City of Phoenix
Office of the City Engineer
Design and Construction Procurement

WS90400085
LIFT STATION 40 REFURBISHMENT

ADDENDUM NO. 4

ISSUE DATE: December 5, 2025

Bidders are hereby notified that the Bid Due Date is extended by one week:

BIDS WILL BE DUE: TUESDAY, DECEMBER 17, 2024, AT 2:00 P.M.

BIDS WILL BE READ: TUESDAY, DECEMBER 17, 2024, AT 2:00 P.M.
ON THE 5TH FLOOR, ROOM 5 WEST AT PHOENIX CITY HALL

Bidders are hereby notified that the Bidding and Contract Documents for the above project, for which Bids are currently to be received on December 17, 2024, at 2:00 P.M., are amended as follows:

Information to Bidders – The following is provided to Bidders for information only (Refer to Drawings, Specifications, and Addenda for construction instructions):

Q1.	Section 00 10 00 Instruction to Bidders, Section 8 States that Attachment A - Pre-Approved Equal Application Forms shall be submitted to Elizabeth Blakey at Elizabeth.Blakley@phoenix.gov. After submitting the form to this email, I was notified by our email provider that the email could not be delivered as the email provided was not found within the Phoenix.gov database. Attached to this RFI log is the completed attachment A form, please confirm the correct email this shall be delivered to.
A1.	Form shall be submitted to Julie Smith at julie.b.smith@phoenix.gov. See Addendum #2 issued November 19, 2024.
Q2.	Please provide the types of light fixtures required in the chemical room, sheet E-12 shows a symbol for light fixtures, but it is not clear which type are required.
A2.	See Item 2 below.
	Please confirm light fixture type A4 is not used in the electrical room. The remarks column on the luminaire schedule states, "Luminaires in Electrical Room" for Type A4, but only type A3 appears on the electrical room drawing.
A3.	See Item 2 below.

Q4.	The Geotech report provided only includes one boring, B-1 which is located within the vicinity of the existing lift station. Since no borings were provided in the location of the new wet well, should all contractors assume rock excavation will be encountered for the entirety of the wet well excavation and deep underground pipe that runs to the wet well?
A4.	The Geotechnical Report "Geotechnical Evaluation, Lift Station 40 Refurbishment, Northwest Corner of Ray Road and Interstate 10, Phoenix Arizona" (dated Sept 11, 2020) is included in the bid documents for reference. Refer to Section 11.0 of the Geotechnical Report. No additional geotechnical reports are available for the new construction area.
Q5.	Please clarify the Fire Alarm system scope for this project. The only indication of a fire alarm system is the fire panel shown on sheet E14. There are no additional details or specifications in regard to the fire alarm system.
A5.	See Item 1 below.
Q6.	Please provide as-built drawings of the structures that are to be demolished.
A6.	As-built drawings will not be provided electronically for bidding purposes. Hard copies of existing as-built drawings are available for inspection at City Hall, 8th Floor Water Services, by appointment only from Friday, December 6th through Monday, December 16th between 8:00 AM and 3:00 PM except weekends. To schedule an appointment, contact Sadie Thompson at sadie.thompson@phoenix.gov. Photographs are strictly prohibited during the inspection.
Q7.	Please provide the bury depth of the existing pipe that is to be demolished.
A7.	Existing as-built drawings containing utility and structure elevations and depths may be reviewed by appointment only. Refer to A6. for appointment scheduling details.
Q8.	Please consider holding an additional site visit for subcontractors to attend, prior to the bid date.
A8.	Additional site visit scheduled for Monday, December 9, 2024 at 11:00 am. All attendees will be required to sign in with City staff and must wear personal protective equipment – hard hat, safety vest and hard-toe footwear. There will be no formal presentation and no questions will be answered on site. Photographs are strictly prohibited during the site visit.
Q9.	Spec section 33 05 05 Buried Piping Installation 3.4 - C.4 states that existing pipelines which are cut and abandoned shall be adequately capped or filled with grout. I interpret that as we can cut and cap the proposed lines and abandon them in place without grout filling the pipe. Is this correct? Or will the contractor be required to grout and fill all pipelines/structures?
A9.	Abandoned pipelines shall either be: (a) capped with an appropriate seal, or (b) filled with grout in accordance with Section 33 05 05 3.11.C.4. When a pipeline is not grouted, it must be capped in a manner that prevents pipe collapse and mitigates the risk of sinkhole formation.

Q10.	Sheet C-05, General Note 5 States, "Contractor to Remove Existing AC Pavement and Concrete and Replace In-Kind. Before replacing any new ac pavement and new concrete refer to the civil sheets for all new buried utility construction." Is the contractor required to remove and replace all existing asphalt within the existing site limits, or only asphalt that is affected by underground pipe demolition?
A10.	New asphalt shall be per the limits shown on Sheet C-21 and C-22. Asphalt removed outside of these limits for underground work shall be replaced in kind per Detail 2 shown on Sheet C-02 or Structural Section No. 1 shown on C-21, whichever is greater.
Q11.	Detail 4 (Typical CMU Site Wall) on Sheet S-18 states, "TOW Elevation - Match Existing" Please confirm the TOW Elevation of the existing CMU site wall.
A11.	The lift station perimeter wall shall be 8 feet tall. See finished grade information on Sheets C-25 and C-26. Contractor shall submit wall profile showing finished grade, top of wall, top of footing elevations along the wall for engineer's review and approval (Per Note 2 of Detail 4 on Sheet S-18).

ITEM 1: FIRE ALARM SYSTEM:

TECHNICAL SPECIFICATIONS:

ADD: SECTION 28 46 21.11 – FIRE ALARM SYSTEM

DRAWINGS:

REPLACE: DRAWING E-18 – POWER PANELS SCHEDULE
DRAWING E-27 – CONDUIT BLOCK DIAGRAMS
DRAWING I-06 – P&ID SHEET 3

ITEM 2: LIGHTING:

DRAWINGS:

REPLACE: DRAWING E-12 – SITE PLAN LIGHTING AND GROUNDING
DRAWING E-14 – ELECTRICAL BUILDING LIGHTING AND GROUNDING

NOTE: Bidders must acknowledge receipt of this Addendum by listing the number and date, where provided, on the SECTION 00 30 00 – BID FORM.

END OF ADDENDUM NO. 4

SECTION 28 46 21.11

FIRE ALARM SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:
   1. Provide all labor, material, equipment, appurtenances, specialty items, and services required to design, furnish, install, and test a complete and workable Class A addressable fire alarm and detection system as specified herein for the following location:
      a. Lift Station 40.
   2. Design, submit design for review, and provide all equipment, labor and appurtenances, and complete installation of the electrical system, including fire alarm control panels, conduit, wire, connectors, and all other components and material required by the Fire Department, the Contract Documents and as required for a complete and operable fire detection and fire alarm system. All electrical work shall comply with installation and material requirements conforming to Division 26, Electrical, and as specified herein.
      a. Initiation appliances and associated conduit/wire are not indicated on the Drawings. All rooms/areas of the Electrical Building shall be provided with manual initiation appliances. The Electrical Building shall be provided with area smoke/heat detectors. The quantity, location, wiring, etc. shall be as determined by Contractor provided and Fire Department approved design.

      b. Notification appliances and associated conduit/wire are not indicated on the Drawings. All rooms/areas of the Electrical Building shall be provided with notification appliances. The quantity, location, wiring, etc. shall be as determined by Contractor provided and Fire Department approved design.
      c. The proposed Electrical Building fire alarm control panel shall connect to the facility's Supervisory Control and Data Acquisition (SCADA) system. Smoke/Heat detection signals shall be routed to the Electrical Building fire alarm control panel and SCADA system. The CONTRACTOR shall provide all necessary equipment, conduits, wiring and programming to facilitate the communication from the Electrical Building Fire Alarm Control Panel and then to the facility SCADA system.

B. Coordination: To ensure that all fire protection equipment and systems are properly coordinated and will function in accordance with the requirements of the Contract Documents, provide a subcontractor with specialized experience in the installation of fire detection systems to furnish and install the fire alarm system specified herein. However, the CONTRACTOR retains ultimate responsibility under this Contract for equipment coordination, installation, operation and guarantee, and to furnish and install all labor, equipment, materials, appurtenances, specialty items and services not provided by CONTRACTOR'S subcontractor and/or suppliers but required for complete and operable systems. The equipment and materials covered by this Section are intended to be standard equipment of proven ability as manufactured by

reputable concerns having extensive experience in the production of such equipment. The equipment furnished shall be manufactured and installed in accordance with the best practice and methods,and shall operate satisfactorily when installed as shown on the Drawings and specified in the Contract Documents.

