Feathercrest and Stone Ridge Lift Stations Upgrades-Ph 3 and 4: New Feathercrest Lift Station
Solicitation Number: CO-00310-SM
Job No.: 19-2502

ADDENDUM 1

Wednesday, June 3, 2020

To Bidder of Record:

This addendum, applicable to work referenced above, is an amendment to the bid proposal, plans and specifications and as such will be a part of and included in the Contract Documents. Acknowledge receipt of this addendum by entering the Addendum number and issue date on the space provided in submitted copies of the bid proposal.

RESPONSES TO QUESTIONS

1. **Sheet E-3 Note 25, Sheet E-7 Note 22 and 23, states antenna tower ground ring to be #4/0 Bare Tinned Copper, whereas specifications and other ground grid conductors are not tinned. Please clarify.**
   Response: All bare ground conductors shall be tinned. See Changes to the Specification item #1 below.

2. **Sheet E-7 Note 19 does not seem to refer to any items on the drawing, please which item it is referring to and verify #2 AWG Solid Bare Tinned Copper is correct.**
   Response: Note is correct. It is referenced at the top of the detail A near the antenna.

3. **Sheet E-6 Panel Schedule A Circuit #21 shows to go to building intrusion sensor as well as shown on E-8, Lift Building layout. There seems to be no specification regarding the intrusion sensor required. Please provide additional information regarding the intrusion sensor that requires 120V power supply**
   Response: Sensor to be powered by 24VDC supply in SCADA Panel. See Changes to the Specification item #1 and Changes to the Plans item #5 below.

4. **E-2 Site drawings show wire insulations to be THWN which contradicts specification Section 16120 2.1.C. Please clarify which is to be used.**
   Response: Cable shall be as specified in 16120. Refer to Changes to the Plans item #1 below.

5. **E-2 site drawing, Conduit #3 1-1" To Generator Control (2-1/C #10 THWN w/#12 GND) to SCADA does not meet the wiring requirements shown E-5 or the specification section 17400 2.09 SCADA interface. Please review and revise.**
   Response: Refer to Changes to the Plans item #1 below.

6. **E-8 general note #10 state "ALL DEVICES SHOWN ON THE PID'S AND INTERCONNECT DRAWINGS SHALL BE INSTALLED WITH CONDUIT/CABLES WHETHER SHOWN ON THE FLOOR PLAN OR NOT". However, there is no clarification on the wire sizes required. Please clarify the wire sizes required as design drawings seems to use both #12 and #10 being utilized for control conductors.**
   Response: Refer to Changes to the Plans item #5 below.

7. **Please provide manufacturer & catalog # regarding the beacon Alarm Light with Horn shown on Sheet E-8.**
   Response: Refer to Changes to the Plans item #2 and #5 below.

8. **Sheet E-6 Detail C, Broadband Radio refers to note 2 & 4, there is no note 4, would this be referring to note #4? Please clarify.**
   Response: Refer to Changes to the Plans item #3 below.

9. **Sheet E-3 Keyed Note 4, Ductbank to Antenna tower is missing the coax cable for Cellular Antenna. Please clarify if it is to be routed in the spare conduit or if you require additional conduit.**
   Response: Refer to Changes to the Plans items #1 and #3 below.

10. **Sheet E-3 keyed Note 7 calls for 2-3/4" for the heat trace feeder. However, Sheet E-6 Panel A schedule calls for 2#12 & 1#12 G in 1" conduit. Please clarify the conduit size to be utilized as well as the wire sizes. It seems it should be 1" conduit with 2#10 and 1#12.**
    Response: Refer to Changes to the Plans items #1 and #3 below.

11. **Sheet E-3 Keyed Note # 2 refers shows 3" conduit for pump power and spares, whereas Keyed Note #10 as well as One-line diagram on Sheet E-2 shows these to be 2" conduits. Please clarify whether 2" or 3" conduit is to be used.**
    Response: Refer to Changes to the Plans item #1 below.

12. **Sheet E-3 Keyed Note #11 refers to Sheet E-6 Detail E for cables sizes for the Odor Control Blower Controls. Detail E on Sheet E-6 is the panel schedule. Please clarify the required control cables.**
    Response: Refer to Changes to the Plans item #1 below.

13. **Sheet E-3 Keyed Note #12 calls for 2-1" conduit for Odor Control Blower Power from the MCC to disconnect with (1) spare in the ductbank. However, it is also indicated at the Lift Station between the disconnect and the Odor Control Blower. Please clarify if the spare conduit required between the disconnect switch and the blower.**
    Response: Refer to Changes to the Plans item #1 below.

14. **Please provide details for Ground Moisturizing Port Referenced on Sheet E-1 and E-3.**
    Response: Refer to Sheet E-2 Detail B.

15. **Please review the lighting contractor schematics on Sheet E-9, for the Electrical building Exterior Lights and Area Lights. The way it is represented, it seems to indicate that there are to be 2-photocells PC1 & PC2. Please clarify.**
    Response: Correct, there are 2 photocells.

16. **Sheet E-8 shows inputs from both wall mounted HVAC Units to SCADA. However, E-11 shows a single input to SCADA from Electrical room Temperature transmitter. Please review and advise if SCADA input is from an Ambient temperature Sensor or temperature sensors internal to the HVAC units.**
    Response: SCADA input is from an Ambient Temperature Sensor. Refer to Changes to the Plans items #5 below.

17. **Does the training requirements below "Manufacturer's Standard Training" need to be done by Rockwell? If so, we really need the part number given per addendum for them to get us an accurate quote.**
    TRAINING
    A. Programmable Logic Controller (PLC) Hardware and Software and HMI System Software:
    1. Provide 32-40 hours of manufacturer's standard training course for five (5) of the Owner's personnel in the operation, configuration, programming, installation, and maintenance of the HMI System software, SAWS Programmer staff will provide the Rockwell course number at a later date.
    2. The hardware and software courses shall not be concurrent.
    3. The following hardware training shall be provided as a minimum:
    a. Hardware maintenance for the PLC equipment provided
    b. Test, adjustment, and calibration procedures
    c. Troubleshooting and diagnosis
    d. Component removal and replacement
    e. Periodic maintenance
    4. The following software training shall be provided as a minimum:
    a. System configuration
    b. Application specific program development/programming
    c. Uploading/downloading programs
    d. Documenting program/configuration
    e. System backups and reload procedures

f. TCP/IP addressing procedures
g. Network communications configuration
Response: Rockwell course FTVP.

CHANGES TO THE SPECIFICATIONS

1. **Section 16120, Conductors:**
    a. Item 2.3.A.1: Revise as follows: "No. 6 AWG and Larger: Stranded **Tinned** Bare Copper, Class B stranding, soft drawn."
    b. Item 2.3.A.2: Revise as follows: "No. 8 AWG and smaller: Solid **Tinned** Bare Copper, or Stranded copper with green, Type XHHW insulation.
    c. Item 2.3.B: Revise as follows: "Direct Buried: Stranded bare **tinned** copper, class B stranding soft drawn."

