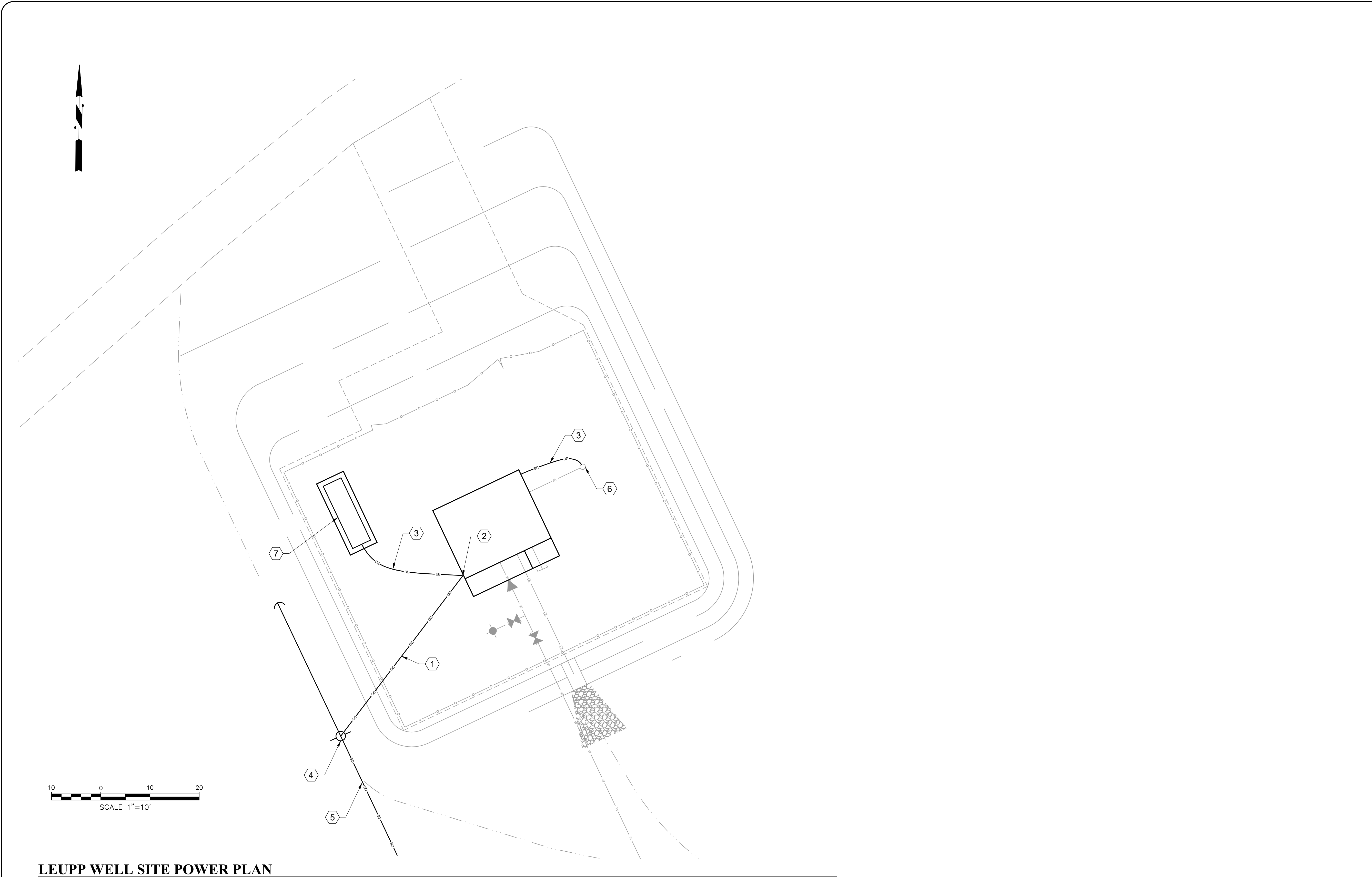
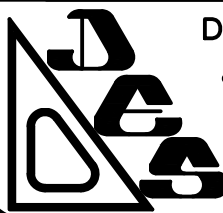


S:\SQUATCH: Design\Leupp-Dilkon\design.dwg



LEUPP WELL SITE POWER PLAN
SCALE 1"=10'





DePAULI ENGINEERING
& SURVEYING, LLC.
CIVIL ENGINEERS
& LAND SURVEYORS

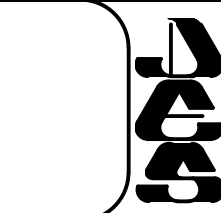
for
NAVAJO ENGINEERING &
CONSTRUCTION AUTHORITY

for the
INDIAN HEALTH SERVICE
WINSLOW SERVICE UNIT
WINSLOW, ARIZONA

NO.	BY	DATE

INDIAN HEALTH SERVICE AND
NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY
LEUPP-DILKON WATER SUPPLY SYSTEM

LEUPP WELL SITE
POWER PLAN

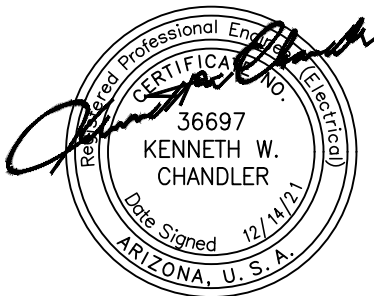


SCALE: SHOWN
DATE: DEC. 2021
DRAWN BY: DEE
CHECKED BY: HWP

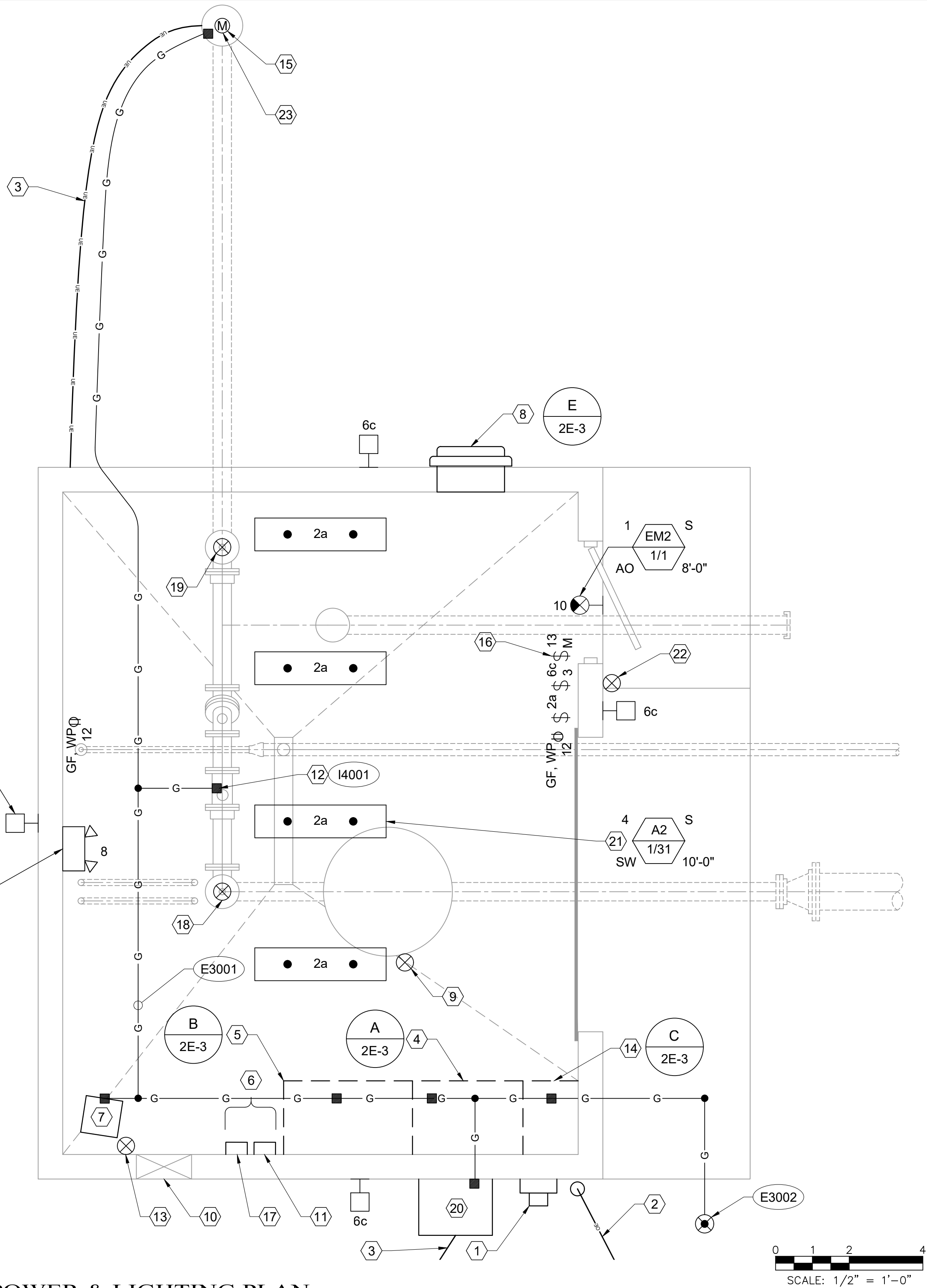
SHEET
2E - 1

- GENERAL NOTES
1. PROVIDE 480 VOLT 3-PHASE POWER UTILITY, ELECTRICAL, INSTRUMENTATION AND TELEMETRY EQUIPMENT.
 2. POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY (NTUA), (928) 729-5721.

- KEY NOTES
- 1 OVERHEAD CIRCUITS PER DRAWING 2E-3, POWER UTILITY REQUIREMENTS TO PREVAIL.
 - 2 PROVIDE SERVICE ENTRANCE SECTION METER, MAIN DISCONNECT, FUSES AND LIGHTNING ARRESTOR ON OUTSIDE OF BUILDING.
 - 3 UNDERGROUND ELECTRICAL AND CONTROL CIRCUITS PER DRAWING 2E-3.
 - 4 POWER POLE, SERVICE POLE, DOWN GUY AND SERVICE LINES (OVERHEAD OR UNDERGROUND) BY NTUA.
 - 5 OVERHEAD ELECTRICAL LINE BY NTUA.
 - 6 WELL HEAD
 - 7 STANDBY GENERATOR GEN-01



S:\SQ\ATCH: D:engineer\Leupp-Dilkon\design.dwg



WELL STATION POWER & LIGHTING PLAN
SCALE: 1/2"=1'



GENERAL NOTES

- GENERAL REQUIREMENTS: SPECIFICATION 16000.
- TESTING: SPECIFICATION 16030.
- ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
- CIRCUITS: DRAWING 2E-3.
- SUBMIT ELECTRICAL EQUIPMENT LAYOUT PRIOR TO CONDUIT ROUGH-IN.

KEY NOTES

- SERVICE ENTRANCE SECTION, WEATHERHEAD, METER AND DISCONNECT.
- OVERHEAD CIRCUITS PER DRAWING 2E-3, POWER UTILITY REQUIREMENTS TO PREVAIL.
- UNDERGROUND ELECTRICAL AND CONTROL CIRCUITS PER DRAWING 2E-3.
- WELL MOTOR STARTER RVSS
- TELEMETRY PLC
- CONTROL AND DISPLAY AREA, REFER TO SHEET 2-4.
- UNIT HEATER
- EXHAUST FAN
- SURGE TANK MONITOR LCP
- MOTOR OPERATED INLET LOUVER
- FLOW INDICATOR, AMI UNIT
- FLOW METER
- AIR TEMPERATURE SENSOR/SWITCH
- LOAD CENTER
- WELL HEAD
- MANUAL MOTOR SWITCH FOR FAN
- LEVEL TRANSDUCER JUNCTION BOX
- PRESSURE TRANSDUCER
- HIGH PRESSURE SWITCH
- ATS-01
- SUSPEND LIGHT FIXTURE FROM ROOF TRUSS WITH CHAIN. MOUNTING METHOD SUBJECT TO CHANGE DEPENDING ON ROOF SYSTEM.
- PHOTOCELL FOR EXTERIOR LIGHTS.
- PRESSURE TYPE LEVEL TRANSDUCER IN WELL.

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MODEL #
A1 1/25	LITHONIA WST LED - SURFACE MOUNT, RUGGED DIE-CAST ALUMINUM HOUSING, ACRYLIC LENS, HIGH-EFFECIENCY LED'S, ZERO UPLIGHT, NIGHTTIME FRIENDLY, IP65 RATED, CONSISTENT WITH LEED AND GREEN GLOBE CRITERIA FOR ELIMINATING WASTEFUL UPLIGHT, 120VAC	LITHONIA WST LED P2 3000 50K VF MVOLT DDBTXD
A2 1/31	LITHONIA FEM LED - SUSPENDED MOUNT, FIBERGLASS HOUSING, REPLACEABLE DIFFUSER LENS, HIGH-EFFICIENCY LED'S, 4000K CCT TEMPERATURE STANDARD, CSA CERTIFIED TO UL AND C-UL STANDARDS, 120 VAC	LITHONIA FEM L48 4000LM LPAFL MD MVOLT GZ10 40K 80CRI
EM1 1/3	LITHONIA ELM2 LED - SURFACE MOUNT, THERMOPLASTIC HOUSING, POLYCARBONATE LENS, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA ELM2 LED HO
EM2 1/1	LITHONIA LQM - SURFACE MOUNT, THERMOPLASTIC HOUSING, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA LQM S W 3 R 120/277 EL N



SINGLE PHASE PANEL: LOAD CENTER (LC)													
VOLTAGE, PHASE, & WIRE:				120 / 240 VAC, 1 PHASE, 3 WIRE				LOCATION:				LEUPP-DILKON WELL STATION	
BUS SIZE:				100 AMPERE				ENCLOSURE:				NEMA-3R	
MAIN SIZE:				70 AMPERE				MOUNTING:				WALL	
MAIN TYPE:				CIRCUIT BREAKER				BUS BRACING:				22 KAIC	
BREAKER TYPE:				PLUG-ON				FED FROM:				SES OUTDOORS	
CIRCUIT TITLE / LOAD DESCRIPTION	AWG WIRE SIZE	RACE-WAY SIZE	BREAKER			LOAD (VA)		LOAD (VA)		BREAKER			CIRCUIT TITLE / LOAD DESCRIPTION
			CKT NO.	AMP	POLE	PHASE A	PHASE B	PHASE B	PHASE A	POLE	AMP	CKT NO.	
TELEMETRY PLC CONTROL PANEL	2-12, 12G	1/2	1	15	1	180			155	1	15	2	WELL STATION LIGHTING
FLOW METER	2-12, 12G	1/2	3	15	1		10	720		1	15	4	GENERATOR BATTERY CHARGER
FLOW INDICATOR	2-12, 12G	1/2	5	15	1	10			125	1	15	6	EXTERIOR LIGHTING
FLOW AMI UNIT	2-12, 12G	1/2	7	15	1		10	7.5		1	15	8	EMERGENCY LIGHTING
GENERATOR BLOCK HEATER	2-12, 12G	1/2	9	15	2	1250			2.5	1	15	10	EXIT LIGHTING
WELL STATION EXHAUST FAN/LOUVER	2-12, 12G	1/2	11	15	1	750	1250	360		1	15	12	RECEPTACLES
WELL STATION HEATER	2-12, 12G	1/2	17	20	2	1500	1500			1	15	14	SURGE TANK 1 MONITORING LCP
SPARE CONDUIT		1/2	19	15	1					1	15	16	SPARE
SPARE			21	15	1					1	15	18	SPARE
SPARE			23	15	1					1	15	20	SPARE
SPARE			25	15	1					2	-	24	SPARE
COLUMN TOTALS:						3690	2770	1088	463			PER MFR.	-
						PHASE-A LOAD (VA):		4153					
						PHASE-B LOAD (VA):		3858					
* SURGE PROTECTOR CIRCUIT BREAKER SIZE PER MFR.						TOTAL LOAD (VA)=		8010		I (amp)		33.4	

PANEL SCHEDULE													
DETAIL C													
2E-2													
SCALE: NONE													

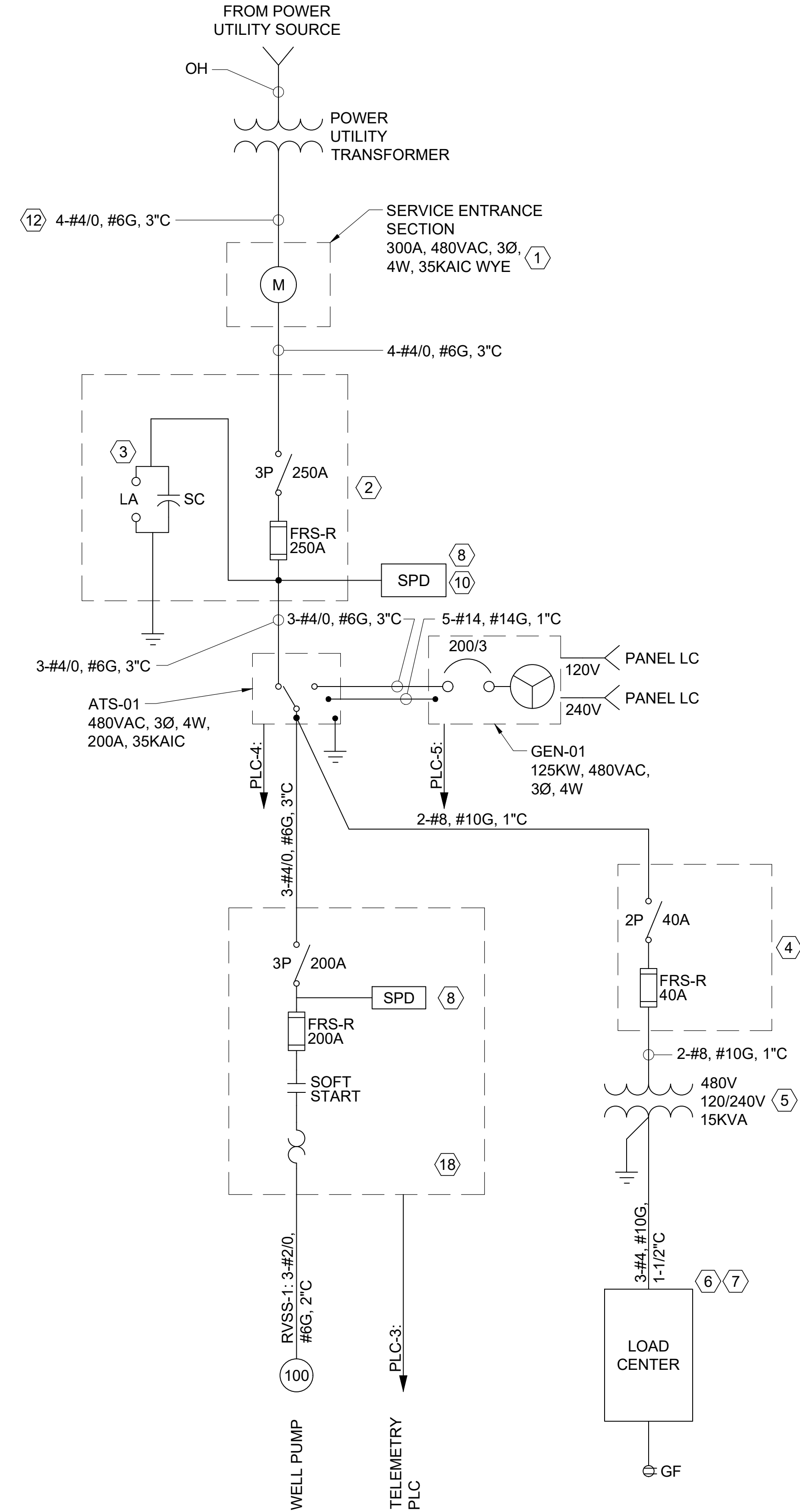
LEUPP-DILKON WELL LOAD SUMMARY AT 480 VAC			
LOAD DESCRIPTION	KVA	HP	480 VAC FLA
WELL PUMP RVSS CONTROLLER		100	124
TRANSFORMER FOR PANEL-A	15		31.3
SUBTOTAL:	15	100	155.3
PLUS 25%:			31
AMPERE TOTAL:			186.3
125 kW STANDBY GENERATOR AT 0.80 PF:	156.3		188

LOAD SUMMARY													
DETAIL D													
2E-2													
SCALE: NONE													

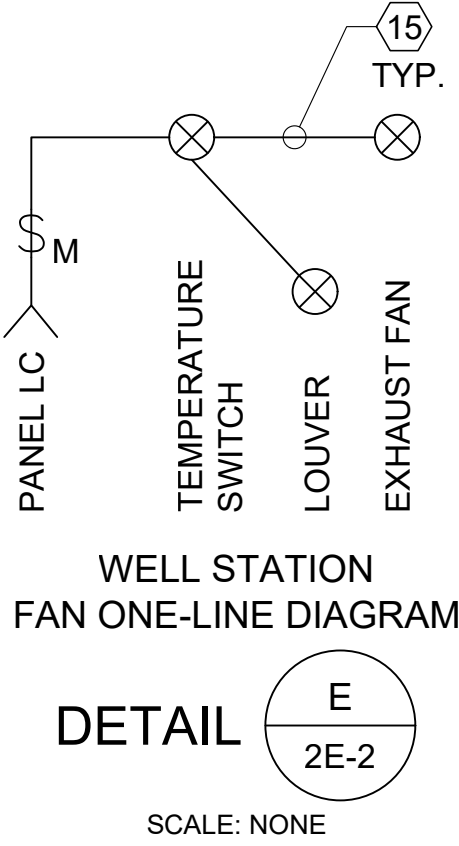
CONTROL ONE-LINE DIAGRAM													
DETAIL B													
2E-2													
SCALE: NONE													

- GENERAL NOTES
- POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY.
 - GENERAL REQUIREMENTS: SPECIFICATION 16000.
 - TESTING: SPECIFICATION 16030.
 - ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
 - SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 01014 AND 17900.

- KEY NOTES
- SERVICE ENTRANCE METER SOCKET, NEMA 3R, EUSERC, TEST BLOCKS, SQUARE D OR SUN VALEY.
 - MAIN DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R, CLASS R FUSE REJECTION KIT, SQUARE D.
 - LIGHTNING ARRESTOR, DELTA LA603.
 - LOAD CENTER DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R SQUARE D MODEL QO.
 - TRANSFORMER, TOTALLY ENCLOSED/ENCAPSULATED, 115 DEGREES C RISE, ACME T-2-53518-3S.
 - LOAD CENTER, WITH GROUND BAR, NEMA 3R, SQUARE D QO.
 - SURGE PROTECTIVE DEVICE, BUS CONNECTED, UL 1449 TYPE 2, 22.5KA SURGE, 1 PHASE 3-WIRE, SQUARE D QO2175SB.
 - SURGE PROTECTIVE DEVICE, UL 1449 TYPE 1, 40KA SURGE, 3 PHASE 4-WIRE, SQUARE D SDSA3650.
 - PROVIDE PER NTUA - TECHNICAL PROVISIONS 4.0 FOR MOTOR CONTROL CENTER AND TANK CONTROL PANEL - PLC CONTROL PANEL, INPUT/OUTPUT WIRING FOR GRUNDFOS WELL WITH SOFT STARTER.
 - SPD. WIRE SIZE PER MANUFACTURER, 1-1/4"C
 - CABLE PER MANUFACTURER, 2"C
 - POWER UTILITY REQUIREMENTS FOR CONDUIT AND BURIAL PREVAIL IF DIFFERENT THAN SPECIFIED.
 - 1-1PR #18S, 2-#14, 1" C
 - ROUTE SPARE CONDUIT TO FLOW METER ON PIPE LOCATION FOR FUTURE USE.
 - 2-#12, #12G, 1/2"C
 - PROVIDE CU GROUND, BOND TO GROUND GRID, SYSTEM AND DUCTBANK GROUND CABLE.
 - 480/120 VAC POWERED
 - PROVIDE PER NTUA - TECHNICAL PROVISIONS 4.0 FOR MOTOR CONTROL CENTER AND TANK CONTROL PANEL - SOFT START PUMP PANEL.



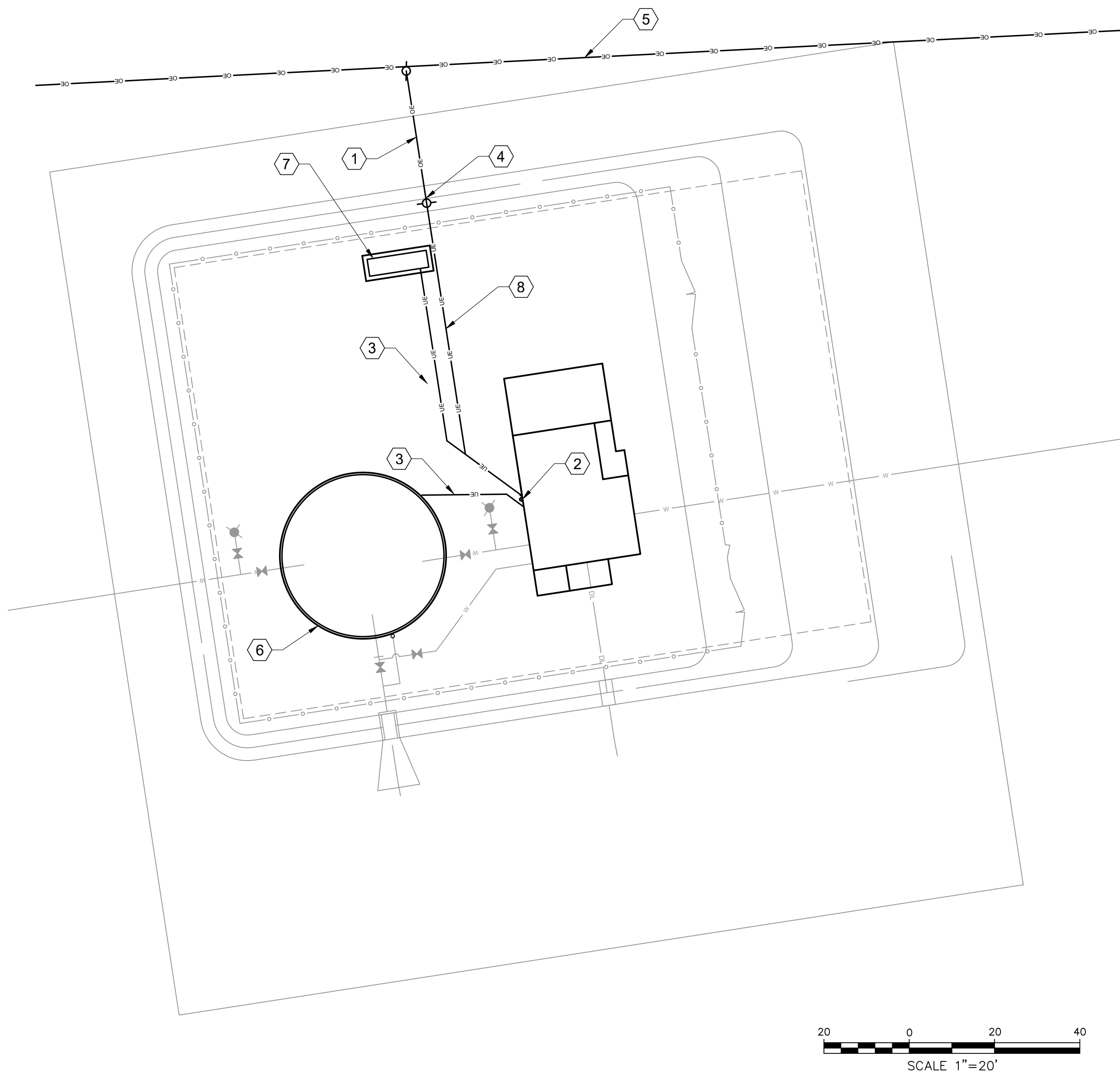
POWER ONE-LINE DIAGRAM
DETAIL A
2E-2
SCALE: NONE



WELL STATION FAN ONE-LINE DIAGRAM
DETAIL E
2E-2
SCALE: NONE

CONTROL ONE-LINE DIAGRAM
DETAIL B
2E-2
SCALE: NONE

S:\SQUATCH: DePauli_Engineer\Leupp-Dilkon\design.dwg



PUMP STATION "0" SITE POWER PLAN
SCALE 1"=20'

GENERAL NOTES

1. PROVIDE 480 VOLT 3-PHASE POWER UTILITY, ELECTRICAL, INSTRUMENTATION AND TELEMETRY EQUIPMENT.
2. POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY (NTUA), (928) 729-5721.

KEY NOTES

- 1 OVERHEAD CIRCUITS PER DRAWING 3E-3, POWER UTILITY REQUIREMENTS TO PREVAIL.
- 2 PROVIDE SERVICE ENTRANCE SECTION METER, ARRESTOR ON OUTSIDE OF BUILDING.
- 3 UNDERGROUND ELECTRICAL AND CONTROL CIRCUITS PER DRAWING 3E-3.
- 4 POWER POLE, SERVICE POLE, DOWN GUY AND SERVICE LINES (OVERHEAD OR UNDERGROUND) BY NTUA.
- 5 OVERHEAD ELECTRICAL LINE BY NTUA.
- 6 STORAGE TANK
- 7 STANDBY GENERATOR GEN-01
- 8 UNDERGROUND CIRCUITS PER DRAWING 3E-3, POWER UTILITY REQUIREMENTS TO PREVAIL.



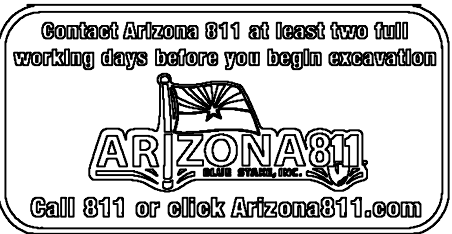
DePAULI ENGINEERING
& SURVEYING, LLC.
CIVIL ENGINEERS
& LAND SURVEYORS

for
NAVAJO ENGINEERING &
CONSTRUCTION AUTHORITY

for the
INDIAN HEALTH SERVICE
WINSLOW SERVICE UNIT
WINSLOW, ARIZONA

NO.	BY	DATE

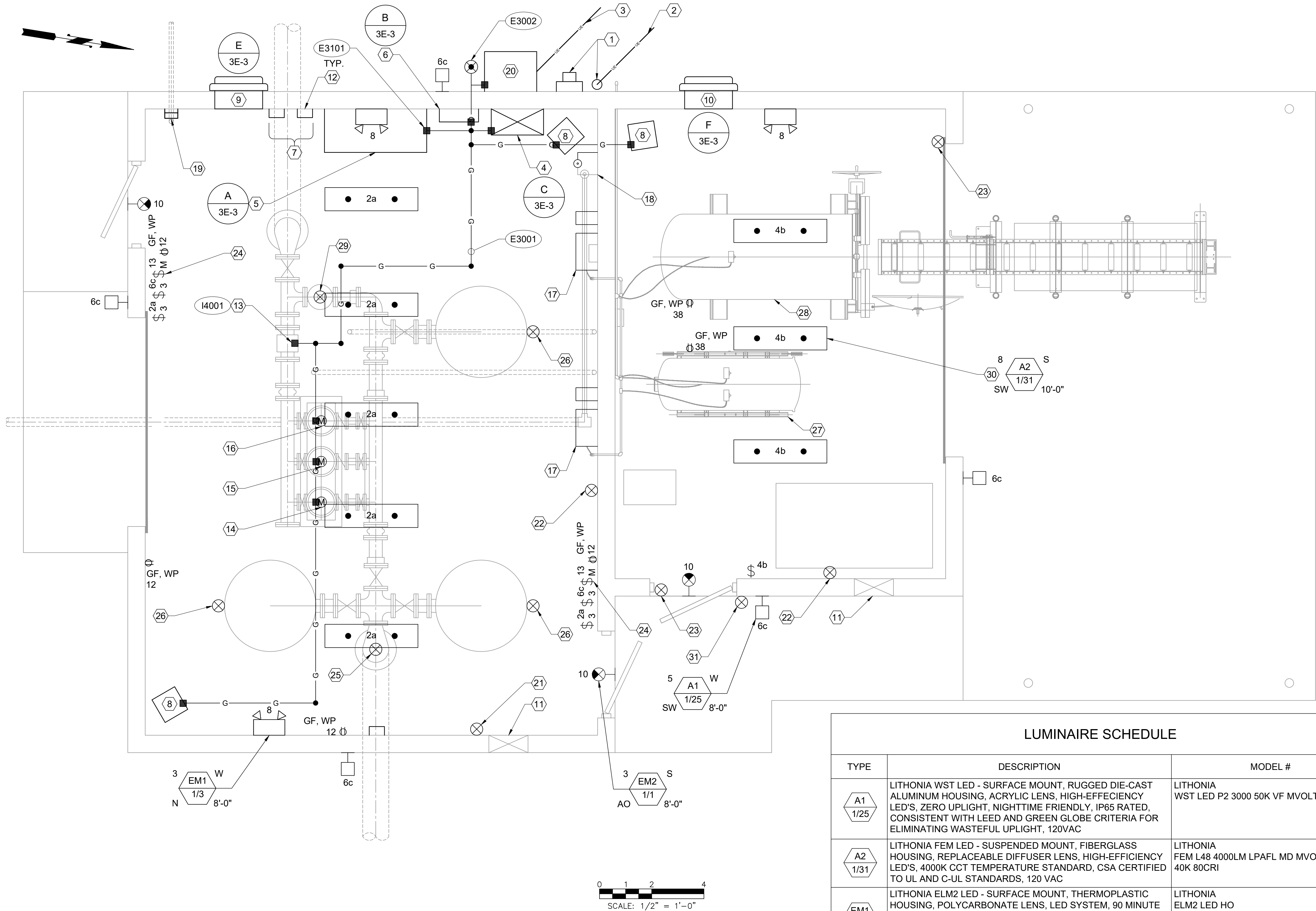
INDIAN HEALTH SERVICE AND
NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY
LEUPP-DILKON WATER SUPPLY SYSTEM



SCALE:	SHOWN
DATE:	DEC. 2021
DRAWN BY:	DEE
CHECKED BY:	HWP

SHEET
3E - 1

PUMP STATION "0"
SITE POWER PLAN



PUMP STATION "0" POWER & LIGHTING PLAN
SCALE: 1/2"=1'



GENERAL NOTES

1. GENERAL REQUIREMENTS: SPECIFICATION 16000.
2. TESTING: SPECIFICATION 16030.
3. ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
4. CIRCUITS: DRAWING 3E-3.
5. SUBMIT ELECTRICAL EQUIPMENT LAYOUT PRIOR TO CONDUIT ROUGH-IN.

KEY NOTES

- 1 SERVICE ENTRANCE SECTION, WEATHERHEAD, METER AND DISCONNECT.
- 2 UNDERGROUND CIRCUITS PER DRAWING 3E-3, POWER UTILITY REQUIREMENTS TO PREVAIL.
- 3 UNDERGROUND ELECTRICAL AND CONTROL CIRCUITS TO TANK AND GENERATOR PER DRAWING 3E-3.
- 4 TRANSFORMER AND LOAD CENTER
- 5 PUMP MANAGEMENT UNIT
- 6 TELEMETRY PLC
- 7 CONTROL AND DISPLAY AREA, REFER TO SHEET 3-9.
- 8 UNIT HEATER
- 9 PUMP ROOM EXHAUST FAN
- 10 CHLORINE ROOM EXHAUST FAN
- 11 MOTOR OPERATED INLET LOUVER
- 12 FLOW INDICATOR, AMI UNIT
- 13 FLOW METER
- 14 PUMP 1
- 15 PUMP 2
- 16 PUMP 3
- 17 CHLORINATOR
- 18 CHLORINE ANALYZER
- 19 PRESSURE TYPE LEVEL TRANSDUCER FROM TANK
- 20 ATS-01
- 21 AIR TEMPERATURE SENSOR/SWITCH
- 22 CHLORINE LEAK DETECTOR
- 23 DOOR SWITCH FOR FAN
- 24 MANUAL MOTOR SWITCH FOR FAN
- 25 PRESSURE TRANSDUCER
- 26 SURGE TANK MONITOR LCP
- 27 150-LB DUAL CHLORINE CONTAINMENT VESSEL
- 28 1-TON CHLORINE CONTAINMENT VESSEL.
- 29 HIGH PRESSURE SWITCH
- 30 SUSPEND LIGHT FIXTURE FROM ROOF TRUSS WITH CHAIN. MOUNTING METHOD SUBJECT TO CHANGE DEPENDING ON ROOF SYSTEM
- 31 PHOTOCELL FOR EXTERIOR LIGHTS.