C. The complete Fire alarm system, as specified in Sections 28 46 21.11, is considered a deferred system; as such, the fire alarm system was not submitted at the time of permit application but is required to be submitted to the building official by the CONTRACTOR. Deferral of the fire alarm system is subject to approval by the building official. The CONTRACTOR shall include in his bid all the time and effort required to obtain a building department review and permit for the fire alarm system design. The CONTRACTOR shall also include in the bid all the time and effort to secure calculations, design drawings, and appropriately sealed by an Engineer for the fire alarm system.
   1. Submittals to ENGINEER and Building Official:
      a. Documents for deferred submittals shall be submitted to the ENGINEER for review prior to them being forwarded to the Building Official. The ENGINEER will review the submittal documents for general conformance with the design intent for the facility.
      b. Documents submitted by the licensed design professional shall have drawings and calculations appropriately signed and sealed by an Engineer registered in the state of Arizona.
      c. In all cases the components must be designed and manufactured by a fabricator approved by the governing body having jurisdiction.
      d. Documents shall include key plans, sections, and details required for construction.

1.2 QUALITY ASSURANCE

A. Supplier:
   1. In order to ensure standardization, proper interfacing and compatibility, it is required that all equipment offered under this Section, shall be furnished by a single supplier who shall furnish all equipment required for a proper installation and coordinate all Shop Drawings.
   2. All items of equipment including wire and cable shall be compatible.
   3. Supplier shall have and maintain an adequate service organization or service representatives located within 30 miles of the project site knowledgeable in the maintenance and installation of equipment required.
   4. All references to model numbers and other pertinent information herein is intended to establish the standards of performance, quality and appearance, and is based upon equipment already designed and manufactured.

B. Reference Standards: Comply with applicable provisions and recommendations of the following, except where otherwise shown on the Drawings or specified:
   1. Factory Mutual (FM).
   2. Institute of Electrical and Electronic Engineers (IEEE).
   3. National Electrical Manufacturers Association (NEMA).
   4. National Electrical Code/NFPA 70.
   5. NFPA 72, National Fire Alarm Code.

6. Underwriters' Laboratories, Inc. (UL).
7. Phoenix Fire Code.

C. Qualifications: Provide written documentation which shall show that CONTRACTOR'S subcontractor has successfully installed fire alarm systems of the same type and design as specified herein. The document shall include the names and locations of at least two installations where CONTRACTOR'S subcontractor has installed such systems. Indicate the type and design of these systems and certify that these systems have performed satisfactorily in the manner intended for a period of not less than 18 months.

D. Certification: All systems proposed to be installed by CONTRACTOR, shall show the system to be currently on the approved listing by the State of Arizona Fire Marshall. All installation of conductors and devices and the termination thereof shall be completed by certified fire alarm technicians employed by the subcontractor.

1.3 SUBMITTALS

A. Shop Drawings: Submit for approval the following:
1. Manufacturer's literature, illustrations, bill of materials, specifications, and engineering data including: general arrangement, outline drawings, dimensions, materials, size, weight, battery consumption calculations, and performance data.
2. Fabrication, assembly, and installation drawings.
3. Complete riser diagrams clearly labeling all conduit and wire.
4. Scaled layout drawings with conduit and equipment numbers.
5. Spare parts and maintenance materials.

B. Manufacturer's original catalog cuts or original descriptive data of all materials and equipment with sufficient information provided so that the exact function of each device is known. Each item supplied shall be clearly identified on each sheet. Where the submittal material described items in addition to the items being submitted, the additional items shall be crossed out. Items to be submitted shall include the following:
1. Fire alarm control panels.
2. Smoke detectors.
3. Heat sensors.
4. Pull stations.
5. Horn/strobes.
6. Air duct smoke detectors.
7. Interface modules.
8. Control modules.
9. Conductors.
10. Conduit.
11. All additional required equipment.

C. Proof of listing or approval by Underwriter's Laboratories, Inc.

D. Operation and Maintenance Data:

1. Submit complete installation, operation and maintenance manuals including test reports, maintenance data and schedules, description of operation and spare parts information.
2. Furnish Operation and Maintenance Manuals in conformance with requirements of Section 01 78 24, Operation and Maintenance Data.

E. Fire Department Submittal: Submit bill of materials, manufacturer's literature, plans showing device locations, control and riser diagrams to the City of Phoenix Building Department for review and approval. No equipment shall be installed prior to reviewing Building Department approval.

F. Each Shop Drawing Submittal shall include a hard copy of the relevant Specification Section and shall be clearly marked to indicate whether the requirements for equipment and/or services in the Specification Section are met by writing "accept" or "deviate" next to each Paragraph. If clarifications are needed to any of the Paragraphs in the Specification Sections due to deviations, they shall be addressed next to the Paragraph as such and explained further with any additional information necessary. If any exceptions and/or deviations are proposed to any of the Specifications, they shall be clearly noted as such in the Submittal, and an explanation of any deviation and/or exception shall be provided. The CONTRACTOR shall furnish equipment and/or services as specified if an exception and/or deviation is rejected. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.

G. Record Drawings: In accordance with Section 01 77 00, Closeout Procedures.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery, storage and handling of materials shall be per the requirements of Section 01 65 00 and Section 01 66 00.

PART 2 - PRODUCTS

2.1 GENERAL

A. The FACP shall monitor the following systems/elements:
1. Initiation appliances located throughout the building (as determined by the Fire Marshall approved design).
2. Notification appliances located throughout the building (as determined by the Fire Marshall approved design).

B. If any monitored point becomes active, the FACP shall:
1. Display that zone on its integral annunciator.
2. Provide provisions for dry contact closures representing the respective zone, internal "WARNING" and "FAIL" for monitoring by the facility's SCADA System.
3. Activate all notification appliances.
4. Shut down all air conditioning units via a hard wired interlock.

2.2 PRODUCTS

A. All items specified here and after shall be the latest state of the art model available at the time of furnishing the said equipment.
   1. Manufacturers: Provide products of one of the following:
      a. Notifier by Honeywell.
      b. Pre-Approved equal.

B. Fire Alarm Control Panel (FACP):
   1. Control Unit:
      a. The control unit shall provide power and necessary components for the operation of a minimum of ten zones of 120 supervised addressable detector circuits and up to 1.5 amps of supervised audible or visual indicating appliances utilizing 24 VDC. The detector circuits shall accommodate ionization, photoelectric, flame or thermal detectors as well as direct shorting type contact devices intermixed as desired on the same zone. Separate circuits shall also monitor sprinkler system flow and tamper switches.
      b. The control unit shall be a microprocessor based unit that is capable of utilizing both analog and conventional detection devices.
      c. The function control of the unit shall have a 16-bit processor along with non-volatile EPROM and Flash memory.
      d. The control unit shall control operating sequences, and monitor input device identity, detector sensitivity, network communication and operator commands.
      e. The control unit shall be able to monitor and control a minimum of 120 microprocessor based devices and 120 programmable device relays.
      f. The control unit shall be able to supply operating power to up to 1.5 amps of listed audible or visual indicating appliances.
      g. The control unit shall be fully field programmable off line using a laptop computer.
      h. The alarm relay coil shall be supervised. The unit shall have built-in ground detection and plug-in connectors for emergency power. It shall be arranged so that alarm signal annunciation shall take precedence over a trouble signal. Terminals shall be provided such that the trouble indicators and controls can be located remotely.
      i. The control unit shall permit expansion of system capability to incorporate any combination of compatible modules not exceeding the maximum current demand.
      j. Control unit shall include an integral annunciator with keypad.
      k. Unit shall be NFPA and UL listed.
   2. Power Supply:
      a. The power supply shall be capable of operating from a three-wire 120 VAC, 60 Hz power supply. The unit shall provide a full wave rectified 24 VDC output.
      b. The rated output, which shall be completely fused, shall be provided at a plug receptacle. A second output, rated at 24 VDC 2 amps shall be provided to power modules internally housed and wired within the control unit enclosure.

c. The power supply shall be a deadfront construction and housed in a steel enclosure compatible with the modularized alarm system. Externally mounted 120 VAC/24 VDC transformers shall not meet the intent of this Section. The unit shall be UL listed.

3. Dual Zone Module:
   a. Dual initiating circuit line monitoring shall be provided by a dual zone module. This module shall be system interconnected by a ten-pin plug and harness and shall be operable with the control unit.
   b. Each detection circuit shall consist of a four-wire Class A circuit. Each circuit shall accommodate up to thirty standard ionization, flame or photoelectric detectors and any quantity of shorting type contact devices such as manual stations and thermal detectors intermixed on that circuit.
   c. Upon operation of any initiating device installed in the circuit, the system shall lock into alarm and the red LED alarm indicating device (one for each circuit) mounted on the face of the module shall illuminate. A yellow LED trouble indicator (one for each circuit) also on the face of the module shall illuminate should a break occur in the initiating circuit wiring, initiating circuit wiring leak current excessively to ground, or a detector be removed from the circuit.
   d. Receipt of alarm conditions shall have priority over trouble conditions and shall be annunciated over any trouble conditions.
   e. All LED indicators shall be lamp tested from the system control panel.
   f. Provide one spare module.
   g. Module shall be UL listed.
4. Supplementary Relay Module:
   a. For repeating signals there shall be provided adequate supplementary relay modules. Each zone shall be provided with a supplementary relay. These modules shall each contain eight independent 24 VDC relays fitted with SPDT contacts with a rating of 2 amps each. Power to operate the relays shall be 24 VDC furnished by the system power supply.
   b. A separate terminal shall be provided for individual actuation of each relay. All terminals shall be of the clamp type which shall accommodate two wires of up to No. 12 AWG.
   c. Unit shall be UL listed.
5. Audible Alarm Module:
   a. An audible signal circuit for operating 24 VDC polarized audible alarm notification appliances shall be provided by audible alarm modules. Modules shall be system interconnected by a ten-pin plug and harness assembly and shall be operable with the control panel.
   b. Upon receipt of an actuating signal, the solid state circuitry shall supply operating power to bells and/or horns. Audible devices shall require a four wire fused, supervised circuit.
   c. Module shall contain a yellow LED indicator lamp to indicate an open or a shorted alarm line when the system is in the normal condition. LED shall be lamp tested from the control panel.
   d. Unit shall be UL listed.

