



## SAWS DOS RIOS SLUDGE BLEND FACILITIES EXPANSION PROJECT

Solicitation Number: CO-00080

Job No.: 16-6507

### ADDENDUM 1

September 22, 2016

To Respondent of Record:

This addendum, applicable to work referenced above, is an amendment to the proposal and 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 proposal.

<b>RESPONSES TO QUESTIONS RECEIVED</b>
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- 1. Does this project request any Union Labor requirements? If this is never required please let me know and I will make a note of this.**

Response: No, SAWS does not require union labor requirements. However, it is subject to prevailing wage rate and labor standard provisions, per General Conditions, Article II, Section 2.10. Please reference the wage decision within the specifications for specific wages for this project.

- 2. What is the start or end date for the construction?**

Response: This contract is expected to be approved at the regular monthly SAWS Board of Trustees meeting on November 1, 2016. Calendar days to complete this project once the Authorization to Proceed is issued is 240.

- 3. Will any Line Stops be required on the Dos Rios WRC - Sludge Blending Facilities Expansion Project, SAWS project?**

Response: No line stops are required on this project.

- 4. Are closed coupling acceptable for the GBT feed pumps in lieu of the flexible coupling required in specification 43 21 36. 2.3. F?**

Response: Yes.

- 5. Please further clarify what type of seal flush plan is required as specification 43 21 36.2.3.A.5 is unclear.**

Response: Updates to Section 43 21 36, Section 2.3, Paragraph A.5 have been included with this Addendum No. 1.

- 6. Is a moisture probe located within the oil bath connected to a sensor relay acceptable in lieu of a visual sight gauge detailed in specification 43 21 13.2.3.A.8?**

Response: Yes. An additional alarm and shutdown control point will need to be provided in addition to this as well though. Refer to updated Sheet E-12, which is included as part of this Addendum No. 1.

- 7. Is Tag# FE-104 a 6" Magnetic flow meter with a flow rate of 500 GPM?**

Response: Yes, it is a 6" flow meter. The maximum flow rate is 600 GPM. See instrument index in Section 40 70 05 for flow range.

**8. Is tag# FE-103 a 6" Magnetic flow meter with a flowrate of 600 GPM?**

Response: Yes, it is a 6" flow meter. The maximum flow rate is 500 GPM. See instrument index in Section 40 70 05 for flow range.

**9. Is tag # FE 101 a 10" magnetic flow meter?**

Response: Yes.

**10. What size is the magnetic flowmeter for tag #FIT 102. I think it is the sludge blend train? I found it in the specs but not on the plans.**

Response: Flow meter Tag # 102 is a 10" existing magnetic flow meter shown on Sheet G-05 in gray coming out of the strain press building. It is also shown on Sheet E-09 keynote 14. Refer to updated Sheets G-05 and P-02, which are included as part of this Addendum No. 1.

**11. On Sheet C-10 detail 3 the above ground schedule 80 PVC pipe is connecting to the underground C-900 90° bend without an adapter. The O.D. of the schedule 80 pipe is 12.75in. and the O.D. of the C-900 is 13.2in. In order to make the connection an omni coupling will be needed. Please advise.**

Response: Utilization of an omni coupling is acceptable. Smith-Blair style 473 restrained pipe lock is acceptable or approved equal. Refer to updated Section 40 05 06, Section 2.1, Paragraph A.2, which is included as part of this Addendum No. 1.

**12. Is the pipe above ground for the overflow connection supposed to be PVC that is shown on C-10 detail 3?**

Response: Yes, schedule 80 PVC, painted, in accordance with exposed piping schedule as shown on Table 40 05 05-A and painting schedule as shown on Table 09 91 00-C.

**13. On sheet M-04 the plans call out a 90° bend coming off the tee for a the 8" line leaving pump one but on sheet M-05 it does not call that out. Should this be an 8" blind flange?**

Response: Yes. An 8" blind flange should be provided. SAWS will install the piping shown in gray. This is why keynote 9 on Sheet M-04 points to the gray portion of pipe.

**14. What is the length of pipe from the reducer and wye on the sludge piping connection detail that is shown on sheet M-06 and M-07?**

Response: Centerline to centerline on sheet M-06 is approximately 11.25 feet. Centerline to centerline on sheet M-07 is approximately 13.3 feet. Contractor should field verify all distances in accordance with note 1 on both sheets.

**15. Sheets E-06 and E-08 shows we are to replace the existing ASCO ATS in MCC-FT1 and MCC-FT2. It appears we are to replace the conductors from the ATS to the generator paralleling gear? How do we quantify the amount of wire that will be needed to replace the conductors? Is the existing raceway currently empty? Is the conduit new?**

Response: Yes, the conductors shall be replaced. Only conductors shall be replaced per revised sheets E-06 and E-08.

**16. Sheet E-04, Detail "A" MCC-BT-1 Proposed One line diagram. It appears that the conduit and wire shown on the diagram are existing. However, on sheet E-03 notes 3, 4, and 5 it states that the wire shall be removed and replaced. Please clarify.**

Response: Please refer to sheet E-04 note 2. The wire shall be removed and replaced.

**17. Sheet E-03 Note 5 states that the motor shall be removed and replaced per Sheet E-04, typical of 5 Sludge Transfer Pump Motors. Sheet E-04 shows 6 Sludge Transfer Pump Motors. Please clarify if we are to replace 5 or 6.**

Response: Revised sheet E-04 has been corrected to reflect replacement of five (5) pumps.

**18. Can the engineer provide a spec. or information for the Sludge Transfer Pump Motors that are to be replaced per Sheet E-03 & E-04?**

Response: Please refer to specification 26 30 00 and 40 05 93, both provide information for the Sludge Transfer Pump Motors.

**19. Sheet E-04, Note 3 states that the existing solid state overloads shall be evaluated for reuse, for proposed motors. If existing overloads are determined to be sized in place and connected incorrectly, Then overloads shall be replaced by contractor. How does the contractor approach this issue. Currently there are no provisions made for the removal and installation of these components. More importantly it would be a change order during the delivery of the project. Would it be possible to get an alternate bid item that would include these Solid State Overloads in the event they are needed?**

Response: Revised sheet E-04 (included with this Addendum No. 1) reflects the complete replacement of existing starters and overloads to serve the replacement motors.

**20. A detail is needed for the pipe rack support.**

Response: See detail 5 on sheet M-08.

**21. Can above-ground overflow piping shown on Sheet C-10 Details 2 and 3 be Ductile Iron instead of PVC?**

Response: Above ground overflow piping and fittings shown in Details 2 and 3 on Sheet C-10 should be Schedule 80 in accordance with Section 40 05 05, Table 40 05 05-A.

**22. What kind of PVC is the below-ground overflow piping and fittings shown on Sheet C-10 Details 2 and 3 and do you have to restrain it?**

Response: Below ground overflow piping and fittings shown in Details 2 and 3 on Sheet C-10 should be C-900 in accordance with Section 40 05 31.2.2.C. Note 3 on Sheet C-10 indicates that all piping and fittings must be restrained.

**23. Please verify if lining should be provided for overflow pipe.**

Response: No lining is necessary. Overflow pipe is to be PVC.

**24. Wafer check valve shown on Detail 2 sheet C-10 can't be flanged.**

Response: Refer to specification 40 05 53, Section 2.5, Paragraph B.3. Valve is to be seated between flange faces.

**25. Does epoxy coating system require 150 mil on all surfaces?**

Response: No. Steel surfacer should be used at all voids and weld locations for a total thickness of 50 mils. Top coat of 100 mils should be utilized everywhere within tank. Total thickness throughout tank should vary from 100-150 mils. Refer to updated Section 09 96 56 Paragraphs 2.3 & 3.4.

<b>MODIFICATIONS TO THE SPECIFICATIONS</b>
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**1. Page IV-1, Invitation to Bidders, Paragraph 6. Replace as follows:**

**“Sealed bids will be received** by the Contract Administration Division, 2800 U.S. Hwy 281 North, Customer Center Building, Suite 171, San Antonio, Texas 78212, **until 10:00 AM (CT), September 29, 2016.** Bids will then be publicly opened and read aloud in Contract Administration, **Suite 154,** Customer Center Building, 2800 U.S. Hwy 281 North, San Antonio, Texas. Each bid must be accompanied by a cashier's check, certified check, or bid bond in an amount not less than five percent of the total bid price.”

2. Section 09 96 56 – Epoxy Lining System

Replace Section 09 96 56.1.7.B as follows:

**“B. Bonded Warranty:** The epoxy lining system applicator shall supply a two-year bond, payable to the San Antonio Water System, for the epoxy lining system that is approved by San Antonio Water System. The two-year bond shall cover both the material costs and the labor costs associated with installing the approved epoxy lining system. The bond shall also be unconditional in nature covering any type of failure in the epoxy lining system and agreeing to repair or replace it at no additional cost to San Antonio Water System at any point during this two-year period. The epoxy lining system applicator shall also supply a warranty from the epoxy lining system manufacturer addressed to the A-minus or better bonding company and San Antonio Water system. This warranty shall state, at a minimum, that if the epoxy lining system is applied in accordance with the manufacturer’s instructions, that the epoxy lining system will not fail for a period of two years. The definition of an epoxy lining system failure is that blistering, cracking, embrittlement, or softening of the epoxy lining system is starting to occur.

Replace section 09 96 56.2.3.B and C as follows:

**“B. Steel Surfacers:** Provide a two-component, epoxy-based material with inert mineral fillers recommended by the epoxy lining system manufacturer. Utilize steel surfacer for filling “bug” holes and voids and at all weld locations in horizontal and vertical surfaces, along with complying with the following:

1. Adhesion to Steel, ASTM D 4541: 1,500 pounds per square inch, minimum 50 mil

**C. Topcoat:** Catalyzed, novolac epoxy with silica fillers 100 mil, minimum.”

Replace Section 09 96 56.3.4.A with the following:

**“A. The epoxy lining system shall be applied in two or more coats. Surfacers thickness will vary depending on steel surface. The epoxy lining coating system shall have a total dry film thickness of at least 100 mils where no surfacer was applied and 150 mils where surfacer was applied.”**

Replace Section 09 96 56.3.5.B.2 with the following:

**“2. A testing laboratory, selected by CONTRACTOR, as indicated in Division 1, General Requirements, will perform appropriate tests for any or all of the following characteristics:**

- a. Abrasion resistance.
- b. Flexibility.
- c. Washability.
- d. Absorption.
- e. Chemical resistance.
- f. Dry opacity.
- g. Generic materials analysis including compressive strength, tensile strength and water vapor transmission.”

3. Section 40 05 06 – Coupling, Adapters, and Specials

Replace Section 40 05 06.2.1.A.2 with the following:

**“2. Products and Manufacturers:** Provide products of one of the following:

- a. Style 253 or 38 depending on size, as manufactured by Dresser Piping Specialties, part of Dresser Inc.
- b. Style 441 or 411 depending on size, by Smith Blair Inc.
- c. Style 473 by Smith Blair Inc.
- d. Or approved equal.”

4. Section 40 05 98 – Seal Water System

Replace Section 40 05 98.2.3.A as follows:

“The seal water supply shall be tapped from the plant effluent water supply. A pressure reducing valve shall reduce line pressure to the designated seal water pressure. Seal water before the pressure reducing valve shall be filtered to **5-microns.**”

5. Section 40 61 93 – Process Control System Input-Output List

**Replace** Section 40 61 93 Appendix A with the attachment.

Changes are as follows:

- a. **Change digital input labeled “High/Low Pressure Alarm” to “High Pressure Alarm” for GBT Feed Pumps 1-6 and Recirculation Pumps 1-2.**
- b. **Add digital input labeled “Low Pressure Alarm” for GBT Feed Pumps 1-6 and Recirculation Pumps 1-2.**
- c. **Add digital input labeled “Motor Seal Failure” to Recirculation Pumps 1-2.**
- d. **Change the digital input point count to 45.**
- e. **Change the digital input cards required to 3.**

6. Section 43 21 36 – Positive Displacement Progressing Cavity Pumps

**Replace** section 43 21 36.2.3.A.5 with the following:

**“Shaft shall be sealed using manufacturer recommended standard seal approved for this application of the Bellows type.”**

**MODIFICATIONS TO THE PLANS**

1. Sheet G-05 - Replace the sheet with the attached.
  - a. Instrument ID #'s added to flow meters for clarity.
2. Sheet P-02 – Replace this sheet with the attached.
  - a. Flow meter 102 line weight changed to gray to indicate existing.
3. Sheet P-03 – Replace this sheet with the attached.
4. Sheet M-06 and M-07 – Replace sheets with the attached.
  - a. Detail 2 – Added existing centerline elevation of inlet pipes to the GBT's to each sheet.
5. Sheet M-04 - Replace this sheet with the attached.
  - a. Note 7 added.
  - b. Blinded tee removed and replaced with straight pipe.
6. Sheet M-11 - Replace this sheet with the attached.
  - a. Piping configuration on Detail 4 updated.
7. Sheet E-04, E-06 through E-14 - Replace these sheet with the attached.



Arcadis U.S., Inc.  
Texas Firm No. F-533



Grubb Engineering, Inc. (Electrical and I&C Only)  
Texas Firm No. F-3904

**ACKNOWLEDGEMENT BY RESPONDENT**

Each Respondent shall acknowledge receipt of this Addendum No. 1 by noting such and signing the Price Proposal.

This undersigned acknowledges receipt of this Addendum No. 1 and the proposal submitted herewith is in accordance with the information and stipulations set forth.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Respondent

**END OF ADDENDUM**



San Antonio Water System  
 Dos Rios WRC Sludge Blend Facilities Expansion

Parameter	Digital Input	Digital Output	Analog Input	Modbus	Ethernet
<b>Dos Rios WRC Sludge Blend Facilities Expansion</b>					
<b>Pump Status/Control</b>					
GBT Feed Pump 1 Control Status in Hand	X				
GBT Feed Pump 1 Control Status in Auto	X				
GBT Feed Pump 1 Control Status in Remote	X				
GBT Feed Pump 1 Run Status	X				
GBT Feed Pump 1 Start		X			
GBT Feed Pump 1 Stop		X			
GBT Feed Pump 1 Shutdown		X			
GBT Feed Pump 1 High Pressure Alarm	X				
GBT Feed Pump 1 Low Pressure Alarm	X				
GBT Feed Pump 1 Overtemperature Alarm	X				
GBT Feed Pump 1 VFD Fail Alarm					X
GBT Feed Pump 1 VFD Speed Indication					X
GBT Feed Pump 1 VFD Speed Set					X
GBT Feed Pump 2 Control Status in Hand	X				
GBT Feed Pump 2 Control Status in Auto	X				
GBT Feed Pump 2 Control Status in Remote	X				
GBT Feed Pump 2 Run Status	X				
GBT Feed Pump 2 Start		X			
GBT Feed Pump 2 Stop		X			
GBT Feed Pump 2 Shutdown		X			
GBT Feed Pump 2 High Pressure Alarm	X				
GBT Feed Pump 2 Low Pressure Alarm	X				
GBT Feed Pump 2 Overtemperature Alarm	X				
GBT Feed Pump 2 VFD Fail Alarm					X
GBT Feed Pump 2 VFD Speed Indication					X
GBT Feed Pump 2 VFD Speed Set					X
GBT Feed Pump 3 Control Status in Hand	X				
GBT Feed Pump 3 Control Status in Auto	X				
GBT Feed Pump 3 Control Status in Remote	X				
GBT Feed Pump 3 Run Status	X				
GBT Feed Pump 3 Start		X			
GBT Feed Pump 3 Stop		X			
GBT Feed Pump 3 Shutdown		X			
GBT Feed Pump 3 High Pressure Alarm	X				
GBT Feed Pump 3 Low Pressure Alarm	X				
GBT Feed Pump 3 Overtemperature Alarm	X				
GBT Feed Pump 3 VFD Fail Alarm					X
GBT Feed Pump 3 VFD Speed Indication					X
GBT Feed Pump 3 VFD Speed Set					X
GBT Feed Pump 4 Control Status in Hand	X				
GBT Feed Pump 4 Control Status in Auto	X				
GBT Feed Pump 4 Control Status in Remote	X				
GBT Feed Pump 4 Run Status	X				
GBT Feed Pump 4 Start		X			
GBT Feed Pump 4 Stop		X			
GBT Feed Pump 4 Shutdown		X			
GBT Feed Pump 4 High Pressure Alarm	X				
GBT Feed Pump 4 Low Pressure Alarm	X				
GBT Feed Pump 4 Overtemperature Alarm	X				
GBT Feed Pump 4 VFD Fail Alarm					X
GBT Feed Pump 4 VFD Speed Indication					X
GBT Feed Pump 4 VFD Speed Set					X
<b>Future GBT Feed Pump 5--Not included in current card count</b>					
GBT Feed Pump 5 Control Status in Hand	X				