2. **Section 16930, Instrumentation**: Add item: "2.6 Building Intrusion Sensor, A. Manufacturer: Interlogix 1076, or equal."

3. **Section 17600, Communication Towers:**
    a. Item 1.8.A.10: Add "b. One Cellular Antenna with Coaxial Cables at 8 foot height."
    b. Item 1.8.A: Add "13. Anti-Climb Panels. Shall extend from base to 8' above base."

CHANGES TO THE PLANS

1. **Dwg E-3:** Replace entire sheet with the attached.

2. **Dwg. E-4:** Replace entire sheet with the attached.

3. **Dwg. E-6:**
    a. Detail C:
        i. Broadband Radio, Remove "See note 2 & 4."
        ii. Add note 4: "Mount Cellular Antenna 8' above grade on antenna mast. Use LMR-900 outdoor rated coaxial cable for connection."
    b. Detail E:
        i. Circuit 4, revise wire to: "2-#10, 1-#10 GND."

4. **Dwg E-7:**
    a. Detail A:
        i. Ground connection from Panel to Tower: Remove callout labeled: "See notes 9 & 18." Replace with See note 18."
        ii. Remove all callouts regarding note 9.

5. **Dwg E-8:** Replace entire sheet with the attached.

CLARIFICATIONS

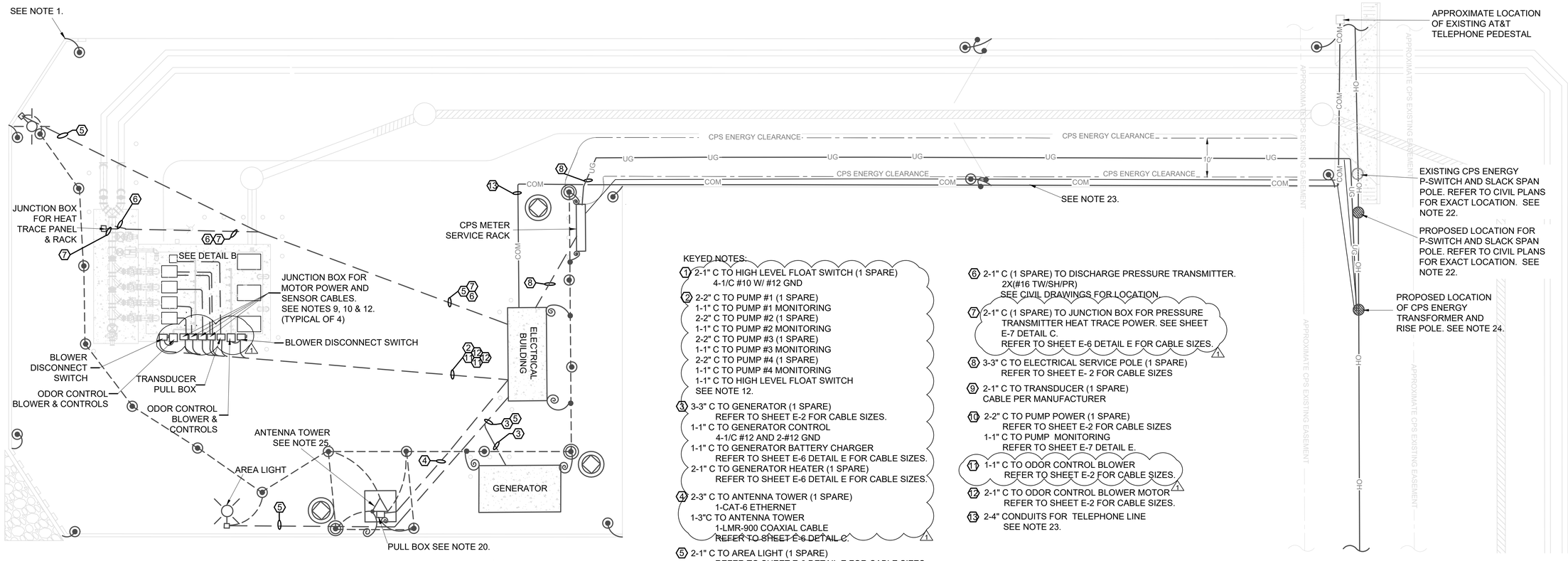
1. None provided with this addendum.

END OF ADDENDUM

This Addendum, including these _four__ (4) pages, is _seven__ (7) pages with attachments in its entirety.
Attachments:
E-3 – Site Plan
E-4 – Lift Station Control Details #1 Pump Control Panel
E-8 – Lift Station Building and MCC Layout

_____

Steven Mouser, PE
Grubb Engineering, Inc. (TBPE No. 3904)



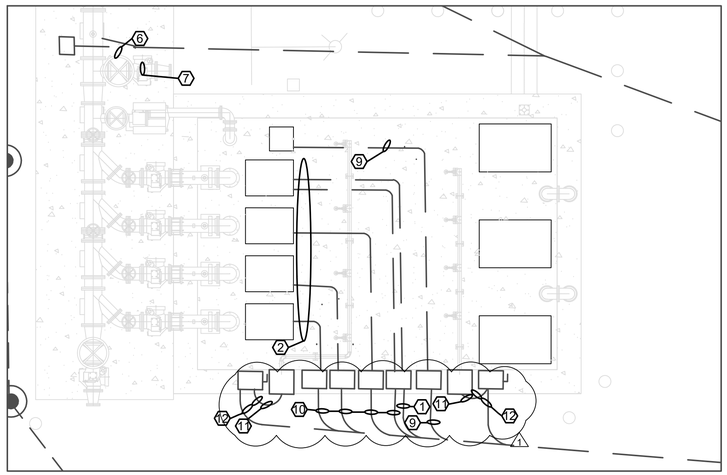
A SITE PLAN
SCALE: AS SHOWN
0 16 32
SCALE IN FEET

KEYED NOTES:

1. 2-1" C TO HIGH LEVEL FLOAT SWITCH (1 SPARE)
   4-1/C #10 W/ #12 GND
2. 2-2" C TO PUMP #1 (1 SPARE)
   1-1" C TO PUMP #1 MONITORING
   2-2" C TO PUMP #2 (1 SPARE)
   1-1" C TO PUMP #2 MONITORING
   2-2" C TO PUMP #3 (1 SPARE)
   1-1" C TO PUMP #3 MONITORING
   2-2" C TO PUMP #4 (1 SPARE)
   1-1" C TO PUMP #4 MONITORING
   1-1" C TO HIGH LEVEL FLOAT SWITCH
   SEE NOTE 12.
3. 3-3" C TO GENERATOR (1 SPARE)
   REFER TO SHEET E-2 FOR CABLE SIZES.
   1-1" C TO GENERATOR CONTROL
   4-1/C #12 AND 2-#12 GND
   1-1" C TO GENERATOR BATTERY CHARGER
   REFER TO SHEET E-6 DETAIL E FOR CABLE SIZES.
   2-1" C TO GENERATOR HEATER (1 SPARE)
   REFER TO SHEET E-6 DETAIL E FOR CABLE SIZES.
4. 2-3" C TO ANTENNA TOWER (1 SPARE)
   1-CAT-6 ETHERNET
   1-3"C TO ANTENNA TOWER
   1-LMR-900 COAXIAL CABLE
   REFER TO SHEET E-6 DETAIL C.
5. 2-1" C TO AREA LIGHT (1 SPARE)
   REFER TO SHEET E-6 DETAIL E FOR CABLE SIZES.
6. 2-1" C (1 SPARE) TO DISCHARGE PRESSURE TRANSMITTER.
   2X(#16 TW/SH/PR)
   SEE CIVIL DRAWINGS FOR LOCATION.
7. 2-1" C (1 SPARE) TO JUNCTION BOX FOR PRESSURE TRANSMITTER HEAT TRACE POWER. SEE SHEET E-7 DETAIL C.
   REFER TO SHEET E-6 DETAIL E FOR CABLE SIZES.
8. 3-3" C TO ELECTRICAL SERVICE POLE (1 SPARE)
   REFER TO SHEET E- 2 FOR CABLE SIZES
9. 2-1" C TO TRANSDUCER (1 SPARE)
   CABLE PER MANUFACTURER
10. 2-2" C TO PUMP POWER (1 SPARE)
    REFER TO SHEET E-2 FOR CABLE SIZES
    1-1" C TO PUMP MONITORING
    REFER TO SHEET E-7 DETAIL E.
11. 1-1" C TO ODOR CONTROL BLOWER
    REFER TO SHEET E-2 FOR CABLE SIZES.
12. 2-1" C TO ODOR CONTROL BLOWER MOTOR
    REFER TO SHEET E-2 FOR CABLE SIZES.
13. 2-4" CONDUITS FOR TELEPHONE LINE
    SEE NOTE 23.

NOTES:

1. FENCE SHALL BE GROUNDED AT EACH CORNER WITH 3/4" X 10' GROUND ROD. RODS SHALL BE LOCATED INSIDE THE FENCE. THE FENCE GROUNDING SHOULD BE ON A SEPARATE SYSTEM.
2. ALL GATES SHALL BE EQUIPPED WITH GROUNDING STRAPS. SEE LEGEND.
3. THERE SHALL BE A 20' SEPARATION BETWEEN GROUND RODS. SPACING SHOWN ON PLAN IS FOR REFERENCE ONLY AND MIGHT NOT BE TO SCALE.
4. ALL ABOVE GROUND CONDUIT SHALL BE INSTALLED AS TO NOT CREATE A TRIPPING HAZARD.
5. PVC COATED ALUMINUM CONDUIT SHALL BE PROVIDED IN AREAS WHERE CONCRETE COMES INTO CONTACT WITH ALUMINUM CONDUIT.
6. GENERATOR SHALL BE BONDED TO GROUNDING RING AT GROUNDING POINTS.
7. SEE SHEET E-9 FOR GROUNDING DETAILS FOR ELECTRICAL SERVICE RACK AND ALL RACKS LOCATED ON SITE.
8. CONTRACTOR SHALL OBSERVE NEC WORKING SPACE REQUIREMENTS WHEN LOCATING EQUIPMENT.
9. PROVIDE BARRIER PER NEC IN JUNCTION BOX TO SEPARATE POWER AND SIGNAL CABLES.
10. JUNCTION BOX OPENING SHOULD BE AWAY FROM WET WELL.
11. GROUND GRID MUST USE ALL EXOTHERMIC WELD TO MAKE A SOLID COMMON GROUNDING LOOP.
12. SEE SHEET E-7 DETAIL E FOR JUNCTION BOX DETAIL. SEE CIVIL DRAWINGS FOR EXACT LOCATION OF ACCESS COVER AND PUMP NUMBERS. DO NOT EXTEND SPARE CONDUIT INSIDE WET WELL.
13. ALL GROUND GRID CONDUCTORS SHALL BE CONTINUOUS EXCEPT WHERE SPLICING IS UNAVOIDABLE.
14. MOISTURIZING PORT SHALL BE LOCATED ADJACENT TO TEST WELL LESS THAN 6" APART.
15. PER COSA STANDARDS, ANTENNA TOWER SHALL BE LOCATED A MINIMUM OF 115% OF THE HEIGHT OF THE ANTENNA SUPPORT STRUCTURE AWAY FROM ANY RESIDENTIAL STRUCTURE.
16. IF LOCATION OF ELECTRIC SERVICE POLE CHANGES DURING CONSTRUCTION PHASE, CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY FOR APPROVAL.
17. OVERHEAD CONDUCTORS MUST HAVE A HORIZONTAL CLEARANCE WITHOUT WIND OF 10 FEET FOR VOLTAGES UP TO 50KV.
18. GROUND RESISTANCE SHALL MEASURE 5 OHMS OR LESS. CONTRACTOR TO ADD SUPPLEMENTAL GROUND RODS WHERE NECESSARY TO ACHIEVE THE RESISTANCE REQUIRED.
19. UTILITIES NOT SHOWN FOR CLARITY. PLEASE SEE CIVIL DRAWINGS FOR UTILITIES.
20. SEE SHEETS E-7, E-9 AND SAWS STANDARDS FOR ANTENNA GROUNDING DETAILS.
21. PULL BOX FOR ANTENNA COAXIAL CABLE.
22. CONTRACTOR TO COORDINATE AND PAY FEES FOR CPS ENERGY OVERHEAD LINE EXTENSION. CONTRACTOR TO COORDINATE AND PAY FEES FOR RELOCATION OF P-SWITCH AND SLACK SPAN POLE.
23. CONTRACTOR TO COORDINATE AND PAY FEES FOR PHONE UTILITY LINE EXTENSION.
24. TRANSFORMER LOCATION WILL NEED TO BE COORDINATED WITH CPS ENERGY. TRANSFORMER POLE MUST BE TWENTY-FIVE FEET AWAY FROM P-SWITCH AND POLE.
25. TOWER GROUND RING MUST BE AT LEAST 2 FEET AWAY FROM TOWER BASE. TOWER RING CONDUCTOR SIZE TO BE #4/0 BARE TINNED COPPER AND BURIED THIRTY INCHES BELOW GRADE. BOND FENCE TO ANTENNA TOWER GROUND GRID.



