



H2OAKS DESALINATION FACILITY WELL SITE DEVELOPMENT PROJECT

Solicitation Number: CO-00319

Job No.: 18-8607

ADDENDUM 4

May 15, 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. Please furnish the Specification Section 26 95 00 – Electrical Testing referenced in Section 26 01 00 1.3 B Line # 9.**
Response: Reference should be Section 26 08 00 Commissioning of Electrical Systems. Refer to Changes to Specifications Items 1, 2, and 3.
- 2. Specification Section 26 05 19 2.3 states VFD cable to be 3-conductor with 3 symmetrical ground cables, however, one-line diagram and ductbank schedules show these to be parallel 3-1/C 300 KCMIL with 1-1/C #1 ground. Please clarify which is to be used.**
Response: Multiconductor cable per Section 26 05 19 2.3 shall be used. Refer to Changes to the Plans Items 2, 4, and 5 (sheets E-01, E-12, and E-13).
- 3. Sheet E-10 shows disconnect switch for Air Handler Unit #1 & #2 however, sheet E-04 the panel schedule does not show any breakers for them. Please advise.**
Response: For this equipment power is supplied to the condenser which in turn powers the air handler unit. Both have a disconnect switch. Refer to Changes to the Plans Item 3 (sheet E-10).
- 4. Well pump motor RTD circuits are not shown on DB schedules for both sites.**
Response: Well pump motor RTD circuits have been added. Refer to Changes to the Plans Items 4 and 5 (sheets E-12 and E-13).
- 5. Please provide wiring requirements or connection diagram for SCADA to MCC & VFD's as they are not shown on the Electrical Building layout. Are we to assume wire & conduit sizes for the circuits shown on the SCADA interconnect Drawings I-03 thru I-05 for those not shown on the ductbank schedules? Please advise.**
Response: Wiring requirements have been added. Refer to Changes to the Plans Items 3, 4, 5, and 6 (sheets E-10, E-12, E-13, and I-04).
- 6. What are the circuit being routed to the Well Pump Instrument Cabinet at both sites? Both TW-1 & BDG-14 duct bank schedules show instruments at the well to be routed back to the Electrical building, unlike Controls circuits which are being routed to Well Pump Control Cabinets. Are the Instrument Cabinets at the well sites just a junction box for the Well Pump instrumentation back to the Electrical Building? Please clarify.**
Response: Yes, the instrument cabinets are junction boxes.
- 7. Please specify the size of Well Pump Junction Box based on the cable / wire type for the Well Pumps. Please keep in mind 3 conductor - 300 KCMIL VFD Cable is not a standard manufactured item and that it will need to be**

increased to 3 conductor - 350 KCMIL which has larger bending radius required by the manufacturer or perhaps reduced to 250KCMIL based on the Pump Load.

Response: Junction box shall be sized by Contractor based on cable supplied.

8. There are a couple of instances where wiring internal to equipment such as MCC, SCADA panel are shown to be in conduit. E-10 2-1/C#10, 1-1/C #10 GND in ¾" conduit from Branch Breaker Section of the MCC to Power Panel A & I-04 Keyed Note #1, 2#12, 1-#12, in 1" Conduit in from UPS to various AC power supplies within the SCADA Panel. Please clarify the intensions of these requirements.

Response: Refer to Changes to the Plans Items 4, 5, and 6 (sheets E-12, E-13, and I-04).

9. There is a discrepancy between E-01 One-Line diagram for the Lubrication Pump circuit and both Ductbank Schedules E-12 & E-13. Please clarify which is to be used.

Response: Refer to Changes to the Plans items 2, 4, and 5 (sheets E-01, E-12, and E-13).

10. There are inconsistencies in the ductbank schedules, for example, on TW-1 Conduit Schedule, Conduit # 31 is 2" containing 5#12 wires yet Conduit #34 is 1" for the same number of #12 wires, in addition, the schedule shows 1.5" Conduits for #40, #48, #41, & #49 with (10) #12 or (19) #12 wires. Please clarify whether 2" conduit for # 31 is an error. Similar situation occurs for BGD-14 ductbank schedule.

Response: Refer to Changes to the Plans Items 4 and 5 (sheets E-12 and E-13).

11. On Plan Sheet C-505, Note 4 calls "FOR BGD-14: INCLUDE TWO (2) 1/2" SCHEDULE 40 PVC TRANSDUCER TUBES STRAPPED TO THE COLUMN PIPE". 1/2" PVC is very small for a transducer. Please confirm the correct size.

Response: Size was arrived at after detailed review of the existing casing and transducers available on the market. These are only for the tube that extends down the well; once above-ground the conduit can be the size as shown on the Electrical Plans.

12. The specification for heat tracing does not list a minimum pipe size for tracing, is tracing required on all exposed piping? What about insulation?

Response: Refer to Sheet E-4 detail F for items requiring heat trace and insulation.

13. Specification section 43 23 31.35, paragraph 1.8 calls for a one year warranty period. General Conditions for this project require a two year warranty.

Response: Per #6 of Changes to the Specification in Addendum 2 dated April 30, 2020, the warranty period was modified and is the same as indicated in the General Conditions..

14. Attached is a pump curves that meet the criteria per section 43 23 31.35 Deep Set Vertical Pumps, from National Pump Company that I would like to submit as approve equal for the reference project. National Pump Company has been in business for 50 yrs and have many deep set vertical turbine pumps installed across the nation. Not only have successfully provide end users with pumping equipment that meet their specific needs but they are also ISO 9001 certified and can provide the NSF/ ANSI 61 and 372 as specified.

Response: No changes to the specifications will be made.

15. Several years ago ITT Goulds split into 2 separate companies, ITT Goulds and Xylem Goulds. ITT Goulds is listed as an acceptable manufacturer. However, Goulds municipal products are now offered by Xylem Goulds, not ITT Goulds, and ITT Goulds does not offer deep set well pumps. Due to this change at Goulds we request that "ITT Goulds" be changed to "Xylem Goulds" as an acceptable manufacturer.

Response: No changes to the specifications will be made.

16. Will Simflo be allowed as a manufacturer to provide the line shaft turbine pumps?

Response: No changes to the specifications will be made.

17. Will Gicon be allowed as a manufacturer to provide the line shaft turbine pumps? The pump Gicon will provide will be a Goulds pump.

Response: No changes to the specifications will be made.

- 18. Plan page C-116 will not print for us. When we try we get an error message. Is it possible to get a copy of just this plan page so I can see if I can print what you send me?**
Response: *There is no sheet C-116 on this project. This question appears to address a different project, the H2Oaks Collection Pipeline Project*
- 19. Question – On drawing C511 they call out a detail 1 - Concrete Apron. Is this detail required on this project? We do not see a callout anywhere on the drawings?**
Response: *Concrete apron is the 2-foot wide concrete that is adjacent to 12-inch concrete mow strip under fence. Apron extends around entire perimeter of site except for where asphalt drive enters gate.*
- 20. I would like to confirm whether or not the desired coating is Skotchkote 134, because they do not make Skotchkote in white. Other wells at this site have been Tnemec- in white color. Please advise.**
Response: *The desired coating must meet all applicable requirements of color and manufacturer as described in 09 90 00 and other applicable specifications and will be approved during the submittal process.*
- 21. Is Benzene a known contaminant on site? Plan Sheet G-004, 2.4**
Response: *Though benzene is not a known contaminant at the project site, due to the project sites' proximity to known oil and gas infrastructure, benzene may be present. The contractor is advised to use caution and follow SAWS General Notes should benzene be encountered.*
- 22. Is Benzene a probable contaminant on site?**
Response: *Due to the project sites' proximity to known oil and gas infrastructure, benzene may be present. The contractor is advised to use caution and follow SAWS General Notes should benzene be encountered.*
- 23. Is there a known quantity of AC pipe that will have to be removed? Plan Sheet G-003**
Response: *There is no known quantity of AC pipe. Should AC pipe be encountered during construction, the contractor is advised to field verify and follow all applicable SAWS and OSHA requirements.*
- 24. Is there a count of power poles to be braced? (This is another item where an allowance works well)**
Response: *There is no existing count of power poles.*
- 25. To what depth does existing fill material extend? It talks of it having to be removed and recompacted is it 'recompacted' with the same material or hauled in material?**
Response: *The exact extent, compaction, and composition of the existing fill is unknown. Fill should be replaced per 31 23 00.00. If the Contractor wishes to reuse the existing fill, they are responsible for testing it to ensure it conforms to the plans and specifications, and they must reinstall it compacting as required per the plans and specifications.*
- 26. The BDG-14 site appears to have a built up construction pad (200' x 200' +/-) of base material already. Sheet C-110 indicates that there is no built up pad. Please advise on the preferred approach in dealing with the existing pad at BDG-14.**
Response: *See Response to Question 25.*
- 27. Are there known Oil and Gas lines within the limits of construction?**
Response: *Oil and gas infrastructure are known to be within the vicinity of the project sites, as indicated on the plans. However, there may be oil and gas infrastructure not previously determined. The contractor is advised to field verify prior to commencing work and any excavation.*
- 28. On sheet C-201 the callout for the 'seal slab' is for a detail on sheet C-504, it appears that should be C-505, please advise.**
Response: *On sheet C-201, the callout for seal slab should reference sheet C-505.*
- 29. What size is the casing in TW-1?**
Response: *Test Well #1 consists of a 20-inch diameter reamed hole that extends 1,266 linear feet below ground level. A 12-inch outside diameter, internally coated epoxy lined steel casing extends from the surface to a depth of 1,100 feet. Below 1,100 feet, an 8-inch outside diameter steel casing has been installed to a depth of 1,214 feet.*