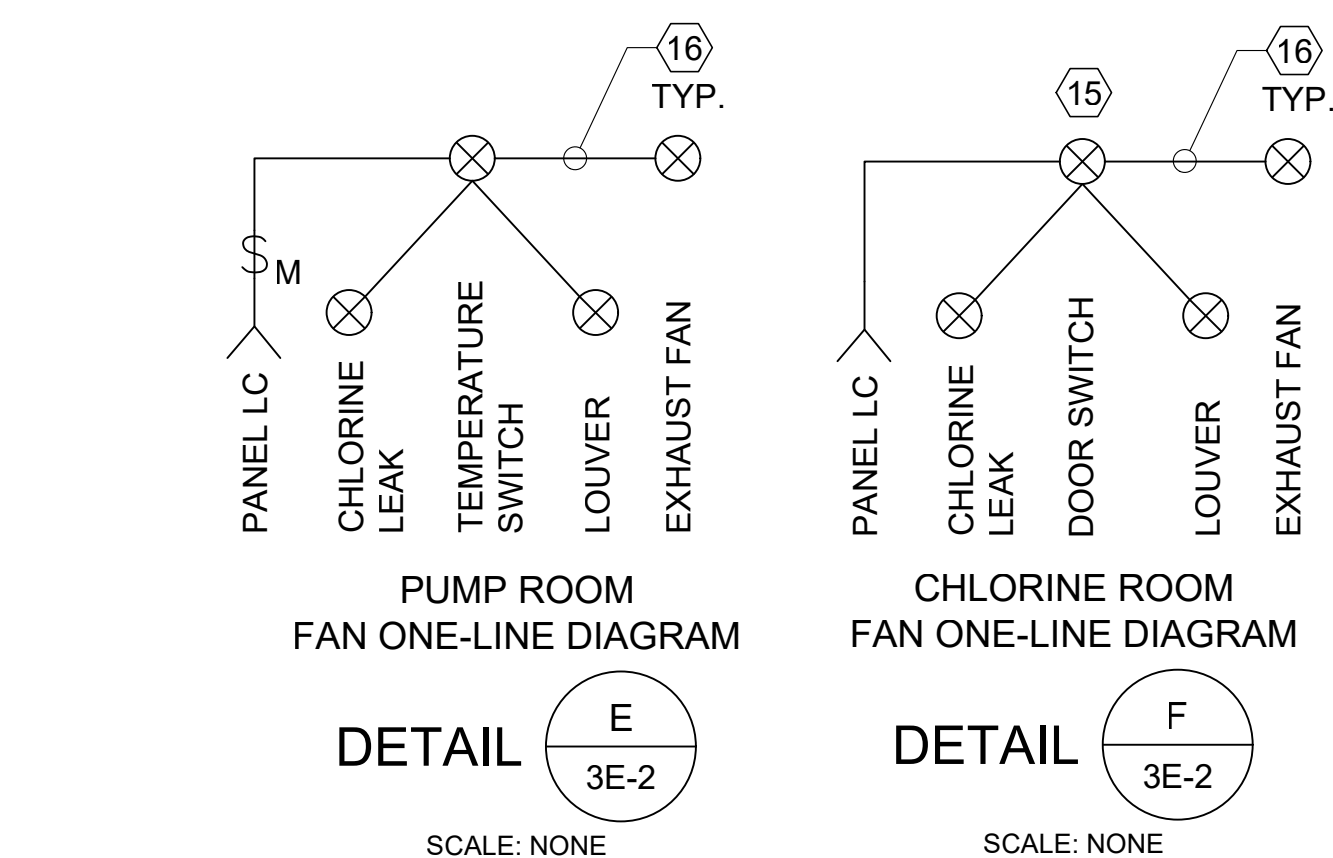
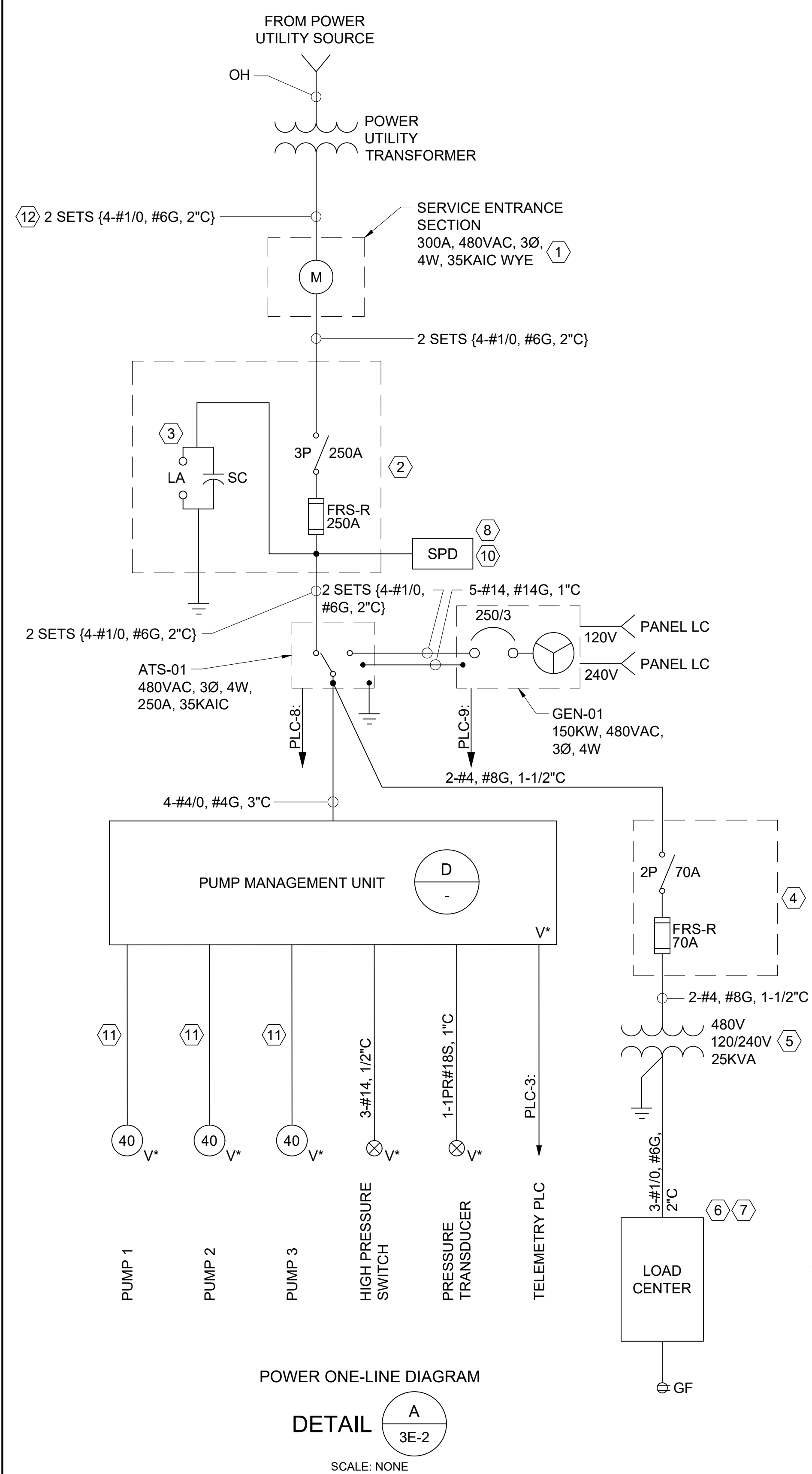
LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MODEL #
A1 1/25	LITHONIA WST LED - SURFACE MOUNT, RUGGED DIE-CAST ALUMINUM HOUSING, ACRYLIC LENS, HIGH-EFFECIENCY LED'S, ZERO UPLIGHT, NIGHTTIME FRIENDLY, IP65 RATED, CONSISTENT WITH LEED AND GREEN GLOBE CRITERIA FOR ELIMINATING WASTEFUL UPLIGHT, 120VAC	LITHONIA WST LED P2 3000 50K VF MVOLT DDBTXD
A2 1/31	LITHONIA FEM LED - SUSPENDED MOUNT, FIBERGLASS HOUSING, REPLACEABLE DIFFUSER LENS, HIGH-EFFICIENCY LED'S, 4000K CCT TEMPERATURE STANDARD, CSA CERTIFIED TO UL AND C-UL STANDARDS, 120 VAC	LITHONIA FEM L48 4000LM LPAFL MD MVOLT GZ10 40K 80CRI
EM1 1/3	LITHONIA ELM2 LED - SURFACE MOUNT, THERMOPLASTIC HOUSING, POLYCARBONATE LENS, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA ELM2 LED HO
EM2 1/1	LITHONIA LQM - SURFACE MOUNT, THERMOPLASTIC HOUSING, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA LQM S W 3 R 120/277 EL N



S:\SQJ\ATCH: D:engineer\Leupp-Dilkon\design.dwg

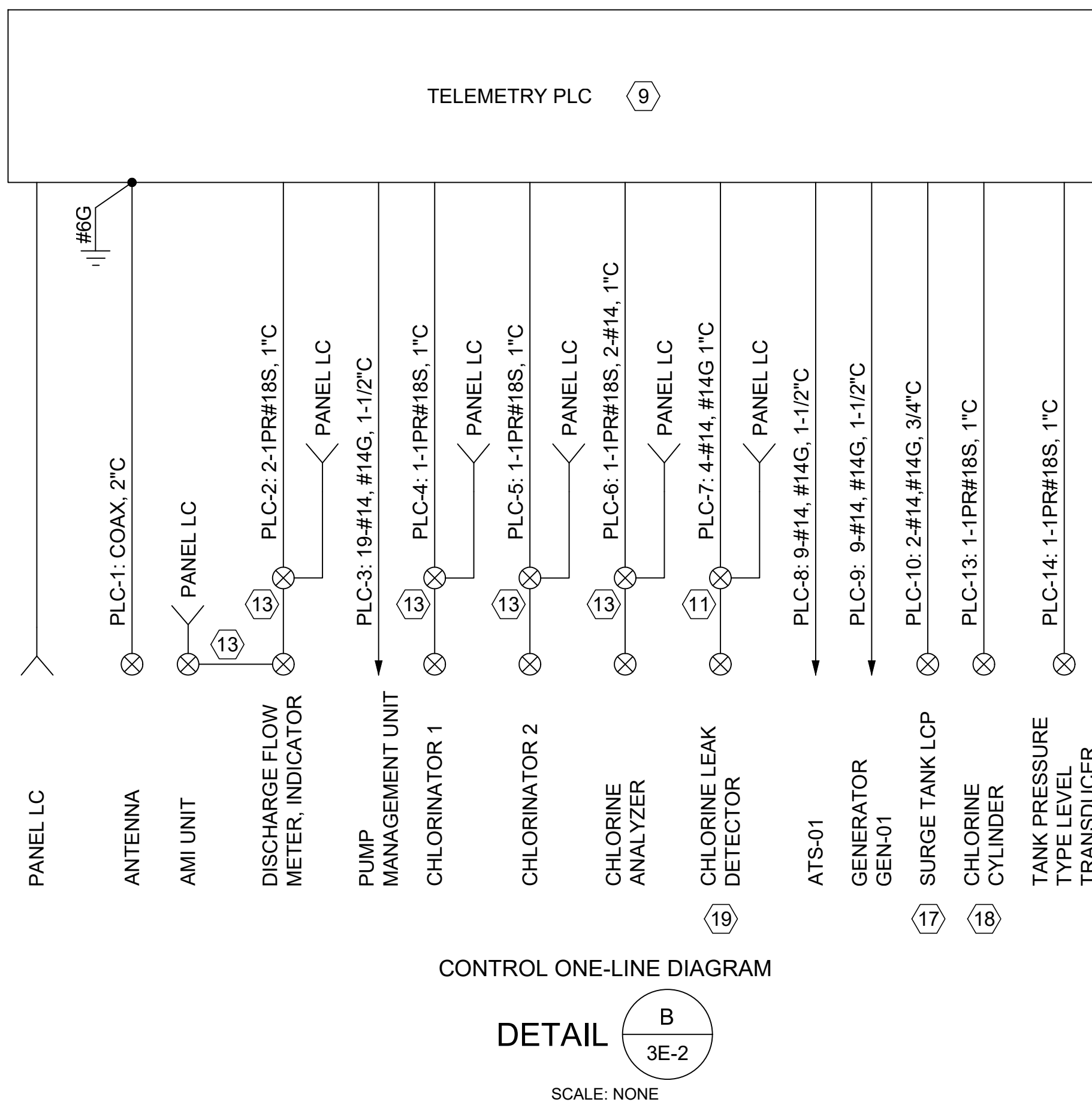
NO.	BY	DATE



LEUPP-DILKON PUMP STATION 0 PRELIMINARY LOAD SUMMARY AT 480 VAC				
LOAD DESCRIPTION	KVA	HP	CONNECTED FLA	RUNNING FLA
BOOSTER PUMP 1 VFD		40	52	52
BOOSTER PUMP 2 VFD		40	52	52
BOOSTER PUMP 3 VFD		40	52	
TRANSFORMER FOR PANEL-LC	25		52.1	52.1
SUBTOTAL:	25	120	208.1	156.1
PLUS 25%:			13	13
AMPERE TOTAL:			221.1	169.1
125 kW STANDBY GENERATOR AT 0.90 PF:	138.9			167
SIZING USING RUNNING LOAD DEMAND FACTOR PER NEC 220.50/430.26				

LOAD SUMMARY	
DETAIL D	3E-2
SCALE: NONE	

PANEL SCHEDULE	
DETAIL C	3E-2
SCALE: NONE	



GENERAL NOTES

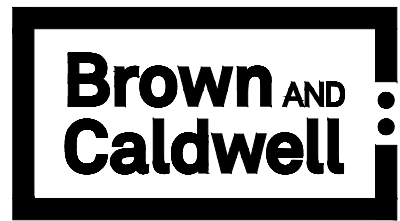
- POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY.
- GENERAL REQUIREMENTS: SPECIFICATION 16000.
- TESTING: SPECIFICATION 16030.
- ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
- SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 01014 AND 17900.

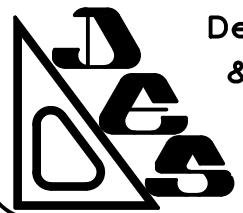
KEY NOTES

- SERVICE ENTRANCE METER SOCKET, NEMA 3R, EUSERC, TEST BLOCKS, SQUARE D OR SUN VALLEY.
- MAIN DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R, CLASS R FUSE REJECTION KIT, SQUARE D.
- LIGHTNING ARRESTOR, DELTA LA603.
- LOAD CENTER DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R SQUARE D MODEL QO.
- TRANSFORMER, TOTALLY ENCLOSED/ENCAPSULATED, 115 DEGREES C RISE, ACME T-2-53518-3S.
- LOAD CENTER, WITH GROUND BAR, NEMA 3R, SQUARE D QO.
- SURGE PROTECTIVE DEVICE, BUS CONNECTED, UL 1449 TYPE 2, 22.5KA SURGE, 1 PHASE 3-WIRE, SQUARE D QO2175SB.
- SURGE PROTECTIVE DEVICE, UL 1449 TYPE 1, 40KA SURGE, 3 PHASE 4-WIRE, SQUARE D SDSA3650.
- PROVIDE PER NTUA - TECHNICAL PROVISIONS 4.0 FOR MOTOR CONTROL CENTER AND TANK CONTROL PANEL - PLC CONTROL PANEL, INPUT/OUTPUT WIRING FOR GRUNDFOS BOOSTER PAQ.
- SPD. WIRE SIZE PER MANUFACTURER, 1-1/4"C
- CABLE PER MANUFACTURER, 1"C
- POWER UTILITY REQUIREMENTS FOR CONDUIT AND BURIAL PREVAIL IF DIFFERENT THAN SPECIFIED.
- 1-1PR #18S, 2-#14, 1" C
- 150 kW GENERATOR APPROXIMATED TO BE 125 kW AFTER ALTITUDE DERATING.
- DOOR SWITCH, ROCKER/ROLLER, NEMA 4X, 20 AMP, HONEYWELL, ALLEN-BRADLEY, OR EQUAL. (TYPICAL OF 2).
- 2-#12, #12G, 1/2"C
- TYPICAL OF 3. ONE FOR EACH SURGE TANK LCP.
- TYPICAL OF 3. ONE FOR EACH CHLORINE CYLINDER/BOTTLE.
- TYPICAL OF 4. ONE FOR CHLORINE ROOM, ONE FOR PUMP ROOM AND ONE FOR EACH CHLORINE VESSEL.
- ROUTE SPARE CONDUIT TO FLOW METER ON PIPE LOCATION FOR FUTURE USE.



D:\IRON: C:\Users\Public\Engineer\Leupp-Dilkon\Pump Station 1.dwg





DePAULI ENGINEERING
& SURVEYING, LLC.
CIVIL ENGINEERS
& LAND SURVEYORS

for
NAVAJO ENGINEERING &
CONSTRUCTION ATHORITY

for the
INDIAN HEALTH SERVICE
WINSLOW SERVICE UNIT
WINSLOW, ARIZONA

NO.	BY	DATE

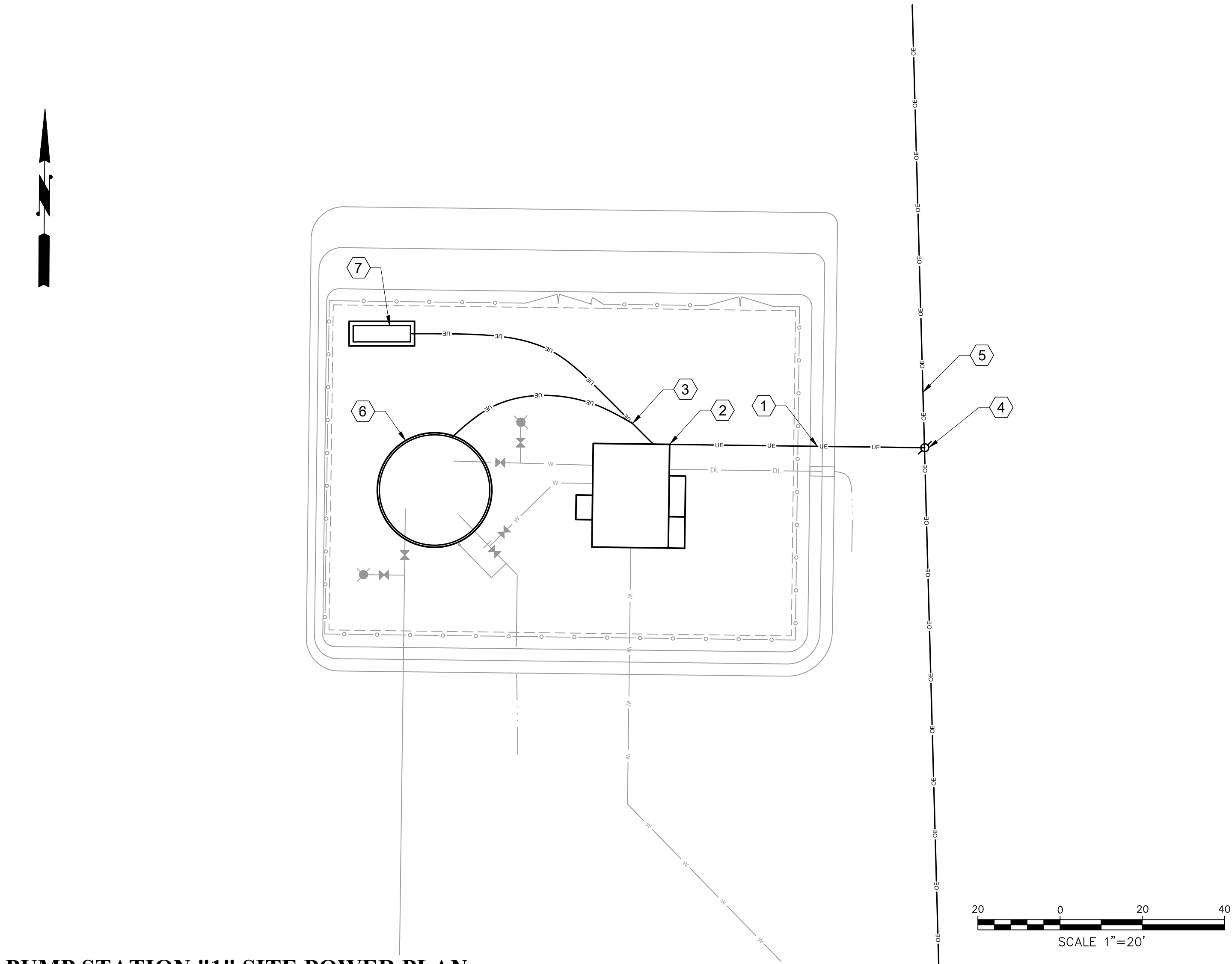
INDIAN HEALTH SERVICE AND
NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY
LEUPP-DILKON WATER SUPPLY SYSTEM

PUMP STATION "1"
SITE POWER PLAN



SCALE: SHOWN
DATE: DEC. 2021
DRAWN BY: DEE
CHECKED BY: HWP

SHEET
4E - 1



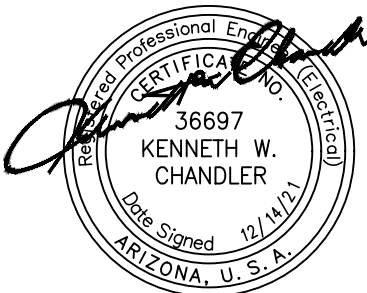
PUMP STATION "1" SITE POWER PLAN
SCALE 1"=20'

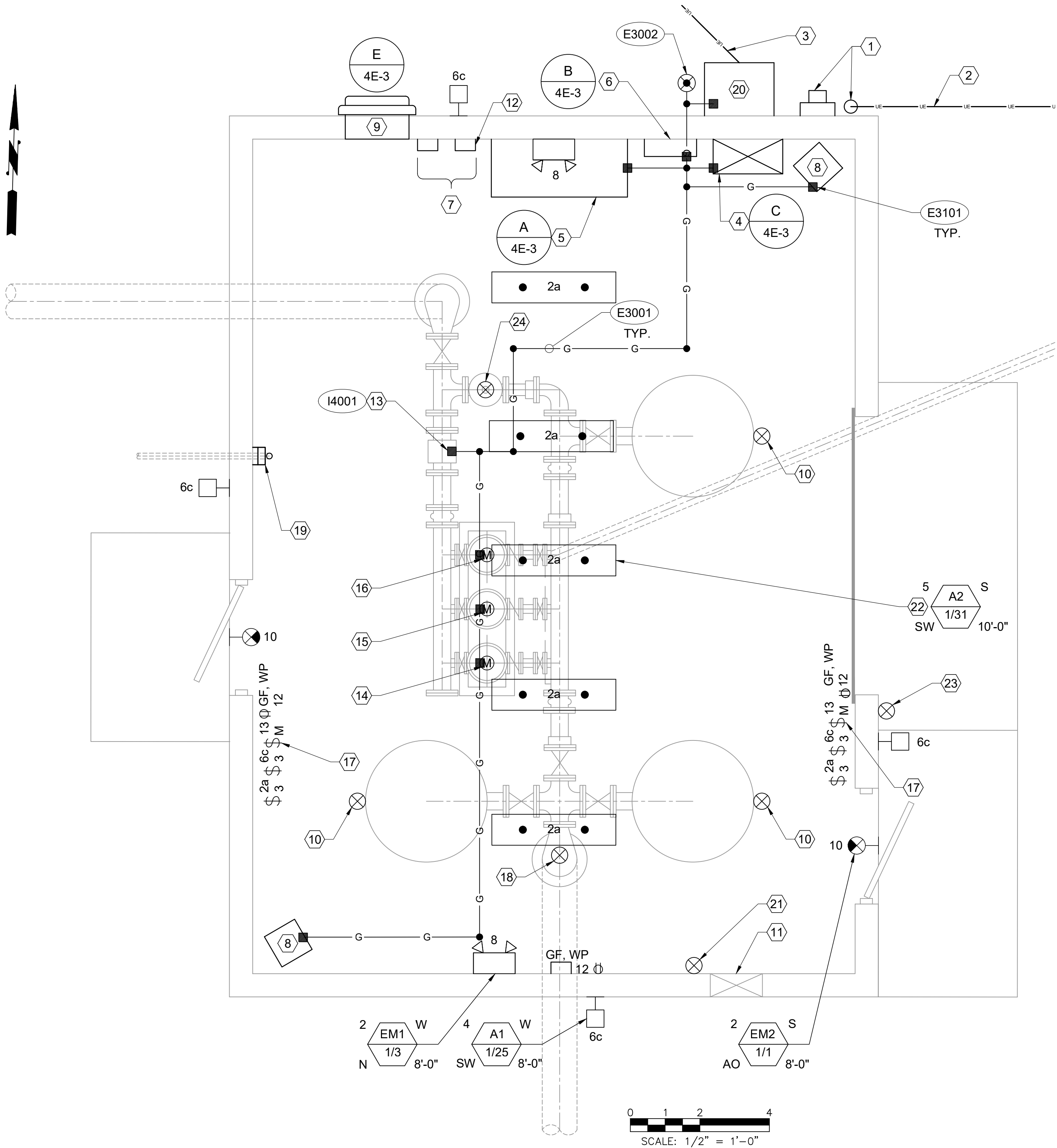
GENERAL NOTES

1. PROVIDE 480 VOLT 3-PHASE POWER UTILITY, ELECTRICAL, INSTRUMENTATION AND TELEMETRY EQUIPMENT.
2. POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY (NTUA), (928) 729-5721.

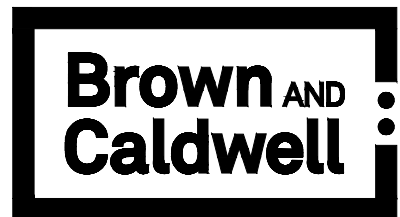
KEY NOTES

- 1 UNDERGROUND CIRCUITS PER DRAWING 4E-3, POWER UTILITY REQUIREMENTS TO PREVAIL.
- 2 PROVIDE SERVICE ENTRANCE SECTION METER, ARRESTOR ON OUTSIDE OF BUILDING.
- 3 UNDERGROUND ELECTRICAL AND CONTROL CIRCUITS PER DRAWING 4E-3.
- 4 POWER POLE, SERVICE POLE, DOWN GUY AND SERVICE LINES (OVERHEAD OR UNDERGROUND) BY NTUA.
- 5 OVERHEAD ELECTRICAL LINE BY NTUA.
- 6 STORAGE TANK
- 7 STANDBY GENERATOR GEN-01





PUMP STATION "1" POWER & LIGHTING PLAN
SCALE: 1/2"=1'



GENERAL NOTES

1. GENERAL REQUIREMENTS: SPECIFICATION 16000.
2. TESTING: SPECIFICATION 16030.
3. ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
4. CIRCUITS: DRAWING 4E-3.
5. SUBMIT ELECTRICAL EQUIPMENT LAYOUT PRIOR TO CONDUIT ROUGH-IN.

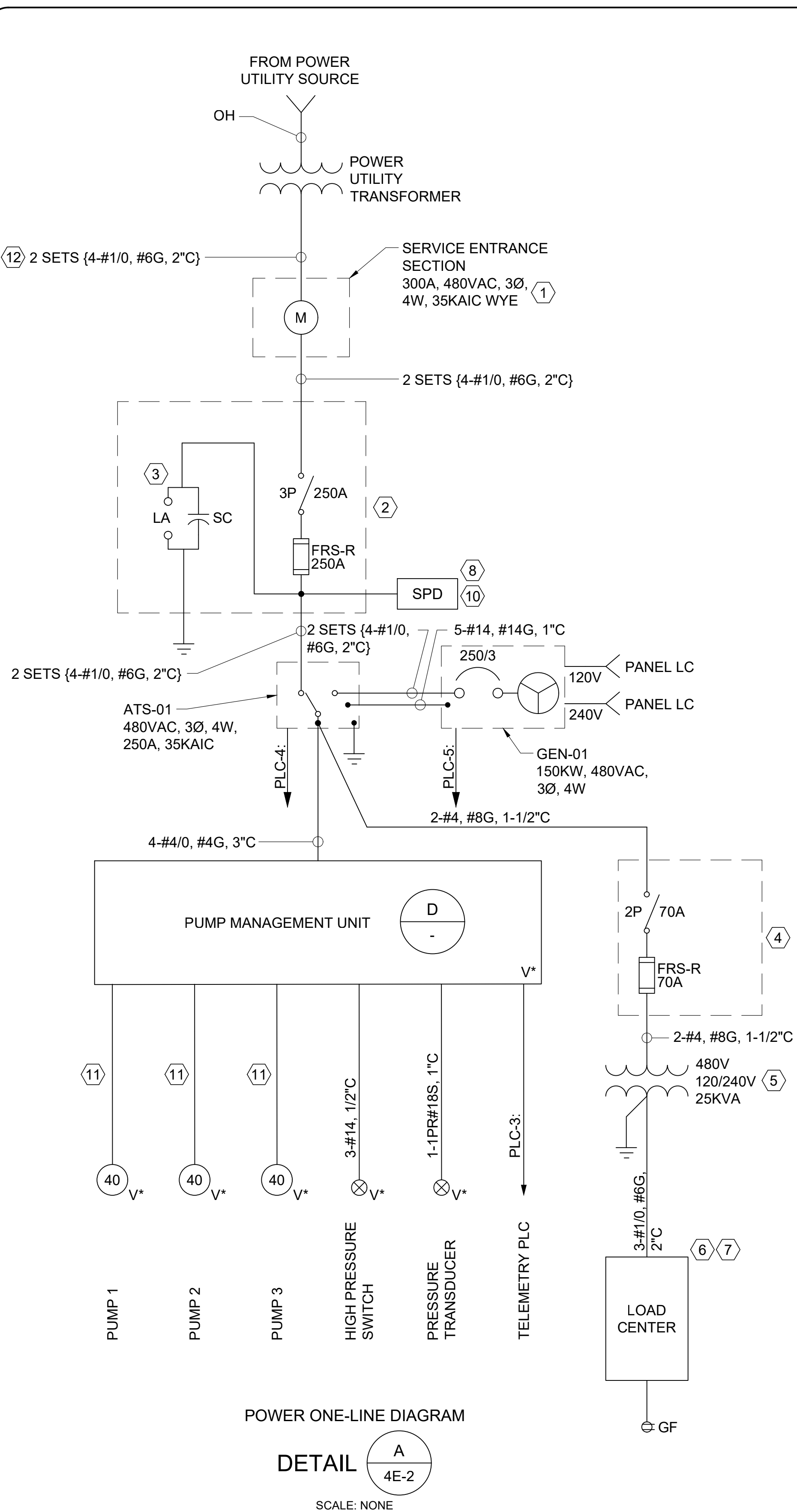
KEY NOTES

- 1 SERVICE ENTRANCE SECTION, WEATHERHEAD, METER AND DISCONNECT.
- 2 UNDERGROUND CIRCUITS PER DRAWING 4E-3, POWER UTILITY REQUIREMENTS TO PREVAIL.
- 3 UNDERGROUND ELECTRICAL AND CONTROL CIRCUITS TO TANK AND GENERATOR PER DRAWING 4E-3.
- 4 TRANSFORMER AND LOAD CENTER
- 5 PUMP MANAGEMENT UNIT
- 6 TELEMETRY PLC
- 7 CONTROL AND DISPLAY AREA, REFER TO SHEET 4-8.
- 8 UNIT HEATER
- 9 PUMP ROOM EXHAUST FAN
- 10 SURGE TANK MONITOR LCP
- 11 MOTOR OPERATED INLET LOUVER
- 12 FLOW INDICATOR, AMI UNIT
- 13 FLOW METER
- 14 PUMP 1
- 15 PUMP 2
- 16 PUMP 3
- 17 MANUAL MOTOR SWITCH FOR FAN
- 18 PRESSURE TRANSDUCER
- 19 PRESSURE TYPE LEVEL TRANSDUCER FROM TANK
- 20 ATS-01
- 21 AIR TEMPERATURE SENSOR/SWITCH
- 22 SUSPEND LIGHT FIXTURE FROM ROOF TRUSS WITH CHAIN. MOUNTING METHOD SUBJECT TO CHANGE DEPENDING ON ROOF SYSTEM.
- 23 PHOTOCELL FOR EXTERIOR LIGHTS.
- 24 HIGH PRESSURE SWITCH

LUMINAIRE SCHEDULE		
TYPE	DESCRIPTION	MODEL #
A1 1/25	LITHONIA WST LED - SURFACE MOUNT, RUGGED DIE-CAST ALUMINUM HOUSING, ACRYLIC LENS, HIGH-EFFECIENCY LED'S, ZERO UPLIGHT, NIGHTTIME FRIENDLY, IP65 RATED, CONSISTENT WITH LEED AND GREEN GLOBE CRITERIA FOR ELIMINATING WASTEFUL UPLIGHT, 120VAC	LITHONIA WST LED P2 3000 50K VF MVOLT DDBTXD
A2 1/31	LITHONIA FEM LED - SUSPENDED MOUNT, FIBERGLASS HOUSING, REPLACEABLE DIFFUSER LENS, HIGH-EFFICIENCY LED'S, 4000K CCT TEMPERATURE STANDARD, CSA CERTIFIED TO UL AND C-UL STANDARDS, 120 VAC	LITHONIA FEM L48 4000LM LPAFL MD MVOLT GZ10 40K 80CRI
EM1 1/3	LITHONIA ELM2 LED - SURFACE MOUNT, THERMOPLASTIC HOUSING, POLYCARBONATE LENS, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA ELM2 LED HO
EM2 1/1	LITHONIA LQM - SURFACE MOUNT, THERMOPLASTIC HOUSING, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA LQM S W 3 R 120/277 EL N



D:\IRON: C:\Users\Public\Engineer\Leupp-Dilkon\Pump Station 1.dwg



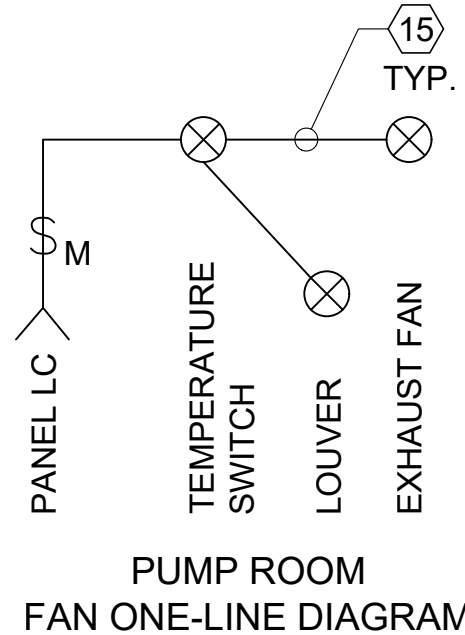
POWER ONE-LINE DIAGRAM

DETAIL **A**
4E-2
SCALE: NONE

SINGLE PHASE PANEL: LOAD CENTER (LC)																
VOLTAGE, PHASE, & WIRE:			120 / 240			VAC, 1 PHASE, 3 WIRE			LOCATION:			LEUPP-DILKON PUMP STATION 1				
BUS SIZE:			100			AMPERE			ENCLOSURE:			NEMA-3R				
MAIN SIZE:			80			AMPERE			MOUNTING:			WALL				
MAIN TYPE:						CIRCUIT BREAKER			BUS BRACING:			22 K AIC				
BREAKER TYPE:						PLUG-ON			FED FROM:			SES OUTDOORS				
CIRCUIT TITLE / LOAD DESCRIPTION	AWG WIRE SIZE	RACE-WAY SIZE	BREAKER			LOAD (VA)		LOAD (VA)		BREAKER			AWG WIRE SIZE	RACE-WAY SIZE	CIRCUIT TITLE / LOAD DESCRIPTION	
			CKT NO.	AMP	POLE	PHASE A	PHASE B	PHASE A	PHASE B	POLE	AMP	CKT NO.				
TELEMETRY PLC CONTROL PANEL	2-12, 12G	1/2	1	15	1	180			194	1	15	2	2-12, 12G	1/2	PUMP ROOM LIGHTING	
FLOW METER	2-12, 12G	1/2	3	15	1		10	720		1	15	4	2-12, 12G	1/2	GENERATOR BATTERY CHARGER	
FLOW INDICATOR	2-12, 12G	1/2	5	15	1	10			125	1	15	6	2-12, 12G	1/2	EXTERIOR LIGHTING	
FLOW AMI UNIT	2-12, 12G	1/2	7	15	1		10	7.5		1	15	8	2-12, 12G	1/2	EMERGENCY LIGHTING	
GENERATOR BLOCK HEATER	2-12, 12G	1/2	9	15	2	1250			2.5	1	15	10	2-12, 12G	1/2	EXIT LIGHTING	
		11				1250	720		1	15	12	2-12, 12G	1/2	RECEPTACLES		
PUMP ROOM EXHAUST FAN/LOUVER	2-12, 12G	1/2	13	15	1	750			180	1	15	14	2-12, 12G	1/2	SURGE TANK 1 MONITORING LCP	
PUMP ROOM HEATER 1	2-12, 12G	1/2	15				1500			1	15	16	2-12, 12G	1/2	SURGE TANK 2 MONITORING LCP	
			17	20	2	1500			180	1	15	18	2-12, 12G	1/2	SURGE TANK 3 MONITORING LCP	
PUMP ROOM HEATER 2	2-12, 12G	1/2	19	20	2		1500			1	15	20			SPARE	
			21			1500				1	15	22			SPARE	
SPARE CONDUIT		1/2	23	15	1					2	-	24				
SPARE			25	15	1							26	PER MFR.	-	SURGE PROTECTOR	
	COLUMN	TOTALS:				5190	4270	1628	682							
						PHASE-A LOAD (VA):		5872								
						PHASE-B LOAD (VA):		5898								
						TOTAL LOAD (VA)=		11769		I (amp)		49.0				
* SURGE PROTECTOR CIRCUIT BREAKER SIZE PER MFR.																