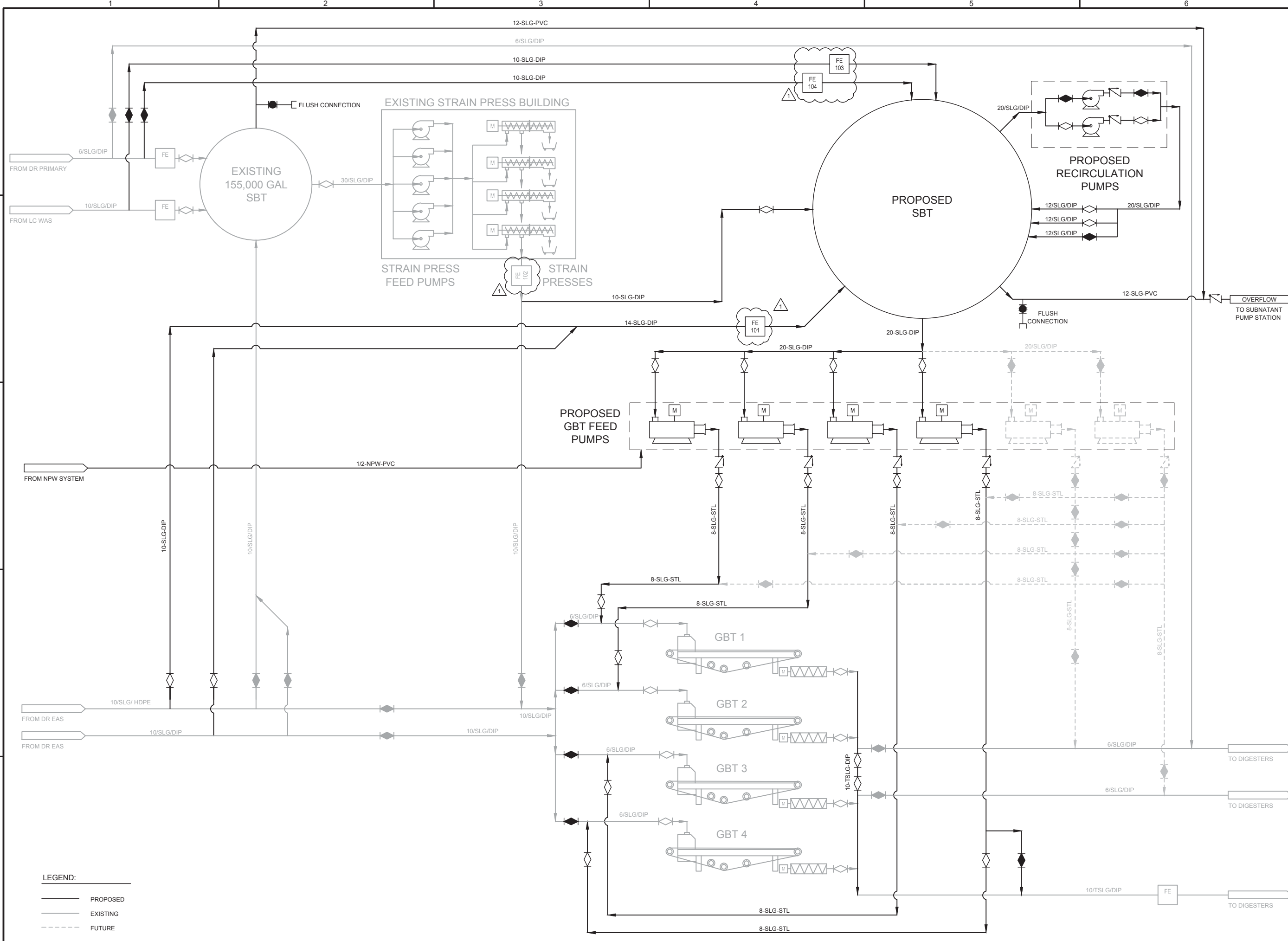
San Antonio Water System  
 Dos Rios WRC Sludge Blend Facilities Expansion

Parameter	Digital Input	Digital Output	Analog Input	Modbus	Ethernet
GBT Feed Pump 5 Control Status in Auto	X				
GBT Feed Pump 5 Control Status in Remote	X				
GBT Feed Pump 5 Run Status	X				
GBT Feed Pump 5 Start		X			
GBT Feed Pump 5 Stop		X			
GBT Feed Pump 5 Shutdown		X			
GBT Feed Pump 5 High Pressure Alarm	X				
GBT Feed Pump 5 Low Pressure Alarm	X				
GBT Feed Pump 5 Overtemperature Alarm	X				
GBT Feed Pump 5 VFD Fail Alarm					X
GBT Feed Pump 5 VFD Speed Indication					X
GBT Feed Pump 5 VFD Speed Set					X
<b>Future GBT Feed Pump 6--Not included in current card count</b>					
GBT Feed Pump 6 Control Status in Hand	X				
GBT Feed Pump 6 Control Status in Auto	X				
GBT Feed Pump 6 Control Status in Remote	X				
GBT Feed Pump 6 Run Status	X				
GBT Feed Pump 6 Start		X			
GBT Feed Pump 6 Stop		X			
GBT Feed Pump 6 Shutdown		X			
GBT Feed Pump 6 High/Low Pressure Alarm	X				
GBT Feed Pump 6 High/Low Pressure Alarm	X				
GBT Feed Pump 6 Overtemperature Alarm	X				
GBT Feed Pump 6 VFD Fail Alarm					X
GBT Feed Pump 6 VFD Speed Indication					X
GBT Feed Pump 6 VFD Speed Set					X
Recirculation Pump 1 Control Status in Auto	X				
Recirculation Pump 1 Control Status in Hand	X				
Recirculation Pump 1 Run Status	X				
Recirculation Pump 1 Start		X			
Recirculation Pump 1 Stop		X			
Recirculation Pump 1 Shutdown		X			
Recirculation Pump 1 High Pressure Alarm	X				
Recirculation Pump 1 Low Pressure Alarm	X				
Recirculation Pump 1 Seal Failure Alarm	X				
Recirculation Pump 1 Overtemperature Alarm	X				
Recirculation Pump 2 Control Status in Auto	X				
Recirculation Pump 2 Control Status in Hand	X				
Recirculation Pump 2 Run Status	X				
Recirculation Pump 2 Start		X			
Recirculation Pump 2 Stop		X			
Recirculation Pump 2 Shutdown		X			
Recirculation Pump 2 High Alarm	X				
Recirculation Pump 2 Low Pressure Alarm	X				
Recirculation Pump 2 Seal Failure Alarm	X				
Recirculation Pump 2 Overtemperature Alarm	X				
<b>Flow</b>					
Real-Time Dos Rios Primary Sludge Flow, Totalized Flow, Status, No Flow				X	
Real-Time Leon Creek WAS Flow, Totalized Flow, Status, No Flow				X	
Real-Time Dos Rios Excess Activated Sludge Flow, Totalized Flow, Status, No Flow				X	
Real-Time Sludge Blend Strain Presses Sludge Flow, Totalized Flow, Status, No Flow				X	
<b>Level</b>					
New Sludge Blend Tank Level			X		



San Antonio Water System  
 Dos Rios WRC Sludge Blend Facilities Expansion

Parameter	Digital Input	Digital Output	Analog Input	Modbus	Ethernet
Sludge Blending Tank High Level Alarm	X				
Sludge Blending Tank Low Level Alarm	X				
<b>Pressure</b>					
NPW Low Pressure	X				
<b>Temperature</b>					
GBT Feed Pump Control Panel #1 Internal Temperature			X		
GBT Feed Pump Control Panel #2 Internal Temperature			X		
<b>Point Count (Does not include internal PLC I/O)</b>	<b>45</b>	<b>18</b>	<b>3</b>	N/A	N/A
<b>Card Capacity</b>	16	16	8	N/A	N/A
<b>Cards Required (includes Spare Capacity)</b>	3	2	1	N/A	N/A



SAN ANTONIO WATER SYSTEM



DOS RIOS WRC - SLUDGE BLENDING FACILITIES EXPANSION

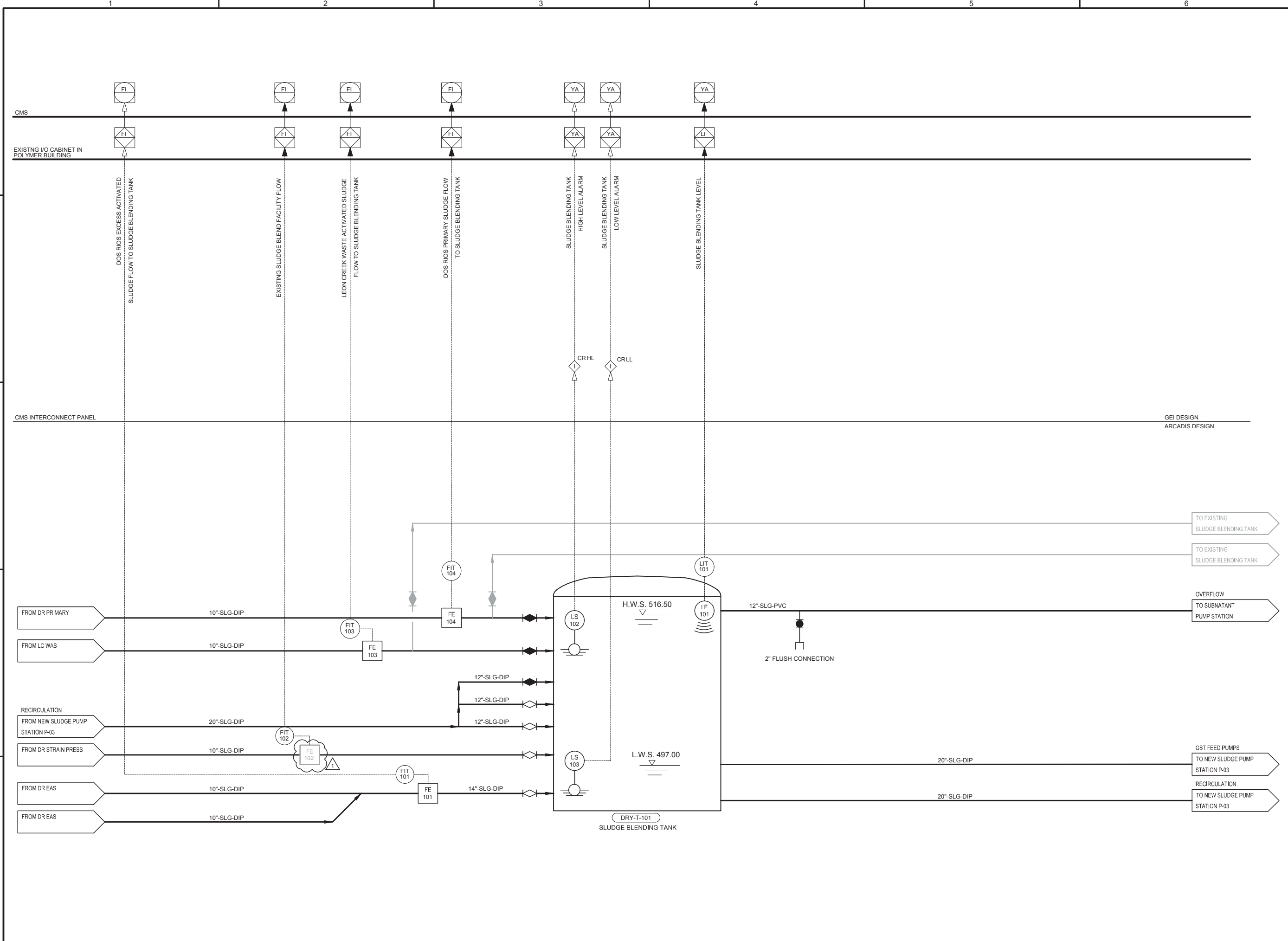
NO.	DATE	REVISION	BY
1	09/16	ADDENDUM NO. 1	GK

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DATE: JULY 2016  
PROJECT NO.: 02196034.0000  
DESIGNED BY: G.KEHOE  
DRAWN BY: N.CANDELAS  
CHECKED BY:

SHEET TITLE  
**GENERAL**  
**SLUDGE PROCESS FLOW SCHEMATIC**

SCALE: AS SHOWN

SHEET **G-05**  
5 OF 54



SAN ANTONIO WATER SYSTEM



DOS RIOS WRC -  
SLUDGE BLENDING FACILITIES  
EXPANSION

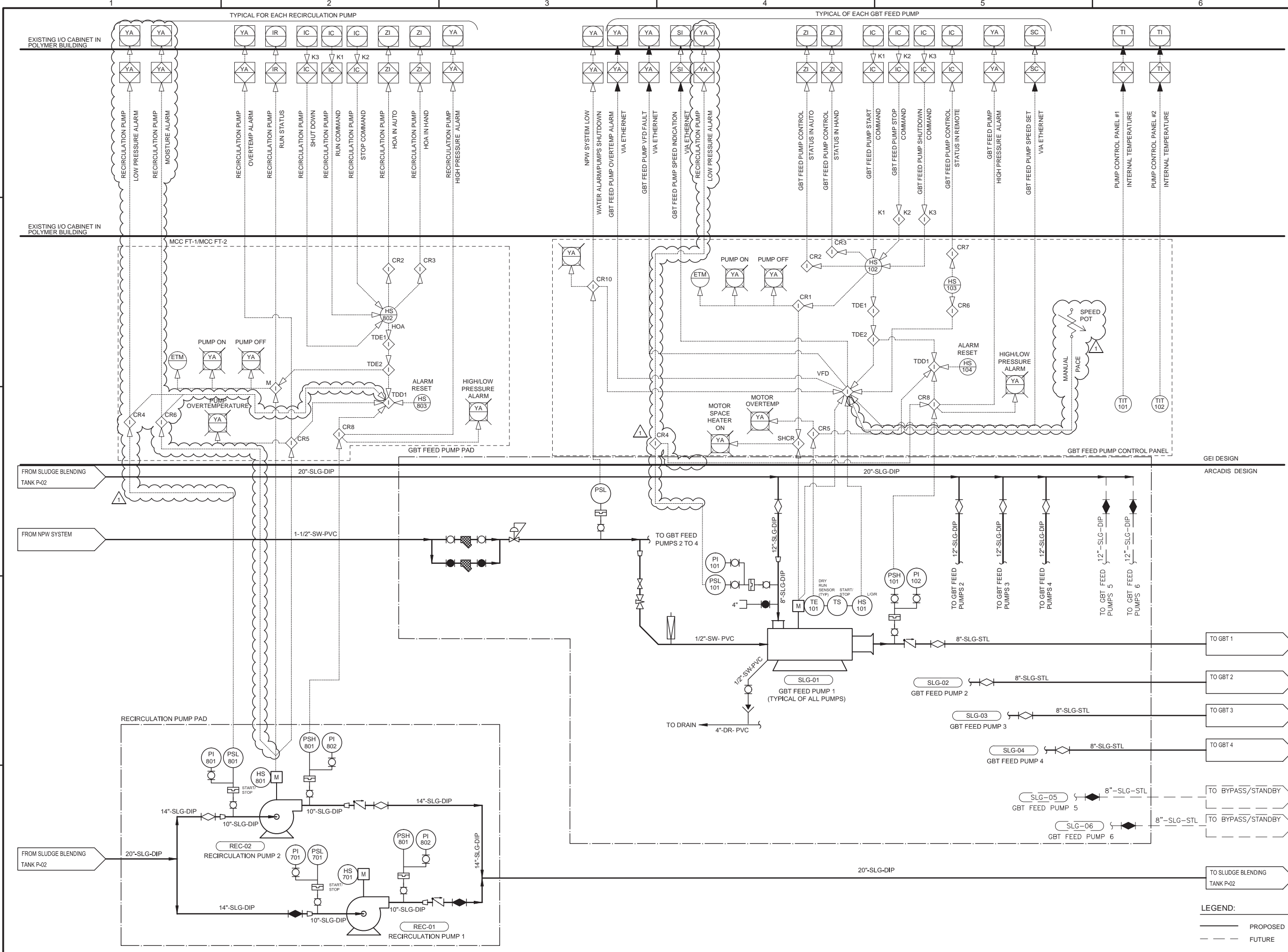
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SHEET TITLE  
**PROCESS AND INSTRUMENTATION**  
**SLUDGE BLENDING TANK**

