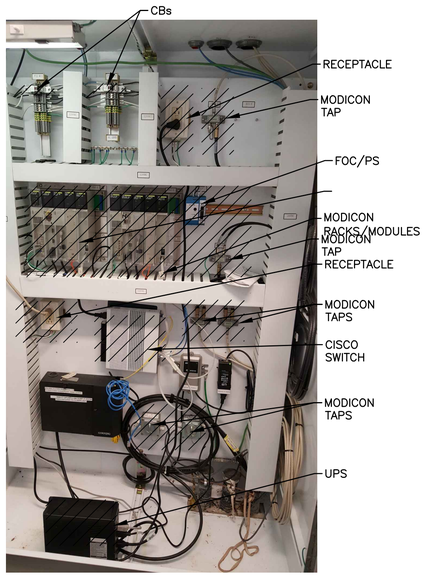
FOR CONSTRUCTION

"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.

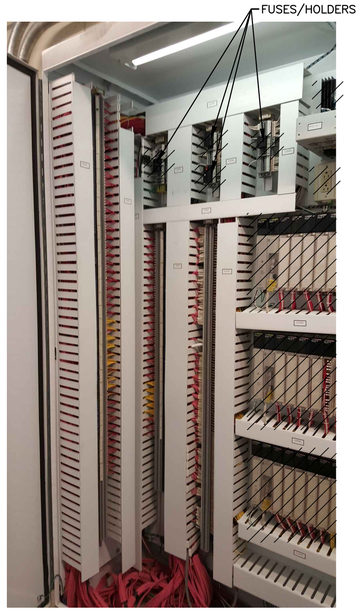


ELECTRICAL BUILDING DEMO

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

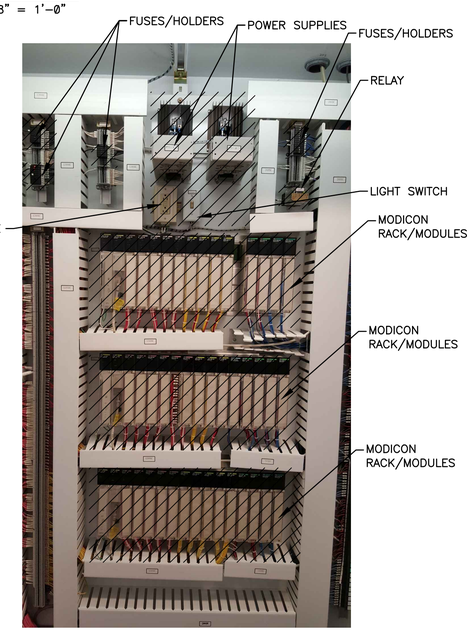


CENTER FRONT VIEW

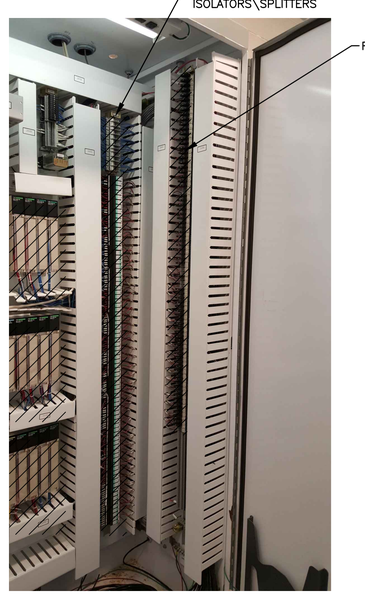


LEFT FRONT VIEW

DETAIL A #/# LCP-FO-NG
N.T.S.



CENTER FRONT VIEW



RIGHT FRONT VIEW

DETAIL B #/# PCP-PS-NG
N.T.S.

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) UNLESS INDICATED OTHERWISE, AND ABANDON BELOW GRADE CONDUITS IN PLACE UNLESS INDICATED OTHERWISE. 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. 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.
8. RETAIN AND DELIVER ALL ITEMS REMOVED FROM PCP-PS-NG AND LCP-FO-NG TO THE OWNER.
8. COORDINATE WITH CITY OF PHOENIX OPERATIONS TO IDENTIFY ITEMS THAT OPERATIONS WOULD LIKE TO SALVAGE PRIOR TO CONSTRUCTION.

KEY NOTES:

1. DEMO EXISTING VFD AND ASSOCIATED WIRES. REUSE EXISTING CONDUITS.
2. DEMO AND REPLACE EXISTING I/O MODULES AND ASSOCIATED WIRES. REUSE CABINET TERMINAL BLOCKS. SEE SPECIFICATIONS FOR REPLACEMENT I/O MODULES.
3. DEMO AND REPLACE FUSE BLOCKS, POWER SUPPLIES, ANALOG ISOLATORS AND SPLITTERS, RELAYS, RECEPTACLES, AND LIGHT SWITCHES. SEE SPECIFICATIONS FOR REPLACEMENT SPECIFICATIONS.
4. DEMO AND REPLACE EXISTING QUANTUM HOT SWAP PLCs WITH SINGLE PLC. DEMO EXISTING MODICON COAX, MODICON COAX TERM BOXES, AND MODICON COAX SPLITTERS. SEE SPECIFICATIONS AND DRAWINGS FOR REPLACEMENT SPECIFICATIONS.
5. DEMO AND REPLACE EXISTING CISCO FIBER SWITCH, BREAKERS, RECEPTACLES, AND UPS. SEE SPECIFICATIONS AND DRAWINGS FOR REPLACEMENT SPECIFICATIONS.
6. DEMO AND REPLACE EXISTING UPS BATTERIES.

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

USER:bbence FILE:Y:\866-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-05 ELECTRICAL BUILDING DEMOLITION PLAN (NG-E-LS66M-02).dwg DATE:1/10/23 TIME:12:33pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 - ELECTRICAL BUILDING

ELECTRICAL BUILDING DEMOLITION PLAN

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

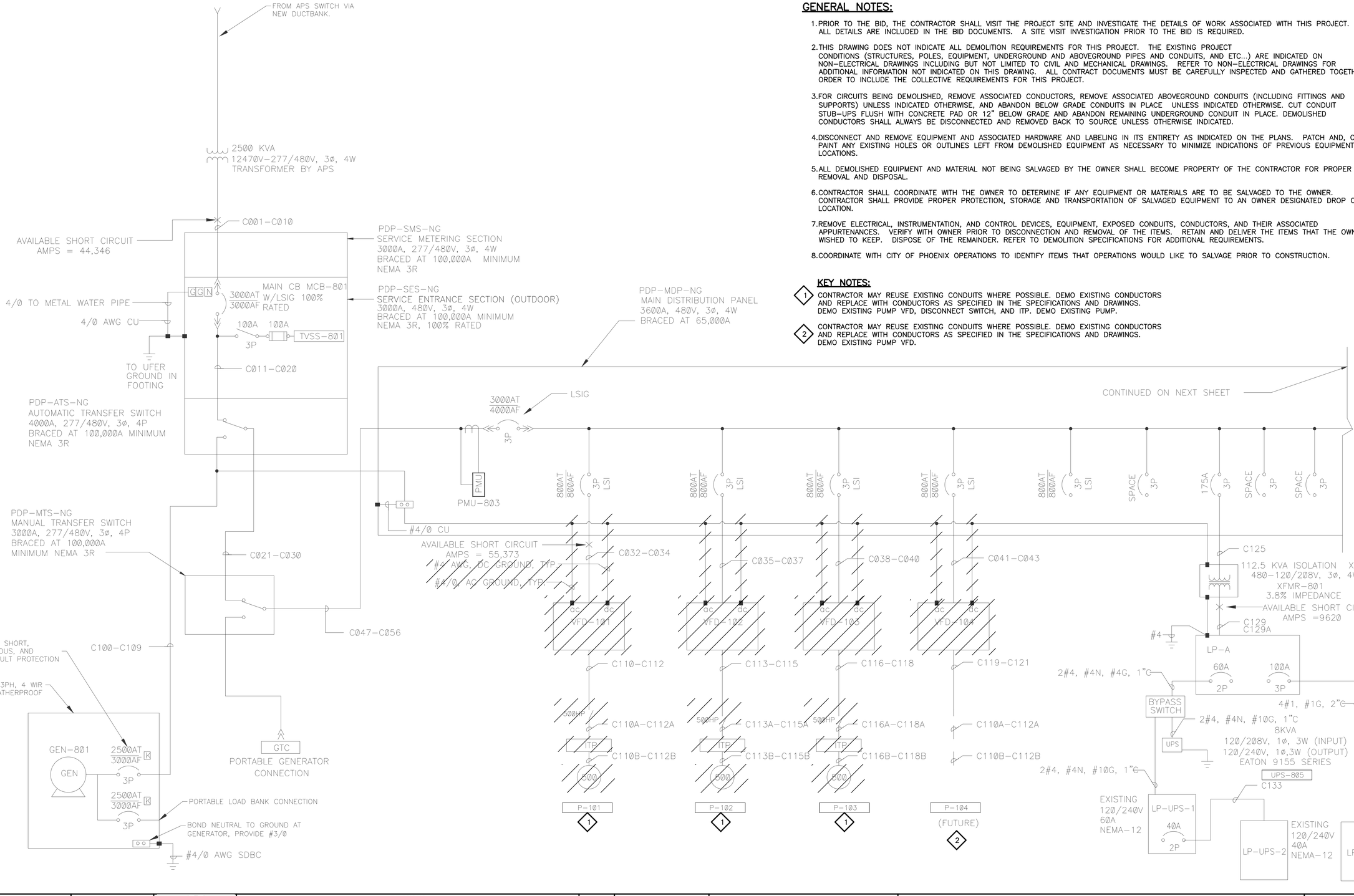
E-05 SHEET 33 OF 80

CAD FILE: NG-E-LS66M-02.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. 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) UNLESS INDICATED OTHERWISE, AND ABANDON BELOW GRADE CONDUITS IN PLACE UNLESS INDICATED OTHERWISE. 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. 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.
8. COORDINATE WITH CITY OF PHOENIX OPERATIONS TO IDENTIFY ITEMS THAT OPERATIONS WOULD LIKE TO SALVAGE PRIOR TO CONSTRUCTION.

KEY NOTES:

1. CONTRACTOR MAY REUSE EXISTING CONDUITS WHERE POSSIBLE. DEMO EXISTING CONDUCTORS AND REPLACE WITH CONDUCTORS AS SPECIFIED IN THE SPECIFICATIONS AND DRAWINGS. DEMO EXISTING PUMP VFD, DISCONNECT SWITCH, AND ITP. DEMO EXISTING PUMP.
2. CONTRACTOR MAY REUSE EXISTING CONDUITS WHERE POSSIBLE. DEMO EXISTING CONDUCTORS AND REPLACE WITH CONDUCTORS AS SPECIFIED IN THE SPECIFICATIONS AND DRAWINGS. DEMO EXISTING PUMP VFD.

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

GARVER | EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-17-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 - ELECTRICAL

SINGLE LINE DIAGRAM I - DEMOLITION

COPYRIGHT © 2007-JANUARY

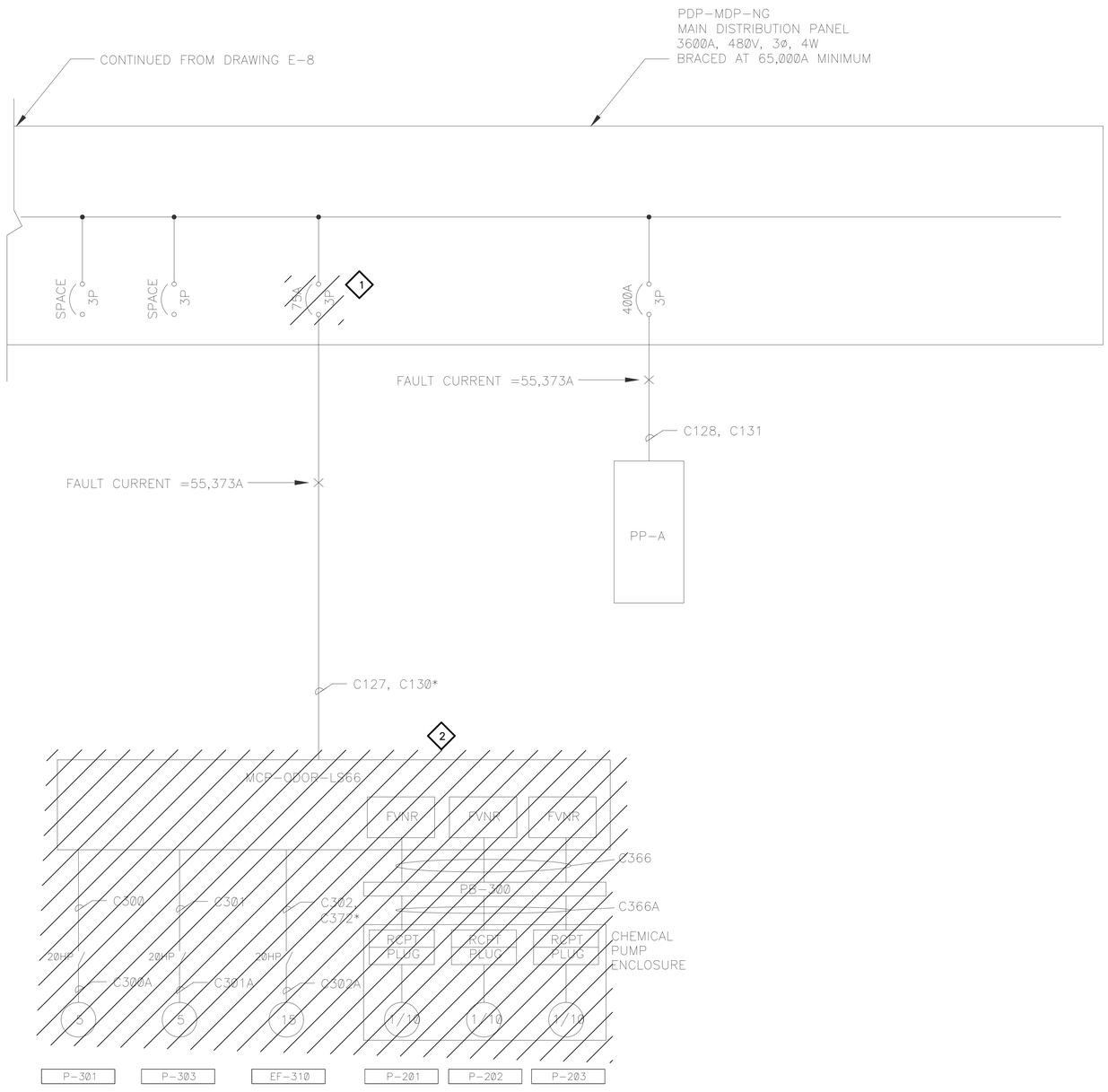
CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
E-08 SHEET 34 OF 80
CAD FILE: NG-E-LS66M-05.dwg

USER:bbence FILE:Y:\666-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-08 SINGLE LINE DIAGRAM I DEMOLITION (NG-E-LS66M-05).dwg DATE:1/18/23 TIME:12:33pm

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.



INDICATES SPARE CONDUIT

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) UNLESS INDICATED OTHERWISE, AND ABANDON BELOW GRADE CONDUITS IN PLACE UNLESS INDICATED OTHERWISE. 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. 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.
8. COORDINATE WITH CITY OF PHOENIX OPERATIONS TO IDENTIFY ITEMS THAT OPERATIONS WOULD LIKE TO SALVAGE PRIOR TO CONSTRUCTION.

KEYED NOTES:

1. DEMO EXISTING CIRCUIT BREAKER AND REPLACE WITH BREAKER INDICATED ON SINGLE LINE DIAGRAM. KEEP AND REUSE ASSOCIATED EXISTING CONDUITS\BOXES. DEMO EXISTING LOAD SIDE WIRES.
2. DEMO EXISTING MCP-ODOR-LS66 PANEL/CHEMICAL PANEL AND ASSOCIATED WIRE. REUSE EXISTING CONDUITS\BOXES AS NEEDED AND AS APPROVED BY THE ENGINEER.

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 – ELECTRICAL

SINGLE LINE DIAGRAM II – DEMOLITION

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

E-09 SHEET 35 OF 80

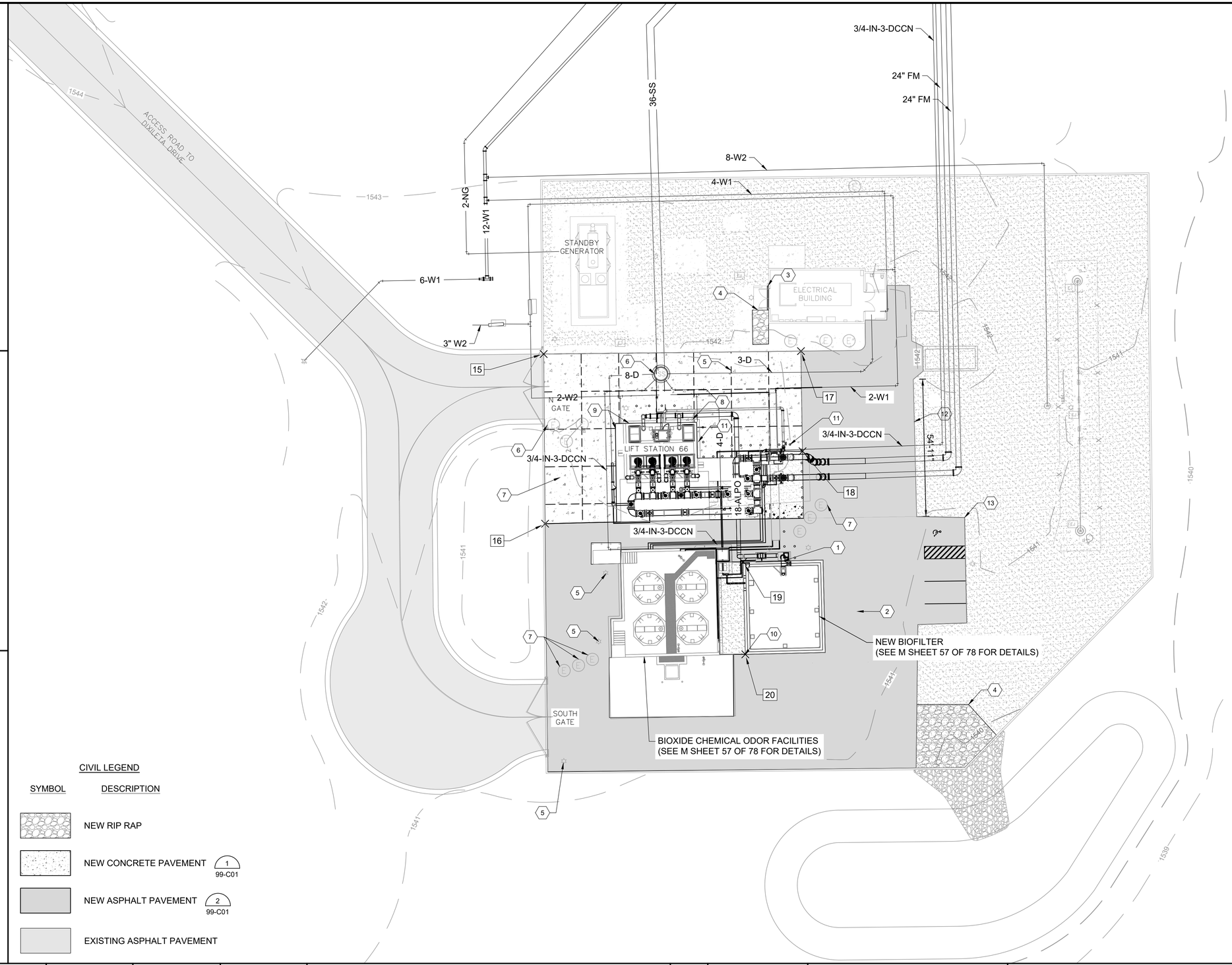
CAD FILE: NG-E-LS66M-06.dwg

USER:bbence FILE:Y:\066-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-09 SINGLE LINE DIAGRAM II DEMOLITION (NG-E-LS66M-06).dwg DATE:1/10/23 TIME:12:34pm

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

FOR CONSTRUCTION

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW. THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



KEYED NOTES:

1. NEW BIOFILTER. SEE MECHANICAL DRAWINGS FOR ADDITIONAL DETAILS.
2. PROVIDE ASPHALT PAVEMENT PER DETAIL 2/74 .
3. PROPOSED CONCRETE DRAIN. 6/75
4. RIPRAP D50 = 6",12" THICK, GRADE TO DRAIN TO PAVEMENT, APPROXIMATE EXTENTS SHOWN.
5. CONCRETE JOINT, MAX 15' BOTH DIRECTIONS (TYP).
6. ADJUST RING AND COVER TO MATCH PROPOSED GRADE. TYPICAL FOR ALL NEW PAVEMENT AREAS
7. NEW CONCRETE PAVEMENT 1/74
8. PROTECT EXISTING HOSE BIB IN PLACE OR REMOVE AND REPLACE.
9. EXPANSION JOINT AT EXISTING STRUCTURE.
10. 2" OF DG PER MAG SPEC 430.4
11. NEW BOLLARD PER MAG DETAIL NO. 140 TYPE 2 REMOVABLE (TYP). 3/74
12. PROPOSED PAVEMENT TO MATCH EXISTING PAVEMENT LIMITS.
13. PARKING AREA TO BE RE STRIPPED / NEEDS TO BE PAINTED TO MATCH EXISTING.

SITE LAYOUT COORDINATES			
POINT #	DESCRIPTION	NORTHING	EASTING
15	NW CONCRETE CORNER	1002434.73	639575.80
16	SW CONCRETE CORNER	1002366.84	639576.38
17	NE CONCRETE CORNER	1002435.89	639678.79
18	WEST EDGE OF PAVEMENT	1002395.83	639679.42
19	TOP OF CONCRETE	1002351.54	639655.63
20	TOP OF CONCRETE	1002314.55	639656.51

CIVIL LEGEND

SYMBOL	DESCRIPTION
	NEW RIP RAP
	NEW CONCRETE PAVEMENT 1/99-C01
	NEW ASPHALT PAVEMENT 2/99-C01
	EXISTING ASPHALT PAVEMENT

N

0 10' 20' 40' 60'
(IN FEET)

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
REVISION | ENGINEERING COMPANY | PROJECT NO. | PROJECT NAME | DATE | CAD FILE NAME | DWG NUMBER | REMARKS

Dwg File: L:\2019\19W11040 - PHX Lift Station 66 Refurbishment\Drawings\PHXLS66-05-C03
Plot Date: 1/13/2023 11:23:19 AM

GARVER

Registered Professional Engineer (Civil)
CERTIFICATE NO.
60517
JONATHON CHILL
Date Signed 1/13/23
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JMC
DWN LAR
CKD JFM

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - SITE CIVIL

SITE PLAN - PROPOSED

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

C SHEET 36 OF 80

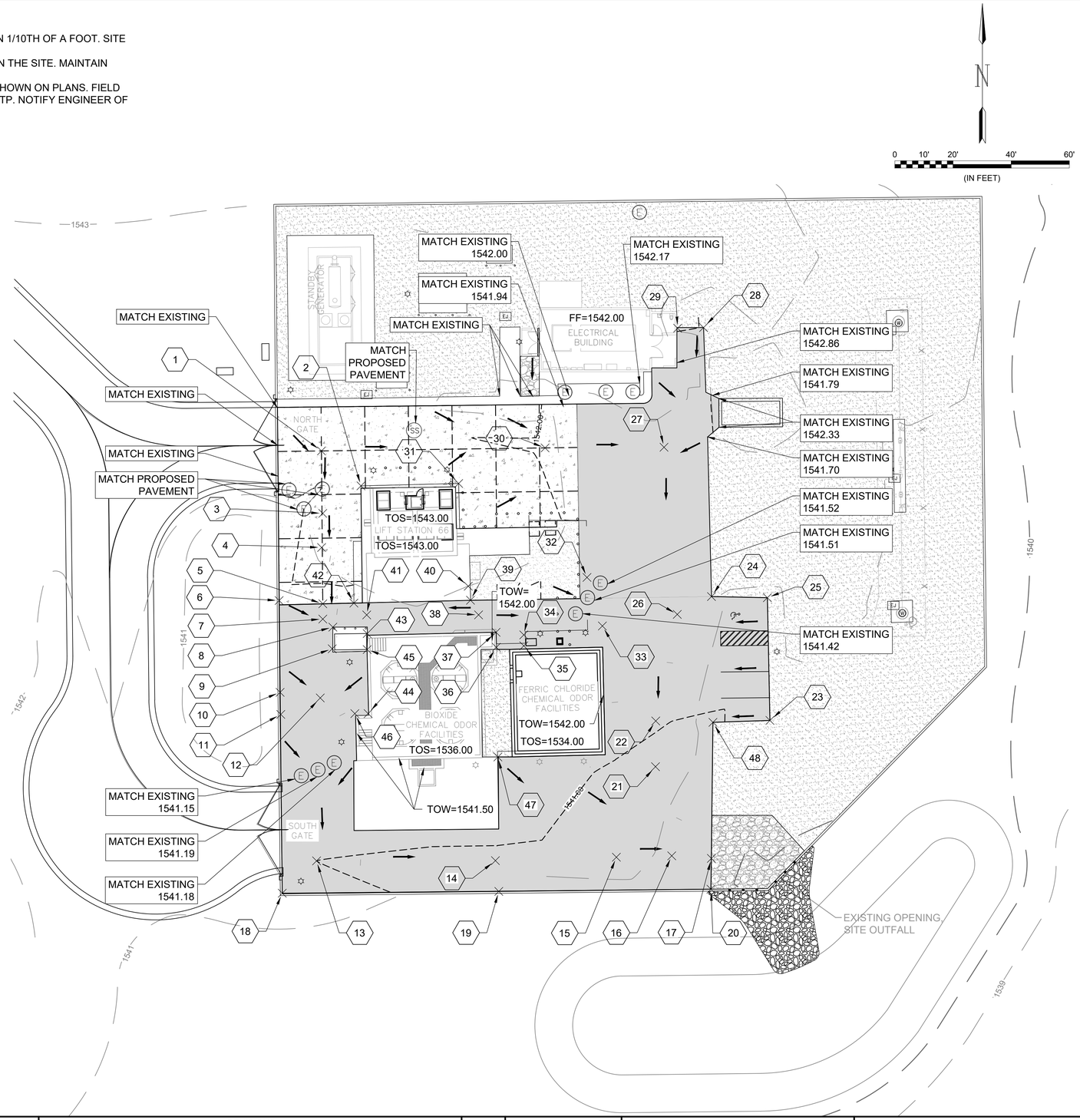
CAD FILE: PHXLS66-05-C03.dwg

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

FOR CONSTRUCTION

GENERAL NOTES:

1. THE TOLERANCE FOR EACH POINT SHALL BE WITHIN 1/10TH OF A FOOT. SITE SHALL BE GRADED TO DRAIN.
2. THERE SHALL BE NO INTERMITTENT LOW POINTS ON THE SITE. MAINTAIN SITE DRAINAGE AT ALL TIMES.
3. TIE PROPOSED GRADE INTO EXISTING GRADE, AS SHOWN ON PLANS. FIELD VERIFY TIE-IN LOCATIONS WITHIN 30 DAYS AFTER NTP. NOTIFY ENGINEER OF AN DISCREPANCIES.
5. NO TRIP HAZARDS.



SITE WORK POINTS				
POINT #	DESCRIPTION	ELEVATION	NORTHING	EASTING
1	TOP OF CONCRETE	1542.20	1002419.77	639590.93
2	TOP OF CONCRETE	1542.72	1002407.77	639604.51
3	TOP OF CONCRETE	1542.75	1002398.31	639591.37
4	TOP OF CONCRETE	1542.70	1002386.57	639590.97
5	TOP OF PAVEMENT	1541.60	1002367.21	639591.40
6	TOP OF PAVEMENT	1541.70	1002368.32	639576.37
7	TOP OF PAVEMENT	1541.25	1002361.96	639591.39
8	TOP OF PAVEMENT	1541.22	1002359.19	639594.85
9	TOP OF PAVEMENT	1541.21	1002351.73	639594.63
10	TOP OF PAVEMENT	1541.50	1002336.76	639576.71
11	TOP OF PAVEMENT	1541.50	1002329.17	639576.95
12	TOP OF PAVEMENT	1541.20	1002334.83	639590.52
13	TOP OF PAVEMENT	1541.00	1002278.81	639589.24
14	TOP OF PAVEMENT	1540.75	1002278.90	639650.75
15	TOP OF PAVEMENT	1540.50	1002280.07	639692.35
16	TOP OF PAVEMENT	1540.25	1002280.55	639711.39
17	TOP OF PAVEMENT	1540.10	1002279.67	639725.03
18	TOP OF PAVEMENT	1541.08	1002267.71	639577.45
19	TOP OF PAVEMENT	1540.80	1002268.31	639651.92
20	TOP OF PAVEMENT	1540.30	1002269.08	639724.88
21	TOP OF PAVEMENT	1540.85	1002311.20	639705.81
22	TOP OF PAVEMENT	1541.05	1002326.91	639705.89
23	TOP OF PAVEMENT	1541.50	1002327.10	639745.16
24	TOP OF PAVEMENT	1541.25	1002369.69	639725.06
25	TOP OF PAVEMENT	1541.50	1002369.30	639744.27
26	TOP OF PAVEMENT	1541.20	1002363.57	639713.29
27	TOP OF PAVEMENT	1541.60	1002421.03	639708.73
28	TOP OF PAVEMENT	1542.75	1002462.18	639722.33
29	TOP OF PAVEMENT	1542.88	1002461.96	639713.41
30	TOP OF CONCRETE	1541.90	1002420.81	639667.83
31	TOP OF CONCRETE	1542.64	1002408.56	639638.11
32	TOP OF PAVEMENT	1541.59	1002376.27	639682.24
33	TOP OF PAVEMENT	1541.41	1002359.58	639687.55
34	TOP OF PAVEMENT	1541.42	1002356.52	639660.50
35	TOP OF PAVEMENT	1541.46	1002352.76	639660.50
36	TOP OF PAVEMENT	1541.45	1002352.24	639651.05
37	TOP OF PAVEMENT	1541.40	1002357.42	639650.97
38	TOP OF PAVEMENT	1541.75	1002363.40	639644.96
39	TOP OF PAVEMENT	1541.40	1002368.43	639642.18
40	TOP OF CONCRETE	1541.80	1002373.24	639641.40
41	TOP OF PAVEMENT	1541.40	1002363.38	639606.49
42	TOP OF PAVEMENT	1541.70	1002367.45	639602.09
43	TOP OF PAVEMENT	1541.95	1002356.96	639606.65
44	TOP OF PAVEMENT	1541.87	1002329.45	639606.98
45	TOP OF PAVEMENT	1541.84	1002351.48	639606.66
46	TOP OF PAVEMENT	1541.80	1002329.44	639602.41
47	TOP OF PAVEMENT	1541.29	1002314.53	639651.61
48	TOP OF PAVEMENT	1540.87	1002326.45	639725.56

CIVIL LEGEND

SYMBOL	DESCRIPTION
	NEW 6" RIP RAP
	NEW DECOMPOSED GRANITE
	NEW CONCRETE PAVEMENT
	NEW ASPHALT PAVEMENT
	EXISTING ASPHALT PAVEMENT
	EXISTING GRAVEL PAVEMENT

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY STATED IN THE CODE OR REQUIRED BY LAW.
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

FOR CITY OF PHOENIX USE ONLY - REFERENCE

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	CID NUMBER:	DATE	CAD FILE NAME	DWG NUMBER	REMARKS

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON OHILL Date Signed 1/13/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JMC
DWN EDT
CKD CDG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - SITE CIVIL

GRADING PLAN - PROPOSED

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

C SHEET 37 OF 80

CAD FILE: PHXLS66-05-C0X.dwg

Dwg File: L:\20191\19W11040 - PHX Lift Station 66 Refurbishment\Drawings\PHXLS66-05-C0X
Plot Date: 1/13/2023 11:23:37 AM

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

FOR CONSTRUCTION

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW. THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

KEYED NOTES:

1. MAINTAIN SERVICE FOR BIOXIDE ODOR CONTROL FACILITIES AND ASSOCIATED ACCESSORIES, INCLUDING CHEMICAL STORAGE TANKS, METERING PUMPS, PIPING, INSTRUMENTATION, EYEWASH STATIONS, SHOWER STATIONS AND POWER. COORDINATE RELOCATION OF ANY PIPING OR UTILITIES WITH THE CITY.
2. MAINTAIN CHEMICAL TRUCK ACCESS THROUGHOUT CONSTRUCTION. COORDINATE WITH CITY TO PROVIDE SUFFICIENT SPACE FOR OFFLOADING CHEMICALS. SITE ACCESS WILL ENTER THROUGH THE SOUTH GATE AND EXIT THROUGH THE NORTH GATE.
3. CONTRACTOR STAGING AREA. COORDINATE EXACT LOCATION AND FOOTPRINT WITH CITY.

CIVIL LEGEND

SYMBOL	DESCRIPTION
	NEW RIP RAP
	CONTRACTOR STAGING AREA
	EXISTING ASPHALT PAVEMENT
	EXISTING GRAVEL PAVEMENT

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

GARVER

Registered Professional Engineer (Civil)
CERTIFICATE NO.
60517
JONATHON
O'HILL
Date Signed 1/13/23
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JMC
DWN LAR
CKD JFM

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - SITE CIVIL

CONSTRUCTION ACCESS AND STAGING PLAN

COPYRIGHT © 2007-JANUARY

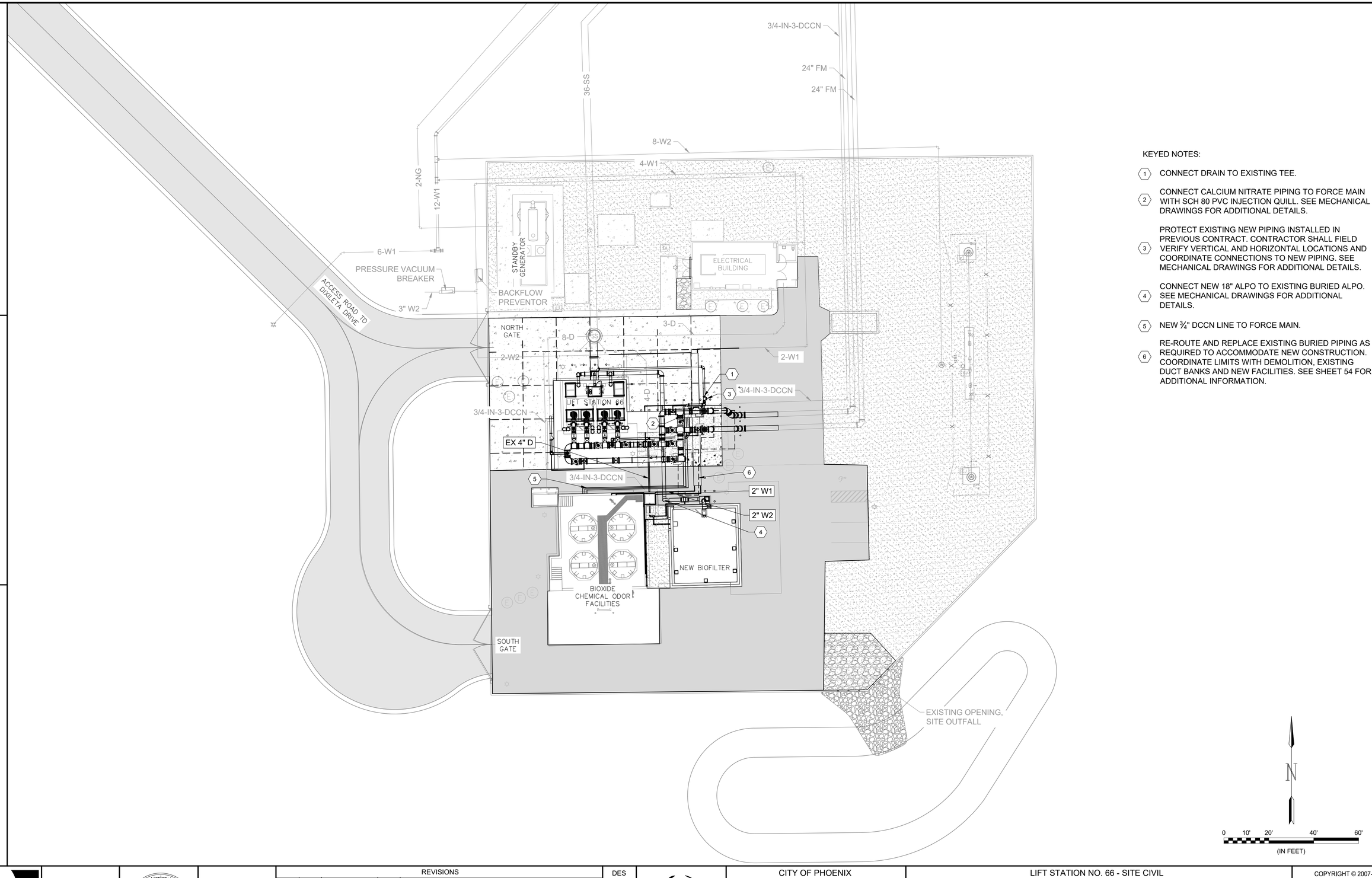
CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
C SHEET 38 OF 80
CAD FILE: PHXLS66-05-C04.dwg

Dwg File: L:\2019\19W11040 - PHX Lift Station 66 Refurbishment\Drawings\PHXLS66-05-C04
Plot Date: 1/13/2023 11:24:18 AM

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

FOR CONSTRUCTION

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY AUTHORIZED BY THE CITY MANAGER OR AS REQUIRED BY LAW. THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



KEYED NOTES:

1. CONNECT DRAIN TO EXISTING TEE.
2. CONNECT CALCIUM NITRATE PIPING TO FORCE MAIN WITH SCH 80 PVC INJECTION QUILL. SEE MECHANICAL DRAWINGS FOR ADDITIONAL DETAILS.
3. PROTECT EXISTING NEW PIPING INSTALLED IN PREVIOUS CONTRACT. CONTRACTOR SHALL FIELD VERIFY VERTICAL AND HORIZONTAL LOCATIONS AND COORDINATE CONNECTIONS TO NEW PIPING. SEE MECHANICAL DRAWINGS FOR ADDITIONAL DETAILS.
4. CONNECT NEW 18" ALPO TO EXISTING BURIED ALPO. SEE MECHANICAL DRAWINGS FOR ADDITIONAL DETAILS.
5. NEW ¾" DCCN LINE TO FORCE MAIN.
6. RE-ROUTE AND REPLACE EXISTING BURIED PIPING AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION. COORDINATE LIMITS WITH DEMOLITION, EXISTING DUCT BANKS AND NEW FACILITIES. SEE SHEET 54 FOR ADDITIONAL INFORMATION.