PANEL SCHEDULE

DETAIL **C**
4E-2
SCALE: NONE

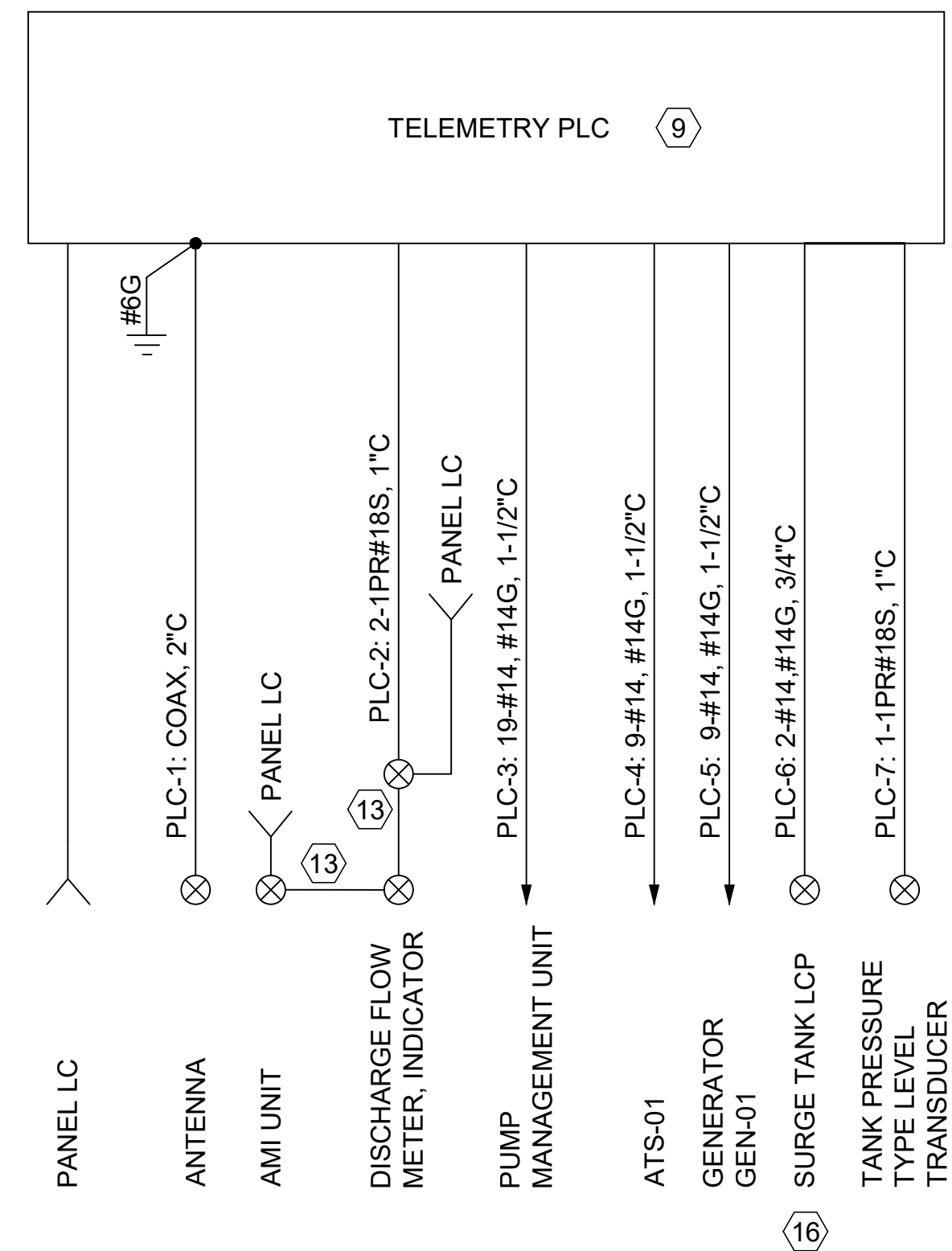


DETAIL **E**
4E-2
SCALE: NONE

LEUPP-DILKON PUMP STATION 1				
PRELIMINARY				
LOAD SUMMARY AT 480 VAC				
LOAD DESCRIPTION	KVA	HP	CONNECTED FLA	RUNNING FLA
BOOSTER PUMP 1 VFD		40	52	52
BOOSTER PUMP 2 VFD		40	52	52
BOOSTER PUMP 3 VFD		40	52	52
TRANSFORMER FOR PANEL-A	25		52.1	52.1
SUBTOTAL:	25	120	208.1	156.1
PLUS 25%:			13	13
AMPERE TOTAL:			221.1	169.1
125 kW STANDBY GENERATOR AT 0.90 PF:	138.9			167
SIZING USING RUNNING LOAD DEMAND FACTOR PER NEC 220.50/430.26				

LOAD SUMMARY

DETAIL **D**
-
SCALE: NONE



CONTROL ONE-LINE DIAGRAM

DETAIL **B**
4E-2
SCALE: NONE

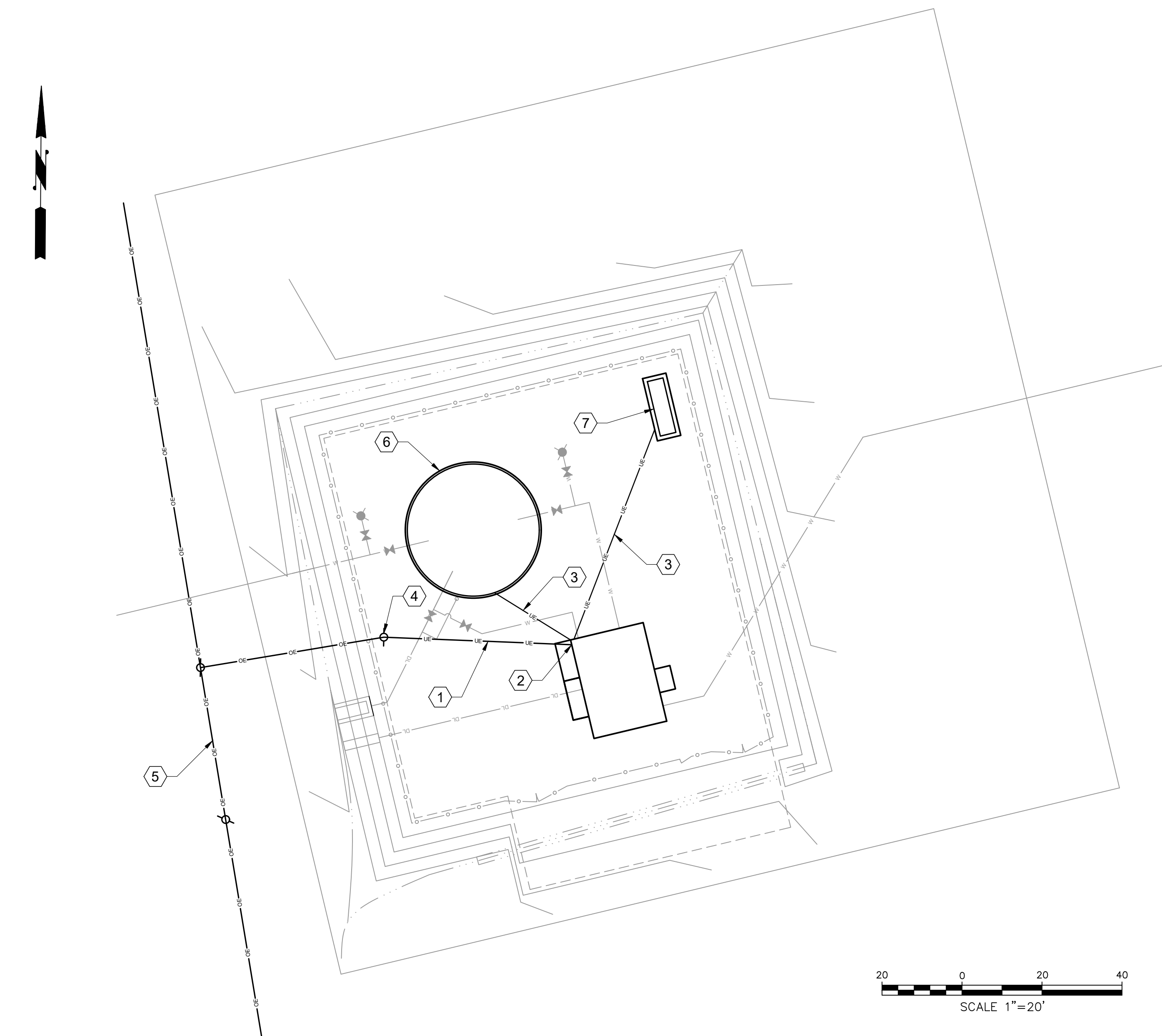
GENERAL NOTES

- POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY.
- GENERAL REQUIREMENTS: SPECIFICATION 16000.
- TESTING: SPECIFICATION 16030.
- ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
- SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 01014 AND 17900.

KEY NOTES

- SERVICE ENTRANCE METER SOCKET, NEMA 3R, EUSERC, TEST BLOCKS, SQUARE D OR SUN VALLEY.
- MAIN DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R, CLASS R FUSE REJECTION KIT, SQUARE D.
- LIGHTNING ARRESTOR, DELTA LA603.
- LOAD CENTER DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R SQUARE D MODEL QO.
- TRANSFORMER, TOTALLY ENCLOSED/ENCAPSULATED, 115 DEGREES C RISE, ACME T-2-53518-3S.
- LOAD CENTER, WITH GROUND BAR, NEMA 3R, SQUARE D QO.
- SURGE PROTECTIVE DEVICE, BUS CONNECTED, UL 1449 TYPE 2, 22.5KA SURGE, 1 PHASE 3-WIRE, SQUARE D QO2175SB.
- SURGE PROTECTIVE DEVICE, UL 1449 TYPE 1, 40KA SURGE, 3 PHASE 4-WIRE, SQUARE D SDSA3650.
- PROVIDE PER NTUA - TECHNICAL PROVISIONS 4.0 FOR MOTOR CONTROL CENTER AND TANK CONTROL PANEL - PLC CONTROL PANEL, INPUT/OUTPUT WIRING FOR GRUNDFOS BOOSTER PAQ.
- SPD. WIRE SIZE PER MANUFACTURER, 1-1/4"C
- CABLE PER MANUFACTURER, 2"C
- POWER UTILITY REQUIREMENTS FOR CONDUIT AND BURIAL PREVAIL IF DIFFERENT THAN SPECIFIED.
- 1-1PR #18S, 2-#14, 1" C
- 150 kW GENERATOR APPROXIMATED TO BE 125 kW AFTER ALTITUDE DERATING.
- 2-#12, #12G, 1/2"C
- TYPICAL OF 3. ONE FOR EACH SURGE TANK LCP.
- ROUTE SPARE CONDUIT TO FLOW METER ON PIPE LOCATION FOR FUTURE USE.





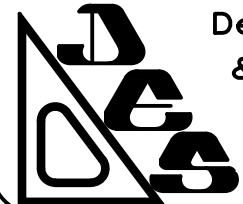
PUMP STATION "2" SITE POWER PLAN
SCALE 1"=20'

GENERAL NOTES

1. PROVIDE 480 VOLT 3-PHASE POWER UTILITY, ELECTRICAL, INSTRUMENTATION AND TELEMTRY EQUIPMENT.
2. POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY (NTUA), (928) 729-5721.

KEY NOTES

- 1 UNDERGROUND CIRCUITS PER DRAWING 5E-3, POWER UTILITY REQUIREMENTS TO PREVAIL.
- 2 PROVIDE SERVICE ENTRANCE SECTION METER, ARRESTOR ON OUTSIDE OF BUILDING.
- 3 UNDERGROUND ELECTRICAL AND CONTROL CIRCUITS PER DRAWING 5E-3.
- 4 POWER POLE, SERVICE POLE, DOWN GUY AND SERVICE LINES (OVERHEAD OR UNDERGROUND) BY NTUA.
- 5 OVERHEAD ELECTRICAL LINE BY NTUA.
- 6 STORAGE TANK
- 7 STANDBY GENERATOR GEN-01



DePAULI ENGINEERING
& SURVEYING, LLC.
CIVIL ENGINEERS
& LAND SURVEYORS

for
**NAVAJO ENGINEERING &
CONSTRUCTION AUTHORITY**

for the
**INDIAN HEALTH SERVICE
WINSLOW SERVICE UNIT
WINSLOW, ARIZONA**

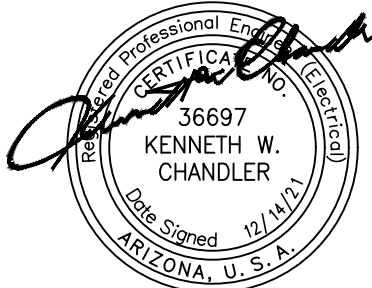
NO.	BY	DATE

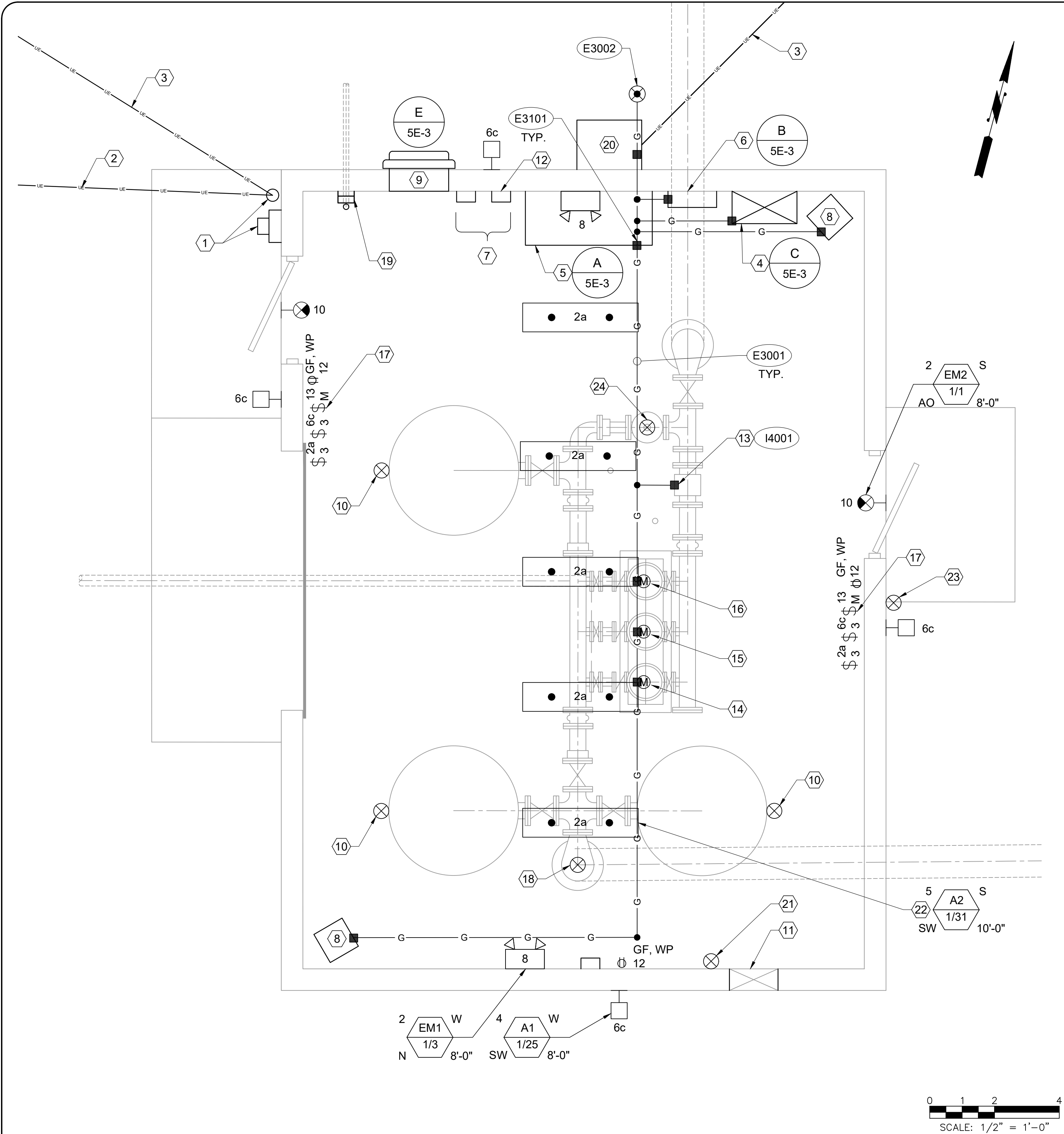
**INDIAN HEALTH SERVICE AND
NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY
LEUPP-DILKON WATER SUPPLY SYSTEM**

**PUMP STATION "2"
SITE POWER PLAN**

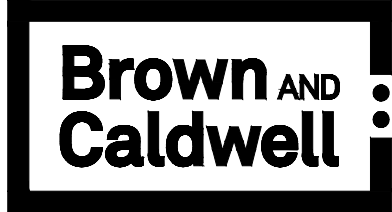
SCALE:	SHOWN
DATE:	DEC. 2021
DRAWN BY:	DEE
CHECKED BY:	HWP

**SHEET
5E - 1**





PUMP STATION "2" POWER & LIGHTING PLAN
SCALE: 1/2"=1'



GENERAL NOTES

- GENERAL REQUIREMENTS: SPECIFICATION 16000.
- TESTING: SPECIFICATION 16030.
- ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
- CIRCUITS: DRAWING 5E-3.
- SUBMIT ELECTRICAL EQUIPMENT LAYOUT PRIOR TO CONDUIT ROUGH-IN.

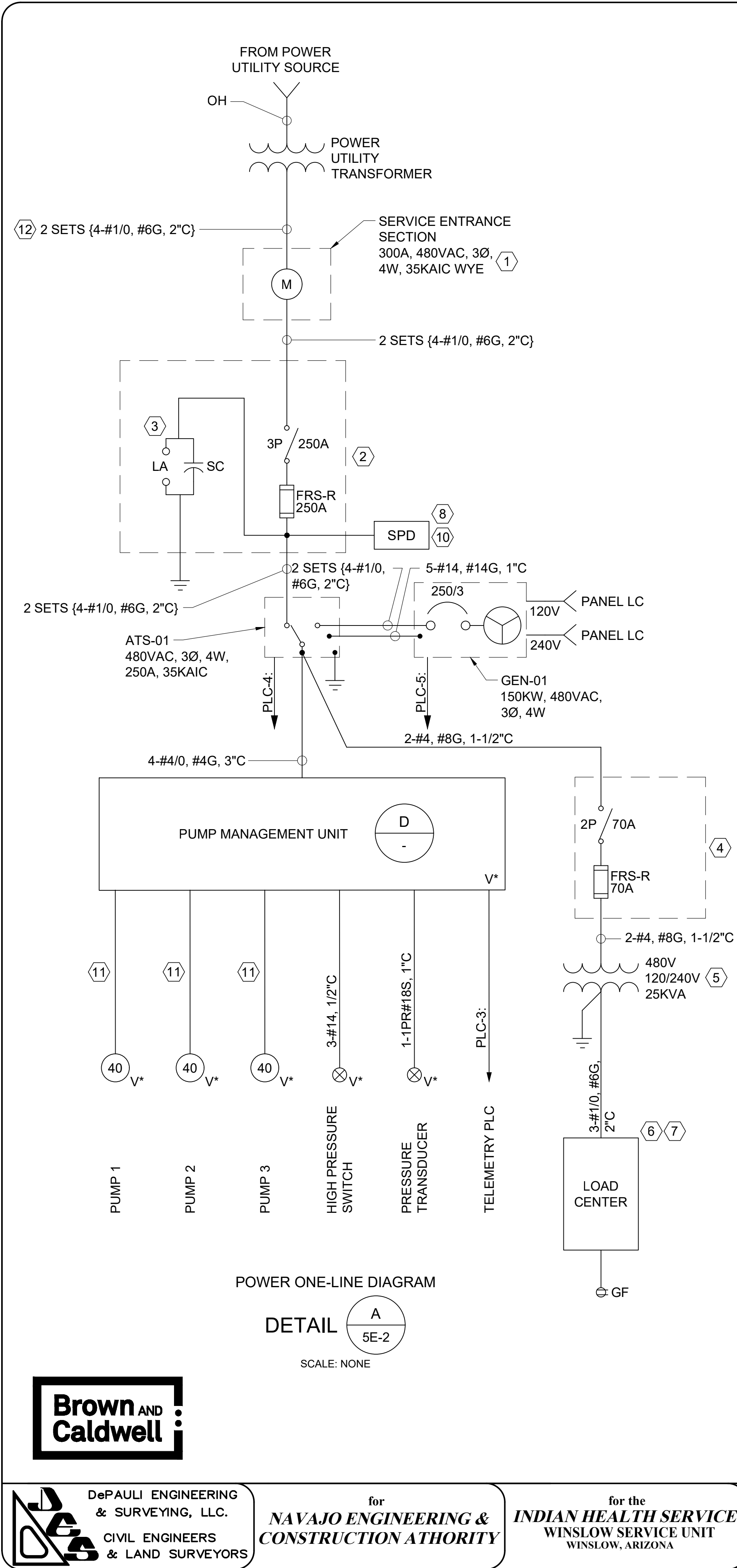
KEY NOTES

- SERVICE ENTRANCE SECTION, WEATHERHEAD, METER AND DISCONNECT.
- UNDERGROUND CIRCUITS PER DRAWING 5E-3, POWER UTILITY REQUIREMENTS TO PREVAIL.
- UNDERGROUND ELECTRICAL AND CONTROL CIRCUITS TO TANK AND GENERATOR PER DRAWING 5E-3.
- TRANSFORMER AND LOAD CENTER
- PUMP MANAGEMENT UNIT
- TELEMETRY PLC
- CONTROL AND DISPLAY AREA, REFER TO SHEET 5-8.
- UNIT HEATER
- PUMP ROOM EXHAUST FAN
- SURGE TANK MONITOR LCP
- MOTOR OPERATED INLET LOUVER
- FLOW INDICATOR, AMI UNIT
- FLOW METER
- PUMP 1
- PUMP 2
- PUMP 3
- MANUAL MOTOR SWITCH FOR FAN
- PRESSURE TRANSDUCER
- PRESSURE TYPE LEVEL TRANSDUCER FROM TANK
- ATS-01
- AIR TEMPERATURE SENSOR/SWITCH
- SUSPEND LIGHT FIXTURE FROM ROOF TRUSS WITH CHAIN. MOUNTING METHOD SUBJECT TO CHANGE DEPENDING ON ROOF SYSTEM.
- PHOTOCELL FOR EXTERIOR LIGHTS
- HIGH PRESSURE SWITCH

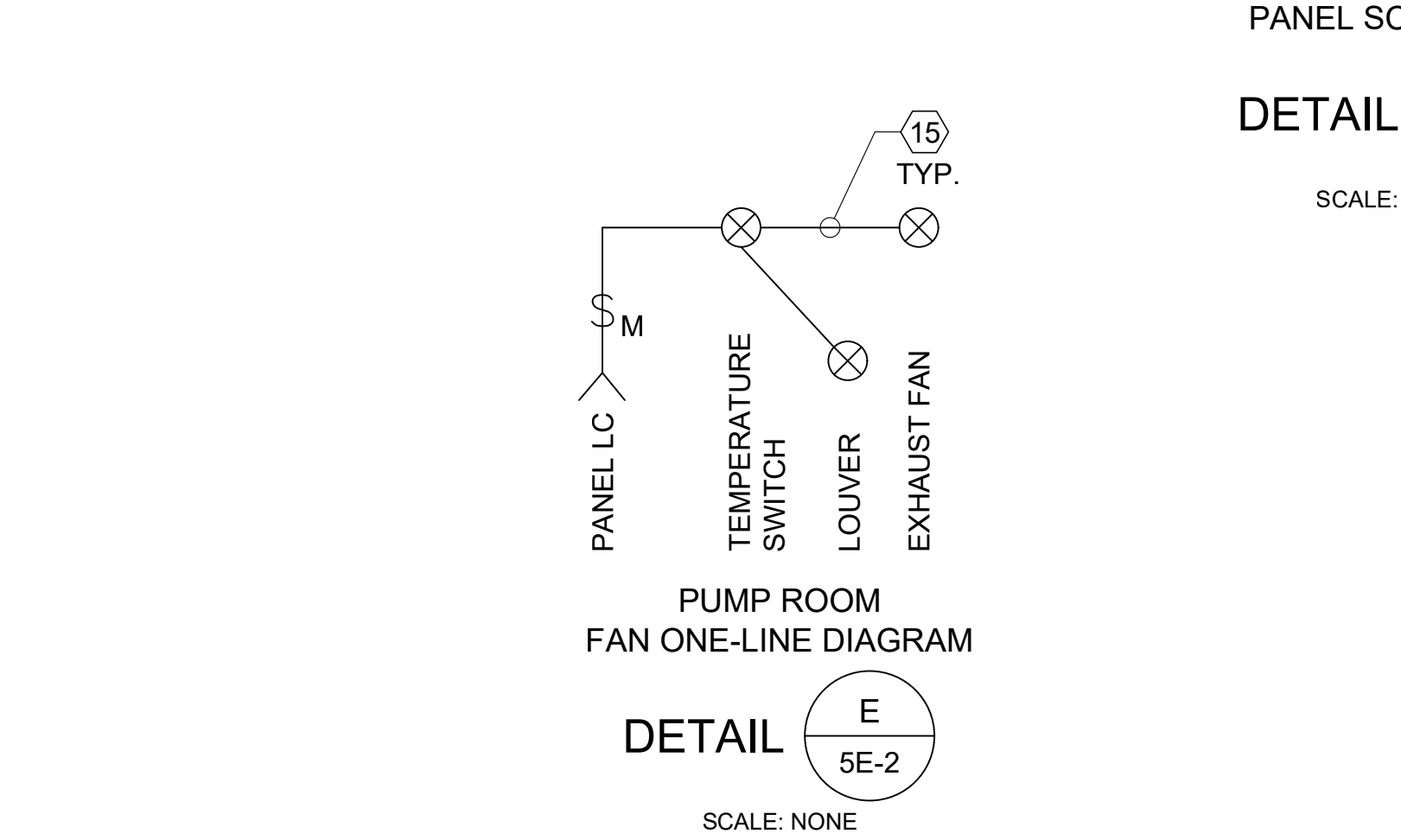
LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MODEL #
A1 1/25	LITHONIA WST LED - SURFACE MOUNT, RUGGED DIE-CAST ALUMINUM HOUSING, ACRYLIC LENS, HIGH-EFFECIENCY LED'S, ZERO UPLIGHT, NIGHTTIME FRIENDLY, IP65 RATED, CONSISTENT WITH LEED AND GREEN GLOBE CRITERIA FOR ELIMINATING WASTEFUL UPLIGHT, 120VAC	LITHONIA WST LED P2 3000 50K VF MVOLT DDBTXD
A2 1/31	LITHONIA FEM LED - SUSPENDED MOUNT, FIBERGLASS HOUSING, REPLACEABLE DIFFUSER LENS, HIGH-EFFICIENCY LED'S, 4000K CCT TEMPERATURE STANDARD, CSA CERTIFIED TO UL AND C-UL STANDARDS, 120 VAC	LITHONIA FEM L48 4000LM LPAFL MD MVOLT GZ10 40K 80CRI
EM1 1/3	LITHONIA ELM2 LED - SURFACE MOUNT, THERMOPLASTIC HOUSING, POLYCARBONATE LENS, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA ELM2 LED HO
EM2 1/1	LITHONIA LQM - SURFACE MOUNT, THERMOPLASTIC HOUSING, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA LQM S W 3 R 120/277 EL N

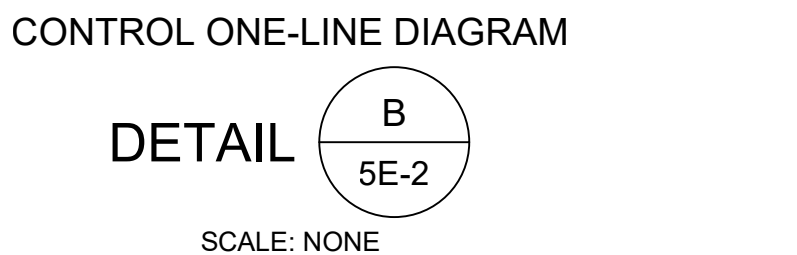
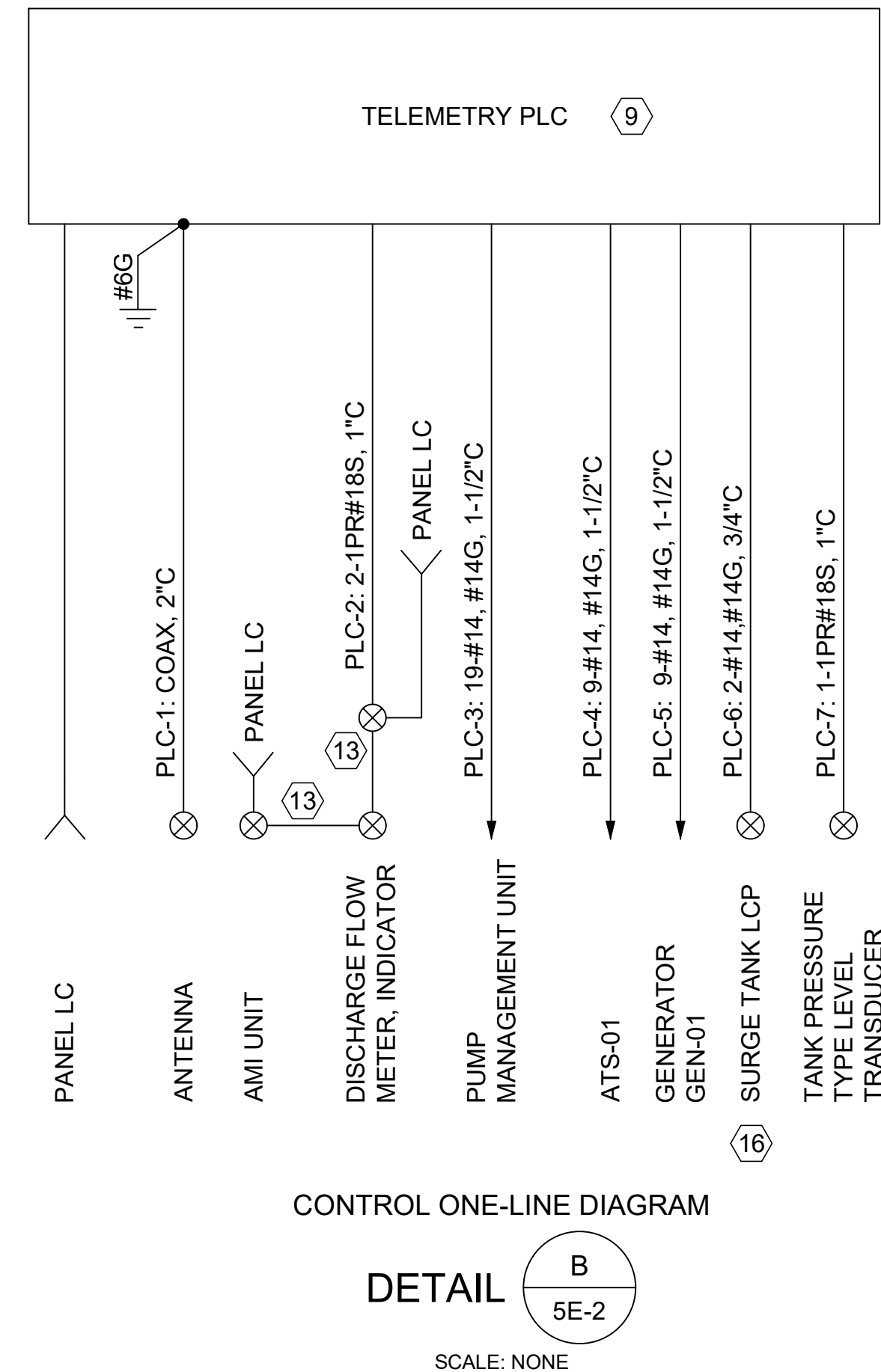
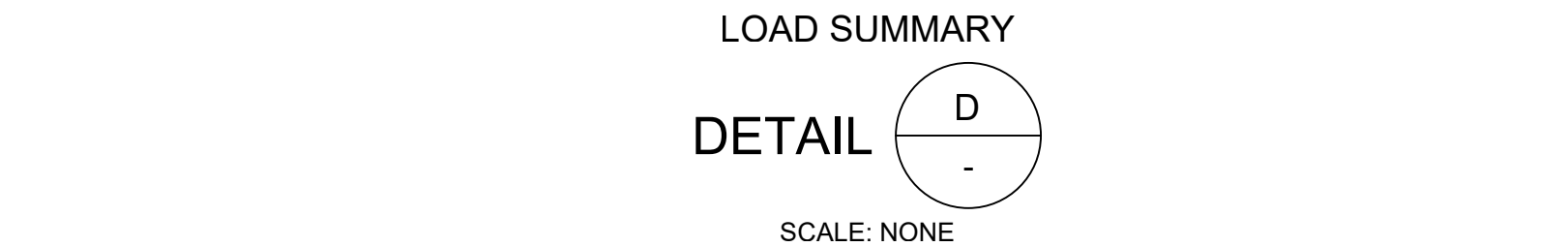




SINGLE PHASE PANEL: LOAD CENTER (LC)															
VOLTAGE, PHASE, & WIRE: 120 / 240				VAC, 1 PHASE, 3 WIRE				LOCATION: ENCLOSURE: MOUNTING: BUS BRACING: FED FROM:				LEUPP-DILKON PUMP STATION 2 NEMA-3R WALL 22 KAIC SES OUTDOORS			
BUS SIZE: 100				AMPERE											
MAIN TYPE: 80				AMPERE											
MAIN TYPE:				CIRCUIT BREAKER											
BREAKER TYPE:				PLUG-ON											
CIRCUIT TITLE / LOAD DESCRIPTION	AWG WIRE SIZE	RACE-WAY SIZE	BREAKER			LOAD (VA)		LOAD (VA)		BREAKER		AWG WIRE SIZE	RACE-WAY SIZE	CIRCUIT TITLE / LOAD DESCRIPTION	
			CKT NO.	AMP	POLE	PHASE A	PHASE B	PHASE B	PHASE A	POLE	AMP				
TELEMETRY PLC CONTROL PANEL	2-12, 12G	1/2	1	15	1	180			194	1	15	2	2-12, 12G	1/2	PUMP ROOM LIGHTING
FLOW METER	2-12, 12G	1/2	3	15	1		10	720		1	15	4	2-12, 12G	1/2	GENERATOR BATTERY CHARGER
FLOW INDICATOR	2-12, 12G	1/2	5	15	1	10			125	1	15	6	2-12, 12G	1/2	EXTERIOR LIGHTING
FLOW AMI UNIT	2-12, 12G	1/2	7	15	1		10	7.5		1	15	8	2-12, 12G	1/2	EMERGENCY LIGHTING
GENERATOR BLOCK HEATER	2-12, 12G	1/2	9	15	2	1250			2.5	1	15	10	2-12, 12G	1/2	EXIT LIGHTING
			11				1250	720		1	15	12	2-12, 12G	1/2	RECEPTACLES
PUMP ROOM EXHAUST FAN/LOUVER	2-12, 12G	1/2	13	15	1	750			180	1	15	14	2-12, 12G	1/2	SURGE TANK 1 MONITORING LCP
PUMP ROOM HEATER 1	2-12, 12G	1/2	15	20	2		1500	180		1	15	16	2-12, 12G	1/2	SURGE TANK 2 MONITORING LCP
			17			1500			180	1	15	18	2-12, 12G	1/2	SURGE TANK 3 MONITORING LCP
PUMP ROOM HEATER 2	2-12, 12G	1/2	19	20	2		1500			1	15	20			SPARE
			21							1	15	22			SPARE
SPARE CONDUIT			23	15	1										
SPARE			25	15	1					2	-	24			
			25									26			
	COLUMN	TOTALS:				5190	4270	1628	682				PER MFR.	-	SURGE PROTECTOR
						PHASE-A LOAD (VA):		5872							
						PHASE-B LOAD (VA):		5898							
						TOTAL LOAD (VA)=		11769		I (amp)		49.0			
* SURGE PROTECTOR CIRCUIT BREAKER SIZE PER MFR.															