6. Emergency Standby Power:
   a. Standby power to the system in an emergency shall be provided by a 24 volt sealed lead-acid battery system comprised of a sealed gelled electrolyte, capable of providing 24-hour standby operation.
   b. System shall be complete with support bracketing and screw type terminals and shall be installed in the same standard system enclosure that houses the operating modules.
   c. Units shall be UL listed.
7. Battery/Charger/Transfer Module:
   a. Battery charging capability shall be provided by a microprocessor controlled battery charger/transfer switch that switches the system to standby batteries during loss or reduction of the primary source AC. Capability shall be provided to recharge batteries to their full capacity. The system shall be capable of displaying the real time battery voltage, AC voltage, charge current and other power data on an alphanumeric display.
   b. The system shall be provided with emergency power from a 24 VDC battery. The battery shall be a sealed gelled electrolyte type capable of providing 24-hour standby operation.
   c. The system shall be complete with support bracketing and screw type terminals and shall be installed in the same standard system enclosure that houses the operating modules. The units shall be UL listed.
8. Control Panel Enclosure:
   a. Control panel enclosures shall be designed to accommodate the control unit, input and output modules, and all power supplies utilized in the system.
   b. Enclosure shall consist of a back box and door cover assembly fabricated of sheet steel. The back box shall be designed for mounting the "Z" brackets, "U" channel supports on which are mounted the controls, modules, and power supplies.
   c. Door cover shall be mounted with slip hinges and fitted with a key locking arrangement. Door shall be red.
   d. Door cover shall contain full-width horizontal viewing slots, to permit visual identification of each row of modules for the various functions served by the system. The inside of the door cover shall be fitted with brackets to accommodate blank face plates which shall be provided to cover those positions in the back box not occupied by any modules or batteries.
   e. Enclosure shall be corrosion resistant and be rated for outdoor installations.

C. Initiation Appliances:
   1. Photoelectrical light-scattering smoke detectors shall be UL listed. Detector operating voltage shall be 24 VDC, but the detector shall remain fully functional over a voltage range of 22 to 27 VDC without exhibiting any aging effects. Location and spacing of the detectors shall be in accordance with NFPA 72, UL listing, and the manufacturer's recommendations. Each detector shall contain a visible, red LED alarm indicating light, which shall remain illuminated following detector actuation until the fire alarm system is manually reset. Detectors shall have RF and transient filtering if these factors affect detector performance. Power for detectors shall be through signal initiating circuits. Detectors having

independent power circuits shall not be accepted. Installation of detectors shall not require any soldering, and the detectors shall be easily removed by simply plugging it into a base. It shall be the CONTRACTOR'S responsibility to take into consideration any adverse, ambient, environmental effects on detector performance, and design the system accordingly to preclude any false-alarm problems.

2. Heat Sensors: The sensor shall be easy to install into a twist-lock base. The sensor shall incorporate built-in type identification so the system can identify the type of sensor. The sensor shall be continually monitored to measure any changes to their sensitivity because of environment (dirt, temperature, humidity, etc.) The sensor shall use dual solid state thermistors and shall monitor the ambient temperature from -10 degrees to +60 degrees C and provide a fast response to rapid increases in temperature. The sensor, on command from the control panel shall send data to the panel representing the analog value of the ambient temperature.
3. Manual Pull Stations: Molded polycarbonate with red matte finish. Raised molded lettering highlighted in white. Alarm switch resetting requires opening front cover. Cover shall be hinged to backplate assembly and locked by allen head screw. Weatherproof gasket.

D. Notification Appliances:
1. Horn/Strobe: Horn/strobes shall include a die-cast metal housing to protect the horn mechanism and a polycarbonate lens to protect the strobe circuitry. The strobes shall have white collars with FIRE lettering and shall flash at approximately 1 flash per second. They shall operate on 24-volt DC with the sound output of 92 dBa average. The device can be surface or flush mount. For flush mount applications, a red trim ring (SFP) can be used. All models shall have screw terminal inputs for in-out field wiring and all models shall be polarized for line supervision. The finish shall be textured red enamel. All models shall be listed to standard UL 1971 signaling devices for hearing impaired and CAN/VLC5526 standard for visual signal device for fire alarm systems. Install in accordance with ANSI/NFPA 72 National Fire Alarm Code which meet or exceed the illumination which results from the ADA specified strobe intensity of 75 candela at 50 feet.
2. Electric Alarm Bell:
   a. A weatherproof, 8-inch, UL Listed alarm bell, specifically designed/manufactured for use with a fire alarm system, shall be furnished and installed on the exterior of the Disinfection Building near the fire department’s water connection. Alarm bell shall be powered / activated from the FACP.

E. Spare Parts: Furnish the following:
1. Two of each type of module in FACP (power supply, supplementary relay, input, output).

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install fire alarm system including conduit and cable in accordance with approved Shop Drawings, ENGINEER'S approval, Fire Department's approval and the manufacturer's recommendations.

B. Install all conduit and cable required for the complete system, including 120 volt power requirements, from local panelboards. Provide pull and junction boxes as required.

C. Bond metallic conduits entering non-metallic enclosures to a ground terminal within the enclosure.

3.2 FIELD QUALITY CONTROL SERVICES

A. Retain a qualified factory trained serviceman to perform the following services:
   1. Inspect and adjust the equipment after installation and insure that it operates properly.
   2. Instruct OWNER'S personnel in the operation and maintenance of the equipment.

B. Field Tests:
   1. Field testing, in accordance with NFPA 72, shall be provided by a factory-trained serviceman.
   2. Verify that the entire installation has been made in accordance with the approved shop drawings, and that the fire alarm system is ready for total operation.
   3. Adjust and leave equipment in proper working order.
   4. Submit a signed written report stating the installed system has passed all applicable tests and is ready for service.

C. Make available to OWNER a local service department of a duly authorized distributor of the equipment manufacturer which shall stock the manufacturer's standard parts. On-the-premises maintenance shall be provided during normal working hours at no cost to the OWNER for a period of twelve months. Said period shall start upon OWNER'S acceptance of entire fire alarm system.

+ + END OF SECTION + +

(The remainder of this page left intentionally blank)

KEY NOTES:

1. FURNISH AND INSTALL A NEMA 4X, SS 316, 600V, 30A, FUSED DISCONNECT SWITCHS. FUSED PER HVAC EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PLEASE NOTE THAT THESE DISCONNECT SWITCHES ARE NOT INDICTED ON THE PLAN VIEWS BUT ARE REQUIRED.
2. FURNISH AND INSTALL A NEMA 4X, SS 316, 600V, 30A, FUSED DISCONNECT SWITCHS. FUSED PER VENDOR EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PLEASE NOTE THAT THESE DISCONNECT SWITCHES ARE NOT INDICTED ON THE PLAN VIEWS BUT ARE REQUIRED.

GENERAL NOTES:

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.
5. FURNISH AND INSTALL ADDITIONAL SIGNALS AS REQUIRED IN SPECIFICATION SECTION 28-46-21.11 FOR THE FIRE ALARM SYSTEM. (1)

PANEL: SWBD-LS40 MANUFACTURER: TBD
VOLTAGE, PHASE &WIRE: 480V VAC 3Ø, 3W — LOCATION: ELECTRICAL ROOM
BUS SIZE: 600 AMPS — ENCLOSURE: NEMA 1
MAIN SIZE: 600 AMPS — MOUNTING: SURFACE
MAIN TYPE: MCB — BUS BRACING: 65 KAIC
MAIN TYPE: — FED FROM: SWGR-LS40