- 30. Can SAWS provide a list of all permits that will be required? Flood Plain Permits, Well Permits etc.**
Response: *The complete list and respective statuses are described below: Bexar County – Floodplain Development Permit (approved), Post-Construction Permit (approved); TCEQ – approved; City of San Antonio – Tree Permit (approved); Wilson County – Floodplain Development Permit (approved); Bexar County Fire Marshal (pending).*
- 31. Would an allowance for permits be possible to establish?**
Response: *Please note all but one permit has been previously obtained. The Bexar County Fire Marshal permit is to be finalized by the Contractor and paid for subsidiary to other bid items.*
- 32. How is site accessed for a site visit/examination prior to bid?**
Response: *Due to the COVID-19 situation and as indicated at the pre-bid meeting, there will be no site access prior to finalizing bidding. Photos of the sites will be posted to the SAWS website.*
- 33. There is mention of submitting a ‘base line schedule’ with the bid, and also shortly after bid. Is it possible to make that only after the bid?**
Response: *Per Addendum 3 dated May 4, 2020, and as indicated on the revised Bid Proposal Checklist the schedule is only required to be submitted after the bid from the apparent low bidder.*
- 34. The specifications request the use of Primavera software for the building of the schedule, please allow Microsoft Project as an equal.**
Response: *MS Project is an acceptable alternative.*
- 35. Our Company is a local industrial painting & protective coatings contractor pursuing the project as a subcontractor. We request that the Qualification under Section 099713.27, Item 1.3.2.2, requiring certification of the coatings subcontractor through “ISO 9001 or SSPC QP1 and SSPC QS1” be removed from the spec section.**
Response: *The existing requirements will be maintained*
- 36. Additionally, regarding Addendum No. 2; Reference - ‘STATEMENT OF BIDDER’S EXPERIENCE 2. BIDDER’S PROJECT EXPERIENCE’ Where it states, “(not proposed subcontractor’s)” eliminates most of the general contractors in the area, if not all. As a general contractor when a project ‘hits the street’ that contains a task within the overall scope that is highly specialized and would potentially carry a large portion of the project value, our first reaction is to examine the extent of the remaining project scope. In most instances specialized contractors prefer to keep their scope of work narrowly focused, and if the remaining scope is varied enough to pull the specialized contractor out of their “sweet spot”, for any length of time, they prefer to bid as a subcontractor. The site work and electrical/controls portion of this project would seem to wander substantially outside of the deep well pump installers preferred scope. We understand and acknowledge that should a project scope be narrow in its focus, enough to clearly indicate that the specialized contractor should bid as a GC, it typically is a waste of time for a GC to bid the project, the math doesn’t work. However, should the scope, in spite of the specialized task clearly indicate otherwise, the math swings dramatically the other direction. Regarding this project we have spoken via email to a preeminent deep well contractor in Texas and their intention was to not bid as a general contractor. We are not the only GC exceedingly qualified to handle the project from a management standpoint, as well as from a financial standpoint. In fact, we are currently under contract with SAWS for a similar project regarding a specialized (sub)contractor (a different specialty, but specialized, none-the-less). We respectfully request that SAWS remove the “(not proposed subcontractor’s)”, from the ‘BIDDER’S PROJECT EXPERIENCE’ portion of the ‘STATEMENT OF BIDDER’S EXPERIENCE’. Handling multiple scopes within a project is the essence of a General Contractor, and it is not the essence of a specialized contractor. We would respectfully ask for a timely response. If that specific ‘Experience’ requirement doesn’t change, although exceedingly qualified as a General Contractor, we will be forced to pass on the project. Lastly, short of 4 or 5 deep well pump installers wanting to bid as a GC it would also seem that the competitive nature of the bid process would suffer.**
Response: *Please refer to Addendum 3 dated May 4, 2020 for updates to the Statement of Bidder's Experience.*
- 37. The wording of the Statement of Bidder's Experience is forcing the well pump installer to be the general contractor on this project which is asking them to take on a lot of risk and tie up a lot of resources in order to sell equipment that is only worth a small portion of the overall value of the project; and overseeing subcontractors on a job of this magnitude is not the strength of pump companies. Would it make more sense to revise the Statement of**

Bidder's Experience to allow a company normally engaged in general contracting of this type of project to be the general contractor?

Response: See Response to Question #36.

38. Please clarify where the drain line from the turbidity meter goes and how it ties in.

Response: C-501 (turbidity analyzer detail) states to route drain pipe to flush discharge. Also called out on piping plans C-201 and C-202, and site plans C-103 and C-113.

CHANGES TO THE SPECIFICATIONS

1. REPLACE Section 26 01 00 1.3.B.9 "Contractor shall provide Electrical Testing as per Section, 26 95 00, ELECTRICAL TESTING." with "Contractor shall provide Electrical Testing as per Section, 26 08 00 COMMISSIONING OF ELECTRICAL SYSTEMS."
2. REPLACE Section 26 05 19 3.6.A "In accordance with Section 26 95 00, ELECTRICAL TESTING." with "In accordance with Section 260800, COMMISSIONING OF ELECTRICAL SYSTEMS"
3. REPLACE Section 26 22 00 3.4.A "In accordance with Section 26 95 00, ELECTRICAL TESTING." with "In accordance with Section 26 08 00, COMMISSIONING OF ELECTRICAL SYSTEMS"

CHANGES TO THE PLANS

1. Sheet C-505: Inert, "Vent tube shall terminate in downward facing gooseneck covered with 16-mesh stainless steel screen" on sheet C-505 in vent tube call out.
2. Sheet E-01 from the bid set is replaced with the revised version attached to this Addendum.
3. Sheet E-10 from the bid set is replaced with the revised version attached to this Addendum.
4. Sheet E-12 from the bid set is replaced with the revised version attached to this Addendum.
5. Sheet E-13 from the bid set is replaced with the revised version attached to this Addendum.
6. Sheet I-04 from the bid set is replaced with the revised version attached to this Addendum.
7. Sheet C-201: Revise the callout for seal slab to reference sheet C-505.

CHANGES TO THE SPECIAL CONDITIONS

1. Add the following to the end of the Special Conditions:

SC11: BGD-14 and TW-1 Well Water Testing Requirements: Following completion of field/functional testing, Contractor will conduct bacteriological clearance in accordance with TCEQ standards. Disinfection and clearance procedures shall be repeated until the wells meets TCEQ requirements. This disinfection and clearance requirement shall be successfully completed for each well prior to pump installation. Costs associated with sampling, shipping, and lab analysis are to be subsidiary to other bid items

SC12: Additional TW-1 Testing Requirements: After passing bacteriological clearance, the Contractor will collect water quality samples from the pump discharge for state and federal water quality regulation analyses. Water samples shall be analyzed by a laboratory certified by the Texas Commission on Environmental Quality and approved by SAWS. All costs for water sample analyses shall be paid by the Contractor. The Contractor shall measure and record pH, conductivity, dissolved oxygen, and temperature and demonstrate stability in these parameters prior to sample collection. The approved laboratory shall collect the samples under the supervision of the Owner's Representative, store them in an appropriate manner, and ship them to the laboratory. Costs associated with sampling, shipping, and lab analysis are to be subsidiary to other bid items. Test results may take 4 months to be approved by TCEQ, and well cannot be placed into production without approved test results; Contractor is encouraged to schedule TW-1 work early to ensure sufficient time to receive test results. A list of water quality analyses is listed in the following table:

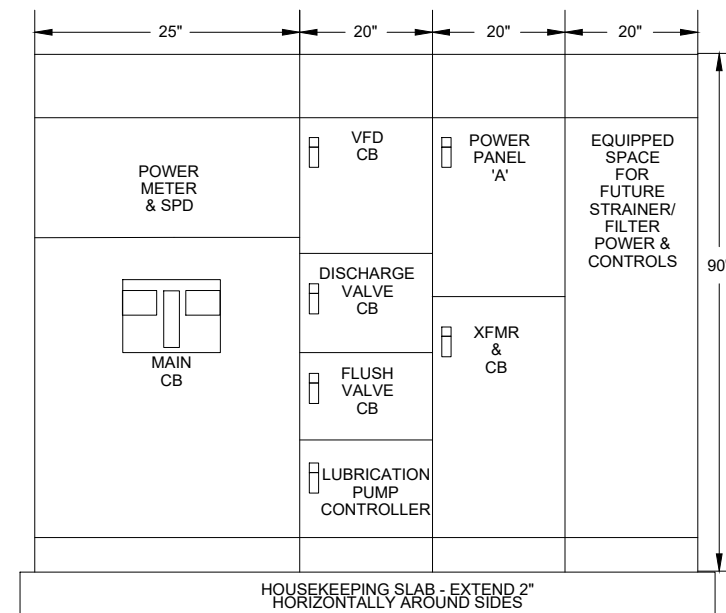
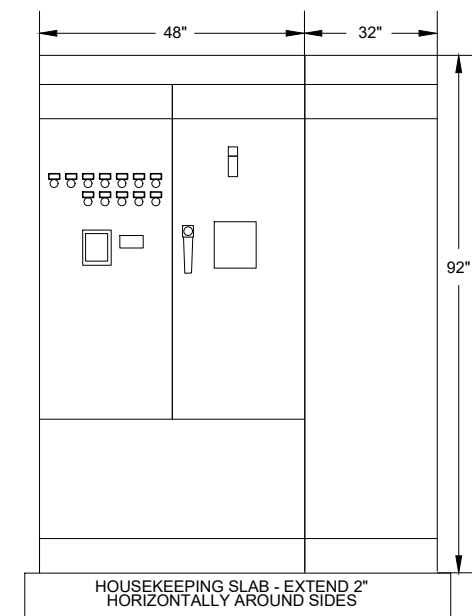
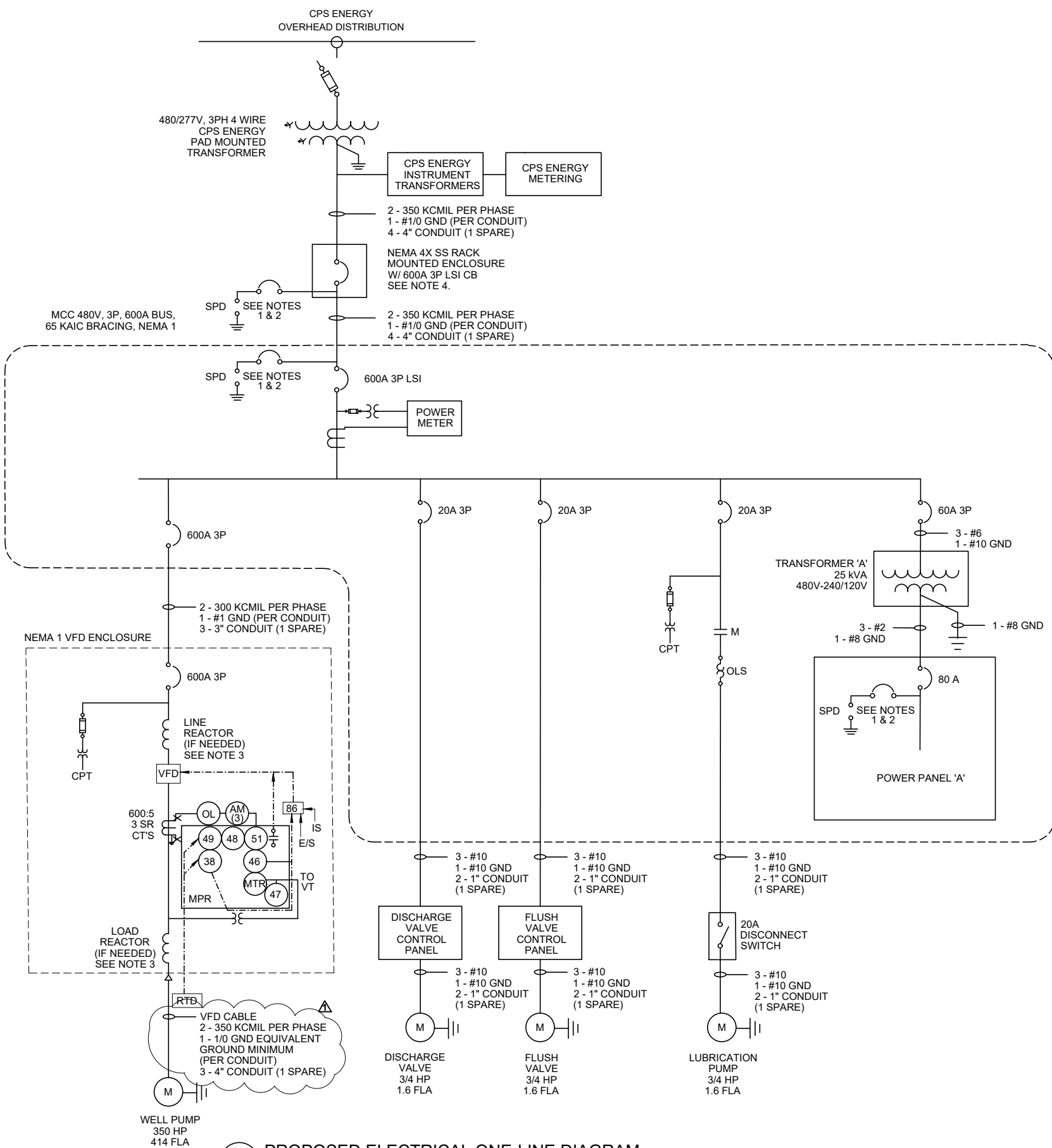
Parameter	Units	Maximum Contaminant Level	Analytical Method
Aluminum	mg/L	0.05 to 0.2	EPA 200.8

Parameter	Units	Maximum Contaminant Level	Analytical Method
Arsenic	mg/L	0.01	EPA 200.8
Calcium	mg/L as CaCO ₃	---	EPA 200.8
Copper	mg/L	1.3	EPA 200.8
Iron (Dissolved)	mg/L	0.3	EPA 200.8
Lead	mg/L	0.015	EPA 200.8
Manganese	mg/L	0.05	EPA 200.8
Sodium	mg/L	---	EPA 200.8
Total Iron	mg/L	---	EPA 200.8
Zinc	mg/L	5.0	EPA 200.8
Chloride	mg/L	300	EPA 300.0
Fluoride	mg/L	4.0 (2.0 secondary)	EPA 300.0
Nitrate	mg/L as N	10	EPA 300.0
Nitrite	mg/L as N	1.0	EPA 300.0
Sulfate	mg/L	300	EPA 300.0
Alkalinity	mg/L as CaCO ₃	---	SM2320B
Bicarbonate	mg/L	---	SM2320B
Carbonate	mg/L	---	SM2320B
Total Dissolved Solids (TDS)	mg/L	1000	SM2540C
Gross alpha	pCi/L	15	EPA 900.0
Radium-226/228	pCi/L	5	EPA 903.1, EPA 904.0
Beta particle	pCi/L	50	EPA 900.0
Uranium	µg/L	30	EPA 908.0

END OF ADDENDUM

This Addendum, including these six (6) pages, is eleven (11) pages with attachments in its entirety. Attachments:

S. Keller Drozdick
Merrick & Company



LOAD NAME	DESCRIPTION	CONNECTED LOAD	DEMAND LOAD
WELL PUMP	350 HP INDUCTION MOTOR	350 kVA	350 kVA
DISCHARGE VALVE MOTOR OPERATOR	3/4 HP MOTOR	.75 kVA	.75 kVA
FLUSH VALVE MOTOR OPERATOR	3/4 HP MOTOR	.75 kVA	.75 kVA
LUBRICATION PUMP	3/4 HP MOTOR	.75 kVA	.75 kVA
TRANSFORMER FOR PANEL A		25 kVA	13.33 kVA
SITE TOTAL:		377.25 kVA	365.58 kVA

- NOTES:**
- DEVICE MUST ADHERE TO UL1449 4TH EDITION STANDARDS.
 - PROVIDE BREAKER FOR SURGE PROTECTIVE DEVICE AS RECOMMENDED BY MANUFACTURER.
 - VFD MANUFACTURER SHALL PERFORM TEST ON SYSTEM TO DETERMINE WHETHER OR NOT LINE AND LOAD REACTORS ARE REQUIRED TO MEET IEEE 519 AT NO ADDITIONAL COST TO SAWS. IF LINE AND/OR LOAD REACTORS ARE FOUND TO BE REQUIRED, THEN THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING REACTORS AT NO ADDITIONAL COST TO SAWS.
 - NO TOP PENETRATIONS ARE ALLOWED IN DISCONNECT SWITCH ENCLOSURE.

APPENDIX #	REV	REVISION DESCRIPTION	DATE

MERRICK
ELECTRICAL ENGINEERING, INC.
DESIGN AND TESTING
TYPE FIRM REGISTRATION NO. 3994
2727 N. ST. MARKS ST. SAN ANTONIO, TEXAS 78212
REG. (210) 638-7250 FAX: (210) 668-9605