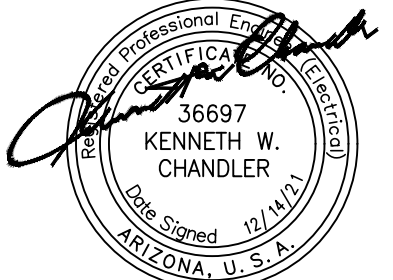


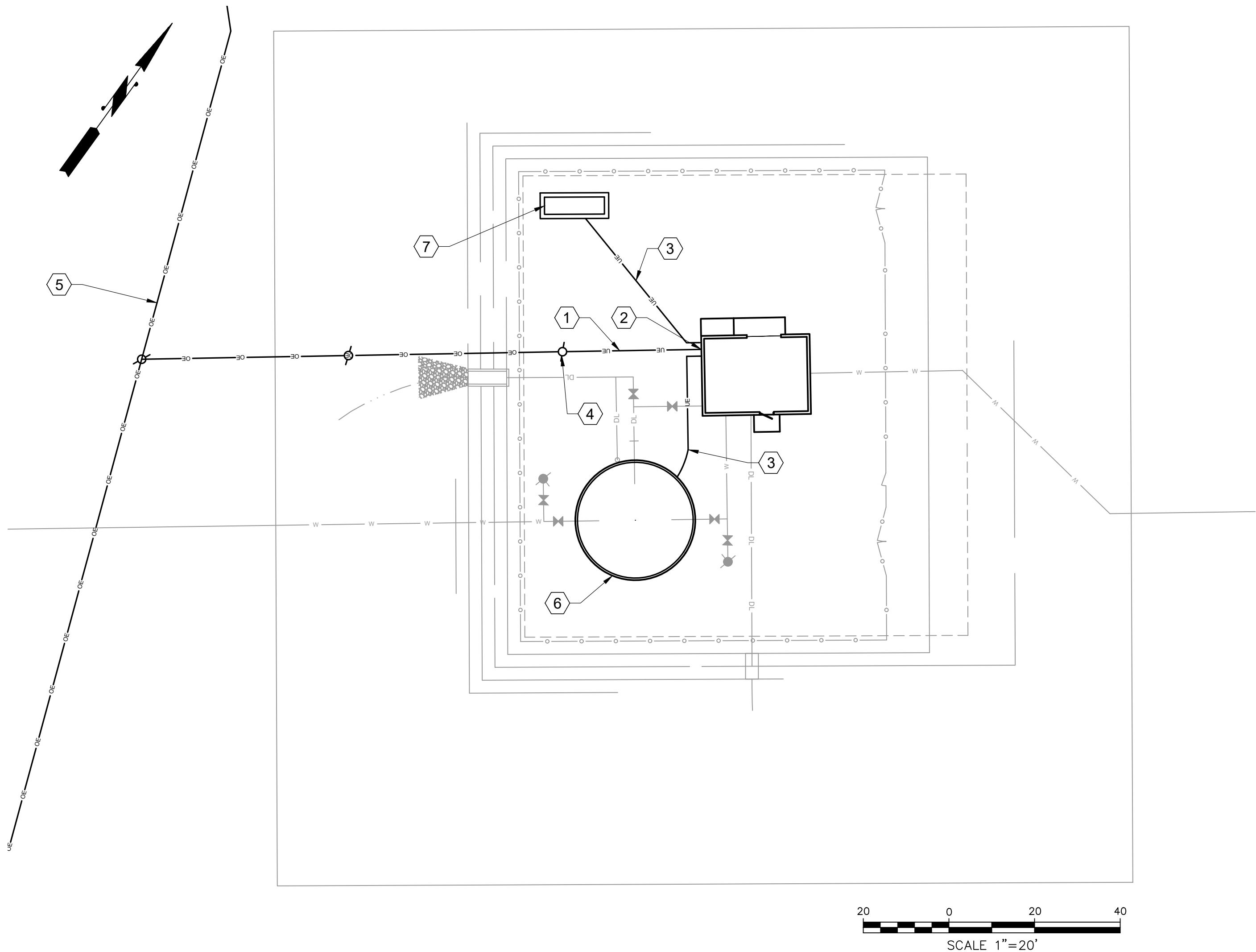
LEUPP-DILKON PUMP STATION 2 PRELIMINARY LOAD SUMMARY AT 480 VAC				
LOAD DESCRIPTION	KVA	HP	CONNECTED FLA	RUNNING FLA
BOOSTER PUMP 1 VFD		40	52	52
BOOSTER PUMP 2 VFD		40	52	52
BOOSTER PUMP 3 VFD		40	52	
TRANSFORMER FOR PANEL-A	25		52.1	52.1
SUBTOTAL:	25	120	208.1	156.1
PLUS 25%:			13	13
AMPERE TOTAL:			221.1	169.1
125 kW STANDBY GENERATOR AT 0.90 PF:	138.9			167
SIZING USING RUNNING LOAD DEMAND FACTOR PER NEC 220.50/430.26				



- GENERAL NOTES
- POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY.
 - GENERAL REQUIREMENTS: SPECIFICATION 16000.
 - TESTING: SPECIFICATION 16030.
 - ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
 - SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 01014 AND 17900.

- KEY NOTES
- SERVICE ENTRANCE METER SOCKET, NEMA 3R, EUSERC, TEST BLOCKS, SQUARE D OR SUN VALLEY.
 - MAIN DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R, CLASS R FUSE REJECTION KIT, SQUARE D.
 - LIGHTNING ARRESTOR, DELTA LA603.
 - LOAD CENTER DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R SQUARE D MODEL QO.
 - TRANSFORMER, TOTALLY ENCLOSED/ENCAPSULATED, 115 DEGREES C RISE, ACME T-2-53518-3S.
 - LOAD CENTER, WITH GROUND BAR, NEMA 3R, SQUARE D QO.
 - SURGE PROTECTIVE DEVICE, BUS CONNECTED, UL 1449 TYPE 2, 22.5KA SURGE, 1 PHASE 3-WIRE, SQUARE D QO2175SB.
 - SURGE PROTECTIVE DEVICE, UL 1449 TYPE 1, 40KA SURGE, 3 PHASE 4-WIRE, SQUARE D SDSA3650.
 - PROVIDE PER NTUA - TECHNICAL PROVISIONS 4.0 FOR MOTOR CONTROL CENTER AND TANK CONTROL PANEL - PLC CONTROL PANEL, INPUT/OUTPUT WIRING FOR GRUNDFOS BOOSTER PAQ.
 - SPD. WIRE SIZE PER MANUFACTURER, 1-1/4"C
 - CABLE PER MANUFACTURER, 2"C
 - POWER UTILITY REQUIREMENTS FOR CONDUIT AND BURIAL PREVAIL IF DIFFERENT THAN SPECIFIED.
 - 1-1PR #18S, 2-#14, 1" C
 - 150 kW GENERATOR APPROXIMATED TO BE 125 kW AFTER ALTITUDE DERATING.
 - 2-#12, #12G, 1/2"C
 - TYPICAL OF 3. ONE FOR EACH SURGE TANK LCP.
 - ROUTE SPARE CONDUIT TO FLOW METER ON PIPE LOCATION FOR FUTURE USE.





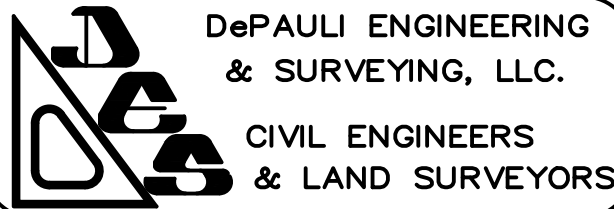
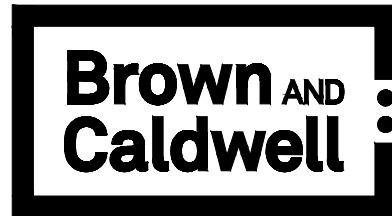
PUMP STATION "3" SITE POWER PLAN
SCALE 1"=20'

GENERAL NOTES

1. PROVIDE 480 VOLT 3-PHASE POWER UTILITY, ELECTRICAL, INSTRUMENTATION AND TELEMETRY EQUIPMENT.
2. POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY (NTUA), (928) 729-5721.

KEY NOTES

- 1 UNDERGROUND CIRCUITS PER DRAWING 6E-3, POWER UTILITY REQUIREMENTS TO PREVAIL.
- 2 PROVIDE SERVICE ENTRANCE SECTION METER, ARRESTOR ON OUTSIDE OF BUILDING.
- 3 UNDERGROUND ELECTRICAL AND CONTROL CIRCUITS PER DRAWING 6E-3.
- 4 POWER POLE, SERVICE POLE, DOWN GUY AND SERVICE LINES (OVERHEAD OR UNDERGROUND) BY NTUA.
- 5 OVERHEAD ELECTRICAL LINE BY NTUA.
- 6 STORAGE TANK
- 7 STANDBY GENERATOR GEN-01

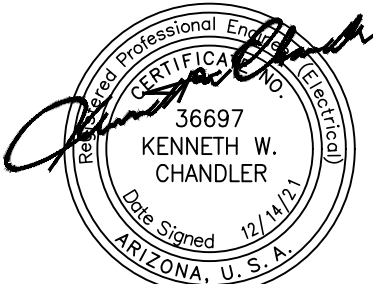


for
**NAVAJO ENGINEERING &
CONSTRUCTION AUTHORITY**

for the
**INDIAN HEALTH SERVICE
WINSLOW SERVICE UNIT
WINSLOW, ARIZONA**

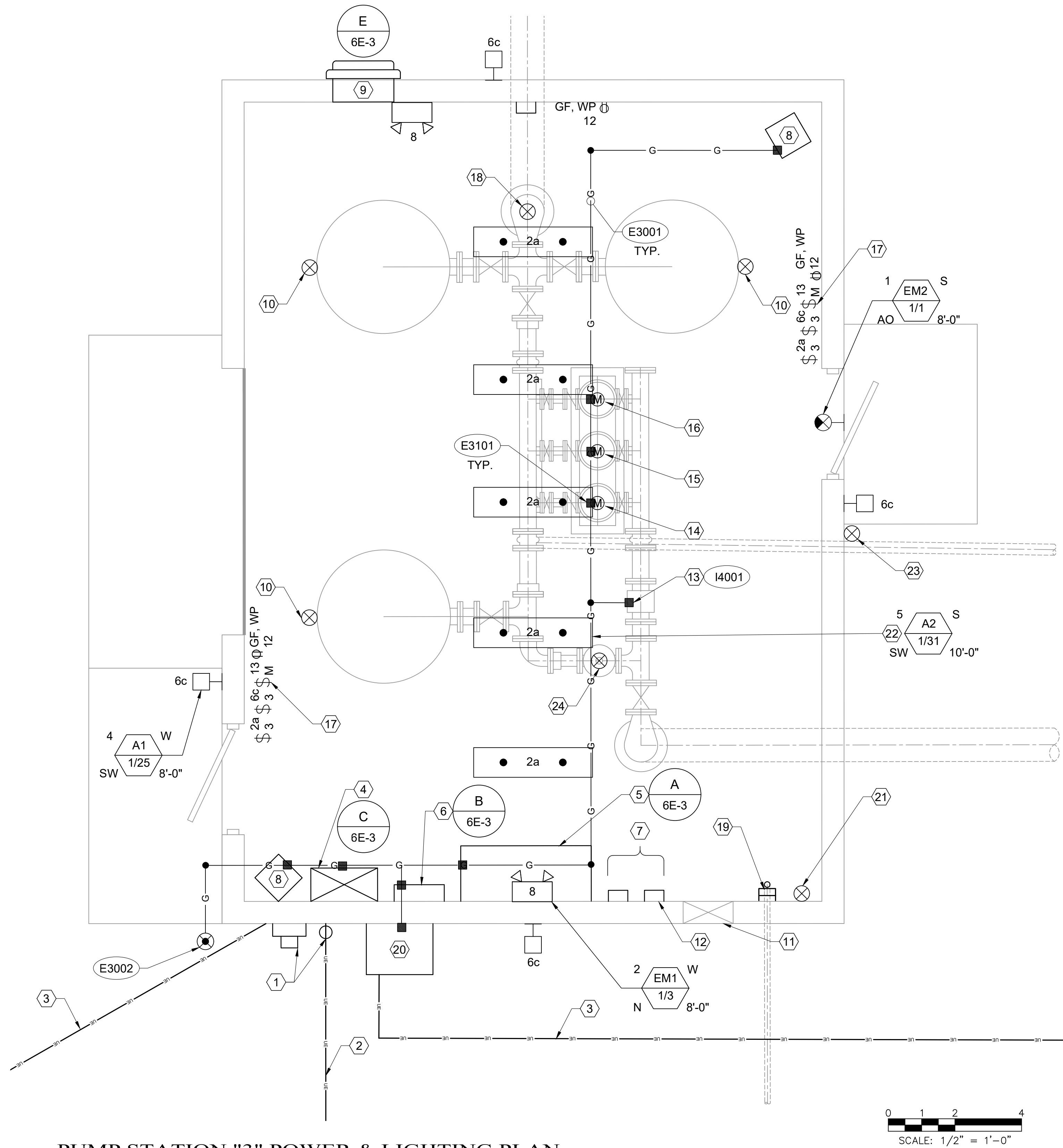
NO.	BY	DATE

**INDIAN HEALTH SERVICE AND
NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY
LEUPP-DILKON WATER SUPPLY SYSTEM**



SCALE:	SHOWN
DATE:	DEC. 2021
DRAWN BY:	DEE
CHECKED BY:	HWP

**SHEET
6E - 1**



PUMP STATION "3" POWER & LIGHTING PLAN
SCALE: 1/2"=1'



GENERAL NOTES

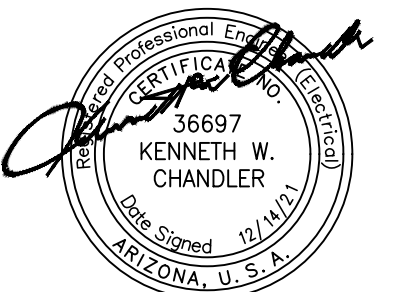
- GENERAL REQUIREMENTS: SPECIFICATION 16000.
- TESTING: SPECIFICATION 16030.
- ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
- CIRCUITS: DRAWING 6E-3.
- SUBMIT ELECTRICAL EQUIPMENT LAYOUT PRIOR TO CONDUIT ROUGH-IN.

KEY NOTES

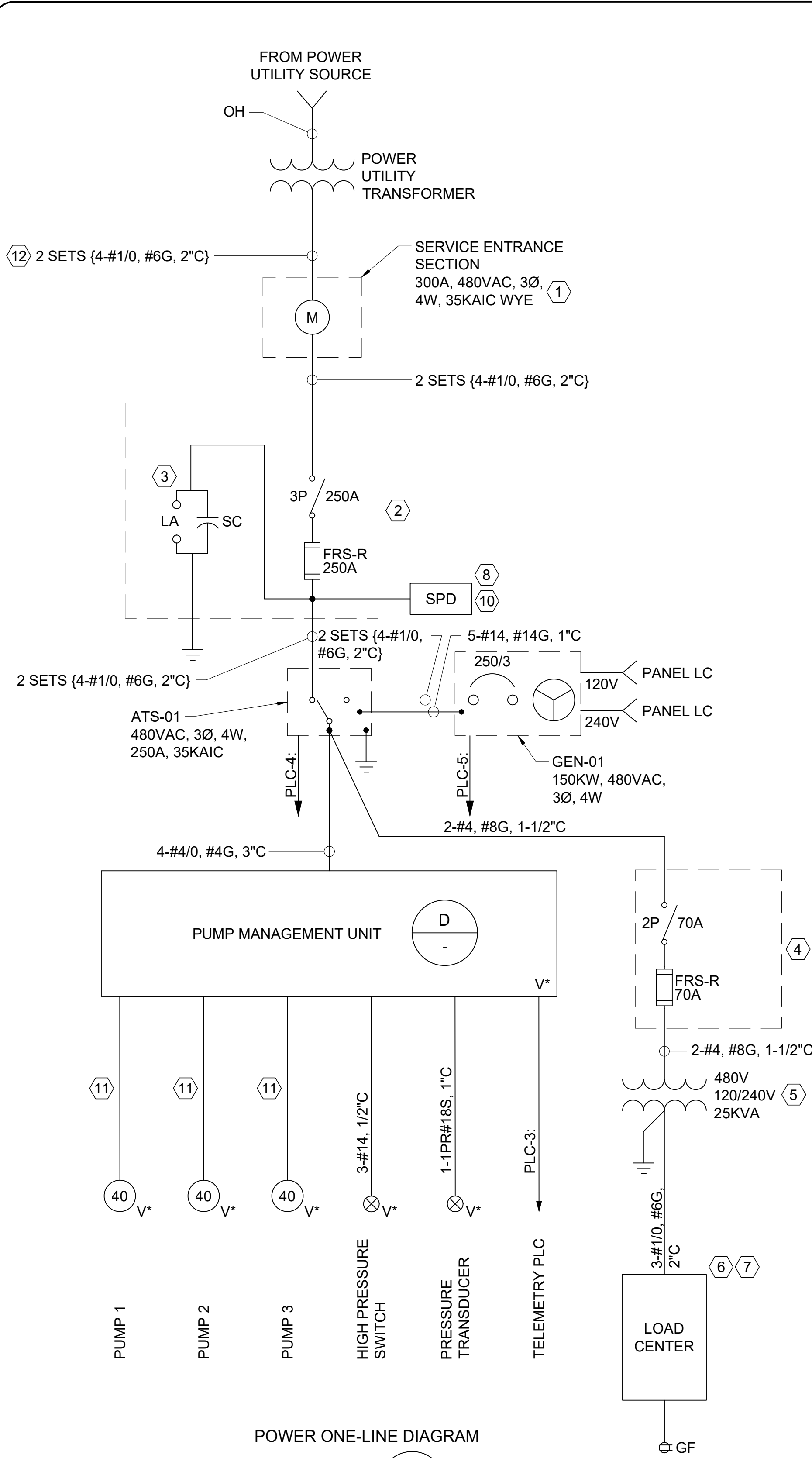
- SERVICE ENTRANCE SECTION, WEATHERHEAD, METER AND DISCONNECT.
- UNDERGROUND CIRCUITS PER DRAWING 6E-3, POWER UTILITY REQUIREMENTS TO PREVAIL.
- UNDERGROUND ELECTRICAL AND CONTROL CIRCUITS TO TANK AND GENERATOR PER DRAWING 6E-3.
- TRANSFORMER AND LOAD CENTER
- PUMP MANAGEMENT UNIT
- TELEMETRY PLC
- CONTROL AND DISPLAY AREA, REFER TO SHEET 6-8.
- UNIT HEATER
- PUMP ROOM EXHAUST FAN
- SURGE TANK MONITOR LCP
- MOTOR OPERATED INLET LOUVER
- FLOW INDICATOR, AMI UNIT
- FLOW METER
- PUMP 1
- PUMP 2
- PUMP 3
- MANUAL MOTOR SWITCH FOR FAN
- PRESSURE TRANSDUCER
- PRESSURE TYPE LEVEL TRANSDUCER FROM TANK
- ATS-01
- AIR TEMPERATURE SENSOR/SWITCH
- SUSPEND LIGHT FIXTURE FROM ROOF TRUSS WITH CHAIN. MOUNTING METHOD SUBJECT TO CHANGE DEPENDING ON ROOF SYSTEM.
- PHOTOCELL FOR EXTERIOR LIGHTS.
- HIGH PRESSURE SWITCH

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MODEL #
A1 1/25	LITHONIA WST LED - SURFACE MOUNT, RUGGED DIE-CAST ALUMINUM HOUSING, ACRYLIC LENS, HIGH-EFFECIENCY LED'S, ZERO UPLIGHT, NIGHTTIME FRIENDLY, IP65 RATED, CONSISTENT WITH LEED AND GREEN GLOBE CRITERIA FOR ELIMINATING WASTEFUL UPLIGHT, 120VAC	LITHONIA WST LED P2 3000 50K VF MVOLT DDBTXD
A2 1/31	LITHONIA FEM LED - SUSPENDED MOUNT, FIBERGLASS HOUSING, REPLACEABLE DIFFUSER LENS, HIGH-EFFICIENCY LED'S, 4000K CCT TEMPERATURE STANDARD, CSA CERTIFIED TO UL AND C-UL STANDARDS, 120 VAC	LITHONIA FEM L48 4000LM LPAFL MD MVOLT GZ10 40K 80CRI
EM1 1/3	LITHONIA ELM2 LED - SURFACE MOUNT, THERMOPLASTIC HOUSING, POLYCARBONATE LENS, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA ELM2 LED HO
EM2 1/1	LITHONIA LQM - SURFACE MOUNT, THERMOPLASTIC HOUSING, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA LQM S W 3 R 120/277 EL N



S:\SQUATCH: DePAULI Engineering\Leupp-Dilkon\design.dwg



POWER ONE-LINE DIAGRAM

DETAIL A
6E-2

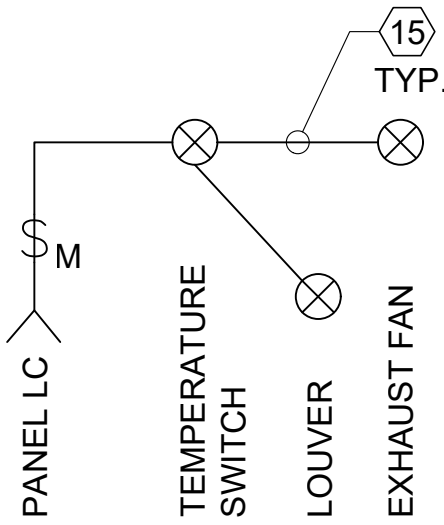
SCALE: NONE

SINGLE PHASE PANEL: LOAD CENTER (LC)														
VOLTAGE, PHASE, & WIRE:			120 / 240 VAC, 1 PHASE, 3 WIRE			LOCATION:			LEUPP-DILKON PUMP STATION 3					
BUS SIZE:			100 AMPERE			ENCLOSURE:			NEMA-3R					
MAIN TYPE:			80 AMPERE			MOUNTING:			WALL					
BREAKER TYPE:			CIRCUIT BREAKER			BUS BRACING:			22 KAIC					
			PLUG-ON			FED FROM:			SES OUTDOORS					
CIRCUIT TITLE / LOAD DESCRIPTION	AWG WIRE SIZE	RACE-WAY SIZE	BREAKER			LOAD (VA)		LOAD (VA)		BREAKER		AWG WIRE SIZE	RACE-WAY SIZE	CIRCUIT TITLE / LOAD DESCRIPTION
			CKT NO.	AMP	POLE	PHASE A	PHASE B	PHASE A	PHASE B	POLE	AMP			
TELEMETRY PLC CONTROL PANEL	2-12, 12G	1/2	1	15	1	180		720	194	1	15	2	2-12, 12G	1/2
FLOW METER	2-12, 12G	1/2	3	15	1		10			1	15	4	2-12, 12G	1/2
FLOW INDICATOR	2-12, 12G	1/2	5	15	1	10			125	1	15	6	2-12, 12G	1/2
FLOW AMI UNIT	2-12, 12G	1/2	7	15	1		10	7.5		1	15	8	2-12, 12G	1/2
GENERATOR BLOCK HEATER	2-12, 12G	1/2	9	15	2	1250			2.5	1	15	10	2-12, 12G	1/2
			11				1250	720		1	15	12	2-12, 12G	1/2
PUMP ROOM EXHAUST FAN/LOUVER	2-12, 12G	1/2	13	15	1	750			180	1	15	14	2-12, 12G	1/2
PUMP ROOM HEATER 1	2-12, 12G	1/2	15	20	2		1500			1	15	16	2-12, 12G	1/2
			17				1500		180	1	15	18	2-12, 12G	1/2
PUMP ROOM HEATER 2	2-12, 12G	1/2	19	20	2		1500			1	15	20		
			21							1	15	22		
SPARE CONDUIT		1/2	23	15	1					2	-	24		
SPARE			25	15	1							26	PER MFR.	
TOTALS:						5190	4270	1628	682					
						PHASE-A LOAD (VA):		5872						
						PHASE-B LOAD (VA):		5898						
* SURGE PROTECTOR CIRCUIT BREAKER SIZE PER MFR.						TOTAL LOAD (VA)=		11769		I (amp)		49.0		

PANEL SCHEDULE

DETAIL C
6E-2

SCALE: NONE



PUMP ROOM FAN ONE-LINE DIAGRAM

DETAIL E
6E-2

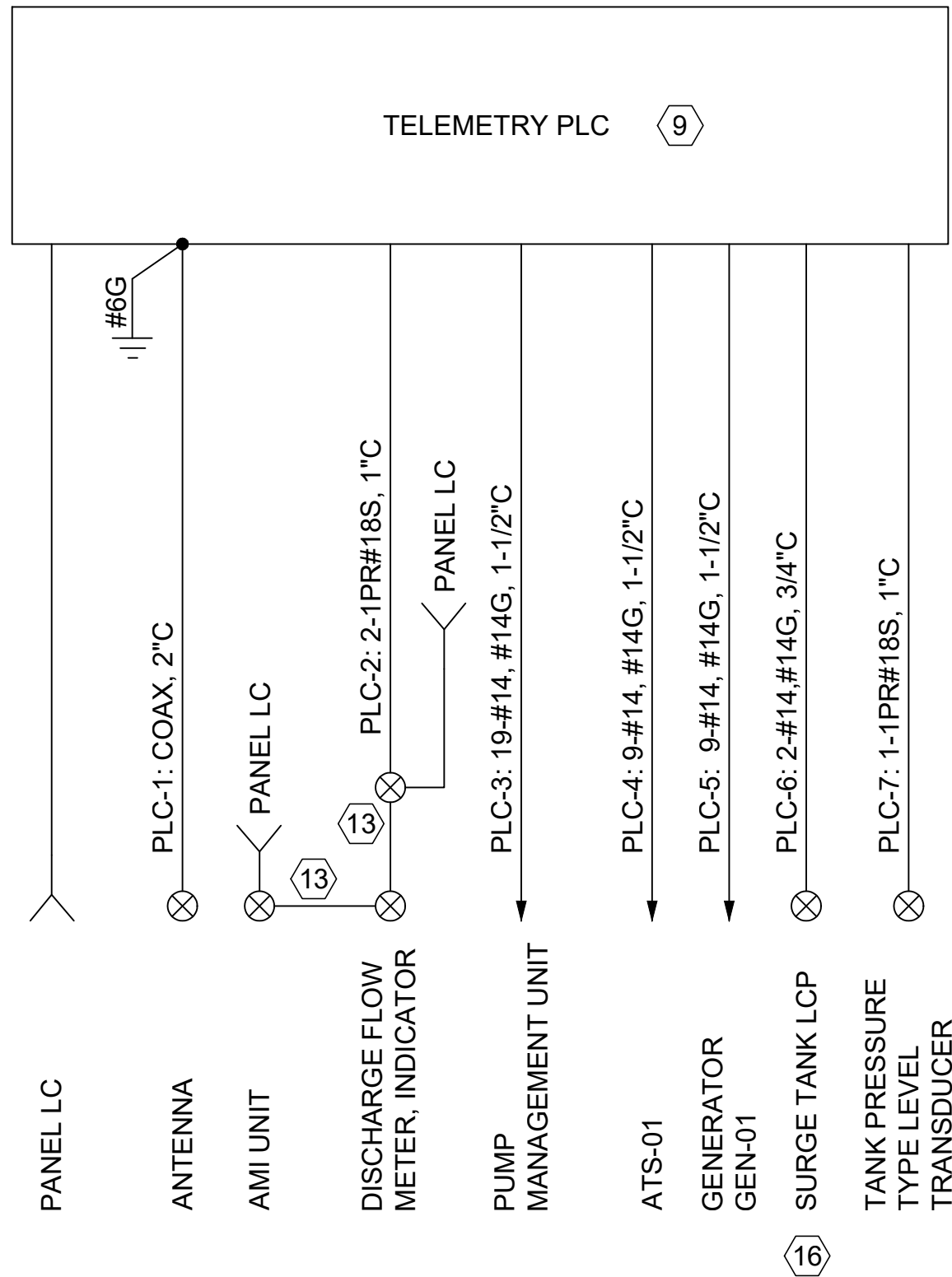
SCALE: NONE

LEUPP-DILKON PUMP STATION 3 PRELIMINARY LOAD SUMMARY AT 480 VAC				
LOAD DESCRIPTION	KVA	HP	CONNECTED FLA	RUNNING FLA
BOOSTER PUMP 1 VFD		40	52	52
BOOSTER PUMP 2 VFD		40	52	52
BOOSTER PUMP 3 VFD		40	52	52
TRANSFORMER FOR PANEL-A	25		52.1	52.1
SUBTOTAL:	25	120	208.1	156.1
PLUS 25%:			13	13
AMPERE TOTAL:			221.1	169.1
125 kW STANDBY GENERATOR AT 0.90 PF:	138.9			167
SIZING USING RUNNING LOAD DEMAND FACTOR PER NEC 220.50/430.26				

LOAD SUMMARY

DETAIL D
-

SCALE: NONE



CONTROL ONE-LINE DIAGRAM

DETAIL B
6E-2

SCALE: NONE

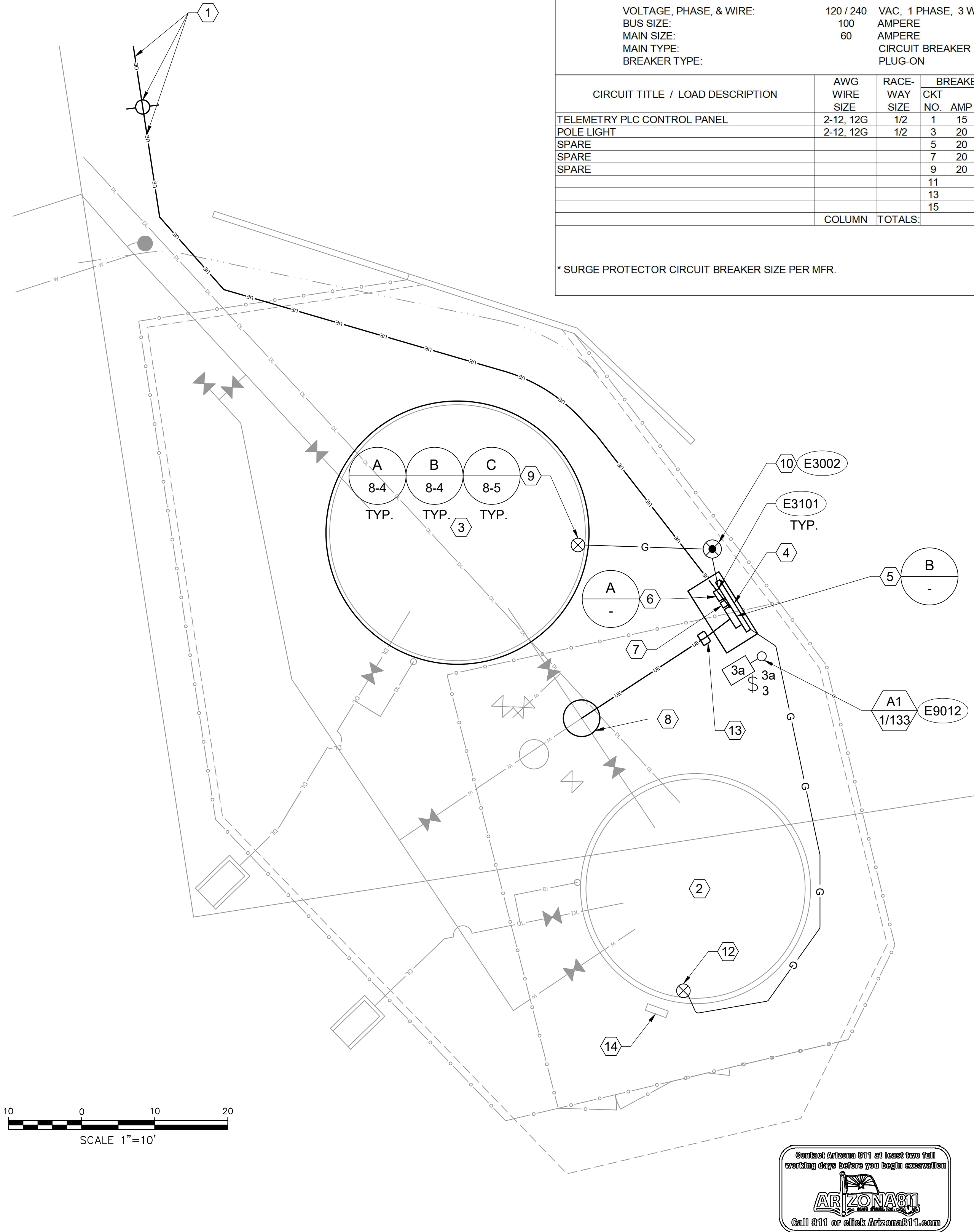
GENERAL NOTES

- POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY.
- GENERAL REQUIREMENTS: SPECIFICATION 16000.
- TESTING: SPECIFICATION 16030.
- ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
- SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 01014 AND 17900.