WIRE/CONDUIT SIZE	CKT NO.	LOAD DESCRIPTION	CKT. BKR. AMP	AMPS A	AMPS B	AMPS C	AMPS A	AMPS B	AMPS C	CKT. BKR. AMP	LOAD DESCRIPTION	CKT NO.	WIRE/CONDUIT SIZE
	1			90.3			21.0					2	
SEE SINGLE LINE.	3	TRANSFORMER XFMR-LS-40	125A		90.3			21.0		30A	MCP-BOCB-LS40	4	SEE SINGLE LINE.
	5					90.3			21.0			6	
	7			32.0			37.0					8	
(1) P0007: 3-#8, #10G, 1"C	9	BUILDING A\C UNIT 1	40A		32.0			37.0		50A	TRANSFORMER XFMR1-LS-40	10	P0008: 3-#6, #10G, 1"C
	11					32.0			37.0			12	
	13			32.0			-					14	
(1) P0013: 3-#8, #10G, 1"C	15	BUILDING A\C UNIT 2	40A		32.0			-		20A	SPARE	16	
	17					32.0			-			18	
	19			48.0			-					20	
P0019: 3-#4, #10G, 1"C	21	EMERG ODOR CONTROL PWR REC	60A		48.0			-		20A	SPARE	22	
	23					48.0			-			24	
	25			-			18.0					26	
	27	SPARE	40A		-			18.0		30A MCP	LCP-AC-VLV-LS40	28	P0026: 3-#10, #10G, 1"C (2)
	29					-			18.0			30	
	31						-					32	
	33	SPARE	40A					-			SPACE	34	
	35								-			36	
	37			-								38	
	39	SPARE	20A		-						SPACE	40	
	41					-						42	
	43			-			-					44	
	45	SPACE			-			-			SPACE	46	
	47					-			-			48	
	49			-			-					50	
	51	SPACE			-			-			SPACE	52	
	53					-			-			54	
	55			-			-					56	
	57	SPACE			-			-			SPACE	58	
	59					-			-			60	
	61			-			-					62	
	63	SPACE			-			-			SPACE	64	
	65					-			-			66	
				202.3	202.3	202.3	76.0	76.0	76.0				

NOTES:
KVA A PHASE = 96.4 AMPS A PHASE = 347.9 BY FIRM:
KVA B PHASE = 96.4 AMPS B PHASE = 347.9 DATE:
KVA C PHASE = 96.4 AMPS C PHASE = 347.9
Changes to this Schedule Require Approval From the City Electrical Foreman
TOTAL KVA = 289.1 (Load totals are calculated as continuous duty at 125%)

A SWBD-LS40 SCHEDULE
N.T.S.

PANEL: PNL-A MANUFACTURER: TBD
VOLTAGE, PHASE &WIRE: 120/208 VAC 3Ø, 4W — LOCATION: ELECTRICAL ROOM
BUS SIZE: 250 AMPS — ENCLOSURE: NEMA 1
MAIN SIZE: 250 AMPS — MOUNTING: SURFACE
MAIN TYPE: MCB — BUS BRACING: 22 KAIC
MAIN TYPE: MCB — FED FROM: XFMR-LS40

WIRE/CONDUIT SIZE	CKT NO.	LOAD DESCRIPTION	CKT. BKR. AMP	AMPS A	AMPS B	AMPS C	AMPS A	AMPS B	AMPS C	CKT. BKR. AMP	LOAD DESCRIPTION	CKT NO.	WIRE/CONDUIT SIZE
P001: 2#12, #12G, 1"C	1	LCP-PLC-LS40	20A	7.0			8.0			20A	LCP-SSE-LS40	2	P002: 2#12, #12G, 1"C
P003: 2#12, #12G, 1"C	3	LCP-PLC-LS40 (LIGHTING\REC)	20A		3.0			3.0		20A	LCP-SSE-LS40 (LIGHTING\REC)	4	P004: 2#12, #12G, 1"C
P005: 2#12, #12G, 1"C	5	LCP-PCP-LS40	20A			8.0			6.0	20A	LCP-BOCB-LS40	6	P006: 2#8, #8G, 1"C
~~P007: 2#12, #12G, 1"C~~	~~7~~	~~LCP-PCP-LS40 (LIGHTING\REC)~~	~~20A~~	~~3.0~~			3.0			20A	LCP-BOCB-LS40 (LIGHTING\REC)	8	P008: 2#8, #8G, 1"C
P009: 2#12, #12G, 1"C	9	FACL	20A		5.0			2.0		20A	LCP-BACKUP-LS40	10	P010: 2#12, #12G, 1"C
~~P011: 2#12, #12G, 1"C~~	~~11~~	~~ROOF RECEPTACLES~~	~~20A~~			3.0			12.0	20A	LCP-COM-LS40	12	P012: 2#12, #12G, 1"C
P013: 2#1, #8G, 1 1/2"C	13	GENERATOR PANELBOARD	100A	80.0			3.0			20A	LCP-COM-LS40 (LIGHTING\REC)	14	P014: 2#12, #12G, 1"C
	15				80.0			5.0		20A	LCP-IBS-LS40	16	P016: 2#12, #12G, 1"C
P017: 2#8, #12G, 1"C	17	AREA LIGHT CONT PNL (ALCP-LS40)	20A			4.5			3.0	20A	LCP-IBS-LS40 (LIGHTING\REC)	18	P018: 2#12, #12G, 1"C
P019: 2#12, #12G, 1"C	19	ELECTRICAL ROOM LIGHTS	20A	5.0			-			20A	SPARE	20	
P021: 2#12, #12G, 1"C	21	ELECTRICAL BUILDING RECEPTACLES	20A		12.0			-		20A	SPARE	22	
P023: 2#12, #12G, 1"C	23	ELECTRICAL BUILDING OUTSIDE LIGHTS	20A			7.5			5.6	20A	BIOFILTER BLOWER ENCLOSURE FAN	24	P024: 2#8, #8G, 1"C
P025: 2#12, #12G, 1"C	25	ELECTRICAL BUILDING EXIT LIGHTS	20A	4.5			-			20A	SPARE	26	
	27	SPARE	20A		-			-		20A	SPARE	28	
P029: 2#12, #12G, 1"C	29	ELECTRICAL BUILDING OUTSIDE REC	20A			7.5			-	20A	SPARE	30	
	31	SPARE	20A	-			9.5			20A	OUTSIDE RECEPTACLES	32	P032: 2#8, #8G, 1"C
	33	SPARE	20A		-			-		20A	SPARE	34	
P035: 2#12, #12G, 1"C	35	OUTSIDE POLE LIGHTING	20A			5.5			15.0	20A	LCP-LP-VLV-LS40	36	P036: 2#12, #12G, 1"C
	37	SPARE	20A	-			-			-	SPACE	38	
	39	SPARE	20A		-			-		-	SPACE	40	
	41	SPARE	20A			-			-	-	SPACE	42	
				99.5	100.0	36.0	23.5	10.0	41.6				

NOTES:
KVA A PHASE = 18.5 AMPS A PHASE = 153.8 BY FIRM:
KVA B PHASE = 16.5 AMPS B PHASE = 137.5 DATE:
KVA C PHASE = 11.6 AMPS C PHASE = 97.0
Changes to this Schedule Require Approval From the City Electrical Foreman
TOTAL KVA = 46.6 (Load totals are calculated as continuous duty at 125%)

B PNL-A-LS40 SCHEDULE
N.T.S.

PANEL: PNL-B MANUFACTURER: TBD
VOLTAGE, PHASE &WIRE: 120/208 VAC 3Ø, 4W — LOCATION: ELECTRICAL ROOM
BUS SIZE: 125 AMPS — ENCLOSURE: NEMA 3R
MAIN SIZE: 100 AMPS — MOUNTING: SURFACE
MAIN TYPE: MCB — BUS BRACING: 22 KAIC
MAIN TYPE: MCB — FED FROM: XFMR1-LS40

WIRE/CONDUIT SIZE	CKT NO.	LOAD DESCRIPTION	CKT. BKR. AMP	AMPS A	AMPS B	AMPS C	AMPS A	AMPS B	AMPS C	CKT. BKR. AMP	LOAD DESCRIPTION	CKT NO.	WIRE/CONDUIT SIZE
P1001: 2#10, #10G, 1"C	1	FERROUS CHLORIDE SYSTEM	20A	14.0			-			20A	SPARE	2	
P1003: 2#12, #12G, 1"C	3	FERROUS CHLORIDE LIGHTING	20A		7.0			20.0		25A	FERROUS CHLORIDE SYSTEM	4	P1004: 2#10, #10G, 1"C
P1005: 2#12, #12G, 1"C	5	FERROUS CHLORIDE RECEPTACLES	20A			8.0			20.0	25A	FERROUS CHLORIDE CONTROL SYSTEMS	6	P1006: 2#10, #10G, 1"C
P1007: 2#12, #12G, 1"C	7	GATE OPERATOR POWER SUPPLY	20A	17.5			-			20A	SPARE	8	
	9				17.5			-		20A	SPARE	10	
	11	SPARE	20A			-			-	20A	SPARE	12	
	13	SPARE	20A	-			-			-	SPACE	14	
P1015: 2#10, #10G, 1"C	15	FERROUS CHLORIDE SYSTEM	25A		20.0			-		-	SPACE	16	
P1017: 2#10, #10G, 1"C	17	FERROUS CHLORIDE SYSTEM	25A			20.0			-	-	SPACE	18	
	19	SPACE	-	-			-			-	SPACE	20	
				31.5	44.5	28.0	0.0	20.0	20.0				

NOTES:
KVA A PHASE = 4.7 AMPS A PHASE = 39.4 BY FIRM:
KVA B PHASE = 9.7 AMPS B PHASE = 80.6 DATE:
KVA C PHASE = 7.2 AMPS C PHASE = 60.0
Changes to this Schedule Require Approval From the City Electrical Foreman
TOTAL KVA = 21.6 (Load totals are calculated as continuous duty at 125%)

C PNL-B-LS40 SCHEDULE
N.T.S.