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON CHILL Date Signed 1/13/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JMC
DWN LAR
CKD CDG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - SITE CIVIL

YARD PIPING PLAN

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

C SHEET 39 OF 80

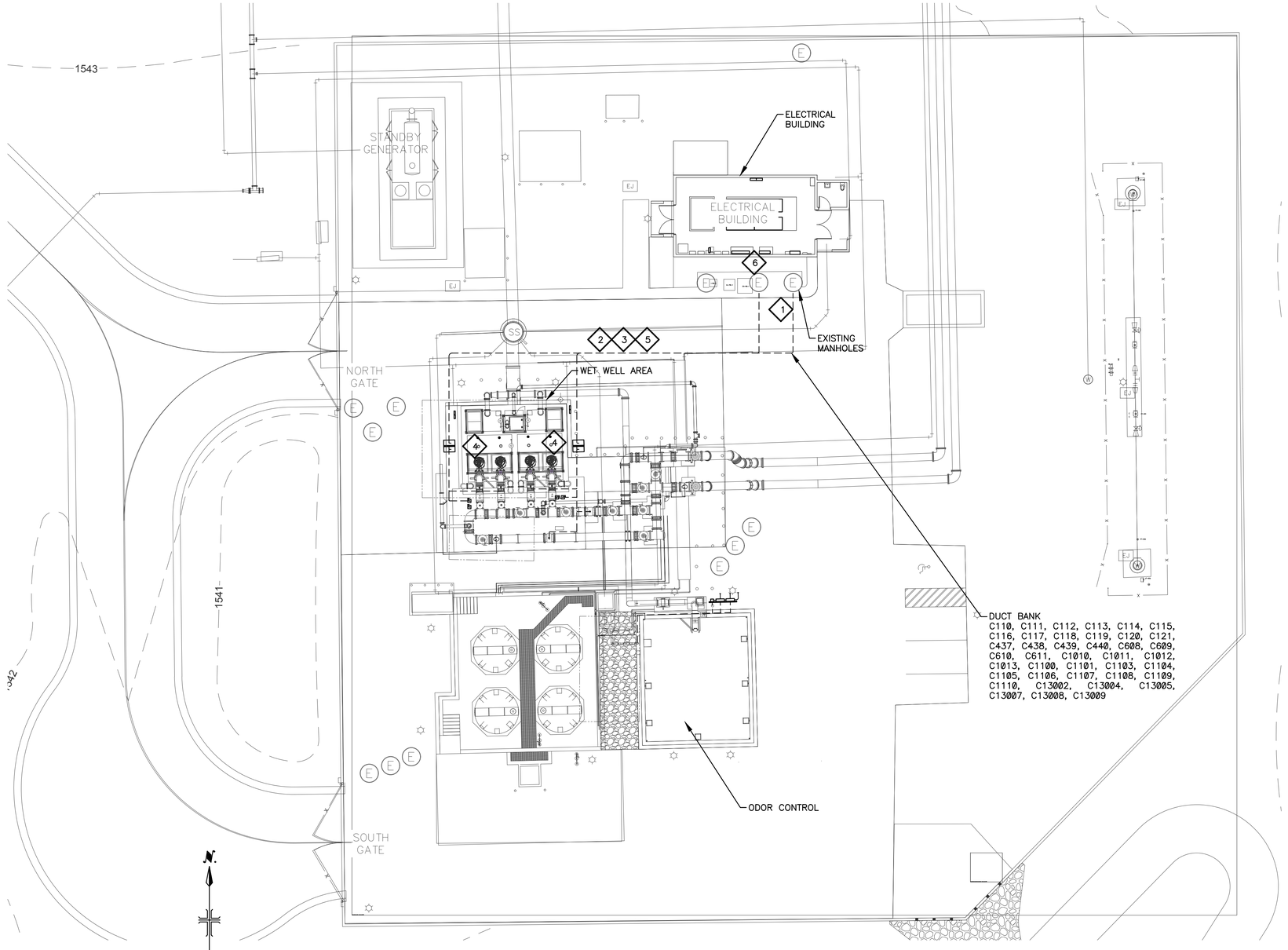
CAD FILE: PHXLS66-05-C06.dwg

Dwg File: L:\2019\19W11040 - PHX Lift Station 66 Refurbishment\Drawings\PHXLS66-05-C06
Plot Date: 1/13/2023 11:25:16 AM

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. 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. NOT ALL 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. SEE CONDUIT BLOCK DIAGRAMS, PANELS SCHEDULES, AND SINGLE LINE DIAGRAM FOR ADDITIONAL CONDUIT AND CABLE REQUIREMENTS NOT INDICATED ON THIS DRAWING.

KEYED NOTES:

1. INTERCEPT EXISTING CONDUITS TERMINATING AT EXISTING MANHOLES AND CONTINUE CONDUITS TO LOCATIONS SHOWN.
2. SEE DETAIL E102 FOR REINFORCED ENCASEMENT FOR ELECTRICAL CONDUITS IN TRAFFIC RATED AREAS.
3. CONTRACTOR TO PERFORM POTHOLING AS NEEDED TO COMPLETE DUCT BANK INSTALLATIONS.
4. CONTRACTOR SHALL CORE DRILL WALLS AS NEEDED TO INSTALL ALL REQUIRED CONDUITS.
5. KEEP AC AND DC VOLTAGES SEPARATED BY AT LEAST 12 INCHES.
6. FOR CONDUITS C1010, C1011, C1012, AND C1013, (AND OTHERS NOT INDICATED ON THIS DRAWING) CONTRACTOR SHALL IDENTIFY AND USE SPARE 24 VDC CONDUITS BETWEEN EXISTING MANHOLE TO PCP-PS-NG.

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

DATE:1/18/23 TIME:12:34pm
USER:bbience FILE:Y:\666-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-10 ELECTRICAL SITE PLAN (NG-E-LS66V-01).dwg

GARVER | EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 – SITE CIVIL

ELECTRICAL SITE PLAN

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

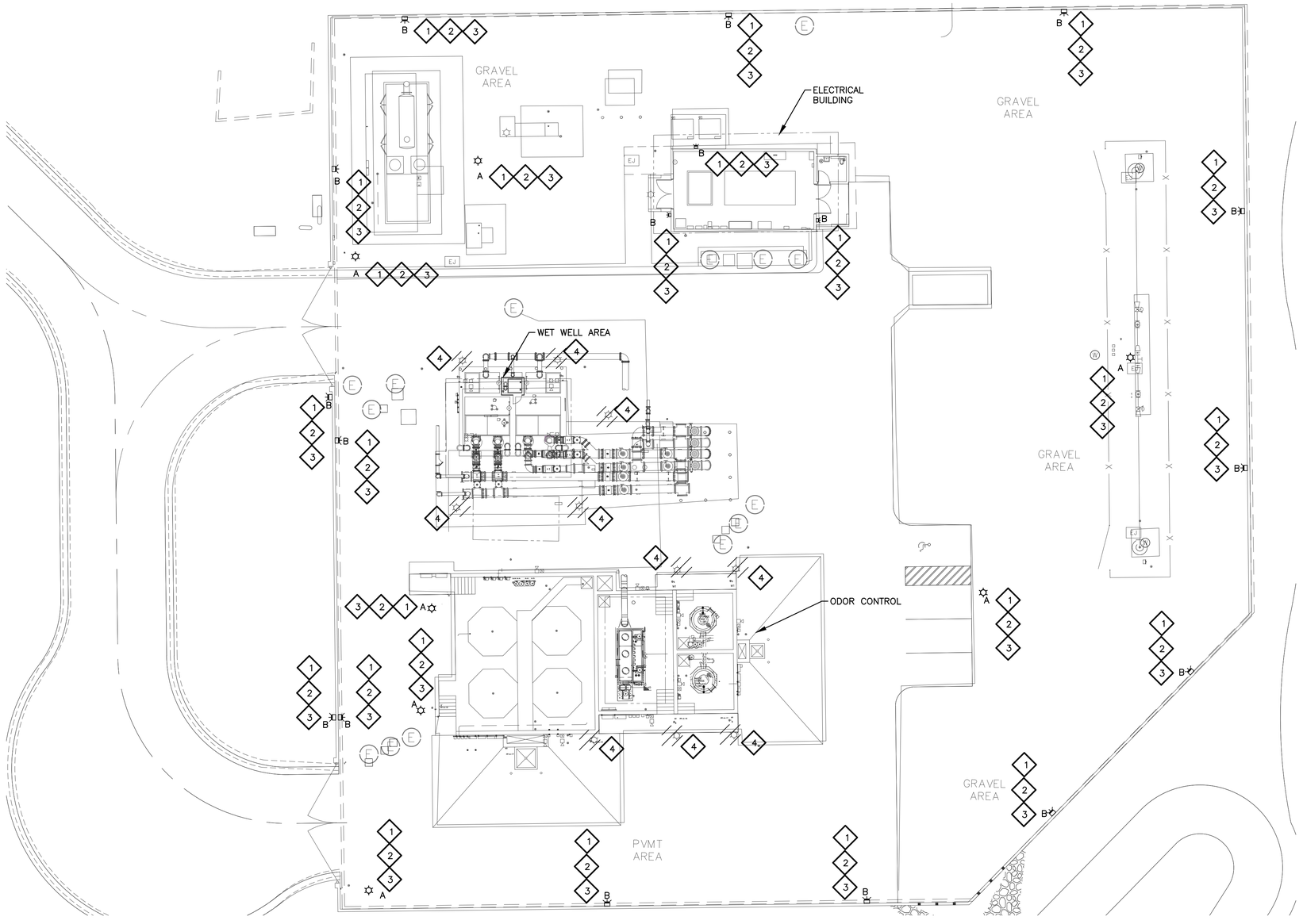
E-10 SHEET 40 OF 80

CAD FILE: NG-E-LS66V-01.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. 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.

KEY NOTES:

1. CONTRACTOR IS TO REMOVE EXISTING FIXTURE AND TURN OVER TO OWNER.
2. CONTRACTOR IS TO FURNISH AND INSTALL NEW FIXTURE.
3. CONTRACTOR IS TO USE EXISTING CONDUIT, WIRE AND HARDWARE.
4. DEMO EXISTING FIXTURE AND ASSOCIATED POLE, CONDUIT (WHERE ACCESSIBLE), AND WIRE, AND TURN OVER TO OWNER.

N

0 8 16 32
1/16" = 1'-0"

LUMINARIES SCHEDULE

SYMBOL	VOLTAGE/WATTAGE	LAMP TYPE	MOUNTING	DESCRIPTION	MANUFACTURER	REMARKS
A	MVOLT/49W EACH	LED	POLE	DSX0 LED P2 40K TFTM MVOLT	LITHONIA DSX0 LED P2 40K TFTM MVOLT SPA (FINISH) / SSS 12.5' W/2.5' BASE	REPLACE EXISTING FIXTURE.
B	MVOLT/12W	LED	WALL	WST LED, PERFORMANCE PACKAGE 1, 40000 K, VISIOAL COMFORT FORWARD THROW, MVOLT W/O PHOTO CELL	LITHONIA WST LED P1 40K VF MVOLT PE (FINISH)	REPLACE EXISTING FIXTURE.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER:

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

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 – SITE CIVIL

LIGHTING SITE PLAN

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

E-14 SHEET 41 OF 80

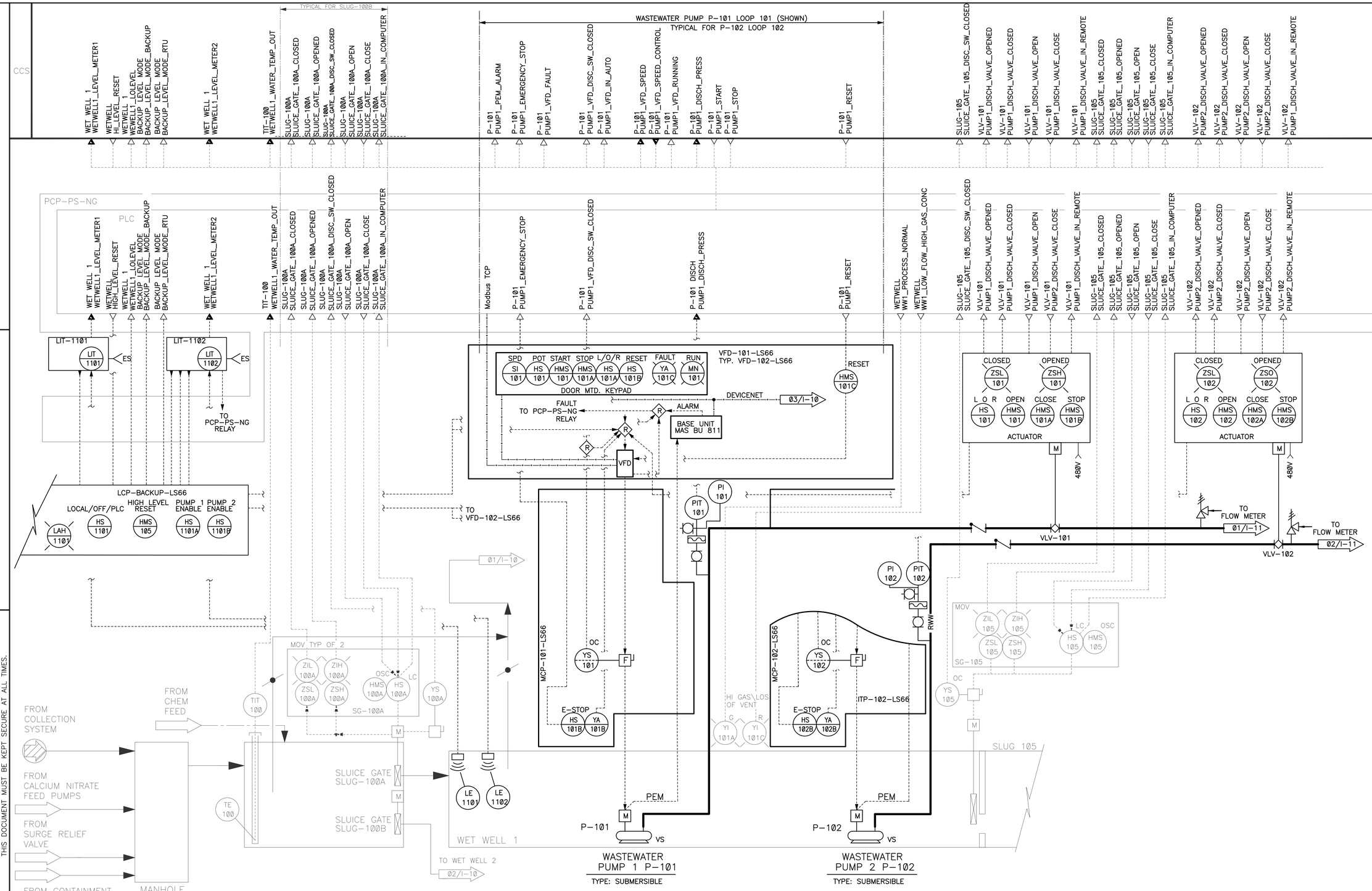
CAD FILE: NG-E-LS66V-05.dwg

USER:bbence FILE:Y:\066-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-14 LIGHTING SITE PLAN (NG-E-LS66V-05).dwg DATE:1/18/23 TIME:12:34pm

FOR CONSTRUCTION

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

"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.



FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER:

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

USER:bbence FILE:Y:\66-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Instrumentation\I-09 P&ID 6 PUMPS WET WELL 1 (NG-I-LS66N-01).dwg DATE:1/18/23 TIME:12:35pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 ARIZONA U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
1				SUPERCEDES FACILITY DRAWING CS000420
•				
•				
•				
•				
•				

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 66
REFURBISHMENT

LIFT STATION NO. 66 – INSTRUMENTATION

P&ID 6 PUMPS WET WELL 1

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

I-09 SHEET 42 OF 80

CAD FILE: NG-I-LS66N-01.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.

WASTEWATER PUMP P-103 LOOP 103 (SHOWN)
TYPICAL FOR P-104 LOOP 104

CCS

WET WELL 2 WETWELL2_LEVEL_METER1
WETWELL 2 WETWELL2_LOLEVEL
WETWELL WETWELL_HILEVEL
WET WELL 2 WETWELL2_LEVEL_METER2
P-103 PUMP3_PEM_ALARM
P-103 PUMP3_EMERGENCY_STOP
P-103 PUMP3_VFD_FAULT
P-103 PUMP3_VFD_DISC_SW_CLOSED
P-103 PUMP3_VFD_IN_AUTO
P-103 PUMP3_VFD_SPEED
P-103 PUMP3_VFD_SPEED_CONTROL
P-103 PUMP3_VFD_RUNNING
P-103 PUMP3_DISCH_PRESS
P-103 PUMP3_START
P-103 PUMP3_STOP
P-103 PUMP3_RESET
VLV-103 PUMP3_DISCH_VALVE_OPENED
VLV-103 PUMP3_DISCH_VALVE_CLOSED
VLV-103 PUMP3_DISCH_VALVE_OPEN
VLV-103 PUMP3_DISCH_VALVE_CLOSE
VLV-103 PUMP3_DISCH_VALVE_IN_REMOTE
VLV-104 PUMP4_DISCH_VALVE_OPENED
VLV-104 PUMP4_DISCH_VALVE_CLOSED
VLV-104 PUMP4_DISCH_VALVE_OPEN
VLV-104 PUMP4_DISCH_VALVE_CLOSE
VLV-104 PUMP4_DISCH_VALVE_IN_REMOTE

PCP-PS-NG
PLC

WETWELL WW2_PROCESS_NORMAL
WETWELL WW2_LOW_FLOW_HIGH_GAS_CONC

(DOOR MOUNTED)
DISPLAY FOP 432
Modbus TCP
CAT6e
CENTRAL UNIT MAS CU 801
DEVICENET
03/I-09
LIT-1103 (LIT 1103) ES
LIT-1104 (LIT 1104) ES
TO PCP-PS-NG RELAY

SPD SI 103 | POT HS 103 | START HMS 103 | STOP HMS 103A | L/O/R HS 103A | RESET HS 103B | FAULT YA 103C | RUN MN 103
DOOR MTD. KEYPAD
RESET HMS 103C
FAULT TO PCP-PS-NG RELAY
ALARM
BASE UNIT MAS BU 811
VFD-103-LS66
TYP VFD-104-LS66
R
VFD

CLOSED ZSL 103 | OPENED ZSO 103
L O R | OPEN HS 103 | CLOSE HMS 103A | STOP HMS 103B
ACTUATOR
M
480V

CLOSED ZSL 104 | OPENED ZSO 104
L O R | OPEN HS 104 | CLOSE HMS 104A | STOP HMS 104B
ACTUATOR
M
480V

LCP-BACKUP-LS66
PUMP 3 ENABLE HS 11010
PUMP 4 ENABLE HS 11011
TO VFD-104-LS66

PI 103 PIT 103
PI 104 PIT 104
MCP-103-LS66
MCP-104-LS66
OC YS 103 F
OC YS 104 F
E-STOP HS 103B YA 103B
E-STOP HS 104B YA 104B
HI GAS\LOSS OF VENT
YI 102A (G) YI 102C (R)
V

TO FLOW METER 01/I-12
VLV-103
TO FLOW METER 02/I-12
VLV-104
TO ODOR CONTROL
01/I-09
I-12

FROM SLUG-100-B
02/I-09
LE 1103
LE 1104

PEM
M
VS
WASTEWATER PUMP 3 P-103
TYPE: SUBMERSIBLE
WASTEWATER PUMP 4 P-104
TYPE: SUBMERSIBLE
WET WELL 2

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 ARIZONA U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
1				SUPERCEDES FACILITY DRAWING CS000421
•				
•				
•				
•				
•				
•				

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 66
REFURBISHMENT

LIFT STATION NO. 66 – INSTRUMENTATION

P&ID 7 PUMPS WET WELL 2

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

I-10 SHEET 43 OF 80

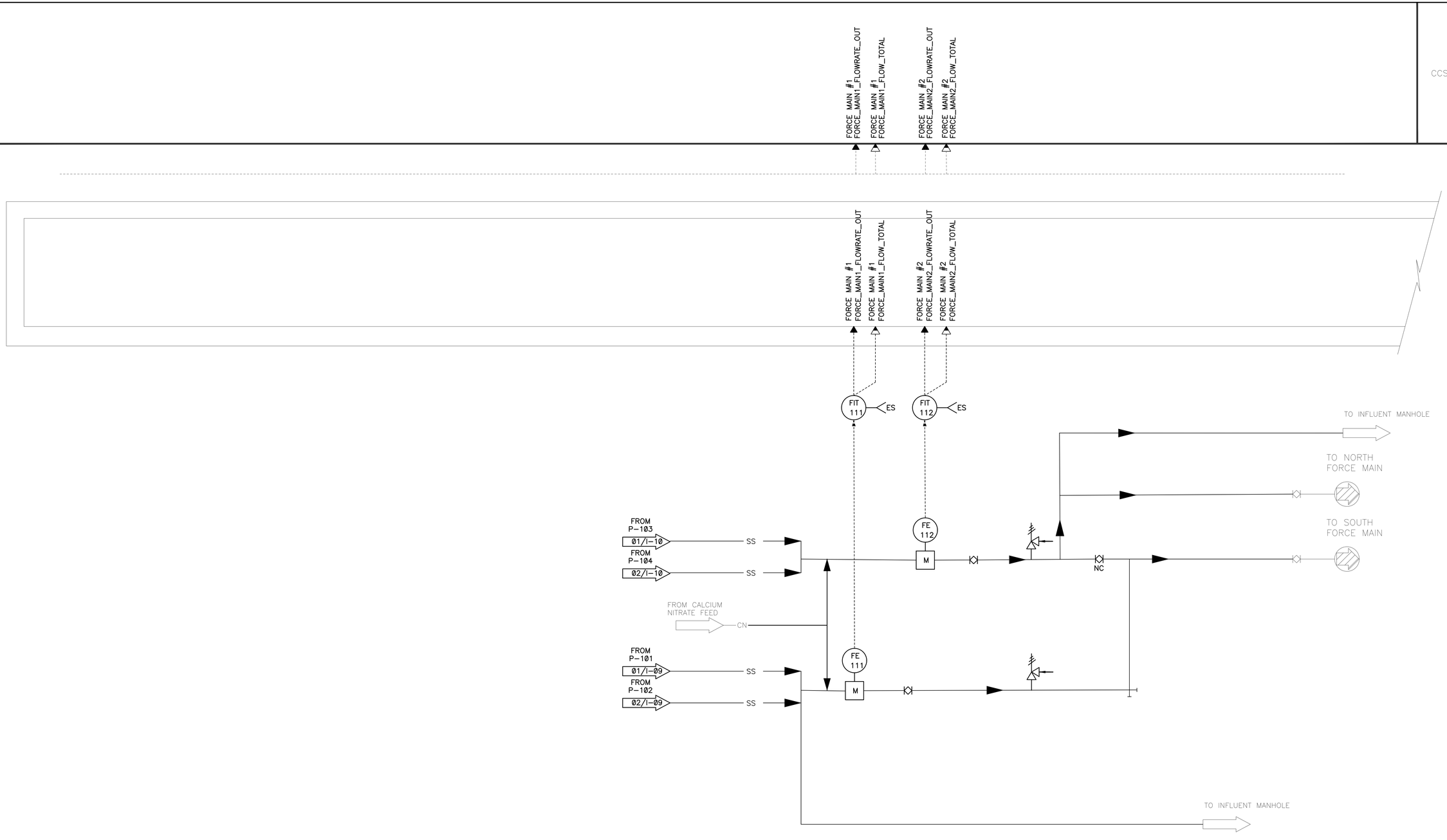
CAD FILE: NG-I-LS66N-02.dwg

USER:bbence FILE:Y:\66-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Instrumentation\I-10 P&ID 7 PUMPS WET WELL 2 (NG-I-LS66N-02).dwg DATE:1/10/23 TIME:12:35pm

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.



FOR CITY OF PHOENIX USE ONLY – REFERENCE OID NUMBER:

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

USER:bbence FILE:Y:\666-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Instrumentation\I-11 P&ID 8 LIFT STATION DISCHARGE (NG-I-LS66N-03).dwg DATE:1/10/23 TIME:12:35pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 – INSTRUMENTATION

P&ID 8 – LIFT STATION DISCHARGE

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

I-11 SHEET 44 OF 80

CAD FILE: NG-I-LS66N-03.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

BIOFILTER BLOWER
BIOFILTER_BLOWER_HI_TEMP

BIOFILTER BLOWER
BIOFILTER_BLOWER_RUNNING

SCADA

PCP-PS-NG

PLC

BIOFILTER BLOWER
BIOFILTER_BLOWER_HI_TEMP

BIOFILTER BLOWER
BIOFILTER_BLOWER_RUNNING

I-13

480VAC

ON/OFF HS 1200

HI TEMP TSH 1200

OVERLOAD OL 1200

RUNNING MN 1200

BIOFILTER BLOWER COMBINATION STARTER

120VAC

BIOFILTER BLOWER ENCLOSURE

CONTROLLER

FROM CITY WATER

S

VLV-1201

IRRIGATION SYSTEM

SOIL BED MEDIA

TSH 1200

PI 1200

PI 1200A

M

FOUL AIR FROM WETWELLS

I-10

AIR DISTRIBUTION

BIOFILTER BLOWER BLWR-1200

1 V*

DRAIN

KEYED NOTES:

1. CONTRACTOR TO FURNISH AND INSTALL PRESSURE GUAGES, DIFFERENTIAL PRESSURE SWITCH, CONDUITS, WIRE AND HARDWARE IN VENDOR PACKAGE.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER:

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

USER:bbence FILE:Y:\66-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Instrumentation\I-12 P&ID 9 BIOLOGICAL ODOR CONTROL SYSTEM (NG-I-LS66N-04).dwg DATE:1/18/23 TIME:12:35pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 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 66
REFURBISHMENT

LIFT STATION NO. 66 – INSTRUMENTATION

P&ID 9 BIOLOGICAL ODOR CONTROL SYSTEM

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

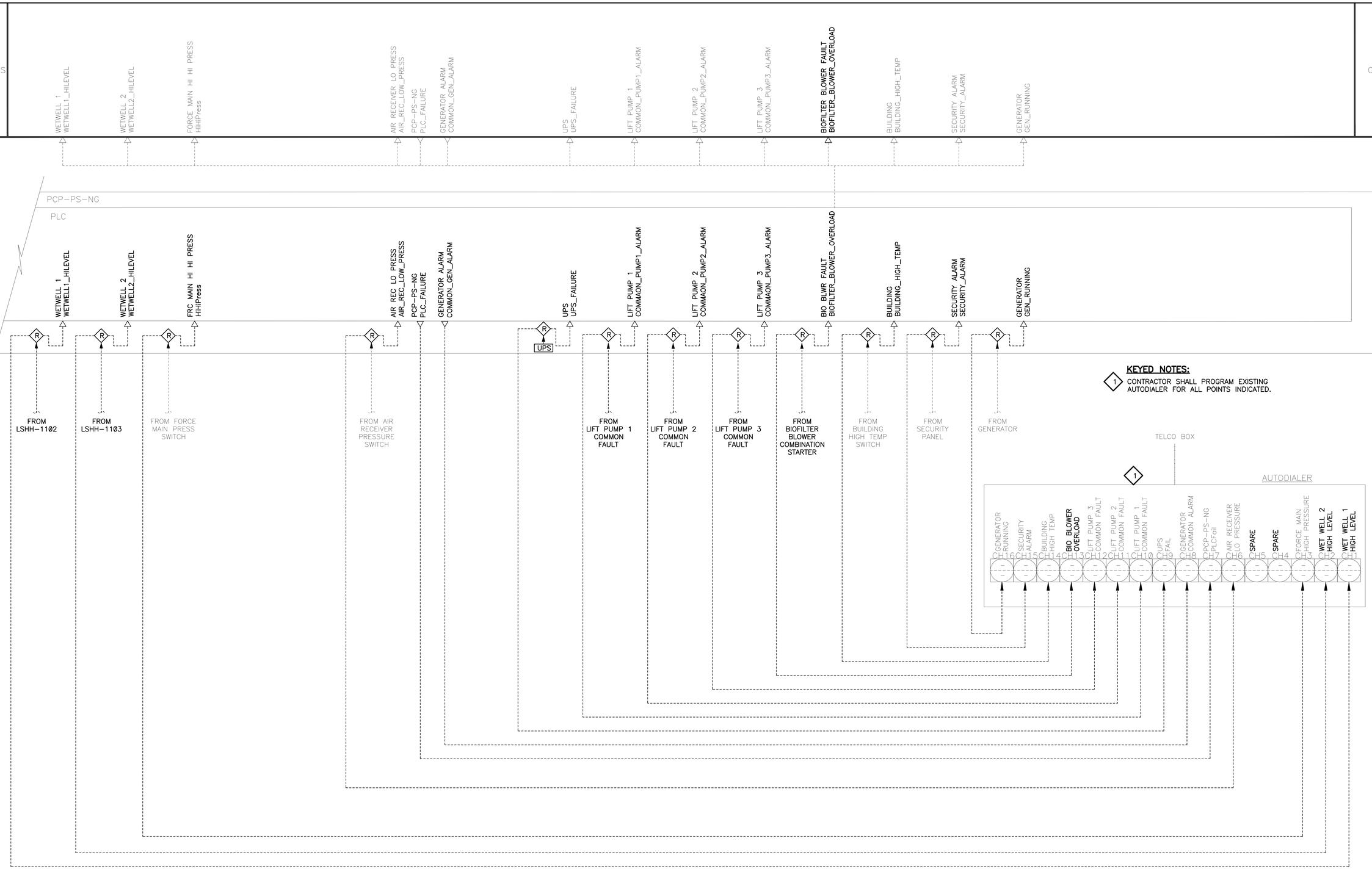
I-12 SHEET 45 OF 80

CAD FILE: NG-I-LS66N-04.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.



KEYED NOTES:

1. CONTRACTOR SHALL PROGRAM EXISTING AUTODIALER FOR ALL POINTS INDICATED.

FOR CITY OF PHOENIX USE ONLY – REFERENCE OID NUMBER:

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

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
•				
•				
•				
•				
•				
•				
•				

DES RB
DWN BB
CKD VB

GARVER
EIC ENGINEERS
Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 ARIZONA U.S.A.

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 66
REFURBISHMENT

LIFT STATION NO. 66 – INSTRUMENTATION

P&ID 10 AUTODIALER

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

I–13 SHEET 46 OF 80

CAD FILE: NG–I–LS66N–05.dwg

USER:bbence FILE:Y:\666-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Instrumentation\I-13 P&ID 10 AUTODIALER (NG-I-LS66N-05).dwg DATE:1/10/23 TIME:12:35pm

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.

CCS

CCS

PNEUMATIC ACTUATORS (LOOP FCV-101 SHOWN)
TYPICAL FOR FCV-102 THROUGH FCV-104

MN-601 Δ Equipment
MN-601 Δ Equipment
MN-602 Δ MtrCtl
MN-603 Δ MtrCtl
PIT-610 Press
SOLENOID VALVE

PCP-PS-NG
PLC
SIGNALS FOUND ON DWGS I-5 & I-6
Ø0344711

COMPRESSOR LCP
RUN
FAULT
MX 601
MA 601
HX 1
HS 601
HMS 601
RS
RUN
FAULT
MX 602
MA 602
HX 2
HS 602
HMS 602
RS
LCP-AC-NG
Ø0344715

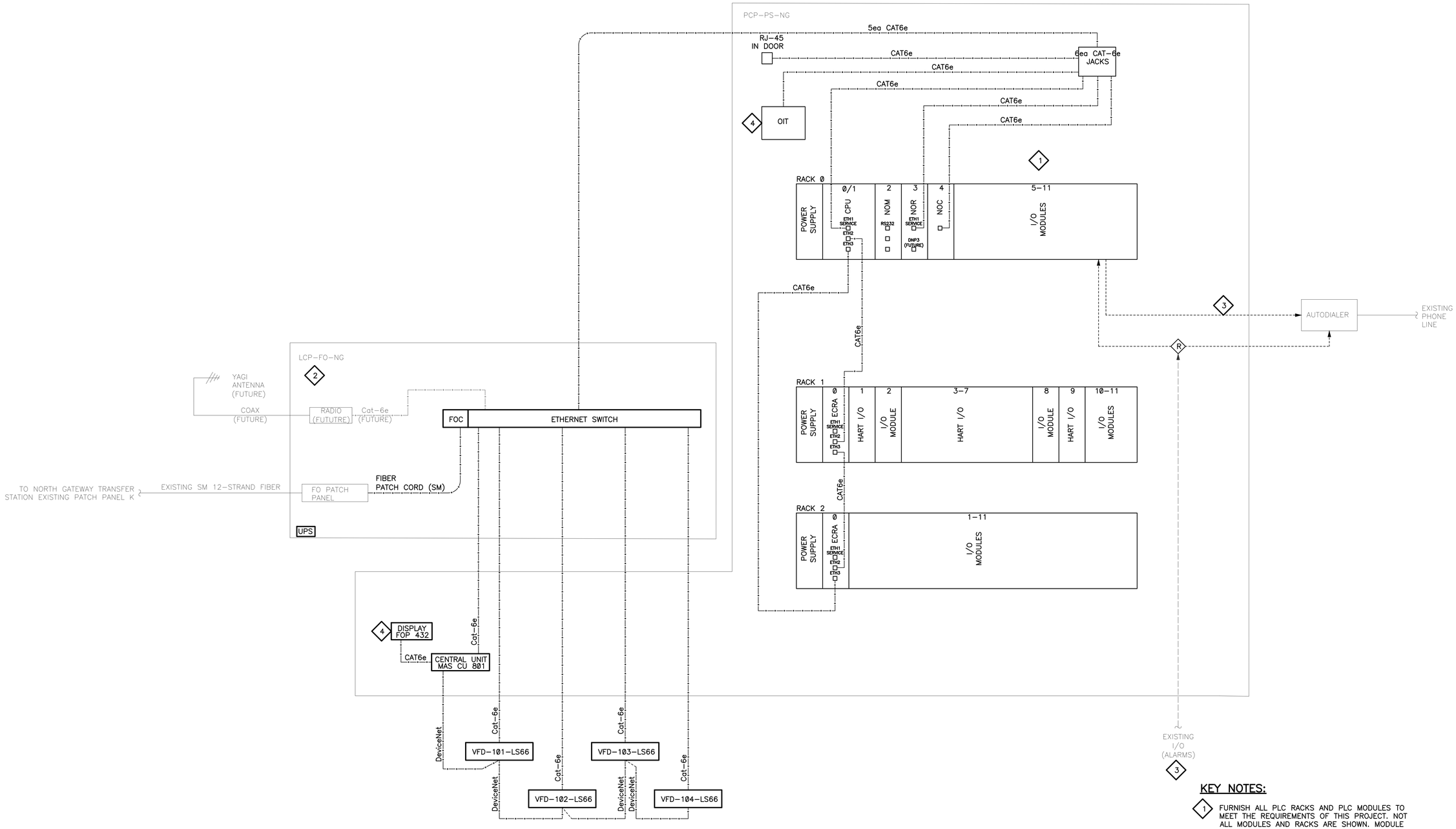
AIR COMPRESSOR PACKAGE
Ø0344691

AIR INLET FILTER (TYP)
Ø0344717
Ø0344718
Ø0344719
Ø0344720
Ø0344721
PI 601
PSH/C 601
LSL 601
LSL 602
AIR RECEIVER
Ø0344716
PCA
AIR COOLED AFTERCOOLER
Ø0344722
Ø0344723
Ø0344724
COMPRESSOR (TYP)
PI 610
Ø0344701
Ø0344702
Ø0344703
Ø0344704
Ø0344705
Ø0344706
Ø0344707
OIL FILTER
Ø0344708
Ø0344709
Ø0344710
Ø0344711
Ø0344712
Ø0344713
PCA
Ø0344714
SET AT 175 PSIG PCA
Ø0344715
Ø0344716
Ø0344717
Ø0344718
Ø0344719
Ø0344720
Ø0344721
AIR RECEIVER
Ø0344725
Ø0344726
Ø0344727
Ø0344728
Ø0344729
Ø0344730
Ø0344731
Ø0344732
Ø0344733
Ø0344734
Ø0344735
Ø0344736
Ø0344737
Ø0344738
Ø0344739
Ø0344740
Ø0344741
Ø0344742
Ø0344743
Ø0344744
Ø0344745
Ø0344746
Ø0344747
Ø0344748
Ø0344749
Ø0344750
Ø0344751
Ø0344752
Ø0344753
Ø0344754
Ø0344755
Ø0344756
Ø0344757
Ø0344758
Ø0344759
Ø0344760
Ø0344761
Ø0344762
Ø0344763
Ø0344764

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.