KEY NOTES

- SERVICE ENTRANCE METER SOCKET, NEMA 3R, EUSERC, TEST BLOCKS, SQUARE D OR SUN VALLEY.
- MAIN DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R, CLASS R FUSE REJECTION KIT, SQUARE D.
- LIGHTNING ARRESTOR, DELTA LA603.
- LOAD CENTER DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R SQUARE D MODEL QO.
- TRANSFORMER, TOTALLY ENCLOSED/ENCAPSULATED, 115 DEGREES C RISE, ACME T-2-53518-3S.
- LOAD CENTER, WITH GROUND BAR, NEMA 3R, SQUARE D QO.
- SURGE PROTECTIVE DEVICE, BUS CONNECTED, UL 1449 TYPE 2, 22.5KA SURGE, 1 PHASE 3-WIRE, SQUARE D QO2175SB.
- SURGE PROTECTIVE DEVICE, UL 1449 TYPE 1, 40KA SURGE, 3 PHASE 4-WIRE, SQUARE D SDSA3650.
- PROVIDE PER NTUA - TECHNICAL PROVISIONS 4.0 FOR MOTOR CONTROL CENTER AND TANK CONTROL PANEL - PLC CONTROL PANEL, INPUT/OUTPUT WIRING FOR GRUNDFOS BOOSTER PAQ.
- SPD. WIRE SIZE PER MANUFACTURER, 1-1/4"C
- CABLE PER MANUFACTURER, 2"C
- POWER UTILITY REQUIREMENTS FOR CONDUIT AND BURIAL PREVAIL IF DIFFERENT THAN SPECIFIED.
- 1-1PR #18S, 2-#14, 1" C
- 150 kW GENERATOR APPROXIMATED TO BE 125 kW AFTER ALTITUDE DERATING.
- 2-#12, #12G, 1/2"C
- TYPICAL OF 3. ONE FOR EACH SURGE TANK LCP.
- ROUTE SPARE CONDUIT TO FLOW METER ON PIPE LOCATION FOR FUTURE USE.





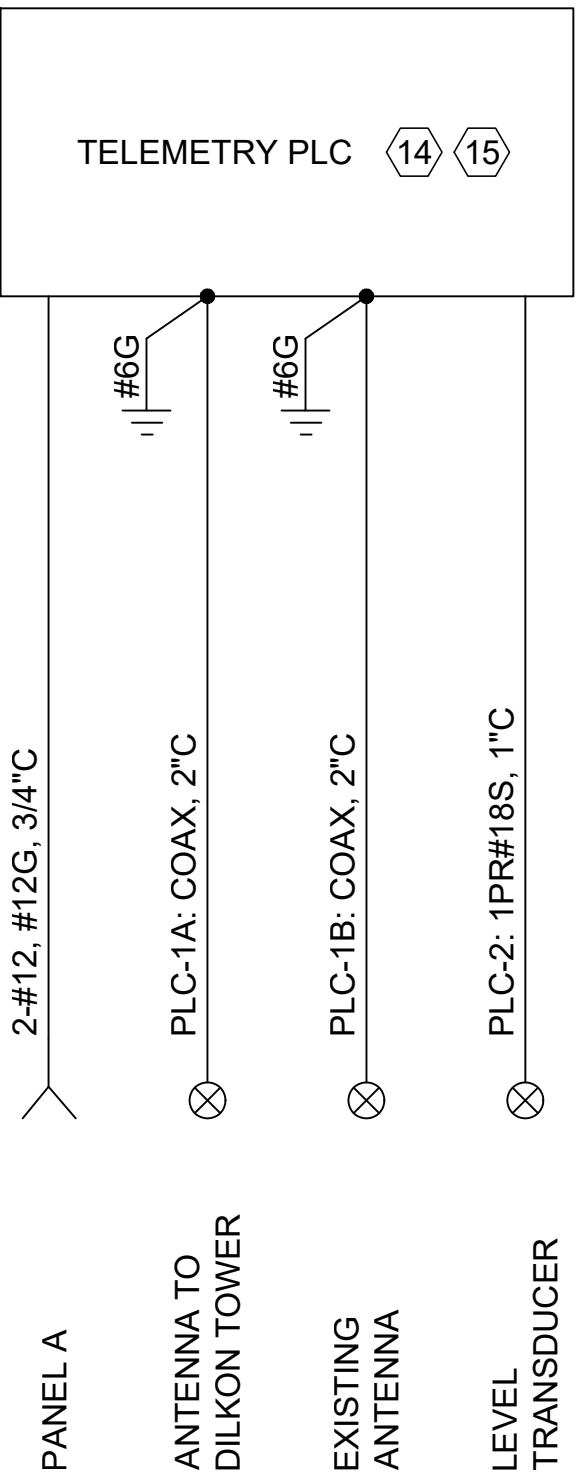
DILKON TANK SITE POWER & CONTROL PLAN
SCALE 1"=10'

SINGLE PHASE PANEL: COMBINATION SERVICE ENTRANCE (PANEL A)															
VOLTAGE, PHASE, & WIRE:			120 / 240			VAC, 1 PHASE, 3 WIRE			LOCATION:			DILKON TANKS			
BUS SIZE:			100			AMPERE			ENCLOSURE:			NEMA-3R			
MAIN SIZE:			60			AMPERE			MOUNTING:			WALL			
MAIN TYPE:						CIRCUIT BREAKER			BUS BRACING:			10 K AIC			
BREAKER TYPE:						PLUG-ON			FED FROM:			SES OUTDOORS			
CIRCUIT TITLE / LOAD DESCRIPTION	AWG WIRE SIZE	RACE-WAY SIZE	BREAKER			LOAD (VA)		LOAD (VA)		BREAKER			AWG WIRE SIZE	RACE-WAY SIZE	CIRCUIT TITLE / LOAD DESCRIPTION
			CKT NO.	AMP	POLE	PHASE A	PHASE B	PHASE A	PHASE B	POLE	AMP	CKT NO.			
TELEMETRY PLC CONTROL PANEL	2-12, 12G	1/2	1	15	1	180				1	30	2	PER MFR.	-	SURGE PROTECTOR
POLE LIGHT	2-12, 12G	1/2	3	20	1		166			1		4			
SPARE			5	20	1					1	20	6			
SPARE			7	20	1					1	20	8			
SPARE			9	20	1					1	20	10			
			11		1					1		12			
			13							1		14			
			15		1					1		16			

PANEL SCHEDULE

DETAIL C

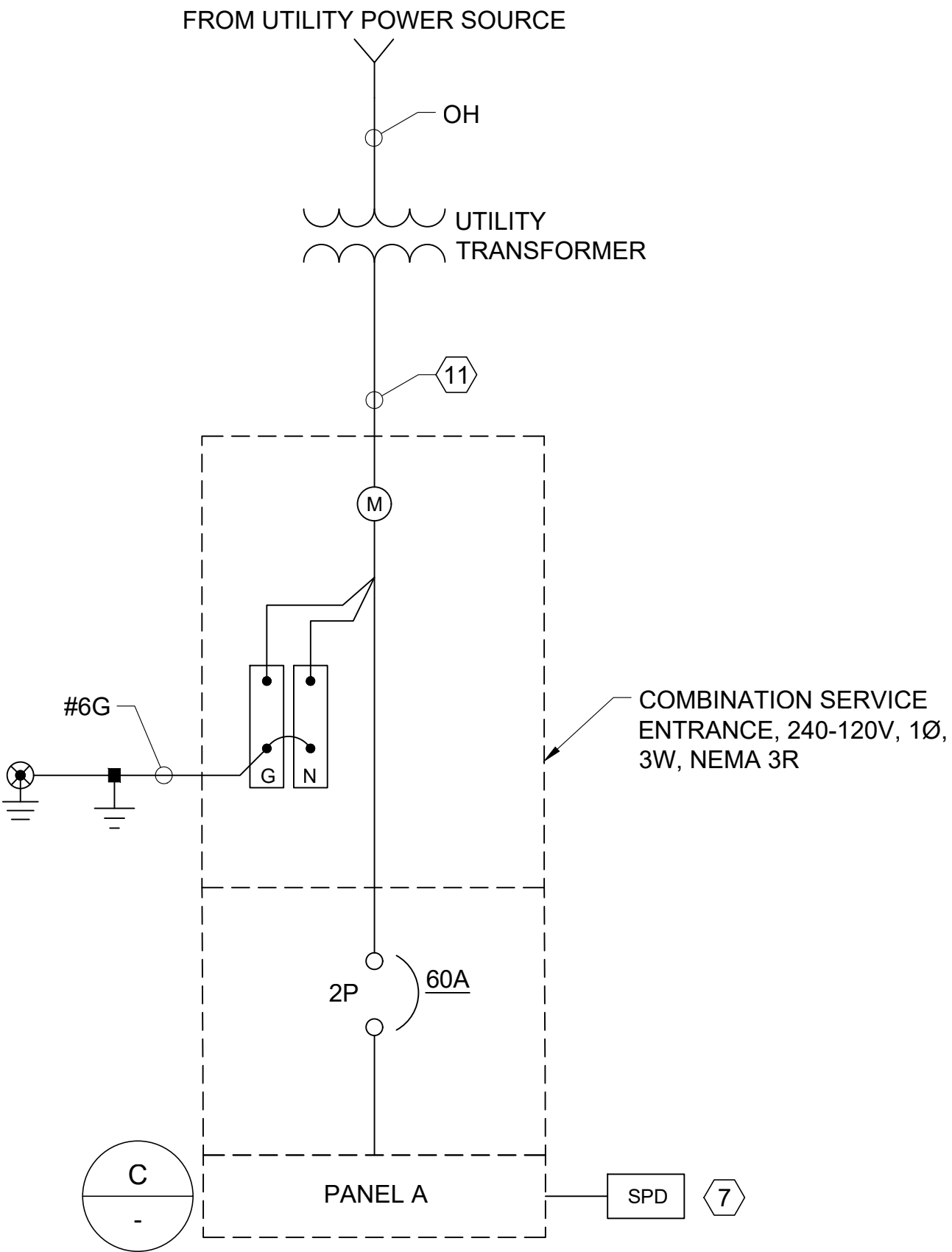
SCALE: NONE



CONTROL ONE-LINE DIAGRAM

DETAIL B

SCALE: NONE



POWER ONE-LINE DIAGRAM

DETAIL A

SCALE: NONE

LUMINAIRE SCHEDULE

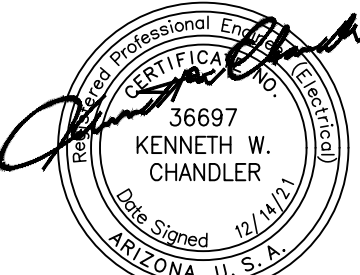
TYPE	DESCRIPTION	MODEL #
A1 1/133	LITHONIA RSX1 LED - SQUARE POLE MOUNT, RSX AREA FIXTURE SIZE, 1 P4 LUMEN PACKAGE, 4000K CCT, MULTIVOLT 120/277VAC, TYPE R5 DISTRIBUTION, NATURAL ALUMINUM FINISH, EXTERNAL GLARE FULL VISOR	LITHONIA RSX1 LED P4 40K R5 MVOLT SPA DNAXD EGVF / SSS 15.5' W/2.5' BASE

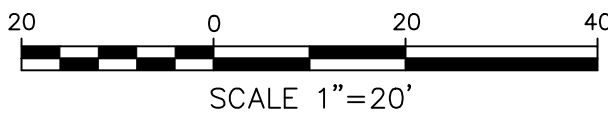
GENERAL NOTES

1. PROVIDE 120/240 VOLT, 1-PHASE POWER UTILITY, ELECTRICAL, INSTRUMENTATION AND TELEMETRY EQUIPMENT.
2. POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY (NTUA), (928) 729-5721.
3. SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 17900.
4. GENERAL REQUIREMENTS: SPECIFICATION 16000.
5. TESTING: SPECIFICATION 16030.
6. ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.

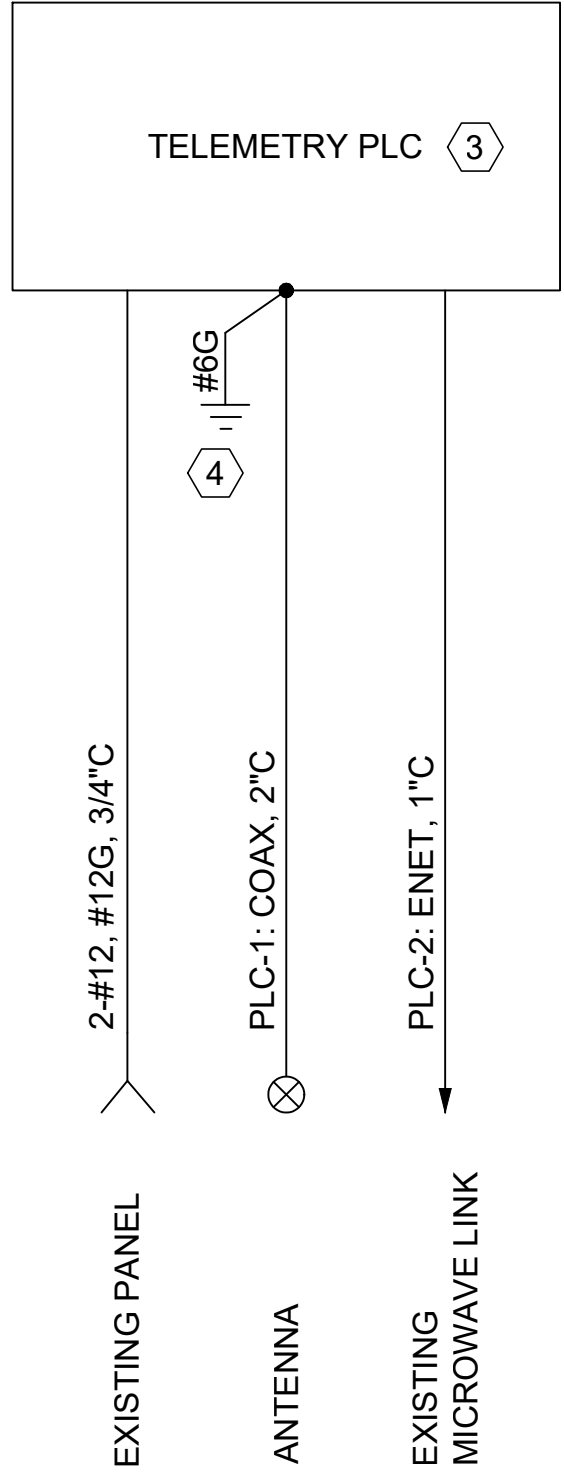
KEY NOTES

- 1 POWER POLE, SERVICE POLE, DOWN GUY AND SERVICE LINES (OVERHEAD OR UNDERGROUND) BY NTUA.
- 2 EXISTING DILKON TANK 1
- 3 DILKON TANK 2
- 4 TANK CONTROL WALL
- 5 PROVIDE TELEMETRY PLC
- 6 COMBINATION SERVICE ENTRANCE, EUSERC, TEST BLOCK, SQUARE D
- 7 SURGE PROTECTIVE DEVICE, BUS CONNECTED, UL 1449 TYPE 2, 22.5KA SURGE, 1 PHASE 3-WIRE, SQUARE D QO2175SB.
- 8 TANK LEVEL (PRESSURE) TRANSDUCER IN VAULT PER SHEET 7-2.
- 9 PROVIDE DIRECTIONAL TELEMETRY ANTENNA ON 10'-2" PIPE, ATTACHED TO OUTSIDE OF MANWAY. PROVIDE #6 GROUND AND 10' GROUND ROD FOR ANTENNA LIGHTNING ARRESTOR. PROVIDE ANTENNA CABLE IN CONDUIT. PROVIDE CGB FITTING AND EXPOSE LOOP OF CABLE FOR FINAL CONNECTION TO ANTENNA. MAKE PENETRATION TO PLC CONTROL PANEL WATER TIGHT. ORIENT ANTENNA TOWARD DILKON TOWER.
- 10 PROVIDE 10 FOOT COPPER GROUND ROD DRIVEN IN EARTH. PROVIDE #6 BOND TO EXISTING GROUND SYSTEM, EQUIPMENT, AND ANTENNAS.
- 11 SES-B: 3-#4, #8G, 1-1/2"C, UNDERGROUND. POWER UTILITY REQUIREMENTS PREVAIL IF DIFFERENT THAN SPECIFIED.
- 12 EXISTING DIRECTIONAL ANTENNA TO PRV-15 STATION, DILKON PASS BPS.
- 13 PULLBOX, H2O LOADING, MINIMUM 12"x24"
- 14 EXISTING TELEMETRY PLC. REMOVE AFTER REPLACEMENT IS OPERATIONAL.
- 15 PROVIDE PER NTUA - TECHNICAL PROVISIONS 4.0 TANK CONTROL PANEL - AC TANK PANEL.





TOLANI LAKE TOWER SITE POWER & CONTROL PLAN
SCALE 1"=20'



CONTROL ONE-LINE DIAGRAM

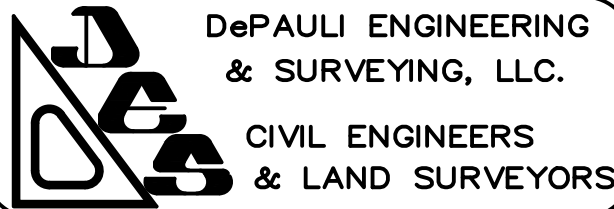


GENERAL NOTES

1. PROVIDE ELECTRICAL AND TELEMTRY EQUIPMENT.
2. GENERAL REQUIREMENTS: SPECIFICATION 16000.
3. TESTING: SPECIFICATION 16030.
4. SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 01014 AND 17900.

KEY NOTES

- (1) PROVIDE TELEMETRY PLC.
- (2) PROVIDE OMNI-DIRECTIONAL TELEMETRY ANTENNA ON 10'-2" PIPE, ATTACHED TO PLC STAND. PROVIDE #6 GROUND AND 10' GROUND ROD FOR ANTENNA LIGHTNING ARRESTOR. PROVIDE ANTENNA CABLE IN CONDUIT. PROVIDE CGB FITTING AND EXPOSE LOOP OF CABLE FOR FINAL CONNECTION TO ANTENNA. MAKE PENETRATION TO PLC CONTROL PANEL WATER TIGHT.
- (3) PROVIDE PER NTUA - TECHNICAL PROVISIONS 4.0 FOR MOTOR CONTROL CENTER AND TANK CONTROL PANEL - AC TANK PANEL.
- (4) PROVIDE 10 FOOT COPPER GROUND ROD DRIVEN IN EARTH. PROVIDE #6 BOND TO EXISTING GROUND SYSTEM.
- (5) EXISTING POWER PANEL.



for
**NAVAJO ENGINEERING &
CONSTRUCTION AUTHORITY**

for the
**INDIAN HEALTH SERVICE
WINSLOW SERVICE UNIT
WINSLOW, ARIZONA**

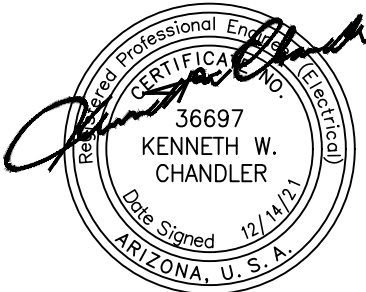
NO.	BY	DATE

**INDIAN HEALTH SERVICE AND
NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY
LEUPP-DILKON WATER SUPPLY SYSTEM**

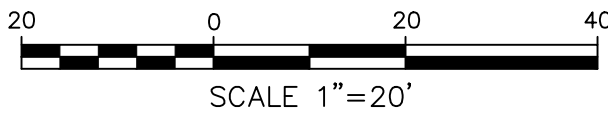
**TOLANI LAKE TOWER SITE
POWER & CONTROL PLAN**

SCALE:	SHOWN
DATE:	DEC. 2021
DRAWN BY:	DEE
CHECKED BY:	HWP

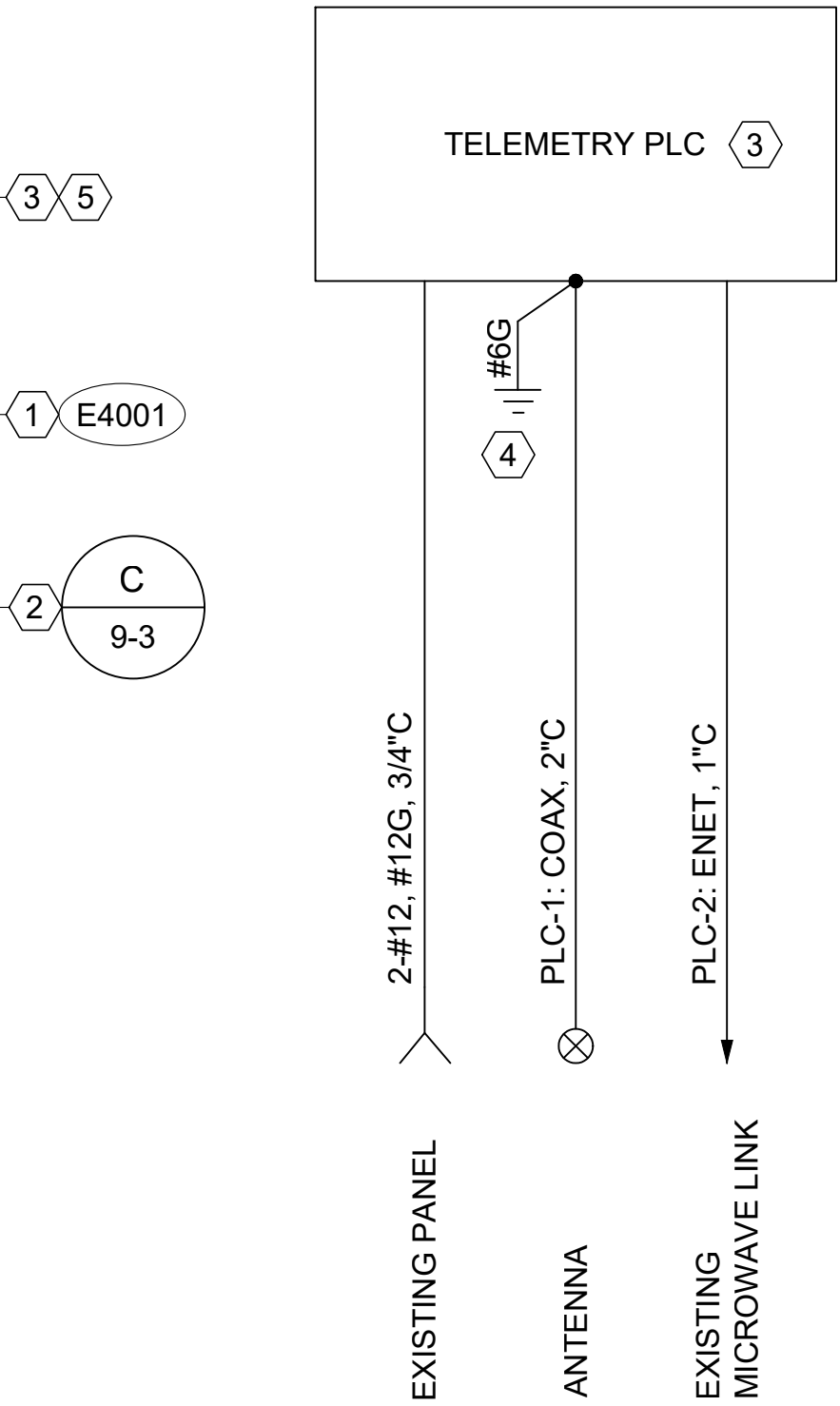
**SHEET
10E - 1**



S:\SQUATCH: Designer\Luepp-Dilkon\Design.dwg



DILKON TANK TOWER SITE POWER & CONTROL PLAN
SCALE 1"=20'



CONTROL ONE-LINE DIAGRAM

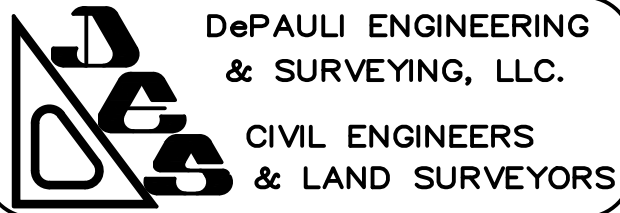


GENERAL NOTES

1. PROVIDE ELECTRICAL AND TELEMTRY EQUIPMENT.
2. GENERAL REQUIREMENTS: SPECIFICATION 16000.
3. TESTING: SPECIFICATION 16030.
4. SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 01014 AND 17900.

KEY NOTES

1. PROVIDE TELEMTRY PLC.
2. PROVIDE OMNI-DIRECTIONAL TELEMTRY ANTENNA ON 10'-2" PIPE, ATTACHED TO PLC STAND. PROVIDE #6 GROUND AND 10' GROUND ROD FOR ANTENNA LIGHTNING ARRESTOR. PROVIDE ANTENNA CABLE IN CONDUIT. PROVIDE CGB FITTING AND EXPOSE LOOP OF CABLE FOR FINAL CONNECTION TO ANTENNA. MAKE PENETRATION TO PLC CONTROL PANEL WATER TIGHT.
3. PROVIDE PER NTUA - TECHNICAL PROVISIONS 4.0 FOR MOTOR CONTROL CENTER AND TANK CONTROL PANEL - AC TANK PANEL.
4. PROVIDE 10 FOOT COPPER GROUND ROD DRIVEN IN EARTH. PROVIDE #6 BOND TO EXISTING GROUND SYSTEM.
5. EXISTING POWER PANEL.



for
**NAVAJO ENGINEERING &
CONSTRUCTION AUTHORITY**

for the
**INDIAN HEALTH SERVICE
WINSLOW SERVICE UNIT
WINSLOW, ARIZONA**

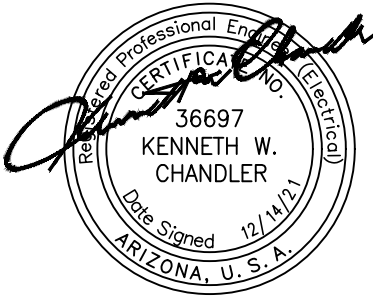
NO.	BY	DATE

INDIAN HEALTH SERVICE AND
NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY
LEUPP-DILKON WATER SUPPLY SYSTEM

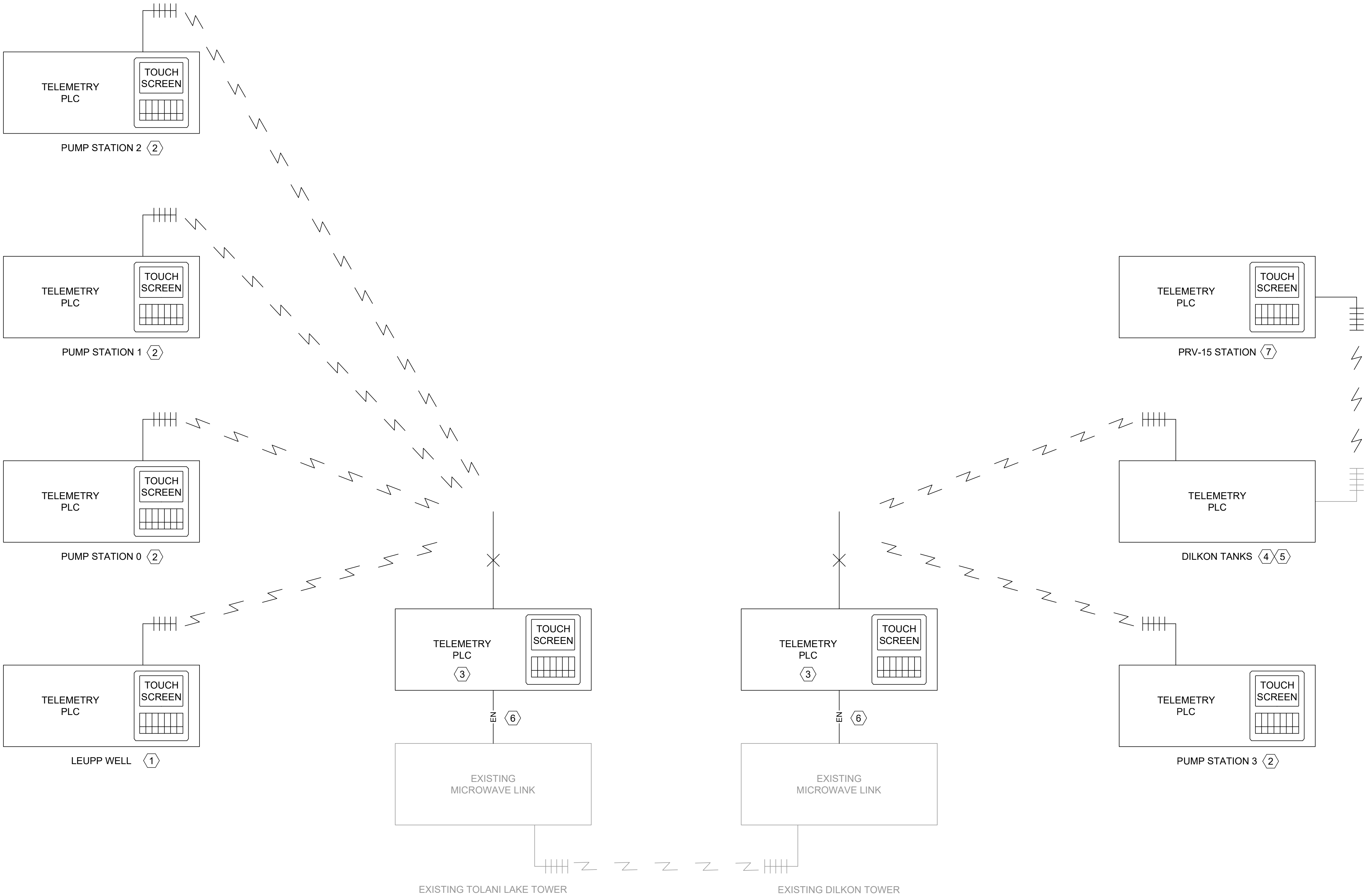
**DILKON TANK TOWER SITE
POWER & CONTROL PLAN**

SCALE:	SHOWN
DATE:	DEC. 2021
DRAWN BY:	DEE
CHECKED BY:	HWP

**SHEET
11E - 1**



S:\SQUATCH: Designer\Luepp-Dilkon\Design.dwg



- GENERAL NOTES
1. EACH PUMP STATION HAS A TANK FOR PUMP SUPPLY. TELEMTRY OF LEVEL TO SOURCE PUMP STATION OR WELL.
 2. SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES.
 3. DILKON TANKS ALSO FILLED BY EXISTING DILKON PASS TANK.

- KEY NOTES
- 1 WELL AND TELEMTRY. WELL HAS TOUCH SCREEN ENTERED TANK LEVEL SETPOINTS FOR WELL PUMP START AND STOP.
 - 2 PUMP STATION AND TELEMTRY.
 - 3 PLC STORES AND FORWARDS SYSTEM STATUS FROM ONE PUMP STATION AND TANK TO THE NEXT.
 - 4 REVISE EXISTING TANK TELEMTRY PROGRAM TO SEND DILKON TANK LEVEL SIGNAL VIA DILKON TOWER TO PUMP STATION 3.
 - 5 REPLACE EXISTING DILKON TANK PLC, RETAIN RADIO AND ANTENNA FOR DILKON PASS COMMUNICATIONS.
 - 6 NTUA TO ADVISE MICROWAVE UNIT INTERFACE REQUIRED.
 - 7 PRV-15 STATION CONSTRUCTION AND COMMISSIONING PERFORMED BY OTHERS. NOT UNDER THE SCOPE OF THIS PROJECT.



DePAULI ENGINEERING
& SURVEYING, LLC.
CIVIL ENGINEERS
& LAND SURVEYORS

for
NAVAJO ENGINEERING &
CONSTRUCTION AUTHORITY

for the
INDIAN HEALTH SERVICE
WINSLOW SERVICE UNIT
WINSLOW, ARIZONA

NO.	BY	DATE

INDIAN HEALTH SERVICE AND
NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY
LEUPP-DILKON WATER SUPPLY SYSTEM

COMMUNICATIONS
BLOCK DIAGRAM

SCALE: NONE
DATE: DEC. 2021
DRAWN BY: DEE
CHECKED BY: HWP



SHEET
1 - 5

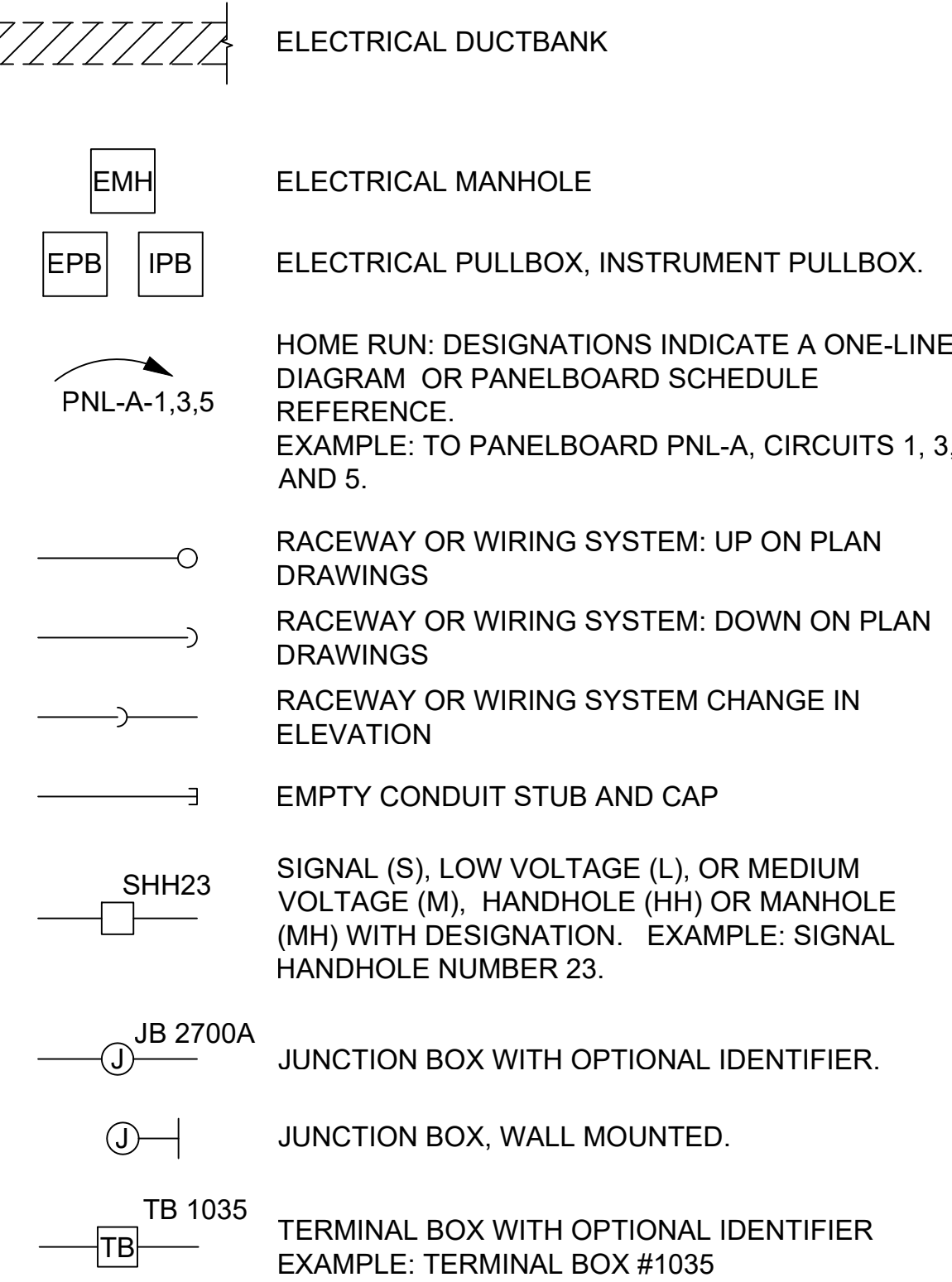
SYMBOLS:

CIRCUIT AND RACEWAYS:

———— RACEWAY OR WIRING SYSTEM ABOVE FLOOR LEVEL BELOW CEILING, EXPOSED, UON.