SCALE: AS SHOWN

SHEET **P-02**  
7 OF 54



DOS RIOS WRC -  
SLUDGE BLENDING FACILITIES  
EXPANSION

NO.	DATE	REVISION	BY
1	09/16	ADDENDUM NO. 1	GK

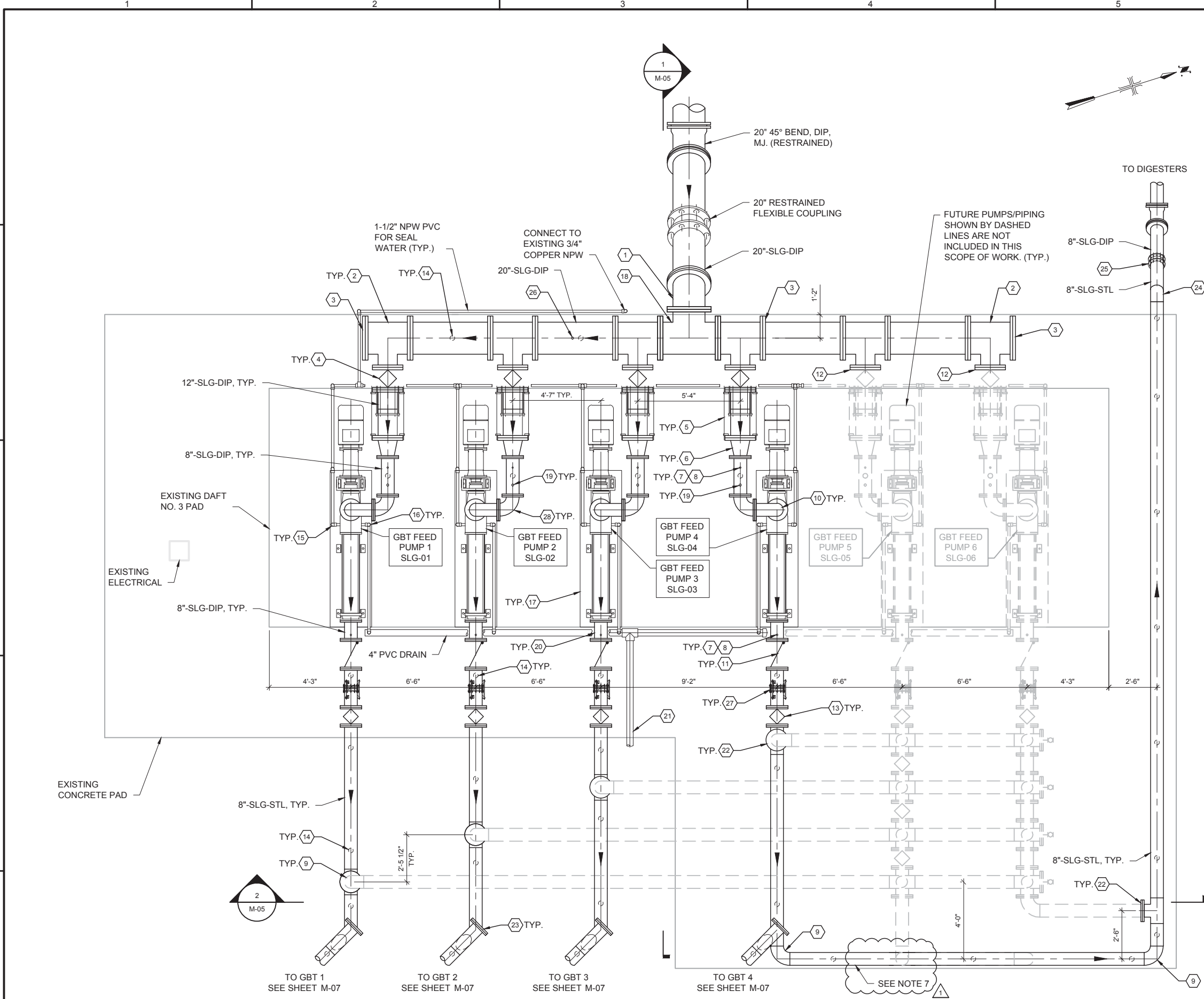
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SHEET TITLE  
**PROCESS AND INSTRUMENTATION**

**NEW SLUDGE PUMP  
 STATION**

SCALE: AS SHOWN  
 SHEET **P-03**  
 8 OF 54

LEGEND:  
 ——— PROPOSED  
 - - - FUTURE



- NOTES:
1. ALL DIMENSIONS SHALL BE FIELD VERIFIED AND CONFIRMED BY EQUIPMENT SUPPLIER AND CONTRACTOR, PRIOR TO MANUFACTURING AND CONSTRUCTION.
  2. ALL PIPING, VALVES, FITTINGS, ETC. TO BE COATED AND LINED IN ACCORDANCE WITH THE SPECIFICATIONS.
  3. ALL BURIED VALVES AND HARDWARE SHALL BE WRAPPED IN 2 COATS OF WAX TAPE.
  4. LOCATION AND QUANTITY OF PIPE SUPPORTS TO BE DETERMINED BY CONTRACTOR PER SPECIFICATIONS.
  5. INSULATE ALL EXPOSED SEAL WATER AND DRAIN LINES.
  6. ALL PIPING SHALL BE INSTALLED SQUARE, LEVEL AND/OR PLUMB. NO JOINT DEFLECTION WILL BE ALLOWED ON ANY EXPOSED PIPE.
  7. REMOVE THIS SPAN OF PIPE ONCE SAWS INSTALLS PUMPS 5 & 6.

- KEYNOTES " X "
1. 20" 45° BEND, DIP, FLG.
  2. 20"x12" REDUCING TEE, DIP, FLG.
  3. 20" BLIND FLANGE
  4. 12" ECCENTRIC PLUG VALVE
  5. 12" RESTRAINED FLANGE COUPLING ADAPTER W/ SS TIE RODS.
  6. CONCENTRIC REDUCER, DIP, FLG.
  7. PRESSURE GAUGE
  8. PRESSURE SWITCH
  9. 8" 90° BEND, STL
  10. 8" L.R. 90° BEND, DIP, FLG.
  11. 8" CHECK VALVE
  12. 12" BLIND FLANGE
  13. 8" ECCENTRIC PLUG VALVE
  14. ADJUSTABLE PIPE SUPPORT, SEE DETAIL 1/ M-08
  15. 1/2" NPW, PVC. CONNECTION SIZE PER MANUFACTURER RECOMMENDATIONS.
  16. 1/2" DRAIN, PVC. CONNECTION SIZE PER MANUFACTURER RECOMMENDATIONS
  17. PUMP MOTOR BASE, SIZING PER MANUFACTURER.
  18. 20" TEE, DIP, FLG.
  19. 2" QUICK CONNECT
  20. 1'-0" MIN.
  21. 4" DRAIN CONNECT TO EXISTING DRAIN, SEE CIVIL SHEETS.
  22. 8" BLINDED TEE
  23. 8" WYE (BLINDED W/ 2" PORT AND 2" BALL VALVE). FOR MANUAL AIR RELEASE.
  24. 8" 45° BEND, STL
  25. 8" RESTRAINED FLEX COUPLING (DIPxSTL)
  26. 2" TAP AND BALL VALVE FOR MANUAL AIR RELEASE.
  27. 8" STEELING COUPLING WITH THREE SETS OF HARNESS CLIPS.
  28. 8" 90° BEND, DIP, FLG.



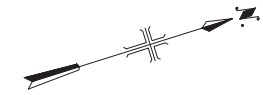
SAN ANTONIO WATER SYSTEM  
 San Antonio Water System  
 DOS RIOS WRC - SLUDGE BLENDING FACILITIES EXPANSION

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 DRAWN BY: N.CANDELAS  
 CHECKED BY:

SHEET TITLE  
 MECHANICAL  
 GBT FEED PUMP STATION PLAN  
 SCALE: 3/8" = 1'-0"  
 SHEET M-04  
 27 OF 54

1 GBT FEED PUMP PAD PLAN  
 M-04  
 SCALE: 3/8" = 1'-0"

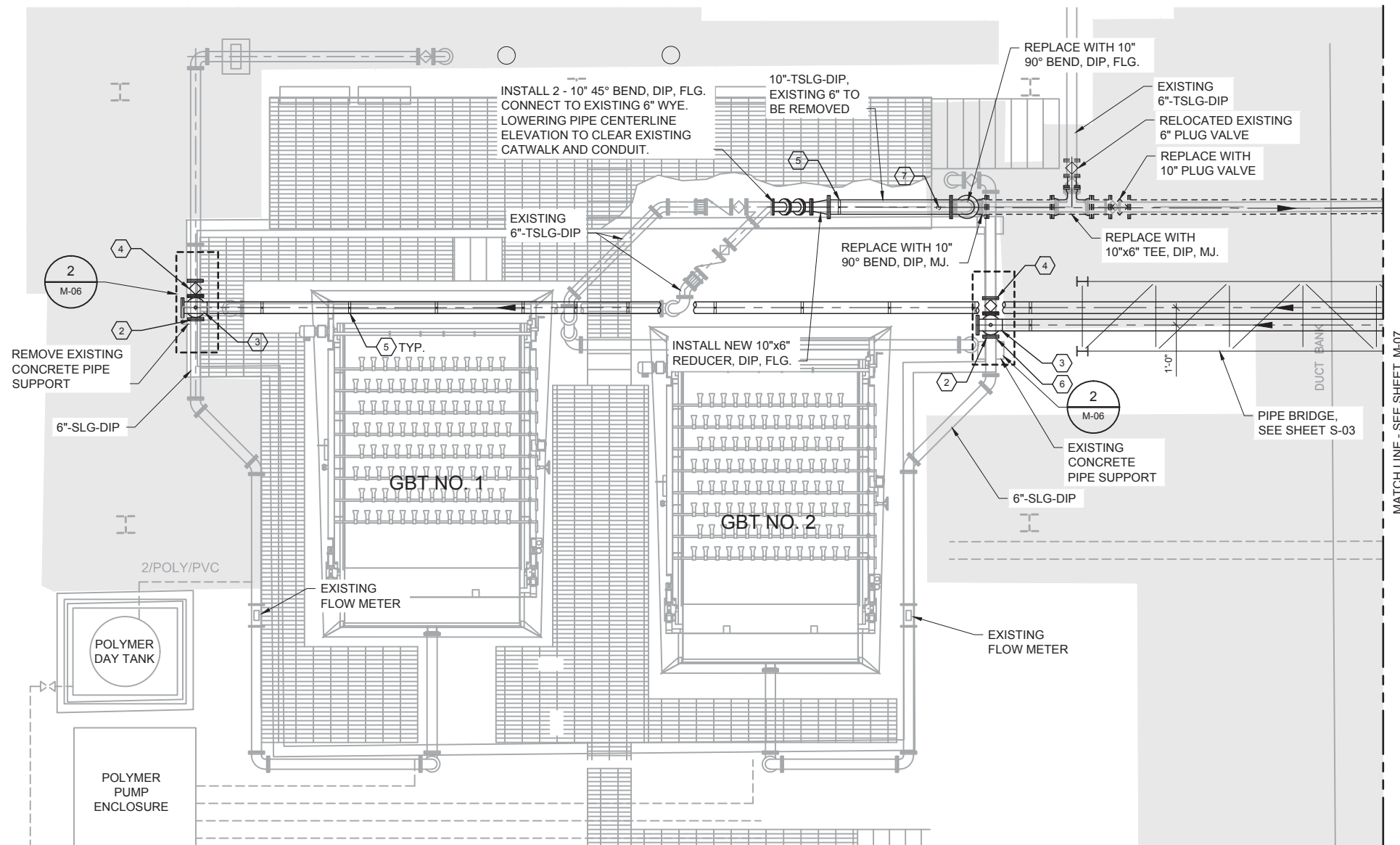


**NOTES:**

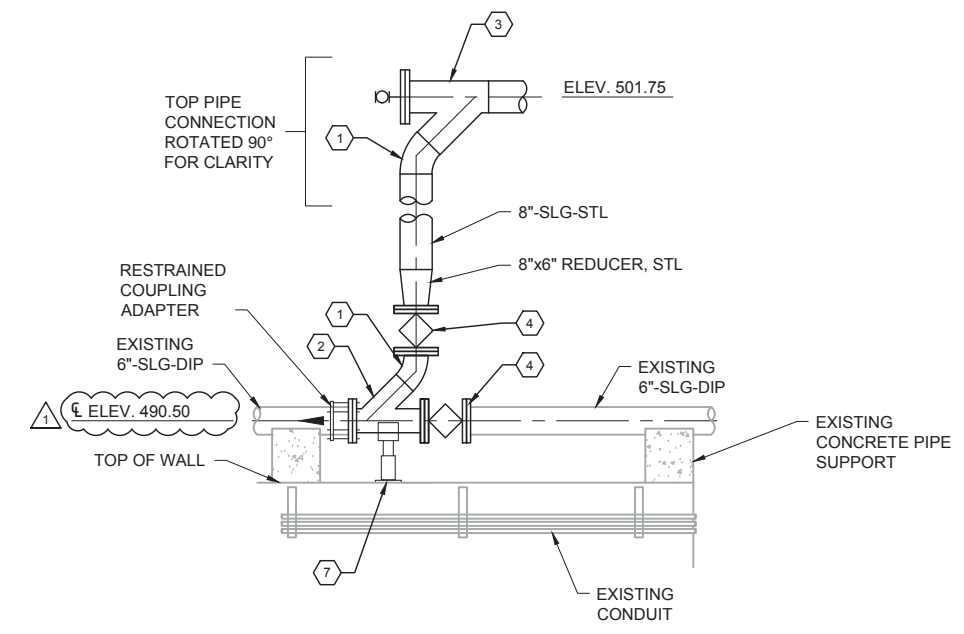
1. ALL DIMENSIONS SHALL BE FIELD VERIFIED AND CONFIRMED BY EQUIPMENT SUPPLIER AND CONTRACTOR, PRIOR TO MANUFACTURING AND CONSTRUCTION.
2. ALL PIPING, VALVES, FITTINGS, ETC. TO BE COATED AND LINED IN ACCORDANCE WITH THE SPECIFICATIONS.
3. ALL BURIED VALVES AND HARDWARE SHALL BE WRAPPED IN 2 COATS OF WAX TAPE.
4. REPLACE ALL PIPING/ VALVES/ FITTINGS INDICATED WITH 10" DUCTILE IRON.
5. ALL EXISTING PIPING/ VALVES / FITTINGS REMOVED SHALL BE RETURNED TO OWNER, UNLESS OTHERWISE DIRECTED TO DISPOSE BY OWNER.
6. ALL PIPING SHALL BE INSTALLED SQUARE, LEVEL AND/OR PLUMB. NO JOINT DEFLECTION WILL BE ALLOWED ON ANY EXPOSED PIPE.

**KEYNOTES "X"**

1. 8" 45° BEND, STL
2. 6" WYE, STL
3. 8" WYE, STL, (BLIND FLANGE W 2" PORT AND 2" BALL VALVE).
4. 6" PLUG VALVE
5. PIPE HANGER SUPPORT, SEE DETAILS ON SHEET M-08.
6. REMOVE EXISTING GATE VALVE
7. ADJUSTABLE PIPE SUPPORT, SEE DETAIL 1/M-08. PROVIDE SUPPORT ON EACH JOIST.