A NETWORK DIAGRAM
N.T.S.

KEY NOTES:

1. 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.
2. PROVIDE SPACE IN EXISTING CABINET FOR FUTURE RADIO.
3. SEE AUTODIALER P&ID FOR SPECIFIC ALARMS.
4. MOUNT ON CABINET DOOR.

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

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

USER:bbence FILE:T:\66-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Instrumentation\I-15 P&ID 12 NETWORK DIAGRAM (NG-I-LS66N-06).dwg DATE:1/10/23 TIME:12:35pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (General) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 ARIZONA U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES	DWN	CKD
RB	BB	VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 66
REFURBISHMENT

LIFT STATION NO. 66 – INSTRUMENTATION

P&ID 12 NETWORK DIAGRAM

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

I–15 SHEET 48 OF 80

CAD FILE: NG-I-LS66N-06.dwg

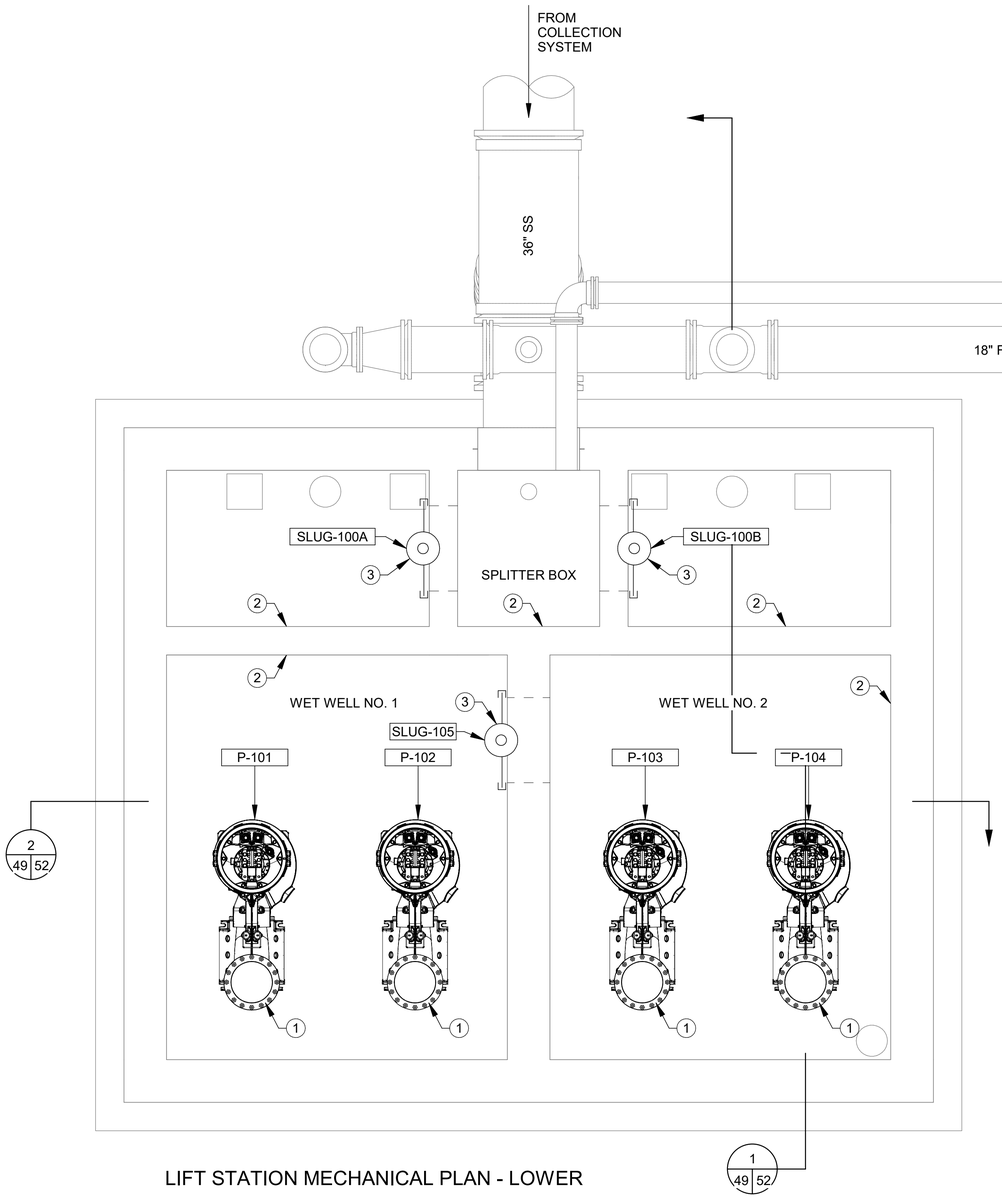
GENERAL NOTES:

1. SEE SPECIFICATIONS 01140 - WORK RESTRICTIONS, 01143 - COORDINATION WITH OWNER'S OPERATIONS.
2. SEE SPECIFICATION 01415 - CONFINED SPACE ENTRY PLAN.

KEYNOTES:	DENOTED BY SYMBOL (X)
1	INSTALL PUMP PROVIDED BY THE CITY
2	PROVIDE SURFACE PREPARATION AND EPOXY LINING FOR WET WELL PER SPECIFICATION 09985 - NOVOLAC EPOXY LINING SYSTEM
3	REPLACE GATES PER SPEC 11287

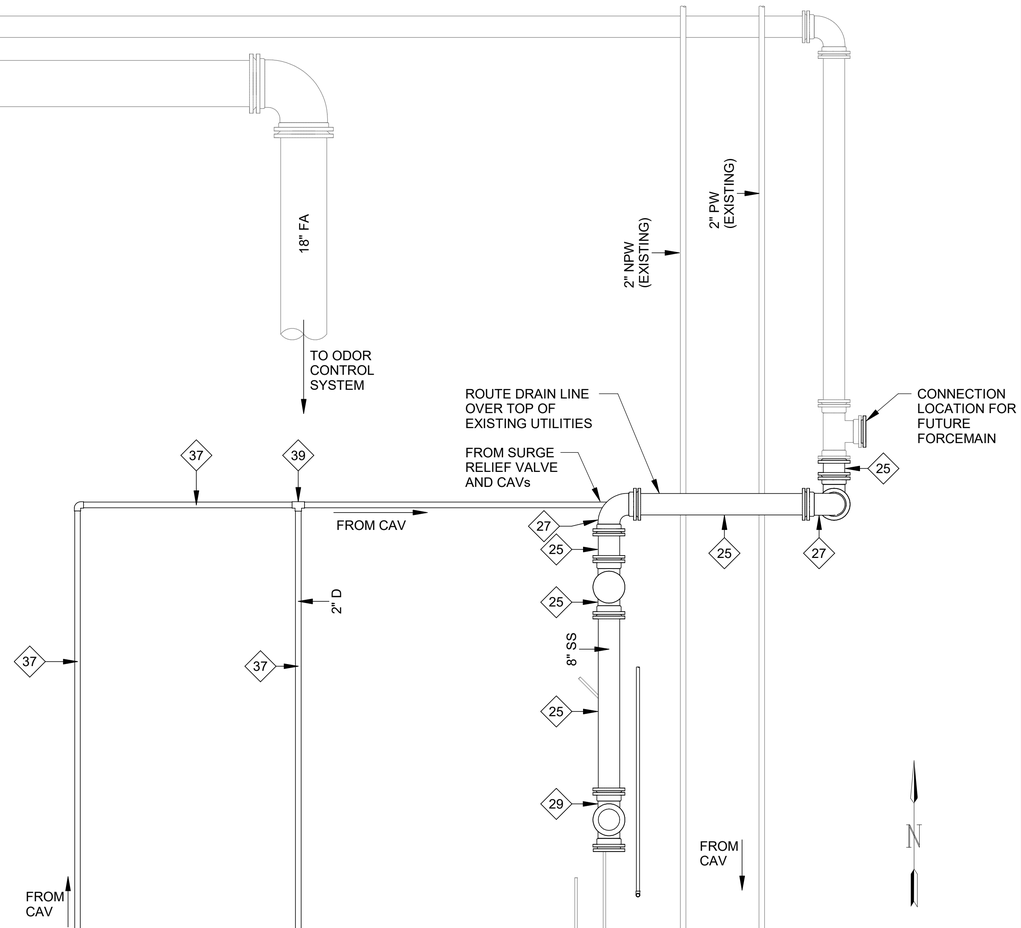
KEYNOTES:	DENOTED BY SYMBOL (X)
01	24" x LENGTH AS REQ'D SPOOL (FLG x PE)
02	24" x LENGTH AS REQ'D SPOOL (FLG x FLG)
03	24" 45° ELBOW
04	24" 90° ELBOW (FLG x FLG)
05	24" x 24" x 24" x 24" CROSS (FLG x FLG x FLG x FLG)
06	24" x 24" x 24" TEE (FLG x FLG x FLG)
07	24" x 24" x 16" REDUCING TEE (FLG x FLG x FLG)
08	24" x 24" x 8" REDUCING TEE (FLG x FLG x FLG)
09	24" x 24" x 6" REDUCING TEE (FLG x FLG x FLG)
10	24" ECCENTRIC PLUG VALVE (FLG x FLG)
11	24" MAGNETIC FLOW METER (FLG x FLG)
12	24" DISMANTLING JOINT
13	24" BLIND FLANGE
14	24" x 8" ECCENTRIC REDUCER (FLG x FLG)
15	24" x 2" TAPPING SADDLE
16	16" x LENGTH AS REQ'D SPOOL (FLG x PE)
17	16" 90° ELBOW (FLG x FLG)
18	16" ECCENTRIC PLUG VALVE (FLG x FLG)
19	16" ANTI-SLAM SWING CHECK VALVE (FLG x FLG)
20	16" FLANGED COUPLING ADAPTER
21	16" DISMANTLING JOINT
22	16" FLEXIBLE COUPLING

KEYNOTES:	DENOTED BY SYMBOL (X)
23	8" x LENGTH AS REQ'D SPOOL (FLG x FLG)
24	8" x LENGTH AS REQ'D SPOOL (FLG x MJ)
25	8" x LENGTH AS REQ'D SPOOL (MJ x MJ)
26	8" 90° ELBOW (FLG x FLG)
27	8" 90° ELBOW (MJ x MJ)
28	8" 45° ELBOW (FLG x FLG)
29	8" x 8" x 8" TEE (MJ x MJ x MJ)
30	8" x 8" x 8" TEE (FLG x FLG x FLG)
31	8" PLUG VALVE
32	8" SURGE RELIEF VALVE
33	8" BLIND FLANGE
34	6" PLUG VALVE
35	6" COMBINATION AIR VALVE (FLG)
36	3" AIR VACUUM VALVE
37	2" x LENGTH AS REQ'D SPOOL (SOC x SOC)
38	2" 90° ELBOW (SOC x SOC)
39	2" x 2" x 2" TEE (SOC x SOCx SOC)
40	2" BALL VALVE
41	1" x LENGTH AS REQ'D SPOOL (SOC x SOC)
42	1" 90° ELBOW (SOC x SOC)
43	PIPE SUPPORT, SEE DETAIL 1 SHEET 75
44	PIPE SUPPORT, SEE DETAIL 2 SHEET 79



LIFT STATION MECHANICAL PLAN - LOWER

3/8" = 1'-0"



*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE ALTERED FOR ANY REASON OR COPIED, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

FOR CONSTRUCTION

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

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
REVISION | ENGINEERING COMPANY | PROJECT NO. | PROJECT NAME | DATE | CAD FILE NAME | DWG NUMBER | REMARKS

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON CHILL Date Signed 1/10/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - LIFT STATION

LIFT STATION MECHANICAL PLAN I

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

M SHEET 49 OF 80

CAD FILE: CSELS66.RVT

Revit File: BIM 360://19W111040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:44:19 PM

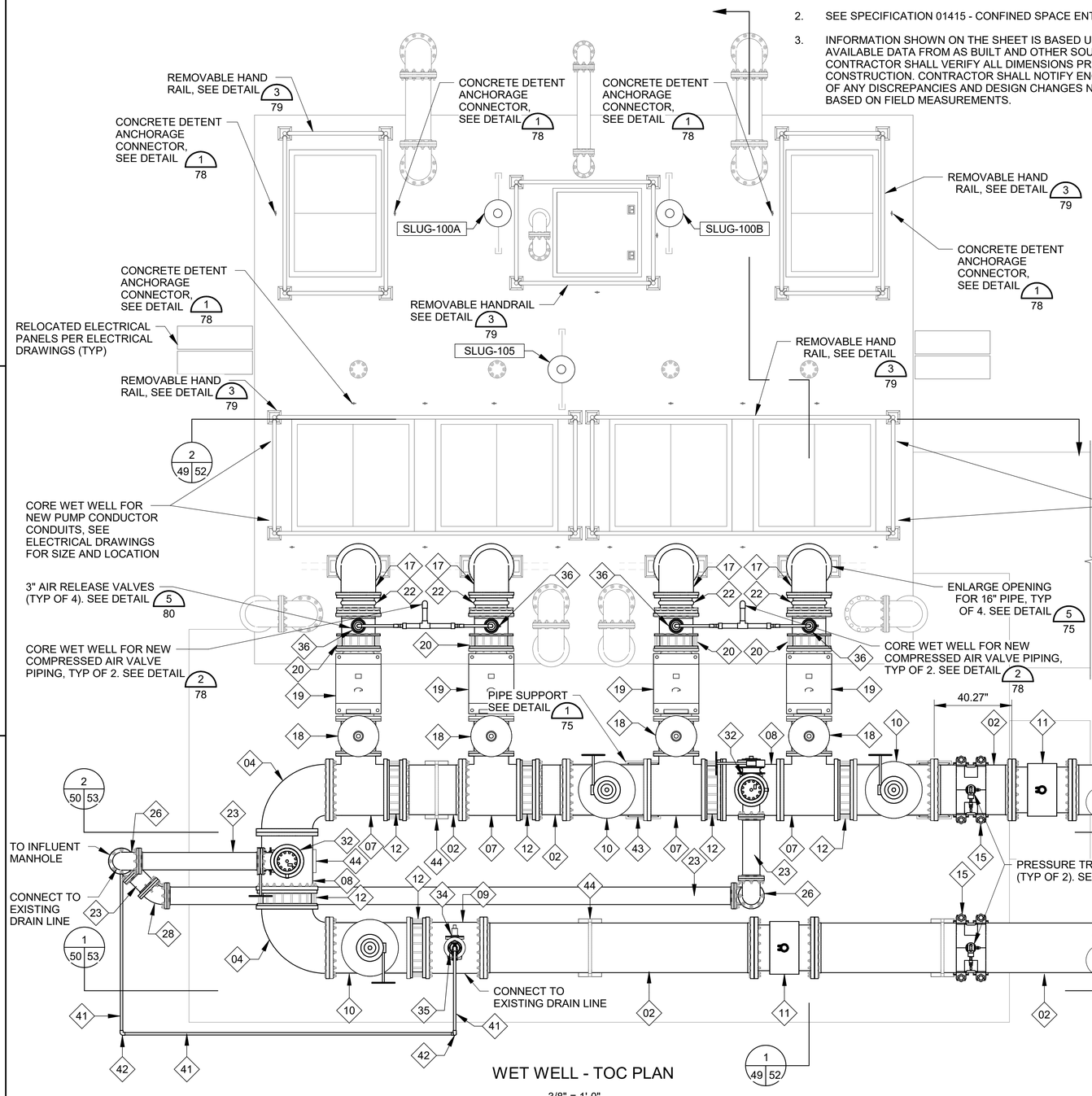
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED OR DISCLOSED TO ANY OTHER PERSONS EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

GENERAL NOTES:

1. SEE SPECIFICATIONS 01140 - WORK RESTRICTIONS, 01143 - COORDINATION WITH OWNER'S OPERATIONS.
2. SEE SPECIFICATION 01415 - CONFINED SPACE ENTRY PLAN.
3. INFORMATION SHOWN ON THE SHEET IS BASED UPON AVAILABLE DATA FROM AS BUILT AND OTHER SOURCES, CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES AND DESIGN CHANGES NEEDED BASED ON FIELD MEASUREMENTS.



WET WELL - TOC PLAN

3/8" = 1'-0"

KEYNOTES:	DENOTED BY SYMBOL X
01	24" x LENGTH AS REQ'D SPOOL (FLG x PE)
02	24" x LENGTH AS REQ'D SPOOL (FLG x FLG)
03	24" 45° ELBOW
04	24" 90° ELBOW (FLG x FLG)
05	24" x 24" x 24" x 24" CROSS (FLG x FLG x FLG x FLG)
06	24" x 24" x 24" TEE (FLG x FLG x FLG)
07	24" x 24" x 16" REDUCING TEE (FLG x FLG x FLG)
08	24" x 24" x 8" REDUCING TEE (FLG x FLG x FLG)
09	24" x 24" x 6" REDUCING TEE (FLG x FLG x FLG)
10	24" ECCENTRIC PLUG VALVE (FLG x FLG)
11	24" MAGNETIC FLOW METER (FLG x FLG)
12	24" DISMANTLING JOINT
13	24" BLIND FLANGE
14	24" x 8" ECCENTRIC REDUCER (FLG x FLG)
15	24" x 2" TAPPING SADDLE
16	16" x LENGTH AS REQ'D SPOOL (FLG x PE)
17	16" 90° ELBOW (FLG x FLG)
18	16" ECCENTRIC PLUG VALVE (FLG x FLG)
19	16" ANTI-SLAM SWING CHECK VALVE (FLG x FLG)
20	16" FLANGED COUPLING ADAPTER
21	16" DISMANTLING JOINT
22	16" FLEXIBLE COUPLING

KEYNOTES:	DENOTED BY SYMBOL X
23	8" x LENGTH AS REQ'D SPOOL (FLG x FLG)
24	8" x LENGTH AS REQ'D SPOOL (FLG x MJ)
25	8" x LENGTH AS REQ'D SPOOL (MJ x MJ)
26	8" 90° ELBOW (FLG x FLG)
27	8" 90° ELBOW (MJ x MJ)
28	8" 45° ELBOW (FLG x FLG)
29	8" x 8" x 8" TEE (MJ x MJ x MJ)
30	8" x 8" x 8" TEE (FLG x FLG x FLG)
31	8" PLUG VALVE
32	8" SURGE RELIEF VALVE
33	8" BLIND FLANGE
34	6" PLUG VALVE
35	6" COMBINATION AIR VALVE (FLG)
36	3" AIR VACUUM VALVE
37	2" x LENGTH AS REQ'D SPOOL (SOC x SOC)
38	2" 90° ELBOW (SOC x SOC)
39	2" x 2" x 2" TEE (SOC x SOCx SOC)
40	2" BALL VALVE
41	1" x LENGTH AS REQ'D SPOOL (SOC x SOC)
42	1" 90° ELBOW (SOC x SOC)
43	PIPE SUPPORT, SEE DETAIL 1 SHEET 75
44	PIPE SUPPORT, SEE DETAIL 2 SHEET 79

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON O'HILL Date Signed 1/13/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - LIFT STATION

LIFT STATION MECHANICAL PLAN II

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
M SHEET 50 OF 80
CAD FILE: CSELS66.RVT

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:44:23 PM

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

FOR CONSTRUCTION

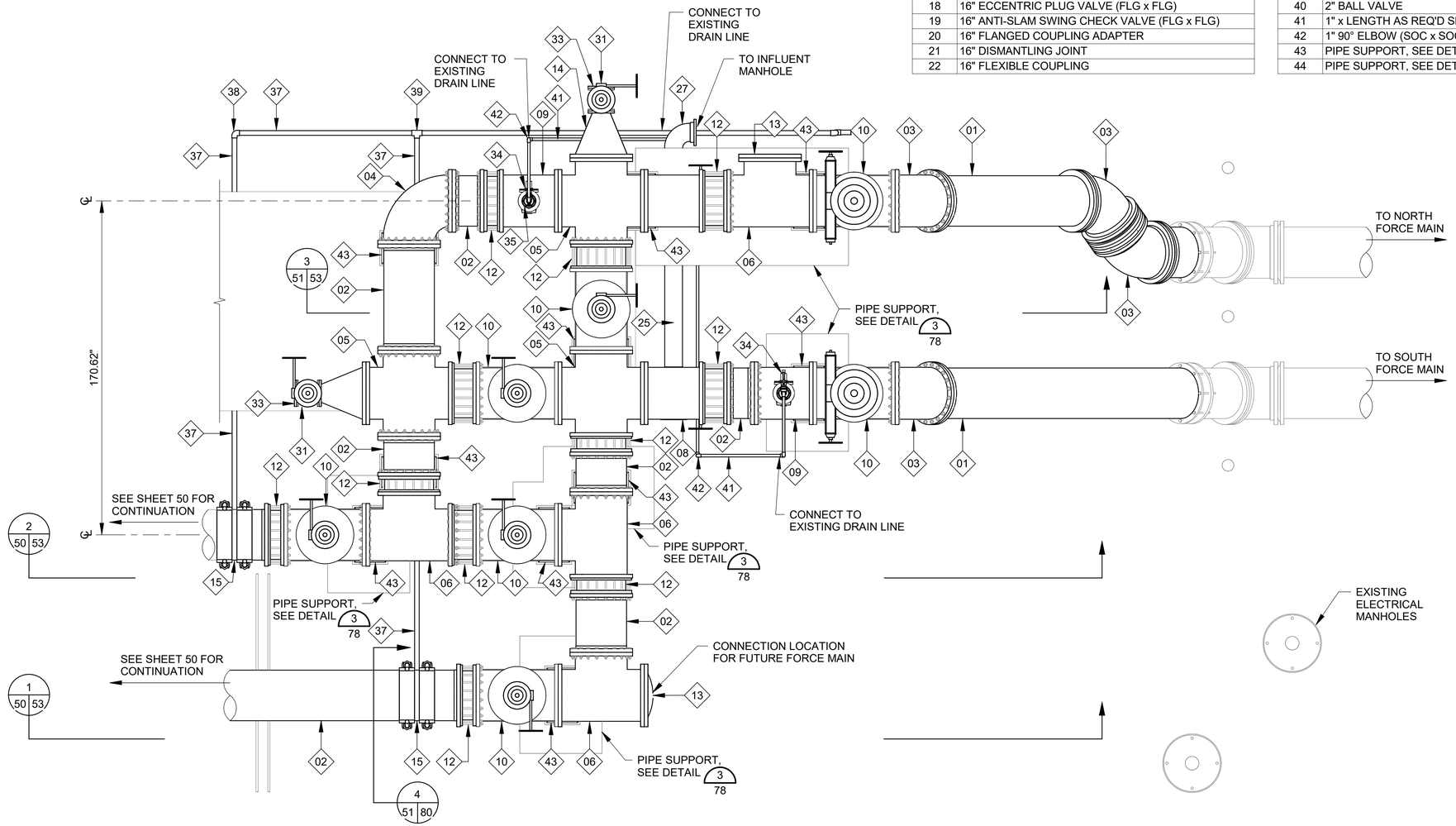
"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR PUBLIC CONSTRUCTION OR OTHER USE EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

GENERAL NOTES:

1. SEE SPECIFICATIONS 01140 - WORK RESTRICTIONS, 01143 - COORDINATION WITH OWNER'S OPERATIONS.
2. SEE SPECIFICATION 01415 - CONFINED SPACE ENTRY PLAN.
3. INFORMATION SHOWN ON THE SHEET IS BASED UPON AVAILABLE DATA FROM AS BUILT AND OTHER SOURCES, CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES AND DESIGN CHANGES NEEDED BASED ON FIELD MEASUREMENTS.

KEYNOTES:	DENOTED BY SYMBOL ◇X
01	24" x LENGTH AS REQ'D SPOOL (FLG x PE)
02	24" x LENGTH AS REQ'D SPOOL (FLG x FLG)
03	24" 45° ELBOW
04	24" 90° ELBOW (FLG x FLG)
05	24" x 24" x 24" CROSS (FLG x FLG x FLG x FLG)
06	24" x 24" x 24" TEE (FLG x FLG x FLG)
07	24" x 24" x 16" REDUCING TEE (FLG x FLG x FLG)
08	24" x 24" x 8" REDUCING TEE (FLG x FLG x FLG)
09	24" x 24" x 6" REDUCING TEE (FLG x FLG x FLG)
10	24" ECCENTRIC PLUG VALVE (FLG x FLG)
11	24" MAGNETIC FLOW METER (FLG x FLG)
12	24" DISMANTLING JOINT
13	24" BLIND FLANGE
14	24" x 8" ECCENTRIC REDUCER (FLG x FLG)
15	24" x 2" TAPPING SADDLE
16	16" x LENGTH AS REQ'D SPOOL (FLG x PE)
17	16" 90° ELBOW (FLG x FLG)
18	16" ECCENTRIC PLUG VALVE (FLG x FLG)
19	16" ANTI-SLAM SWING CHECK VALVE (FLG x FLG)
20	16" FLANGED COUPLING ADAPTER
21	16" DISMANTLING JOINT
22	16" FLEXIBLE COUPLING

KEYNOTES:	DENOTED BY SYMBOL ◇X
23	8" x LENGTH AS REQ'D SPOOL (FLG x FLG)
24	8" x LENGTH AS REQ'D SPOOL (FLG x MJ)
25	8" x LENGTH AS REQ'D SPOOL (MJ x MJ)
26	8" 90° ELBOW (FLG x FLG)
27	8" 90° ELBOW (MJ x MJ)
28	8" 45° ELBOW (FLG x FLG)
29	8" x 8" x 8" TEE (MJ x MJ x MJ)
30	8" x 8" x 8" TEE (FLG x FLG x FLG)
31	8" PLUG VALVE
32	8" SURGE RELIEF VALVE
33	8" BLIND FLANGE
34	6" PLUG VALVE
35	6" COMBINATION AIR VALVE (FLG)
36	3" AIR VACUUM VALVE
37	2" x LENGTH AS REQ'D SPOOL (SOC x SOC)
38	2" 90° ELBOW (SOC x SOC)
39	2" x 2" x 2" TEE (SOC x SOCx SOC)
40	2" BALL VALVE
41	1" x LENGTH AS REQ'D SPOOL (SOC x SOC)
42	1" 90° ELBOW (SOC x SOC)
43	PIPE SUPPORT, SEE DETAIL 1 SHEET 75
44	PIPE SUPPORT, SEE DETAIL 2 SHEET 79



WET WELL - TOC PLAN

3/8" = 1'-0"

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
PROJECT NAME
PROJECT NO.
ENGINEERING COMPANY
DATE
CAD FILE NAME
DWG NUMBER
REMARKS
REVISION

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:44:25 PM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON J. OHILL Date Signed 1/10/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN JAG
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - LIFT STATION

LIFT STATION MECHANICAL PLAN III

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

M SHEET 51 OF 80

CAD FILE: CSELS66.RVT

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

FOR CONSTRUCTION

PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE USED FOR ANY PURPOSE OTHER THAN THAT SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW. THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

PIPE PENETRATION NOTES:

1. REMOVE AREA OF EXISTING SLAB, ZONE OF REMOVAL SHALL BE 6" LARGER THAN NEW PIPE SLEEVE.
2. BEGIN REMOVAL BY SAWCUTING AREA 1" DEEP. DO NOT OVERCUT OR DAMAGE EXISTING REBAR.
3. REMAINING CONCRETE SHALL BE REMOVED BY BUSH HAMMER, DO NOT DAMAGE EXISTING CONCRETE.
4. EDGE OF OPENING SHALL BY TAPERED TO SLOPE OUTWARD AT TOP OF OPENING . SLOPE APPROX 1" PER 12" VERT/HORIZ.
5. PLACE NEW PIPE SLEEVE PER PROCESS DRAWINGS.
6. FILL OPENING WITH EPOXY GROUT.

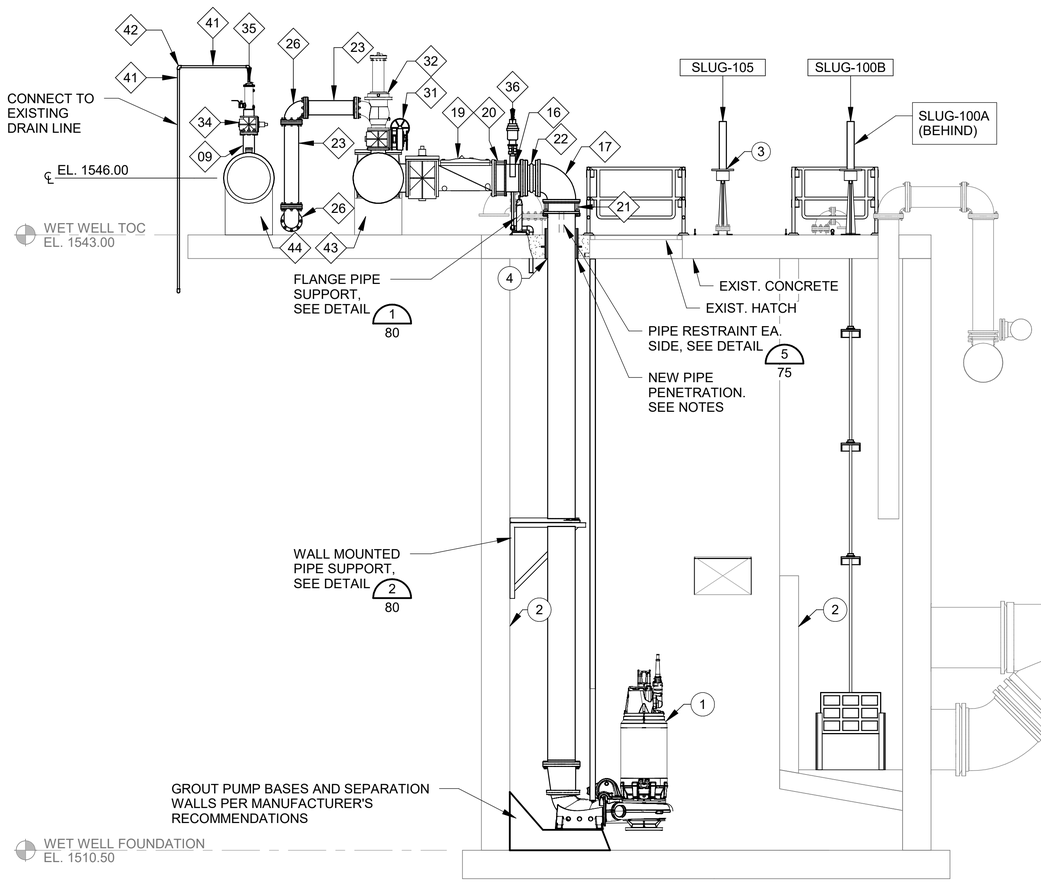
KEYNOTES:	DENOTED BY SYMBOL (X)
1	INSTALL PUMP PROVIDED BY THE CITY
2	PROVIDE SURFACE PREPARATION AND EPOXY LINING FOR WET WELL PER SPECIFICATION 09985 - NOVOLAC EPOXY LINING SYSTEM
3	REPLACE GATES PER SPEC 11287

GENERAL NOTES:

1. SEE SPECIFICATIONS 01140 - WORK RESTRICTIONS, 01143 - COORDINATION WITH OWNER'S OPERATIONS.
2. SEE SPECIFICATION 01415 - CONFINED SPACE ENTRY PLAN.

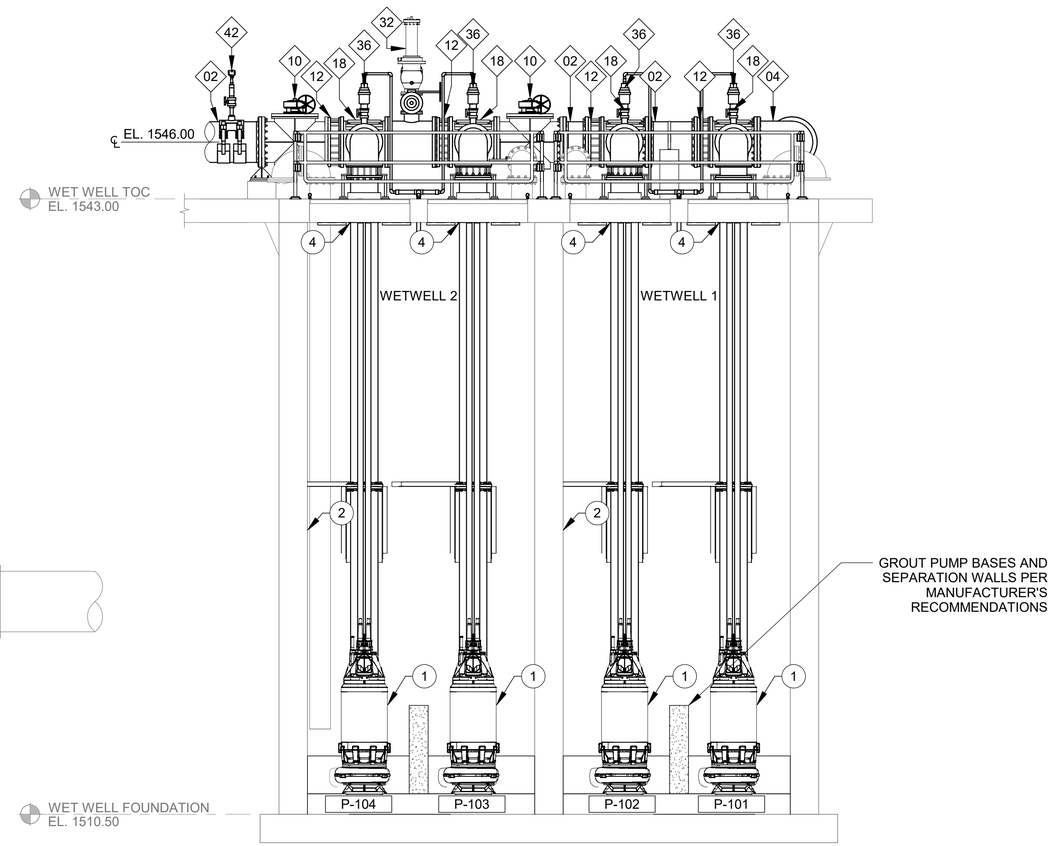
KEYNOTES:	DENOTED BY SYMBOL (X)
01	24" x LENGTH AS REQ'D SPOOL (FLG x PE)
02	24" x LENGTH AS REQ'D SPOOL (FLG x FLG)
03	24" 45° ELBOW
04	24" 90° ELBOW (FLG x FLG)
05	24" x 24" x 24" x 24" CROSS (FLG x FLG x FLG x FLG)
06	24" x 24" x 24" TEE (FLG x FLG x FLG)
07	24" x 24" x 16" REDUCING TEE (FLG x FLG x FLG)
08	24" x 24" x 8" REDUCING TEE (FLG x FLG x FLG)
09	24" x 24" x 6" REDUCING TEE (FLG x FLG x FLG)
10	24" ECCENTRIC PLUG VALVE (FLG x FLG)
11	24" MAGNETIC FLOW METER (FLG x FLG)
12	24" DISMANTLING JOINT
13	24" BLIND FLANGE
14	24" x 8" ECCENTRIC REDUCER (FLG x FLG)
15	24" x 2" TAPPING SADDLE
16	16" x LENGTH AS REQ'D SPOOL (FLG x PE)
17	16" 90° ELBOW (FLG x FLG)
18	16" ECCENTRIC PLUG VALVE (FLG x FLG)
19	16" ANTI-SLAM SWING CHECK VALVE (FLG x FLG)
20	16" FLANGED COUPLING ADAPTER
21	16" DISMANTLING JOINT
22	16" FLEXIBLE COUPLING

KEYNOTES:	DENOTED BY SYMBOL (X)
23	8" x LENGTH AS REQ'D SPOOL (FLG x FLG)
24	8" x LENGTH AS REQ'D SPOOL (FLG x MJ)
25	8" x LENGTH AS REQ'D SPOOL (MJ x MJ)
26	8" 90° ELBOW (FLG x FLG)
27	8" 90° ELBOW (MJ x MJ)
28	8" 45° ELBOW (FLG x FLG)
29	8" x 8" x 8" TEE (MJ x MJ x MJ)
30	8" x 8" x 8" TEE (FLG x FLG x FLG)
31	8" PLUG VALVE
32	8" SURGE RELIEF VALVE
33	8" BLIND FLANGE
34	6" PLUG VALVE
35	6" COMBINATION AIR VALVE (FLG)
36	3" AIR VACUUM VALVE
37	2" x LENGTH AS REQ'D SPOOL (SOC x SOC)
38	2" 90° ELBOW (SOC x SOC)
39	2" x 2" x 2" TEE (SOC x SOCx SOC)
40	2" BALL VALVE
41	1" x LENGTH AS REQ'D SPOOL (SOC x SOC)
42	1" 90° ELBOW (SOC x SOC)
43	PIPE SUPPORT, SEE DETAIL 1 SHEET 75
44	PIPE SUPPORT, SEE DETAIL 2 SHEET 79



SECTION 1 / 49 / 52

1/4" = 1'-0"



SECTION 2 / 49 / 52

1/4" = 1'-0"

REMARKS | DWG NUMBER | CAD FILE NAME | DATE | PROJECT NAME | PROJECT NO. | CID NUMBER: | ENGINEERING COMPANY | FOR CITY OF PHOENIX USE ONLY - REFERENCE

REVISION	NO.	BY	DATE	CKD	REMARKS

DES JBR | DWN GRN | CKD JMC

GARVER

Registered Professional Engineer Certificate No. 60517 Jonathon Ohlly State of Signed July 31, 2023 Arizona, U.S.A.