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

FOR CONSTRUCTION

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

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

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

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

HDR | EiC ENGINEERING POWERING SUSTAINABLE WATER

Registered Professional Engineer (Electrical) CERTIFICATE NO. 33468 VAHID BAGHERI Date Signed 7-31-24 ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS
1	RB	December 4, 2024	VB	Addendum 4
*				
*				
*				
*				
*				
*				

DES RB
DWN BB
CKD VB

City of Phoenix

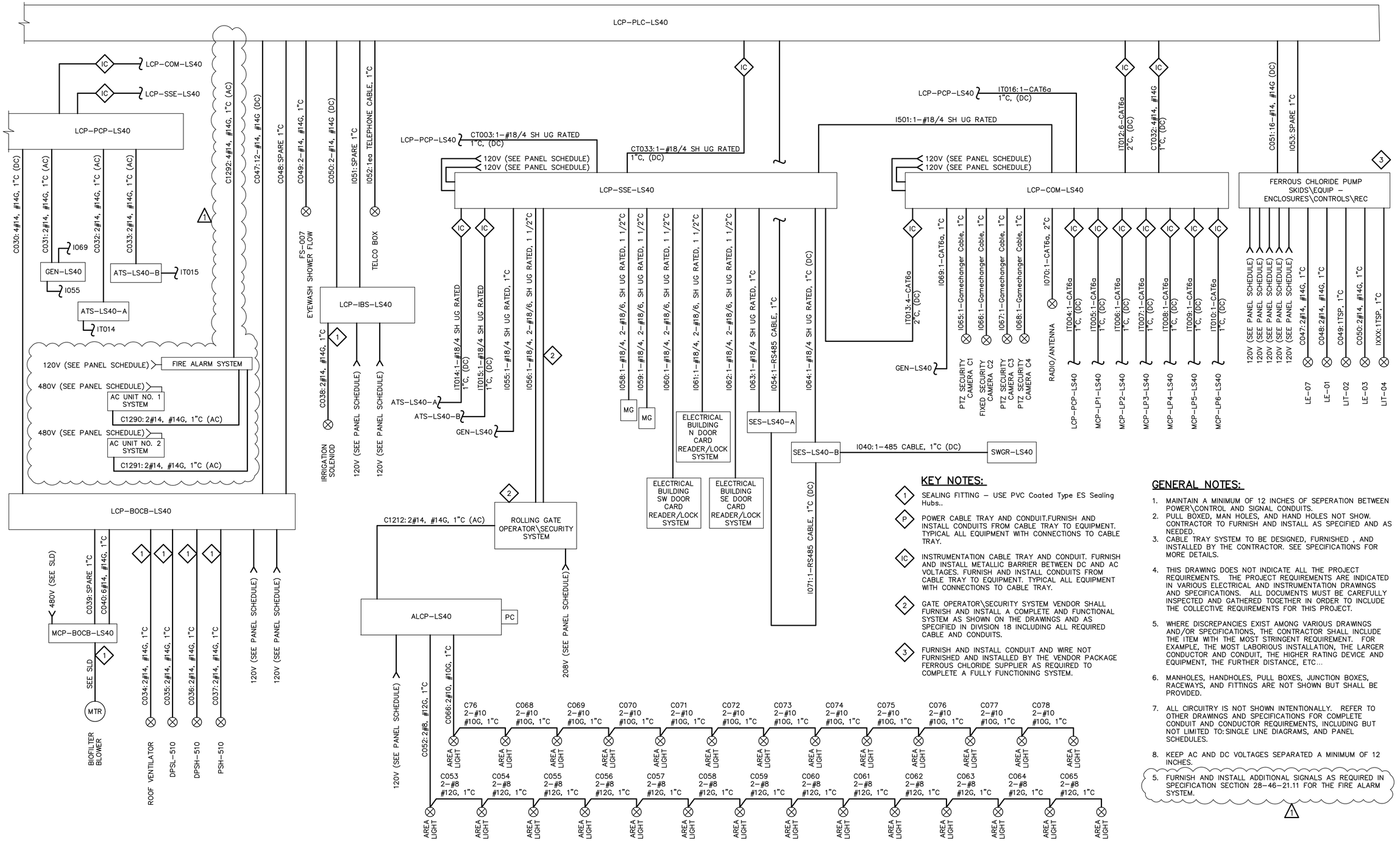
CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

POWER PANEL SCHEDULES

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-18 SHEET 109 OF 134
CAD FILE: CSELS40EL01.dwg



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. SEALING FITTING – USE PVC Coated Type ES Sealing Hubs..
2. GATE OPERATOR\SECURITY SYSTEM VENDOR SHALL FURNISH AND INSTALL A COMPLETE AND FUNCTIONAL SYSTEM AS SHOWN ON THE DRAWINGS AND AS SPECIFIED IN DIVISION 18 INCLUDING ALL REQUIRED CABLE AND CONDUITS.
3. FURNISH AND INSTALL CONDUIT AND WIRE NOT FURNISHED AND INSTALLED BY THE VENDOR PACKAGE FERROUS CHLORIDE SUPPLIER AS REQUIRED TO COMPLETE A FULLY FUNCTIONING SYSTEM.
P. POWER CABLE TRAY AND CONDUIT.FURNISH AND INSTALL CONDUITS FROM CABLE TRAY TO EQUIPMENT. TYPICAL ALL EQUIPMENT WITH CONNECTIONS TO CABLE TRAY.
IC. INSTRUMENTATION CABLE TRAY AND CONDUIT. FURNISH AND INSTALL METALLIC BARRIER BETWEEN DC AND AC VOLTAGES. FURNISH AND INSTALL CONDUITS FROM CABLE TRAY TO EQUIPMENT. TYPICAL ALL EQUIPMENT WITH CONNECTIONS TO CABLE TRAY.
5. FURNISH AND INSTALL ADDITIONAL SIGNALS AS REQUIRED IN SPECIFICATION SECTION 28-46-21.11 FOR THE FIRE ALARM SYSTEM.

GENERAL NOTES:

1. MAINTAIN A MINIMUM OF 12 INCHES OF SEPERATION BETWEEN POWER\CONTROL AND SIGNAL CONDUITS.
2. PULL BOXED, MAN HOLES, AND HAND HOLES NOT SHOW. CONTRACTOR TO FURNISH AND INSTALL AS SPECIFIED AND AS NEEDED.
3. CABLE TRAY SYSTEM TO BE DESIGNED, FURNISHED , AND INSTALLED BY THE CONTRACTOR. SEE SPECIFICATIONS FOR MORE DETAILS.
4. THIS DRAWING DOES NOT INDICATE ALL THE PROJECT REQUIREMENTS. THE PROJECT REQUIREMENTS ARE INDICATED IN VARIOUS ELECTRICAL AND INSTRUMENTATION DRAWINGS AND SPECIFICATIONS. ALL DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
5. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE HIGHER RATING DEVICE AND EQUIPMENT, THE FURTHER DISTANCE, ETC...
6. MANHOLES, HANDHOLES, PULL BOXES, JUNCTION BOXES, RACEWAYS, AND FITTINGS ARE NOT SHOWN BUT SHALL BE PROVIDED.
7. ALL CIRCUITRY IS NOT SHOWN INTENTIONALLY. REFER TO OTHER DRAWINGS AND SPECIFICATIONS FOR COMPLETE CONDUIT AND CONDUCTOR REQUIREMENTS, INCLUDING BUT NOT LIMITED TO: SINGLE LINE DIAGRAMS, AND PANEL SCHEDULES.
8. KEEP AC AND DC VOLTAGES SEPARATED A MINIMUM OF 12 INCHES.

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

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

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

REVISIONS					DES
NO.	BY	DATE	CKD	REMARKS	RB
1	RB	December 4, 2024	VB	Addendum 4	DWN
*					BB
*					CKD
*					VB
*					
*					
*					

HDR | EIC ENGINEERING, POWERING SUSTAINABLE WATER | Registered Professional Engineer Certificate No. 33468 VAHID BAGHERI, Date Signed 7-31-24, Arizona