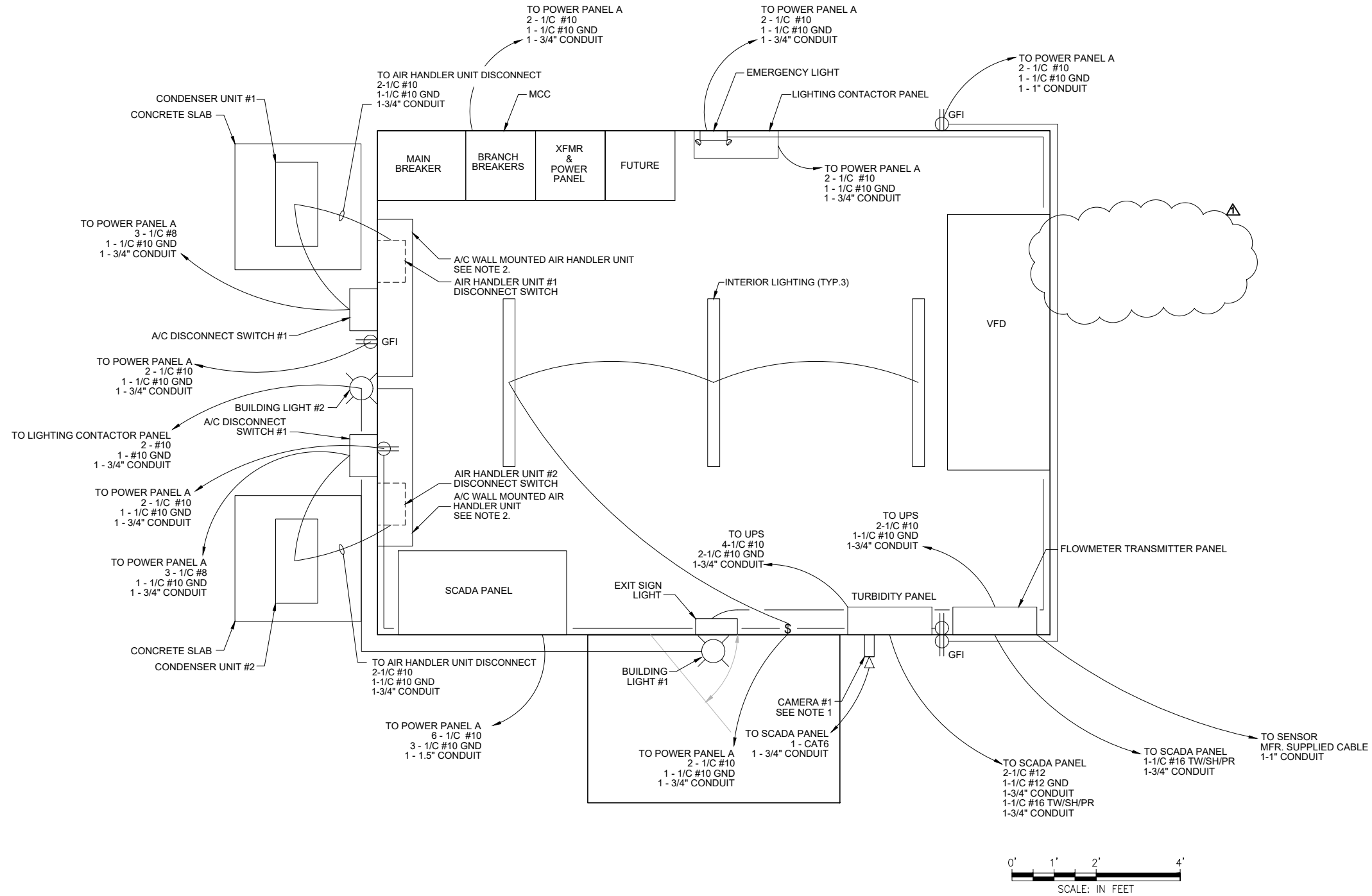
SAN ANTONIO WATER SYSTEM

H2OAKS WELL SITES
BGD14 AND TW1
TW1 AND BGD14
ELECTRICAL
ONE-LINE

5/13/2020
STATE OF TEXAS
STEVEN MOUSER
103671
LICENSED PROFESSIONAL ENGINEER

DESIGN BY:	JP
DRAWN BY:	SG
CHECKED BY:	SM
APPROVED BY:	SM
JOB NO:	6542-0233
DATE:	2020-4-17
SHEET:	E-01

EQUIPMENT	MANUFACTURER	MODEL NUMBER
INTERIOR BUILDING LIGHTS (TYP. 3)	LITHONIA	CLX L48 5000LM HEF FDL MVOLT GZ10 50K 80CRI WH
EXTERIOR BUILDING LIGHT (TYP. 2)	LITHONIA	TWH LED ALO 40K
EMERGENCY LIGHT	LITHONIA	ELM2LEDS
CAMERA #1	AXIS	P3375-VE
EXIT SIGN LIGHT	LITHONIA	LQC1RELN WALL MOUNTED ABOVE DOOR



A ELECTRICAL BUILDING
SCALE: AS SHOWN

- NOTES
1. MOUNT CAMERA 4 FEET ABOVE BUILDING LIGHT. REFER TO SPECIFICATION FOR SECURITY DETAILS.
 2. SEE MANUFACTURER FOR RECOMMENDED CABLE SIZE FOR INDOOR AIR HANDLER UNIT.
 3. CIRCUITS NOT SHOWN ON THIS SHEET BUT SHOWN ON I SHEETS AND ELSEWHERE SHALL BE AS FOLLOWS: DIGITAL I/O 2-#12 + #12 GND PER POINT IN 1" CONDUIT. ANALOG SIGNALS SHALL BE #16 TW/SH/PR IN 1" CONDUIT.

ADDENDUM #	REV	REVISION DESCRIPTION	DATE

MERRICK
ELECTRICAL POWER SYSTEMS
DESIGN AND TESTING
TYPE FIRM REGISTRATION NO. 3994
2727 N. ST. MARKS ST. SAN ANTONIO, TEXAS 78212
REG. U.S. (1/10/08) 7250 FAX: (210) 668 9605