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - LIFT STATION

LIFT STATION MECHANICAL SECTIONS AND DETAILS I

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

M SHEET 52 OF 80

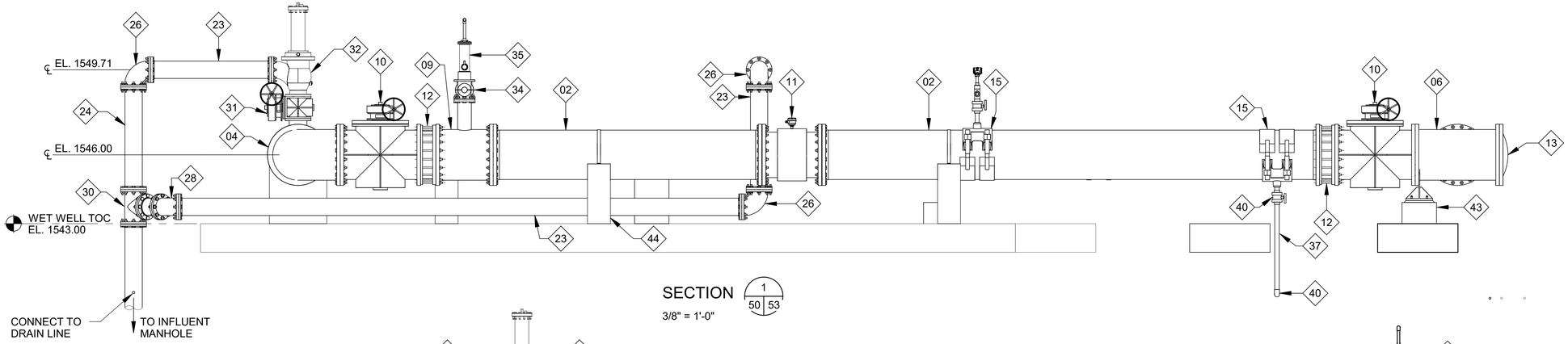
CAD FILE: CSELS66.RVT

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:44:49 PM

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

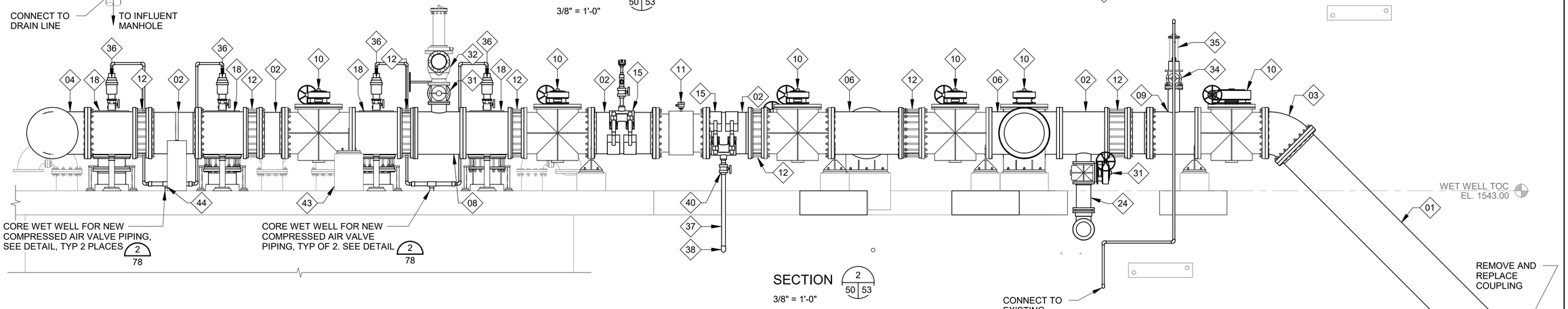
FOR CONSTRUCTION

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED TO OTHERS OR USED FOR OTHER WORK EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



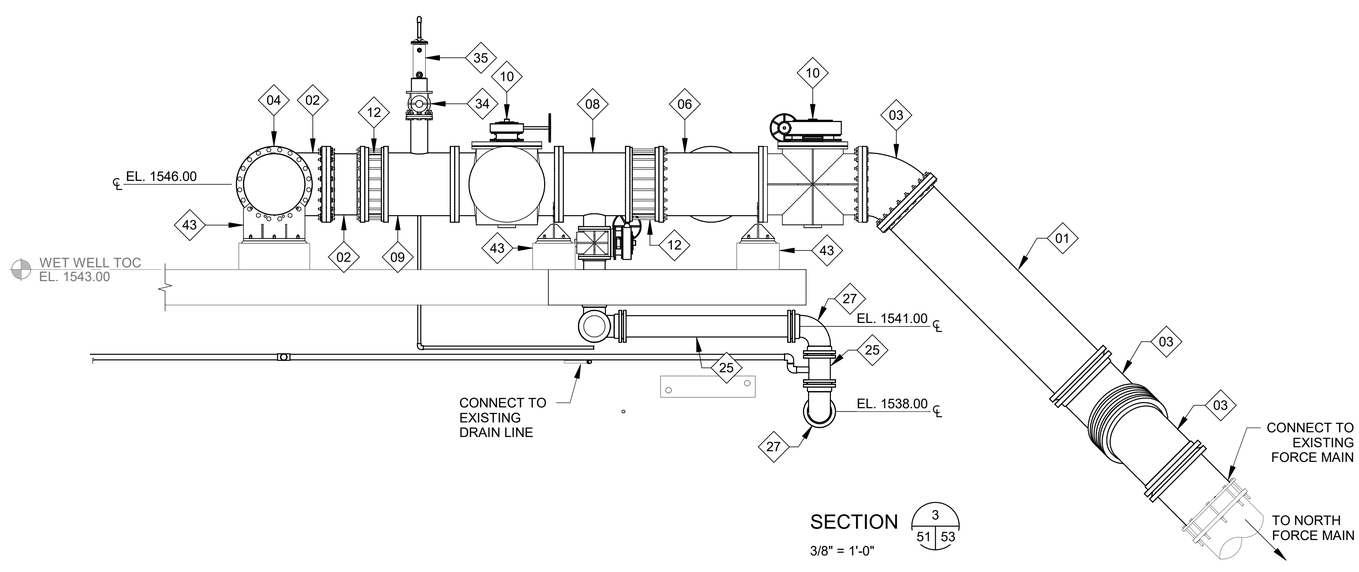
SECTION 1 / 50 | 53

3/8" = 1'-0"



SECTION 2 / 50 | 53

3/8" = 1'-0"



SECTION 3 / 51 | 53

3/8" = 1'-0"

KEYNOTES:	DENOTED BY SYMBOL X
01	24" x LENGTH AS REQ'D SPOOL (FLG x PE)
02	24" x LENGTH AS REQ'D SPOOL (FLG x FLG)
03	24" 45° ELBOW
04	24" 90° ELBOW (FLG x FLG)
05	24" x 24" x 24" x 24" CROSS (FLG x FLG x FLG x FLG)
06	24" x 24" x 24" TEE (FLG x FLG x FLG)
07	24" x 24" x 16" REDUCING TEE (FLG x FLG x FLG)
08	24" x 24" x 8" REDUCING TEE (FLG x FLG x FLG)
09	24" x 24" x 6" REDUCING TEE (FLG x FLG x FLG)
10	24" ECCENTRIC PLUG VALVE (FLG x FLG)
11	24" MAGNETIC FLOW METER (FLG x FLG)
12	24" DISMANTLING JOINT
13	24" BLIND FLANGE
14	24" x 8" ECCENTRIC REDUCER (FLG x FLG)
15	24" x 2" TAPPING SADDLE
16	16" x LENGTH AS REQ'D SPOOL (FLG x PE)
17	16" 90° ELBOW (FLG x FLG)
18	16" ECCENTRIC PLUG VALVE (FLG x FLG)
19	16" ANTI-SLAM SWING CHECK VALVE (FLG x FLG)
20	16" FLANGED COUPLING ADAPTER
21	16" DISMANTLING JOINT
22	16" FLEXIBLE COUPLING

KEYNOTES:	DENOTED BY SYMBOL X
23	8" x LENGTH AS REQ'D SPOOL (FLG x FLG)
24	8" x LENGTH AS REQ'D SPOOL (FLG x MJ)
25	8" x LENGTH AS REQ'D SPOOL (MJ x MJ)
26	8" 90° ELBOW (FLG x FLG)
27	8" 90° ELBOW (MJ x MJ)
28	8" 45° ELBOW (FLG x FLG)
29	8" x 8" x 8" TEE (MJ x MJ x MJ)
30	8" x 8" x 8" TEE (FLG x FLG x FLG)
31	8" PLUG VALVE
32	8" SURGE RELIEF VALVE
33	8" BLIND FLANGE
34	6" PLUG VALVE
35	6" COMBINATION AIR VALVE (FLG)
36	3" AIR VACUUM VALVE
37	2" x LENGTH AS REQ'D SPOOL (SOC x SOC)
38	2" 90° ELBOW (SOC x SOC)
39	2" x 2" x 2" TEE (SOC x SOCx SOC)
40	2" BALL VALVE
41	1" x LENGTH AS REQ'D SPOOL (SOC x SOC)
42	1" 90° ELBOW (SOC x SOC)
43	PIPE SUPPORT, SEE DETAIL 1 SHEET 75
44	PIPE SUPPORT, SEE DETAIL 2 SHEET 79

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
PROJECT NAME
PROJECT NO.
ENGINEERING COMPANY
DATE
CAD FILE NAME
DWG NUMBER
REMARKS
REVISION

GARVER

Registered Professional Engineer (Civil)
CERTIFICATE NO.
60517
JONATHON
OHILL
Date Signed 1/10/23
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - LIFT STATION

LIFT STATION MECHANICAL SECTIONS AND DETAILS II

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

M SHEET 53 OF 80

CAD FILE: CSELS66.RVT

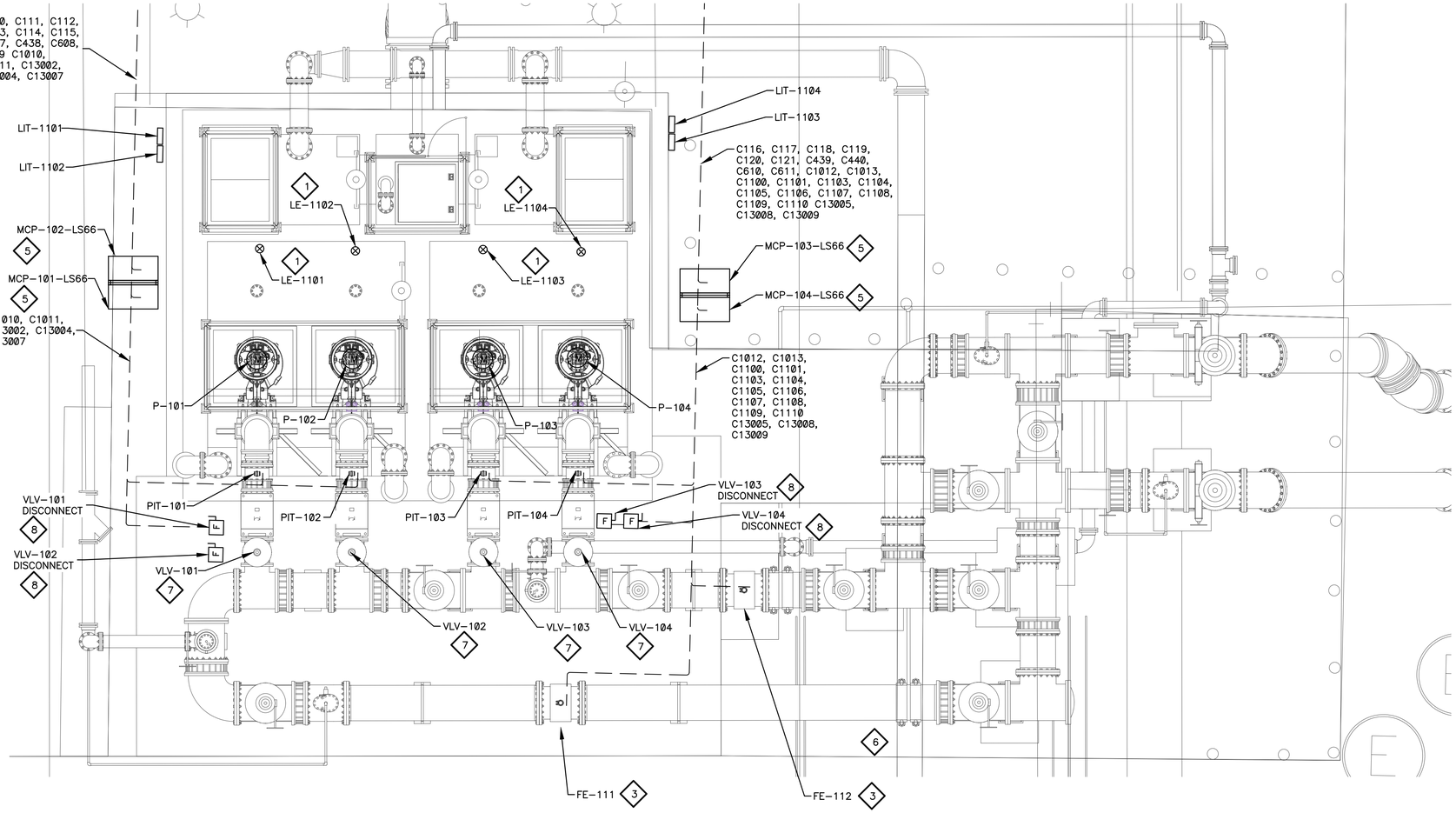
Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:02 PM

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 CONTRACT WITH THE CITY OF PHOENIX."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

THE AREAS WITHIN 3 FEET OF HATCHES ARE CLASS 1, DIVISION 2 AREAS.



LIFT PUMP AREA

0 1 2 4

3/8" = 1'-0"

N

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. LCP-FO-NG AND LCP-SNL-NG SHALL BE UPGRADED USING THE CURRENT CITY OF PHOENIX STANDARDS AND SHALL BE RELABELED WITH A UL-508A LABEL. SEE SPECIFICATIONS FOR MORE DETAILS.
9. CONTRACTOR TO INVESTIGATE AND AS-BUILD EXISTING GROUND GRID AND CONNECT THE NEW GROUND BONDS TO THE EXISTING GROUND GRID.
8. SEE CONDUIT BLOCK DIAGRAMS, PANELS SCHEDULES, AND SINGLE LINE DIAGRAM FOR ADDITIONAL CONDUIT AND CABLE REQUIREMENTS NOT INDICATED ON THIS DRAWING.

KEYED NOTES:

1. FURNISH AND INSTALL LEVEL TRANSDUCERS SUCH THAT THEY ARE LOCATED CLOSE TO THE WETWELL OPENING FOR MAINTENANCE ACCESS. TRANSDUCERS SHOULD BE SERVICEABLE THROUGH EACH WETWELL OPENING WHILE LID IS OPEN WITHOUT HAVING TO UNBOLT SUPPORTS OR MOUNTS. SEE ELECTRICAL DETAILS FOR ADDITIONAL INFORMATION. 902 #/#
2. NOT USED.
3. BOND THE EXISTING GROUNDING ELECTRODE CONDUCTOR TO THE FLOW METER GROUNDING RING.
4. BOND THE EXISTING GROUNDING ELECTRODE CONDUCTOR TO THE ITP PANEL.
5. BOND THE EXISTING GROUNDING ELECTRODE CONDUCTOR TO THE DISCONNECT PANEL.
6. BOND THE EXISTING GROUNDING ELECTRODE CONDUCTOR TO ABOVE GROUND WATER PIPE.
7. BOND THE EXISTING GROUNDING ELECTRODE CONDUCTOR TO A VALVE ACTUATOR BOLT.
8. BOND THE EXISTING GROUNDING ELECTRODE CONDUCTOR TO THE VALVE DISCONNECT SUPPORT STRUCTURE. SEE ELECTRICAL DETAILS.

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 – LIFT STATION

LIFT STATION PUMP AREA ELECTRICAL PLAN

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

E-12 SHEET 54 OF 80

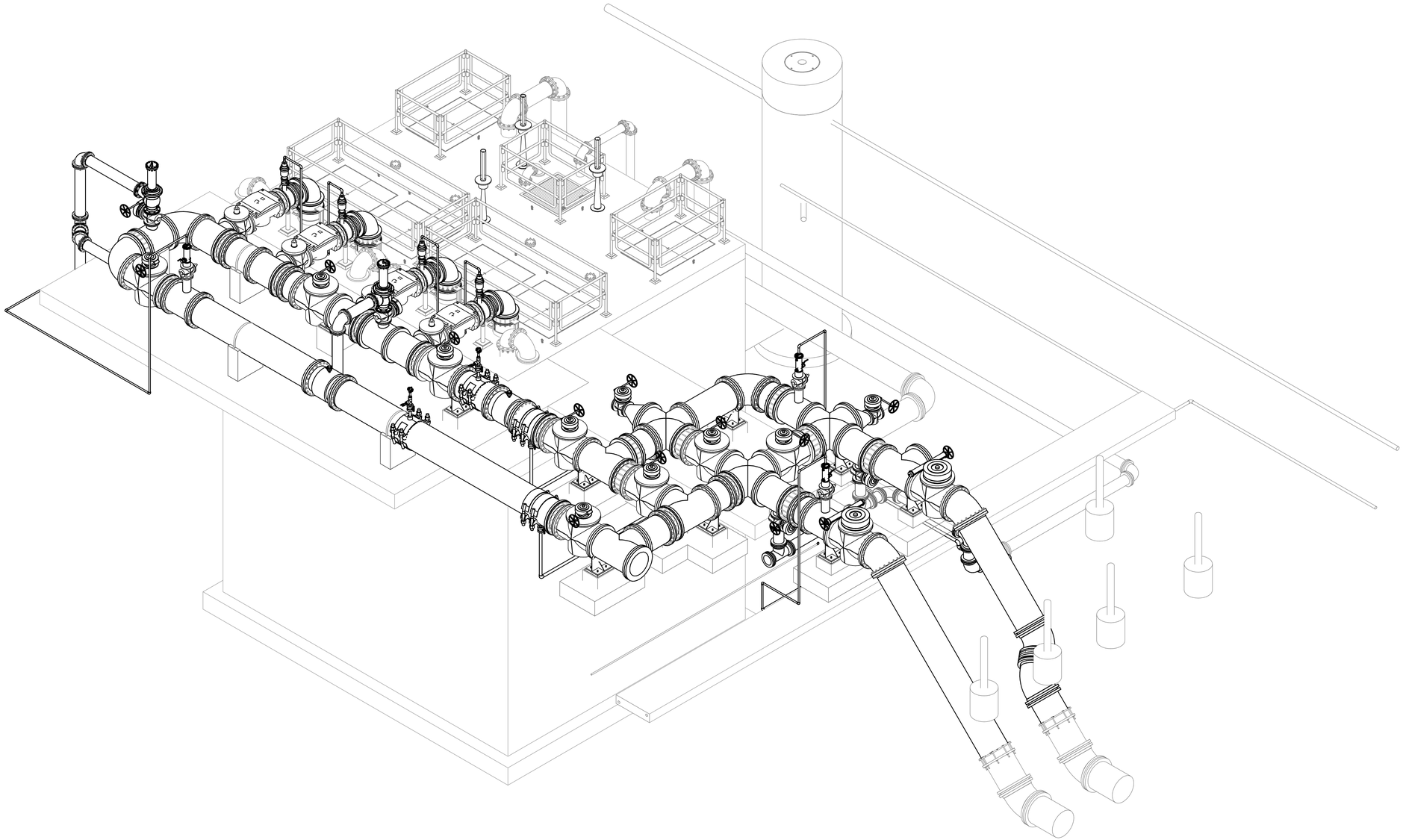
CAD FILE: NG-E-LS66V-03.dwg

USER:bbence FILE:Y:\066-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-12 LIFT STATION PUMP AREA PLAN (NG-E-LS66V-03).dwg DATE:1/10/23 TIME:12:34pm

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

FOR CONSTRUCTION

PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR OTHERWISE, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW. THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



ISO - LIFT STATION NEW

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	REMARKS

GARVER

Registered Professional Engineer (Civil)
CERTIFICATE NO.
60517
JONATHON
SHILL
Date Signed 1/13/23
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

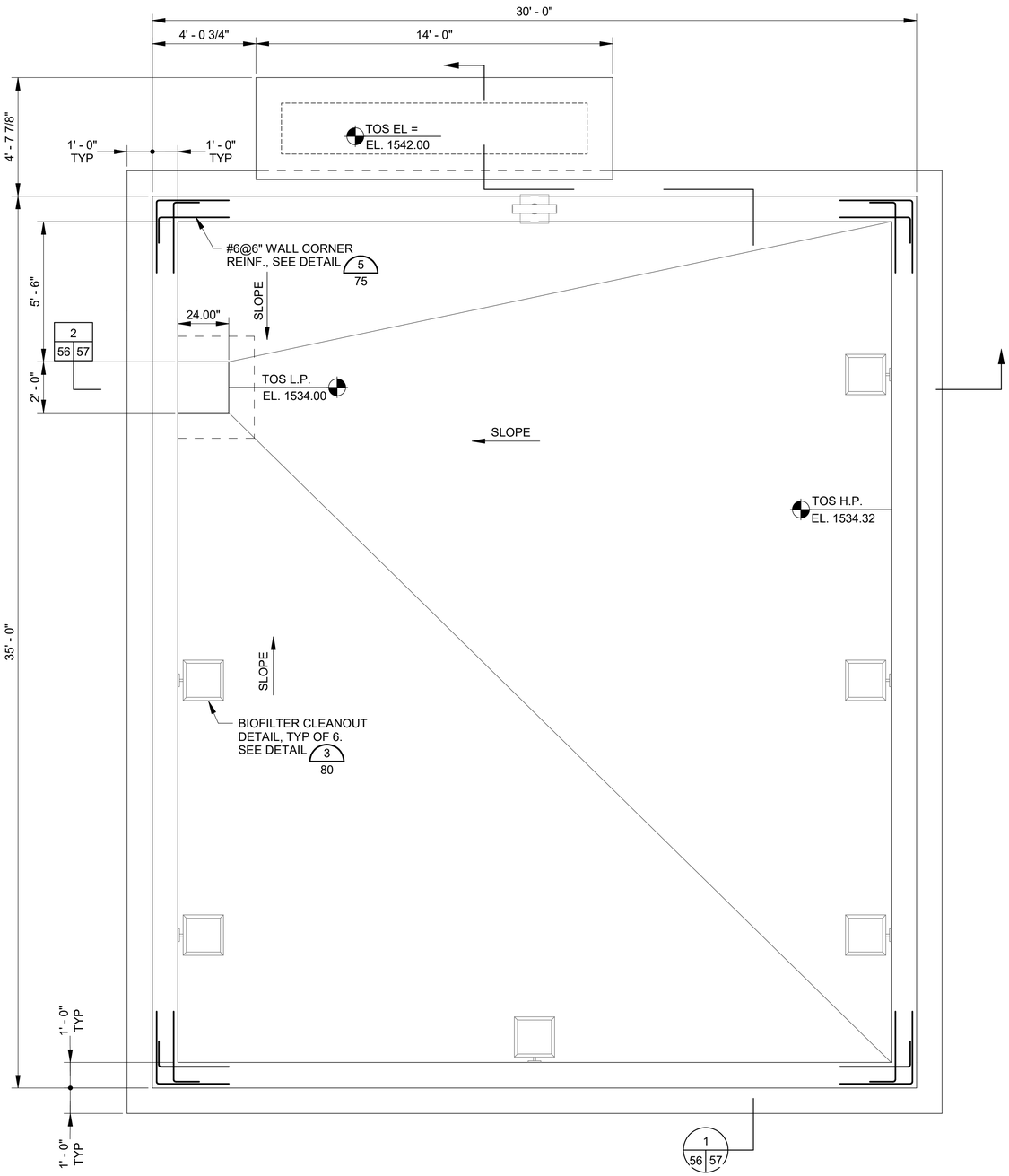
LIFT STATION NO. 66 - LIFT STATION

LIFT STATION MECHANICAL ISOMETRIC

COPYRIGHT © 2007-JANUARY

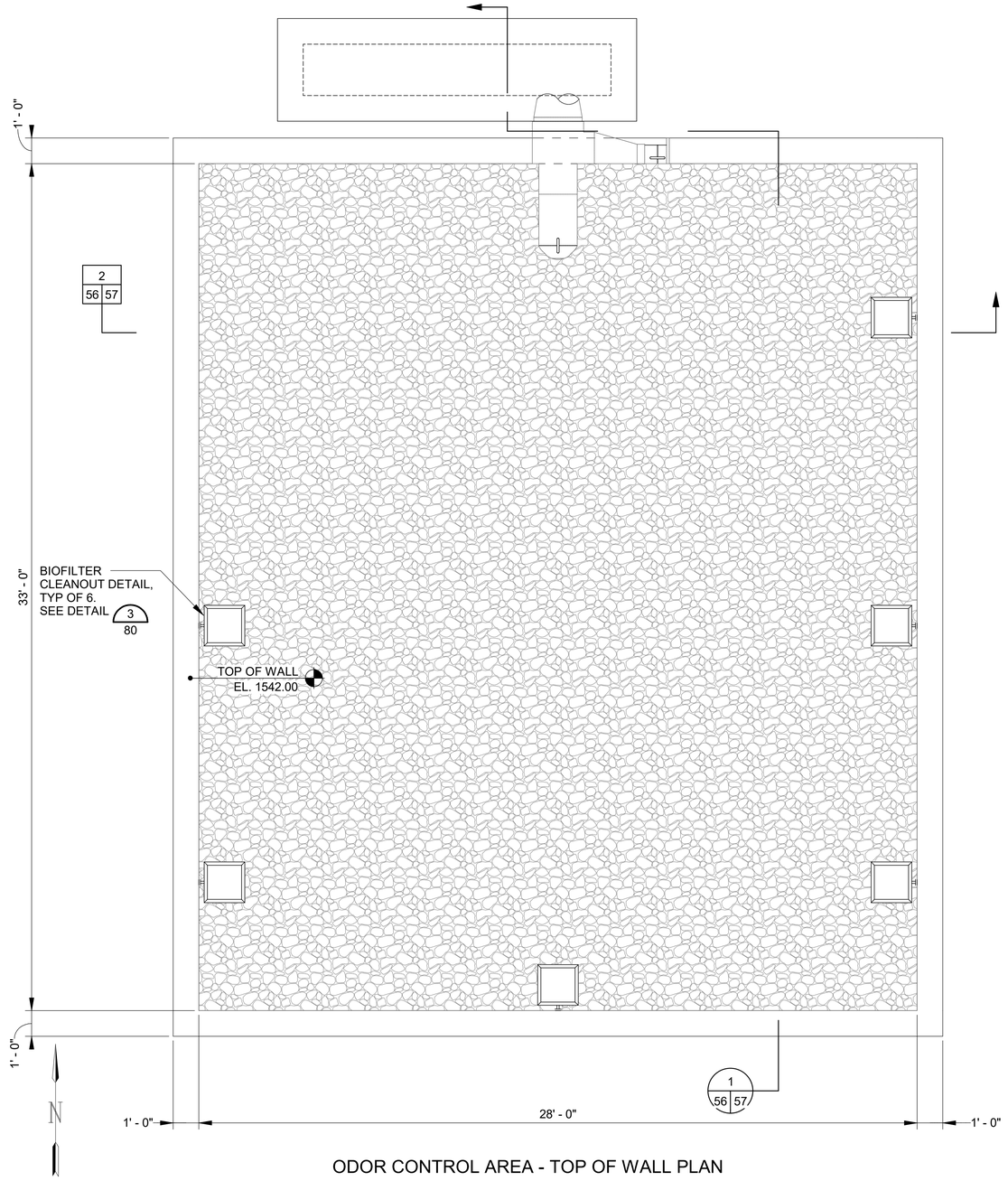
CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
M SHEET 55 OF 80
CAD FILE: CSELS66.RVT

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:06 PM



ODOR CONTROL AREA - LOWER WALL PLAN

3/8" = 1'-0"



ODOR CONTROL AREA - TOP OF WALL PLAN

3/8" = 1'-0"

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR OTHERWISE, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

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

FOR CONSTRUCTION

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:07 PM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 70373 HARRY W. ELLIOTT Date
Digitally Signed 01/13/2023

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON CHILL Date Signed 01/13/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - ODOR CONTROL

ODOR CONTROL STRUCTURAL PLAN

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

S SHEET 56 OF 80

CAD FILE: CSELS66.RVT

FOR CITY OF PHOENIX USE ONLY - REFERENCE

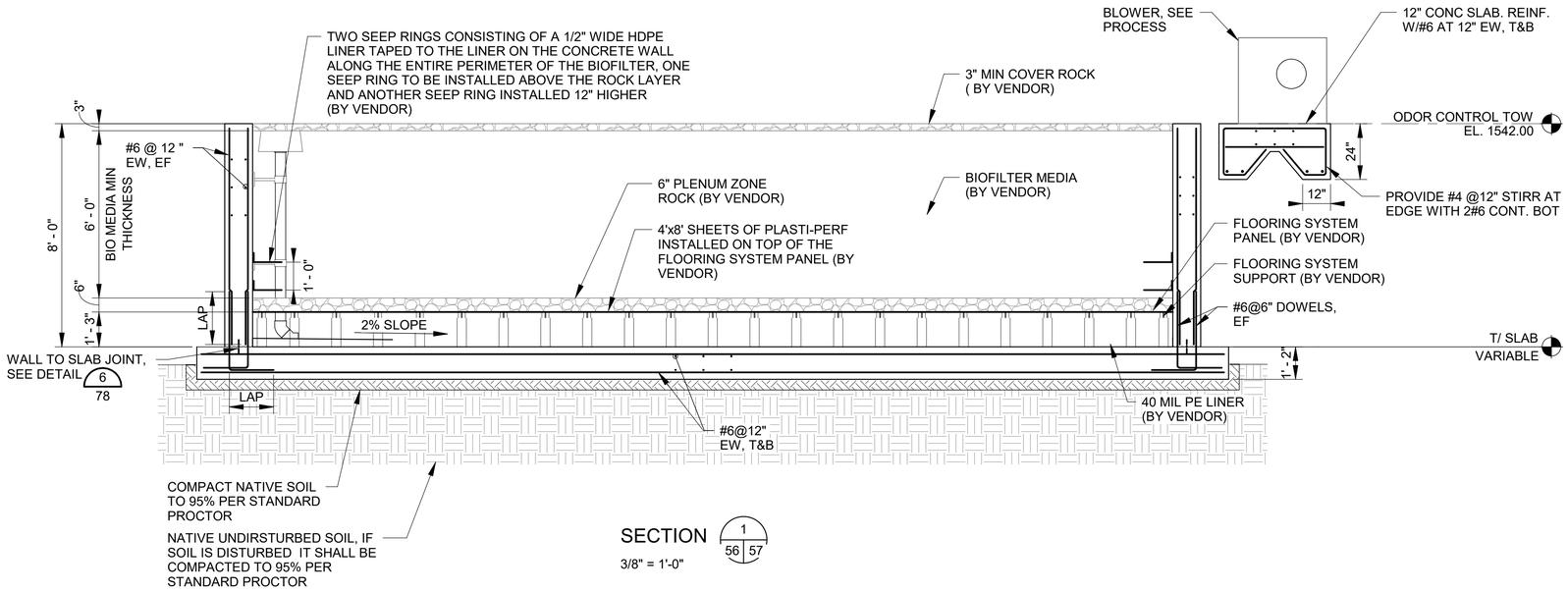
REVISION	ENGINEERING COMPANY	PROJECT NO	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	REMARKS

CID NUMBER:

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

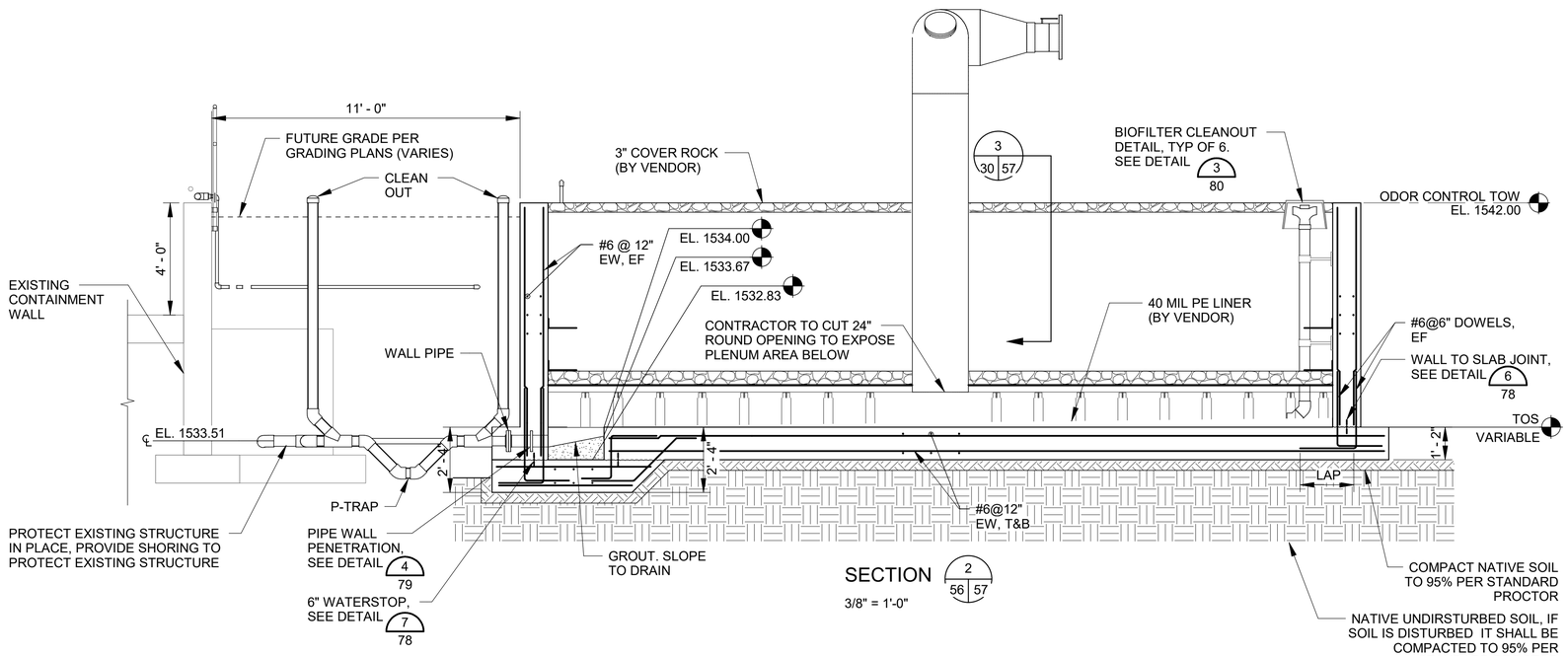
FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE REPRODUCED OR DISTRIBUTED FOR COMMERCIAL PURPOSE EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



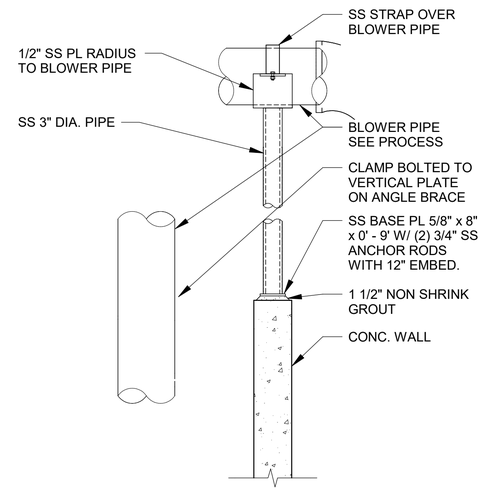
SECTION 1 (56 | 57)

3/8" = 1'-0"



SECTION 2 (56 | 57)

3/8" = 1'-0"



SECTION

DETAIL 3 (30 | 57)

NOT TO SCALE

SUBSURFACE PREPARATION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS PROVIDED BY TERRACON GEOREPORT:
65215143 - GARVER - PROPOSED LIFT STATION 66 BIOFILTER - GEO - FINAL REPORT

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
REVISION | ENGINEERING COMPANY | PROJECT NO | PROJECT NAME | DATE | CAD FILE NAME | DWG NUMBER | REMARKS

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 70373 HARRY W. ELLIOTT — Digitally Signed 01/13/2023

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON CHILL — State Signed 1/13/2023 — ARIZONA, U.S.A.