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

CONDUIT BLOCK DIAGRAMS

CITY PROJECT NO. WS90400085

DATE: 08/2024

E–27 SHEET 118 OF 134

CAD FILE: CSELS40EC02.dwg

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

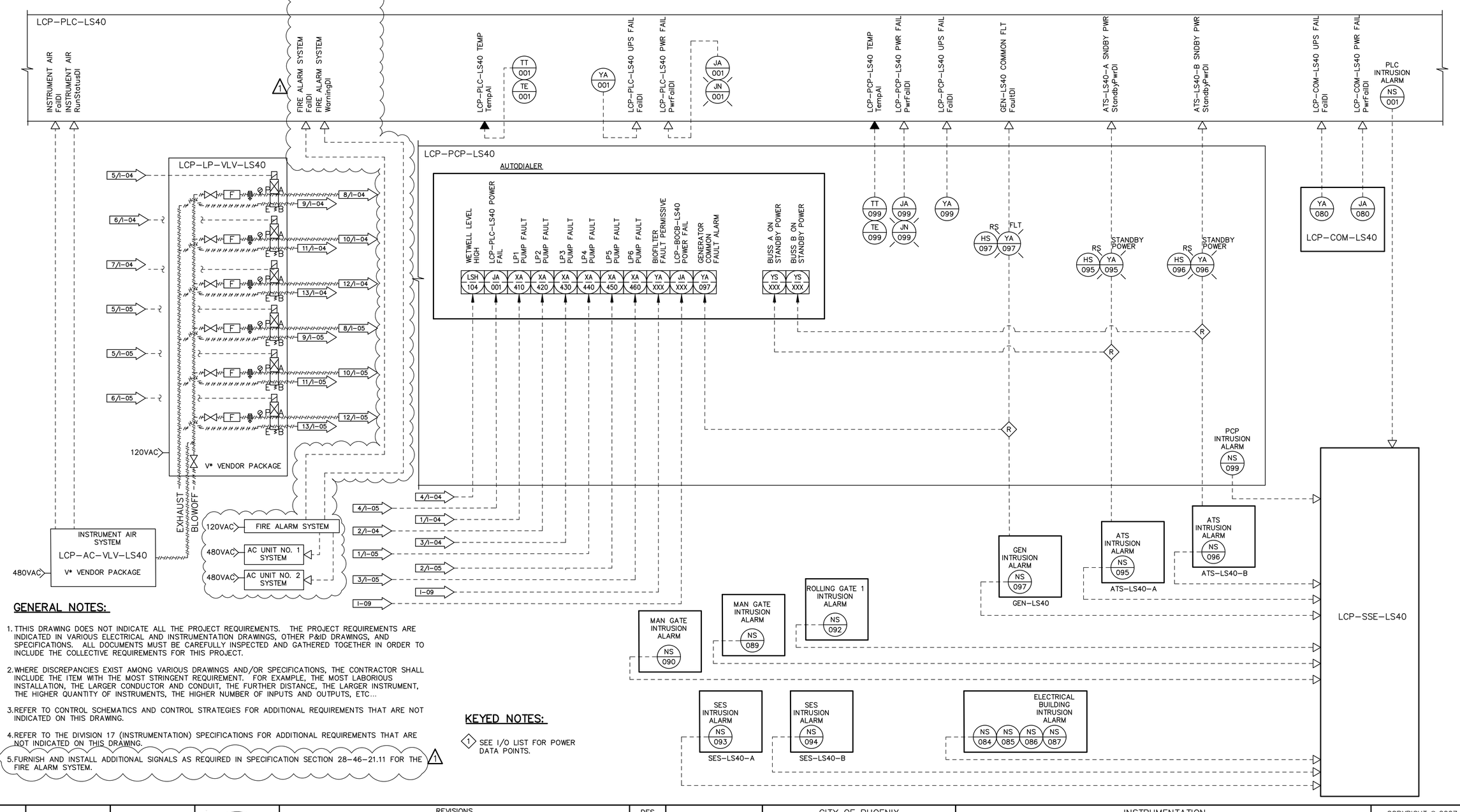
FOR CONSTRUCTION

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

SCADA

INSTRUMENT AIR FailDI
INSTRUMENT AIR RunStatusDI
FIRE ALARM SYSTEM FailDI
FIRE ALARM SYSTEM WarningDI
LCP–PLC–LS40 TempAI
LCP–PLC–LS40 UPS FAIL FailDI
LCP–PLC–LS40 PWR FAIL PwrFailDI
LCP–PCP–LS40 TempAI
LCP–PCP–LS40 PWR FAIL PwrFailDI
LCP–PCP–LS40 UPS FAIL FailDI
GEN–LS40 COMMON FAULT FailDI
ATS–LS40–A SNDBY PWR StandbyPwrDI
ATS–LS40–B SNDBY PWR StandbyPwrDI
LCP–COM–LS40 UPS FAIL FailDI
LCP–COM–LS40 PWR FAIL PwrFailDI

SCADA



GENERAL NOTES:

1. TTHIS DRAWING DOES NOT INDICATE ALL THE PROJECT REQUIREMENTS. THE PROJECT REQUIREMENTS ARE INDICATED IN VARIOUS ELECTRICAL AND INSTRUMENTATION DRAWINGS, OTHER P&ID DRAWINGS, AND SPECIFICATIONS. ALL DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
2. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE FURTHER DISTANCE, THE LARGER INSTRUMENT, THE HIGHER QUANTITY OF INSTRUMENTS, THE HIGHER NUMBER OF INPUTS AND OUTPUTS, ETC...
3. REFER TO CONTROL SCHEMATICS AND CONTROL STRATEGIES FOR ADDITIONAL REQUIREMENTS THAT ARE NOT INDICATED ON THIS DRAWING.
4. REFER TO THE DIVISION 17 (INSTRUMENTATION) SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS THAT ARE NOT INDICATED ON THIS DRAWING.
5. FURNISH AND INSTALL ADDITIONAL SIGNALS AS REQUIRED IN SPECIFICATION SECTION 28-46-21.11 FOR THE FIRE ALARM SYSTEM. (1)

KEYED NOTES:

(1) SEE I/O LIST FOR POWER DATA POINTS.

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

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

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

DWG NUMBER -

HDR | EIC ENGINEERING POWERING SUSTAINABLE WATER | Registered Professional Engineer Certificate No. 33468 VAHID BAGHERI Date Signed 7-31-24 Arizona U.S.A.

REVISIONS					DES
NO.	BY	DATE	CKD	REMARKS	RB
1	RB	December 4, 2024	VB	Addendum 4	DWN
*					BB
*					
*					CKD
*					VB
*					