**1** EXISTING GBT NO. 1 & 2 PLAN  
M-06  
SCALE: 1/4" = 1'-0"



**2** SLUDGE PIPING CONNECTION DETAIL  
M-06  
SCALE: 1/2" = 1'-0"



SAN ANTONIO WATER SYSTEM



DOS RIOS WRC - SLUDGE BLENDING FACILITIES EXPANSION

NO.	DATE	REVISION	BY
1	09/16	ADDENDUM NO. 1	GK

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DATE: JULY 2016  
PROJECT NO.: 02196034.0000  
DESIGNED BY: G.KEHOE  
DRAWN BY: N.CANDELAS  
CHECKED BY: \_\_\_\_\_

SHEET TITLE  
**MECHANICAL**  
**EXISTING GBT FEED LINE IMPROVEMENTS I**

SCALE: AS SHOWN  
SHEET **M-06**  
29 OF 54



SAN ANTONIO  
WATER SYSTEM



DOS RIOS WRC -  
SLUDGE BLENDING FACILITIES  
EXPANSION

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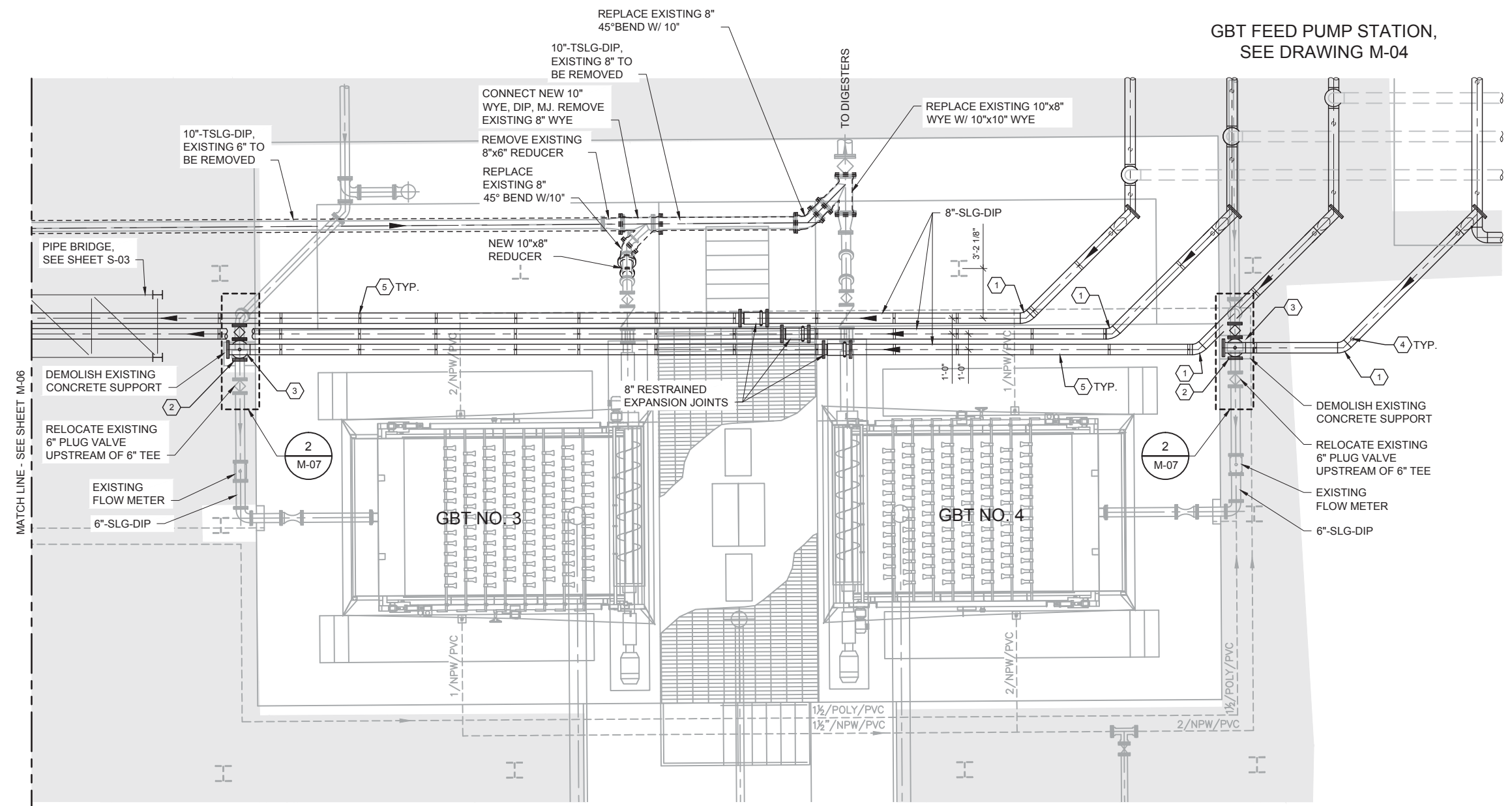
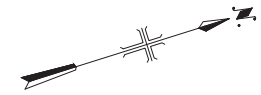
SHEET TITLE  
MECHANICAL

EXISTING GBT FEED  
LINE IMPROVEMENTS II

SCALE: AS SHOWN

SHEET **M-07**  
30 OF 54

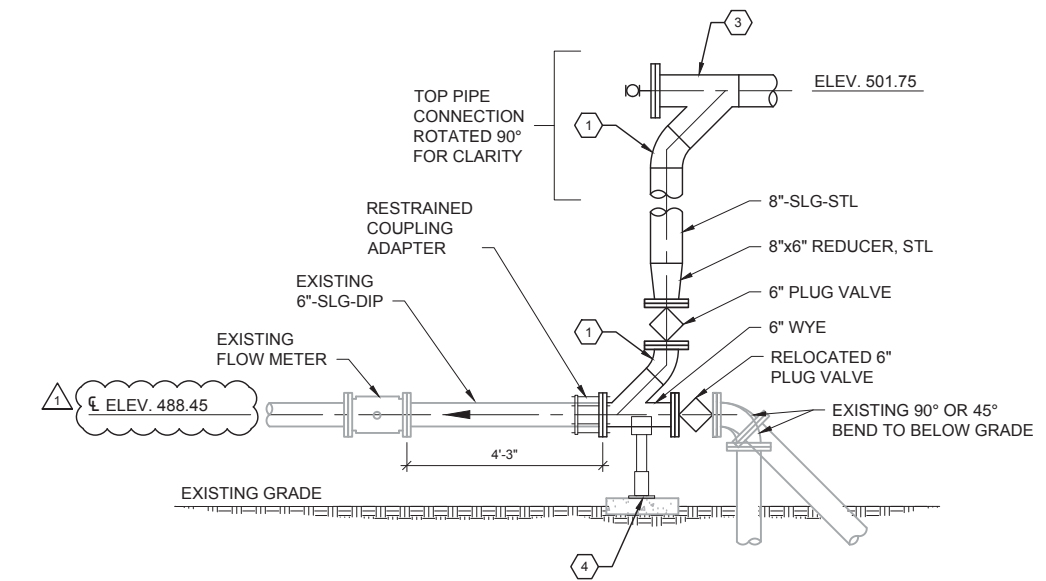
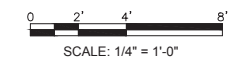
**GBT FEED PUMP STATION,  
SEE DRAWING M-04**



- NOTES:**
1. ALL DIMENSIONS SHALL BE FIELD VERIFIED AND CONFIRMED BY EQUIPMENT SUPPLIER AND CONTRACTOR, PRIOR TO MANUFACTURING AND CONSTRUCTION.
  2. ALL PIPING, VALVES, FITTINGS, ETC. TO BE COATED AND LINED IN ACCORDANCE WITH THE SPECIFICATIONS.
  3. ALL BURIED VALVES AND HARDWARE SHALL BE WRAPPED IN 2 COATS OF WAX TAPE.
  4. REPLACE ALL PIPING/ VALVES/ FITTINGS INDICATED WITH 10" DUCTILE IRON.
  5. ALL EXISTING PIPING/ VALVES / FITTINGS REMOVED SHALL BE RETURNED TO OWNER, UNLESS OTHERWISE DIRECTED TO DISPOSE BY OWNER.
  6. ALL PIPING SHALL BE INSTALLED SQUARE, LEVEL AND/OR PLUMB. NO JOINT DEFLECTION WILL BE ALLOWED ON ANY EXPOSED PIPE.

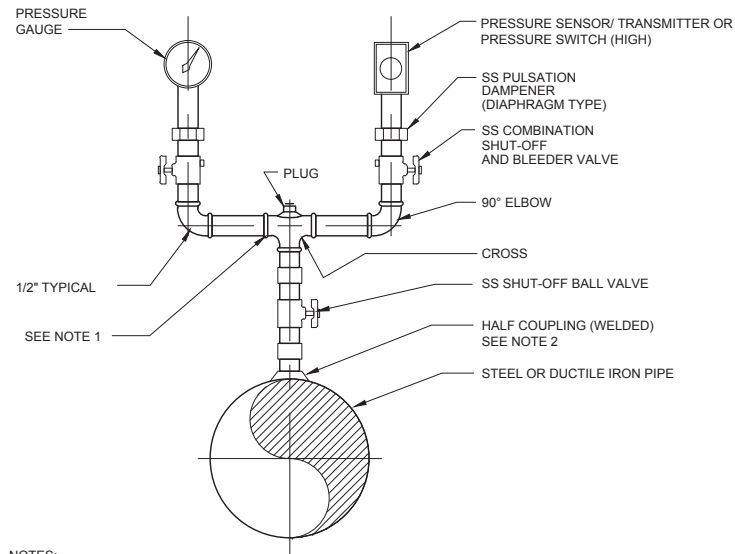
- KEYNOTES "X"**
1. 8" 45° BEND, STL
  2. 6" TEE, DIP, FLG.
  3. 8" WYE, DIP, FLG. (BLIND FLANGE W 2" PORT AND 2" BALL VALVE).
  4. ADJUSTABLE PIPE SUPPORT, SEE DETAIL 1/M-08.
  5. PIPE HANGER SUPPORT, SEE DETAILS ON SHEET M-08. PROVIDE SUPPORT ON EACH JOIST.

**1 EXISTING GBT NO. 3 & 4 PLAN**



**2 SLUDGE PIPING CONNECTION DETAIL**



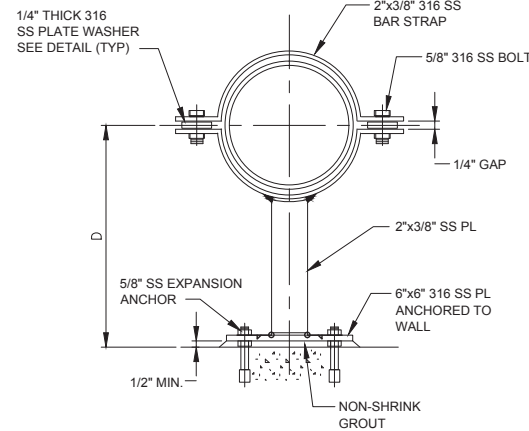


**NOTES:**

1. ALL PIPE AND FITTINGS SHALL BE SCH. 40 SS
2. FOR ALL PIPING, A DIAPHRAGM SEAL SHALL BE PROVIDED.
3. THIS DETAIL APPLIES TO BOTH PRESSURE SWITCH AND TRANSMITTER.
4. FOR STEEL GALV AND PVC 2 1/2" AND SMALLER USE A BUSHING IN A TEE.
5. FOR DI ALL SIZES, USE PIPE SADDLE W/BUSHING.
6. FOR STEEL AND SS PIPES 3" AND LARGER, AND PRESSURE VESSELS, USE THRED-O-LET AS SHOWN.
7. PROVIDE SNUBBER FOR POSITIVE DISPLACEMENT PUMP INSTALLATIONS.