REVISIONS					DES
NO.	BY	DATE	CKD	REMARKS	JBR
					DWN
					GRN
					CKD
					JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - ODOR CONTROL

ODOR CONTROL STRUCTURAL SECTIONS AND DETAILS

COPYRIGHT © 2007-JANUARY

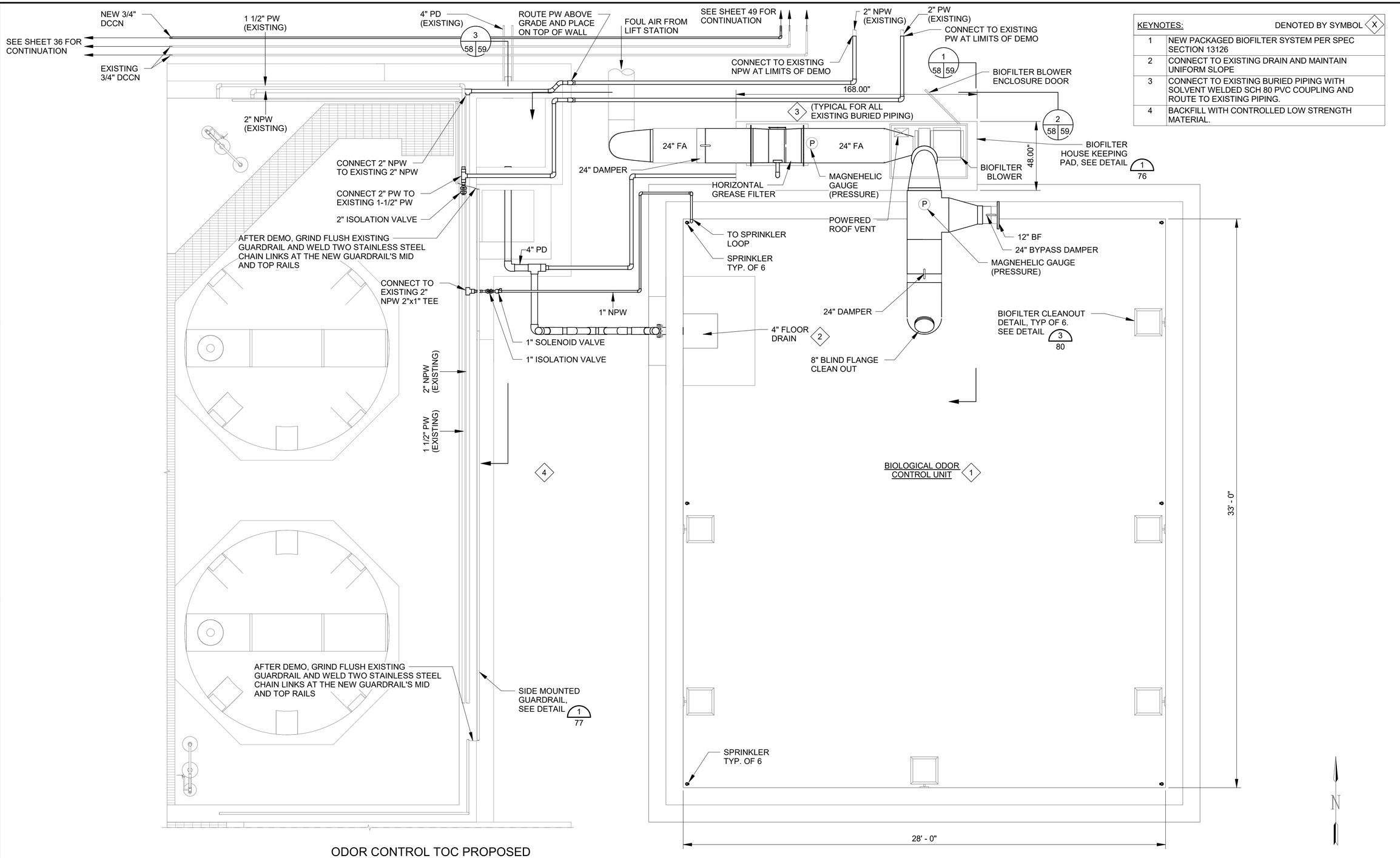
CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

S SHEET 57 OF 80

CAD FILE: CSELS66.RVT

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:08 PM



KEYNOTES:	DENOTED BY SYMBOL X
1	NEW PACKAGED BIOFILTER SYSTEM PER SPEC SECTION 13126
2	CONNECT TO EXISTING DRAIN AND MAINTAIN UNIFORM SLOPE
3	CONNECT TO EXISTING BURIED PIPING WITH SOLVENT WELDED SCH 80 PVC COUPLING AND ROUTE TO EXISTING PIPING.
4	BACKFILL WITH CONTROLLED LOW STRENGTH MATERIAL.

ODOR CONTROL TOC PROPOSED

3/8" = 1'-0"

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

FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR USE, CONSTRUCTION OR COPYING, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

GARVER

Registered Professional Engineer Only
CERTIFICATE NO.
60517
JONATHON C. HILL
Not Valid Unless Signed 1/10/23
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - ODOR CONTROL

ODOR CONTROL MECHANICAL PLAN

COPYRIGHT © 2007-JANUARY

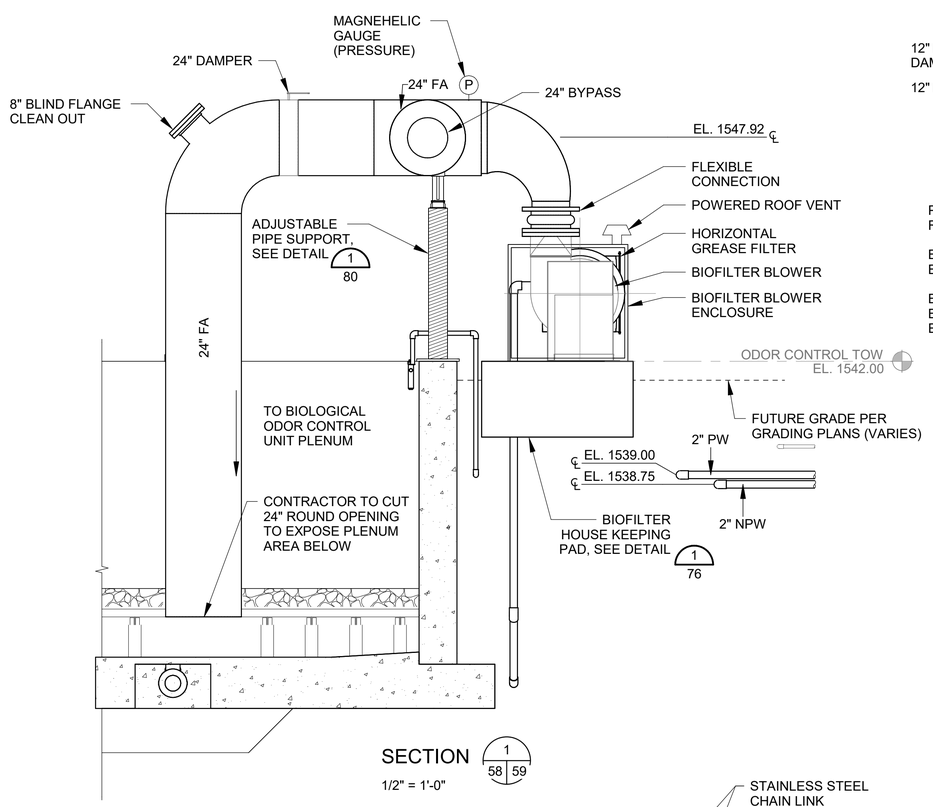
CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

M SHEET 58 OF 80

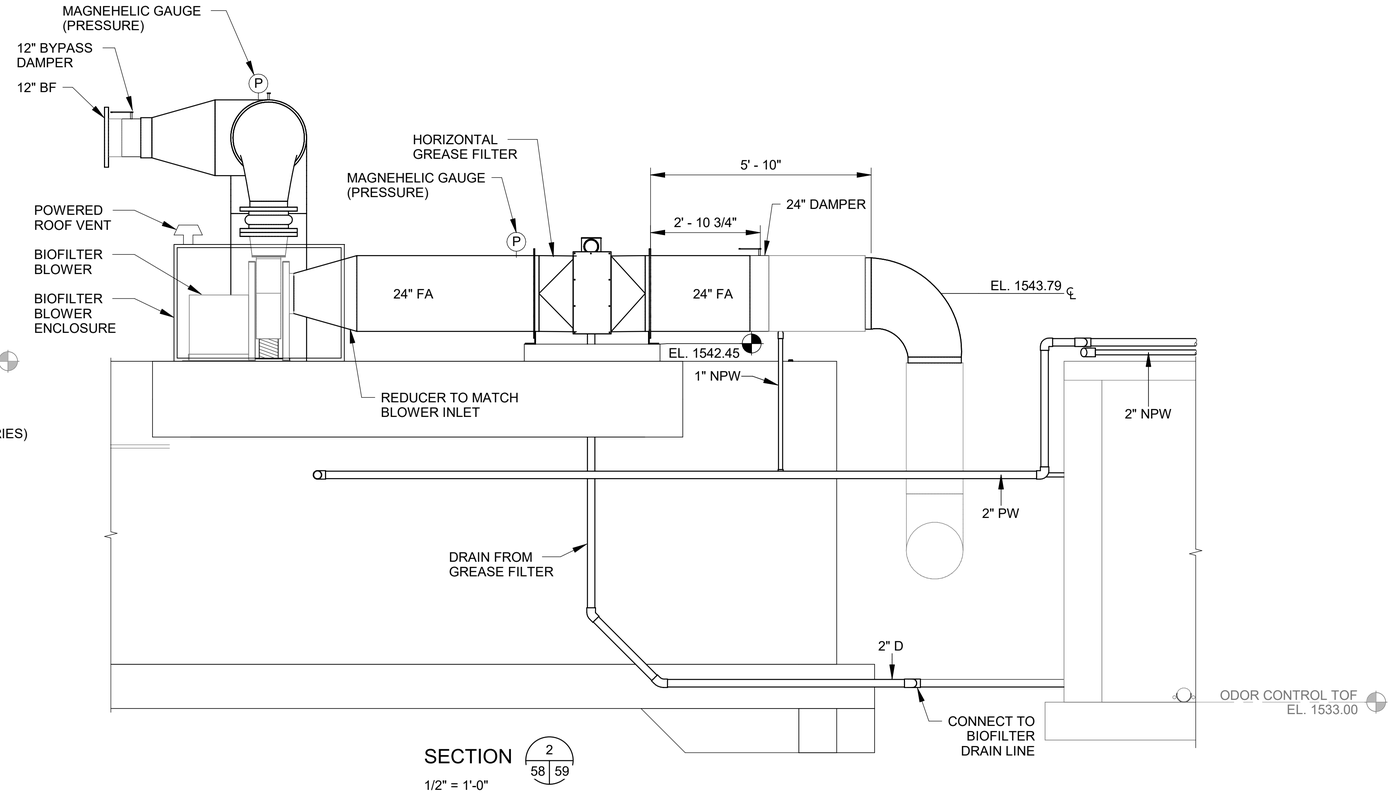
CAD FILE: CSELS66.RVT

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:09 PM



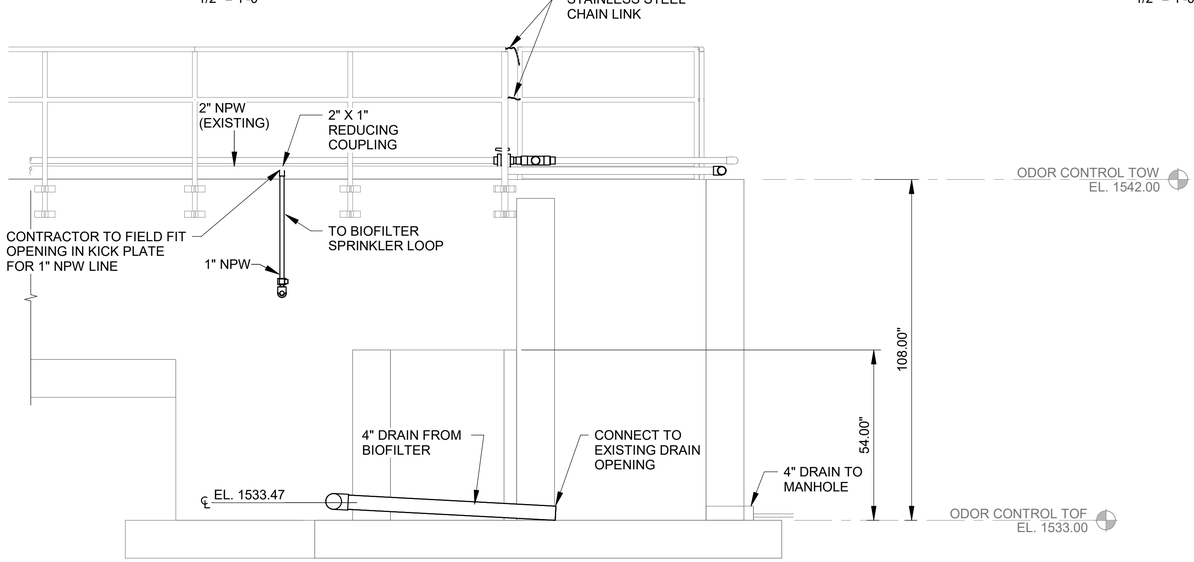
SECTION 1/58|59

1/2" = 1'-0"



SECTION 2/58|59

1/2" = 1'-0"



SECTION 3/58|59

1/2" = 1'-0"

NOTE:

1. GREASE FILTER SUPPORTS AND DRAIN PIPING TO BE SHOWN IN 90% DESIGN SUBMITTAL.

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

FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE LOANED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW." THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:10 PM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON C. SHILL Date Signed 1/10/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - ODOR CONTROL

ODOR CONTROL MECHANICAL SECTIONS AND DETAILS

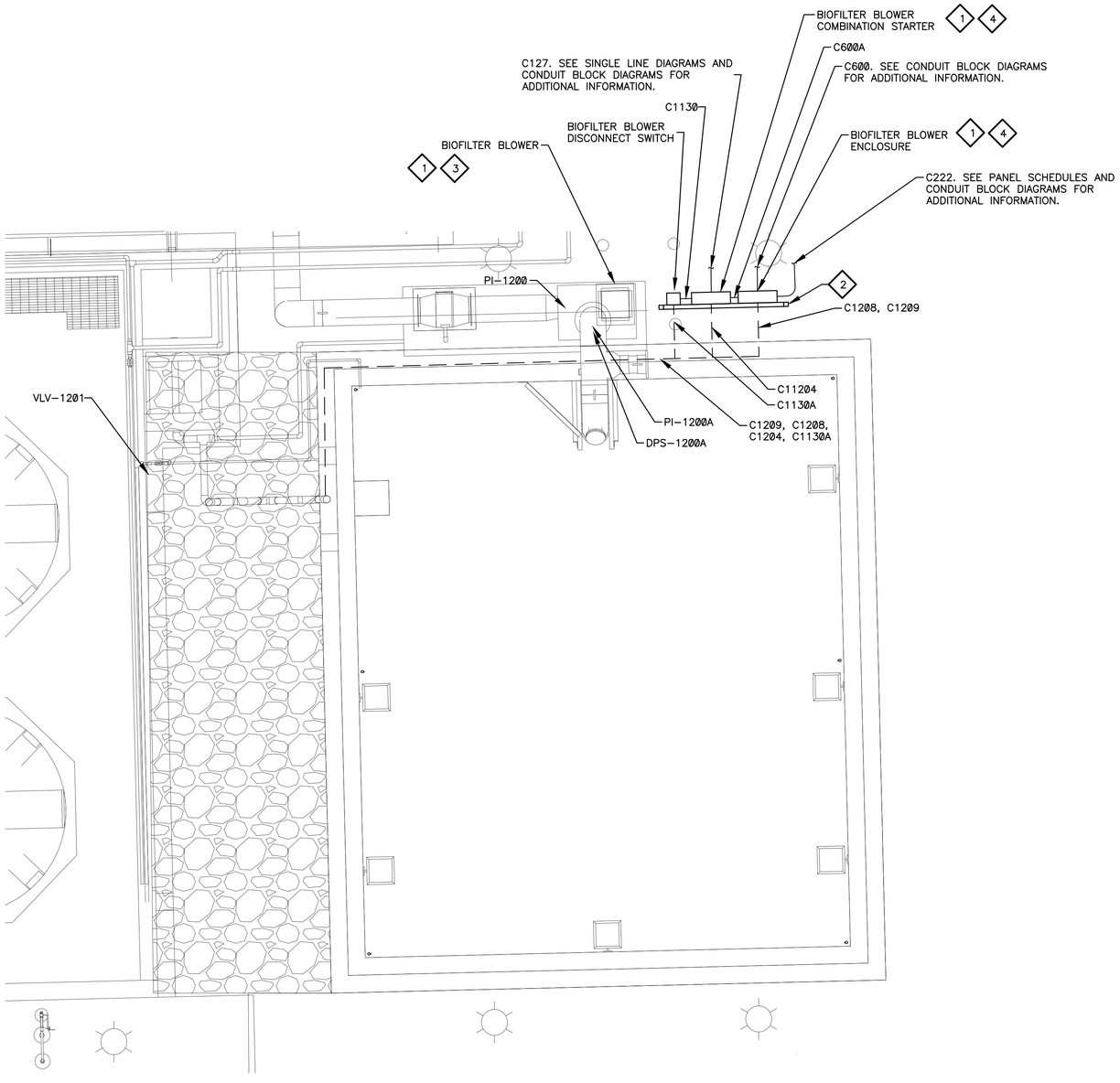
COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
M SHEET 59 OF 80
CAD FILE: CSELS66.RVT

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
PROJECT NAME
PROJECT NO.
ENGINEERING COMPANY
REVISION
DATE
CAD FILE NAME
DWG NUMBER
REMARKS

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

FOR CONSTRUCTION



ODOR CONTROL AREA PLAN

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

N

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.

KEYED NOTES:

1. CONTRACTOR TO FURNISH AND INSTALL CONDUITS, WIRE AND HARDWARE IN VENDOR PACKAGE.
2. BOND THE EXISTING GROUNDING ELECTRODE CONDUCTOR TO THE EQUIPMENT SUPPORT STRUCTURE.
3. BOND THE EXISTING GROUNDING ELECTRODE CONDUCTOR TO THE BIOFILTER BLOWER MOTOR.
4. BOND THE EXISTING GROUNDING ELECTRODE CONDUCTOR TO THE BIOFILTER BLOWER ENCLOSURE AND COMBINATION STARTER.

THE AREAS WITHIN 3 FEET OF THE ODOR CONTROL AREA ARE CLASS 1, DIVISION 2 AREAS.

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 ARIZONA U.S.A.

REVISIONS					DES
NO.	BY	DATE	CKD	REMARKS	RB
•					DWN
•					BB
•					CKD
•					VB
•					
•					
•					

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 66
REFURBISHMENT

LIFT STATION – LS-66

ODOR CONTROL PLAN

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

E-13 SHEET 60 OF 80

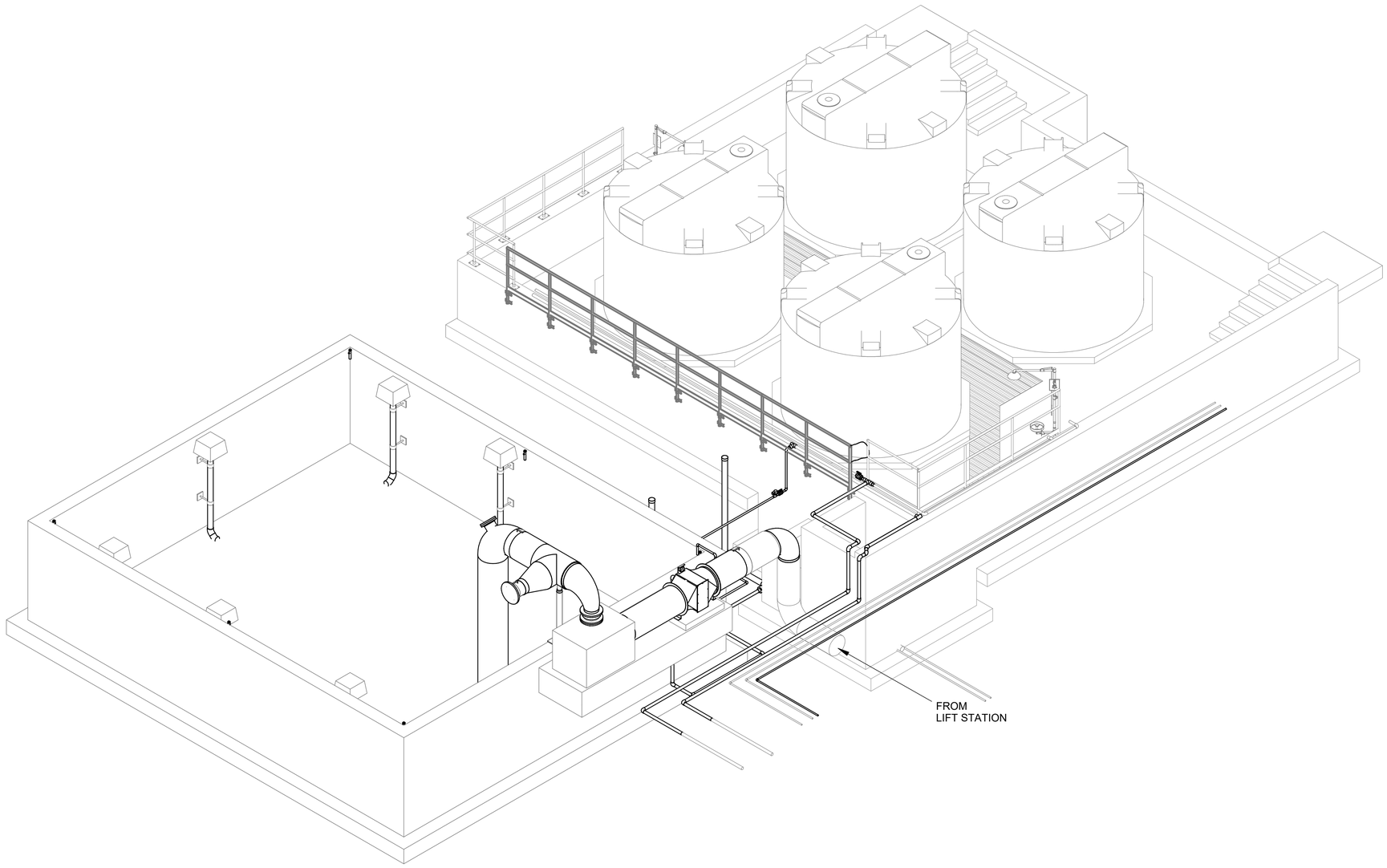
CAD FILE: NG-E-LS66V-04

USER:bbence FILE:Y:\666-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-13 ODOR CONTROL PLAN (NG-E-LS66V-04).dwg DATE:1/10/23 TIME:12:34pm

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

FOR CONSTRUCTION

PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW.
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



ODOR CONTROL MECHANICAL ISOMETRIC

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

GARVER

Registered Professional Engineer Civil
CERTIFICATE NO.
60517
JONATHON
DHILL
Date Signed 1/30/23
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - ODOR CONTROL

ODOR CONTROL MECHANICAL ISOMETRIC

COPYRIGHT © 2007-JANUARY

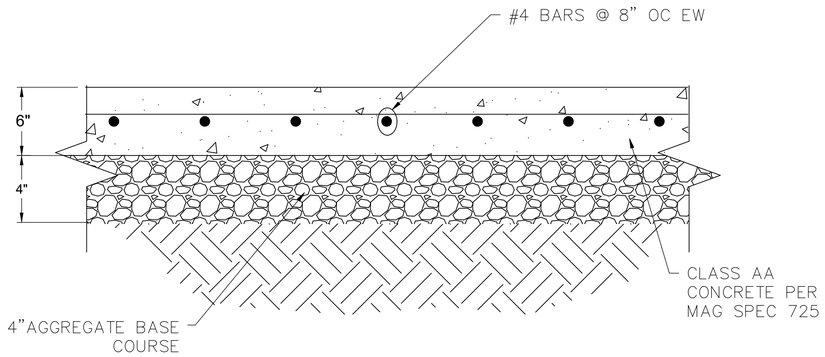
CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

M SHEET 61 OF 80

CAD FILE: CSELS66.RVT

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:11 PM

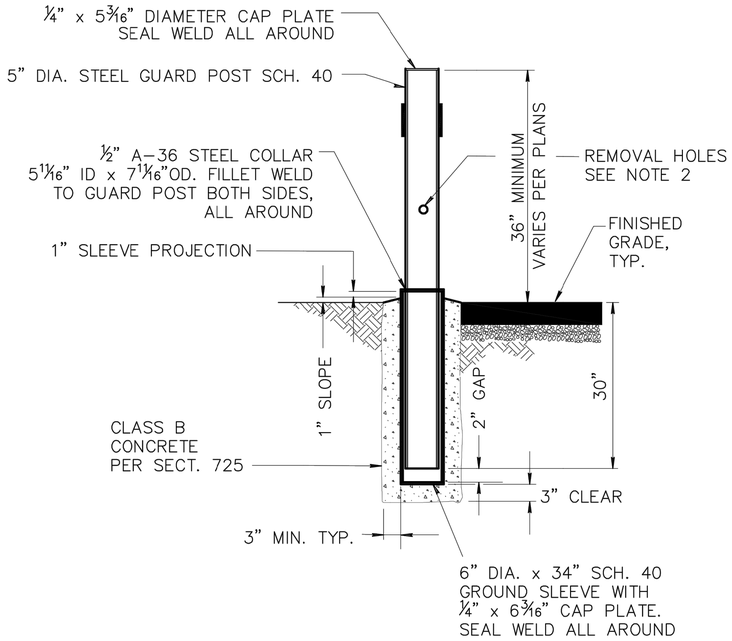


1 / 05-C03 | 99-C01

CONCRETE PAVEMENT

SCALE: NONE

SOIL PREPARATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICL REPORT 65215143 - GARVER - PROPOSED LIFT STATION 66 BIOFILTER-GEO FINAL REPORT.



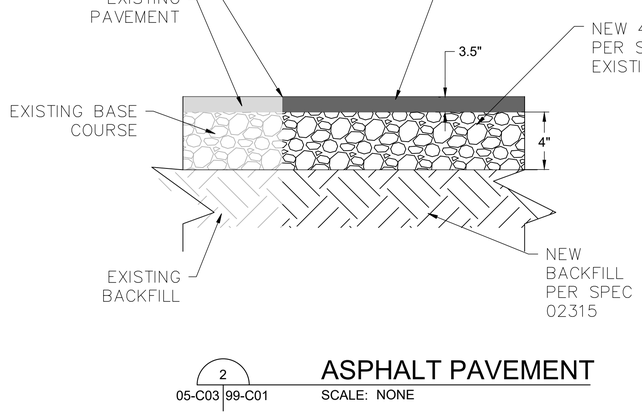
NOTES:

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

3 / 05-C03 | 99-C01

BOLLARD MAG DETAIL NO. 140 (TYPE 2 REMOVABLE)

SCALE: NONE



2 / 05-C03 | 99-C01

ASPHALT PAVEMENT

SCALE: NONE

SOIL PREPARATION SHALL BE IN ACCORDANCE WITH THE GETECHNICAL REPORT 651215143 - GARVER - PROPOSED LIFT STATION 66 BIOFILTER - GEO FINAL REPORT.

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

FOR CONSTRUCTION

*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR COPYING, EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE OR AS REQUIRED BY LAW. THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

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

GARVER

Registered Professional Engineer Civil
CERTIFICATE NO.
60517
JONATHON D HILL
Date Signed JANUARY 31, 2023
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JMC
DWN MAW
CKD CDG

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - SITE CIVIL

CIVIL DETAILS I

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

C SHEET 62 OF 80

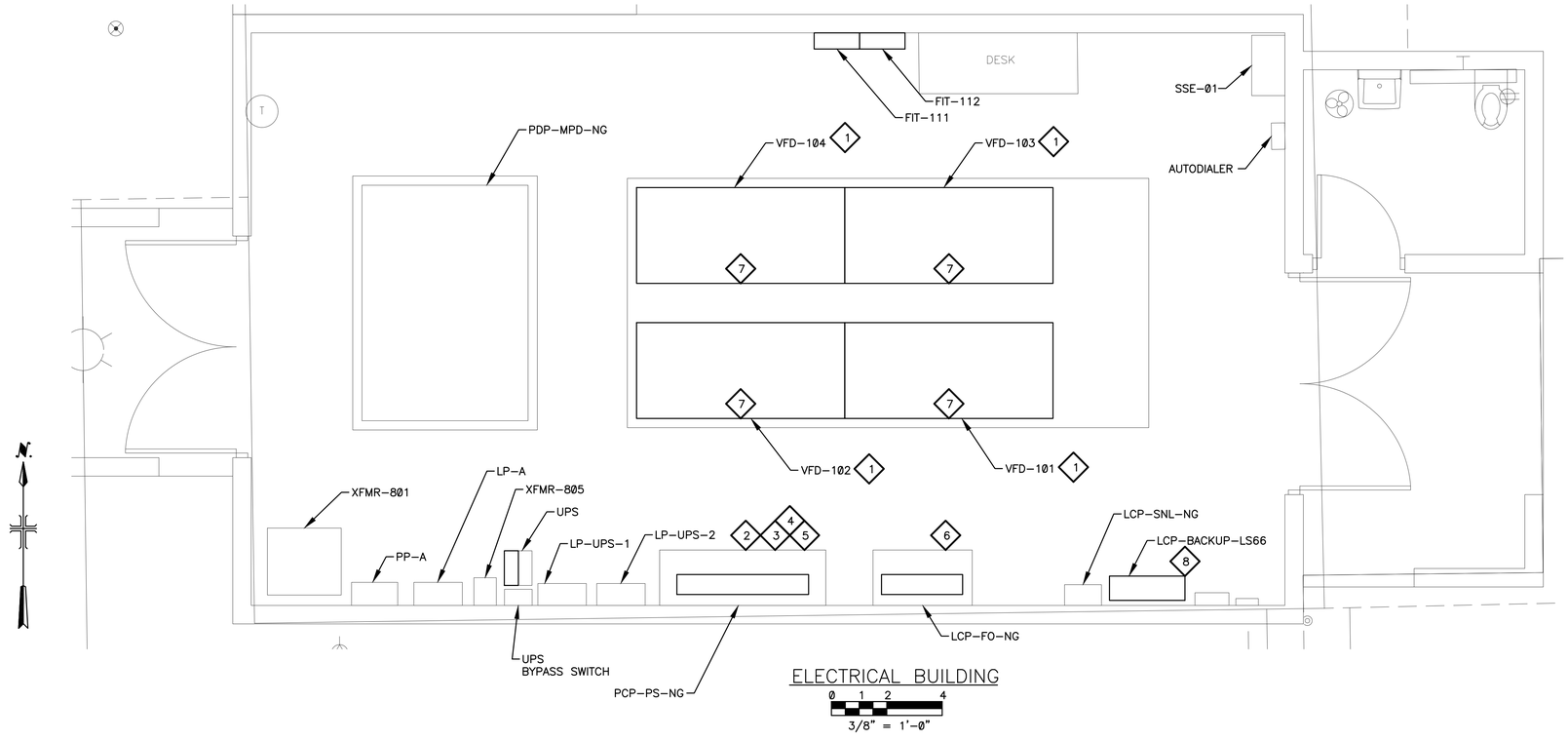
CAD FILE: 99-C01.dwg

Dwg File: L:\2019\19W11040 - PHX Lift Station 66 Refurbishment\Drawings\99-C01
Plot Date: 1/13/2023 11:25:31 AM

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.



ELECTRICAL BUILDING
0 1 2 4
3/8" = 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. LCP-FO-NG AND LCP-SNL-NG SHALL BE UPGRADED USING THE CURRENT CITY OF PHOENIX STANDARDS AND SHALL BE RELABELED WITH A UL-508A LABEL. SEE SPECIFICATIONS FOR MORE DETAILS.

KEY NOTES:

1. FURNISH AND INSTALL VFDs AND ASSOCIATED WIRES. REUSE EXISTING CONDUITS. SEE ALL DRAWINGS AND SPECIFICATIONS FOR MORE DETAILS.
2. FURNISH AND INSTALL I/O MODULES AND ASSOCIATED WIRES. REUSE CABINET TERMINAL BLOCKS. SEE SPECIFICATIONS FOR REPLACEMENT I/O MODULES.
3. FURNISH AND INSTALL FUSE BLOCKS, POWER SUPPLIES, ANALOG ISOLATORS AND SPLITTERS, RELAYS, AUTODIALER SPLITTER RELAYS, RECEPTACLES, AND LIGHT SWITCHES. SEE SPECIFICATIONS FOR REPLACEMENT SPECIFICATIONS.
4. FURNISH AND INSTALL PLC AND ALL CONNECTING CABLES. SEE SPECIFICATIONS AND DRAWINGS FOR REPLACEMENT SPECIFICATIONS.
5. FURNISH AND INSTALL FYLGT HMI (MOUNT IN DOOR), AND FLYGT CENTRAL UNIT.
6. FURNISH AND INSTALL CISCO FIBER SWITCH, BREAKERS, RECEPTACLES, AND UPS. SEE SPECIFICATIONS AND DRAWINGS FOR REPLACEMENT SPECIFICATIONS.
7. BOND THE EXISTING GROUNDING ELECTRODE CONDUCTOR TO THE VFD.
8. BOND THE EXISTING GROUNDING ELECTRODE CONDUCTOR TO LCP-BACKUP-LS66 PANEL.

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

USER:bbience FILE:Y:\66-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-11 ELECTRICAL BUILDING PLAN - (NG-E-LS66V-02).dwg DATE:1/18/23 TIME:12:34pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 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 66
REFURBISHMENT

LIFT STATION NO. 66 – ELECTRICAL BUILDING

ELECTRICAL BUILDING PLAN

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

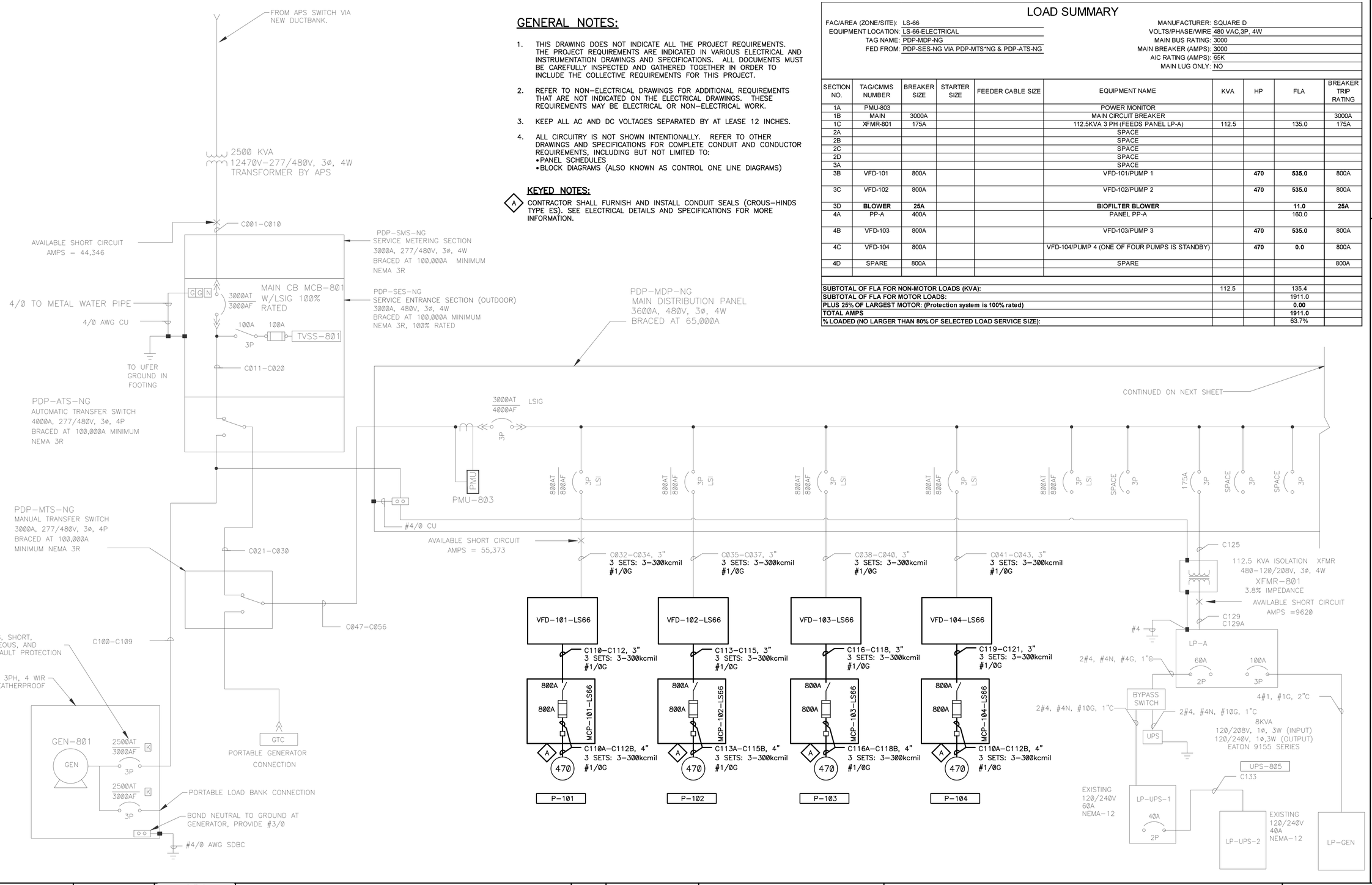
E-11 SHEET 63 OF 80

CAD FILE: NG-E-LS66V-02.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. 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. 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.
3. KEEP ALL AC AND DC VOLTAGES SEPARATED BY AT LEASE 12 INCHES.
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
   - BLOCK DIAGRAMS (ALSO KNOWN AS CONTROL ONE LINE DIAGRAMS)

KEYED NOTES:

(A) CONTRACTOR SHALL FURNISH AND INSTALL CONDUIT SEALS (CROUS-HINDS TYPE ES). SEE ELECTRICAL DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.