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

INSTRUMENTATION

P&ID SHEET 3

CITY PROJECT NO. WS90400085

DATE: 08/2024

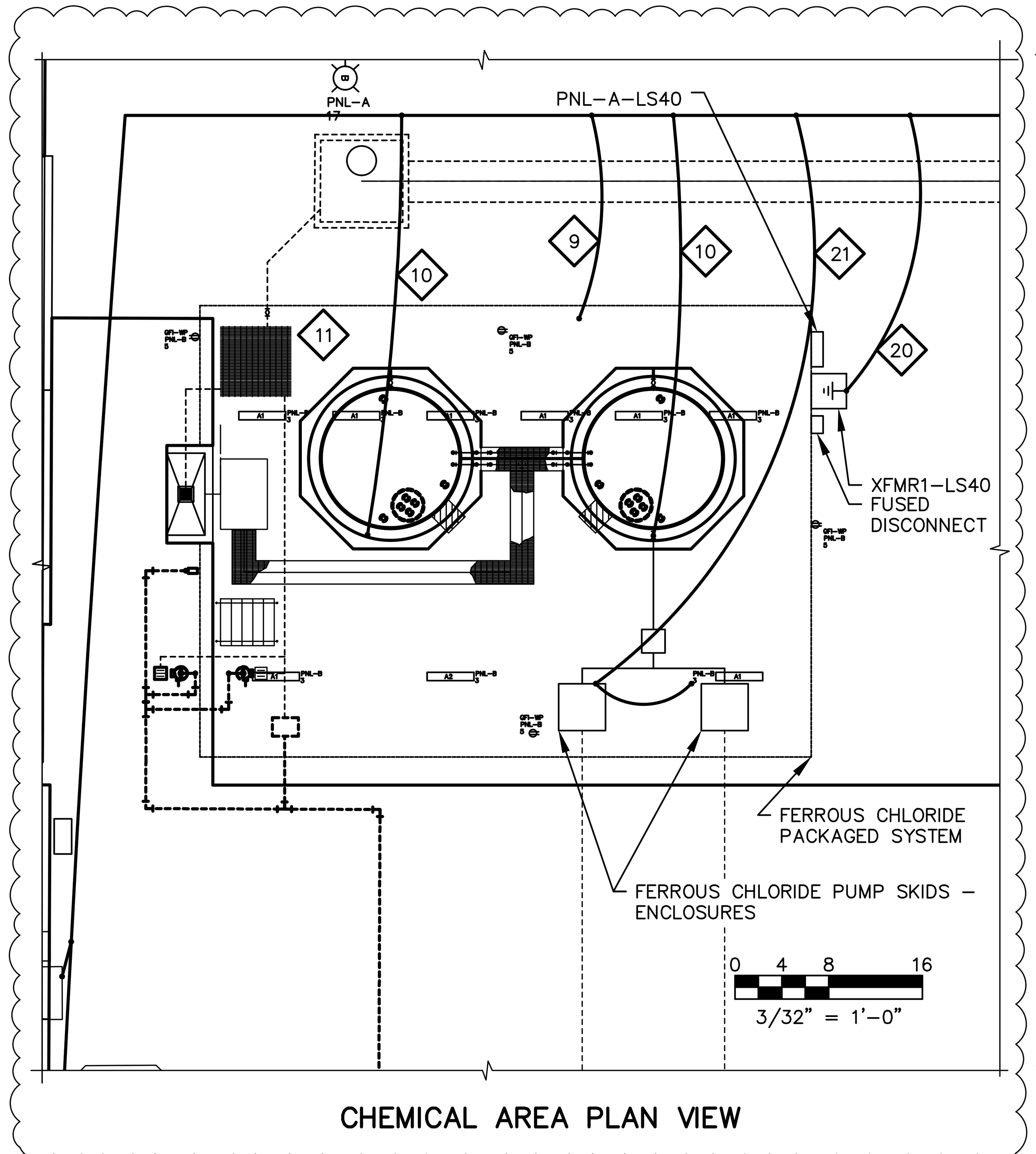
I–06 SHEET 130 OF 134

CAD FILE: CSILS40IN03.dwg

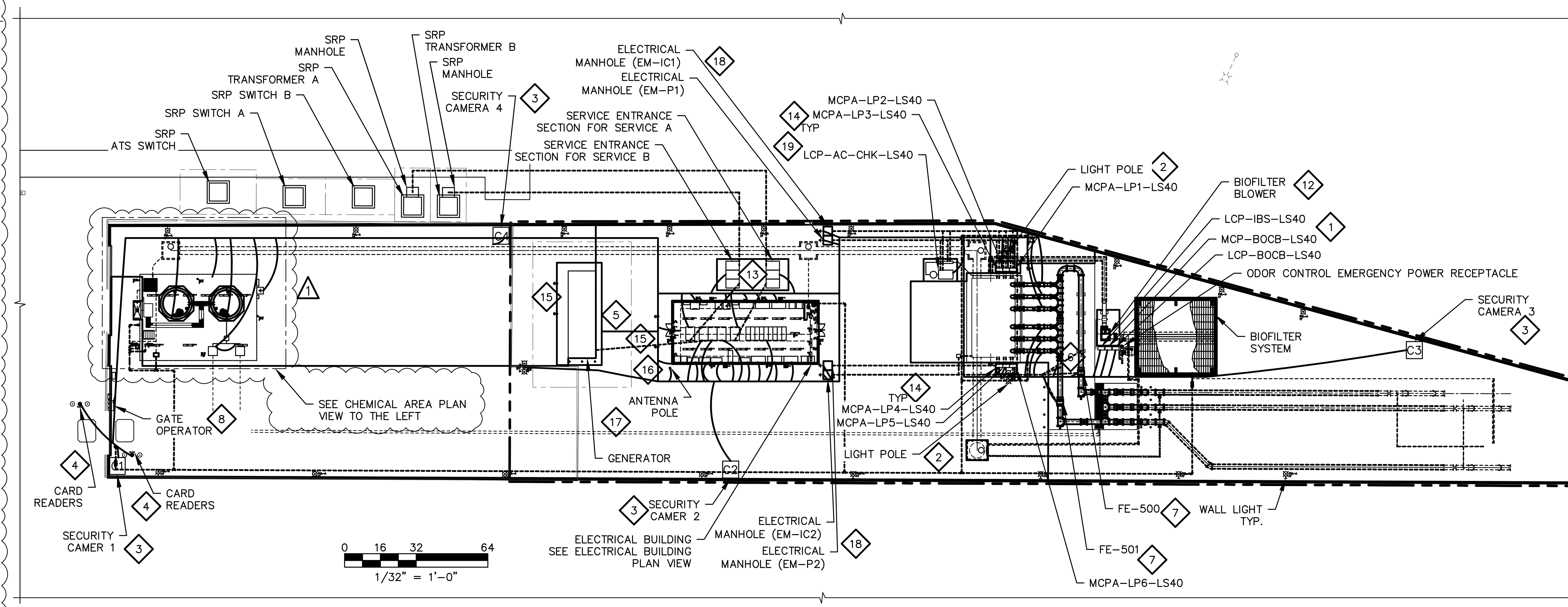
THIS DRAWING MUST BE FIELD VERIFIED BEFORE USE
DRAWING NOT TO SCALE UNLESS SCALE BAR IS PRESENT

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.



CHEMICAL AREA PLAN VIEW



SITE PLAN VIEW

GENERAL NOTES:

1. THIS DRAWING DOES NOT INDICATE ALL THE PROJECT REQUIREMENTS. THE PROJECT REQUIREMENTS ARE INDICATED IN VARIOUS ELECTRICAL AND INSTRUMENTATION DRAWINGS AND SPECIFICATIONS. ALL DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
2. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE HIGHER RATING DEVICE AND EQUIPMENT, THE FURTHER DISTANCE, ETC...
3. INSTALL RECEPTACLES AND DATA OUTLETS AT 18 INCHES ABOVE FINISHED FLOOR.
4. FURNISH AND INSTALL A 20-AMP, 120V, WEATHERPROOF, GFCI RECEPTACLE WITHIN 25 FEET OF ALL HVAC EQUIPMENT EVEN IF THEY ARE NOT INDICATED ON THE DRAWINGS.
5. INSTALL RECEPTACLES AT 18 INCHES ABOVE FINISHED FLOOR.
6. INSTALL LIGHT SWITCHES AT 42 INCHES ABOVE FINISHED FLOOR.
7. INSTALL WALL MOUNTED LIGHT FIXTURES AT 8 FEET ABOVE FINISHED FLOOR.
8. ALL OUTDOOR LIGHT FIXTURES SHALL BE EQUIPPED WITH FULL CUT-OFF SHIELDS EVEN IF IT IS NOT INDICATED ON THE LIGHT FIXTURE SCHEDULE OR ELSEWHERE ON THE DRAWINGS AND/OR SPECIFICATIONS.
9. INSTALL CEILING MOUNTED LIGHT FIXTURES AT 12 FEET ABOVE FINISHED FLOOR.
10. FURNISH AND INSTALL LIGHTING CONTROL PANEL FOR ALL OUTDOOR LIGHTS. THE CONTROL PANEL SHALL MEET OR EXCEED THE FOLLOWING REQUIREMENTS
    a. BE EQUIPPED WITH A MAIN CIRCUIT BREAKER RATED 65AIC
    b. BE EQUIPPED WITH A CONTACTOR RATED FOR 30 AMPS
    c. HAVE A VOLTAGE RATING AS INDICATED BY ITS FEEDER
    d. TURN LIGHTS ON AND OFF BY A PHOTOCELL REMOTELY LOCATED OUTSIDE THE BUILDING.
    e. BE EQUIPPED WITH A TIMER THAT LIMITS THE HOURS OF OPERATION DURING PHOTOCELL OPERATION
    f. HAVE OVERRIDE CAPABILITY TO TURN LIGHTS ON AND OFF REGARDLESS OF PHOTOCELL
    g. BE EQUIPPED WITH A NEMA 12 ENCLOSURE
    h. LOCATION OF THE LIGHTING CONTROL PANEL WILL BE DETERMINED DURING CONSTRUCTION. ALLOW FOR 30 FEET OF DISTANCE BETWEEN THE POWER SOURCE AND THE LIGHTING CONTROL PANEL
    i. LOCATION OF THE PHOTOCELL WILL BE DETERMINED DURING CONSTRUCTION. ALLOW FOR 100 FEET OF DISTANCE BETWEEN THE LIGHTING CONTROL PANEL AND THE PHOTOCELL

KEY NOTES:

1. BOND THE GROUNDING ELECTRODE CONDUCTOR TO LCP-BOCB-LS40, TO MCP-BOCB-LS40, AND LCP-IBS-LS40.
2. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE LIGHT POLE.
3. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE SECURITY CAMERA POLE .
4. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE KEYPAD PEDESTALS.
5. BOND THE GENERATOR GROUNDING ELECTRODE TO THE BUILDING GROUNDING ELECTRODE.
6. BOND THE GROUNDING ELECTRODE CONDUCTOR TO ABOVE GROUND WATER PIPE.
7. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE MAGNETIC FLOW METERS.
8. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE GATE OPERATOR POWER SUPPLY.
9. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE SHADE STRUCTURE.
10. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE FERROUS CHLORIDE TANKS.
11. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE FERROUS CHLORIDE SYSTEM STRUCTURE.
12. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE BIOFILTER BLOWER.
13. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE SERVICE ENTRANCE SECTIONS.
14. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE LIFT PUMP MCP PANELS.
15. GROUND ROD AND GROUND TEST WELL PER TYPICAL DETAIL.
16. CONCRETE ENCASED GROUND (UFER) IN BLOCK WALL.
17. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE ANTENNA POLE.
18. BOND THE MANHOLE GROUNDING ELECTRODES TO THE BUILDING GROUNDING ELECTRODE.
19. BOND THE GROUNDING ELECTRODE TO THE COMPRESSOR.
20. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE SECONDARY SIDE OF THE TRANSFORMER AND GROUND ROD.
21. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE FERROUS CHLORIDE PUMP SKIDS.