----- RACEWAY OR WIRING SYSTEM ABOVE FLOOR LEVEL. CONCEALED IN WALL OR ABOVE CEILING, UON.

— — — RACEWAY OR WIRING SYSTEM IN OR UNDER FLOOR, OR CONCEALED IN OR BEHIND STRUCTURE OR EQUIPMENT, OR CONDUIT ROUTED BELOW GRADE IN CONCRETE ENCASEMENT.



GROUNDING:

⊙ GROUND ROD, 3/4" x 10'-0", COPPERCLAD

⊗ GROUND ROD AND TEST WELL

⊙ LIGHTNING ROD

—■— GROUND CONNECTION

— G — G — GROUNDING SYSTEM CONDUCTOR

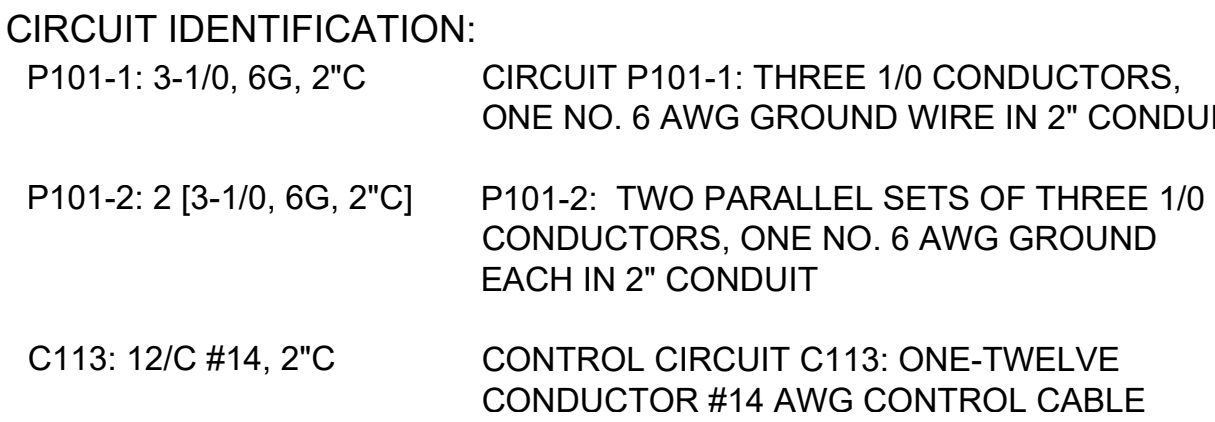
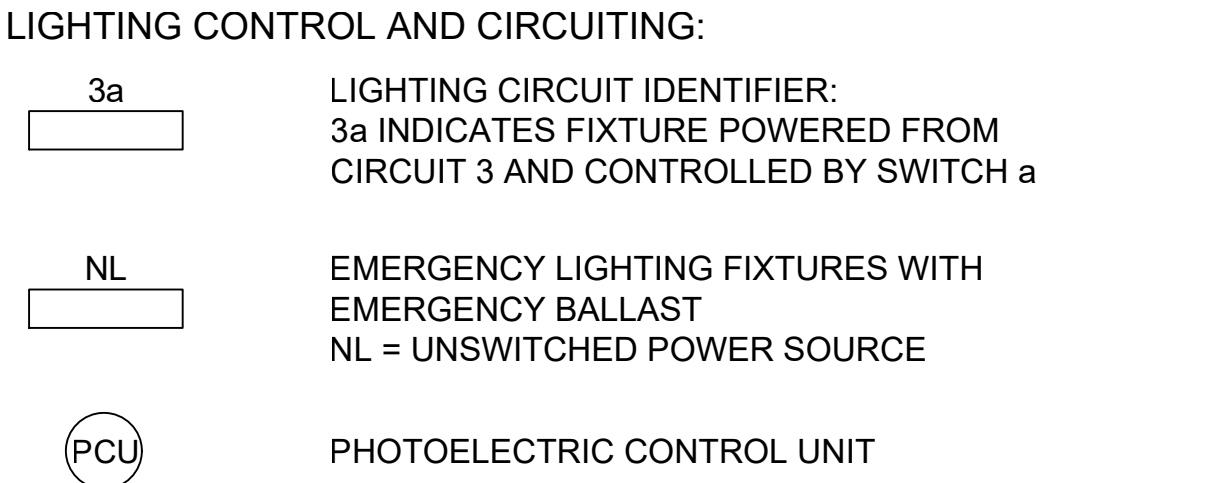
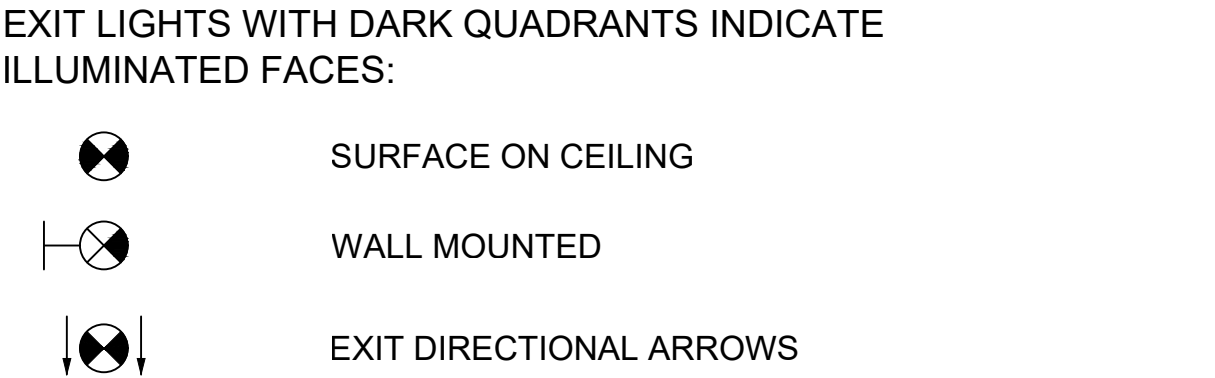
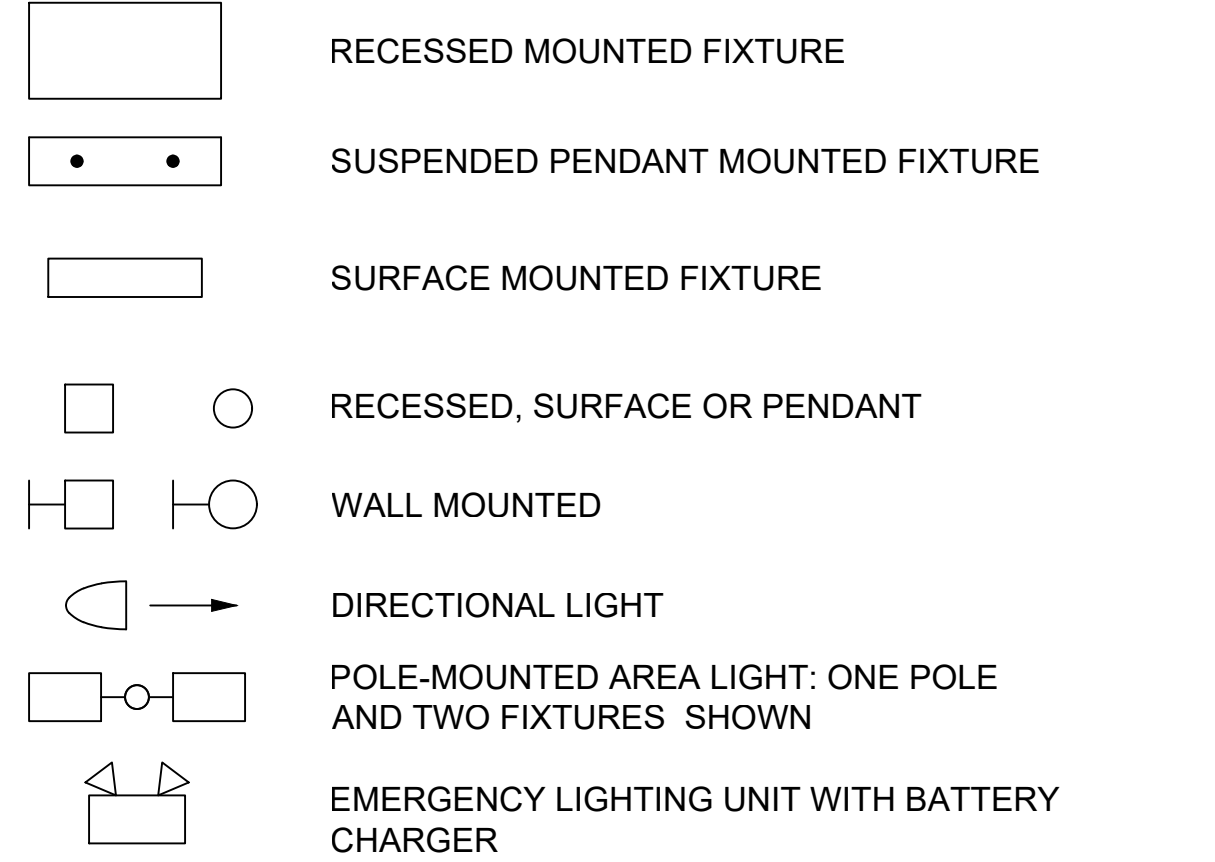
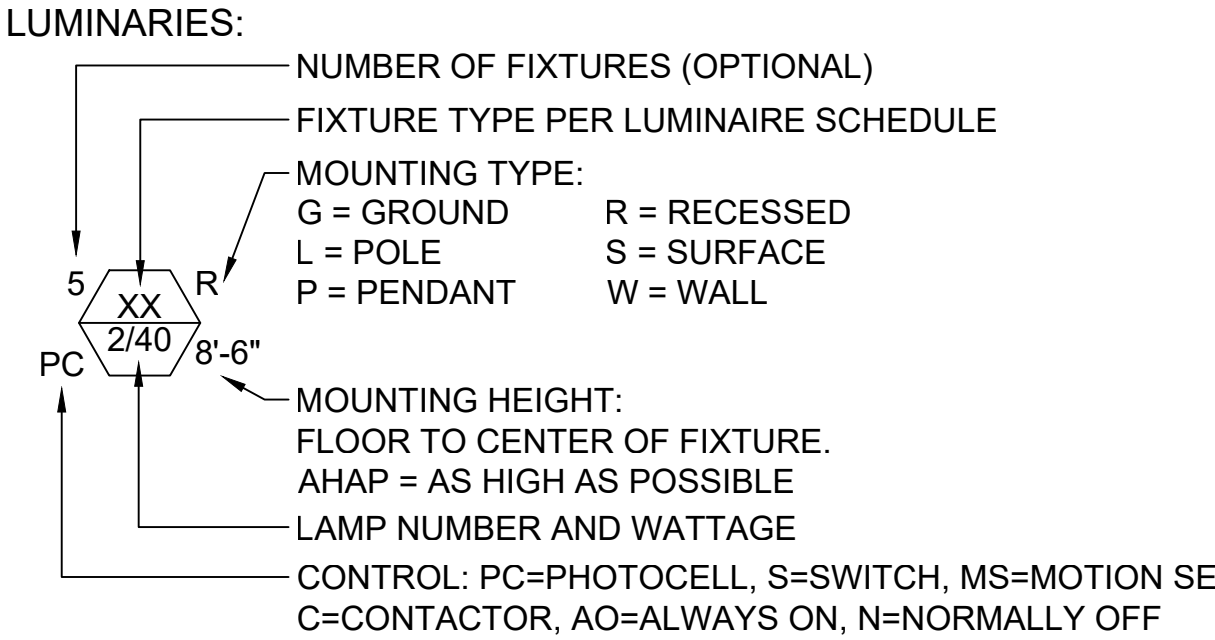
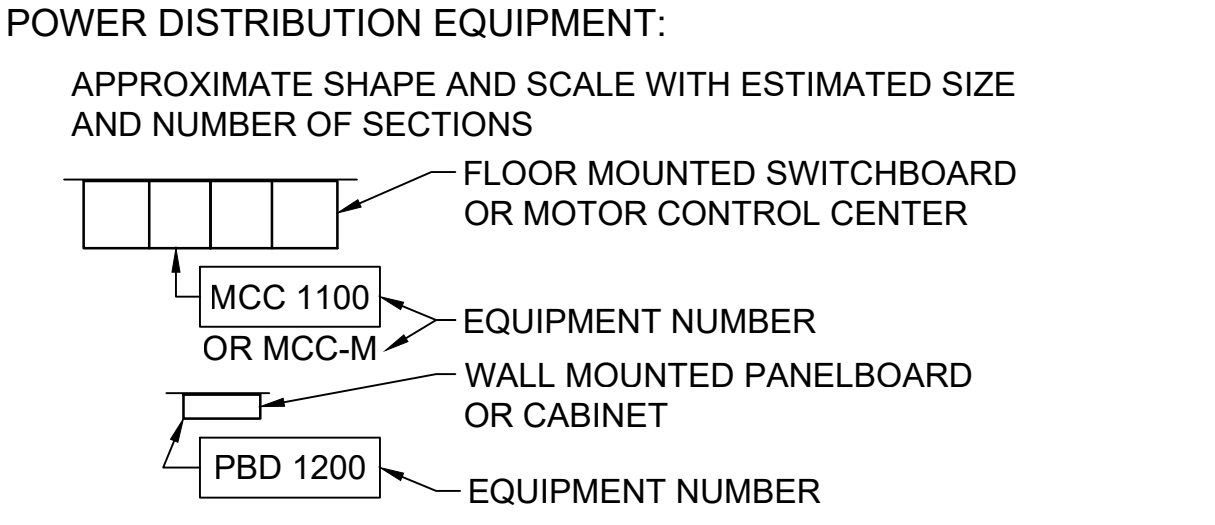
— L — L — LIGHTNING SYSTEM CONDUCTOR

⌈ G ⌋ EQUIPMENT GROUND PLATE

—OHE—OHE— OVERHEAD POWER LINE

METERING (ANSI/IEEE FUNCTIONS AS SPECIFIED):

ID# POWER MONITOR (PM), POWER QUALITY MONITOR (HARMONIC ANALYSIS) (PQM), MOTOR MONITOR AND PROTECTION RELAY (MPR), FEEDER PROTECTION RELAY (FPR)



S111: 2-1 PR #16S, 1"C SIGNAL CIRCUIT S111: TWO SIGNAL CABLES OF ONE PAIR 16 AWG TWISTED SHIELDED CABLES IN 1" CONDUIT

S112: 1-4 PR #16S, 1"C SIGNAL CIRCUIT S112: ONE - FOUR PAIR 16 AWG SHIELDED IN 1" CONDUIT

TELEPHONE SYSTEMS:

▶ EXTERNAL LINE OR PLANT PHONE SYSTEM OUTLET

WIRING DEVICES:

SWITCHES:

\$ SINGLE POLE SWITCH.

\$ \$ GANGED SWITCHES IN COMMON BOX WITH COMMON WALL PLATE

\$^a SWITCH SUPERScript MODIFIER: LOWER CASE LETTER INDICATES LUMINAIRE CONTROLLED (I.E. a, b, c, ect). MAY BE COMBINED WITH CIRCUIT NUMBER (I.E. 1a, 4b, ect.)

\$₃ SWITCH SUBScript MODIFIER: UPPER CASE LETTER OR NUMBER

2 = DOUBLE POLE

3 = THREE WAY

4 = FOUR WAY

K = KEY OPERATED

M = HORSEPOWER RATED MANUAL STARTER

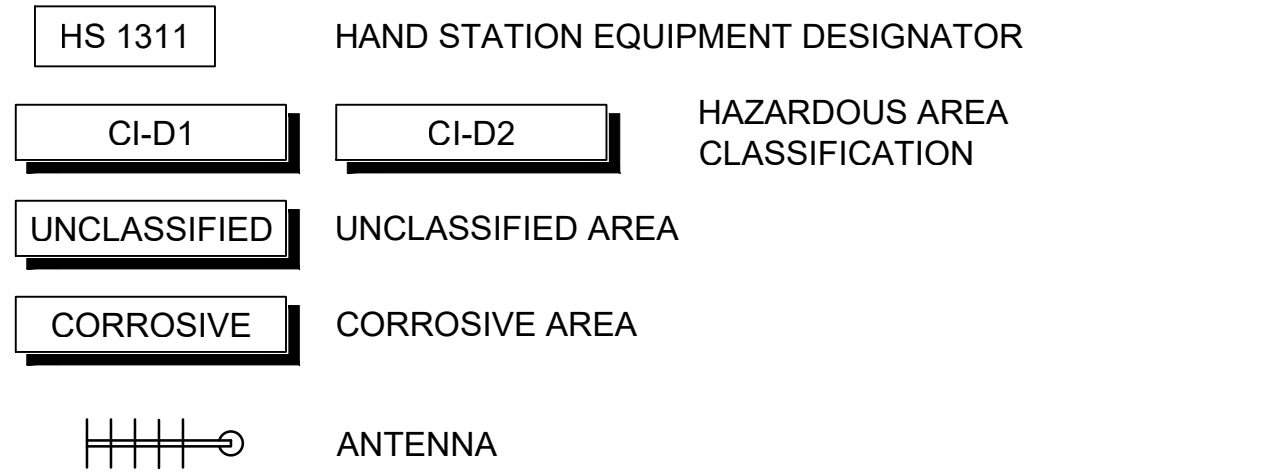
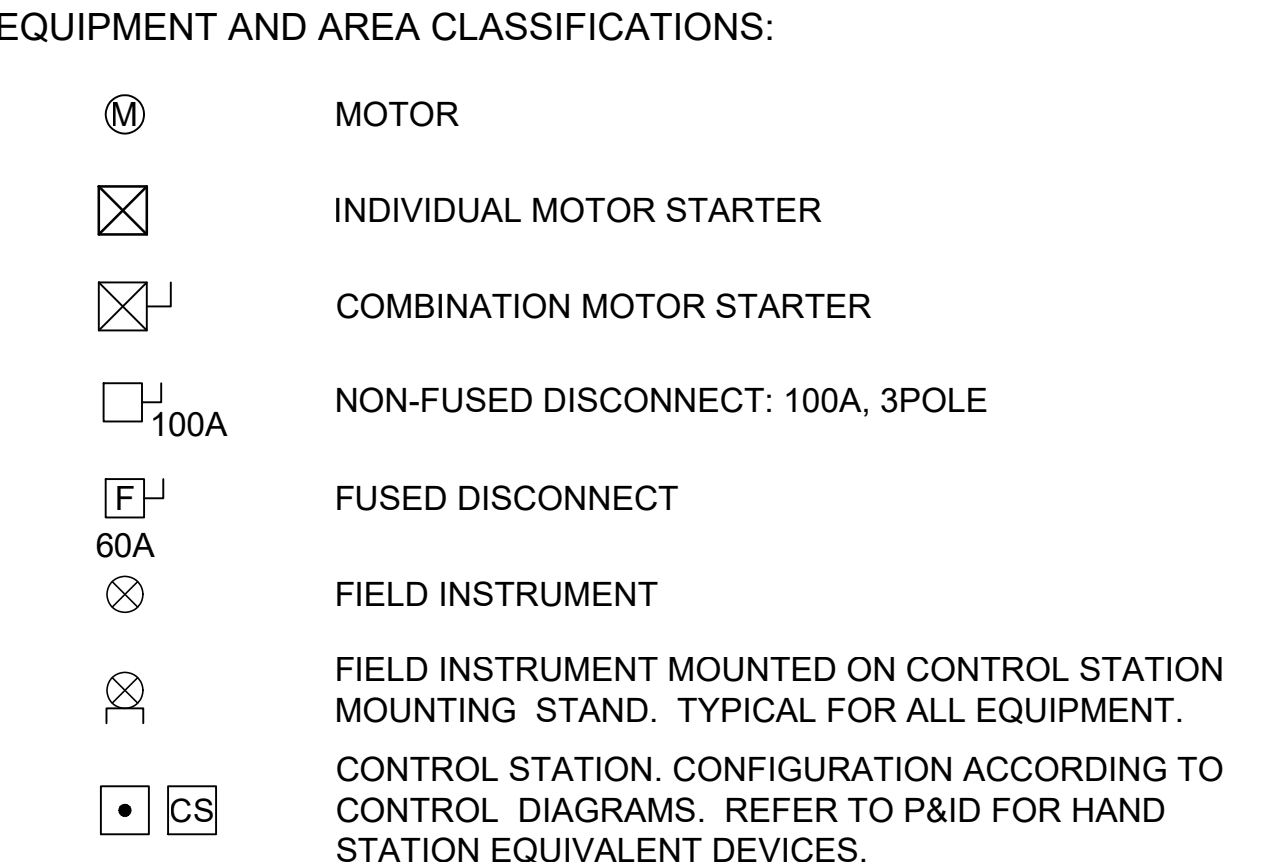
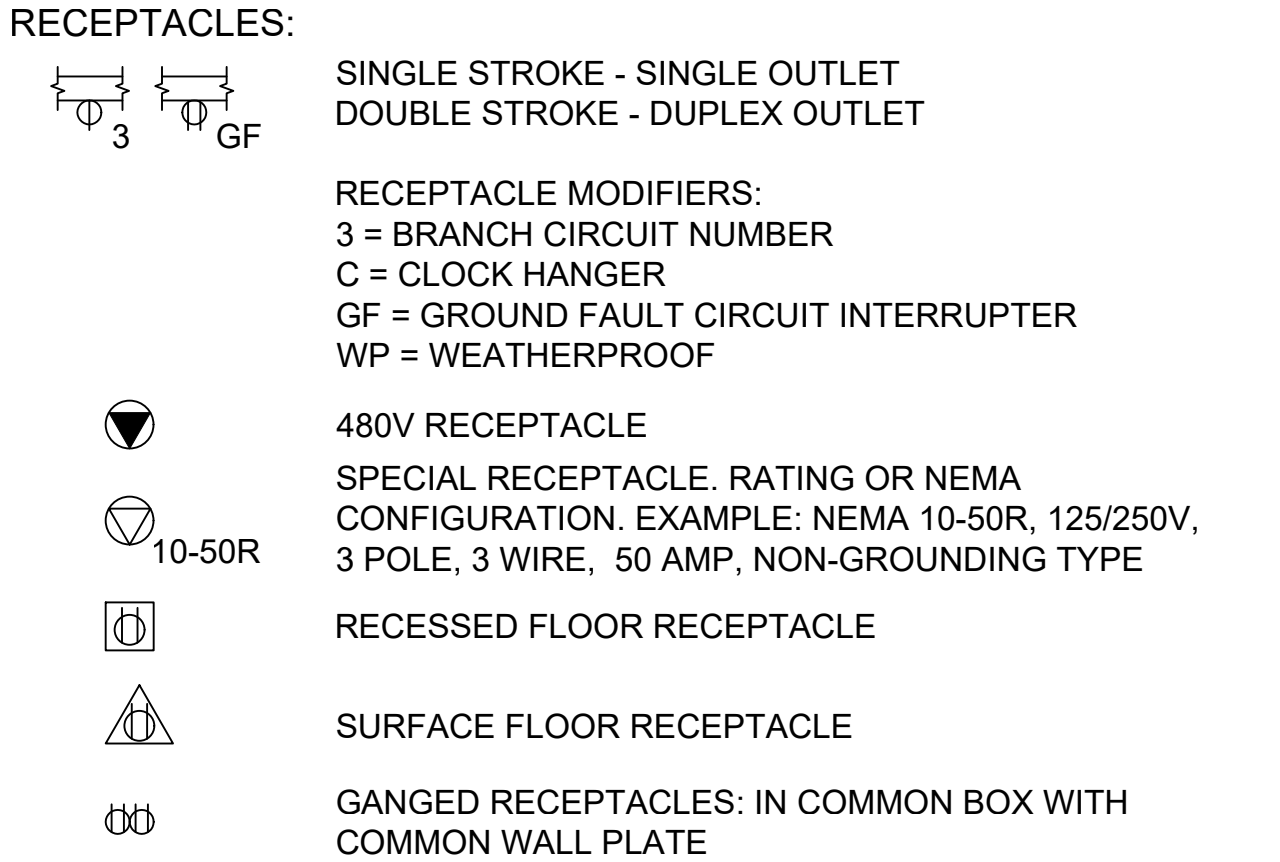
MC = MOMENTARY CONTACT, THREE POSITION

MS = MANUAL (MOTOR) STARTER OR SWITCH

R = RHEOSTAT (DIMMER OR SPEED CONTROL)

F = FLUSH MOUNTED

WP = WEATHERPROOF



ABBREVIATIONS:

NOTES:

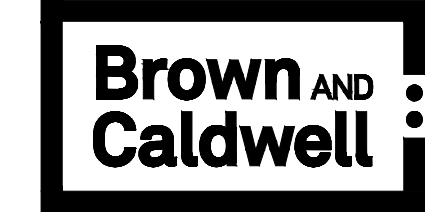
1. ABBREVIATIONS SHOWN ON ELECTRICAL DRAWINGS ARE IN ACCORDANCE WITH ASME STANDARD Y14.38A

2. ABBREVIATIONS ON THIS SHEET ARE IN ADDITION TO THE ABBREVIATIONS DEFINED ON OTHER DRAWINGS.

3. ABBREVIATIONS HERE IN SHALL TAKE PRECEDENCE IN CASE OF CONFLICT.

4. ABBREVIATIONS ARE NOT EQUIPMENT NUMBERING PREFIXES LISTED ON OTHER DRAWINGS.

A, AMP	AMP(S), AMPERE(S)	CONDUCTOR	MVMC	MEDIUM VOLTAGE	TFR	TRANSFORMER
AC	ALTERNATING CURRENT	GF	GROUND FAULT	MOTOR CONTROL	TRI	TRIAD
AFF	ABOVE FINISHED FLOOR	GFI	GROUND FAULT INTERRUPTER	N.C.	NORMALLY CLOSED	TV
AHAP	AS HIGH AS POSSIBLE	GND, G	GROUND	N.O.	NORMALLY OPENED	TYP
AIC	AMPS	GRS	GALVANIZED RIGID STEEL	N/A	NOT APPLICABLE	U/G
AL	ALUMINUM	NEUT,N	NEUTRAL	NEUT,N	NEUTRAL	UNLESS OTHERWISE
ARCH	ARCHITECT(URAL)	NF	NON-FUSED	NIC	NOT IN CONTRACT	NOTED
ASYM	ASYMMETRICAL	NO.	NUMBER	NOM	NOMINAL	UPS
AUTO	AUTOMATIC	NP	NAMEPLATE	NTS	NOT TO SCALE	POWER SUPPLY
AUX	AUXILIARY	OC	ON CENTER	OD	OUTSIDE DIAMETER	V
AWG	AMERICAN WIRE GAUGE	OH	OVERHEAD	OD	OUTSIDE DIAMETER	VA
BC	BARE COPPER	OIS	OPERATOR	OH	OVERHEAD	VOLT-AMPERE
BLDG	BUILDING	HTR	HEATER	OT	OIL TIGHT	VAR
BOT	BOTTOM	HV	HIGH VOLTAGE	OWS	OPERATOR	W
C	CONDUCTOR, CONDUIT	HVAC	HEATING, VENTILATION, & AIR CONDITIONING	P	POLE, PHASE	W/O
CB	CIRCUIT BREAKER	HZ	HERTZ (CYCLES PER SECOND)	PB	PUSH-BUTTON, PULLBOX	WG
CKT	CIRCUIT	Hz	HERTZ (CYCLES PER SECOND)	PB	PUSH-BUTTON, PULLBOX	WW
CLG	CEILING	I/O	INPUT / OUTPUT	PCP	PROCESS CONTROL	Z
CM	CENTIMETERS	ICOM	INTERCOM	PCP	PROCESS CONTROL	IMPEDANCE
CNTL	CONTROL	ID	INSIDE DIAMETER	PF	POWER FACTOR	
CONC	CONCRETE	IMC	INDIVIDUAL MOTOR CONTROLLER	PH	PHASE	
CPT	CONTROL POWER TRANSFORMER	INCAND	INCANDESCENT	PLC	PROGRAMMABLE LOGIC CONTROLLER	
CT	CURRENT TRANSFORMER	INST	INSTANTANEOUS, INSTRUMENT	PMM	POWER MONITORING MODULE	
CU	COPPER	INTLK	INTERLOCK	PNL	PANEL	
DB	DIRECT BURIAL	IPB	INSTRUMENT PULLBOX	PP	POWER PANEL	
DC	DIRECT CURRENT, DATA CABLE	JB	JUNCTION BOX	PRI	PRIMARY	
DET	DETAIL	KCMIL	1000 CIRCULAR MIL	PT	POTENTIAL TRANSFORMER	
DIAG	DIAGRAM	KV	KILOVOLT	PVC	POLYVINYL CHLORIDE	
DISC	DISCONNECT	KVA	KILOVOLT-AMPERE	PVC	POLYVINYL CHLORIDE	
DWG	DRAWING	KVAR	KILOVOLT-AMPERE REACTIVE	PWR	POWER	
EA	EACH	KW	KILOWATT	RCPT	RECEPTACLE	
EG	ENGINE	KWH	KILOWATT HOUR	RE STL	REINFORCED STEEL	
ELEC	ELECTRIC(AL)	L	LONG	REF	REFERENCE	
EMER	EMERGENCY	LA	LIGHTNING	REQD	REQUIRED	
EMH	ELECTRICAL MANHOLE	LCP	LOCAL CONTROL	RMS	ROOT MEAN SQUARE	
ENCL	ENCLOSURE / ENCLOSED	LT	LONG TIME	RTD	RESISTANCE	
EP	EXPLOSION PROOF	LTG	LIGHTING	RTU	REMOTE TERMINAL UNIT	
EPB	ELECTRICAL PULLBOX	LV	LOW VOLTAGE	SA	SURGE ARRESTOR	
EQUIP	EQUIPMENT	M	METER	SCR	SILICON	
EX	EXISTING	MA	MILLIAMPERE	SD	SMOKE DETECTOR	
F.O.	FAIL OPENED	MBS	MANUAL BYPASS SWITCH	SEC	SECONDARY	
FDR	FEEDER	MCC	MOTOR CONTROL CENTER	SEL	SELECTOR	
FL	FLUORESCENT	MCP	MOTOR CIRCUIT PROTECTOR	SPD	SURGE PROTECTIVE DEVICE	
FLA	FULL LOAD AMPS	MECH	MECHANICAL	SPEC	SPECIFICATION	
FLEX	FLEXIBLE CONDUIT	MFR	MANUFACTURE	SPKR	SPEAKER	
FM	FLOW METER	MH	MANHOLE, METAL	ST	SHORT TIME	
FO	FIBER OPTIC	HALIDE	HALIDE	SUB	SUBSTATION	
FUT	FUTURE	MOV	MOTOR OPERATED VALVE	SW	SWITCH	
GDR	GROUNDING RESISTOR	MPC	MINI POWER CENTER	SWBD	SWITCHBOARD	
GEC	GROUND ELECTRODE	MTS	MANUAL TRANSFER SWITCH	SWGR	SWITCHGEAR	
		MV	MILLIVOLT, MEDIUM VOLTAGE	SYMM	SYMMETRICAL	
				SYS	SYSTEM	
				TB	TERMINAL BOX	
				TEL	TELEPHONE	
				TEMP	TEMPERATURE	



DePAULI ENGINEERING & SURVEYING, LLC. CIVIL ENGINEERS & LAND SURVEYORS

for NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY

for the INDIAN HEALTH SERVICE WINSLOW SERVICE UNIT WINSLOW, ARIZONA

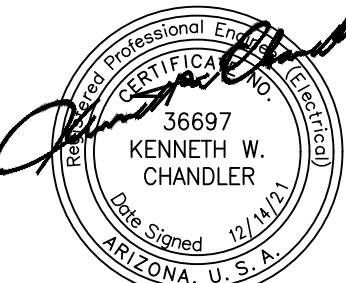
NO.	BY	DATE

INDIAN HEALTH SERVICE AND NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY LEUPP-DILKON WATER SUPPLY SYSTEM

SYMBOLS, ABBREVIATIONS & NOTES

SCALE:	NONE
DATE:	DEC. 2021
DRAWN BY:	DEE
CHECKED BY:	HWP

SHEET 1 - 6



CONTROL DIAGRAMS:

ONE LINE DIAGRAMS:

GENERAL NOTES:

LINEWORK:

CONDUCTORS CONNECTED

CONDUCTORS NOT CONNECTED

MISCELLANEOUS:

MOTOR CIRCUIT PROTECTOR (MCP)
MAGNETIC-ONLY CIRCUIT BREAKER

THERMAL-MAGNETIC CIRCUIT BREAKER

FUSE WITH SIZE AND OPTIONAL IDENTIFICATION

FUSE WITH BLOWN FUSE INDICATOR

DISCONNECT SWITCH

MOTOR (PHASES AS REQUIRED)

SOLENOID VALVE OR OVERLOAD TRIP UNIT

SPACE HEATER AND WATTAGE

CONTROL TRANSFORMER.
PRIMARY & SECONDARY VOLTAGE SHOWN, SIZE OPTIONAL

CURRENT TRANSFORMER WITH
PRIMARY / SECONDARY TURNS RATIO

HORN / SIREN

POWER FACTOR CORRECTION CAPACITOR

MOTOR STARTER TERMINATION POINT

PLC I/O POINTS:
DO = DIGITAL OUT SIGNAL
DI = DIGITAL IN SIGNAL
AO = ANALOG OUT SIGNAL
AI = ANALOG IN SIGNAL

STATUS INDICATORS: SHOWN WITH DESCRIPTION AND COLOR (X):

A = AMBER

R = RED

B = BLUE

W = WHITE

G = GREEN

INDICATORS:

STATUS (X = COLOR)

PUSH TO TEST

REMOTE TEST

BACK-LIT PUSH-BUTTON

DESCRIPTION (TYP)

COILS:

LTG CTK #1

AUTO ENABLE

ON or OFF DELAY
RANGE x to xx SEC/MIN
SET AT x SEC/MIN

U

D) MECHANICALLY LATCHED RELAY WITH
UNLATCH COIL

THERMAL OVERLOAD RELAY OR SOLID STATE
OVERLOAD RELAY

METER WITH ALPHA IDENTIFIERS
ETM= ELAPSED TIME
A = AMMETER
V = VOLTMETER

POWER CONTACTORS:

AIR-BREAK CONTACTOR WITH NEMA SIZE

VACUUM CONTACTOR WITH NEMA SIZE

REDUCED VOLTAGE SOLID STATE STARTER

SWITCHES: (SHOWN WITH OPTIONAL LOCATION REFERENCE)

NORMALLY OPEN (NO)

5ZS

VALVE FV010

NORMALLY CLOSED (NC)

1ZS

VALVE FV0101

LIMIT: FREE

3ZS

VALVE FV0101

7ZS

VALVE FV0101

LIMIT: HELD

FS3

FLOW

TS1

TEMPERATURE

PS1

PRESSURE

LS5

LEVEL

WS2

FORCE OR TORQUE

SS1

SPEED

HSxxx

AT PNLxxx

HSxxx

AT PNLxxx

STOP

AT DRIVE

ON

OFF

DESCRIPTION

1

2

AT PNLxxx

1

2

AT PNLxxx

1

2

3

AT PNLxxx

1

2

3

AT PNLxxx

KEY INTERLOCK

KEY INTERLOCK

5

MOTOR WITH HORSEPOWER

NORMAL

EMERGENCY

MTS10
60A, 3P

LOAD

POWER TRANSFER SWITCH
WITH DESIGNATIONS, RATING
AND CONFIGURATION
MTS = MANUAL TRANSFER
SWITCH
ATS = AUTOMATIC
TRANSFER SWITCH

FVNR

31

MOTOR CONTACTOR (SIZE 1)
FVR = FULL VOLTAGE,
REVERSING STARTER
FVNR = FULL VOLTAGE
NON-REVERSING
RVSS = REDUCED VOLTAGE
SOLID-STATE
2S2W= TWO SPEED, TWO
WINDING STARTER

GROUND ROD ELECTRODE

CONTROL STATION PER
CONTROL DIAGRAMS

FIELD INSTRUMENT OR DEVICE

55 KVAR

POWER FACTOR
CORRECTION CAPACITOR:
KVAR RATING

CIRCUIT ROUTED IN UNDERGROUND DUCTBANK

CIRCUIT ROUTED IN UNDERGROUND DUCTBANK

12kV

INCOMING POWER SUPPLY

C

CABLE TERMINATION: STRESS CONE FOR
SHIELDED CABLES.