LOAD SUMMARY

FAC/AREA (ZONE/SITE): LS-66
EQUIPMENT LOCATION: LS-66-ELECTRICAL
TAG NAME: PDP-MDP-NG
FED FROM: PDP-SES-NG VIA PDP-MTS*NG & PDP-ATS-NG

MANUFACTURER: SQUARE D
VOLTS/PHASE/WIRE: 480 VAC,3P, 4W
MAIN BUS RATING: 3000
MAIN BREAKER (AMPS): 3000
AIC RATING (AMPS): 65K
MAIN LUG ONLY: NO

SECTION NO.	TAG/CMMS NUMBER	BREAKER SIZE	STARTER SIZE	FEEDER CABLE SIZE	EQUIPMENT NAME	KVA	HP	FLA	BREAKER TRIP RATING
1A	PMU-803				POWER MONITOR				
1B	MAIN	3000A			MAIN CIRCUIT BREAKER				3000A
1C	XFMR-801	175A			112.5KVA 3 PH (FEEDS PANEL LP-A)	112.5		135.0	175A
2A					SPACE				
2B					SPACE				
2C					SPACE				
2D					SPACE				
3A					SPACE				
3B	VFD-101	800A			VFD-101/PUMP 1		**470**	**535.0**	800A
3C	VFD-102	800A			VFD-102/PUMP 2		**470**	**535.0**	800A
3D	**BLOWER**	**25A**			**BIOFILTER BLOWER**			**11.0**	**25A**
4A	PP-A	400A			PANEL PP-A			160.0	
4B	VFD-103	800A			VFD-103/PUMP 3		**470**	**535.0**	800A
4C	VFD-104	800A			VFD-104/PUMP 4 (ONE OF FOUR PUMPS IS STANDBY)		**470**	**0.0**	800A
4D	SPARE	800A			SPARE				800A
SUBTOTAL OF FLA FOR NON-MOTOR LOADS (KVA):						112.5		135.4	
SUBTOTAL OF FLA FOR MOTOR LOADS:								1911.0	
PLUS 25% OF LARGEST MOTOR: (Protection system is 100% rated)								**0.00**	
TOTAL AMPS								**1911.0**	
% LOADED (NO LARGER THAN 80% OF SELECTED LOAD SERVICE SIZE):								63.7%	

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:

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

DATE:1/10/23 TIME:12:34pm

GARVER | EIC ENGINEERS | Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 ARIZONA U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
1				SUPERCEDES FACILITY DRAWING CS000297
•				
•				
•				
•				
•				
•				

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 66
REFURBISHMENT

LIFT STATION NO. 66 – ELECTRICAL

SINGLE LINE DIAGRAM I

COPYRIGHT © 2007–JANUARY

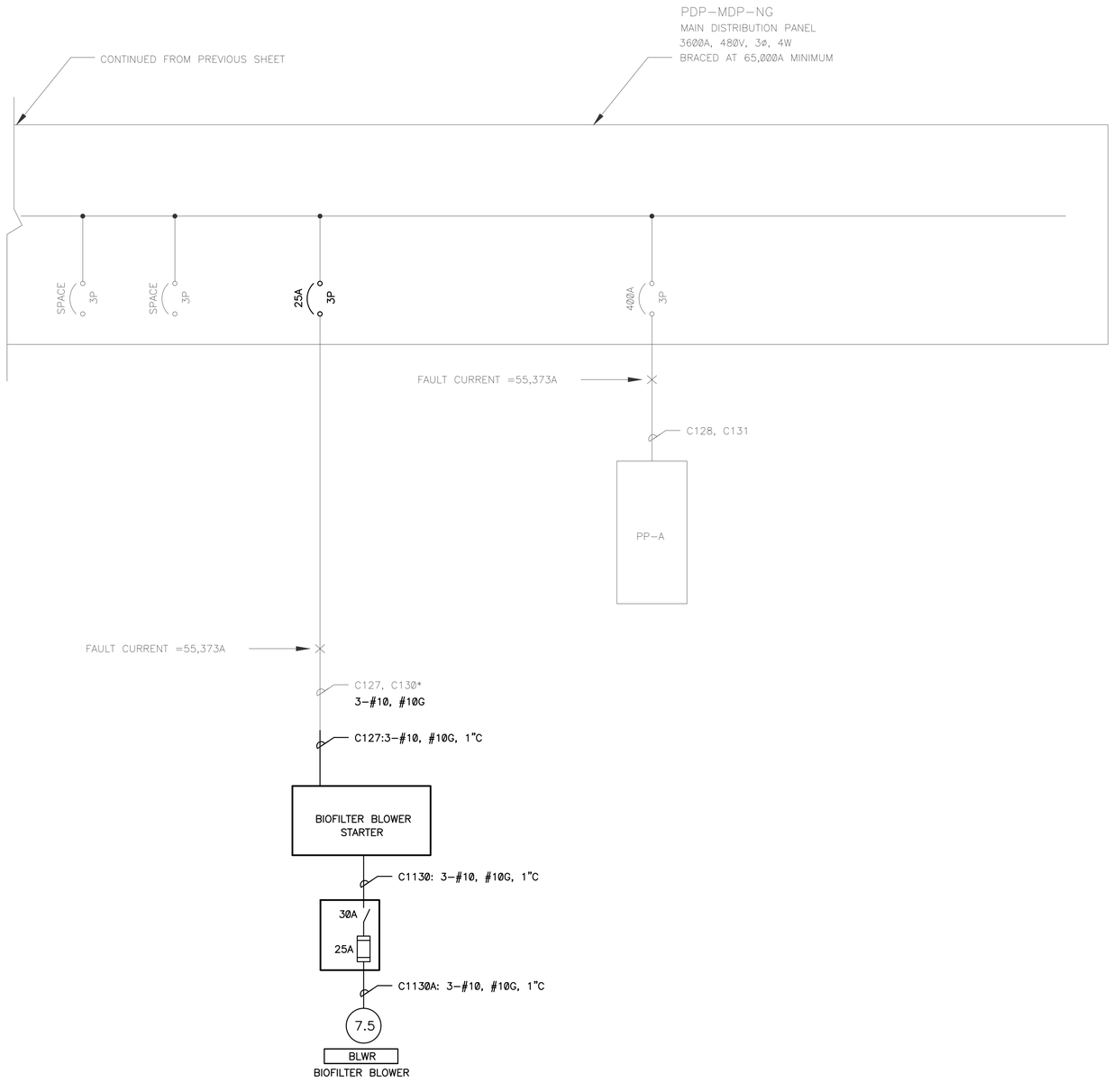
CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
E-15 SHEET 64 OF 80
CAD FILE: NG-E-LS66N-01.dwg

USER:bbience FILE:Y:\666-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-15 SINGLE LINE DIAGRAM (NG-E-LS66N-01).dwg DATE:1/10/23

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.



* INDICATES SPARE CONDUIT

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. 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.
3. KEEP ALL AC AND DC VOLTAGES SEPARATED BY AT LEAST 12 INCHES.
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
   - BLOCK DIAGRAMS (ALSO KNOWN AS CONTROL ONE LINE DIAGRAMS)

FOR CITY OF PHOENIX USE ONLY - REFERENCE OID NUMBER:

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

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-24 ARIZONA U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS
1				SUPERCEDES FACILITY DRAWING CS000298
•				
•				
•				
•				
•				
•				

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 66
REFURBISHMENT

LIFT STATION NO. 66 - ELECTRICAL

SINGLE LINE DIAGRAM II

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

E-16 SHEET 65 OF 80

CAD FILE: NG-E-LS66N-02.dwg

USER:bbence FILE:Y:\666-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-16 SINGLE LINE DIAGRAM II (NG-E-LS66N-02).dwg DATE:1/10/23 TIME:12:34pm

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.

PANEL: LP-A — MANUFACTURER: SQUARE-D
VOLTAGE, PHASE &WIRE: 120/208 VAC 3Ø, 4W — LOCATION: LS66 - ELECTRICAL BUILDING
BUS SIZE: 400 AMPS — ENCLOSURE: NEMA 3R
MAIN SIZE: 400 AMPS — MOUNTING: SURFACE
MAIN TYPE: CIRCUIT BREAKER — BUS BRACING: 22KAIC
MAIN TYPE: BOLT-ON — FED FROM: PDP-MDP-NG (SEC 1C) VIA XFMR-801 (112.5KVA)

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.
1	SPARE	40	0.0	-	-	0.1			20	EF-1 EXHAUST FAN	2
3			-	0.0	-		1.5		20	PHONE BOARD RECEPTACLE	4
5	HEAT TRACE	20	-	-	6.0			0.5	20	LCP-RR-NG POWER	6
7	ELECTRICAL BUILDING RECEPTACLES	20	6.5	-	-	4.2			20	LCP-FMMP-LS66 LIGHTS AND RECEPTACLE	8
9	ELECTRICAL BUILDING RECEPTACLES	20	-	6.5	-		4.2		20	MCP-FMMP-LS66 LIGHTS AND RECEPTACLE	10
11	WET WELL RECEPTACLES	20	-	-	6.5			4.2	20	F.O. LIGHTS AND RECEPTACLE	12
13	AIR REC DRAIN RECEPTACLE	20	6.5	-	-	57.1					14
15	**SPARE**	20	-	**0.0**	-		55.5		100	LP-GEN IN GENERATOR BUILDING	16
17	**SPARE**	20	-	-	**0.0**			25.8			18
19	**SPARE**	20	**0.0**	-	-	17.1			40	PANEL LP-B @ GENERATOR BUILDING	20
21	SPARE	20	-	0.0	-		26.5				22
23	SPARE	20	-	-	0.0			0.0	15	SPARE	24
25	**SPARE**	20	**0.0**	-	-	2.0			20	PCP-PS-LS66 LIGHTS AND RECEPTACLE	26
27	MCP-FMMP-LS66 AIR CONDITIONER	20	-	6.8	-		0.0		20	SPARE	28
29	**SPARE**	20	-	-	**0.0**			4.2	20	LCP-FMMP-LS66 AIR CONDITIONER	30
31	SPARE	20	0.0	-	-	4.5			20	ODOR SCRUBBER RECEPTACLE	32
33	WATER HEATER	20	-	30.0	-		4.5		20	CHEMICAL STORAGE RECEPTACLE	34
35	SECURITY SYSTEM ENCLOSURE	20	-	-	5.0			0.0	20	SPARE	36
37	**BIOFILTER LOCAL CONTROL PANEL**	20	**8.2**	-	-	0.0			-	SPACE	38
39	PANEL UPS-1 VIA UPS-805	60	-	24.0	-		2.0		15	PHOTO CELL (LIGHT CONTROL)	40
41			-	-	30.0			0.0	-	SPACE	42
			21.2	67.3	47.5	85.0	94.2	34.7			

NOTES:
KVA A PHASE = 15.9 — AMPS A PHASE = 132.8 — BY FIRM:
KVA B PHASE = 24.2 — AMPS B PHASE = 201.9 — DATE:
KVA C PHASE = 12.3 — AMPS C PHASE = 102.8
Changes to this Schedule Require Approval From the City Electrical Foreman
TOTAL KVA = 52.5 (Load totals are calculated as continuous duty at 125%)

DETAIL A #/# PANEL LP-A SCHEDULE

PANEL: LP-UPS-1 — MANUFACTURER: SQUARE D
VOLTAGE, PHASE &WIRE: 120/240 VAC 1Ø, 3W — LOCATION: LASS - ELECTRICAL BUILDING
BUS SIZE: 60 AMPS — ENCLOSURE: NEMA 3R
MAIN SIZE: 60 AMPS — MOUNTING: SURFACE
MAIN TYPE: YES CIRCUIT BREAKER — BUS BRACING: 22KAIC
MAIN TYPE: YES BOLT-ON — FED FROM: PP-A (CKTS 21, 23) VIA XFMR-805

CKT NO.	LOAD DESCRIPTION	CKT. BKR. AMP	AMPS A	AMPS B	AMPS A	AMPS B	CKT. BKR. AMP	LOAD DESCRIPTION	CKT NO.
1	**LIT-1101**	20	**0.5**	-	**0.5**	-	20	**LIT-1103**	2
3	**LIT-1102**	20		**0.5**	-	**0.5**	20	**LIT-1104**	4
5	LCP-SPKL-NG	20	0.5	-	1.5	-	20	FIT-111	6
7	TIT-100	20		0.5	-	1.0	20	PCP-PS-LS66	8
9	SPARE AT WETWELL	20	0.0	-	1.0	-	20	LCP-FMMP-LS66 CONTROL POWER	10
11	**SPARE**	20		**0.0**	-	0.5	20	LIT-401	12
13	AIT-102	20	1.0	-	0.5	-	20	LIT0402	14
15	**SPARE**	20		**0.0**	-	**3.4**	20	**LCP-BACKUP-LS66**	16
17	**SPARE**	20	**0.0**	-	0.0	-	20	SPARE	18
19	SPARE AT WETWELL	20		0.0	-	1.0	20	LCP-T401-LS66	20
21	SPARE AT WETWELL	20	0.0	-	1.0	-	20	LCP-T402-LS66	22
23	FIT-501	20		1.5	-	**1.5**	20	**FIT-111**	24
25	LIT-501	20	0.5	-	**1.5**	-	20	**FIT-112**	26
27	LCP-SCTY-NG POWER	20		1.0	-	1.5	20	FIT-502	28
29	LCP-ESA 1-LS66	20	0.5	-	0.5	-	20	LIT-502	30
31	LCP-ESA 2-LS66	20		0.5	-	2.0	20	AIR COMPRESSOR	32
33	LCP-ESA 3-LS66	20	0.5	-	**0.0**	-	20	**SPARE**	34
35	**SPARE**	20		**0.0**	-	**0.0**	20	**SPARE**	36
37	AIT-104	20	6.7	-	**0.0**	-	20	**SPARE**	38
39	PANEL LP-UPS-2	40		1.5	-	**0.0**	20	**SPARE**	40
41			1.5	-	**0.0**	-	20	**SPARE**	42
	UNUSABLE SPACE			-	-	-	-	UNUSABLE SPACE	
	UNUSABLE SPACE			-	-	-	-	UNUSABLE SPACE	
	UNUSABLE SPACE			-	-	-	-	UNUSABLE SPACE	
	UNUSABLE SPACE			-	-	-	-	UNUSABLE SPACE	
	MAIN	60		-	-	-	-	UNUSABLE SPACE	
			11.7	5.5	6.5	11.4			

NOTES:
KVA A PHASE = 2.7 — AMPS A PHASE = 22.8 — BY FIRM:
KVA B PHASE = 2.5 — AMPS B PHASE = 21.1 — DATE:
Changes to this Schedule Require Approval From the City Electrical Foreman
TOTAL KVA = 5.3 (Load totals are calculated as continuous duty at 125%)

DETAIL B #/# PANEL LP-UPS-1 SCHEDULE

PANEL: LP-UPS-2 — MANUFACTURER: SQUARE D
VOLTAGE, PHASE &WIRE: 120/240 VAC 1Ø, 3W — LOCATION: LASS - ELECTRICAL BUILDING
BUS SIZE: 40 AMPS — ENCLOSURE: NEMA 3R
MAIN SIZE: 40 AMPS — MOUNTING: SURFACE
MAIN TYPE: YES CIRCUIT BREAKER — BUS BRACING: 22KAIC
MAIN TYPE: YES BOLT-ON — FED FROM: LP-UPS-1 (CKTS 39, 41)

CKT NO.	LOAD DESCRIPTION	CKT. BKR. AMP	AMPS A	AMPS B	AMPS A	AMPS B	CKT. BKR. AMP	LOAD DESCRIPTION	CKT NO.
1	LP-FO-NG POWER	20	0.5	-	0.0	-	20	SPARE	2
3	**SPARE**	20		**0.0**	-	**0.0**	20	**SPARE**	4
5	**SPARE**	20	**0.0**	-	**0.0**	-	20	**SPARE**	6
7	**SPARE**	20		**0.0**	-	0.0	20	SPARE	8
9	SPARE	20	0.0	-	0.0	-	20	SPARE	10
11	SPARE	20		0.0	-	0.0	20	SPARE	12
13	SPARE	20	0.0	-	0.0	-	20	SPARE	14
15	SPARE	20		0.0	-	0.0	20	SPARE	16
17	SPARE	20	0.0	-	0.0	-	20	SPARE	18
19	SPARE	20		0.0	-	0.0	20	SPARE	20
			0.5	0.0	0.0	0.0			

NOTES:
KVA A PHASE = 0.1 — AMPS A PHASE = 0.6 — BY FIRM:
KVA B PHASE = 0.0 — AMPS B PHASE = 0.0 — DATE:
Changes to this Schedule Require Approval From the City Electrical Foreman
TOTAL KVA = 0.1 (Load totals are calculated as continuous duty at 125%)

DETAIL C #/# PANEL LP-UPS-2 SCHEDULE

PANEL: PP-A — MANUFACTURER: SQUARE D
VOLTAGE, PHASE &WIRE: 277/480V VAC 3Ø, 4W — LOCATION: LS66 - ELECTRICAL BUILDING
BUS SIZE: 400 AMPS — ENCLOSURE: NEMA 1
MAIN SIZE: 400 AMPS — MOUNTING: SURFACE
MAIN TYPE: YES CIRCUIT BREAKER — BUS BRACING: 65KAIC
MAIN TYPE: YES BOLT-ON — FED FROM: PDP-MDP-NG (SECTION 4A)

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.
1	SG-100A	15	3.4			3.4			15	SG-100B	2
3				3.4			3.4				4
5					3.4			3.4			6
7	SG-105	15	3.4			4.4			20	VLV-101, VLV-102	8
9				3.4			4.4				10
11					3.4			4.4			12
13	SITE LIGHTING	20	9.0			4.4			20	VLV-103, VLV-104	14
15	SITE LIGHTING	20		9.0			4.4				16
17	ELECTRICAL BUILDING LIGHTS	20			8.0			4.4			18
19	SPARE	20	0.0			9.2			20	MCP-FMMP-LS66	20
21	SPARE	20		0.0			9.2				22
23					0.0			9.2			24
25	HP-1	20	13.0			13.0			20	HP-2	26
27				13.0			13.0				28
29					13.0			13.0			30
31	SPARE	20	**0.0**			9.0			20	SITE LIGHTING	32
33				**0.0**			9.0		20	SITE LIGHTING	34
35					**0.0**			9.0	20	SITE LIGHTING	36
37	WELDING OUTLET	30	4.6			0.0			100	SPARE	38
39				4.6			0.0				40
41					4.6			0.0			42
			33.6	33.6	32.6	43.4	43.4	43.4			

NOTES:
KVA A PHASE = 26.7 — AMPS A PHASE = 96.3 — BY FIRM:
KVA B PHASE = 26.7 — AMPS B PHASE = 96.3 — DATE:
KVA C PHASE = 26.3 — AMPS C PHASE = 95.0
Changes to this Schedule Require Approval From the City Electrical Foreman
TOTAL KVA = 79.6 (Load totals are calculated as continuous duty at 125%)

DETAIL D #/# PANEL PP-A SCHEDULE

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. 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.

KEY NOTES:

1. DEMO LCP-ODOR-LS66 LIGHT AND RECEPTACLES CIRCUIT 15. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
2. DEMO MCP-ODOR-LS66 LIGHT AND RECEPTACLES CIRCUIT 17. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
3. DEMO LCP-ODOR-LS66 AIR EXCHANGER CIRCUIT 19. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
4. DEMO MCP-ODOR-LS66 CONTROL POWER CIRCUIT 25. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
5. DEMO RECEPTACLE ODOR SCRUBBER CIRCUIT 29. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE." CONTRACTOR TO FIELD VERIFY CIRCUIT IS NOT FEEDING RECEPTACLES NOT BEING DEMOLISHED.
6. REUSE CIRCUIT 37 FOR EXISTING LCP-ODOR-LS66 TO POWER BIOFILTER LOCAL CONTROL PANEL.
7. DEMO AIT-301 CIRCUIT 5. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
8. DEMO FIT-300 CIRCUIT 7. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
9. DEMO AIT-303A CIRCUIT 4. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
10. DEMO AIT-303B CIRCUIT 6. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
11. REUSE LIT-1101,1102,1103,104 CIRCUITS 1,2,3,4, FOR REPLACEMENT LEVEL TRANSMITTERS LIT-1101,1102,1103,1104.
12. DEMO LCP-T201-LS66 CIRCUIT 11. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
13. DEMO LCP-T202-LS66 CIRCUIT 15. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
14. DEMO LIT-202 CIRCUIT 17. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
15. DEMO LCP-ESA4-LS66 CIRCUIT 35. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
16. USE SPARE CIRCUIT 16. LABEL AS NOTED.
17. USE SPARE CIRCUIT 24. LABEL AS NOTED.
18. USE SPARE CIRCUIT 26. LABEL AS NOTED.
19. DEMO LCP-ESA5-LS66 CIRCUIT 36. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
20. DEMO LCP-ESA6-LS66 CIRCUIT 38. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
21. DEMO LCP-ESA7-LS66 CIRCUIT 40. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
22. DEMO LCP-ESA8-LS66 CIRCUIT 42. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
23. REUSE EXISTING SITE LIGHTING BREAKERS, CIRCUITS 13, 15, 32, 34, AND 36, AND EXISTING CONDUIT\WIRE, FOR LED LIGHTING.
24. REPLACE SPARE BREAKERS IN CIRCUITS 8,10,12 WITH 3 POLE 20A BREAKER.
25. USE SPARE 20A 3 POLE BREAKER IN CIRCUITS 14,16,18.
26. FURNISH AND INSTALL A 30 AMP FUSED SWITCH AT EACH VALVE.
27. DEMO LCP-PA-NG CIRCUIT 3. LEAVE BREAKER IN PLACE AND LABEL AS "SPARE."
28. DEMO EXISTING LCP-AC-NG PANEL AND ASSOCIATED WIRES AND CONDUIT. DEMO AIR COMPRESSOR NO. 1 AND NO 2.

FOR CITY OF PHOENIX USE ONLY - REFERENCE CID NUMBER:
REVISION | ENGINEERING COMPANY | PROJECT NO. | PROJECT NAME | DATE | CAD FILE NAME | DWG NUMBER | REMARKS

DATE:1/10/23 TIME:12:34pm
USER:bbence FILE:Y:\866-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-17 PANEL SCHEDULES (NG-E-LS66L-01).dwg

GARVER | EIC ENGINEERS | Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI 2023 Date Signed 1-11-23 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 66
REFURBISHMENT

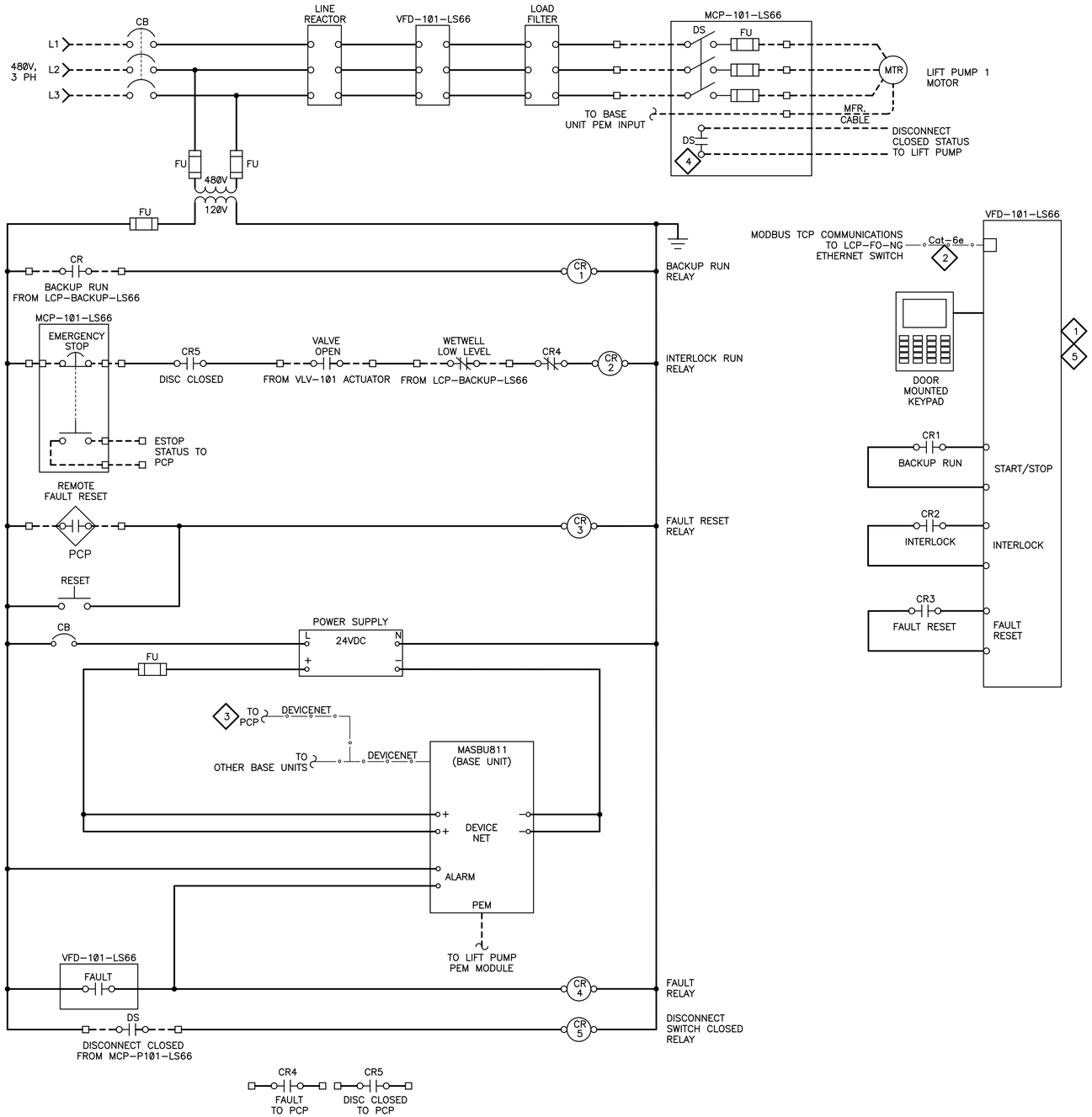
ELECTRICAL
PANEL SCHEDULES

COPYRIGHT © 2007-JANUARY
CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
E-17 SHEET 66 OF 80
CAD FILE: NG-E-LS66L-01.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.



DETAIL A #/# LIFT PUMP P101 CONTROL SCHEMATIC
TYPICAL ALL PUMPS.

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. 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.
4. SEE SPECIFICATIONS. NOT ALL COMPONENTS ARE SHOW. FURNISH AND INSTALL ALL COMPONENTS AS SHOW AND AS SPECIFIED IN THE SPECIFICATIONS.

KEYED NOTES:

1. VFD SPEED IN BACKUP RUN CONDITION IS FIXED IN THE VFD. WHEN NOT BACKUP RUN CONDITION, THE SPEED COMES FROM THE PCP. THE PCP SHALL SEND AN ENABLE BIT TO SWITCH VFD TO FOLLOW PCP SPEED WHEN NOT IN A BACKUP RUN CONDITION.
2. VFD TO BE MONITORED AND CONTROLLED IN REMOTE MODE USING MODBUS TCP COMMUNICATIONS PROTOCOL. SEE SPECIFICATIONS AND P&ID DRAWINGS FOR MORE DETAILS.
3. PUMP 1 ONLY.
4. FAST ACTING AUX SWITCH.
5. VFD MANUFACTURER TO INCLUDE ENOUGH SPACE IN VFD CONTROLS SECTION TO ACCOMMODATE ALL CONTROLS AS SPECIFIED AND AS INDICATED IN THE DRAWINGS INCLUDING THE MAS 801 PUMP MONITORING SYSTEM BASE UNITS.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER:

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	REMARKS

USER:bbence FILE:Y:\866-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-18 CONTROL SCHEMATICS 1 (NG-E-LS665-01).dwg DATE:1/10/23 TIME:12:35pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 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 66
REFURBISHMENT

ELECTRICAL

CONTROL SCHEMATICS I

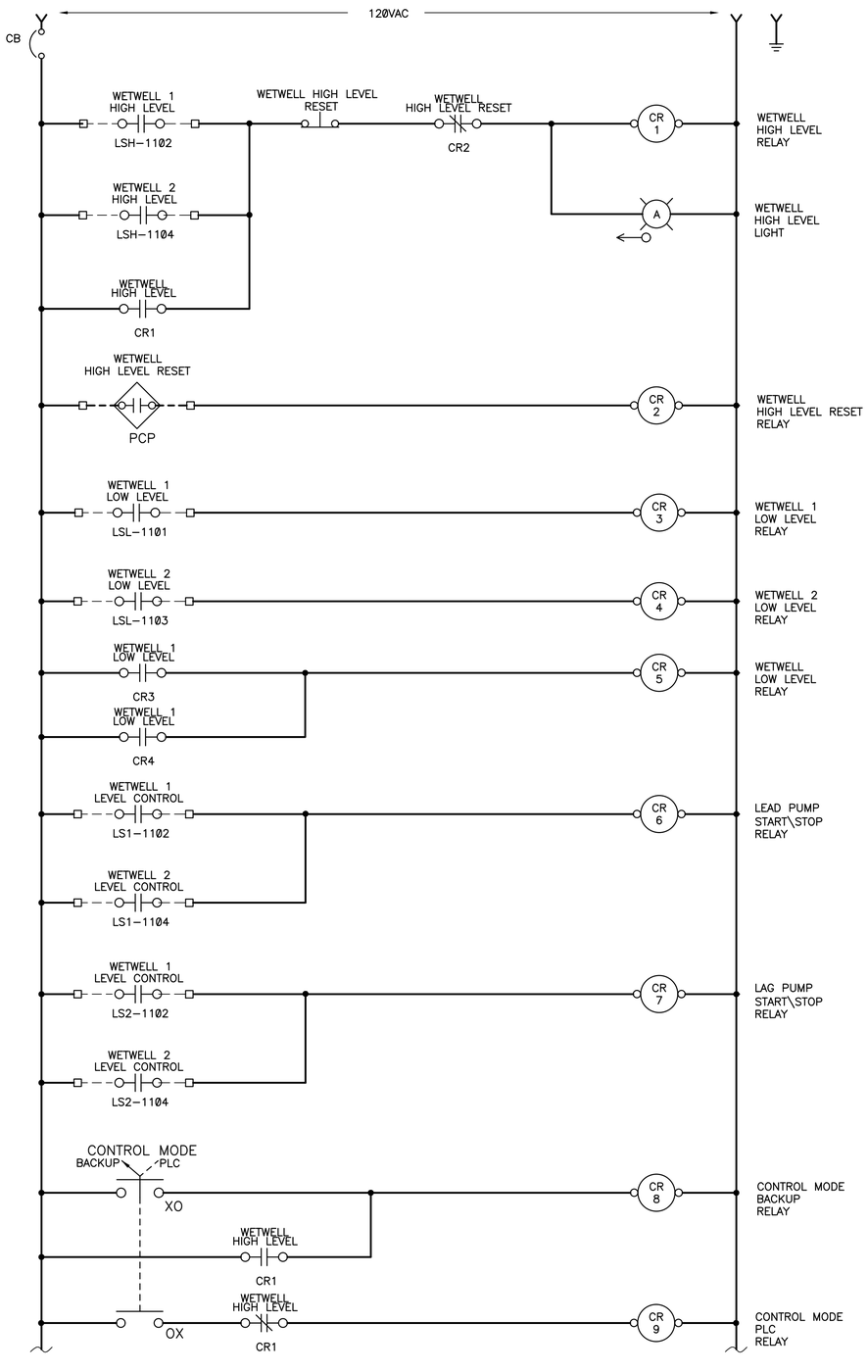
COPYRIGHT © 2007–JANUARY

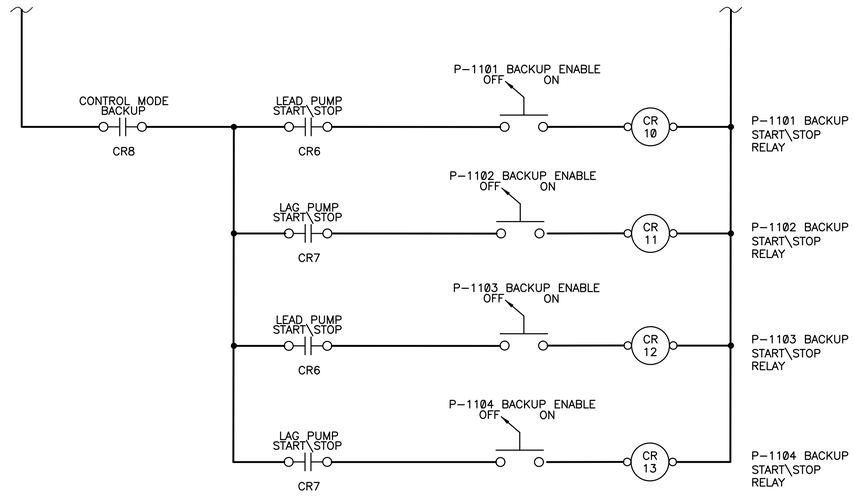
CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
E-18 SHEET 67 OF 80
CAD FILE: NG-E-LS665-01.dwg

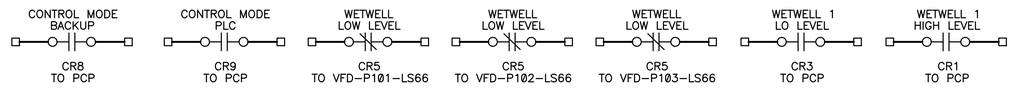
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

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.







DETAIL A #/# — CONTROL SCHEMATIC LCP-BACKUP-LS66

KEYED NOTES:

1. CONTRACTOR SHALL INSTALL LABEL ON FRONT OF BACKUP CONTROL PANEL INDICATING THE FOLLOWING: ONLY TWO PUMPS CAN BE SELECTED AT ANY ONE TIME.

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. 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.
4. SEE SPECIFICATIONS. NOT ALL COMPONENTS ARE SHOW. FURNISH AND INSTALL ALL COMPONENTS AS SHOW AND AS SPECIFIED IN THE SPECIFICATIONS.

FOR CITY OF PHOENIX USE ONLY – REFERENCE OID NUMBER:

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

GARVER | EIC ENGINEERS | Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 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 66
REFURBISHMENT

ELECTRICAL

CONTROL SCHEMATICS II

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

E-19 SHEET 68 OF 80

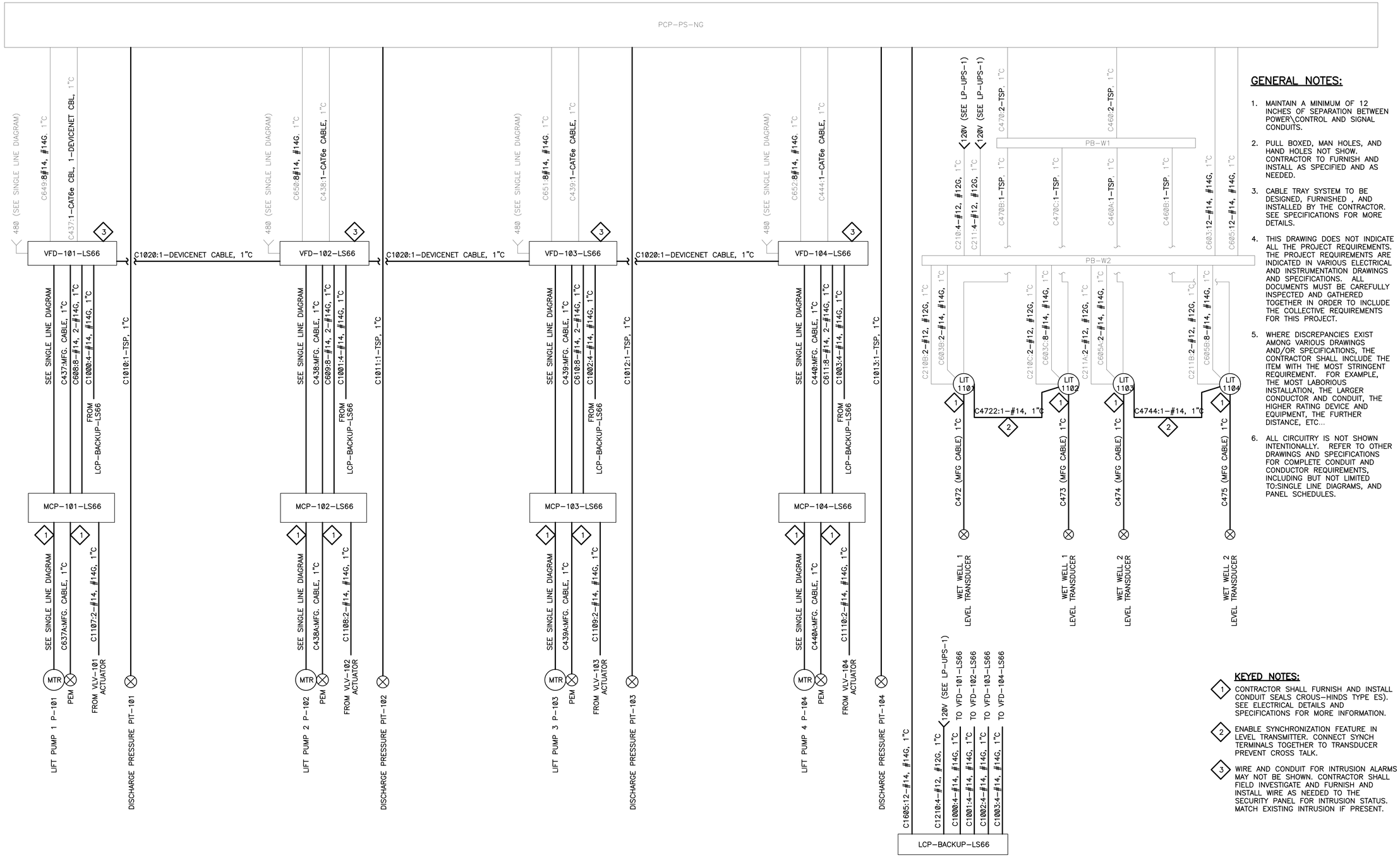
CAD FILE: NG-E-LS66S-02.dwg

USER:bbence FILE:Y:\666-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-19 CONTROL SCHEMATICS II (NG-E-LS66S-02).dwg DATE:1/16/23 TIME:12:35pm

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. MAINTAIN A MINIMUM OF 12 INCHES OF SEPARATION 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. 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.