SAN ANTONIO WATER SYSTEM

H2OAKS WELL SITES
BGD14 AND TW1
ELECTRICAL BUILDING
LAYOUT

5/13/2020
STATE OF TEXAS
STEVEN MOUSER
103671
LICENSED PROFESSIONAL ENGINEER

DESIGN BY:	JP
DRAWN BY:	SG
CHECKED BY:	SM
APPROVED BY:	SM
JOB NO:	6542-0233
DATE:	2020-4-17
SHEET:	E-10

DUCTBANK #	CONDUIT ID	SIZE	CABLES			FROM	TO	CIRCUIT
			POWER	GROUND/NEUTRAL	CONTROL			
1A	1	4"	3-1/C 350 KCMIL	1-1/C #1/0		CPS ENERGY PAD MOUNTED TRANSFORMER	MAIN BREAKER ON UTILITY RACK	MAIN INCOMING FEED
1A	2	4"	3-1/C 350 KCMIL	1-1/C #1/0		CPS ENERGY PAD MOUNTED TRANSFORMER	MAIN BREAKER ON UTILITY RACK	MAIN INCOMING FEED
1A	3	4"	SPARE	SPARE	SPARE	CPS ENERGY PAD MOUNTED TRANSFORMER	UTILITY RACK	SPARE STUBBED UP 6" AND CAPPED
1A	4	4"	SPARE	SPARE	SPARE	CPS ENERGY PAD MOUNTED TRANSFORMER	UTILITY RACK	SPARE STUBBED UP 6" AND CAPPED
1A	5	1"				CPS ENERGY PAD MOUNTED TRANSFORMER	CPS METER ON UTILITY RACK	WIRE FOR CTs FOR METER
1B	6	4"	3-1/C 350 KCMIL	1-1/C #1/0		MAIN BREAKER ON UTILITY RACK	MAIN BREAKER CABINET AT MCC INSIDE BUILDING	MAIN INCOMING FEED
1B	7	4"	3-1/C 350 KCMIL	1-1/C #1/0		MAIN BREAKER ON UTILITY RACK	MAIN BREAKER CABINET AT MCC INSIDE BUILDING	MAIN INCOMING FEED
1B	8	4"	SPARE	SPARE	SPARE	UTILITY RACK	MAIN BREAKER CABINET AT MCC INSIDE BUILDING	SPARE STUBBED UP 6" AND CAPPED
1B	9	4"	SPARE	SPARE	SPARE	UTILITY RACK	MAIN BREAKER CABINET AT MCC INSIDE BUILDING	SPARE STUBBED UP 6" AND CAPPED
2	10	1.5"	4-1/C #10	2-1/C #10 GND		SURGE TANK	POWER PANEL A	120V POWER
2	11	1.5"			1-CAT 6	SURGE TANK	SCADA PANEL	COMMUNICATION FROM SURGE TANK TO SCADA
2	12	1.5"	SPARE	SPARE	SPARE	SURGE TANK	SCADA PANEL	SPARE STUBBED UP AND CAPPED
3	13	2"			2-CAT 6	ANTENNA	SCADA PANEL	1-CAT 6 FOR CAMERA AND 1-CAT 6 FOR RADIO
3	14	2"	SPARE	SPARE		ANTENNA	SCADA PANEL	SPARE STUBBED UP 6" AND CAPPED
4.5,10	15	1"	2-1/C #10	1-1/C #10 GND		LIGHT POLE	LIGHTING CONTACTOR PANEL	120V POWER FOR AREA LIGHT
4.5,10	16	1"	SPARE	SPARE	SPARE	LIGHT POLE	LIGHTING CONTACTOR PANEL	SPARE STUBBED UP 6" AND CAPPED
4.5,11,11A	17	3/4"	2-1/C #10	1-1/C #10 GND		RECEPTACLE ON RACK AT WELL PUMP	POWER PANEL A	120V POWER FOR RECEPTACLE AT WELL RACK
4.5,11,11A	18	1"			1X(#16 TW/SH/PR)	WELL LEVEL INSTRUMENT	SCADA PANEL	WELL DEPTH TO WATER TO SCADA
-	19	4"	3-1/C 350 KCMIL	1-1/C #1/0 GND		MOTOR	J-BOX ON RACK AT WELL PUMP	480V POWER FROM MOTOR TO WELL PUMP J-BOX (MULTI CONDUCTOR CABLE)
-	20	4"	3-1/C 350 KCMIL	1-1/C #1/0 GND		MOTOR	J-BOX ON RACK AT WELL PUMP	480V POWER FROM MOTOR TO WELL PUMP J-BOX (MULTI CONDUCTOR CABLE)
-	21	4"	SPARE	SPARE	SPARE	MOTOR	J-BOX ON RACK AT WELL PUMP	SPARE STUBBED UP 6" AND CAPPED
4.5,11,11A	22	4"	3-1/C 350 KCMIL	1-1/C #1/0 GND		J-BOX ON RACK AT WELL PUMP	VFD IN BUILDING	480V POWER FROM J-BOX ON RACK AT WELL PUMP TO VFD IN BUILDING (MULTI CONDUCTOR CABLE)
4.5,11,11A	23	4"	3-1/C 350 KCMIL	1-1/C #1/0 GND		J-BOX ON RACK AT WELL PUMP	VFD IN BUILDING	480V POWER FROM J-BOX ON RACK AT WELL PUMP TO VFD IN BUILDING (MULTI CONDUCTOR CABLE)
4.5,11,11A	24	4"	SPARE	SPARE	SPARE	J-BOX ON RACK AT WELL PUMP	VFD IN BUILDING	SPARE STUBBED UP 6" AND CAPPED
4.5,11,11A	25	1"	2-1/C #10	1-1/C #10 GND		MOTOR SPACE HEATER (WELL PUMP CONTROLS CABINET)	POWER PANEL A	120V POWER FOR MOTOR SPACE HEATER
4.5,11,11A	26	1"			2-1/C #12 + 1-1/C #12 GND	VIBRATION SWITCH	VFD IN BUILDING	VIBRATION SWITCH
4.5,11,11A	27	1"	2-1/C #10	1-1/C #10 GND		LUBRICATION PUMP DISCONNECT SWITCH	MCC IN BUILDING	480V POWER TO DISCONNECT SWITCH
4.5,11,11A	28	1"	SPARE	SPARE	SPARE	LUBRICATION PUMP DISCONNECT SWITCH	MCC IN BUILDING	SPARE STUBBED UP 6" AND CAPPED
-	29	1"	2-1/C #10	1-1/C #10 GND		LUBRICATION PUMP	LUBRICATION PUMP DISCONNECT SWITCH	480V POWER TO LUBRICATION PUMP
-	30	1"	SPARE	SPARE	SPARE	LUBRICATION PUMP	LUBRICATION PUMP DISCONNECT SWITCH	SPARE STUBBED UP 6" AND CAPPED
4.5,11,11A	31	1"			4-1/C #12 + 1-1/C #12 GND	WELL PUMP CONTROLS CABINET	VFD IN BUILDING	CS-2 AND E-STOP FROM VFD
4.5,11,11A	32	1"	SPARE	SPARE	SPARE	WELL PUMP CONTROLS CABINET	VFD IN BUILDING	SPARE STUBBED UP 6" AND CAPPED
4.5,11,11A	33	2"	SPARE	SPARE	SPARE	WELL PUMP CONTROLS CABINET	VFD IN BUILDING	SPARE STUBBED UP 6" AND CAPPED
4.5,11,11B	34	1"			4-1/C #12 + 1-1/C #12 GND	SOLENIOD VALVE & FLOW SWITCH	LUBRICATION CB AT MCC IN BUILDING	SOLENIOD VALVE & FLOW SWITCH
4.5,11,11C	35	1"			2-1/C #12 + 1-1/C #12 GND	PRESSURE SWITCH	VFD IN BUILDING	PRESSURE SWITCH
4.5,11,11D	36	1.5"			MANUFACTURERS CABLE	FLOWMETER SENSOR	FLOWMETER PANEL INSIDE BUILDING	MANUFACTURERS CABLE FROM SENOR TO FLOWMETER
-	37	1.5"	3-1/C #10	1-1/C #10 GND		FLUSH VALVE ACTUATOR	FLUSH VALVE CONTROLS CABINET ON RACK	480V POWER FOR FLUSH VALVE
-	38	1.5"			18-1/C #12 + 9-1/C #12 GND	FLUSH VALVE ACTUATOR	FLUSH VALVE CONTROLS CABINET ON RACK	120V CONTROLS WIRES
4.5,6	39	1.5"	3-1/C #10	1-1/C #10 GND		FLUSH VALVE CONTROLS CABINET ON RACK	FLUSH VALVE CB AT MCC INSIDE BUILDING	480V POWER FOR FLUSH VALVE CONTROLS CABINET
4.5,6	40	1.5"			6-1/C #12 + 3-1/C #12 GND	FLUSH VALVE CONTROLS CABINET ON RACK	VFD IN BUILDING	FLUSH VALVE OPEN/CLOSED POSITION, INCOMPLETE SEQUENCE TO VFD
4.5,6	41	1.5"			12-1/C #12 + 6-1/C #12 GND	FLUSH VALVE CONTROLS CABINET ON RACK	SCADA PANEL	FLUSH VALVE MONITORING CONTROL TO SCADA PANEL
-	42	1"			2X(#16 TW/SH/PR)	FLUSH VALVE ACTUATOR	FLUSH VALVE J-BOX ON RACK	FLUSH VALVE %OPEN POSITION STATUS CONTROL TO J-BOX
4.5,6	43	1"			2X(#16 TW/SH/PR)	FLUSH VALVE J-BOX ON RACK	SCADA PANEL	FLUSH VALVE %OPEN POSITION STATUS CONTROL TO SCADA
-	44	1.5"	3-1/C #10	1-1/C #10 GND		DISCHARGE VALVE ACTUATOR	DISCHARGE VALVE CONTROLS CABINET ON RACK	480V POWER FOR DISCHARGE VALVE
-	45	1.5"			18-1/C #12 + 9-1/C #12 GND	DISCHARGE VALVE ACTUATOR	DISCHARGE VALVE CONTROLS CABINET ON RACK	120V CONTROLS WIRES
4.7	46	1.5"	3-1/C #10	1-1/C #10 GND		DISCHARGE VALVE CONTROLS CABINET ON RACK	DISCHARGE VALVE CB AT MCC INSIDE BUILDING	480V POWER FOR DISCHARGE VALVE CONTROLS CABINET
4.7	47	1"	2-1/C #10	1-1/C #10 GND		DISCHARGE VALVE RACK	POWER PANEL A	120V POWER FOR RECEPTACLE
4.7	48	1.5"			6-1/C #12 + 3-1/C #12 GND	DISCHARGE VALVE CONTROLS CABINET ON RACK	VFD IN BUILDING	DISCHARGE VALVE OPEN/CLOSED POSITION, INCOMPLETE SEQUENCE TO VFD
4.7	49	1.5"			12-1/C #12 + 6-1/C #12 GND	DISCHARGE VALVE CONTROLS CABINET ON RACK	SCADA PANEL	DISCHARGE VALVE MONITORING CONTROL TO SCADA PANEL
-	50	1"			2X(#16 TW/SH/PR)	DISCHARGE VALVE ACTUATOR	DISCHARGE VALVE J-BOX ON RACK	DISCHARGE VALVE %OPEN POSITION STATUS CONTROL TO J-BOX
4.7	51	1"			2X(#16 TW/SH/PR)	DISCHARGE VALVE J-BOX ON RACK	SCADA PANEL	DISCHARGE VALVE %OPEN POSITION STATUS CONTROL TO SCADA
4.7	52	1"	2-1/C #10	1-1/C #10 GND		HEAT TRACE CABINET	POWER PANEL A	120V POWER FOR HEAT TRACE CABINET
4.7	53	1"	SPARE	SPARE	SPARE	HEAT TRACE CABINET	POWER PANEL A	SPARE STUBBED UP 6" AND CAPPED
-	54	1"	2-1/C #10	1-1/C #10 GND		HEAT TRACE ON PIPES AND INSTRUMENTS	HEAT TRACE CABINET	120V POWER FOR HEAT TRACE
4.8	55	1"			1-#16 TW/SH/PR	PRESSURE TRANSMITTER	SCADA PANEL	4-20ma SIGNAL WIRES
4.8	56	1"	SPARE	SPARE	SPARE	PRESSURE TRANSMITTER	SCADA PANEL	SPARE STUBBED UP 6" AND CAPPED
-	57	1"			1-#16 TW/SH/PR	PRESSURE TRANSMITTER ON PIPE	PRESSURE TRANSMITTER	4-20ma SIGNAL WIRES
4.8	58	1"	2-1/C #10	1-1/C #10 GND		PRESSURE TRANSMITTER RACK	POWER PANEL A	120V POWER FOR RECEPTACLE
4.9	59	2"				FUTURE STRAINER/FILTER	FUTURE STRAINER/FILTER AT MCC INSIDE BUILDING	STUBBED UP 6" AND CAPPED
4.9	60	2"				FUTURE STRAINER/FILTER	POWER PANEL A	STUBBED UP 6" AND CAPPED
4.9	61	2"				FUTURE STRAINER/FILTER	SCADA PANEL	STUBBED UP 6" AND CAPPED
7.8	59	1"	2-1/C #10	1-1/C #10 GND		HEAT TRACE CABINET	PRESSURE TRANSMITTER	HEAT TRACE TO PRESSURE TRANSMITTER
4.5,11,11A	60	1"	2-1/C #10	1-1/C #10 GND		HEAT TRACE CABINET	WELL PUMP LUBRICATION PIPING	HEAT TRACE TO WELL PUMP LUBRICATION PIPING
-	61	1.5"			8X(3-1/C #16 TW/SH/TRIAD)	WELL PUMP MOTOR	J-BOX ON RACK AT WELL PUMP	WELL PUMP RTDS
4.5,11,11A	62	1.5"			8X(3-1/C #16 TW/SH/TRIAD)	J-BOX ON RACK AT WELL PUMP	VFD IN BUILDING	WELL PUMP RTDS

A TW-1 DUCTBANK SCHEDULE
SCALE: NOT TO SCALE

ADDENDUM #4	REV	REVISION DESCRIPTION	DATE

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TEXAS REGISTERED ENGINEERING FIRM F-3911

GRUBB ENGINEERING, INC.
ELECTRICAL POWER SYSTEMS
DESIGN AND TESTING

TYPE FIRM REGISTRATION NO. 3994
2727 N. ST. MARKS ST. SAN ANTONIO, TEXAS 78212
REG. REG. (210) 628-7250 FAX: (210) 628-9605