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

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

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

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer, Certificate No. 33468, VAHID BAGHERI, Arizona, U.S.A., Signed 7-31-24

REVISIONS

NO.	BY	DATE	CKD	REMARKS
1	RB	December 4, 2024	VB	Addendum 4
•				
•				
•				
•				
•				
•				

DES RB
DWN BB
CKD VB

City of Phoenix

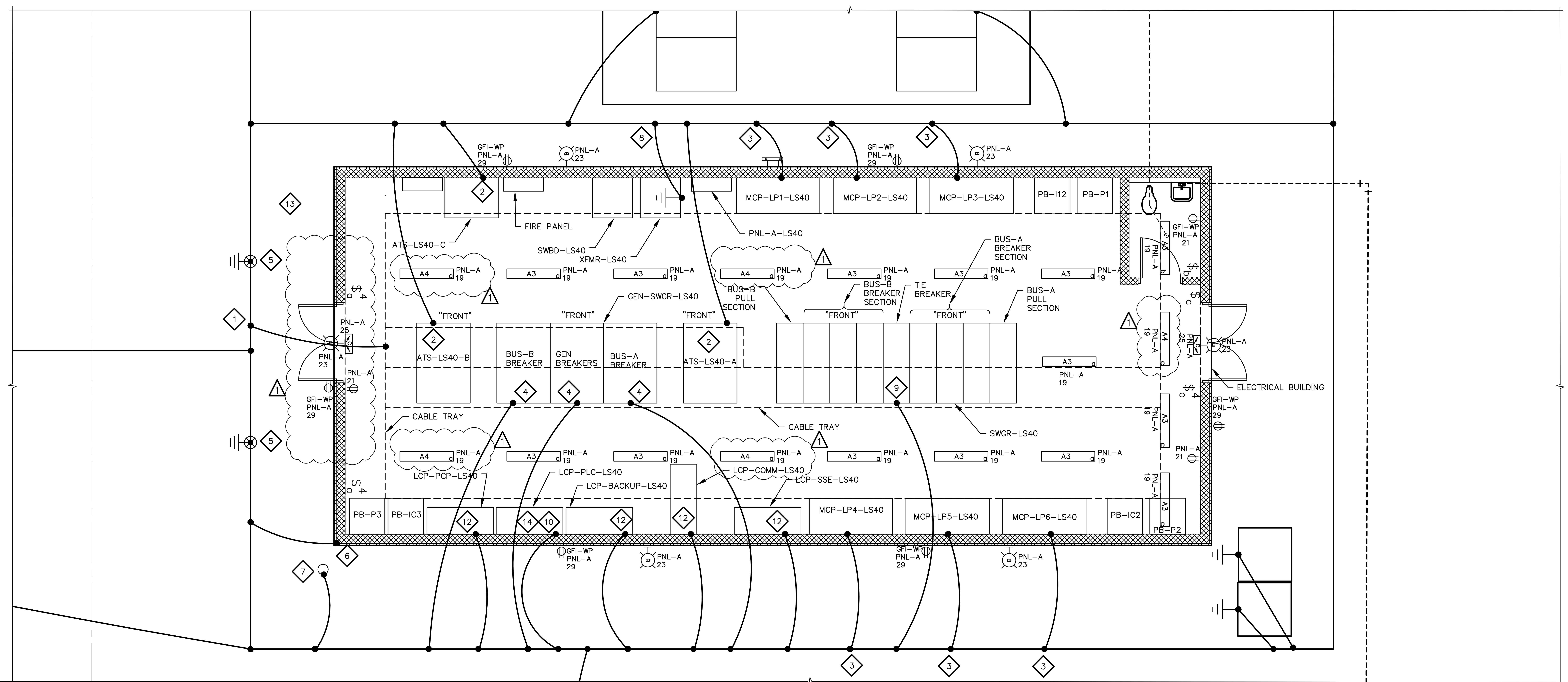
CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

SITE PLAN LIGHTING AND GROUNDING

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-12 SHEET 103 OF 134
CAD FILE: CSELS40EP01.dwg



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

GENERAL NOTES:

1. THIS DRAWING DOES NOT INDICATE ALL THE PROJECT REQUIREMENTS. THE PROJECT REQUIREMENTS ARE INDICATED IN VARIOUS ELECTRICAL AND INSTRUMENTATION DRAWINGS AND SPECIFICATIONS. ALL DOCUMENTS MUST BE CAREFULLY INSPECTED AND GATHERED TOGETHER IN ORDER TO INCLUDE THE COLLECTIVE REQUIREMENTS FOR THIS PROJECT.
2. WHERE DISCREPANCIES EXIST AMONG VARIOUS DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE ITEM WITH THE MOST STRINGENT REQUIREMENT. FOR EXAMPLE, THE MOST LABORIOUS INSTALLATION, THE LARGER CONDUCTOR AND CONDUIT, THE HIGHER RATING DEVICE AND EQUIPMENT, THE FURTHER DISTANCE, ETC...
3. INSTALL RECEPTACLES AND DATA OUTLETS AT 18 INCHES ABOVE FINISHED FLOOR.
4. FURNISH AND INSTALL A 20-AMP, 120V, WEATHERPROOF, GFCI RECEPTACLE WITHIN 25 FEET OF ALL HVAC EQUIPMENT EVEN IF THEY ARE NOT INDICATED ON THE DRAWINGS.
5. INSTALL RECEPTACLES AT 18 INCHES ABOVE FINISHED FLOOR.
6. INSTALL LIGHT SWITCHES AT 42 INCHES ABOVE FINISHED FLOOR.
7. INSTALL WALL MOUNTED LIGHT FIXTURES AT 8 FEET ABOVE FINISHED FLOOR.
8. ALL OUTDOOR LIGHT FIXTURES SHALL BE EQUIPPED WITH FULL CUT-OFF SHIELDS EVEN IF IT IS NOT INDICATED ON THE LIGHT FIXTURE SCHEDULE OR ELSEWHERE ON THE DRAWINGS AND/OR SPECIFICATIONS.
9. INSTALL CEILING MOUNTED LIGHT FIXTURES AT 12 FEET ABOVE FINISHED FLOOR.
10. FURNISH AND INSTALL LIGHTING CONTROL PANEL FOR ALL OUTDOOR LIGHTS. THE CONTROL PANEL SHALL MEET OR EXCEED THE FOLLOWING REQUIREMENTS
    a. BE EQUIPPED WITH A MAIN CIRCUIT BREAKER RATED 65AIC
    b. BE EQUIPPED WITH A CONTACTOR RATED FOR 30 AMPS
    c. HAVE A VOLTAGE RATING AS INDICATED BY ITS FEEDER
    d. TURN LIGHTS ON AND OFF BY A PHOTOCELL REMOTELY LOCATED OUTSIDE THE BUILDING.
    e. BE EQUIPPED WITH A TIMER THAT LIMITS THE HOURS OF OPERATION DURING PHOTOCELL OPERATION
    f. HAVE OVERRIDE CAPABILITY TO TURN LIGHTS ON AND OFF REGARDLESS OF PHOTOCELL
    g. BE EQUIPPED WITH A NEMA 12 ENCLOSURE
    h. LOCATION OF THE LIGHTING CONTROL PANEL WILL BE DETERMINED DURING CONSTRUCTION. ALLOW FOR 30 FEET OF DISTANCE BETWEEN THE POWER SOURCE AND THE LIGHTING CONTROL PANEL
    i. LOCATION OF THE PHOTOCELL WILL BE DETERMINED DURING CONSTRUCTION. ALLOW FOR 100 FEET OF DISTANCE BETWEEN THE LIGHTING CONTROL PANEL AND THE PHOTOCELL

KEY NOTES:

1. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE CABLE TRAY.
2. BOND THE GROUNDING ELECTRODE CONDUCTOR TO ATS-LS40-A, ATS-LS40-B AND ATS-LS40-C.
3. BOND THE GROUNDING ELECTRODE CONDUCTOR TO MCP-LP1-LS40, MCP-LP2-LS40, MCP-LP3-LS40, MCP-LP4-LS40, MCP-LP5-LS40, MCP-LP6-LS40.
4. BOND THE GROUNDING ELECTRODE CONDUCTOR TO BUS-A BREAKER, BUS-B BREAKER AND GEN BREAKER.
5. GROUND ROD AND GROUND TEST WELL PER TYPICAL DETAIL.
6. CONCRETE ENCASED GROUND (UFER) IN BLOCK WALL.
7. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE ANTENNA POLE.
8. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE SECONDARY SIDE OF THE TRANSFORMER AND GROUND ROD.
9. BOND THE GROUNDING ELECTRODE CONDUCTOR TO SWGR-LS40.
10. BOND THE GROUNDING ELECTRODE CONDUCTOR TO LCP-PLC-LS40.
11. NOT USED.
12. BOND THE GROUNDING ELECTRODE CONDUCTOR TO LCP-COMM-LS40, LCP-SSE-LS40, LCP-PCP-LS40 AND LCP-BACKUP-LS40.
13. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE A/C UNITS.
14. BOND THE GROUNDING ELECTRODE CONDUCTOR TO THE PLC PANEL DC GROUND BUS USING GREEN INSULATED WIRE CONNECTION. SEE SECTION 16061 FOR DETAILS.

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

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

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

HDR

EIC ENGINEERING
POWERING SUSTAINABLE WATER

Registered Professional Engineer — CERTIFICATE NO. 33468 — VAHID BAGHERI — Date Signed 7-31-24 — ARIZONA, U.S.A.

REVISIONS

NO.	BY	DATE	CKD	REMARKS
1	RB	December 4, 2024	VB	Addendum 4
•				
•				
•				
•				
•				
•				

DES RB
DWN BB
CKD VB

City of Phoenix

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

LIFT STATION 40
REFURBISHMENT

ELECTRICAL

ELECTRICAL BUILDING LIGHTING AND GROUNDING

CITY PROJECT NO. WS90400085
DATE: 08/2024
E-14 SHEET 105 OF 134
CAD FILE: CSELS40EP05.dwg