**1 PRESSURE GAUGE AND SENSOR MOUNTING**

M-11

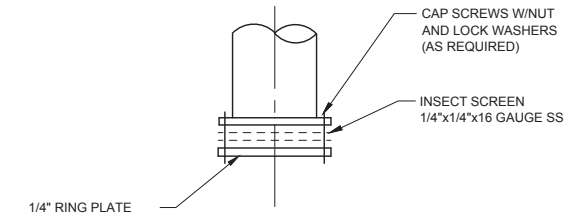


**NOTE:**

1. D=DISTANCE FROM WALL SHOWN ON PLAN OR SECTION.

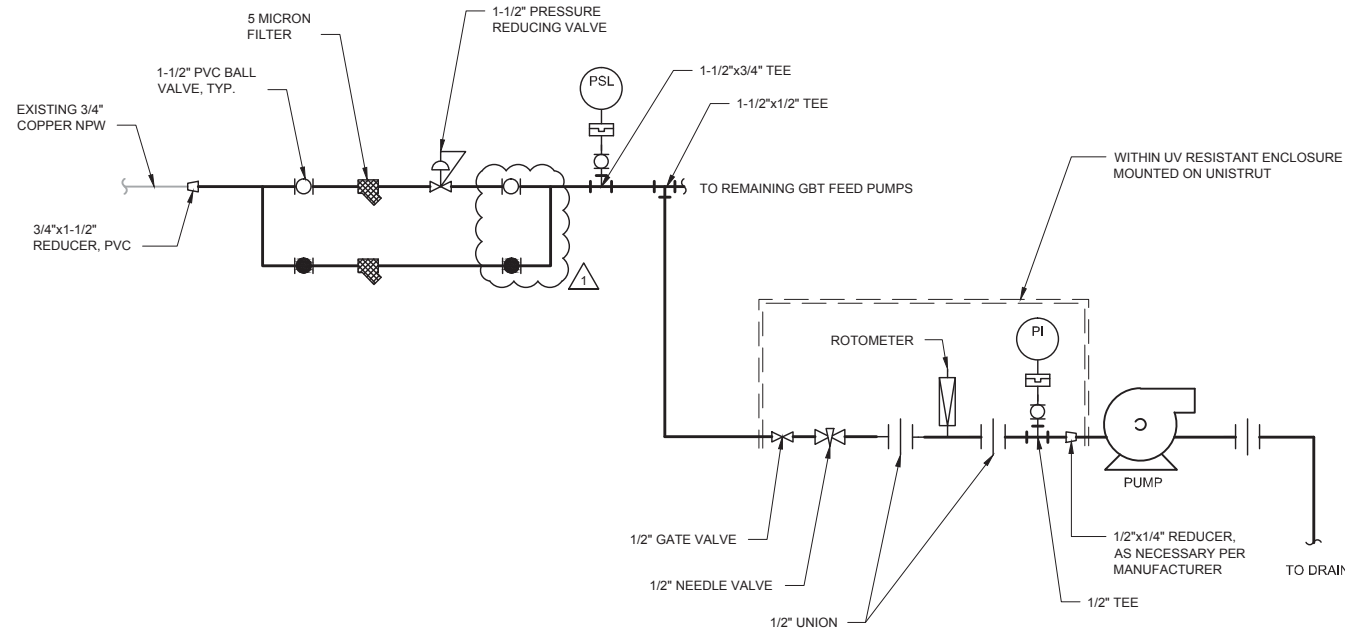
**2 VERTICAL PIPE SUPPORT**

M-11



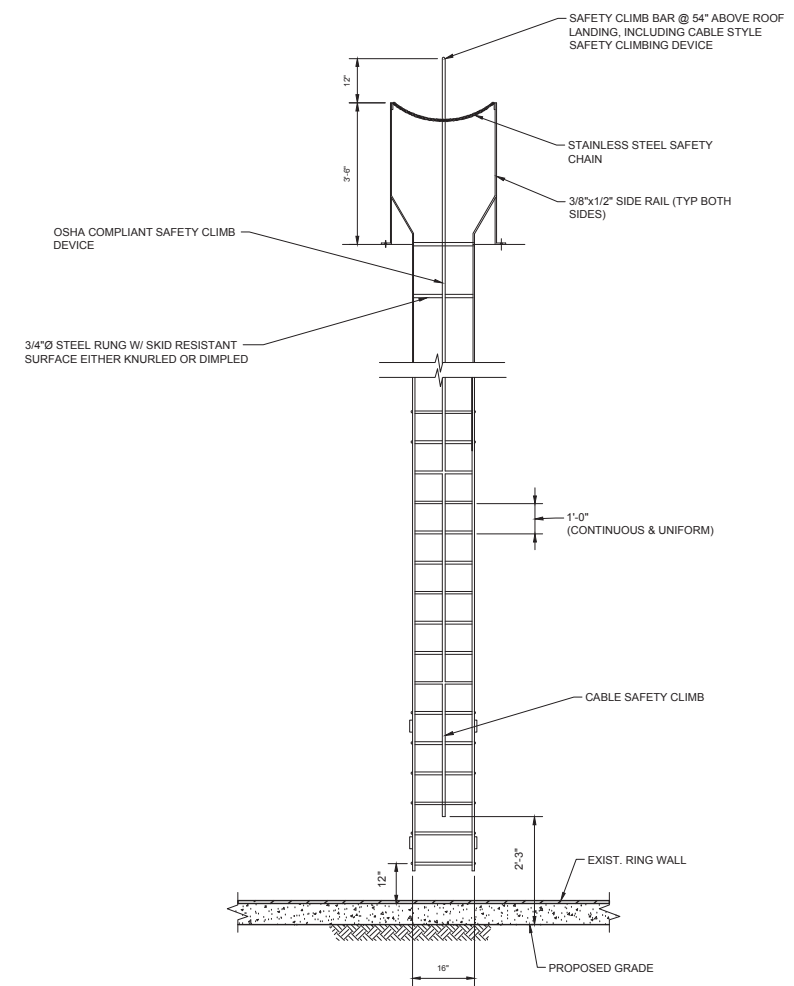
**3 INSECT SCREEN DETAIL**

M-11



**4 SEAL WATER DETAIL**

M-11



**5 TANK EXTERIOR LADDER**

M-11



SAN ANTONIO WATER SYSTEM



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SHEET TITLE

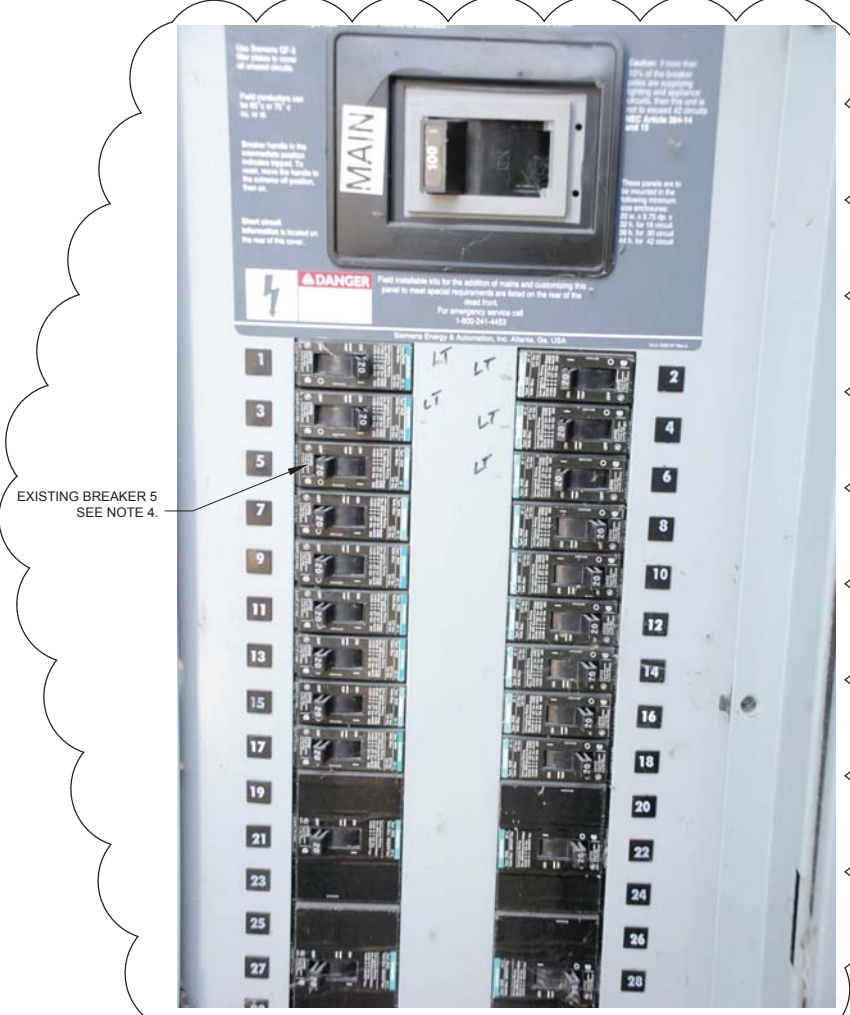
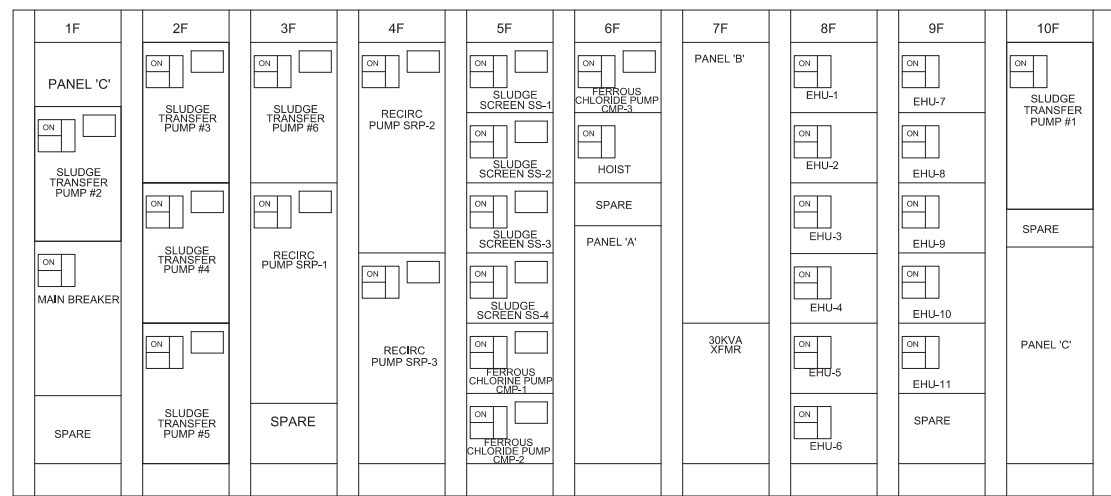
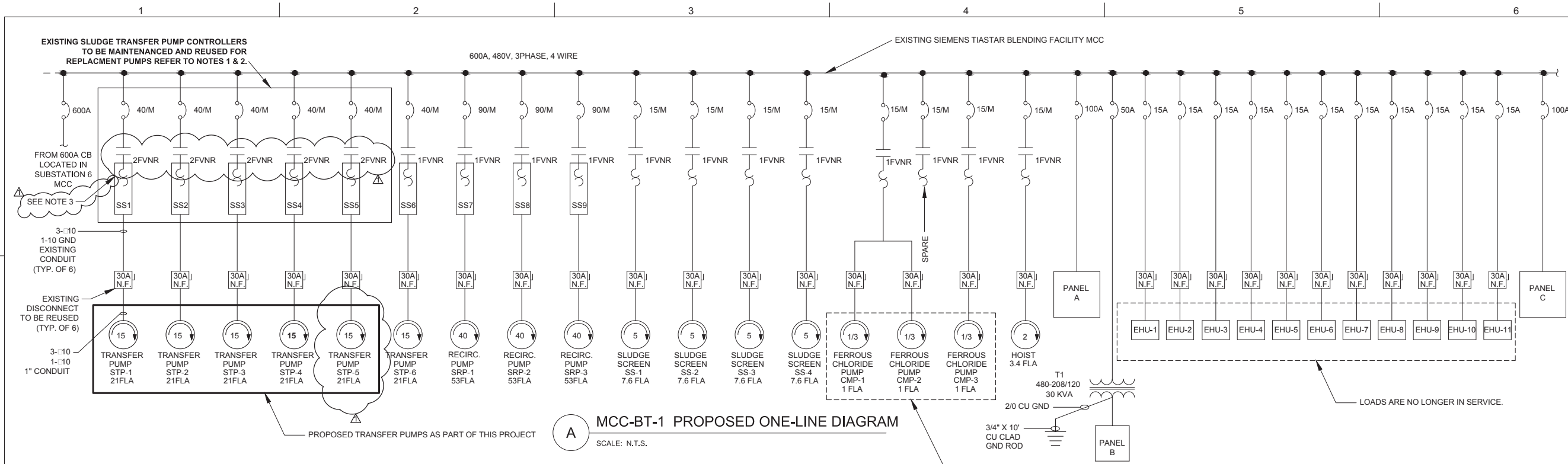
MECHANICAL

MECHANICAL DETAILS IV

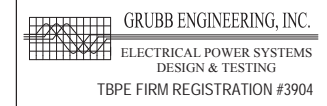
SCALE: AS SHOWN

SHEET **M-11**  
34 OF 54





- NOTES:
- EXISTING VFD PANELS SHALL BE REMOVED AND RETURNED TO SAWS, PER SHEET E-03.
  - EXISTING CONDUIT FROM MCC TO SLUDGE TRANSFER PUMP SHALL BE REUSED. NEW CABLE AS SHOWN SHALL BE ROUTED FROM EXISTING MCC TO NEW SLUDGE TRANSFER PUMP MOTORS.
  - CONTRACTOR SHALL REPLACE EXISTING STARTERS AND OVERLOADS TO BE SIZED FOR DRAWING AND PER NEC BASED ON SUPPLIED MOTOR NAMEPLATE DATA.
  - EXISTING BREAKER 5, LOCATED IN POWER PANEL A OF MCC-BT-1 SHALL SERVE NEW FLOODLIGHT LOCATED ON SOUTH CORNER OF SCREEN PRESS BUILDING. ASSOCIATED CABLE AND CONDUIT FROM POWER PANEL A THROUGH SCREEN PRESS BUILDING MCC TO NEW LIGHTS SHALL BE SUPPLIED AND ROUTED BY CONTRACTOR. CONTRACTOR SHALL FURNISH, MOUNT AND CONNECT NEW PHOTOCCELL TO ADDED CIRCUIT.



SAN ANTONIO WATER SYSTEM



DOS RIOS WRC - SLUDGE BLENDING FACILITIES EXPANSION

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SHEET TITLE  
**ELECTRICAL**  
**EXISTING SBT ONE-LINE AND INTERCONNECTION DIAGRAM**

SCALE:  
SHEET **E-04**  
42 OF 54



SAN ANTONIO  
WATER SYSTEM



DOS RIOS WRC -  
SLUDGE BLENDING FACILITIES  
EXPANSION

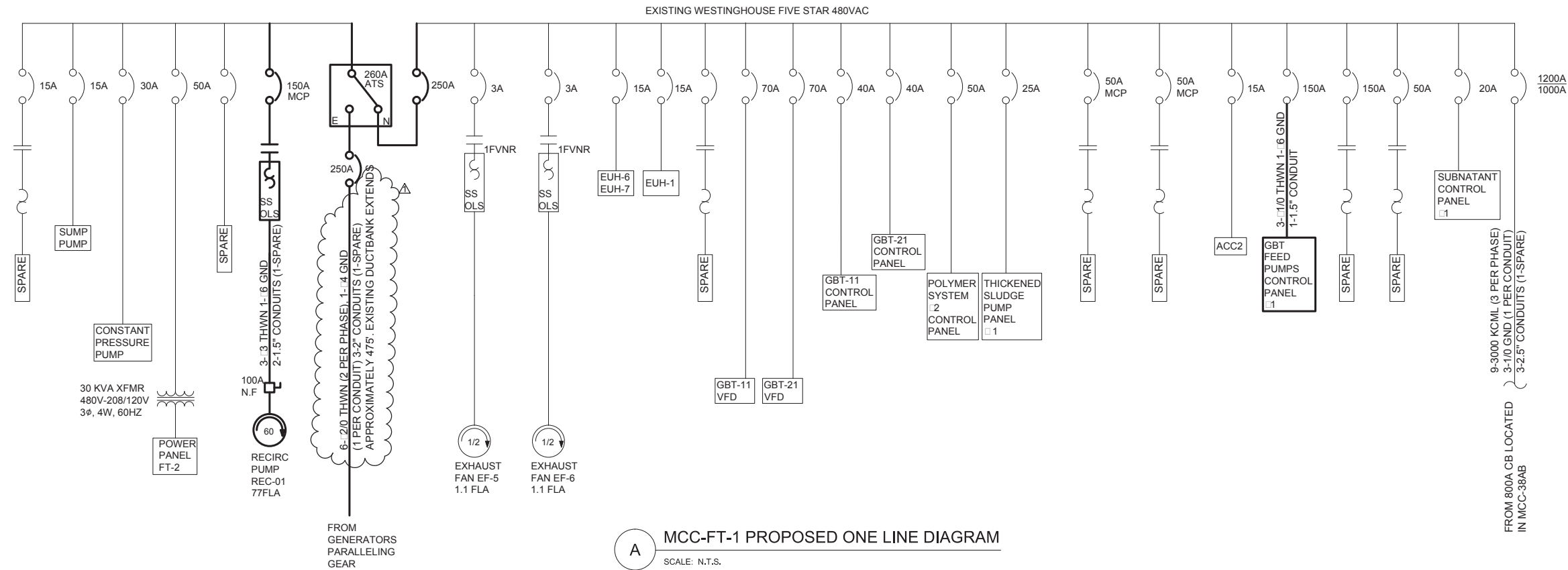
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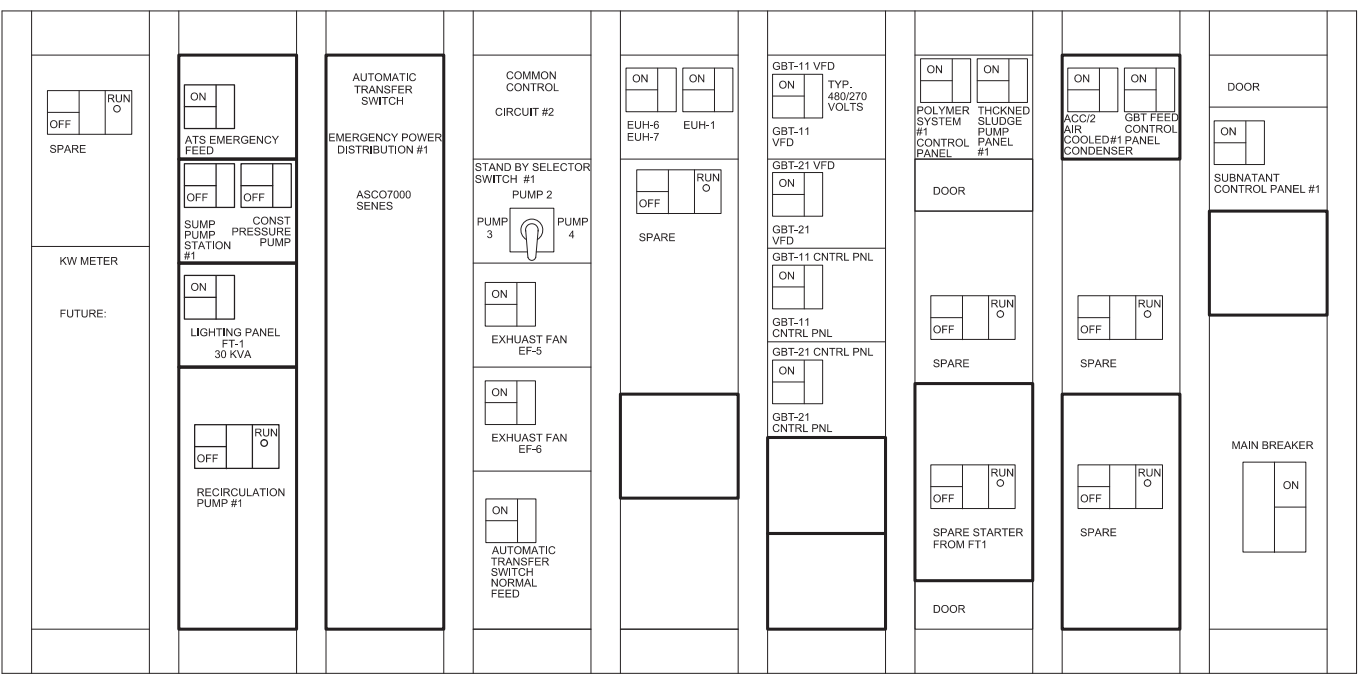
SHEET TITLE  
**ELECTRICAL**  
**PROPOSED MCC  
FT-1 ONE-LINE DIAGRAM,  
ELEVATION, AND LOAD  
ANALYSIS**