KEYED NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL CONDUIT SEALS CROUS-HINDS TYPE ES). SEE ELECTRICAL DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.
2. ENABLE SYNCHRONIZATION FEATURE IN LEVEL TRANSMITTER. CONNECT SYNCH TERMINALS TOGETHER TO TRANSDUCER PREVENT CROSS TALK.
3. WIRE AND CONDUIT FOR INTRUSION ALARMS MAY NOT BE SHOWN. CONTRACTOR SHALL FIELD INVESTIGATE AND FURNISH AND INSTALL WIRE AS NEEDED TO THE SECURITY PANEL FOR INTRUSION STATUS. MATCH EXISTING INTRUSION IF PRESENT.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER:

REVISION	ENGINEERING COMPANY	PROJECT NO.	PROJECT NAME	DATE	CAD FILE NAME	REMARKS

USER:bbence FILE:Y:\866-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-20 CONDUIT BLOCK DIAGRAMS 1 (NG-E-LS66X-01).dwg DATE:1/18/23 TIME:12:35pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 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 66
REFURBISHMENT

ELECTRICAL

CONDUIT BLOCK DIAGRAMS I

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

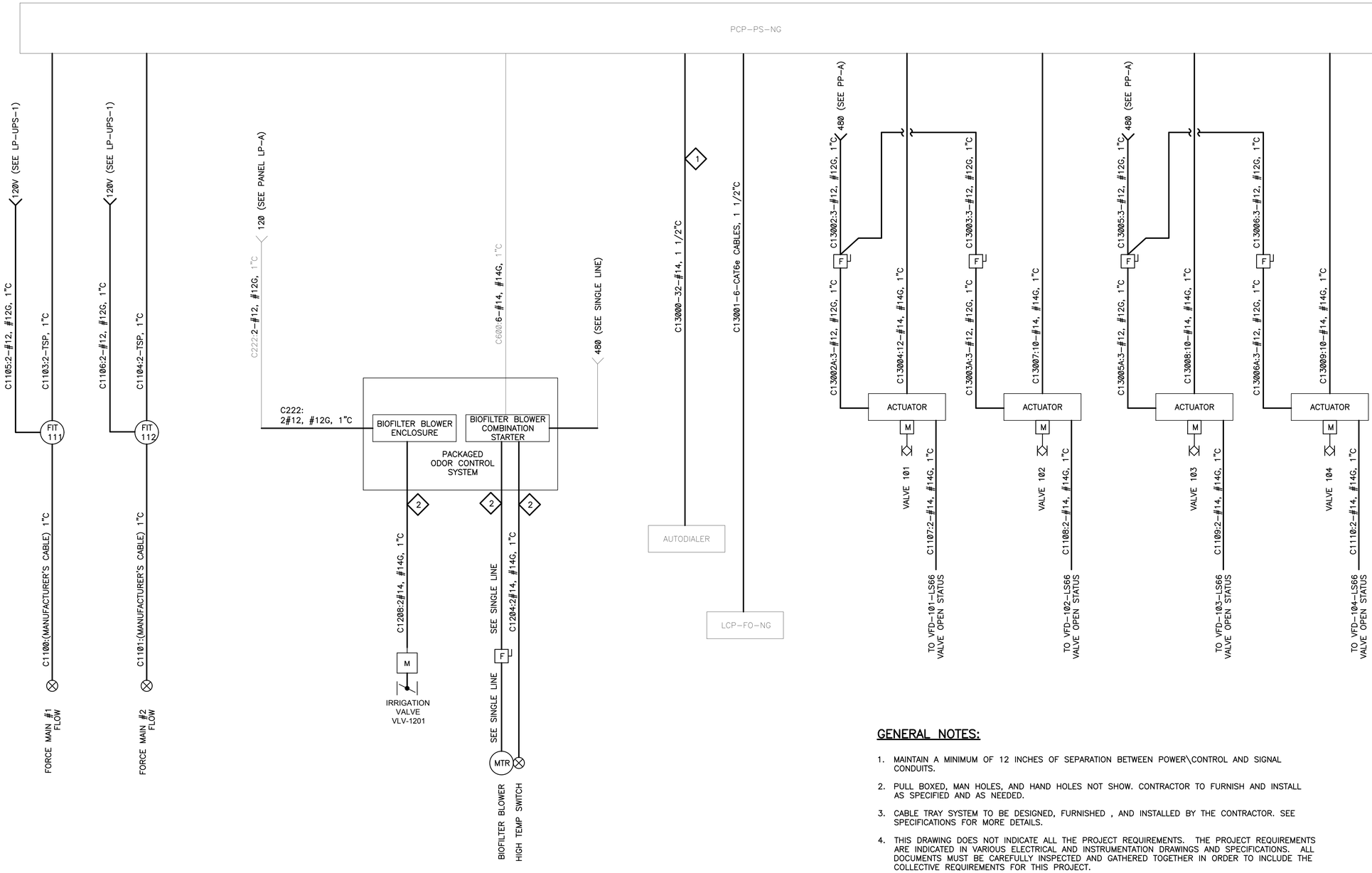
E-20 SHEET 69 OF 80

CAD FILE: NG-E-LS55X-01.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. MAINTAIN A MINIMUM OF 12 INCHES OF SEPARATION 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. 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.

KEYED NOTES:

1. CONTRACTOR MAY REUSE EXISTING CONDUIT AS APPROVED BY THE ENGINEER.
2. CONTRACTOR SHALL FURNISH AND INSTALL CONDUIT SEALS CROUS-HINDS TYPE ES). SEE ELECTRICAL DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.

FOR CITY OF PHOENIX USE ONLY – REFERENCE OID NUMBER:

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

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 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 66
REFURBISHMENT

ELECTRICAL

CONDUIT BLOCK DIAGRAMS II

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

E-21 SHEET 70 OF 80

CAD FILE: NG-E-LS66X-01.dwg

USER:bbence FILE:Y:\666-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-21 CONDUIT BLOCK DIAGRAMS II (NG-E-LS66X-02).dwg DATE:1/18/23 TIME:12:35pm

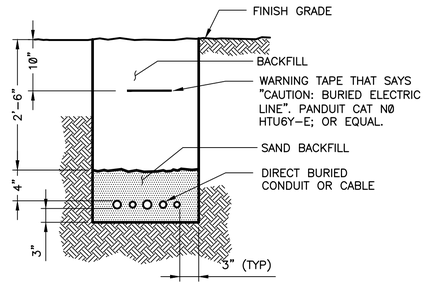
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

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:

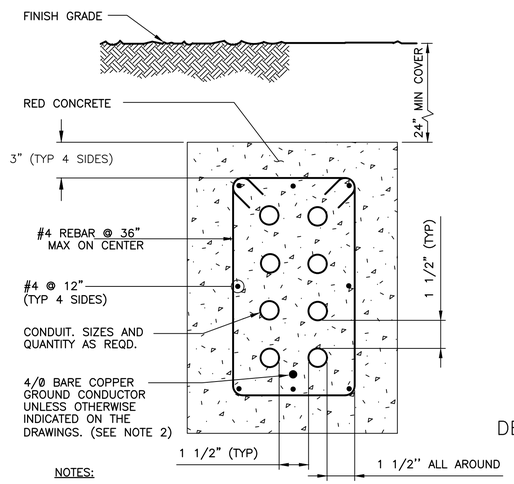
1. THE TYPICAL DETAILS ARE NOT REFERENCED ON EACH AND EVERY DRAWING. THE TYPICAL DETAILS ARE NOT REFERENCED ON EACH AND EVERY TYPE OF INSTALLATION. THE TYPICAL DETAILS HOWEVER SHALL BE ADHERED TO WHERE THE INSTALLATION APPLIES.
2. WHERE THE INSTALLATION OF TYPICAL DETAILS CANNOT BE PERFORMED EXACTLY PER THE TYPICAL DETAIL, SIMILAR INSTALLATION DETAIL MAY BE ACCEPTABLE. SUBMIT SIMILAR INSTALLATION DETAIL FOR REVIEW BY THE ENGINEER PRIOR TO ANY WORK.



NOTES:

1. ALL DIMENSIONS ARE MINIMUM UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. REFER TO SPECIFICATIONS FOR TRENCH BACKFILL REQUIREMENTS.

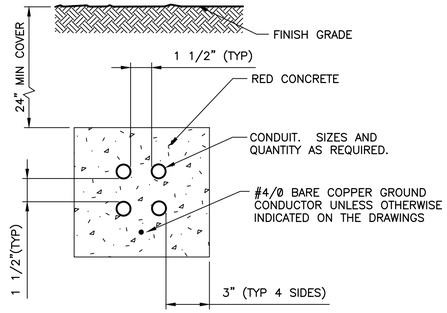
DETAIL E100 (#/#) DIRECT BURIED CONDUIT OR CABLE
SCALE = NONE



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 BE 7-1/2"ON CENTER FOR MEDIUM VOLTAGE DUCTBANKS.

DETAIL E102 (#/#) REINFORCED ENCASEMENT FOR ELECTRICAL CONDUITS IN TRAFFIC RATED AREAS
SCALE = NONE



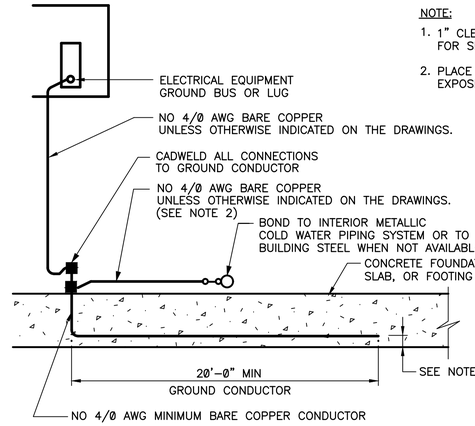
NOTES:

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.

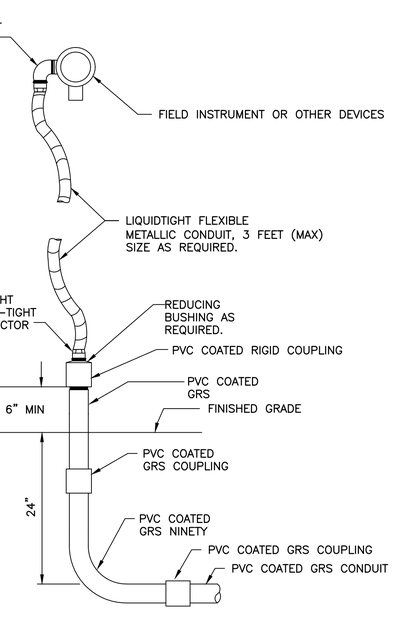
DETAIL E101 (#/#) UNREINFORCED ENCASEMENT FOR ELECTRICAL CONDUITS IN NON-TRAFFIC RATED AREAS
SCALE = NONE

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 (-/-) N.T.S. CONCRETE ENCASED GROUND

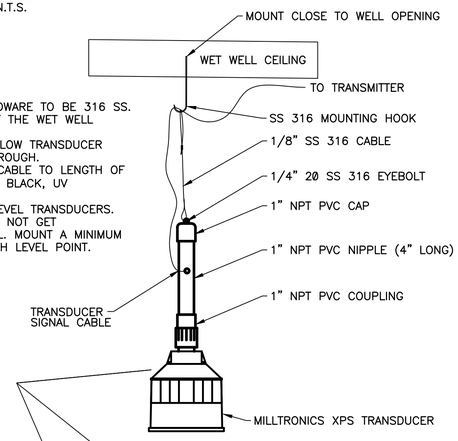


E200 (-/-) N.T.S. PVC-COATED-GRS STUB UPS

SAW CUT AND CORE DRILL AS NEEDED TO INSTALL CONDUIT IN EXISTING CONCRETE. SEAL AS NEEDED.

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.
6. ENSURE TRANSDUCER DOES NOT GET SUBMERGED ON HIGH LEVEL. MOUNT A MINIMUM OF 1 FOOT ABOVE THE HIGH LEVEL POINT.



DETAIL 902 (#/#) SONIC LEVEL SENSOR MOUNTING DETAIL FOR CONCRETE CEILING SLAB
TYPICAL BOTH WETWELLS
SCALE = NONE

FOR CITY OF PHOENIX USE ONLY - REFERENCE OID NUMBER:

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

GARVER | EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-2023 Renewal 12/31/24

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES RB
DWN BB
CKD VB

City of Phoenix
CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 66
REFURBISHMENT

ELECTRICAL

ELECTRICAL DETAILS I

COPYRIGHT © 2007-JANUARY

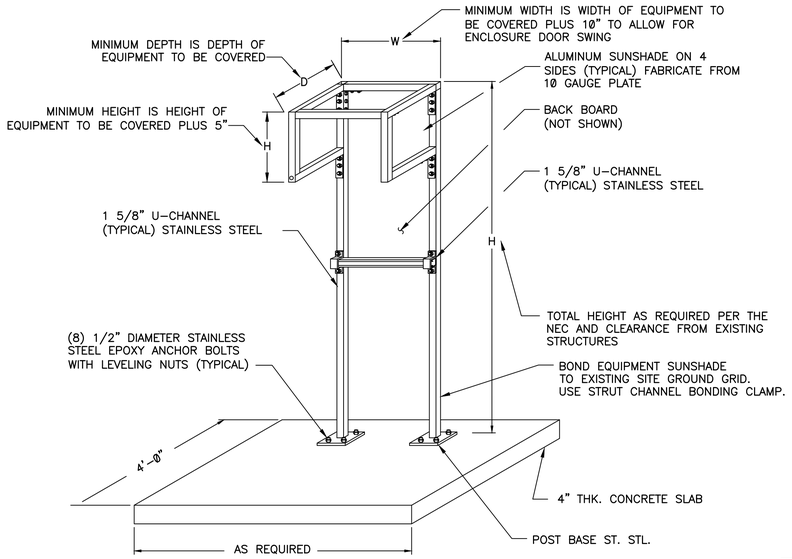
CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
E-22 SHEET 71 OF 80
CAD FILE: NG-E-LS66D-01.dwg

USER:bbence FILE:Y:\66-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-22 ELECTRICAL DETAILS I (NG-E-LS66D-01).dwg DATE:1/18/23 TIME:12:35pm

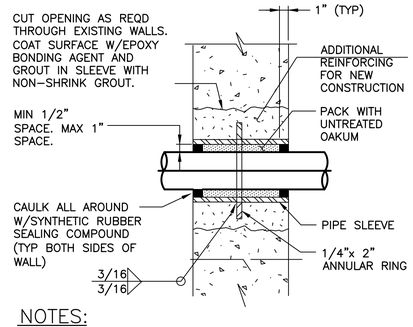
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

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.



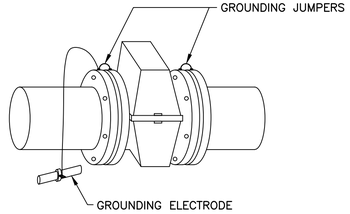
E400 EQUIPMENT SUNSHADE
N.T.S.



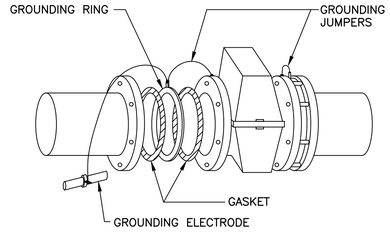
NOTES:

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.



a) ELECTRICALLY CONDUCTIVE PIPE

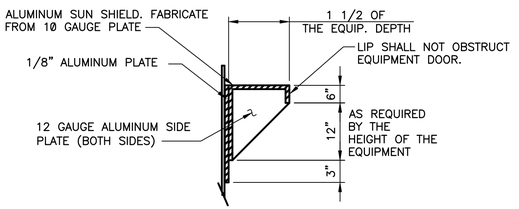


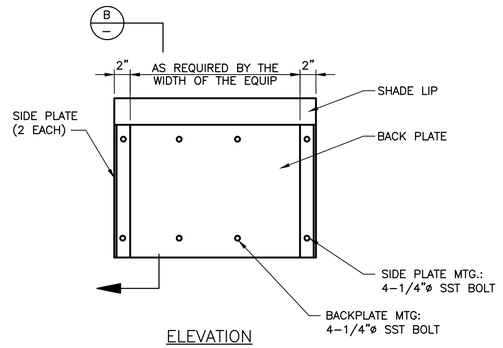
b) ELECTRICALLY INSULATING PIPE

E501 FLOWMETER GROUNDING
N.T.S.

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.



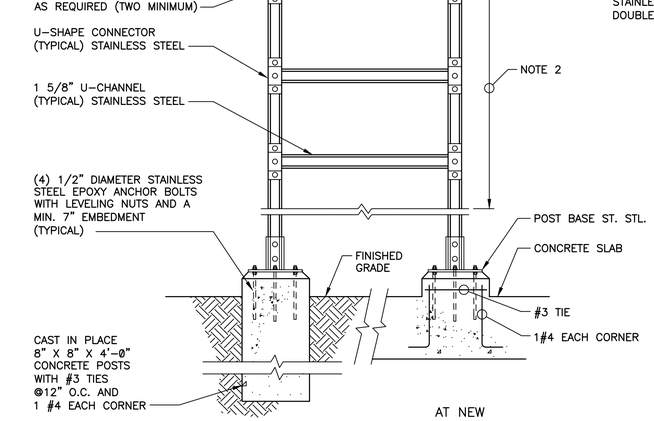


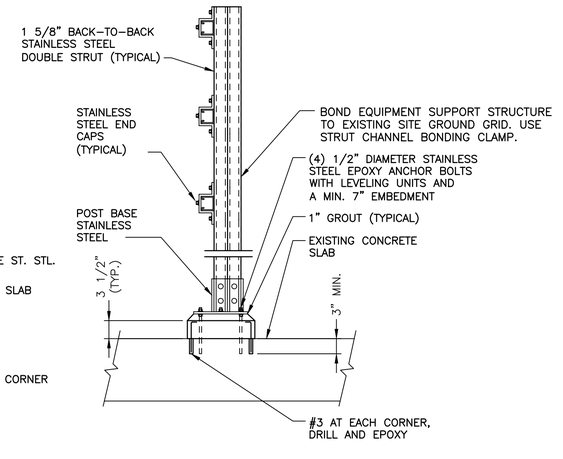
ELEVATION

NOTE:

SUBMIT FABRICATION DRAWINGS FOR EACH SUN SHIELD FOR ENGINEER'S APPROVAL PRIOR TO MANUFACTURING THE SUN SHIELDS.

803/## SUN SHIELD FOR ELECTRICAL EQUIPMENT AND INSTRUMENTS
SCALE = NONE

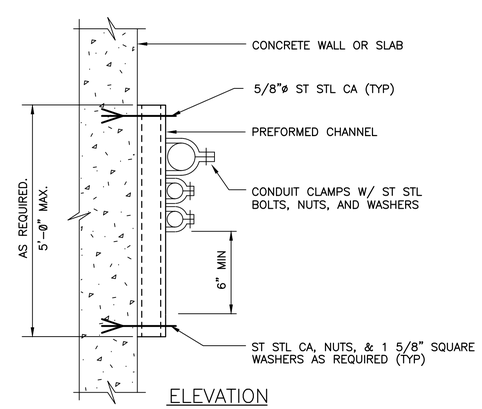




NOTES:

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.
5. BOND SUPPORT STRUCTURE TO EXISTING SITE GROUNDING ELECTRODE CONDUCTOR. USE STRUT CHANNEL BONDING CLAMP.

E502 EQUIPMENT SUPPORT STRUCTURE
N.T.S.



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.

FOR CITY OF PHOENIX USE ONLY – REFERENCE CID NUMBER:

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

USER:bbence FILE:Y:\66-Garver COP Lift Station 66 Rehab Design\Active Drawings and Specs\Electrical\E-23 ELECTRICAL DETAILS II (NG-E-LS66D-02).dwg DATE:1/18/23 TIME:12:35pm

GARVER

EIC ENGINEERS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 1-11-23 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 66
REFURBISHMENT

ELECTRICAL

ELECTRICAL DETAILS II

COPYRIGHT © 2007–JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
E-23 SHEET 72 OF 80
CAD FILE: NG-E-LS66D-02.dwg

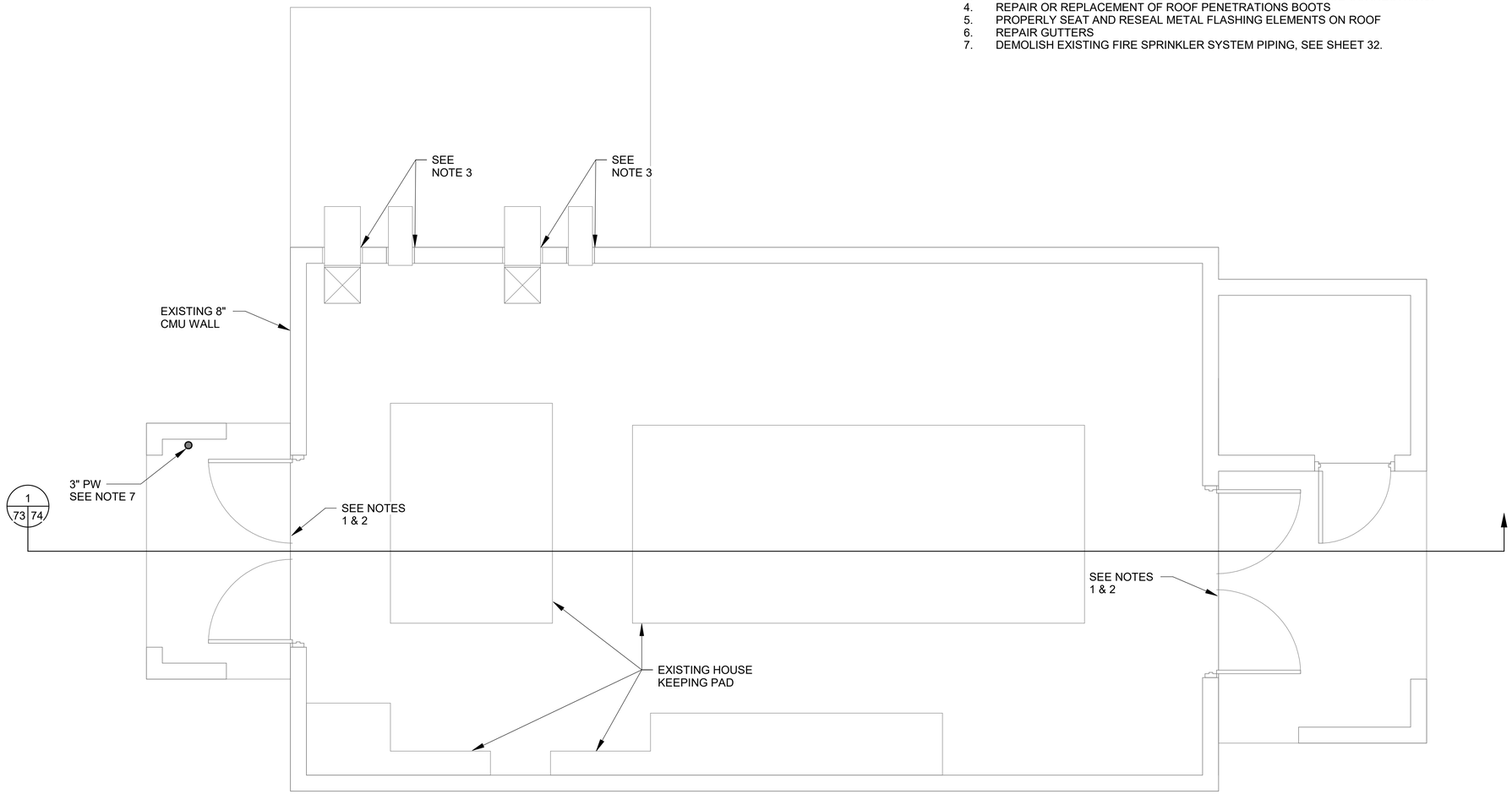
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

"PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR INSPECTION OR OTHER PURPOSES EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

SCOPE OF REPAIR WORKS:

1. REPLACEMENT OF SWEEP GASKETS FOR DOUBLE DOORS EAST AND WEST ENTRANCES
2. REPLACEMENT OR REPAIR OF SEALANT BEDS FOR METAL DOOR THRESHOLD PLATES AT EAST AND WEST ENTRANCES.
3. RESEALING OF HVAC WALL PENETRATIONS AND DUCT FLANGE CONNECTIONS.
4. REPAIR OR REPLACEMENT OF ROOF PENETRATIONS BOOTS
5. PROPERLY SEAT AND RESEAL METAL FLASHING ELEMENTS ON ROOF
6. REPAIR GUTTERS
7. DEMOLISH EXISTING FIRE SPRINKLER SYSTEM PIPING, SEE SHEET 32.



ELECTRICAL BUILDING PLAN

3/8" = 1'-0"

N

FOR CITY OF PHOENIX USE ONLY - REFERENCE

REVISION	ENGINEERING COMPANY	PROJECT NO	PROJECT NAME	DATE	CAD FILE NAME	DWG NUMBER	CID NUMBER:

REMARKS

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:12 PM

GARVER

Registered Professional Engineer (Civil)
CERTIFICATE NO.
60517
JONATHON CHILL
Date Signed 1/10/23
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - ELECTRICAL BUILDING

ELECTRICAL BUILDING REPAIR PLAN

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
S SHEET 73 OF 80
CAD FILE: CSELS66.RVT

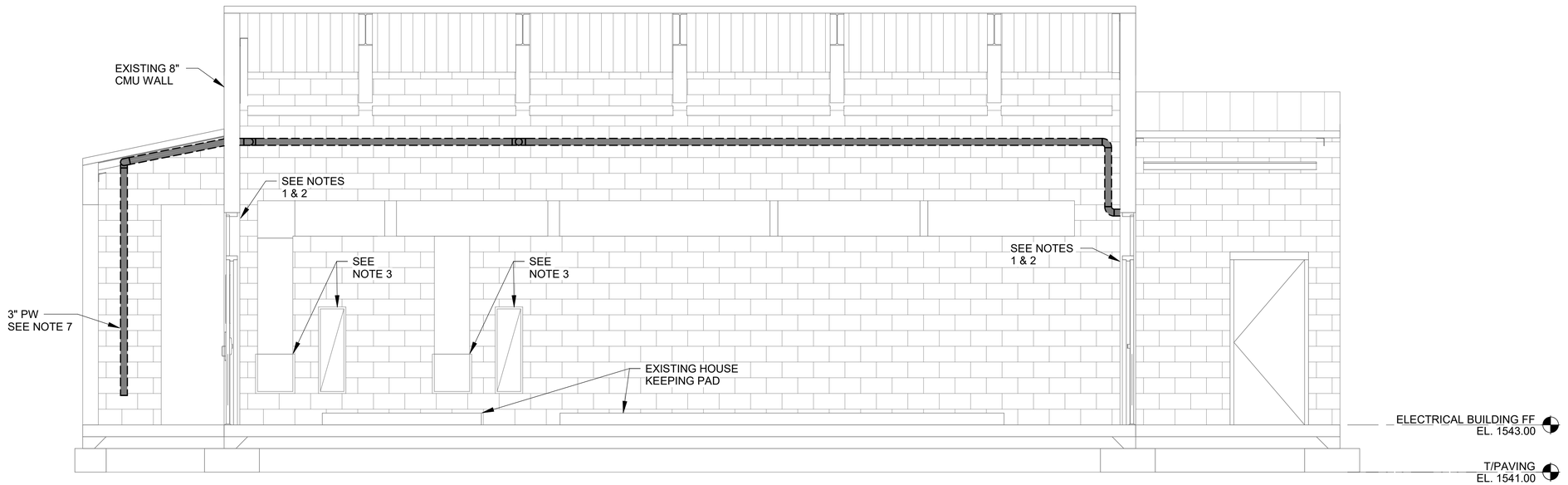
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

FOR CONSTRUCTION

PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE LOANED TO OR REPRODUCED FOR ANY PERSON OR COMPANY EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW.
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

SCOPE OF REPAIR WORKS:

1. REPLACEMENT OF SWEEP GASKETS FOR DOUBLE DOORS EAST AND WEST ENTRANCES
2. REPLACEMENT OR REPAIR OF SEALANT BEDS FOR METAL DOOR THRESHOLD PLATES AT EAST AND WEST ENTRANCES.
3. RESEALING OF HVAC WALL PENETRATIONS AND DUCT FLANGE CONNECTIONS.
4. REPAIR OR REPLACEMENT OF ROOF PENETRATIONS BOOTS
5. PROPERLY SEAT AND RESEAL METAL FLASHING ELEMENTS ON ROOF
6. REPAIR GUTTERS
7. DEMOLISH EXISTING FIRE SPRINKLER SYSTEM PIPING, SEE SHEET 32.



SECTION 1/73 74
3/8" = 1'-0"

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
ENGINEERING COMPANY | PROJECT NO. | PROJECT NAME | DATE | CAD FILE NAME | DWG NUMBER | REMARKS
REVISION

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:12 PM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON O'HILL Date Signed 1/10/23 ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN JAG
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - ELECTRICAL BUILDING

ELECTRICAL BUILDING SECTIONS AND DETAILS

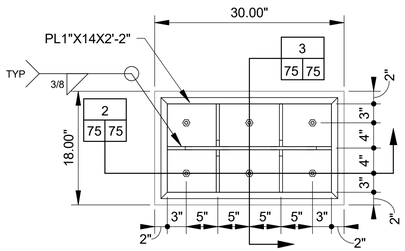
COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084
DATE: JANUARY 2023
S SHEET 74 OF 80
CAD FILE: CSELS66.RVT

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

FOR CONSTRUCTION

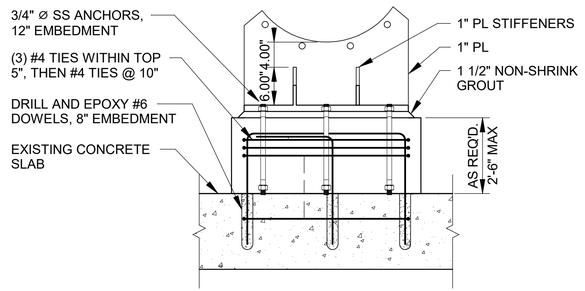
*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH THEY ARE SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW.
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



PIPE SUPPORT DETAIL

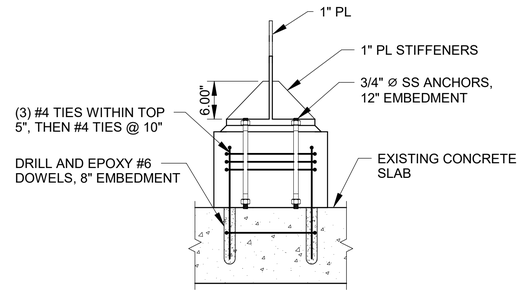
DETAIL 1 (75 | 75)

NOT TO SCALE



2 (75 | 75) SECTION I

1" = 1'-0"

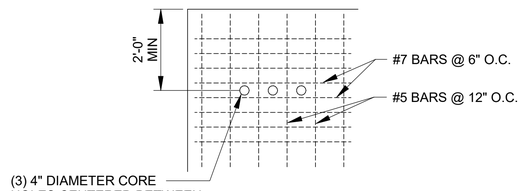


3 (75 | 75) SECTION II

1" = 1'-0"

NOTE:

1. PRIOR TO CORING, CONTRACTOR SHALL LOCATE EXISTING REBAR LOCATIONS TO SELECT PLACEMENT OF PROPOSED CORES.

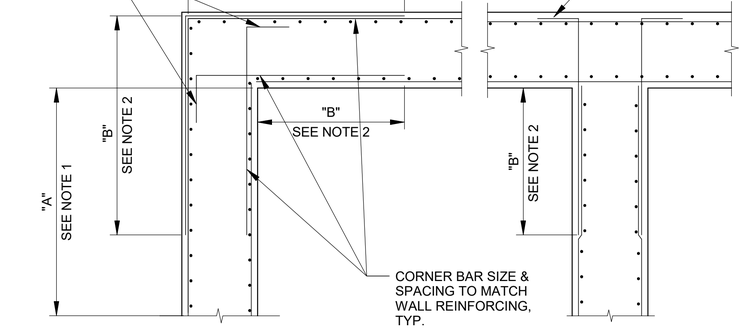


PLAN VIEW

CONDUIT CORING DETAIL

DETAIL 7 (75)

NOT TO SCALE



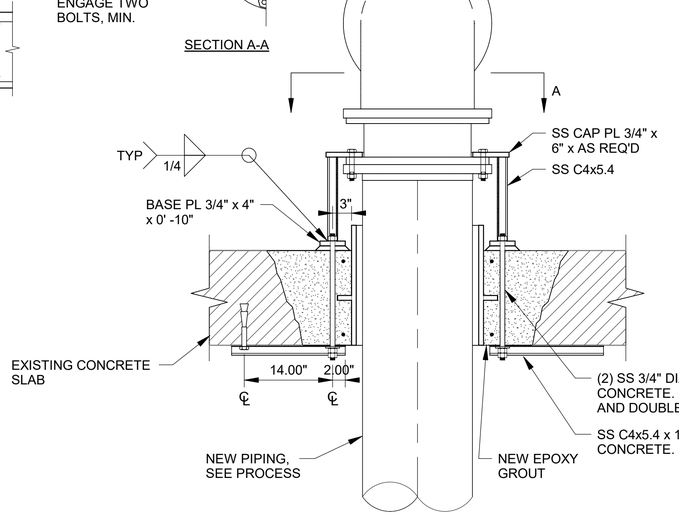
NOTES:

1. DIMENSION "A" = LENGTH OF WALL PARALLEL TO THE BAR LENGTH IN QUESTION.
2. UNLESS OTHERWISE NOTED ON THE DRAWINGS, DIMENSION "B" SHALL BE THE MINIMUM CLASS B LAP SPLICE LENGTH AS REQUIRED. IF BAR SIZES DIFFER, USE THE MINIMUM LAP LENGTH AS REQUIRED FOR THE SMALLER OF THE TWO BARS BEING SPLICED.
3. ALL GRADE BEAMS AND FOUNDATIONS SHALL ALSO HAVE CORNER BARS.

TYPICAL REINF. WALL, GRADE BEAM, & FOUNDATION INTERSECTION/CORNER REINFORCING

DETAIL 4 (56 | 75)

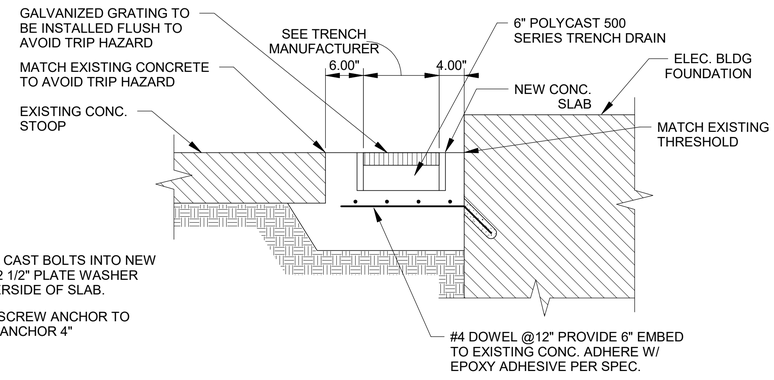
NOT TO SCALE



PIPE RESTRAINT DETAIL

DETAIL 5 (52 | 75)

NOT TO SCALE



TRENCH DRAIN DETAIL

DETAIL 6 (75)

NOT TO SCALE

FOR CITY OF PHOENIX USE ONLY - REFERENCE

CID NUMBER:

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

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:22 PM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 70373 HARRY W. ELLIOTT — Digitally Signed 01/13/2023

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON CHILL — Date Signed 1/13/2023 — ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN JAG
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - STANDARD DETAILS

STRUCTURAL DETAILS I

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

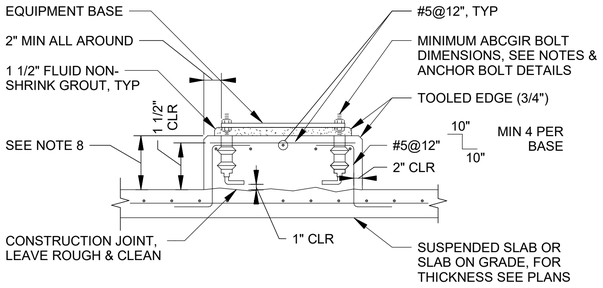
S SHEET 75 OF 80

CAD FILE: CSELS66.RVT

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

FOR CONSTRUCTION

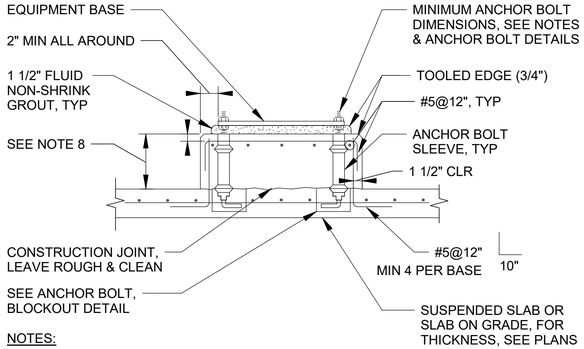
PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE REPRODUCED OR DISTRIBUTED FOR ANY PURPOSE EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW.
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



NOTES:

1. SEE EQUIPMENT BASE NOTES.
2. SEE TYPE B NOTES.

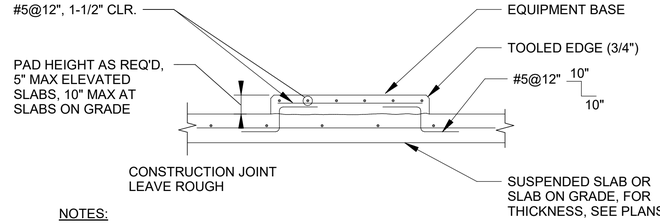
TYPE A



NOTES:

1. SEE EQUIPMENT BASE NOTES.
2. USE TYPE B BASE IN PLAVE OF TYPE A WHERE REQUIRED BY EQUIPMENT OR STUCTURE GEOMETRY. SEE NOTE 8.