SAN ANTONIO WATER SYSTEM

H2OAKS WELL SITES
BGD14 AND TW1

TW-1
DUCTBANK SCHEDULE

5/13/2020

DESIGN BY: JP
DRAWN BY: SG
CHECKED BY: SM
APPROVED BY: SM

JOB NO: 6542-0233
DATE: 2020-4-17
SHEET: E-12

DUCTBANK	CONDUIT			CABLES			FROM	TO	CIRCUIT
	#	ID	SIZE	POWER	GROUND/NEUTRAL	CONTROL			
1A	1	4"	3-1/C 350 KCMIL	1-1/C #1/0			CPS ENERGY PAD MOUNTED TRANSFORMER	MAIN BREAKER ON UTILITY RACK	MAIN INCOMING FEED
1A	2	4"	3-1/C 350 KCMIL	1-1/C #1/0			CPS ENERGY PAD MOUNTED TRANSFORMER	MAIN BREAKER ON UTILITY RACK	MAIN INCOMING FEED
1A	3	4"	SPARE	SPARE	SPARE		CPS ENERGY PAD MOUNTED TRANSFORMER	UTILITY RACK	SPARE STUBBED UP 6" AND CAPPED
1A	4	4"	SPARE	SPARE	SPARE		CPS ENERGY PAD MOUNTED TRANSFORMER	UTILITY RACK	SPARE STUBBED UP 6" AND CAPPED
1A	5	1"					CPS ENERGY PAD MOUNTED TRANSFORMER	CPS METER ON UTILITY RACK	WIRE FOR CT'S FOR METER
1B	6	4"	3-1/C 350 KCMIL	1-1/C #1/0			MAIN BREAKER ON RACK	MAIN BREAKER CABINET AT MCC INSIDE BUILDING	MAIN INCOMING FEED
1B	7	4"	3-1/C 350 KCMIL	1-1/C #1/0			MAIN BREAKER ON RACK	MAIN BREAKER CABINET AT MCC INSIDE BUILDING	MAIN INCOMING FEED
1B	8	4"	SPARE	SPARE	SPARE		UTILITY RACK	MAIN BREAKER CABINET AT MCC INSIDE BUILDING	SPARE STUBBED UP 6" AND CAPPED
1B	9	4"	SPARE	SPARE	SPARE		UTILITY RACK	MAIN BREAKER CABINET AT MCC INSIDE BUILDING	SPARE STUBBED UP 6" AND CAPPED
2	10	2"				2-CAT 6	ANTENNA	SCADA PANEL	1-CAT 6 FOR CAMERA AND 1-CAT 6 FOR RADIO
2	11	2"	SPARE	SPARE			ANTENNA	SCADA PANEL	SPARE STUBBED UP 6" AND CAPPED
3,6,6A	12	1"	2-1/C #10	1-1/C #10 GND			LIGHT POLE	LIGHTING CONTACTOR PANEL	120V POWER FOR AREA LIGHT
3,6,6A	13	1"	SPARE	SPARE	SPARE		LIGHT POLE	LIGHTING CONTACTOR PANEL	SPARE STUBBED UP 6" AND CAPPED
3,6,6B	14	3/4"	2-1/C #10	1-1/C #10 GND			RECEPTACLE ON RACK AT WELL PUMP	POWER PANEL A	120V POWER FOR RECEPTACLE AT WELL PUMP
-	15	4"	3-1/C 350 KCMIL	1-1/C #1/0 GND			MOTOR	J-BOX ON RACK AT WELL PUMP	480V POWER FROM MOTOR TO WELL PUMP J-BOX (MULTI CONDUCTOR CABLE)
-	16	4"	3-1/C 350 KCMIL	1-1/C #1/0 GND			MOTOR	J-BOX ON RACK AT WELL PUMP	480V POWER FROM MOTOR TO WELL PUMP J-BOX (MULTI CONDUCTOR CABLE)
-	17	4"	SPARE	SPARE	SPARE		MOTOR	J-BOX ON RACK AT WELL PUMP	SPARE STUBBED UP 6" AND CAPPED
3,6,6B	18	1"				1X(#16 TW/SH/PR)	WELL LEVEL INSTRUMENT	SCADA PANEL	WELL DEPTH TO WATER TO SCADA
3,6,6B	19	4"	3-1/C 350 KCMIL	1-1/C #1/0 GND			J-BOX ON RACK AT WELL PUMP	VFD IN BUILDING	480V POWER FROM J-BOX ON RACK AT WELL PUMP TO VFD IN BUILDING (MULTI CONDUCTOR CABLE)
3,6,6B	20	4"	3-1/C 350 KCMIL	1-1/C #1/0 GND			J-BOX ON RACK AT WELL PUMP	VFD IN BUILDING	480V POWER FROM J-BOX ON RACK AT WELL PUMP TO VFD IN BUILDING (MULTI CONDUCTOR CABLE)
3,6,6B	21	4"	SPARE	SPARE	SPARE		J-BOX ON RACK AT WELL PUMP	VFD IN BUILDING	SPARE STUBBED UP 6" AND CAPPED
3,6,6B	22	1"	2-1/C #10	1-1/C #10 GND			MOTOR SPACE HEATER (WELL PUMP CONTROLS CABINET)	POWER PANEL A	120V POWER FOR MOTOR SPACE HEATER
3,6,6B	23	1"				2-1/C #12 + 1-1/C #12 GND	VIBRATION SWITCH	VFD IN BUILDING	VIBRATION SWITCH
3,6,6B	24	1"	2-1/C #10	1-1/C #10 GND			LUBRICATION PUMP DISCONNECT SWITCH	MCC IN BUILDING	480V POWER TO DISCONNECT SWITCH
3,6,6B	25	1"	SPARE	SPARE	SPARE		LUBRICATION PUMP DISCONNECT SWITCH	MCC IN BUILDING	SPARE STUBBED UP 6" AND CAPPED
-	26	1"	2-1/C #10	1-1/C #10 GND			LUBRICATION PUMP	LUBRICATION PUMP DISCONNECT SWITCH	480V POWER TO LUBRICATION PUMP
-	27	1"	SPARE	SPARE	SPARE		LUBRICATION PUMP	LUBRICATION PUMP DISCONNECT SWITCH	SPARE STUBBED UP 6" AND CAPPED
3,6,6B	28	1"				4-1/C #12 + 1-1/C #12 GND	WELL PUMP CONTROLS CABINET	VFD IN BUILDING	CS-2 AND E-STOP FROM VFD
3,6,6B	29	1"	SPARE	SPARE	SPARE		WELL PUMP CONTROLS CABINET	VFD IN BUILDING	SPARE STUBBED UP 6" AND CAPPED
3,6,6B	30	2"	SPARE	SPARE	SPARE		WELL PUMP CONTROLS CABINET	VFD IN BUILDING	SPARE STUBBED UP 6" AND CAPPED
3,6,6D	31	1"				4-1/C #12 + 1-1/C #12 GND	SOLENIOD VALVE & FLOW SWITCH	LUBRICATION CB AT MCC IN BUILDING	SOLENIOD VALVE & FLOW SWITCH
3,6,6C	32	1"				2-1/C #12 + 1-1/C #12 GND	PRESSURE SWITCH	VFD IN BUILDING	PRESSURE SWITCH
3,6,6E	33	1"					MANUFACTURERS CABLE	FLOWMETER SENSOR	FLOWMETER PANEL INSIDE BUILDING
-	34	1.5"	3-1/C #10	1-1/C #10 GND			FLUSH VALVE ACTUATOR	FLUSH VALVE CONTROLS CABINET ON RACK	480V POWER FOR FLUSH VALVE
-	35	1.5"				18-1/C #12 + 9-1/C #12 GND	FLUSH VALVE ACTUATOR	FLUSH VALVE CONTROLS CABINET ON RACK	120V CONTROLS WIRES
3,5	36	1.5"	3-1/C #10	1-1/C #10 GND			FLUSH VALVE CONTROLS CABINET ON RACK	FLUSH VALVE CB AT MCC INSIDE BUILDING	480V POWER FOR FLUSH VALVE CONTROLS CABINET
3,5	37	1.5"				6-1/C #12 + 3-1/C #12 GND	FLUSH VALVE CONTROLS CABINET ON RACK	VFD IN BUILDING	FLUSH VALVE OPEN/CLOSED POSITION, INCOMPLETE SEQUENCE TO VFD
3,5	38	1.5"				12-1/C #12 + 6-1/C #12 GND	FLUSH VALVE CONTROLS CABINET ON RACK	SCADA PANEL	FLUSH VALVE MONITORING/CONTROL TO SCADA PANEL
-	39	1"				2X(#16 TW/SH/PR)	FLUSH VALVE ACTUATOR	FLUSH VALVE J-BOX ON RACK	FLUSH VALVE %OPEN POSITION STATUS/CONTROL TO J-BOX
3,5	40	1"				2X(#16 TW/SH/PR)	FLUSH VALVE J-BOX ON RACK	SCADA PANEL	FLUSH VALVE %OPEN POSITION STATUS/CONTROL TO SCADA
-	41	1.5"	3-1/C #10	1-1/C #10 GND			DISCHARGE VALVE ACTUATOR	DISCHARGE VALVE CONTROLS CABINET ON RACK	480V POWER FOR DISCHARGE VALVE
-	42	1.5"				18-1/C #12 + 9-1/C #12 GND	DISCHARGE VALVE ACTUATOR	DISCHARGE VALVE CONTROLS CABINET ON RACK	120V CONTROLS WIRES
4,3	43	1.5"	3-1/C #10	1-1/C #10 GND			DISCHARGE VALVE CONTROLS CABINET ON RACK	DISCHARGE VALVE CB AT MCC INSIDE BUILDING	480V POWER FOR DISCHARGE VALVE CONTROLS CABINET
4,3	44	1.5"				6-1/C #12 + 3-1/C #12 GND	DISCHARGE VALVE CONTROLS CABINET ON RACK	VFD IN BUILDING	DISCHARGE VALVE OPEN/CLOSED POSITION, INCOMPLETE SEQUENCE TO VFD
4,3	45	1.5"				12-1/C #12 + 6-1/C #12 GND	DISCHARGE VALVE CONTROLS CABINET ON RACK	SCADA PANEL	DISCHARGE VALVE MONITORING/CONTROL TO SCADA PANEL
-	46	1"				2X(#16 TW/SH/PR)	DISCHARGE VALVE ACTUATOR	DISCHARGE VALVE J-BOX ON RACK	DISCHARGE VALVE %OPEN POSITION STATUS/CONTROL TO J-BOX
4,3	47	1"				2X(#16 TW/SH/PR)	DISCHARGE VALVE J-BOX ON RACK	SCADA PANEL	DISCHARGE VALVE %OPEN POSITION STATUS/CONTROL TO SCADA
4,3	48	1"	2-1/C #10	1-1/C #10 GND			DISCHARGE VALVE RACK	POWER PANEL A	120V POWER FOR RECEPTACLE
4,3	49	1"	2-1/C #10	1-1/C #10 GND			HEAT TRACE CABINET	POWER PANEL A	120V POWER FOR HEAT TRACE CABINET
4,3	50	1"	SPARE	SPARE	SPARE		HEAT TRACE CABINET	POWER PANEL A	SPARE STUBBED UP 6" AND CAPPED
-	51	1"	2-1/C #10	1-1/C #10 GND			HEAT TRACE ON PIPES AND INSTRUMENTS	HEAT TRACE CABINET	120V POWER FOR HEAT TRACE
3,7	52	1"				1-#16 TW/SH/PR	PRESSURE TRANSMITTER	SCADA PANEL	4-20ma SIGNAL WIRES
3,7	53	1"	SPARE	SPARE	SPARE		PRESSURE TRANSMITTER	SCADA PANEL	SPARE STUBBED UP 6" AND CAPPED
-	54	1"				1-#16 TW/SH/PR	PRESSURE TRANSMITTER ON PIPE	PRESSURE TRANSMITTER	4-20ma SIGNAL WIRES
3,7	55	1"	2-1/C #10	1-1/C #10 GND			PRESSURE TRANSMITTER RACK	POWER PANEL A	120V POWER FOR RECEPTACLE
8,3	56	2"					FUTURE STRAINER/FILTER	FUTURE STRAINER/FILTER AT MCC INSIDE BUILDING	STUBBED UP 6" AND CAPPED
8,3	57	2"					FUTURE STRAINER/FILTER	POWER PANEL A	STUBBED UP 6" AND CAPPED
8,3	58	2"					FUTURE STRAINER/FILTER	SCADA PANEL	STUBBED UP 6" AND CAPPED
4,7	59	1"	2-1/C #10	1-1/C #10 GND			HEAT TRACE CABINET	PRESSURE TRANSMITTER	HEAT TRACE TO PRESSURE TRANSMITTER
4,6,6B	60	1"	2-1/C #10	1-1/C #10 GND			HEAT TRACE CABINET	WELL PUMP LUBRICATION PIPING	HEAT TRACE TO WELL PUMP LUBRICATION PIPING
-	61	1.5"				8X(3-1/C #16 TW/SH/TRIAD)	WELL PUMP MOTOR	J-BOX ON RACK AT WELL PUMP	WELL PUMP RTDS
3,6,6B	62	1.5"				8X(3-1/C #16 TW/SH/TRIAD)	J-BOX ON RACK AT WELL PUMP	VFD IN BUILDING	WELL PUMP RTDS