B WET WELL
SCALE: AS SHOWN
0 8 16
SCALE IN FEET

- GROUND MOISTURIZING PORT
- GROUNDING CONNECTION EXOTHERMIC OR COMPRESSION
- GATE FLEXIBLE GROUNDING STRAP.
- GROUND ROD CONNECTION 3/4" X 10' LONG.
- TEST WELL WITH GROUND ROD CONNECTION 3/4" X 10' LONG.
- ABOVE GRADE TAIL FOR EQUIPMENT CONNECTION. TO BE LOCATED FOR PROPER EQUIPMENT ENTRANCE. PENETRATION THRU CONCRETE TO HAVE SCHEDULE 80 PVC PIPE SEGMENT.
- #4/0 STRANDED BARE COPPER WIRE, SOFT DRAWN AS SHOWN ON PLANS
- OH — UNDERGROUND ELECTRIC DUCTBANK
- COM — UNDERGROUND AT&T TELEPHONE COMMUCATION LINE
- CPS ENERGY CLEARANCE

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TEXAS REGISTERED ENGINEERING FIRM F-13

NO.	DATE	REVISION	BY
1	6/3/2020	ADDENDUM #1	

GRUBB ENGINEERING, INC.
ELECTRICAL POWER SYSTEMS
DESIGN & TESTING
TBPE FIRM REGISTRATION #3904

San Antonio Water System

FEATHERCREST AND STONE RIDGE
LIFT STATIONS UPGRADES
SAWS JOB NO. 19-2502

ELECTRICAL SITE PLAN

6/3/2020
STATE OF TEXAS
STEVEN MOUSER
103671
LICENSED
PROFESSIONAL ENGINEER

BAR IS ONE INCH ON ORIGINAL DRAWING.
ONE INCH

DESIGNED	BD
DRAWN	SG
CHECKED	CG
REVIEWED	SM

Seq. of

Dwg. No. E-3

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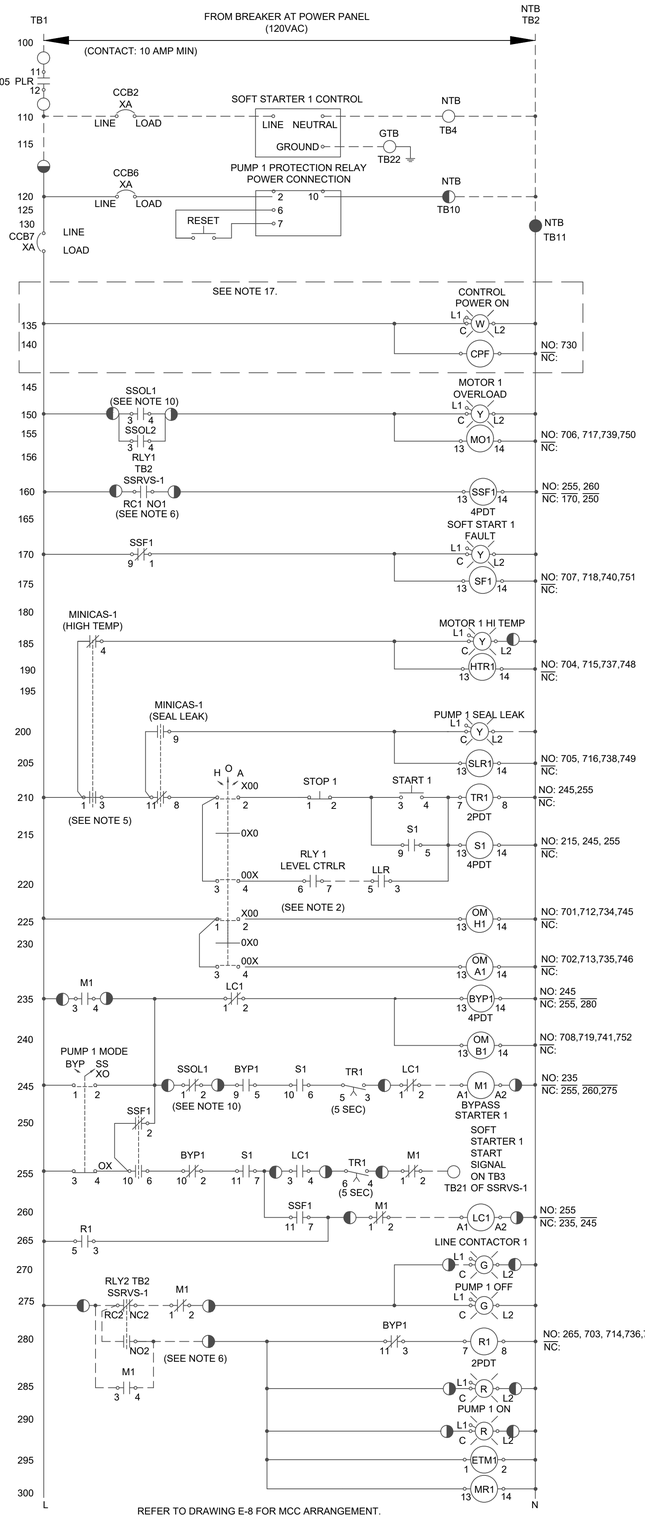

A MCC CONTROL SCHEMATIC (TYPICAL OF 4)

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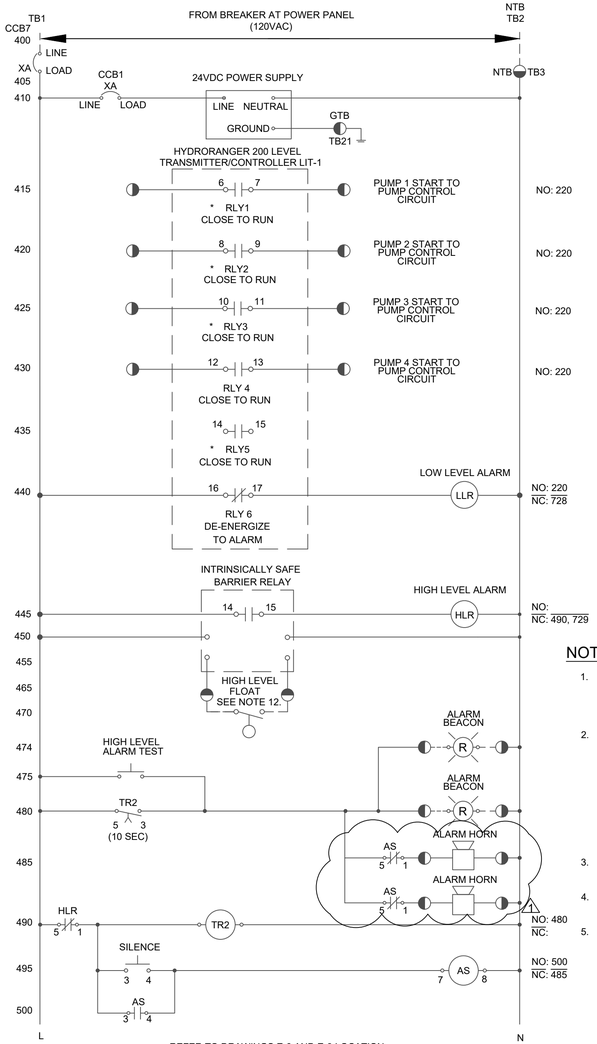
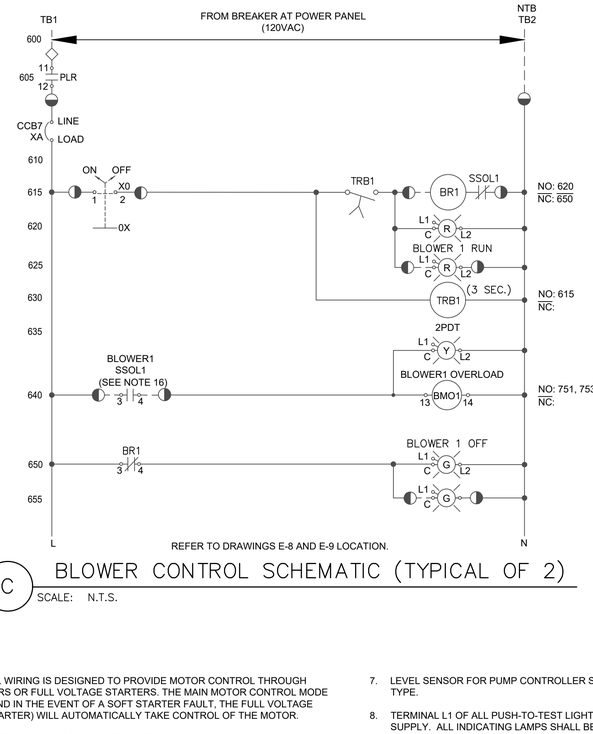