L

LIGHTNING ARRESTOR

S

SURGE ARRESTOR

B

BUS DUCT OR BUSWAY

S

STAB OR PULL-APART CONNECTION.

52A

AIR CIRCUIT BREAKER: TRIP
RATING AND I.D.

200A

AIR CIRCUIT BREAKER: BREAKER FRAME
RATING / TRIP SETTING. SOLID STATE
TRIP FEATURES SHOWN: L = LONG DELAY
S = SHORT DELAY
I = INSTANTANEOUS
G = GROUND FAULT

52-G1

1000AT
1200AF

POWER CIRCUIT BREAKER FRAME AND TRIP
SETTING AND I.D. SHOWN

100A

POWER DISCONNECT OR ISOLATION
SWITCH: CONTINUOUS RATING SHOWN.
30A, 3P

F

OR

FUSED SWITCH: WITH TYPE AND RATINGS

100E
200A

FUSED SWITCH: WITH TYPE AND RATINGS

1500 KVA
13.2 KV - 480V
30, 4W

POWER TRANSFORMER: DESIGNATION, SIZE, PRIMARY
AND SECONDARY VOLTAGES, AND WINDING
CONFIGURATION

DELTA

WINDING CONFIGURATION:
DELTA

W

WYE (GROUNDED)

4160V - 120V

POTENTIAL TRANSFORMER WITH PRIMARY AND
SECONDARY VOLTAGES AND WINDINGS QUANTITIES

250/5

CURRENT TRANSFORMER: RATIO, QUANTITIES

XS

METER SWITCH:
AS = AMMETER SWITCH
VS = VOLTMETER SWITCH

0 - 1000
AMPS

METER WITH RANGE:
A = AMMETER
W = WATTMETER
KWH = KILOWATT-HOUR METER
F = FREQUENCY METER
VAR = VAR METER
V = VOLTMETER

64
N

ANSI C37.2 DEVICE WITH QUANTITIES

600kW
60 HZ

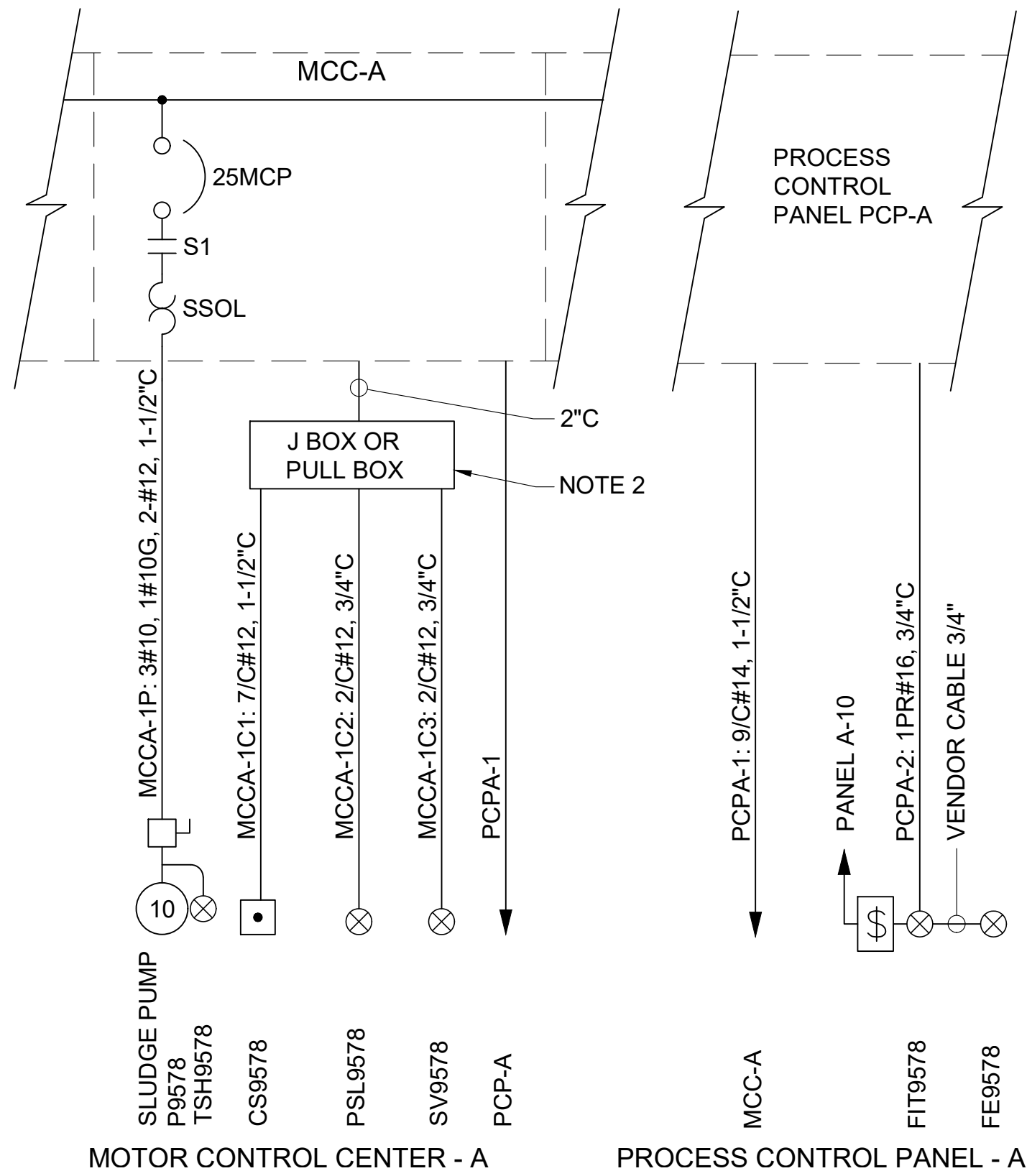
GENERATOR WITH RATING

50 AMP
10 SEC

NEUTRAL GROUNDING RESISTOR:
CURRENT / TIME RATING SHOWN

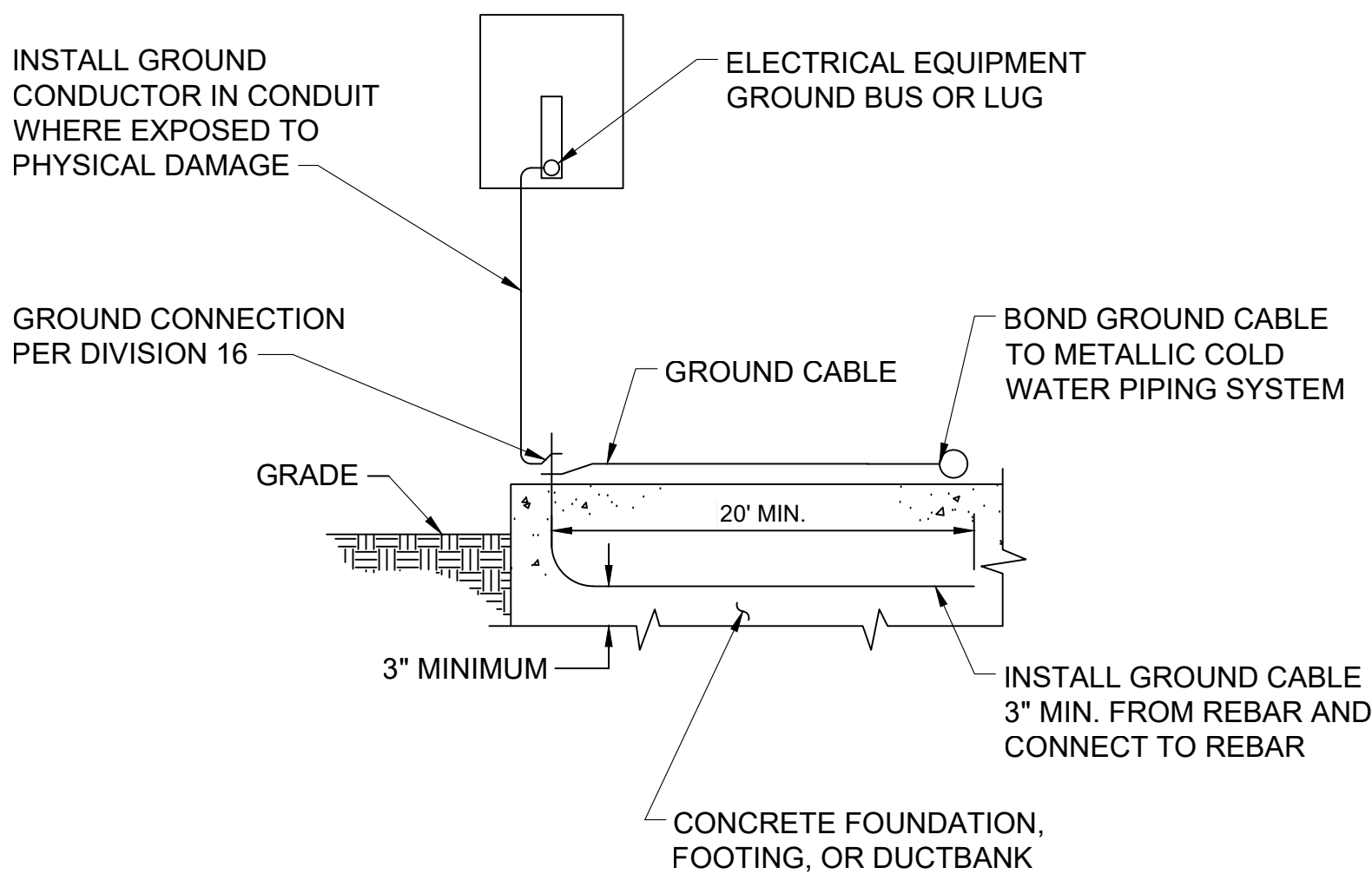
1. SYMBOLS AND ABBREVIATION
DRAWINGS ARE GENERAL IN NATURE

2. NOT ALL SYMBOLS OR ABBREVIATIONS
SHOWN ON DRAWINGS 8E-1 AND 8E-2
ARE USED IN SUBSEQUENT DRAWINGS.

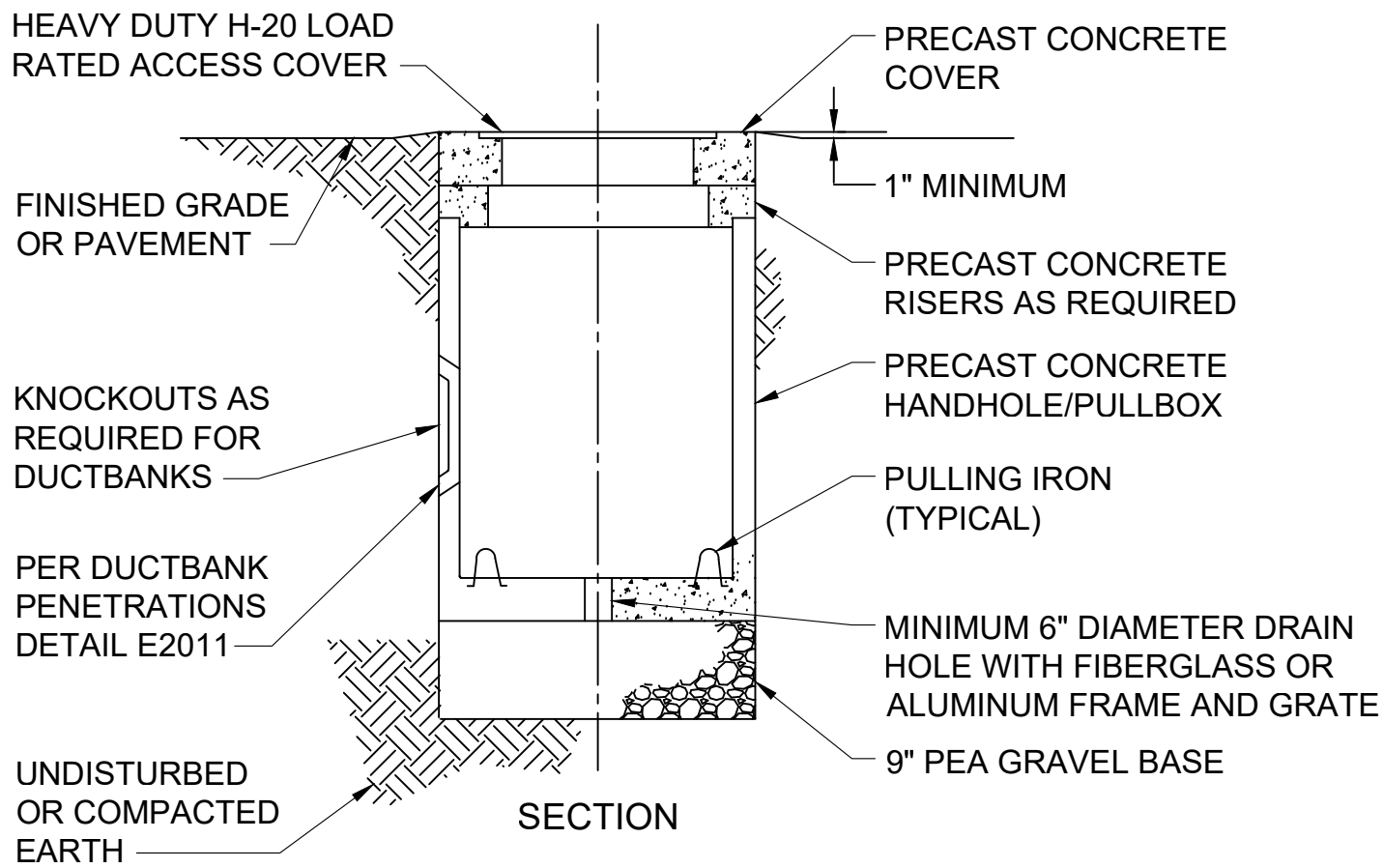


- NOTES:
1. MOTOR CONTROL CENTER AND PROCESS CONTROL PANEL HOMERUN CIRCUIT DESIGNATIONS: REFER TO PLAN DRAWINGS.
 2. PROVIDE TERMINATION BOX, PULL BOX FITTINGS, OR DUCTBANK TRANSITION, AS REQUIRED.

SINGLE-LINE DIAGRAM
TYPICAL
DETAIL E1001
NO SCALE

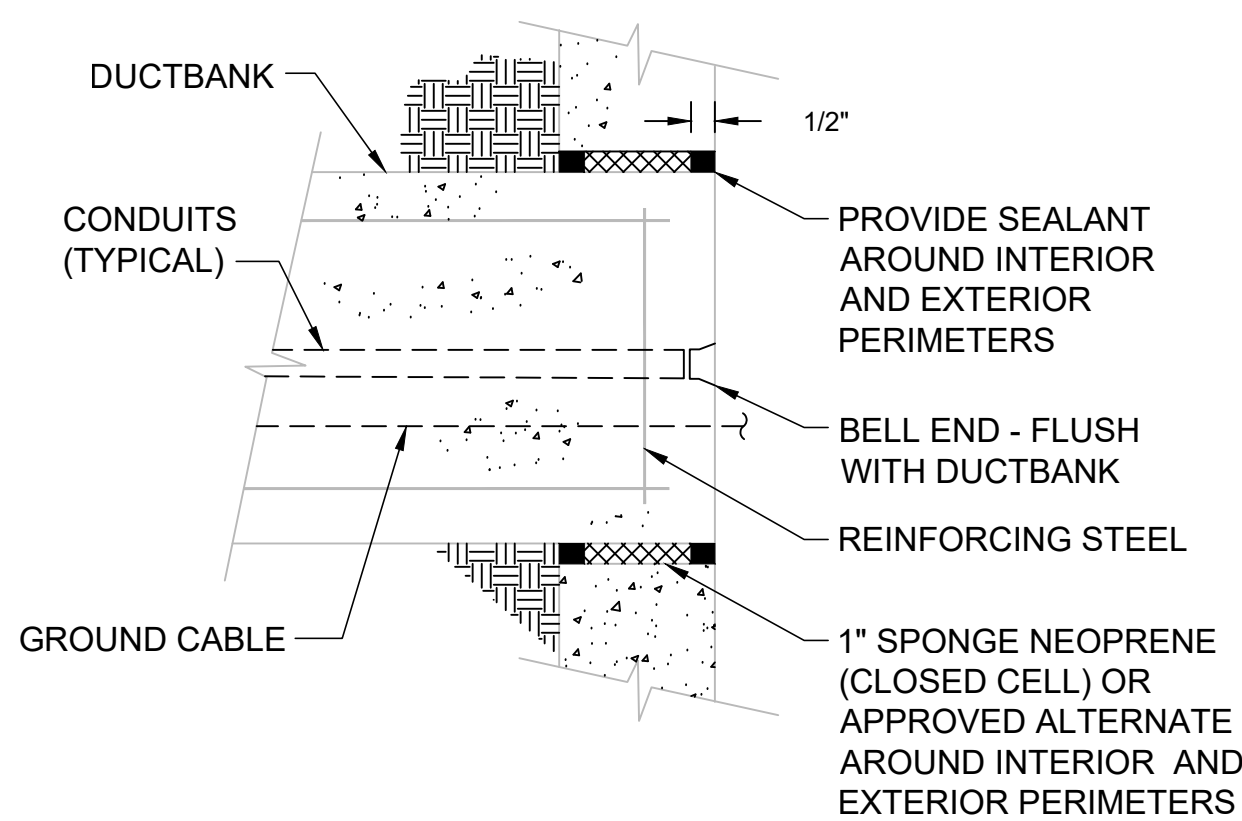


GROUND ELECTRODE
CONCRETE ENCASED
DETAIL E3001
NO SCALE

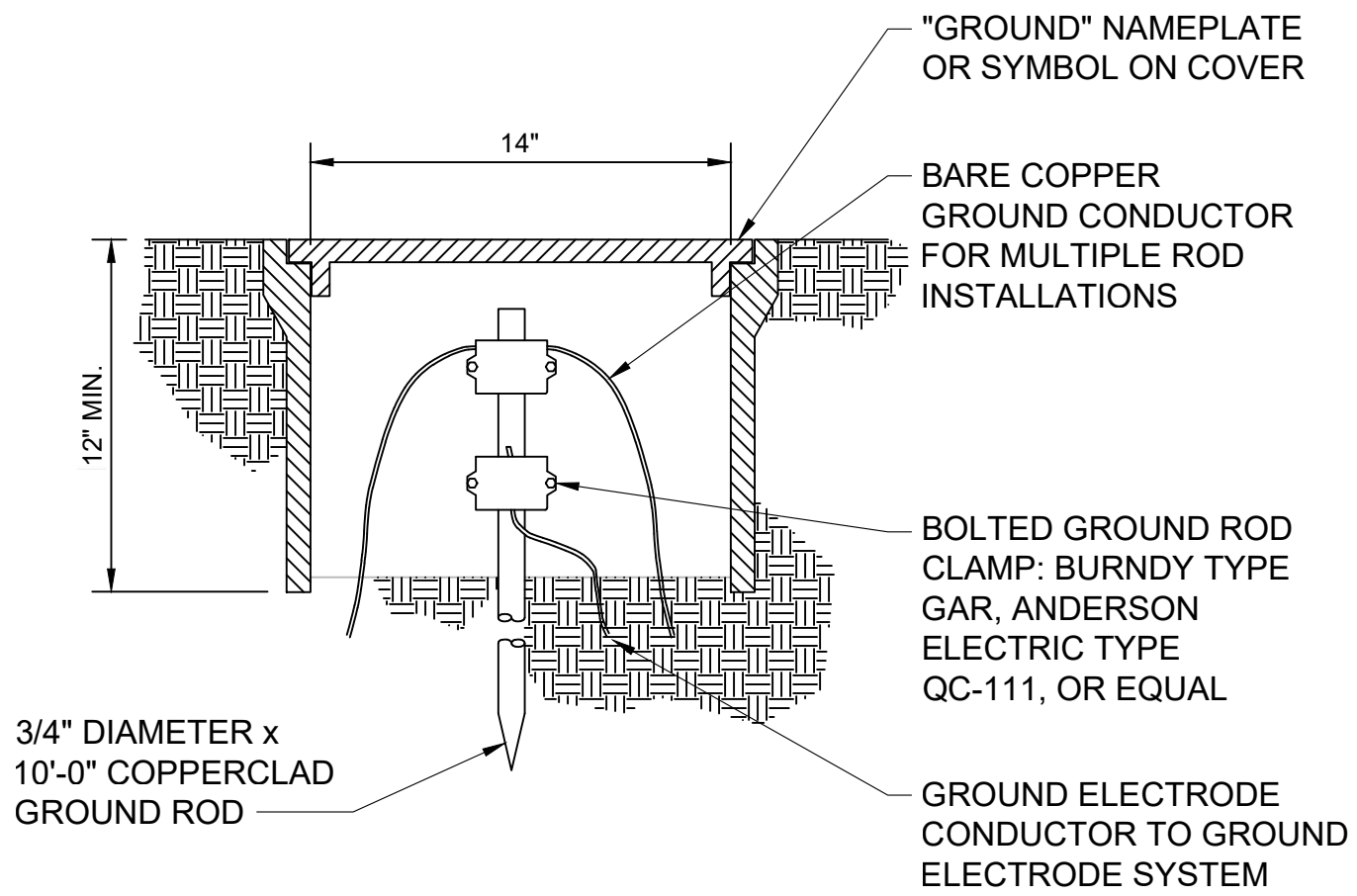


- NOTES:
1. HANDHOLE/PULLBOX DEPTH, SIZE AND LOCATION PER DRAWINGS.
 2. MINIMUM INTERIOR DIMENSIONS SHALL BE 3' x 3' x 3'D UON.
 3. BOND DUCTBANK GROUND CONDUCTORS TOGETHER.
 4. MANHOLE INTERIOR SPACE: CLASSIFIED AS CORROSIVE AREA PER SPECIFICATION DIVISION 16.

RACEWAY BOXES
HANDHOLE/PULLBOX
DETAIL E2701
NO SCALE

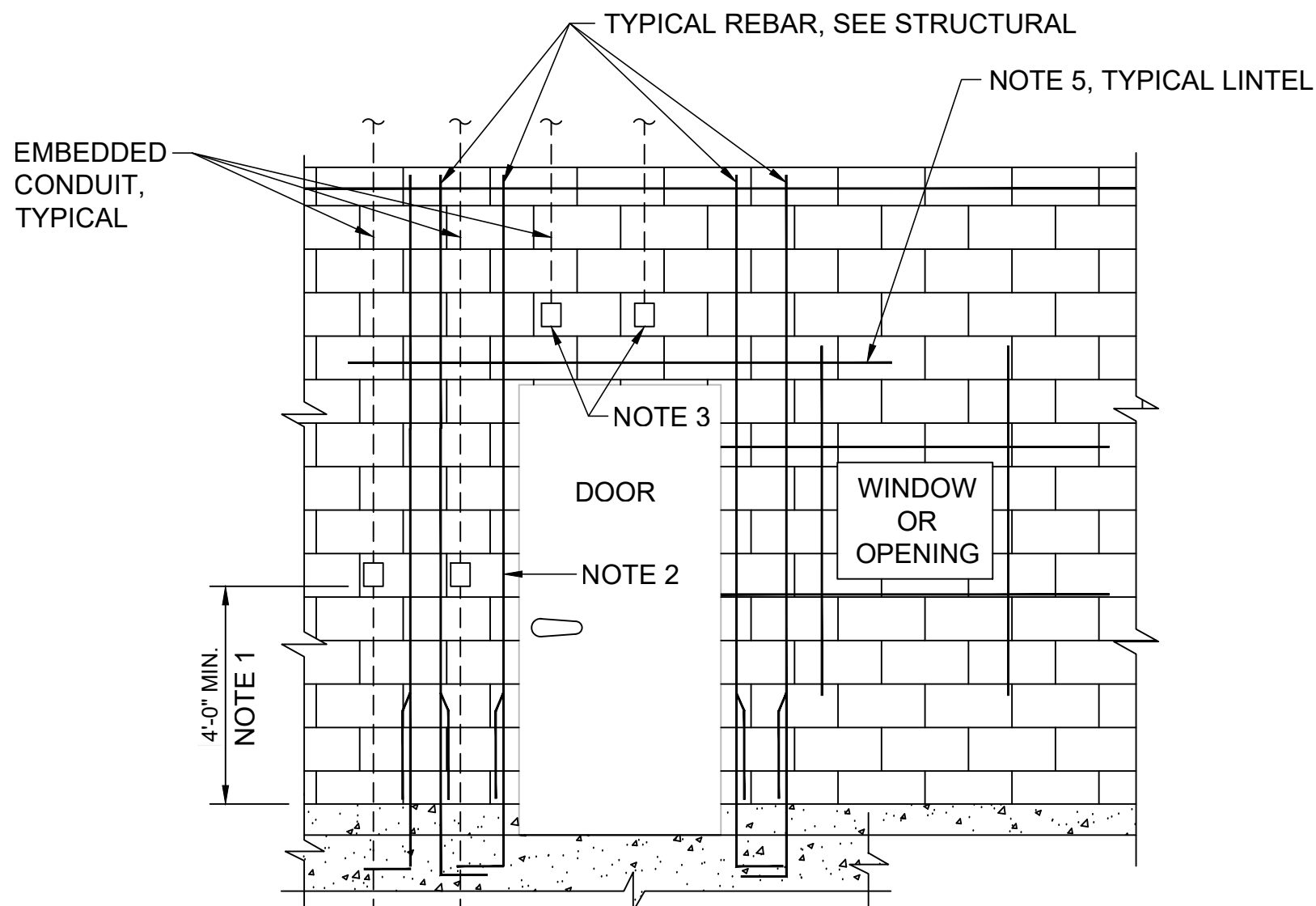


UNDERGROUND DUCTBANKS
DUCTBANK AT STRUCTURE
DETAIL E2011
NO SCALE



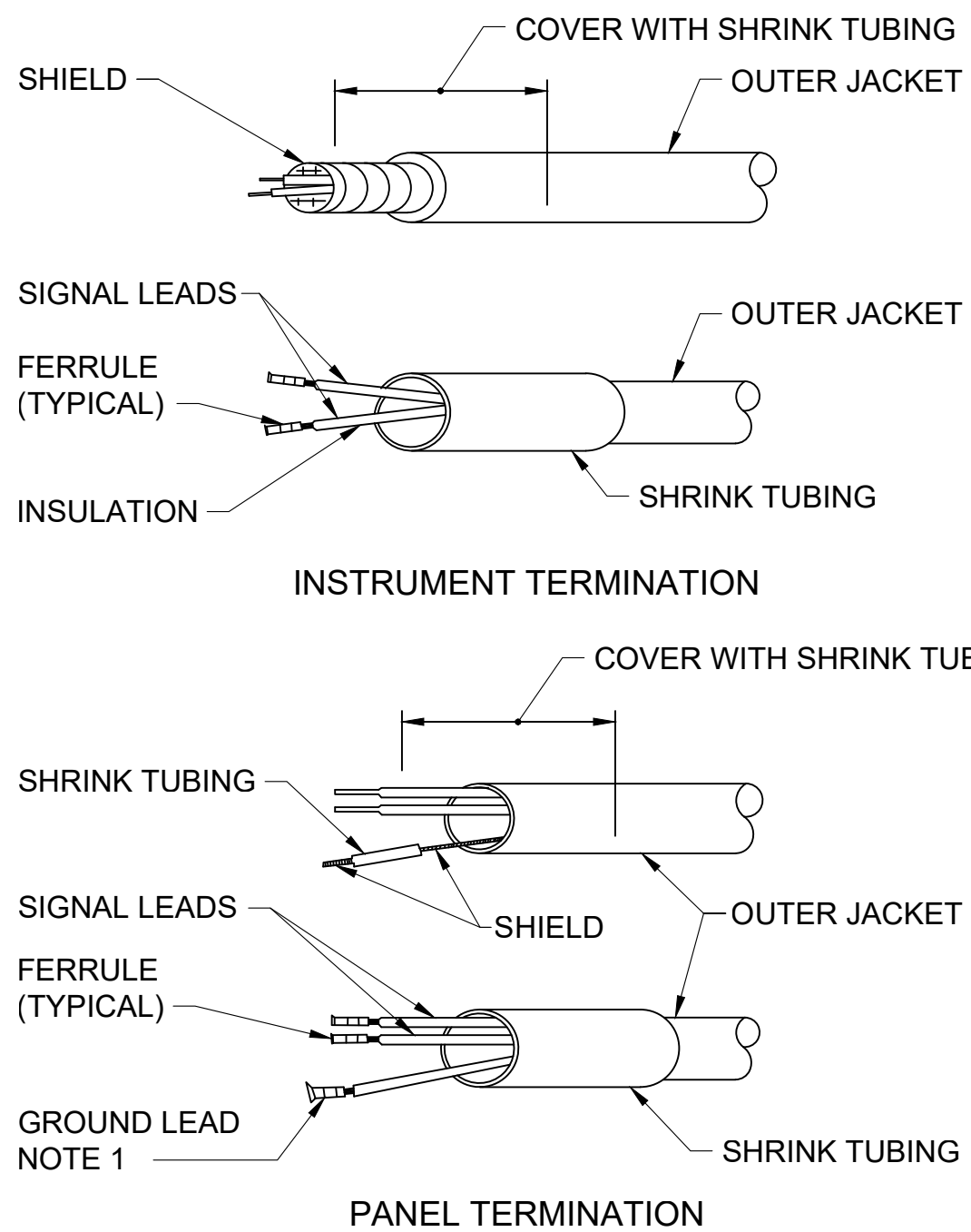
- NOTES:
1. TEST WELL OF CONCRETE, PVC, OR FRP MATERIAL.
 2. H-20 LOAD RATED COVER FOR TEST WELL IN TRAFFIC AREA.

GROUND ELECTRODE
TEST WELL
DETAIL E3002
NO SCALE



- NOTES:
1. ALL EMBEDDED BOXES ABOVE GROUT LIFTS, AND BOND BEAMS.
 2. EMBEDDED BOXES ARE NOT ALLOWED IN WALL BLOCK CELLS WITH VERTICAL REBAR.
 3. EMBEDDED BOXES FOR EXIT LIGHTS, FIRE ALARMS, INTRUSION SWITCHES, ETC. ABOVE HORIZONTAL LINTEL. SEE STRUCTURAL FOR LINTEL HEIGHTS.
 4. CUT OPENINGS IN CMU FOR EMBEDDED BOXES.
 5. HORIZONTAL CONDUIT RUNS ARE NOT ALLOWED IN BOND BEAM OR LINTEL.
 6. ELECTRICAL EQUIPMENT WEIGHING OVER 200 POUNDS MAY NOT BE ATTACHED TO WALLS. PROVIDE EQUIPMENT RACK PER DETAIL E4001.