SCALE: AS SHOWN

SHEET E-06  
44 OF 54



**A** MCC-FT-1 PROPOSED ONE LINE DIAGRAM  
SCALE: N.T.S.

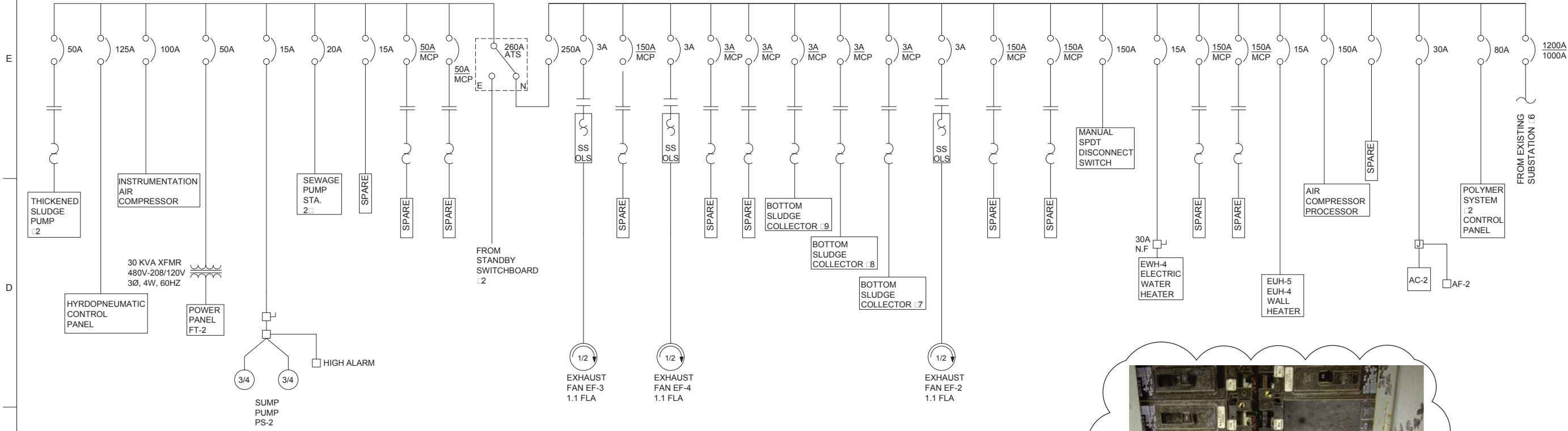


**B** MCC-FT-1 PROPOSED FRONT ELEVATION  
SCALE: N.T.S.

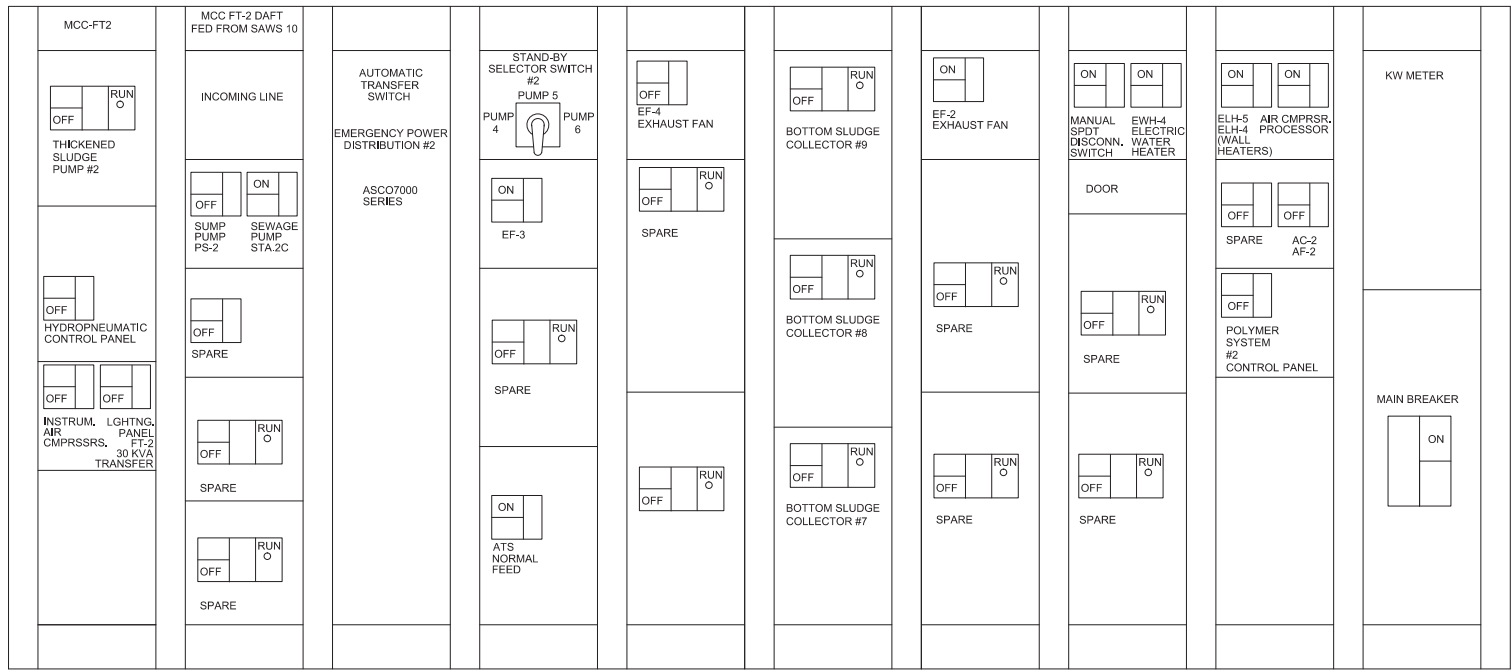
DESCRIPTION	LOAD SCHEDULE CONNECTED LOAD	DESIGN LOAD
GBT FEED PUMPS 1-2 (50 HP EA.)	100 VA	100 VA
EXHAUST FAN EF-5	0.5 VA	0.5 VA
EXHAUST FAN EF-6	0.75 VA	0.75 VA
GBT 11 BELT DRIVE	5 VA	5 VA
GBT 11 WASHWATER BOOSTER PUMP	10 VA	10 VA
GBT 11 HYDRAULIC PUMP	1 VA	1 VA
GBT 11 CONTROL PANEL CPT	0.75 VA	0.75 VA
GBT 21 BELT DRIVE	5 VA	5 VA
GBT 21 WASHWATER BOOSTER PUMP	10 VA	10 VA
GBT 21 HYDRAULIC PUMP	1 VA	1 VA
GBT 21 CONTROL PANEL CPT	0.75 VA	0.75 VA
GBT 11 TSP VFD	25 VA	25 VA
GBT 11 TSP CONTROL PANEL CPT	1 VA	1 VA
GBT 21 TSP VFD	25 VA	25 VA
GBT 21 TSP CONTROL PANEL CPT	1 VA	1 VA
EUH-1	5 VA	5 VA
EUH-6, EUH-7	6 VA	6 VA
POLYMER SYSTEM #1 CONTROL PANEL	35 VA	35 VA
THICKENED SLUDGE PUMP #1 CONTROL PANEL	17 VA	17 VA
SUBSTANTANT PUMP #1 CONTROL PANEL	8.5 VA	8.5 VA
ACC-2	10 VA	10 VA
GBT PRESSURE WASHER	20 VA	20 VA
POWER PANEL FT-1 TRANSFORMER	30 VA	30 VA
RECIRCULATION PUMP 1 (60 HP)	60 VA	60 VA
	378.25 VA	388.25 VA @ 467.5 AMPS

**C** MCC-FT-1 PROPOSED LOAD ANALYSIS  
SCALE: N.T.S.

EXISTING WESTINGHOUSE FIVE STAR 480 VAC



**A** MCC-FT-2 EXISTING ONE LINE DIAGRAM  
SCALE: N.T.S.



**B** MCC-FT-2 EXISTING FRONT ELEVATION  
SCALE: N.T.S.



- NOTES:
- EXISTING BREAKER 31, LOCATED IN POWER PANEL FT-2, SHALL SERVE NEW FLOODLIGHT LOCATED ON GBT'S 3 AND 4 STRUCTURE. ASSOCIATED CABLE AND CONDUIT FROM POWER PANEL FT-2 THROUGH ELECTRICAL ROOM WALL SHALL BE SUPPLIED AND ROUTED BY CONTRACTOR.
  - EXISTING BREAKER 33, LOCATED IN POWER PANEL FT-2, SHALL SERVE NEW FLOODLIGHT LOCATED ON TEAS P.S. No. 1. ASSOCIATED CABLE AND CONDUIT FROM POWER PANEL FT-2 THROUGH ELECTRICAL ROOM WALL SHALL BE SUPPLIED AND ROUTED BY CONTRACTOR.
  - EXISTING BREAKER 35, LOCATED IN POWER PANEL FT-2, SHALL SERVE NEW LIGHTING LOCATED ON THE RECIRCULATED PUMP STRUCTURE. ASSOCIATED CABLE AND CONDUIT FROM POWER PANEL FT-2 THROUGH ELECTRICAL ROOM WALL SHALL BE SUPPLIED AND ROUTED BY CONTRACTOR.

**C** POWER PANEL FT-2 MODIFICATIONS  
SCALE: N.T.S.



SAN ANTONIO WATER SYSTEM



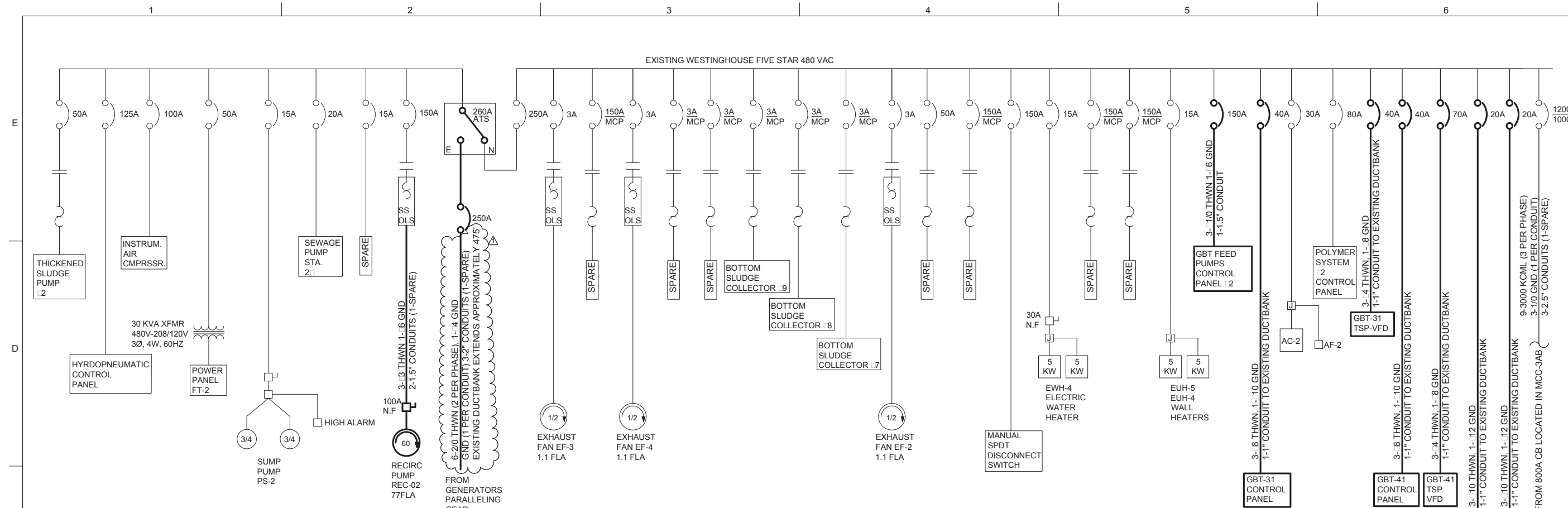
DOS RIOS WRC -  
SLUDGE BLENDING FACILITIES  
EXPANSION

NO.	DATE	REVISION	BY
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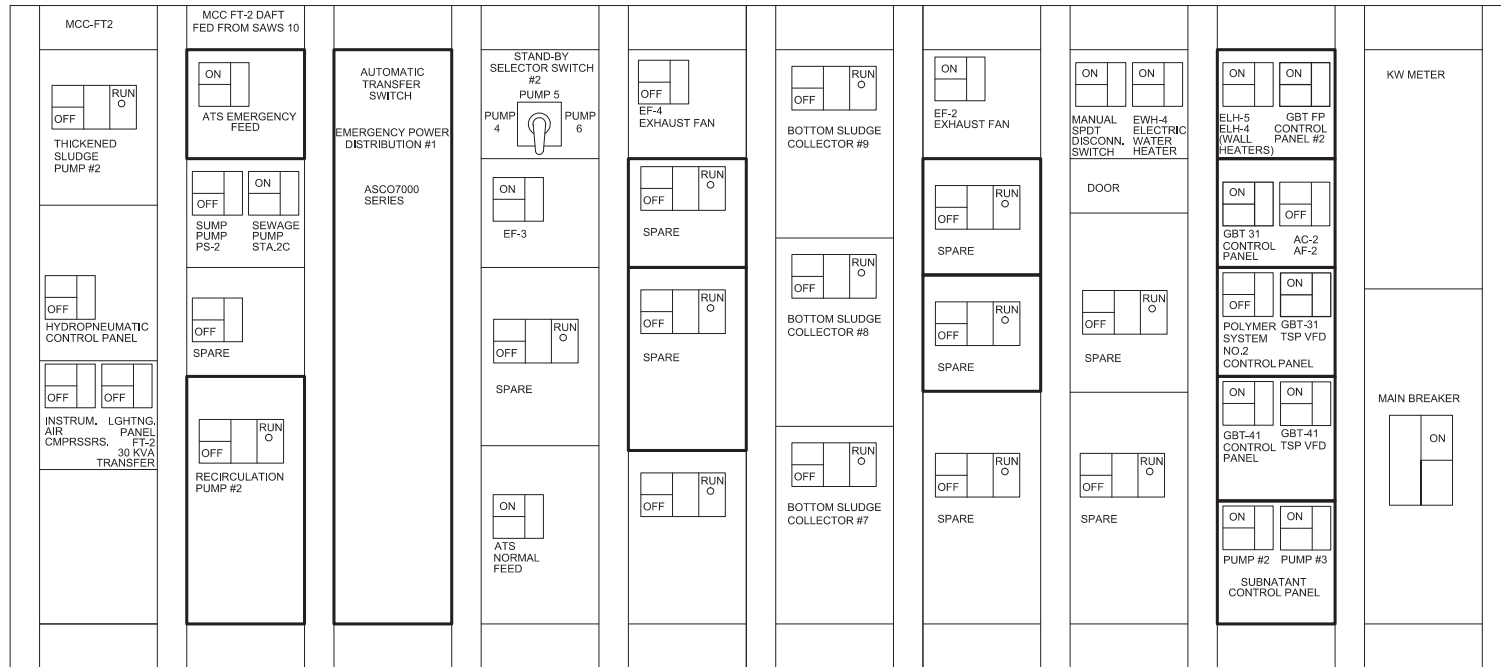
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SHEET TITLE  
**ELECTRICAL**  
**EXISTING MCC FT-2 ONE-LINE DIAGRAM AND ELEVATION**

SCALE: AS SHOWN  
SHEET **E-07**  
45 OF 54



**A** MCC-FT-2 PROPOSED ONE LINE DIAGRAM  
SCALE: N.T.S.



**B** MCC-FT-2 PROPOSED FRONT ELEVATION  
SCALE: N.T.S.

DESCRIPTION	LOAD SCHEDULE CONNECTED LOAD	DESIGN LOAD
GBT FEED PUMPS 3-4 (50 HP EA.)	100 kVA	100 kVA
EXHAUST FAN EF-3, 4, 5 (0.5 HP EA.)	1.5 kVA	1.5 kVA
GBT 31 BELT DRIVE	5 kVA	5 kVA
GBT 31 WASHWATER BOOSTER PUMP	10 kVA	10 kVA
GBT 31 HYDRAULIC PUMP	1 kVA	1 kVA
GBT 31 CONTROL PANEL CPT	0.75 kVA	0.75 kVA
GBT 41 BELT DRIVE	5 kVA	5 kVA
GBT 41 WASHWATER BOOSTER PUMP	10 kVA	10 kVA
GBT 41 HYDRAULIC PUMP	1 kVA	1 kVA
GBT 41 CONTROL PANEL CPT	0.75 kVA	0.75 kVA
GBT 31 TSP VFD	1 kVA	1 kVA
GBT 41 TSP VFD	25 kVA	25 kVA
GBT 41 TSP CONTROL PANEL CPT	1 kVA	1 kVA
ELECTRIC WATER HEATER (EWH-1)	3 kVA	3 kVA
EWH-4, EWH-5 COMPRESSOR	10 kVA	10 kVA
COMPRESSOR	10 kVA	10 kVA
SUBNATANT PUMP #2 CONTROL PANEL	8.5 kVA	8.5 kVA
SUBNATANT PUMP #3 CONTROL PANEL	8.5 kVA	8.5 kVA
INSTRUMENTATION AIR COMPRESSORS	30 kVA	30 kVA
POWER PANEL FT-2 TRANSFER	30 kVA	30 kVA
RECIRCULATION PUMP 2 (60 HP)	60 kVA	60 kVA
SEWAGE PUMP CONTROL PANEL	15 kVA	15 kVA
	362 kVA	372 kVA @ 448.0 AMPS