B LEVEL CONTROL SCHEMATIC LOCATED IN PUMP CONTROL PANEL

SCALE: N.T.S.



C BLOWER CONTROL SCHEMATIC (TYPICAL OF 2)

SCALE: N.T.S.

LEGEND

- EXTERNAL PANEL WIRING
- INTERNAL PANEL WIRING
- PUMP CONTROL PANEL (DARK SIDE INDICATES CONNECTION INTERNAL TO PANEL.)

NOTES

1. THE MOTOR CONTROL WIRING IS DESIGNED TO PROVIDE MOTOR CONTROL THROUGH EITHER SOFT STARTERS OR FULL VOLTAGE STARTERS. THE MAIN MOTOR CONTROL MODE IS SOFT STARTERS, AND IN THE EVENT OF A SOFT STARTER FAULT, THE FULL VOLTAGE STARTER (BYPASS STARTER) WILL AUTOMATICALLY TAKE CONTROL OF THE MOTOR.
2. RELAY OUTPUT CONFIGURATION FOR LEVEL CONTROLLER

   RLY1, RLY2, RLY3 & RLY4
   MUST BE PROGRAMMED BY A PUMPING ALGORITHM TO ALTERNATE LEAD, LAG1, LAG2, & LAG3 PUMPS FOR EACH PUMPING CYCLE. ONLY THREE PUMPS WILL BE RUNNING SIMULTANEOUSLY.

   RLY 6
   MUST BE PROGRAMMED TO BE ENERGIZED UNDER NORMAL LEVEL CONDITION, AND BE DE-ENERGIZED UNDER LOW LEVEL CONDITION.
3. THE ELECTRIC LOAD OF EACH INTERNAL RELAY OF LEVEL CONTROLLER SHALL BE LIMITED TO ONE MINIATURE RELAY COIL.
4. BYPASS STARTER REQUIRES AUXILIARY CONTACT KITS. CONTRACTOR SHALL SUPPLY AND INSTALL SUFFICIENT CONTACT KITS PER SCHEMATIC.
5. PROTECTION RELAY USED FOR MOTOR HIGH TEMPERATURE AND SEAL LEAK PROTECTION SHALL OPERATE AS FOLLOWS:

   UNDER NORMAL CONDITIONS:
   HIGH TEMPERATURE RELAY CONTACTS:
   NO CONTACT 1-3: IS CLOSED
   NC CONTACT 1-4: IS OPEN
   SEAL LEAK RELAY CONTACTS:
   NC CONTACT 11-8: IS CLOSED
   NO CONTACT 11-9: IS OPEN

   UNDER HIGH TEMPERATURE CONDITION:
   HIGH TEMPERATURE RELAY CONTACTS:
   NO CONTACT 1-3: OPENS
   NC CONTACT 1-4: CLOSES

   UNDER SEAL LEAK CONDITION:
   SEAL LEAK RELAY CONTACTS:
   NC CONTACT 11-8: OPENS
   NO CONTACT 11-9: CLOSES
6. SOFT STARTER KEY NOTES:

   SOFT STARTERS SHALL BE PROVIDED WITH 3 PROGRAMMABLE RELAYS FOR OUTPUT SIGNAL.
   THE RELAYS SHALL BE DOUBLE THROW TYPE (COMMON - NORMALLY OPEN - NORMALLY CLOSED)

   RELAY 1 OUTPUT (RLY1 TB2 SSRVS)
   SHALL BE PROGRAMMED TO BE ENERGIZED UNDER NORMAL CONDITIONS AND BE DE-ENERGIZED UNDER ANY SOFT STARTER FAULT CONDITION.

   UNDER NORMAL SOFT STARTER CONDITIONS:
   NO1 CONTACT IS CLOSED
   NC1 CONTACT IS OPEN

   UNDER ANY SOFT STARTER FAULT CONDITION:
   NO1 CONTACT OPENS
   NC1 CONTACT CLOSES

   RELAY 2 OUTPUT (RLY2 TB2 SSRVS)
   SHALL BE PROGRAMMED TO BE ENERGIZED WHEN THE SOFT STARTER RECEIVES THE RUN SIGNAL AND STARTS APPLYING VOLTAGE TO THE MOTOR, AND SHALL BE DE-ENERGIZED WHEN THE SOFT STARTER HAS STOPPED APPLYING VOLTAGE TO THE MOTOR.

   WHEN VOLTAGE IS BEING APPLIED TO THE MOTOR
   NO2 CONTACT IS CLOSED
   NC2 CONTACT IS OPEN

   WHEN VOLTAGE IS NOT BEING APPLIED TO THE MOTOR
   NO2 CONTACT IS OPEN
   NC2 CONTACT IS CLOSED

   RELAY 3 OUTPUT (RLY3 TB2 SSRVS)
   SPARE.
7. LEVEL SENSOR FOR PUMP CONTROLLER SHALL BE SUBMERSIBLE LEVEL TRANSMITTER TYPE.
8. TERMINAL L1 OF ALL PUSH-TO-TEST LIGHTS SHALL BE CONNECTED TO THE 120V CONTROL SUPPLY. ALL INDICATING LAMPS SHALL BE PRESS-TO-TEST LED TYPE.
9. CIRCUIT BREAKER AUXILIARY CONTACT OPERATION (AXCB) IF INCLUDED IN CONTROL DIAGRAM:

   WHEN CIRCUIT BREAKER IS OFF OR TRIPPED:
   NO AUXILIARY CONTACT IS OPEN
   NC AUXILIARY CONTACT IS CLOSED

   WHEN CIRCUIT BREAKER IS ON:
   NO AUXILIARY CONTACT IS CLOSED
   NC AUXILIARY CONTACT IS OPEN
10. MOTOR OVERLOAD PROTECTION RELAY OF BYPASS STARTER SHALL HAVE ONE NC CONTACT AND A SEPARATE NO CONTACT (NO COMMON FOR BOTH CONTACTS IS ALLOWED). RESET SHALL BE MANUAL.