EMBEDDED RACEWAYS
CMU WALLS
DETAIL E2211
NO SCALE

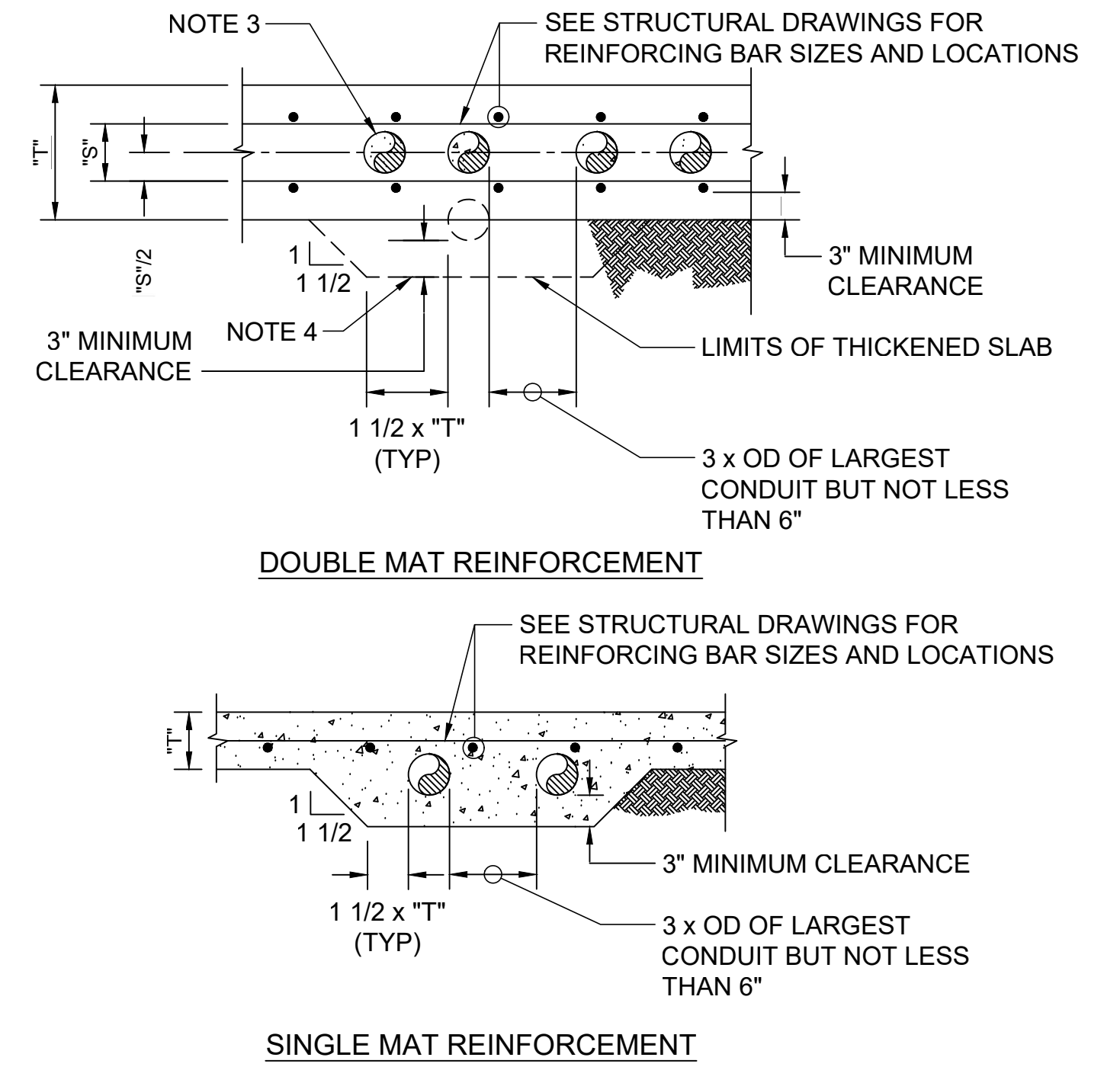
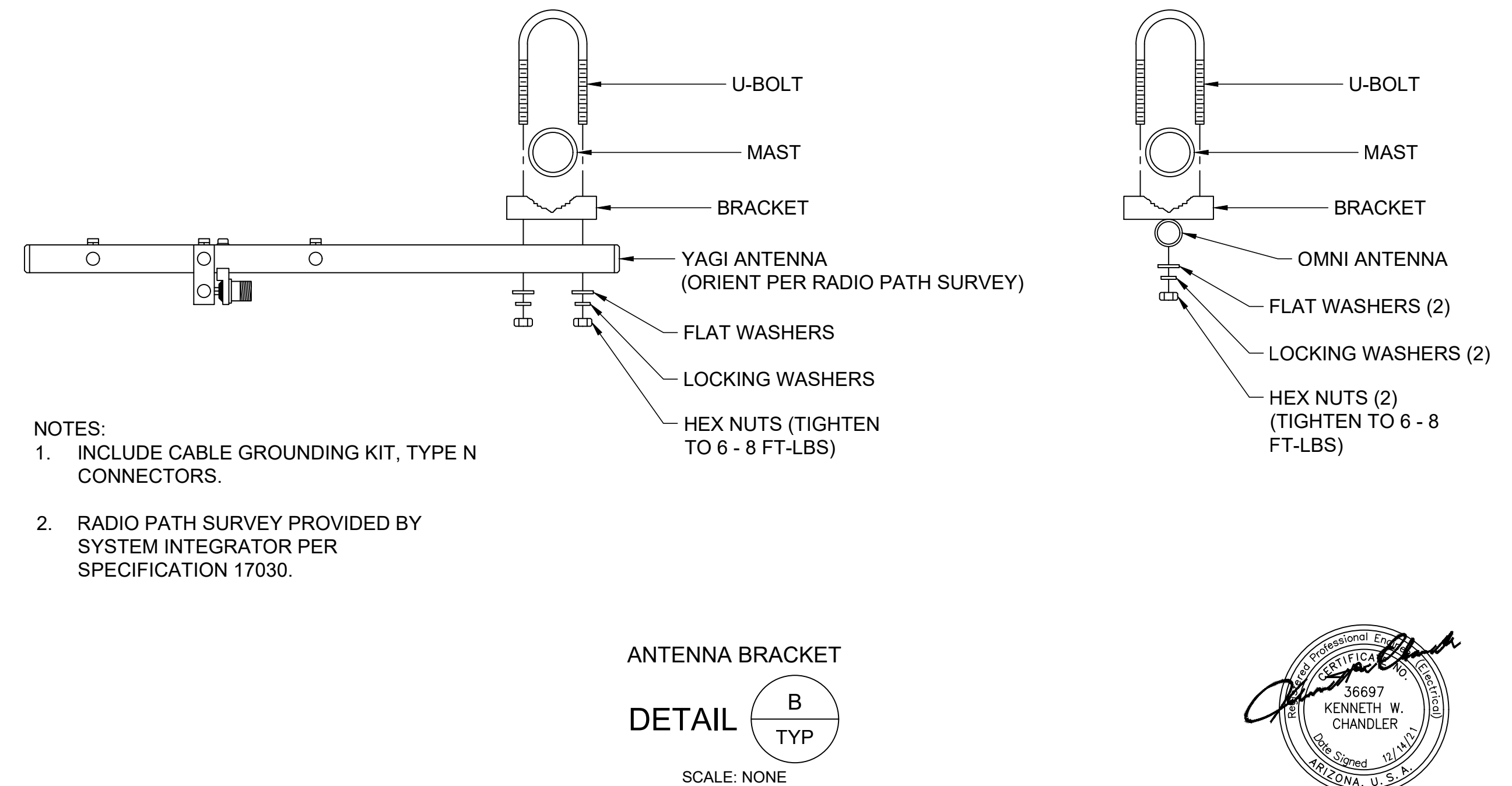
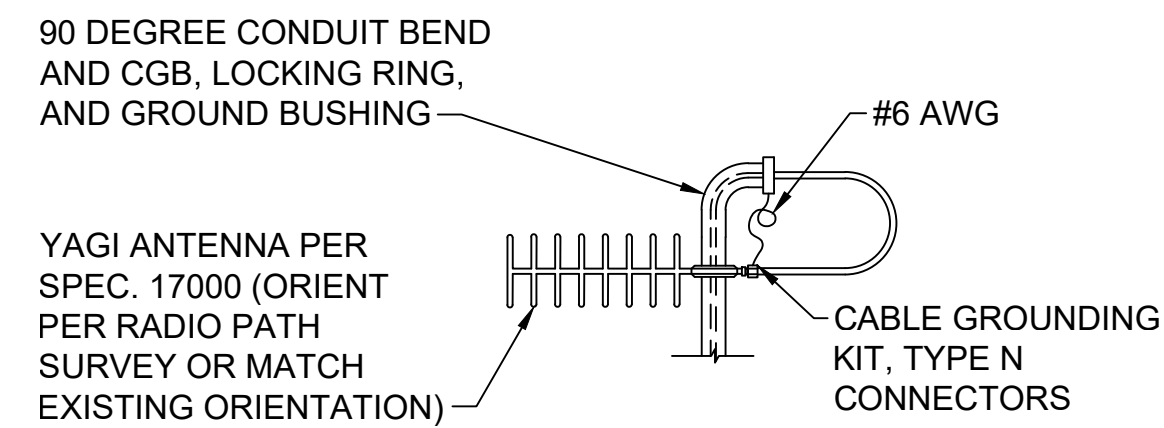
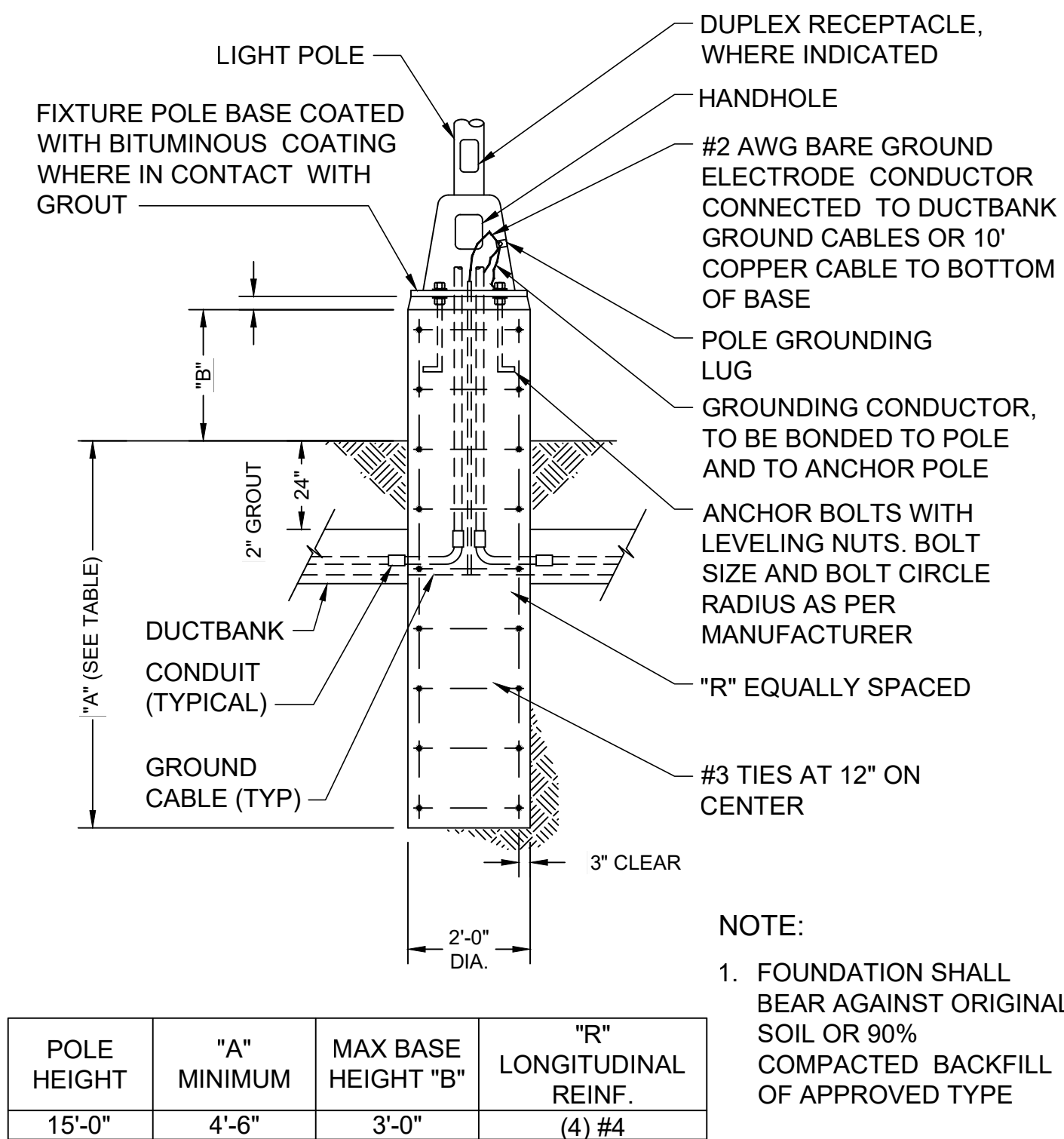
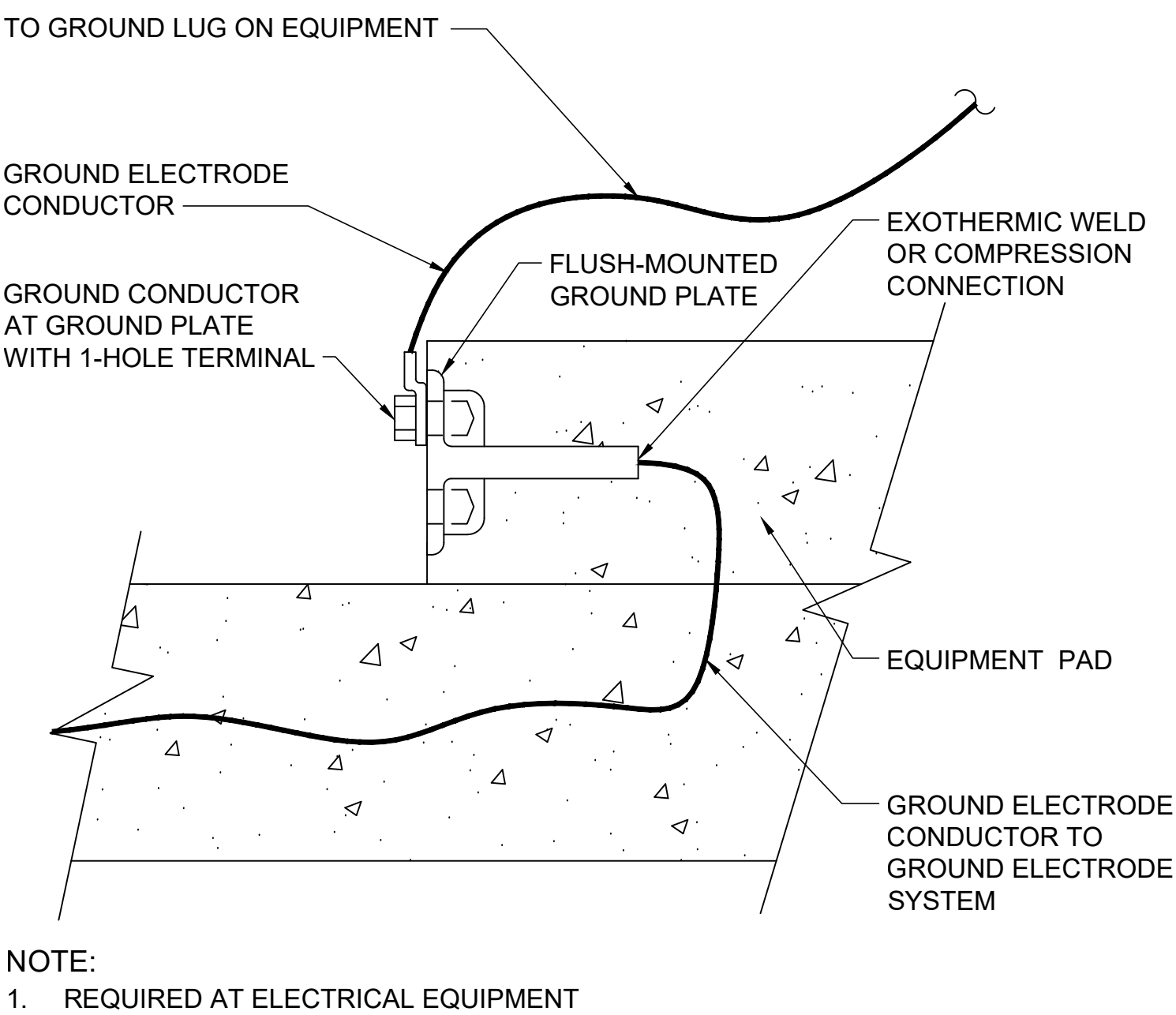
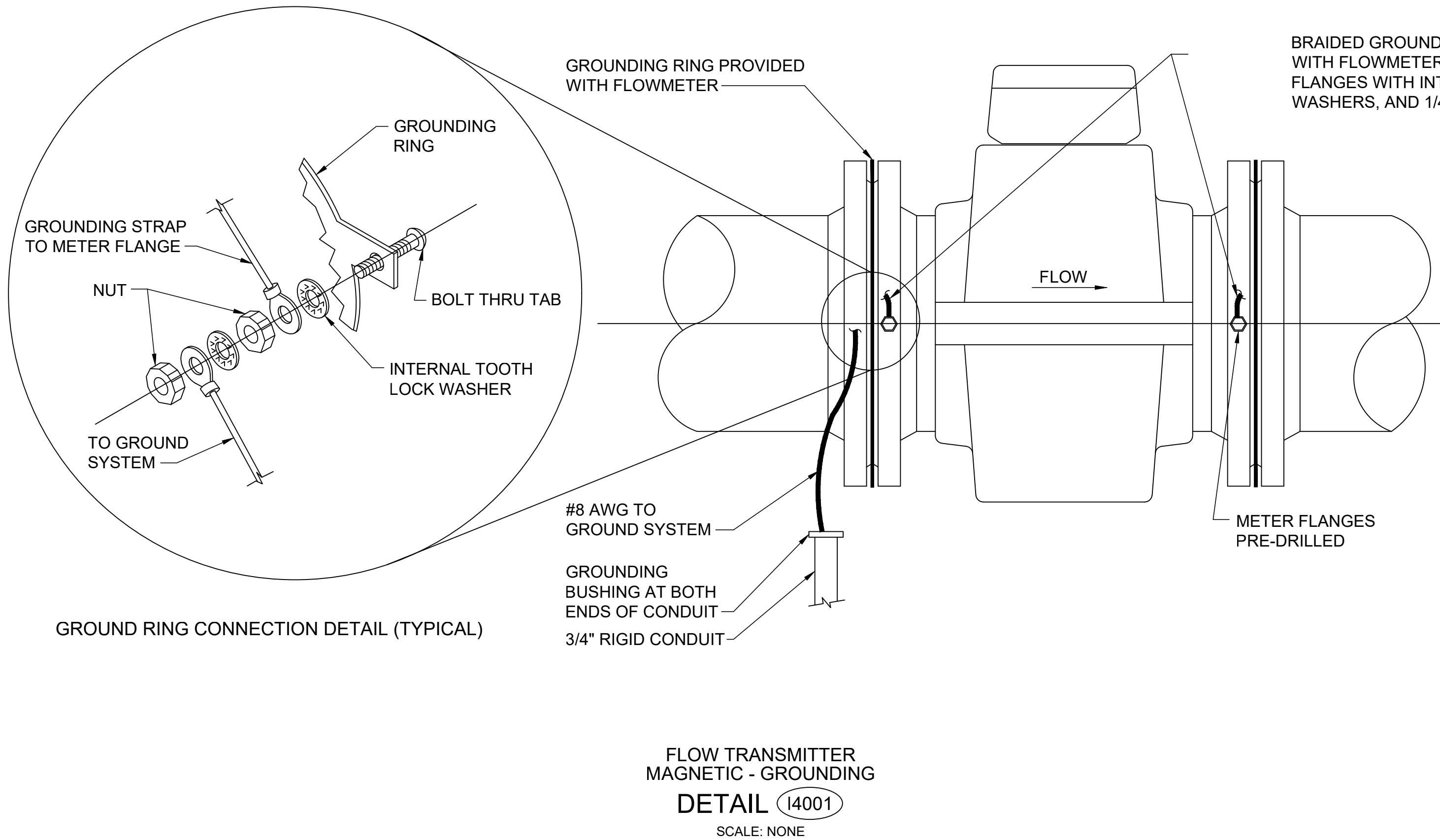


- NOTE:
1. GROUND SHIELD AT PANEL NOT AT INSTRUMENT.

SHIELDED CABLE
TERMINATION
DETAIL I0501
NO SCALE



GROUND ELECTRODE
CONCRETE ENCASED
DETAIL E3001
NO SCALE

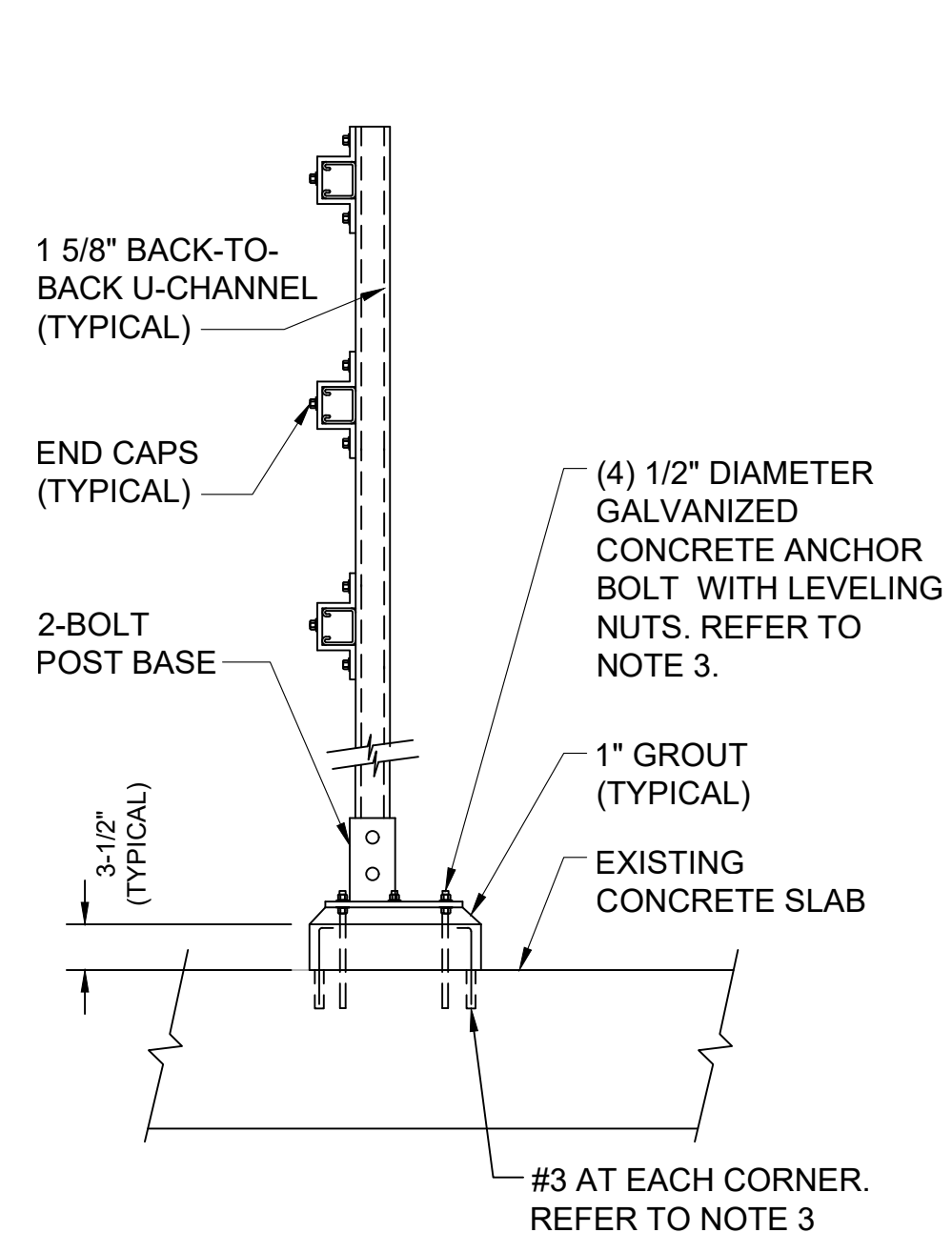
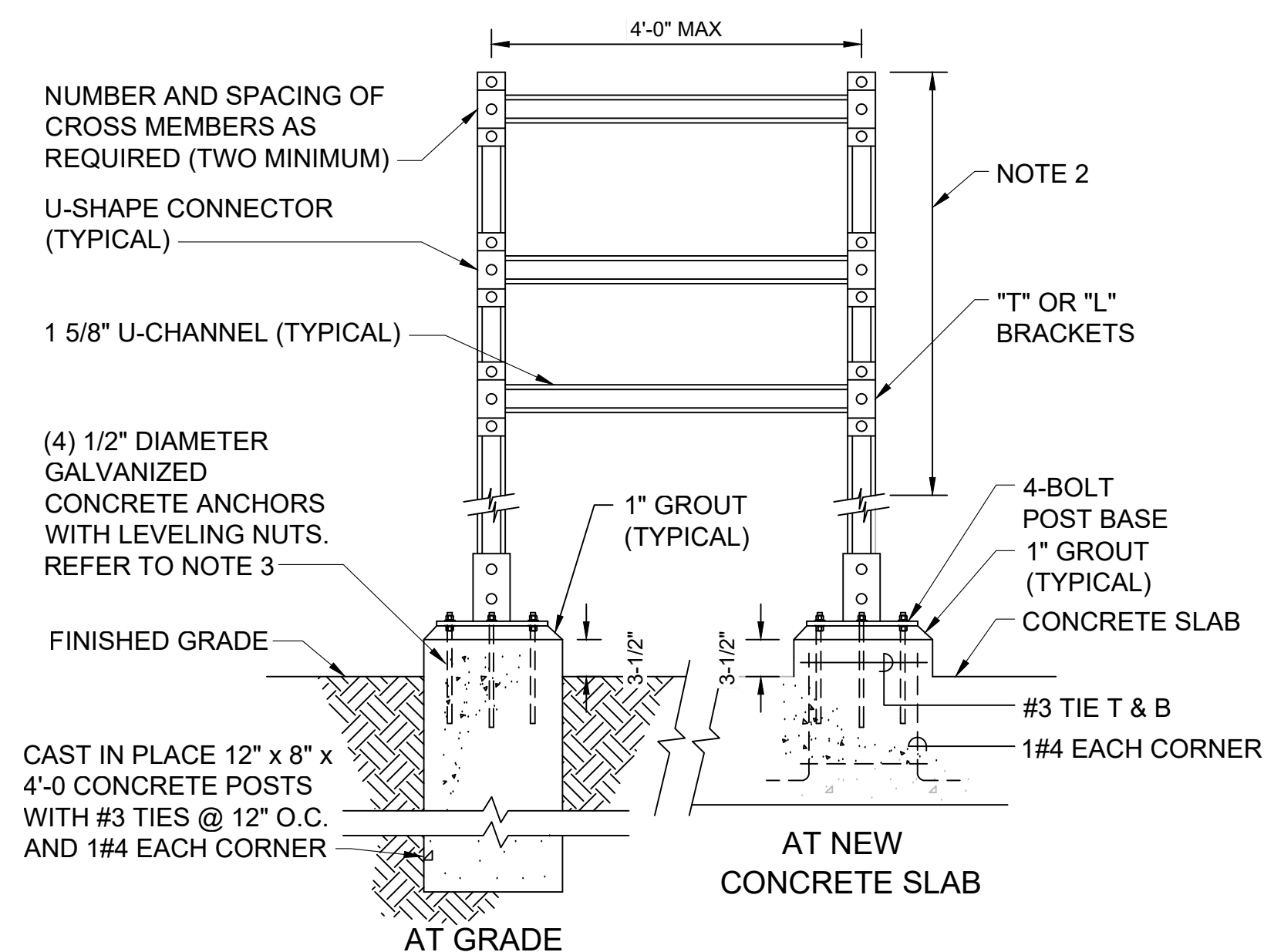
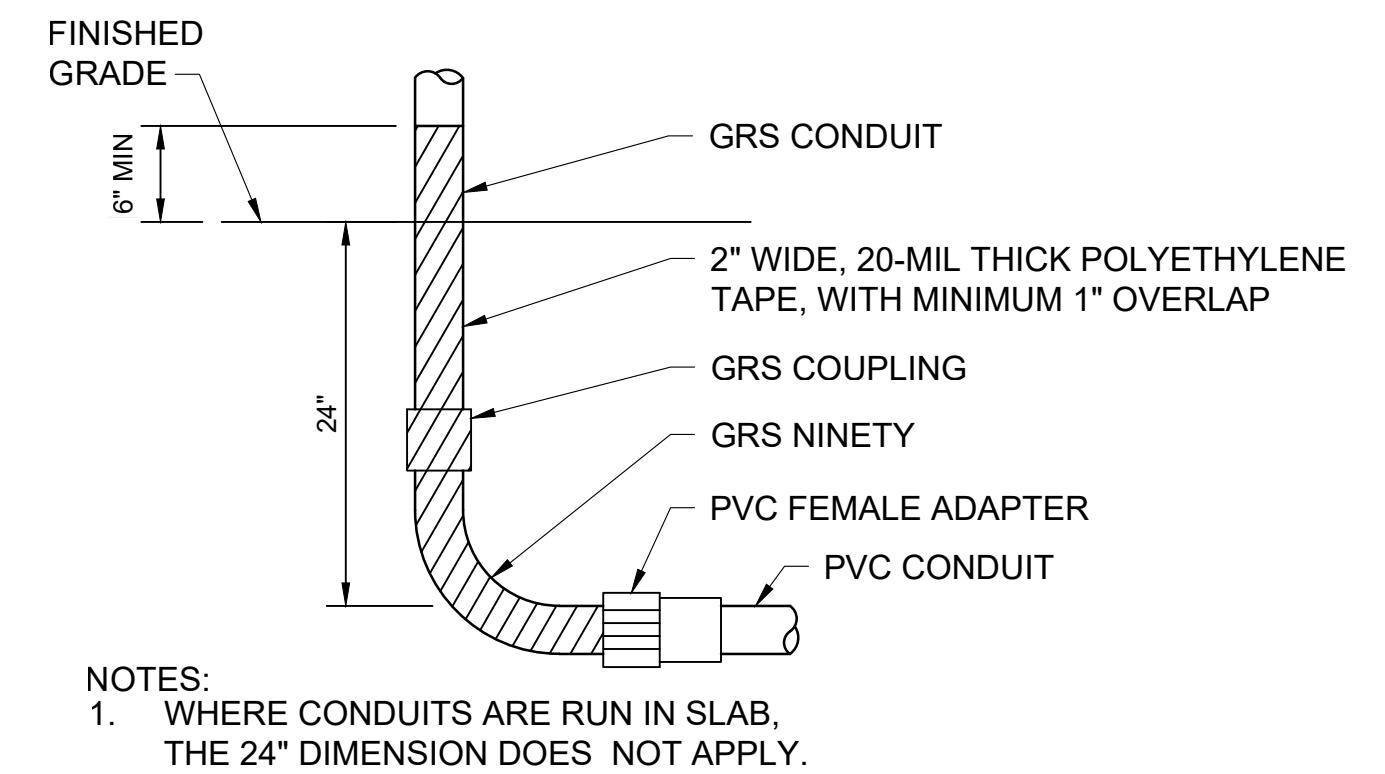
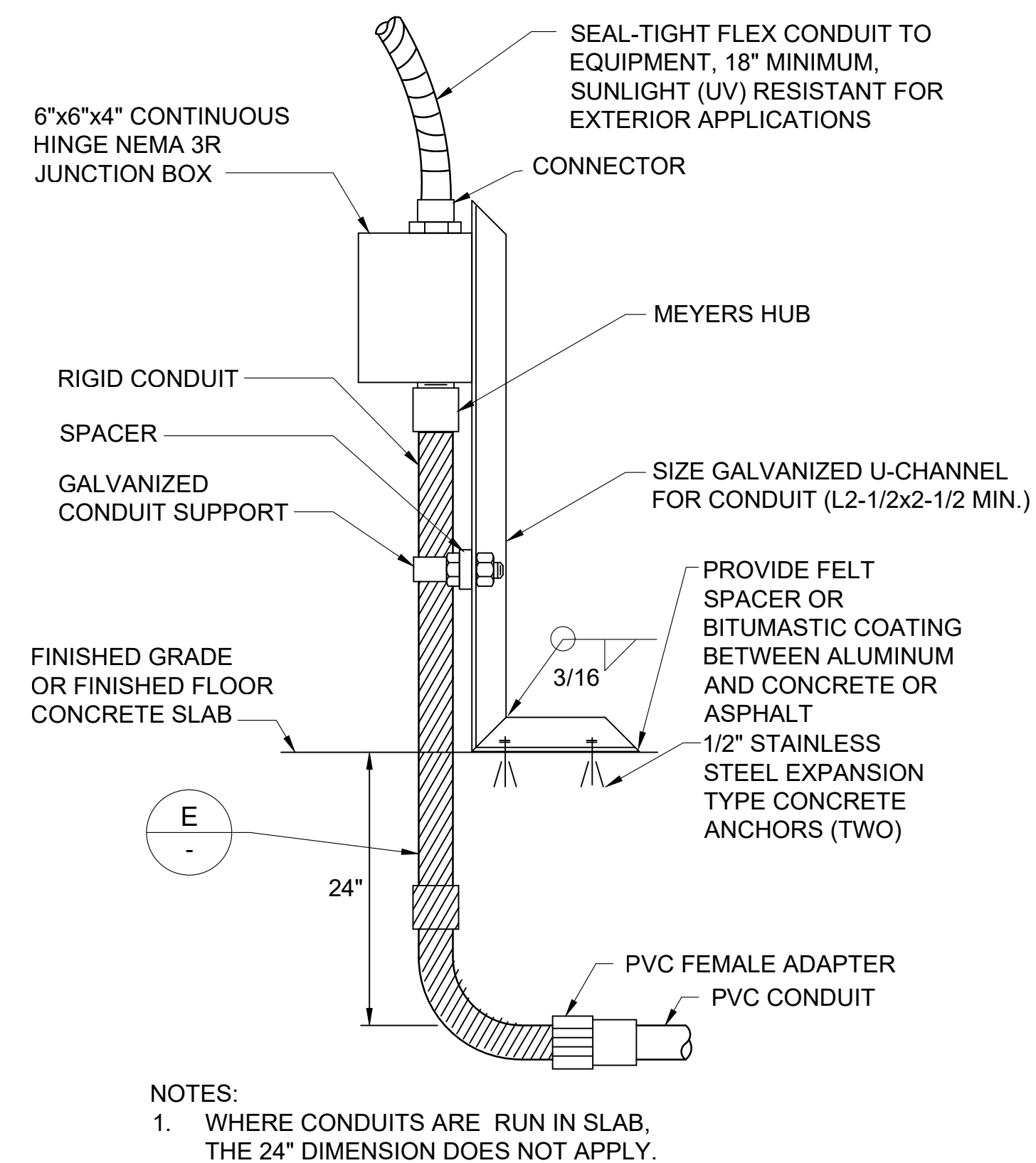
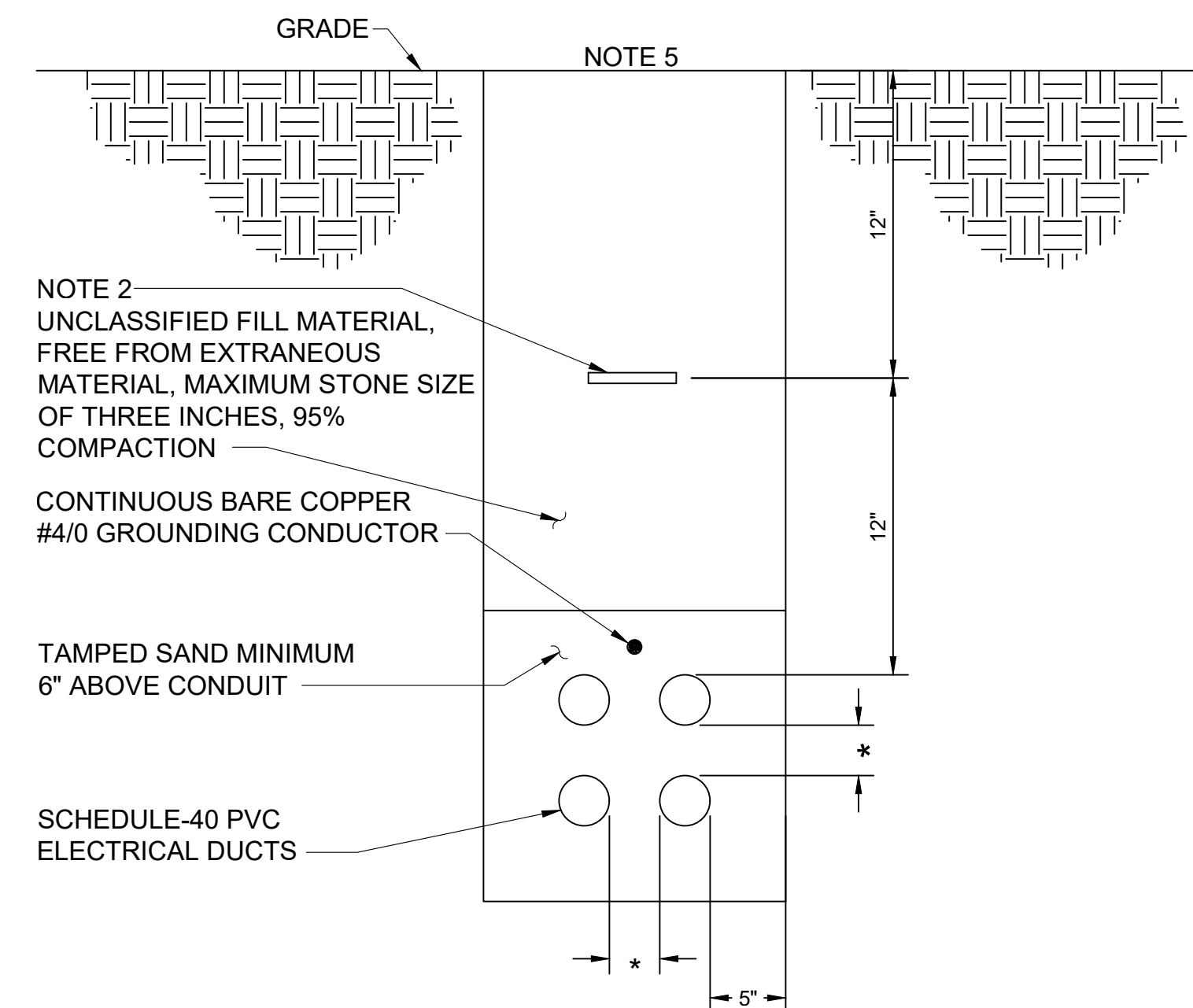


- NOTES
1. OD = OUTSIDE DIAMETER OF CONDUIT.
 2. "S" = CLEAR SPACE BETWEEN REINFORCING.
 3. MAXIMUM OD = T/4 OR S - 1/2".
 4. PLACE CONDUIT UNDER SLAB AND ENCASE IN CONCRETE WHERE OD GREATER THAN T/4 OR S - 1/2".
 5. PROVIDE PVC OR PVC COATED CONDUITS WHERE IN CONTACT WITH REINFORCING.
- EMBEDDED RACEWAYS SLAB ON GRADE DETAIL (E2202)
- SCALE: NONE



EQUIPMENT GROUNDING GROUND PLATE IN SLAB DETAIL (E3101)

SCALE: NONE



- NOTES:**
1. EQUIPMENT RACK SIZING:
 - A. ONE ITEM GREATER THAN 150 SQUARE INCHES.
 - B. TWO EQUIPMENT ITEMS GREATER THAN 130 SQUARE INCHES.
 - C. THREE OR MORE EQUIPMENT ITEMS.
 - D. PROVIDE GALVANIZED CHANNEL END-CAPS, AND FITTINGS
 - E. PROVIDE 1/4" MINIMUM ALUMINUM PLATE FOR SMALL ITEMS
 2. MOUNT INDICATORS OR EQUIPMENT OPERATING HANDLES FOUR FEET ABOVE FLOOR OR PLATFORM.
 3. REFER TO STRUCTURAL DRAWINGS AND SPECIFICATION FOR ANCHORAGE MATERIAL AND METHOD REQUIREMENTS.
 4. MATERIAL AND HARDWARE PER SPECIFICATION DIVISION 16.