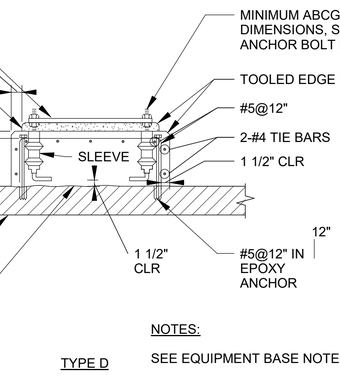
TYPE B



NOTES:

1. SEE EQUIPMENT BASE NOTES.
2. ANCHOR EQUIPMENT TO CONCRETE USING SST CONCRETE ANCHORS OR ANCHOR BOLTS SPECIFIED
3. PAD SHALL BE 6" LARGER THAN EQUIPMENT ON ALL SIDES UNO OR AS REQUIRED BY EQUIP. MFG.

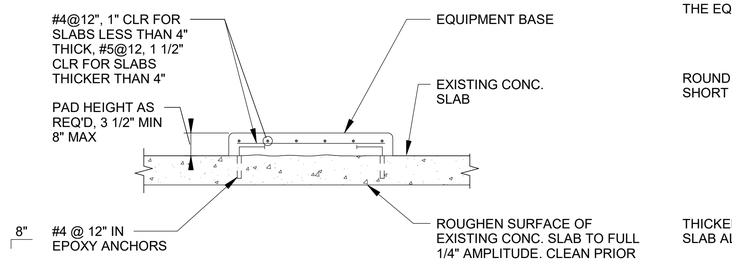
TYPE C



NOTES:

SEE EQUIPMENT BASE NOTES.

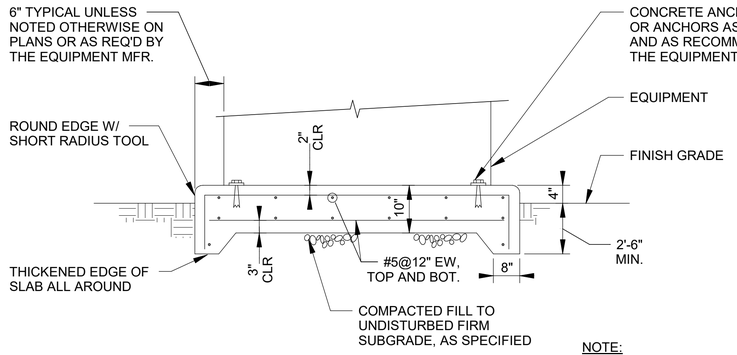
TYPE D



NOTE:

ANCHOR EQUIPMENT TO CONCRETE USING SST CONCRETE ANCHORS SPECIFIED

TYPE E



NOTE:

VERIFY PAD SIZE WITH EQUIPMENT MANUFACTURER PRIOR TO CONSTRUCTION.

TYPE F

EQUIPMENT BASE NOTES:

1. PAD SIZE SHALL BE MINIMUM INDICATED OR AS SHOWN ON THE PLANS. VERIFY ALL PAD SIZE REQUIREMENTS WITH SHOP DRAWINGS OF ACTUAL EQUIPMENT FURNISHED AND OBTAIN ENGINEER'S APPROVAL OF FINAL DIMENSIONS.
2. THE SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER, AND SHALL BE AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A ONE PIECE TEMPLATE, MATCHING THE BASE PLATE, WHILE PAD IS BEING POURED.
3. ANCHOR BOLT A MINIMUM MOVEMENT OF 1/2" IN ALL DIRECTIONS. THE MINIMUM SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT.
4. ANCHOR BOLT SLEEVES SHALL HAVE A MINIMUM INTERNAL DIAMETER 1" GREATER THAN BOLT DIAMETER AND A MAXIMUM INTERNAL DIAMETER 3" GREATER THAN ANCHOR BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT.
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS SPECIFIED OTHERWISE.
6. WEDGES OR SHIMS SHALL BE USED TO SUPPORT THE BASE WHILE THE NON-SHRINK GROUT IS PLACED. TEMPORARY LEVELING NUTS SHALL BE BACKED OFF. IF LEFT IN THE WEDGES OR SHIMS SHALL NOT BE EXPOSED TO VIEW.
7. HEIGHT OF PADS SHALL BE MINIMUM REQUIRED FOR ANCHOR BOLT CLEARANCE TO KEEP ANCHOR BOLT OUT OF SLAB (SEE TABLE BELOW). WHERE EQUIPMENT OR PIPING ELEVATION REQUIRE A PAD HEIGHT LESS THAN THE MINIMUM SHOW, USE TYPE B WITH BLOCKOUT.

AB DIA (IN.)	1/2	5/8	3/4	7/8	1	1 1/4	1 3/8	1 1/2	1 3/4	2
MIN PAD HT (IN.)	7	8 1/2	10	11	12 1/2	15	16 1/2	18	21	24

8. TYPE "D" PADS MAY BE SUBSTITUTED FOR TYPE "A" PADS FOR LOCATIONS APPROVED IN WRITING BY THE ENGINEER.
9. SEE ANCHOR BOLT AND BLOCKOUT DETAILS.

EQUIPMENT BASE DETAIL

DETAIL 1/76

NOT TO SCALE

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:
PROJECT NAME
PROJECT NO.
ENGINEERING COMPANY
REVISION | DATE | CAD FILE NAME | DWG NUMBER | REMARKS

GARVER

Registered Professional Engineer (Civil)
CERTIFICATE NO.
70373
HARRY W. ELLIOTT
Digitally Signed 01/13/2023

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN JAG
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - STANDARD DETAILS

STRUCTURAL DETAILS II

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

S SHEET 76 OF 80

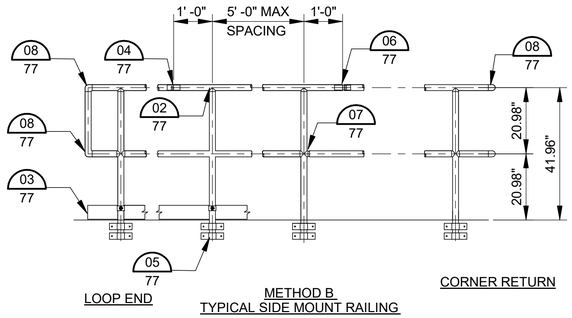
CAD FILE: CSELS66.RVT

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:22 PM

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

FOR CONSTRUCTION

PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE FURNISHED FOR CONSTRUCTION OR OTHERWISE EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW.
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

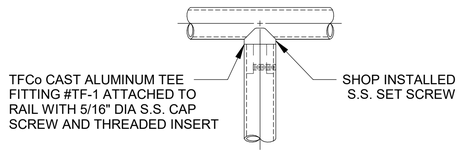


GUARDRAILS SHALL BE TOP MOUNTED OR SIDE MOUNTED AS SHOWN ON PLANS

OSHA TYPE GUARDRAIL

DETAIL 1 (58 | 77)

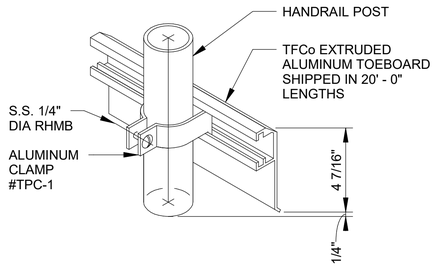
NOT TO SCALE



TEE FITTING DETAIL

DETAIL 2 (77 | 77)

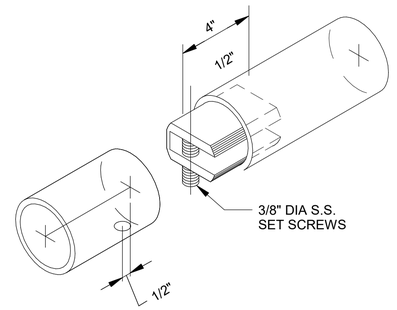
NOT TO SCALE



TOEBOARD DETAILS

DETAIL 3 (77 | 77)

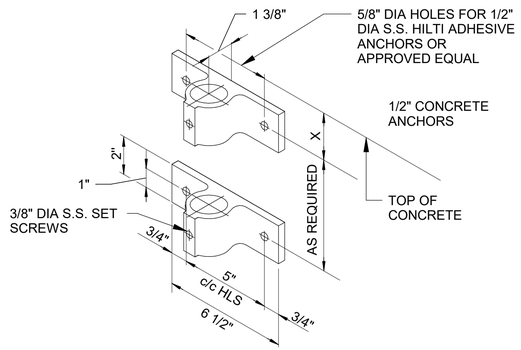
NOT TO SCALE



SPLICE LOCK

DETAIL 4 (77 | 77)

NOT TO SCALE



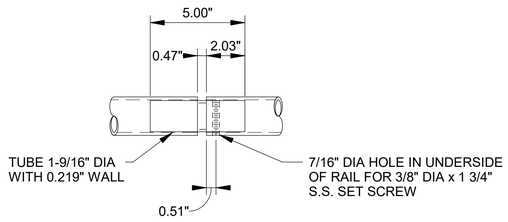
NOTE:

1. DIMENSION "X", EDGE DISTANCE SHALL COMPLY WITH FASTERNER CALCULATIONS.

SIDE MOUNT BRACKET

DETAIL 5 (77 | 77)

NOT TO SCALE



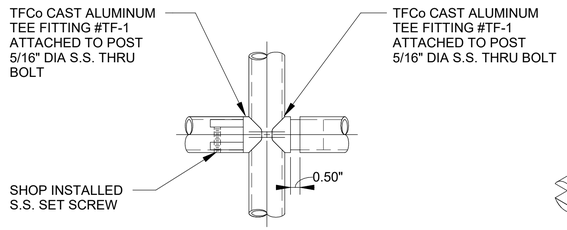
NOTE:

1. LOCATED AT 60' - 0" MAXIMUM INTERVALS.

EXPANSION JOINT SPLICE

DETAIL 6 (77 | 77)

NOT TO SCALE



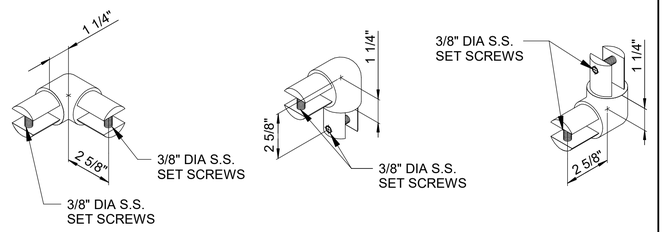
NOTE:

1. MIDRAIL EXPANSION SPLICE LOCATED AT 60' - 0" MAXIMUM INTERVALS.

EXPANSION SPLICE DETAIL

DETAIL 7 (77 | 77)

NOT TO SCALE



DETAILS

DETAIL 8 (77 | 77)

NOT TO SCALE

FOR CITY OF PHOENIX USE ONLY - REFERENCE

REVISION	ENGINEERING COMPANY	PROJECT NO	PROJECT NAME	CID NUMBER:	DATE	CAD FILE NAME	DWG NUMBER	REMARKS

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 70373 HARRY W. ELLIOTT
Digitally Signed 01/13/2023

NO.	BY	DATE	CKD	REMARKS

REVISIONS

DES Designer
DWN Author
CKD Checker

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - STANDARD DETAILS

STRUCTURAL DETAILS III

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

S SHEET 77 OF 80

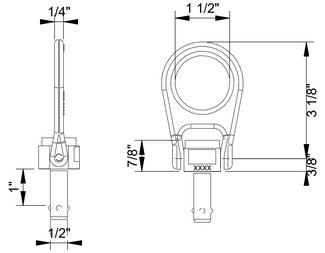
CAD FILE: CSELS66.RVT

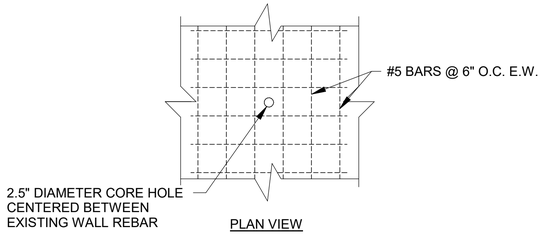
Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:23 PM

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

FOR CONSTRUCTION

PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE REPRODUCED FOR OTHER PURPOSES OR DISCLOSED EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW.
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.

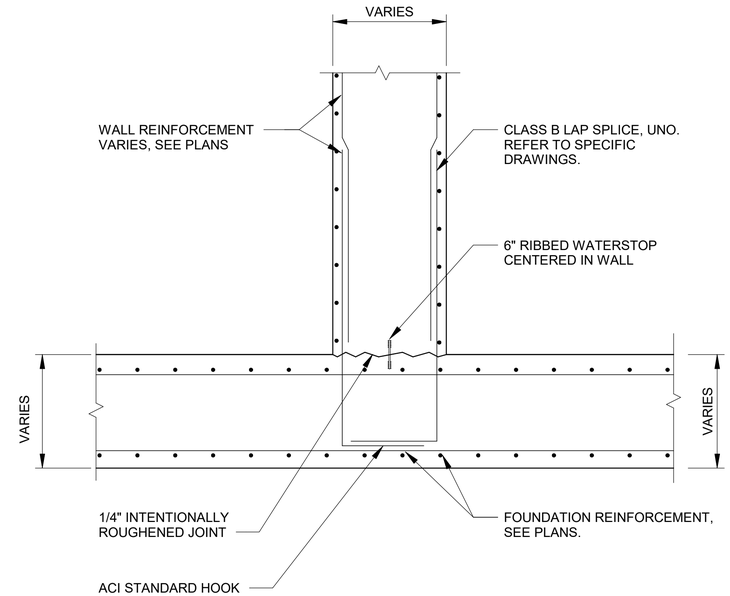




PIPING CORING DETAIL

DETAIL 2 / 50 | 78

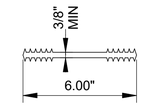
NOT TO SCALE



WALL TO SLAB JOINT

DETAIL 6 / 57 | 78

NOT TO SCALE



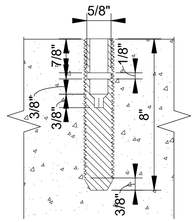
NOTES:

1. FLAT RIBBED PVC WATERSTOP TO BE USED IN NEW CONSTRUCTION OF NEW CONCRETE TO NEW CONCRETE.
2. WATERSTOPS SHALL BE GREENSTREAK OR APPROVED EQUAL

FLAT RIBBED WATERSTOP DETAIL

DETAIL 7 / 57 | 78

NOT TO SCALE



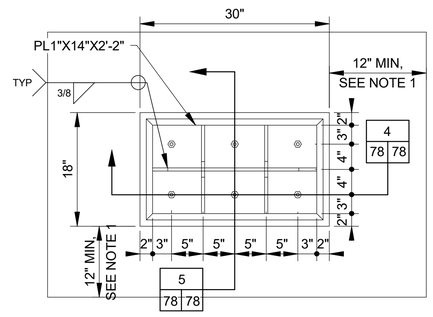
NOTES:

1. FALL ARREST ANCHOR SHALL BE 3M DBI-SALA REUSEABLE CONCRETE DETENT ANCHORAGE CONNECTOR OR ENGINEER APPROVED EQUAL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND PLAN OF PROPOSED ANCHOR LAYOUT
2. CONTRACTOR SHALL FOLLOW MANUFACTURER'S INSTALLATION PROCEDURE FOR DETENT ANCHOR AND EPOXY HILTI HIT-HY 200, SIMPSON SET EPOXY-TIE, OR FISHER FIS-V ADHESIVE
3. MINIMUM CONCRETE EMBED LENGTH SHALL BE 8" OR MANUFACTURER'S RECOMMENDATION, WHICHEVER IS GREATER
4. MINIMUM EDGE DISTANCE TO CLOSEST CONCRETE EDGE SHALL BE 8" OR MANUFACTURER'S RECOMMENDATION, WHICHEVER IS GREATER
5. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL LOCATE EXISTING REBAR LOCATION TO SELECT PLACE OF ANCHORS

CONCRETE DETENT ANCHORAGE CONNECTOR

DETAIL 1 / 50 | 78

NOT TO SCALE



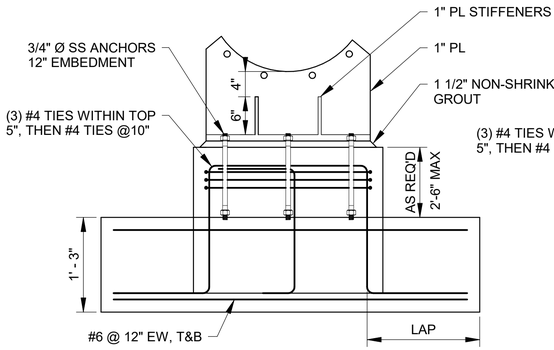
NOTE:

1. CONCRETE FOUNDATION SHALL EXTEND 12" MINIMUM FROM THE BASE OF THE STEM OF THE PIPE SUPPORT. WHERE TWO PIPE SUPPORTS OVERLAP, EXTEND THE FOUNDATION SO THE MINIMUM ARE SATISFIED. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND PLAN OF PROPOSED CONCRETE FOUNDATIONS. OF PROPOSED CONCRETE FOUNDATIONS.

PROPOSED PIPE SUPPORT

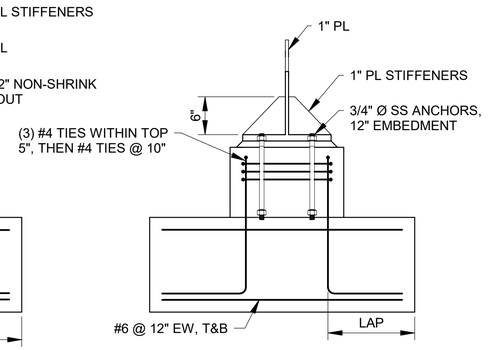
DETAIL 3 / 51 | 78

NOT TO SCALE



4 / 78 | 78 SECTION I

1" = 1'-0"



5 / 78 | 78 SECTION II

1" = 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

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:24 PM

GARVER

Registered Professional Engineer (Civil)
CERTIFICATE NO.
70373
HARRY W. ELLIOTT
Digitally Signed 01/13/2023

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES Designer
DWN Author
CKD Checker

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

STRUCTURAL DETAILS IV

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

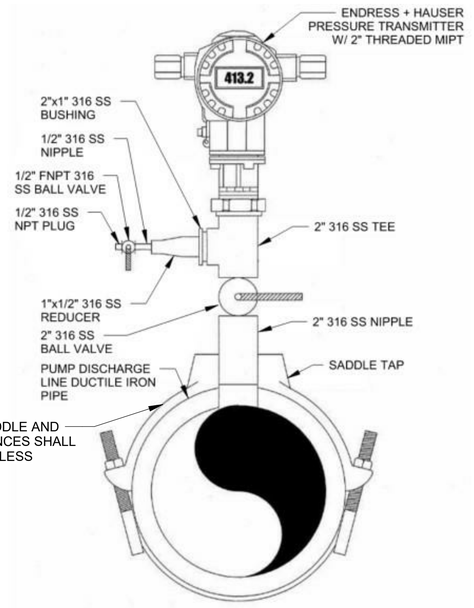
S SHEET 78 OF 80

CAD FILE: CSELS66.RVT

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

FOR CONSTRUCTION

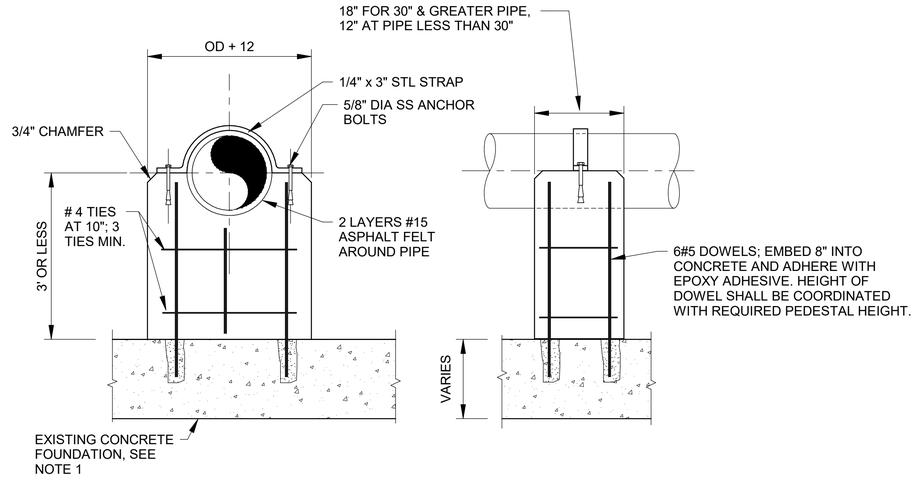
*PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE USED FOR ANY OTHER PURPOSE. COPYING IS EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW."
THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



TYPICAL PRESSURE INDICATOR INSTALLATION

DETAIL 1 / 50 79

NOT TO SCALE



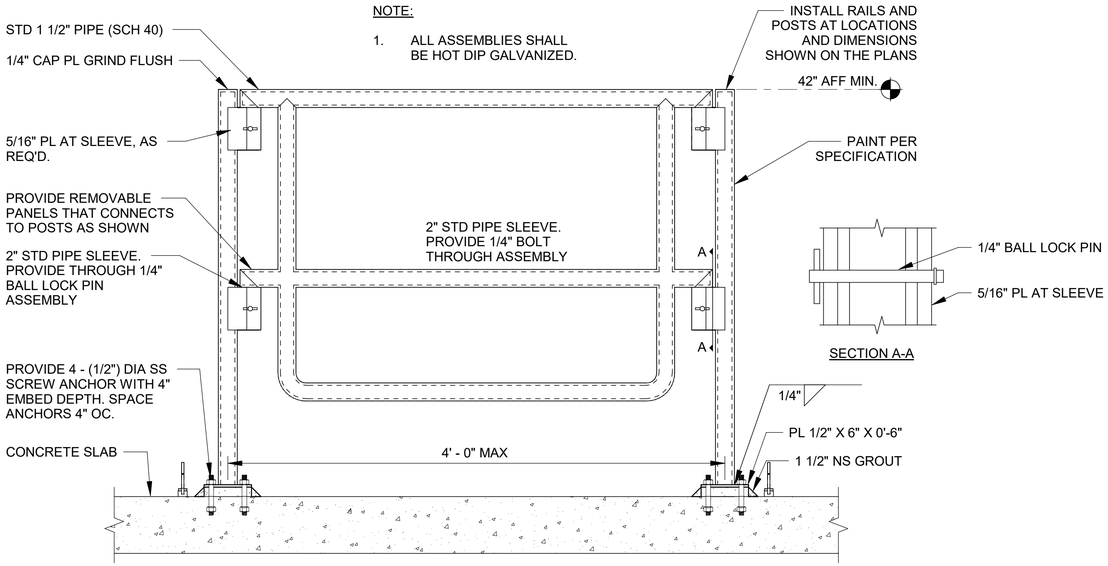
NOTES:

1. EPOXY DOWEL AS SHOWN FOR EXISTING CONCRETE FOUNDATIONS. IF DETAIL IS REQUIRED WHERE EXISTING CONCRETE FOUNDATION IS NOT AVAILABLE, CONTRACTORS SHALL SUBMIT A PLAN OF A NEW CONCRETE FOUNDATION THAT IS A MINIMUM OF 12" LARGER LATTERALLY IN EACH DIRECTION THAN THAT OF THE PLAN DIMENSIONS OF THE PIPE SUPPORT STEM. THE FOUNDATION MUST BE A MINIMUM 12" THICK, WITH #6@12 REINFORCEMENT EACH WAY, TOP AND BOTTOM.

CONCRETE PIPE SUPPORTS AT EXISTING STRUCTURE

DETAIL 2 / 52 79

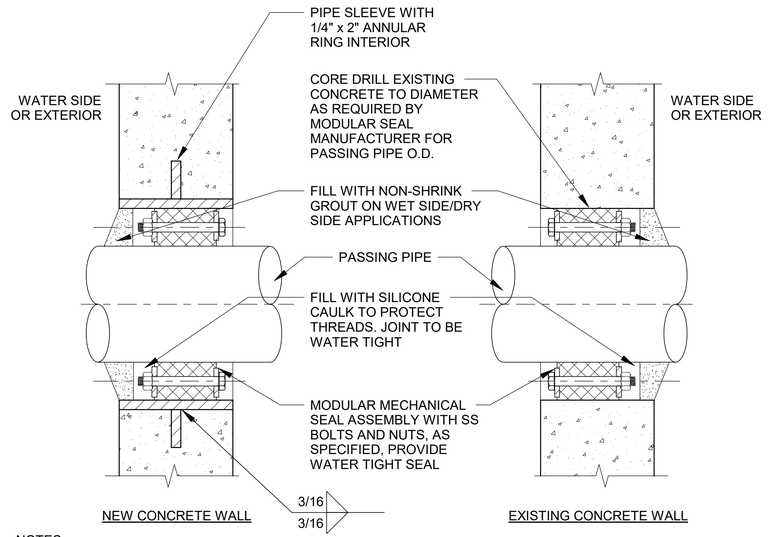
NOT TO SCALE



REMOVABLE HAND RAIL DETAIL

DETAIL 3 / 50 79

NOT TO SCALE



NOTES:

1. WHERE EXISTING CONCRETE STRUCTURE IS TO BE CORE DRILLED, THE CONTRACTOR SHALL ULTRASONIC TEST OR X-RAY THE AREA FOR EMBEDDED ITEMS BEFORE CORE DRILLING CAN PROCEED. IF EMBEDDED ITEMS ARE FOUND, NOTIFY THE ENGINEER IMMEDIATELY.
2. FOR NEW CONSTRUCTION, SLEEVES SHALL BE CAST INTO WALL. BLOCKOUTS AND SUBSEQUENT GROUTED IN SLEEVES WILL NOT BE PERMITTED UNLESS A KEYED WATERSTOP JOINT IS PROVIDED.
3. 6" DIAMETER SLEEVES AND SMALLER SHALL BE SCHEDULE 40 STEEL PIPE.
4. SLEEVES LARGER THAN 6" DIAMETER SHALL BE 1/4" THICK STEEL PIPE.
5. IN WALLS THICKER THAN 12", LINK SEAL SHALL BE INSTALLED AT BOTH ENDS OF THE WALL SLEEVE. SLEEVE DIAMETER SHALL BE PER LINK SEAL MANUFACTURER'S RECOMMENDATION.
6. SLEEVE SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
7. FOR NEW CONCRETE STRUCTURE WHERE AN EXISTING PIPE WILL PENETRATE A NEW CONCRETE WALL, SLEEVES SHALL BE SPLIT WALL SLEEVES WELDED AROUND THE EXISTING PIPE AND POSITIONED IN THE FORM TO CENTER THE PIPE. SLEEVE DIAMETER AND THICKNESS SHALL BE PER MANUFACTURER'S RECOMMENDATION.

WALL PENETRATION SEAL

DETAIL 4 / 57 79

NOT TO SCALE

FOR CITY OF PHOENIX USE ONLY - REFERENCE

CID NUMBER:

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

GARVER

Registered Professional Engineer (City)
CERTIFICATE NO.
60517
JONATHON
CHILL
Date Signed 1/13/23
ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN GRN
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - STANDARD DETAILS

MECHANICAL DETAILS I

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

M SHEET 79 OF 80

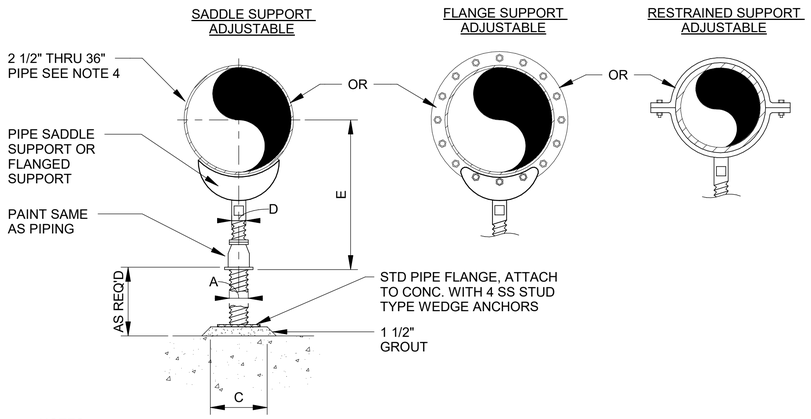
CAD FILE: CSELS66.RVT

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:25 PM

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

FOR CONSTRUCTION

PER PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE ALTERED FOR ANY REASON OTHER THAN AS EXCEPT AS SPECIFICALLY STATED IN THE CITY CODE, OR AS REQUIRED BY LAW. THIS DOCUMENT MUST BE KEPT SECURE AT ALL TIMES.



NOTES:

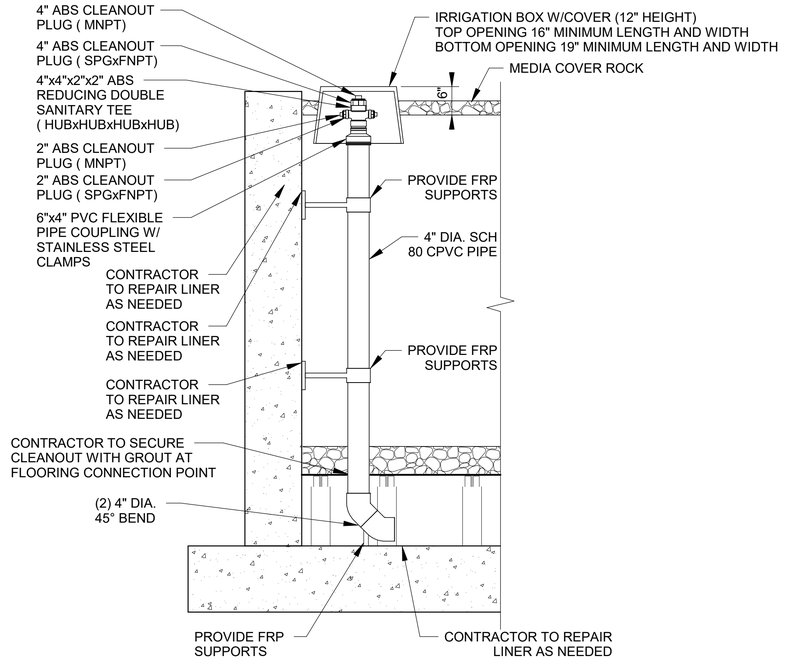
1. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION PROTECTION SHIELD WHERE PIPING IS INSULATED.
2. PROVIDE NEOPRENE WAFFLE INSULATION PAD, SIMILAR TO MASON TYPE "W" OR KORFUND 40, UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
3. FOR BASE, HEIGHT AND FLANGE DIMENSIONS, SEE TABLE.
4. USE 2 1/2" SUPPORTS FOR PIPES LESS THAN 2 1/2" DIAMETER.
5. ON DUCT WORK, PROVIDE 1/4" RUBBER GASKET BETWEEN DUCT AND PIPE SUPPORT TO PROTECT PIPE

ADJUSTABLE FLOOR MOUNTED PIPE SUPPORT

DETAIL 1 (52 | 80)

NOT TO SCALE

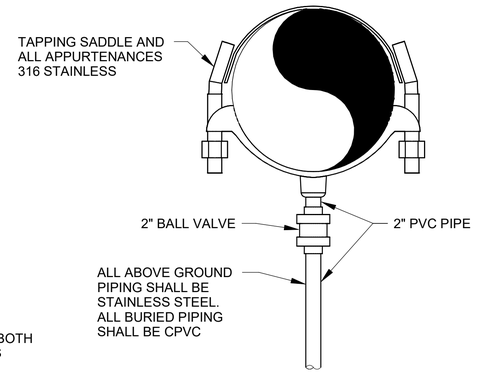
DIMENSION TABLE						
PIPE SIZE	A	B	C	D	E	
					MIN	MAX
2-1/2"	2-1/2"	3-1/2"	6"	1-1/2"	8"	13"
3"	2-1/2"	3-3/4"	8"	1-1/2"	8-1/4"	13-1/4"
3-1/2"	2-1/2"	4"	8"	1-1/2"	8-1/2"	13-1/2"
4"	3"	4-1/4"	8"	2-1/2"	9-1/4"	14"
5"	3"	4-7/8"	8"	2-1/2"	10"	14-3/4"
6"	3"	5-1/2"	10"	2-1/2"	10-1/2"	15-1/4"
8"	3"	6-7/8"	10"	2-1/2"	11-3/4"	15-1/2"
10"	3"	8-1/2"	14"	2-1/2"	13-1/2"	18-1/4"
12"	3"	9-15/16"	18"	2-1/2"	15"	19-3/4"
14"	4"	10-15/16"	18"	3"	16-1/4"	20-3/4"
16"	4"	12-3/8"	20"	3"	17-3/4"	22-1/4"
18"	6"	13-7/8"	22"	3-1/2"	19-1/2"	24"
20"	6"	15-3/8"	22"	3-1/2"	21"	25-1/2"
24"	6"	17-15/16"	24"	4"	23-3/4"	28-1/4"
30"	6"	21-5/16"	30"	4"	27"	31-1/2"
32"	6"	22-1/2"	30"	4"	28-1/4"	32-3/4"
36"	6"	24-1/2"	30"	4"	30-1/4"	34-3/4"



BIOFILTER CLEANOUT ASSEMBY DETAIL

DETAIL 3 (57 | 80)

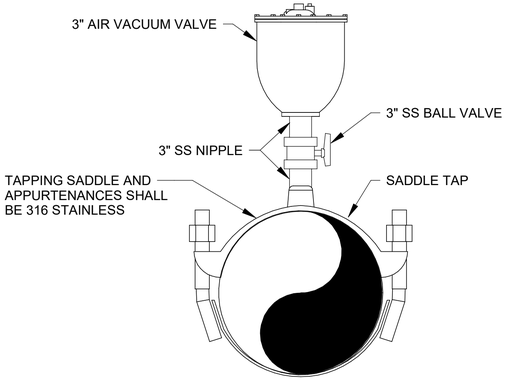
NOT TO SCALE



TAPPING SADDLE DETAIL

DETAIL 4 (51 | 80)

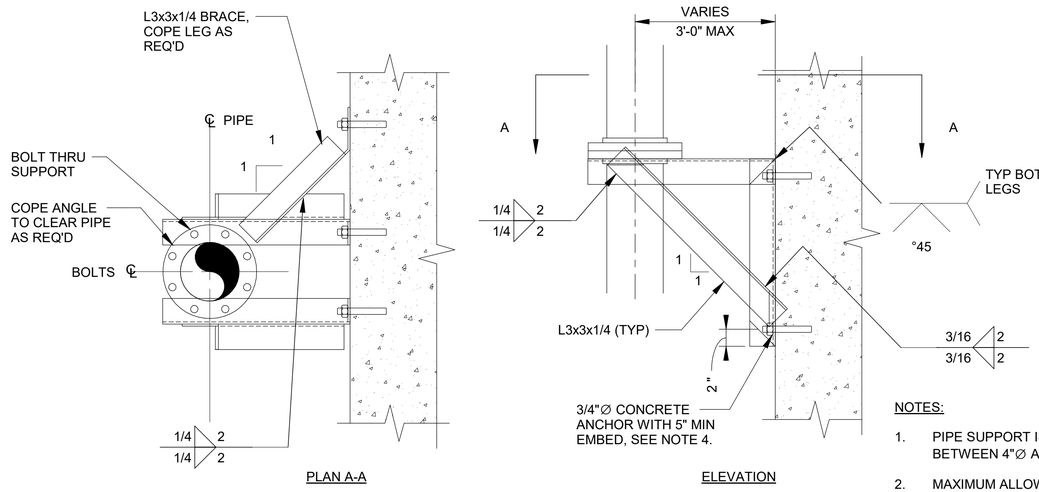
NOT TO SCALE



WASTEWATER AIR/VACUUM VALVE

DETAIL 5 (50 | 80)

NOT TO SCALE



WALL MOUNTED VERTICAL PIPE SUPPORT

DETAIL 2 (52 | 80)

NOT TO SCALE

NOTES:

1. PIPE SUPPORT IS TO BE USED FOR PIPE SIZES BETWEEN 4"∅ AND 24"∅ .
2. MAXIMUM ALLOWABLE VERTICAL LOAD = 1500 POUNDS.
3. ALL SUPPORT MATERIALS SHALL BE 316 SST UNLESS NOTED OTHERWISE ON THE DRAWINGS.
4. ANCHORS TO BE SIMPSON STRONG BOLT 2 OR APPROVED EQUAL.

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

FOR CITY OF PHOENIX USE ONLY - REFERENCE
CID NUMBER:

Revit File: BIM 360://19W11040 - PHX Lift Station 66 Refurbishment/CSLS66.rvt
Plot Date: 1/10/2023 3:45:26 PM

GARVER

Registered Professional Engineer (Civil) CERTIFICATE NO. 70373 HARRY W. ELLIOTT — Digitally Signed 01/13/2023

Registered Professional Engineer (Civil) CERTIFICATE NO. 60517 JONATHON CHILL — Date Signed 1/13/23 — ARIZONA, U.S.A.

REVISIONS				
NO.	BY	DATE	CKD	REMARKS

DES JBR
DWN JAG
CKD JMC

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION NO. 66
REFURBISHMENT

LIFT STATION NO. 66 - STANDARD DETAILS

MECHANICAL DETAILS II

COPYRIGHT © 2007-JANUARY

CITY PROJECT NO. WS90400084

DATE: JANUARY 2023

M SHEET 80 OF 80

CAD FILE: CSELS66.RVT