    UNDER NORMAL CONDITIONS:
    NC CONTACT SHALL REMAIN CLOSED
    NO CONTACT SHALL REMAIN OPEN

    UNDER OVERLOAD CONDITIONS:
    NC CONTACT SHALL OPEN
    NO CONTACT SHALL CLOSE
11. SELECTOR SWITCHES

    HAND-OFF-AUTO SWITCH SHALL BE THREE POSITION MAINTAINED SWITCH

    PUMP MODE SWITCH (SOFT START - BYPASS) SHALL BE TWO POSITION MAINTAINED SWITCH
12. FLOAT SWITCHES

    HIGH LEVEL FLOAT
    CONTACT NC:
    CLOSED UNDER NORMAL LEVEL CONDITION
    OPEN UNDER HIGH LEVEL CONDITION
13. MOTOR CONTROLLER SUPPLIER TO OBTAIN TEMP/LEAK DETECTOR FROM PUMP MOTOR SUPPLIER AND INCLUDE WITH MOTOR CONTROLLER. PUMP MOTOR SUPPLIER SHALL PROVIDE COMPATIBLE TEMPERATURE/LEAKAGE SENSORS.
14. SEE SHEET E-8 FOR MCC LAYOUT.
15. PHASE LOSS RELAYS LOCATED IN MCC.
16. MOTOR OVERLOAD PROTECTION RELAY SHALL HAVE ONE NC CONTACT AND A SEPARATE NO CONTACT (NO COMMON FOR BOTH CONTACTS IS ALLOWED). RESET SHALL BE MANUAL.

    UNDER NORMAL CONDITIONS:
    NC CONTACT SHALL REMAIN CLOSED
    NO CONTACT SHALL REMAIN OPEN

    UNDER OVERLOAD CONDITIONS:
    NC CONTACT SHALL OPEN
    NO CONTACT SHALL CLOSE
17. ONLY ONE CONTROL POWER STATUS CIRCUIT REQUIRED.
18. ALARM BEACONS SHALL BE EDWARDS MODEL 125STRNR120A (RED).
19. ALARM HORNS SHALL BE EDWARDS MODEL 876-N5.

ELECTRICAL ABBREVIATIONS

BMO	BLOWER OVERLOAD
BR	BLOWER RUN STATUS
CPF	CONTROL POWER FAIL
ETM	ELAPSED TIME METER
HLR	HIGH LEVEL RELAY
HTR	HIGH TEMPERATURE RELAY
LC	LINE CONTACTOR
LE	LEVEL SENSOR
LIT	LEVEL TRANSMITTER
LLR	LOW LEVEL RELAY
M	BYPASS STARTER
MO	MOTOR OVERLOAD
PLR	PHASE LOSS RELAY
R	PUMP RUN STATUS
RVSS	REDUCED VOLTAGE SOFT STARTER
S	PUMP START RELAY
SLR	SEAL LEAK RELAY
SSF	SOFT START FAIL
SSOL	SOLID STATE OVERLOAD RELAY
TR	PUMP TIME DELAY

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San Antonio Water System

FEATHERCREST AND STONE RIDGE
LIFT STATIONS UPGRADES
SAWS JOB NO. 19-2502

LIFT STATION CONTROL DETAILS #1
PUMP CONTROL PANEL

6/3/2020
STATE OF TEXAS
STEVEN MOUSER
103671
LICENSED
PROFESSIONAL ENGINEER

BAR IS ONE INCH ON ORIGINAL DRAWING.
ONE INCH

DESIGNED	BD
DRAWN	SG
CHECKED	CG
REVIEWED	SM
Seq.	of
Dwg. No.	E-4

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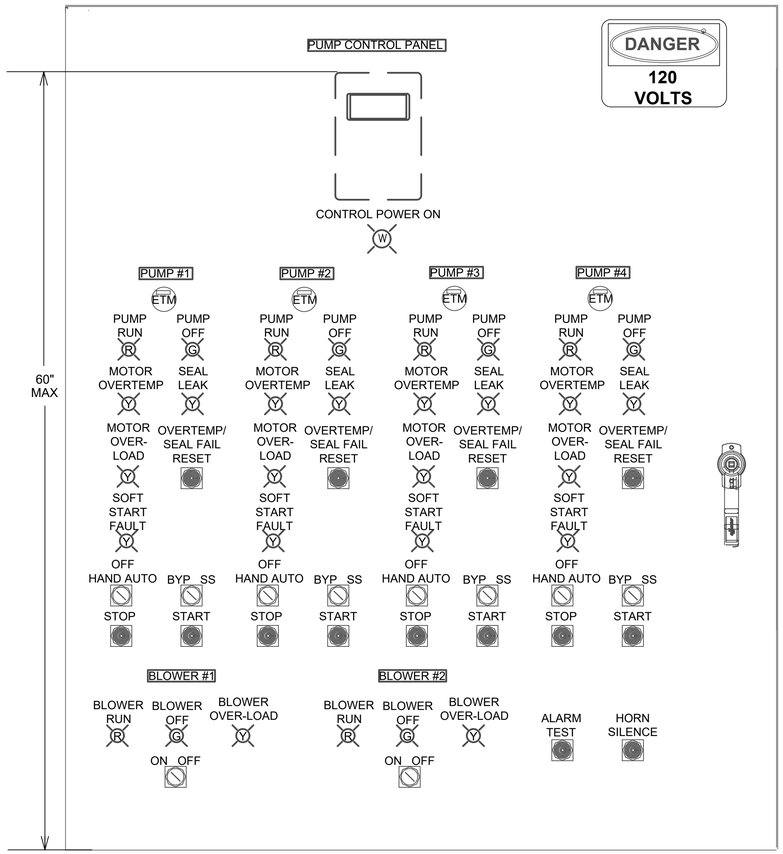


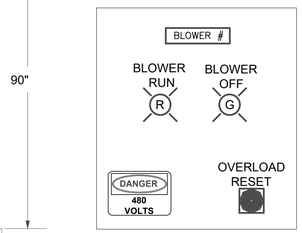
NOTES:
1. ALARM BEACON LIGHTS WILL BE LOCATED OUTSIDE OF THE ELECTRICAL BUILDING.
2. REFER TO SHEET E-4 FOR LEVEL CONTROL SCHEMATIC.
3. LEVEL CONTROLLER TO BE MOUNTED ON THE FRONT OF THE PANEL.