A BGD-14 DUCTBANK SCHEDULE
SCALE: NOT TO SCALE

ADDENDUM #4	REV	DATE

MERRICK
REGISTERED PROFESSIONAL ENGINEERING FIRM F-3911
401 E. SONTERA BLVD., SUITE E 250
SAN ANTONIO, TX 78258
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FAX: (210) 444-2570

GRUBB ENGINEERING, INC.
ELECTRICAL POWER SYSTEMS
DESIGN AND TESTING
TYPE FIRM REGISTRATION NO. 3994
2727 N. ST. MARKS ST., SAN ANTONIO, TEXAS 78212
REG. REG. (210) 725-7250 FAX: (210) 668-9605

SAN ANTONIO WATER SYSTEM

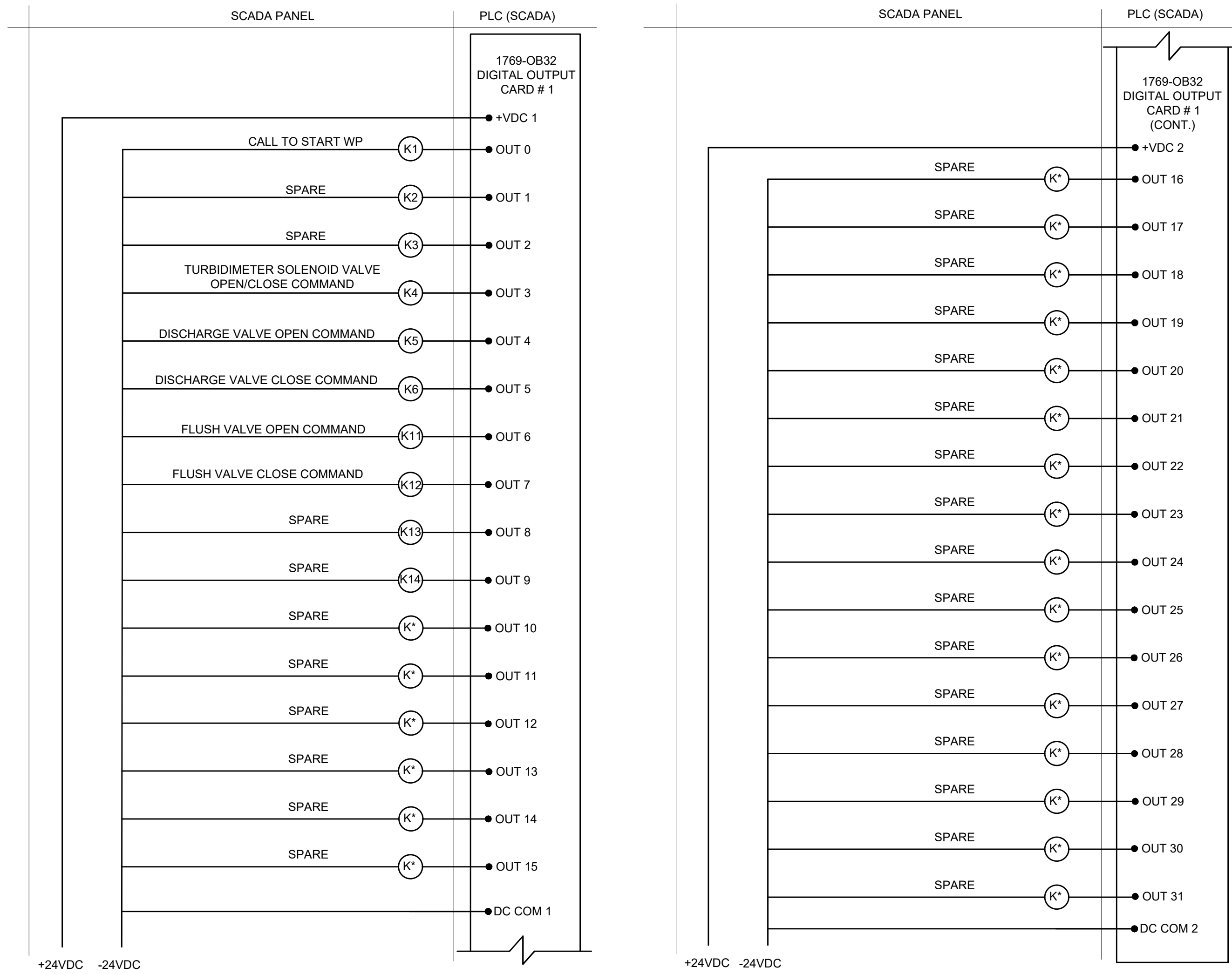
**H2OAKS WELL SITES
BGD14 AND TW1**

**BGD-14
DUCTBANK SCHEDULE**

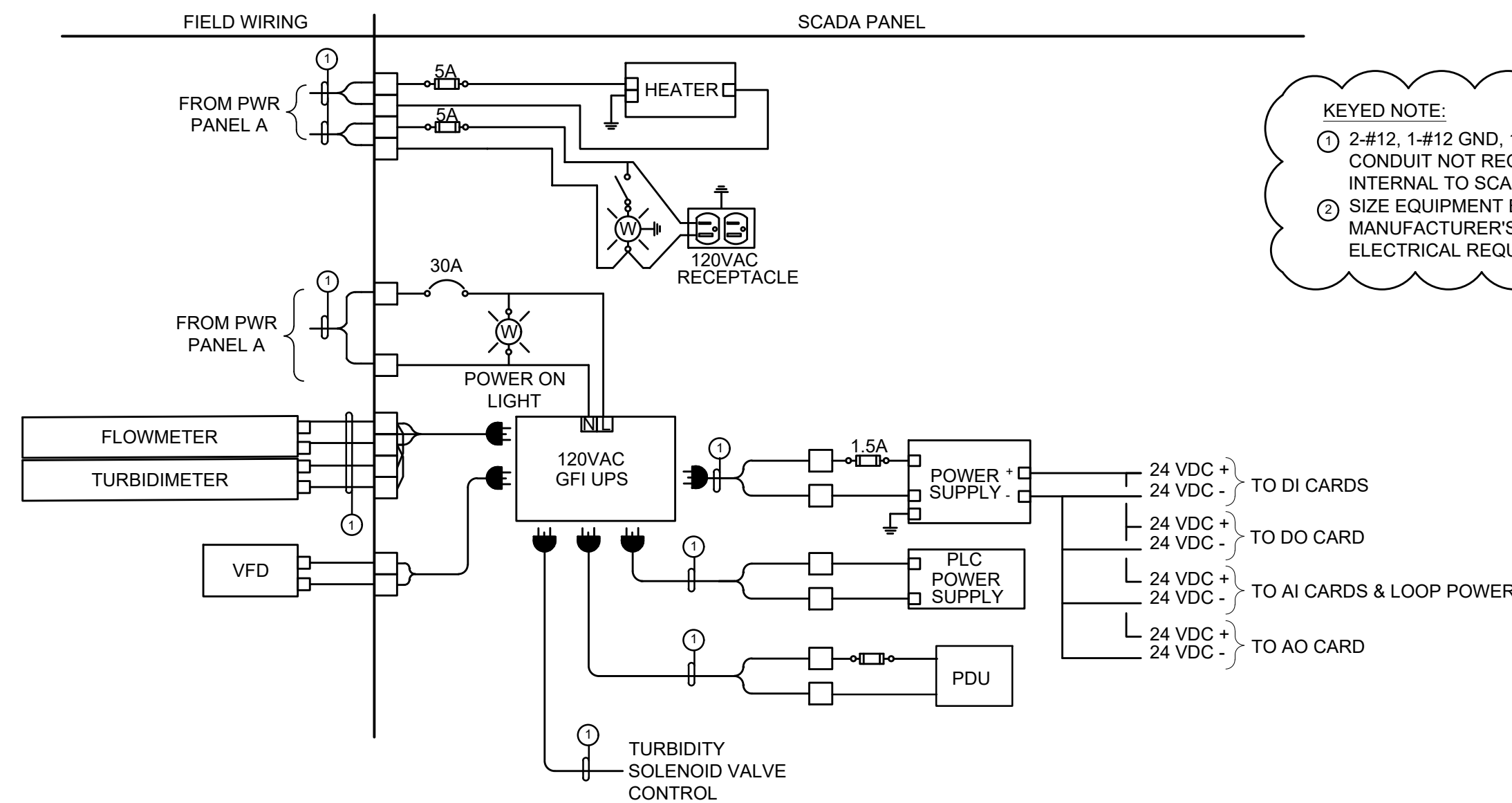
5/13/2020
STATE OF TEXAS
STEVEN MOUSER
103671
LICENSED PROFESSIONAL ENGINEER

DESIGN BY:	JP
DRAWN BY:	SG
CHECKED BY:	SM
APPROVED BY:	SM

JOB NO: 6542-0233
DATE: 2020-4-17
SHEET: E-13



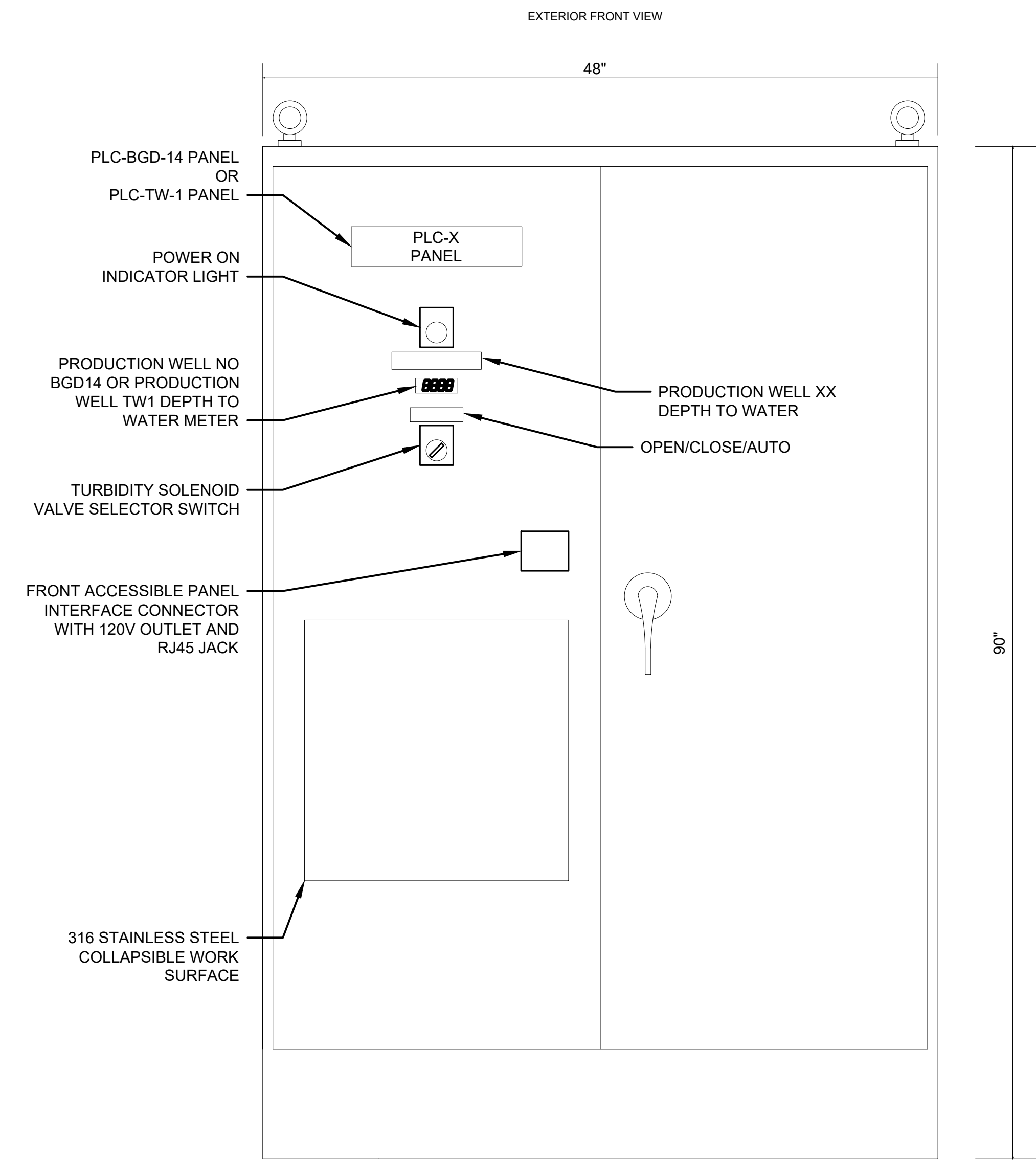
A SCADA PLC DIGITAL OUTPUT
N.T.S.



NOTE: NOT ALL POWER SUPPLIES SHOWN ON DIAGRAM. PROVIDE NECESSARY POWER SUPPLIES FOR THE SCADA, SECURITY AND COMMUNICATIONS PANEL.