A PUMP CONTROL PANEL
SCALE: N.T.S.

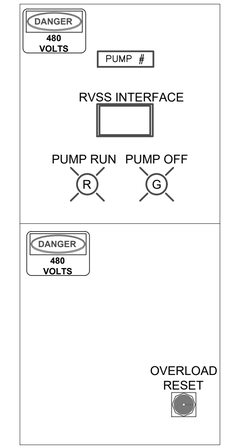
20"	32"	32"	32"	32"	20"	20"	20"	
MAIN BREAKER	HSP-1 SOFT STARTER SEE NOTE 17 & DETAIL D.	HSP-2 SOFT STARTER SEE NOTE 17 & DETAIL D.	HSP-3 SOFT STARTER SEE NOTE 17 & DETAIL D.	HSP-4 SOFT STARTER SEE NOTE 17 & DETAIL D.	ODOR CONTROL (SEE DETAIL C)	HVAC-1 BREAKER	BREAKERS (SPARE) SECTION	90"
						HVAC-2 BREAKER		
SPD	HSP-1 FULL VOLTAGE STARTER SEE NOTE 17 & DETAIL D.	HSP-2 FULL VOLTAGE STARTER SEE NOTE 17 & DETAIL D.	HSP-3 FULL VOLTAGE STARTER SEE NOTE 17 & DETAIL D.	HSP-4 FULL VOLTAGE STARTER SEE NOTE17 & DETAIL D.	ODOR CONTROL (SEE DETAIL C)	50KVA TRANSFORMER BREAKER		

HOUSEKEEPING SLAB - EXTEND 2" HORIZONTALLY AROUND SIDES

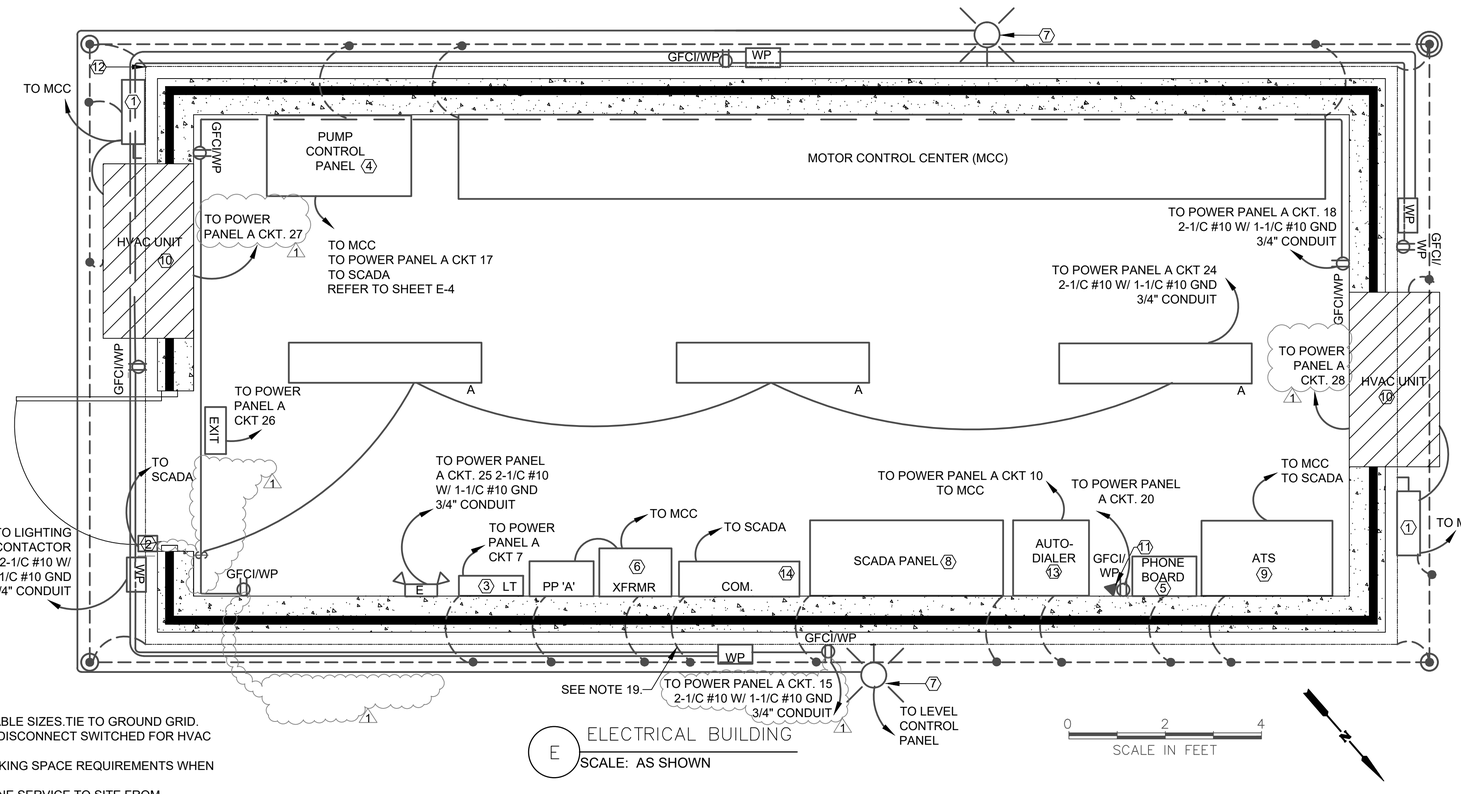
B MOTOR CONTROL CENTER FRONT (NORTH SIDE)
SCALE: N.T.S.



C EXTERIOR 480 VOLT BLOWER CONTROL CUBICLE (TYP. OF 2)
SCALE: N.T.S.



D EXTERIOR 480 VOLT MOTOR CONTROL CUBICLE (TYP. OF 4)
SCALE: N.T.S.



E ELECTRICAL BUILDING
SCALE: AS SHOWN

KEY NOTES:
1. HVAC DISCONNECT SWITCH TO HVAC
   REFER TO SHEET E-2 FOR CABLE AND CONDUIT SIZES.
   HVAC CONTROLS
   REFER TO SHEETS E-6 FOR CABLES AND CONDUIT SIZES.
   REFER TO MECHANICAL SPECIFICATIONS AND DRAWINGS.
2. INTRUSION SENSOR
   2-#12 W/ #12 GND
   1-1" CONDUIT
3. LIGHTING CONTACTOR PANEL
   REFER TO SHEET E-6 FOR CABLE AND CONDUIT SIZES
4. PUMP CONTROL PANEL
   SHEET E-4 CONTRACTOR TO USE
   2-#12 W/ #12 GND FOR EACH INDICATING LIGHT SWITCH, PUSHBUTTON AND SWITCH COMING FROM THE MCC AND
   2-2" CONDUIT
5. TELEPHONE TERMINAL BOARD WITH 3/4" PLYBOARD BACKBOARD AND #6 GROUND. REFER TO NOTE18.
6. 50 KVA 3 PH AUXILIARY TRANSFORMER
   REFER TO SHEET E-2 FOR CABLES AND CONDUIT SIZES
7. BEACON ALARM LIGHT AND HORN
   1"C, 4#10, 2#12GND
8. SCADA PANEL
   REFER TO SHEETS E-2 & E-3 FOR CABLES AND CONDUIT SIZES.
9. AUTOMATIC TRANSFER SWITCH (ATS)
   REFER TO SHEET E-2 FOR CABLES AND CONDUIT SIZES
10. HVAC UNIT WITH MANUFACTURER INTEGRATED CONTROLS
11. PHONE JACK & DEDICATED RECEPTACLE. SEE NOTE 14.
    REFER TO SHEETS E-2 AND E-6 FOR CABLES AND CONDUIT
12. BOND REBAR IN BUILDING SLAB TO ELECTRODE GROUND SYSTEM. SEE NOTE 16.
13. AUTODIALER LOCATED IN NEMA 12 ENCLOSURE. REFER TO SHEET E-6.
14. COMMUNICATION PANEL REFER TO SHEET E-6 DETAIL C AND SHEET E-9 DETAIL K.

NOTES:
1. CONTRACTOR SHALL ALSO REFER TO THE PLANS AND SPECIFICATIONS FOR MORE DETAILED EQUIPMENT REQUIREMENTS.
2. CONTRACTOR TO COORDINATE GEAR FOOTPRINT WITH CONCRETE INSTALLATION.
3. GEAR FOOTPRINT DIMENSIONS WILL DIFFER BASED ON MANUFACTURER SELECTED.
4. GROUNDING SYSTEM IS A SOLIDLY GROUNDED NEUTRAL SYSTEM THAT IS MULTI GROUNDED.
5. THE GROUNDING ELECTRODE IS THE GROUNDING RING FORMED BY THE CONDUCTORS.
6. GROUND WIRE TO BE INSTALLED NOT LESS THAN 30" DEEP.
7. SEE DRAWING E-9 FOR GROUNDING DETAILS.
8. GROUND ROD RESISTANCE TO BE 5 OHMS OR LESS.
9. GROUND RODS TO BE SPACED AT LEAST 20' APART.
10. ALL DEVICES SHOWN ON THE PID'S AND INTERCONNECT DRAWINGS SHALL BE INSTALLED WITH CONDUIT/CABLES WHETHER SHOWN ON THE FLOOR PLAN OR NOT. DIGITAL I/O FOR SCADA SHALL BE 2-#12 W/ #12 GND. ANALOG I/O FOR SCADA SHALL BE #16 TW/SH/PR. POWER CIRCUITS SHALL BE 2-#10 W/ #10 GND, 3/4" CONDUIT MINIMUM.
11. REFER TO E-6 FOR POWER PANEL AND CABLE SIZES.TIE TO GROUND GRID.
12. PROVIDE NEMA 4X 316 STAINLESS STEEL DISCONNECT SWITCHED FOR HVAC UNITS.
13. CONTRACTOR SHALL OBSERVE NEC WORKING SPACE REQUIREMENTS WHEN LOCATING EQUIPMENT.
14. CONTRACTOR TO COORDINATE TELEPHONE SERVICE TO SITE FROM TELEPHONE UTILITY.
15. HVAC & HVAC CONTROLS ARE PROVIDED BY OTHERS.
16. REFER TO BUILDING SPECIFICATION FOR BUILDING GROUND BUS BAR.
17. ISOLATE 120 VOLT EQUIPMENT FOR PUMPS AND ODOR CONTROL BLOWER IN THE DESIGNATED 120VOLT CUBICLE. ONLY 480 VOLT EQUIPMENT WILL BE LOCATED IN STARTER CUBICLE AND ODOR CONTROL CUBICLE.
18. CONTRACTOR TO COORDINATE AND PAY THE FEES FOR LINE EXTENSION AND INSTALLATION OF PHONE LINE AND EQUIPMENT FOR PHONE SERVICE TO THE AUTODIALER.
19. TELECOMMUNICATIONS GROUND MUST BE A MINIMUM OF #6 AWG.

LEGEND

- GROUNDING CONNECTION EXOTHERMIC WELD OR COMPRESSION
- GROUND ROD CONNECTION 3/4" X 10' LONG.
- TEST WELL WITH GROUND ROD CONNECTION 3/4" X 10' LONG
- #4/0 STRANDED BARE COPPER WIRE, SOFT DRAWN AS SHOWN ON PLANS

LIGHT FIXTURE SCHEDULE

TYPE	LAMPS	MOUNTING	VOLTAGE	MANUFACT.	DESCRIPTION	CATALOG
A	LED	SURFACE MOUNT	120	LITHONIA	INTERIOR LIGHTING	CLX L48 5000LM HEF FDL MVOLT 35K 80CRI CLXRW48 WGLX48 E10WLCP
E	LED	WALL MOUNTED	120	LITHONIA	EMERGENCY LIGHTS	ELM2LEDSD MOUNT 7.5 AFF OR ABOVE DOOR
WP	LED	WALL MOUNTED	120	LITHONIA	WALL PACK	OWS-FC-202-LED-5000L-DIM10-MVOLT -40K-BZ-PHC WITH EMERGENCY BATTERY
EXIT		WALL MOUNTED	120	LITHONIA	EXIT	LQC1RELN WALL MOUNTED ABOVE DOOR

ALAN PLUMMER ASSOCIATES, INC.
ENVIRONMENTAL ENGINEERS AND SCIENTISTS
1777 NE LOOP 410, SUITE 500
SAN ANTONIO, TEXAS 78217
PHONE: 210-510-0888
TEXAS REGISTERED ENGINEERING FIRM F-13

NO.	DATE	REVISION	BY
1	6/3/2020	ADDENDUM #1	

GRUBB ENGINEERING, INC.
ELECTRICAL POWER SYSTEMS DESIGN & TESTING
TBPE FIRM REGISTRATION #3904

San Antonio Water System

FEATHERCREST AND STONE RIDGE LIFT STATIONS UPGRADES
SAWS JOB NO. 19-2502

LIFT STATION BUILDING & MCC LAYOUT

6/3/2020
STATE OF TEXAS
STEVEN MOUSER
103671
LICENSED PROFESSIONAL ENGINEER

BAR IS ONE INCH ON ORIGINAL DRAWING.
ONE INCH

DESIGNED BD
DRAWN SG
CHECKED CG
REVIEWED SM.

Seq. of

Dwg. No. E-8

0535-013-01

PRINTED: 6/3/2020 8:58 AM R:\Alan Plummer Associates\2018 SAWS Feathercrest & Stone Ridge Lift Stations\Design\Conform\Drawings\E-8 LIFT STATION bld.dwg SAVED: 6/3/2020 8:52 AM SAVED BY: BDeleon USER: Bridgett Deleon