B SCADA PANEL POWER DISTRIBUTION
SCALE: N.T.S.

KEYED NOTE:
 ① 2-#12, 1-#12 GND, 1" C. CONDUIT NOT REQUIRED IF INTERNAL TO SCADA PANEL.
 ② SIZE EQUIPMENT BASED ON MANUFACTURER'S RECOMMENDED ELECTRICAL REQUIREMENTS.



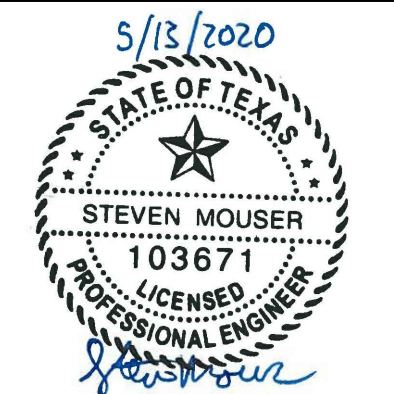
C SCADA PANEL FRONT ELEVATION
SCALE: N.T.S.

APPENDIX #4	SM	CD	5/13/20
REV	REVISION DESCRIPTION	APPROVED BY	DATE

GRUBB ENGINEERING, INC.
 ELECTRICAL POWER SYSTEMS
 DESIGN AND TESTING
 TBE FIRM REGISTRATION NO. 3904
 2727 N. ST. MARY'S ST. SAN ANTONIO, TEXAS 78212
 BUS: (210) 638-7250 FAX: (210) 638-9805



H2OAKS WELL SITES
 BGD14 AND TW1
 SCADA
 INTERCONNECTION
 DETAILS #2



DESIGN BY:	JP
DRAWN BY:	SG
CHECKED BY:	SM
APPROVED BY:	SM

JOB NO: 6542-0233
 DATE: 2020-4-17

SHEET: I-04

MERRICK
 401 E. SONTERA BLVD / SUITE 250
 SAN ANTONIO, TX 78258
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 TEXAS REGISTERED ENGINEERING FIRM E-3911