**C** MCC-FT-2 PROPOSED LOAD ANALYSIS  
SCALE: N.T.S.



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



SAN ANTONIO  
WATER SYSTEM



DOS RIOS WRC -  
SLUDGE BLENDING FACILITIES  
EXPANSION

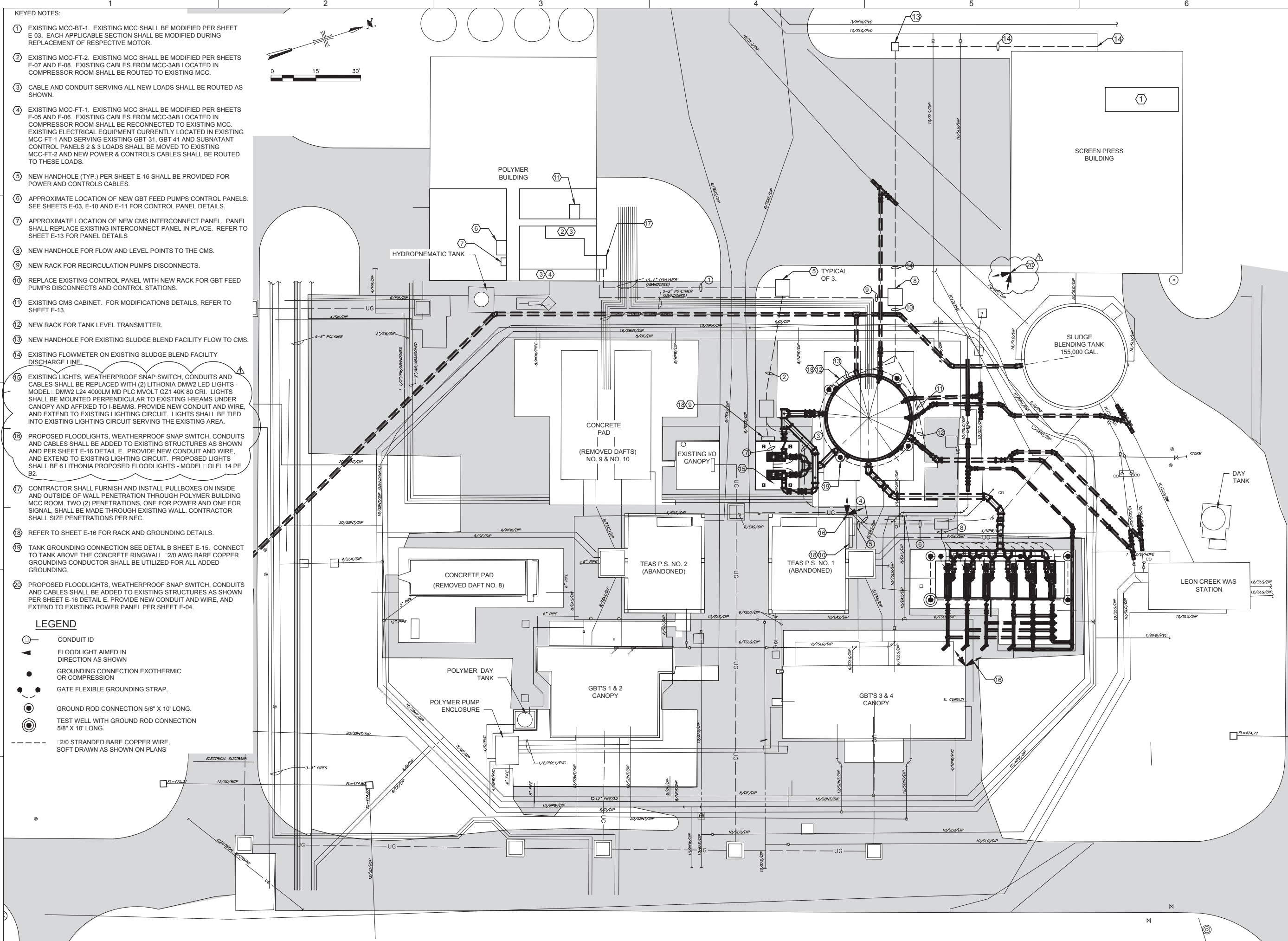
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SHEET TITLE  
**ELECTRICAL**  
PROPOSED MCC  
FT-2 ONE-LINE DIAGRAM,  
ELEVATION, AND LOAD  
ANALYSIS

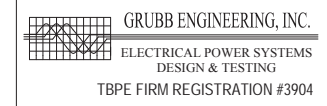
SCALE: NOT TO SCALE

SHEET **E-08**  
46 OF 54



- KEYED NOTES:
- 1 EXISTING MCC-BT-1. EXISTING MCC SHALL BE MODIFIED PER SHEET E-03. EACH APPLICABLE SECTION SHALL BE MODIFIED DURING REPLACEMENT OF RESPECTIVE MOTOR.
  - 2 EXISTING MCC-FT-2. EXISTING MCC SHALL BE MODIFIED PER SHEETS E-07 AND E-08. EXISTING CABLES FROM MCC-3AB LOCATED IN COMPRESSOR ROOM SHALL BE ROUTED TO EXISTING MCC.
  - 3 CABLE AND CONDUIT SERVING ALL NEW LOADS SHALL BE ROUTED AS SHOWN.
  - 4 EXISTING MCC-FT-1. EXISTING MCC SHALL BE MODIFIED PER SHEETS E-05 AND E-06. EXISTING CABLES FROM MCC-3AB LOCATED IN COMPRESSOR ROOM SHALL BE RECONNECTED TO EXISTING MCC. EXISTING ELECTRICAL EQUIPMENT CURRENTLY LOCATED IN EXISTING MCC-FT-1 AND SERVING EXISTING GBT-31, GBT 41 AND SUBTANT CONTROL PANELS 2 & 3 LOADS SHALL BE MOVED TO EXISTING MCC-FT-2 AND NEW POWER & CONTROLS CABLES SHALL BE ROUTED TO THESE LOADS.
  - 5 NEW HANDHOLE (TYP.) PER SHEET E-16 SHALL BE PROVIDED FOR POWER AND CONTROLS CABLES.
  - 6 APPROXIMATE LOCATION OF NEW GBT FEED PUMPS CONTROL PANELS. SEE SHEETS E-03, E-10 AND E-11 FOR CONTROL PANEL DETAILS.
  - 7 APPROXIMATE LOCATION OF NEW CMS INTERCONNECT PANEL. PANEL SHALL REPLACE EXISTING INTERCONNECT PANEL IN PLACE. REFER TO SHEET E-13 FOR PANEL DETAILS.
  - 8 NEW HANDHOLE FOR FLOW AND LEVEL POINTS TO THE CMS.
  - 9 NEW RACK FOR RECIRCULATION PUMPS DISCONNECTS.
  - 10 REPLACE EXISTING CONTROL PANEL WITH NEW RACK FOR GBT FEED PUMPS DISCONNECTS AND CONTROL STATIONS.
  - 11 EXISTING CMS CABINET. FOR MODIFICATIONS DETAILS, REFER TO SHEET E-13.
  - 12 NEW RACK FOR TANK LEVEL TRANSMITTER.
  - 13 NEW HANDHOLE FOR EXISTING SLUDGE BLEND FACILITY FLOW TO CMS.
  - 14 EXISTING FLOWMETER ON EXISTING SLUDGE BLEND FACILITY DISCHARGE LINE.
  - 15 EXISTING LIGHTS, WEATHERPROOF SNAP SWITCH, CONDUITS AND CABLES SHALL BE REPLACED WITH (2) LITHONIA DMW2 LED LIGHTS - MODEL DMW2 L24 4000LM MD PLC MVOLT GZ1 40K 80 CRI. LIGHTS SHALL BE MOUNTED PERPENDICULAR TO EXISTING I-BEAMS UNDER CANOPY AND AFFIXED TO I-BEAMS. PROVIDE NEW CONDUIT AND WIRE, AND EXTEND TO EXISTING LIGHTING CIRCUIT. LIGHTS SHALL BE TIED INTO EXISTING LIGHTING CIRCUIT SERVING THE EXISTING AREA.
  - 16 PROPOSED FLOODLIGHTS, WEATHERPROOF SNAP SWITCH, CONDUITS AND CABLES SHALL BE ADDED TO EXISTING STRUCTURES AS SHOWN AND PER SHEET E-16 DETAIL E. PROVIDE NEW CONDUIT AND WIRE, AND EXTEND TO EXISTING LIGHTING CIRCUIT. PROPOSED LIGHTS SHALL BE 6 LITHONIA PROPOSED FLOODLIGHTS - MODEL OLFL 14 PE B2.
  - 17 CONTRACTOR SHALL FURNISH AND INSTALL PULLBOXES ON INSIDE AND OUTSIDE OF WALL PENETRATION THROUGH POLYMER BUILDING MCC ROOM. TWO (2) PENETRATIONS, ONE FOR POWER AND ONE FOR SIGNAL, SHALL BE MADE THROUGH EXISTING WALL. CONTRACTOR SHALL SIZE PENETRATIONS PER NEC.
  - 18 REFER TO SHEET E-16 FOR RACK AND GROUNDING DETAILS.
  - 19 TANK GROUNDING CONNECTION SEE DETAIL B SHEET E-15. CONNECT TO TANK ABOVE THE CONCRETE RINGWALL. #20 AWG BARE COPPER GROUNDING CONDUCTOR SHALL BE UTILIZED FOR ALL ADDED GROUNDING.
  - 20 PROPOSED FLOODLIGHTS, WEATHERPROOF SNAP SWITCH, CONDUITS AND CABLES SHALL BE ADDED TO EXISTING STRUCTURES AS SHOWN PER SHEET E-16 DETAIL E. PROVIDE NEW CONDUIT AND WIRE, AND EXTEND TO EXISTING POWER PANEL PER SHEET E-04.

- LEGEND**
- CONDUIT ID
  - ▲ FLOODLIGHT AIMED IN DIRECTION AS SHOWN
  - GROUNDING CONNECTION EXOTHERMIC OR COMPRESSION
  - ⊙ GATE FLEXIBLE GROUNDING STRAP.
  - ⊙ GROUND ROD CONNECTION 5/8" X 10' LONG.
  - ⊙ TEST WELL WITH GROUND ROD CONNECTION 5/8" X 10' LONG.
  - - - 2/0 STRANDED BARE COPPER WIRE, SOFT DRAWN AS SHOWN ON PLANS



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SHEET TITLE  
 ELECTRICAL  
 ELECTRICAL SITE PLAN

SCALE: AS SHOWN  
 SHEET **E-09**  
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SAN ANTONIO  
WATER SYSTEM



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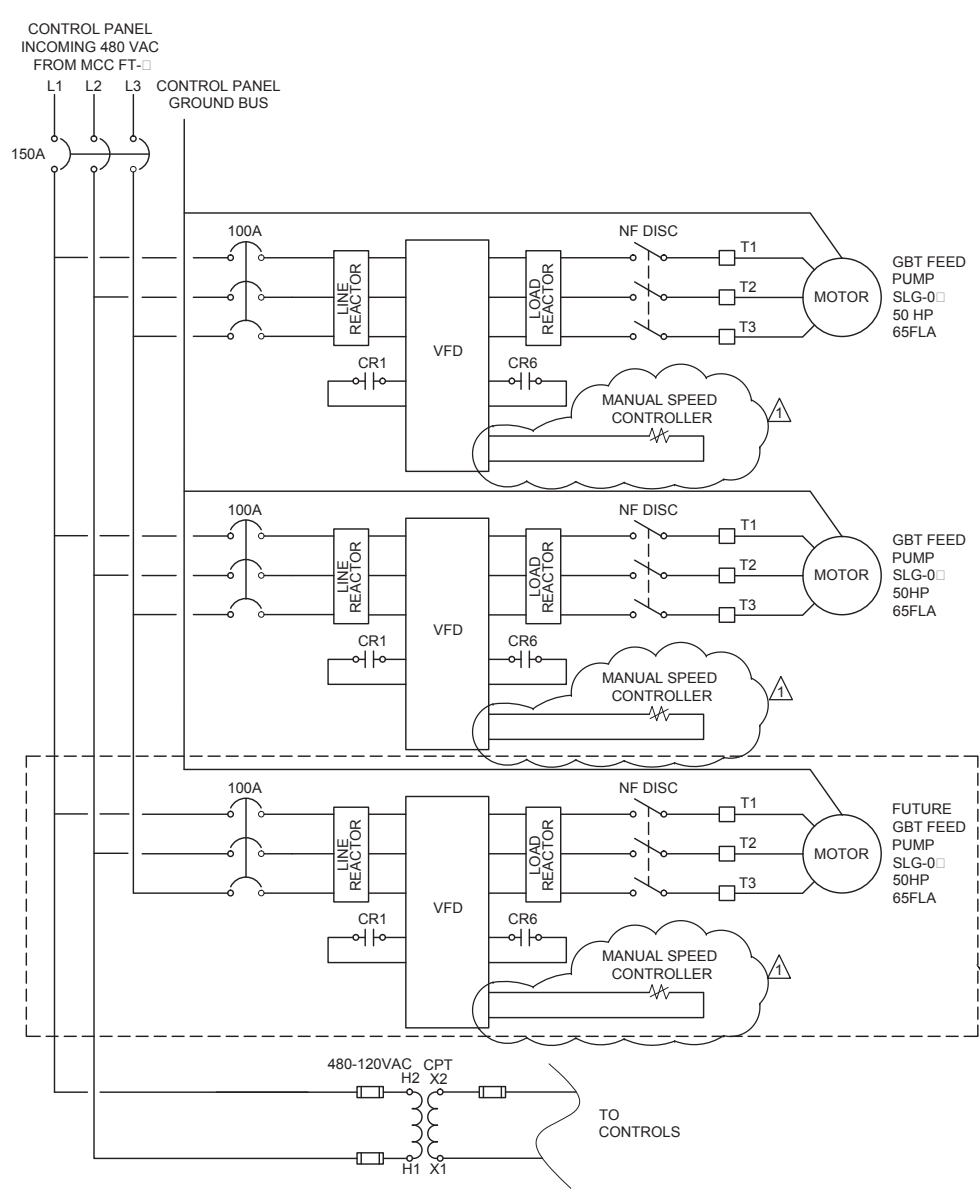
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ELECTRICAL

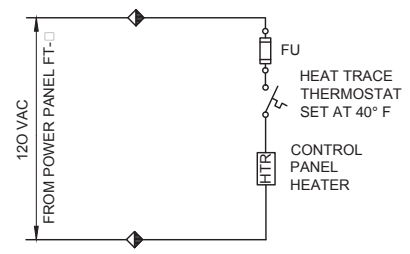
**GBT FEED PUMP  
MOTOR  
CONTROL  
DIAGRAM**

SCALE:

SHEET **E-10**  
48 OF 54



**A** GBT FEED PUMP CONTROL PANEL POWER DISTRIBUTION  
SCALE: N.T.S. (TYP. OF 2 CONTROL PANELS)

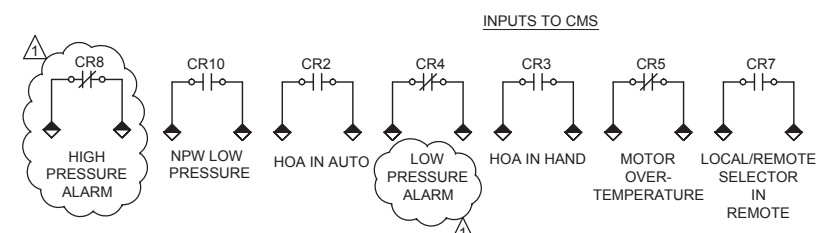


**B** CONTROL PANEL HEATER CIRCUIT  
SCALE: N.T.S. (TYP. PER CONTROL PANEL)

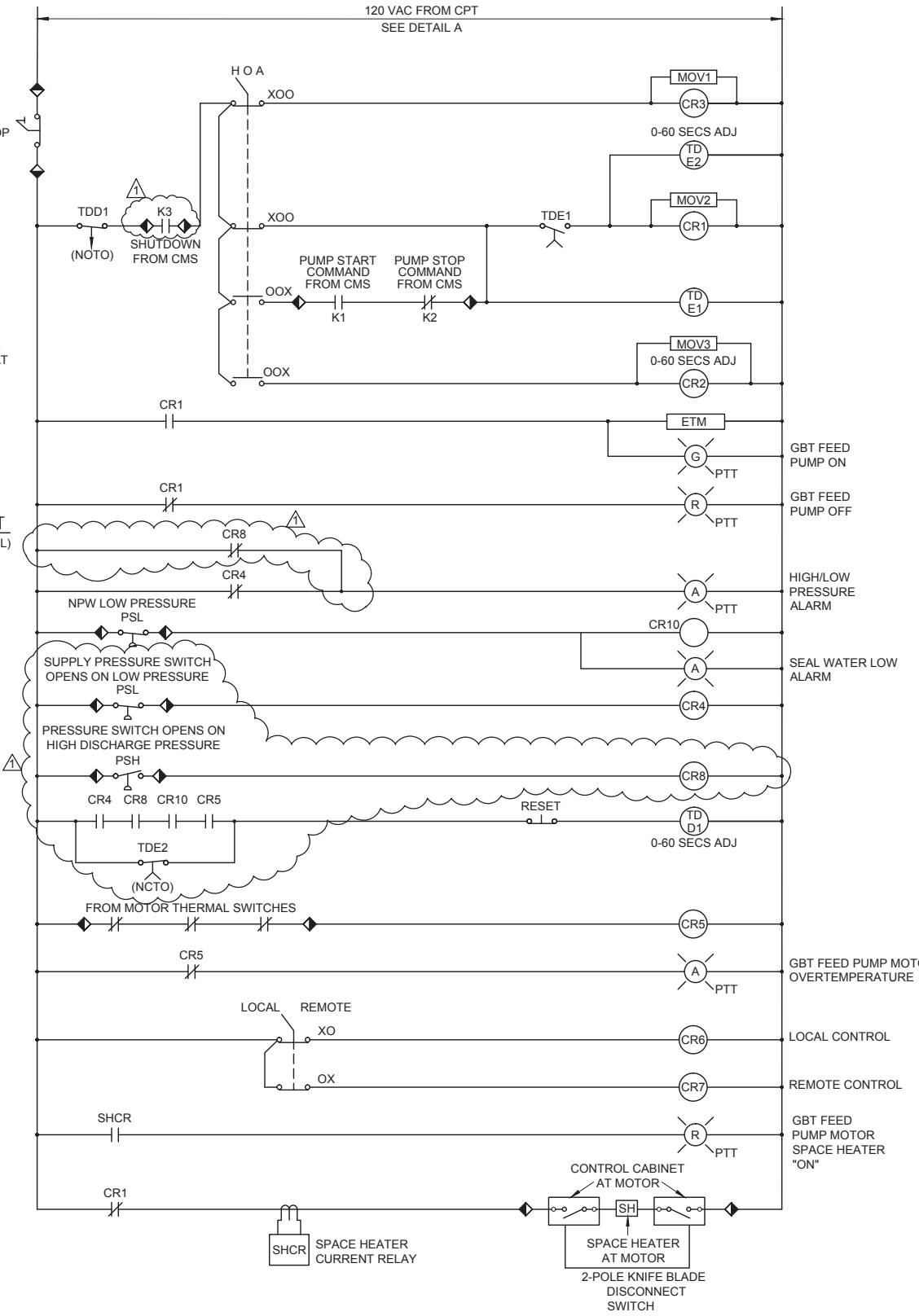
◆ TERMINAL POINT IN PUMP CONTROL PANEL  
DARK SIDE INDICATES CONNECTION INTERNAL TO PANEL.

SPACE PROVIDED IN CONTROL PANEL FOR FUTURE COMPONENTS

- LEGEND**
- ◆ TERMINAL POINT IN SPECIFIED AREA INDICATED BY CONTROL DIAGRAM DESCRIPTION. DARK SIDE INDICATES CONNECTION INTERNAL TO PANEL.
  - || NORMALLY OPEN CONTACT
  - ∩ NORMALLY CLOSED CONTACT
  - FUSED
  - VFD VARIABLE FREQUENCY DRIVE
  - CMS CENTRAL MONITORING SYSTEM



VFD FAULT, SPEED INDICATION, SPEED SET, ON INDICATION & MOTOR OVERTEMPERATURE SHALL BE INPUT TO OR OUTPUT FROM THE CMS VIA ETHERNET COMMUNICATION.



**C** GBT FEED PUMP MOTOR DIAGRAM  
SCALE: N.T.S. (TYPICAL PER GBT FEED PUMPS 1-4)

- REFER TO SPECIFICATION 406196 FOR PUMP OPERATION DESCRIPTION.
  - INTERLOCK AT MCC SHUTS DOWN PUMP AFTER ADJUSTABLE TIME DELAY ON HIGH DISCHARGE PRESSURE AND/OR LOW SUPPLY PRESSURE.
- INDICATES MCC, PUMP CONTROL PANEL OR PUMP NUMBER. MCC-FT1 SERVES PUMP CONTROL PANEL #1. MCC-FT2 SERVES PUMP CONTROL PANEL #2. PUMP CONTROL PANEL #1 CONSISTS OF EQUIPMENT SERVING GBT FEED PUMPS 1, 2 AND SPACE FOR EQUIPMENT SERVING PUMP 5. PUMP CONTROL PANEL #2 CONSISTS OF EQUIPMENT SERVING GBT FEED PUMPS 3, 4 AND SPACE FOR EQUIPMENT SERVING PUMP 6.



SAN ANTONIO  
WATER SYSTEM



DOS RIOS WRC -  
SLUDGE BLENDING FACILITIES  
EXPANSION

NO.	DATE	REVISION	BY
Δ	9/14/16	ADDENDUM #1	JP

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DATE: JULY 27, 2016  
PROJECT NO.: 02196034.0000  
DESIGNED BY: CG  
DRAWN BY: SG  
CHECKED BY: JP

SHEET TITLE

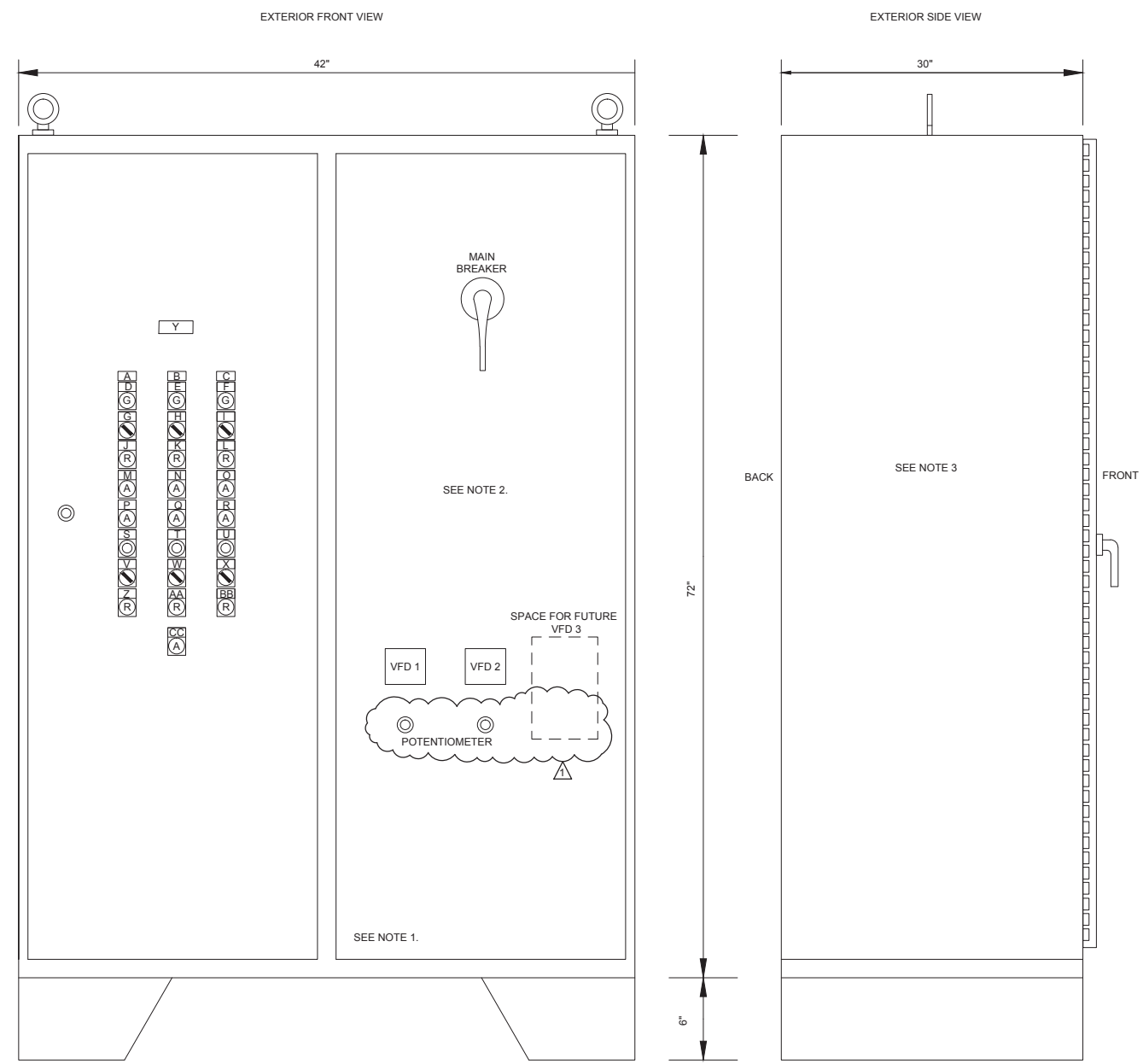
ELECTRICAL

GBT FEED PUMPS  
CONTROL PANEL  
LAYOUT

SCALE:

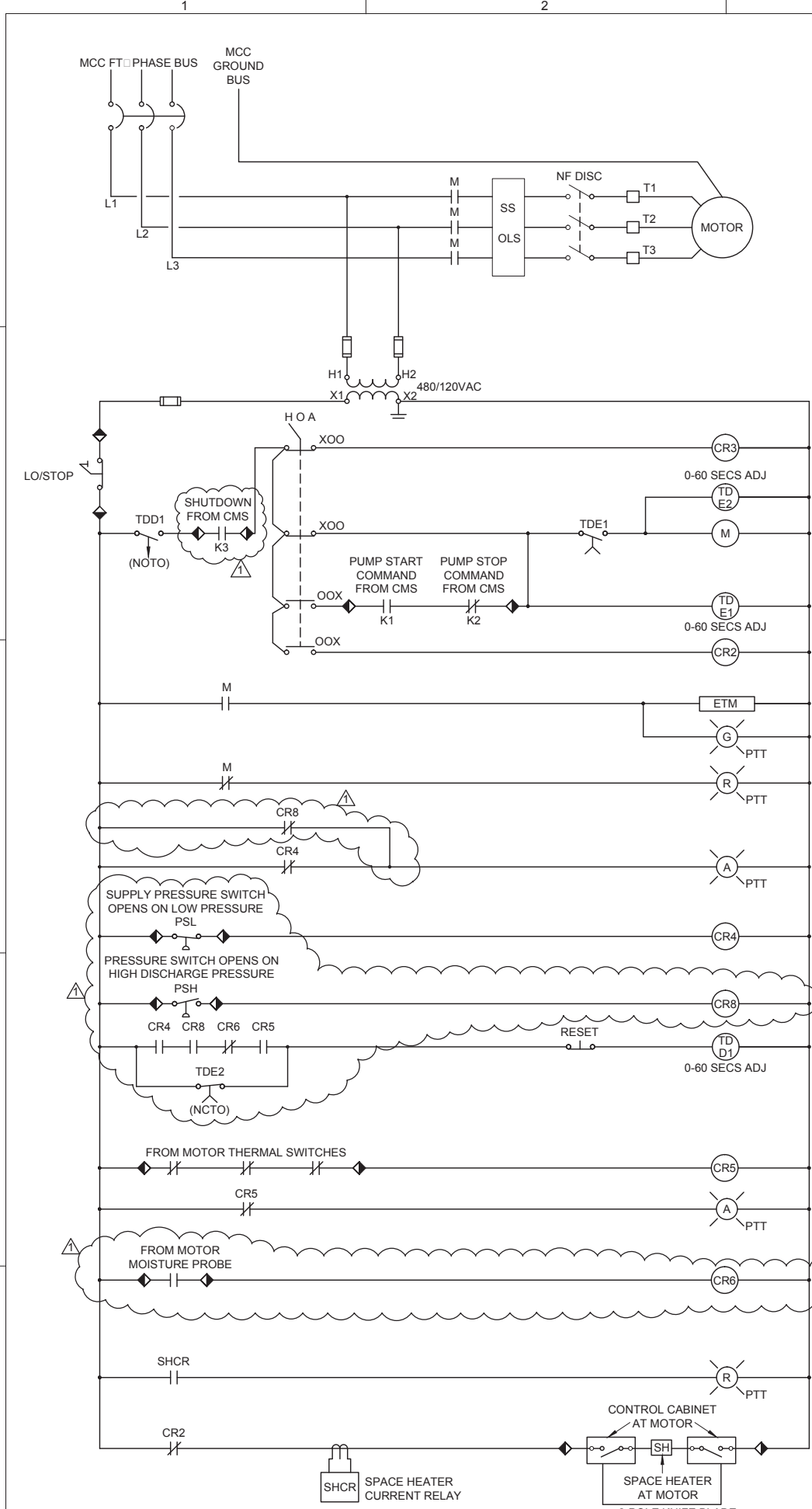
SHEET **E-11**  
49 OF 54

ITEM	LET.	DESCRIPTION	LEGEND PLATE
1	A	GBT FEED PUMP :1	GBT FEED PUMP :1
2	B	GBT FEED PUMP :2	GBT FEED PUMP :2
3	C	GBT FEED PUMP :3	GBT FEED PUMP :3
4	D	GBT FEED PUMP :1 ON	ON
5	E	GBT FEED PUMP :2 ON	ON
6	F	GBT FEED PUMP :3 ON	ON
7	G	GBT FEED PUMP :1 HAND/OFF/AUTO SWITCH	HAND/OFF/AUTO
8	H	GBT FEED PUMP :2 HAND/OFF/AUTO SWITCH	HAND/OFF/AUTO
9	I	GBT FEED PUMP :3 HAND/OFF/AUTO SWITCH	HAND/OFF/AUTO
10	J	GBT FEED PUMP :1 OFF	OFF
11	K	GBT FEED PUMP :2 OFF	OFF
12	L	GBT FEED PUMP :3 OFF	OFF
13	M	GBT FEED PUMP :1 PRESSURE ALARM	LOW/HIGH PRESSURE
14	N	GBT FEED PUMP :2 PRESSURE ALARM	LOW/HIGH PRESSURE
15	O	GBT FEED PUMP :3 PRESSURE ALARM	LOW/HIGH PRESSURE
16	P	GBT FEED PUMP :1 OVER TEMPERATURE ALARM	OVER TEMPERATURE
17	Q	GBT FEED PUMP :2 OVER TEMPERATURE ALARM	OVER TEMPERATURE
18	R	GBT FEED PUMP :3 OVER TEMPERATURE ALARM	OVER TEMPERATURE
19	S	GBT FEED PUMP :1 ALARM RESET	RESET
20	T	GBT FEED PUMP :2 ALARM RESET	RESET
21	U	GBT FEED PUMP :3 ALARM RESET	RESET
22	V	GBT FEED PUMP :1 LOCAL/REMOTE SWITCH	LOCAL/REMOTE
23	W	GBT FEED PUMP :2 LOCAL/REMOTE SWITCH	LOCAL/REMOTE
24	X	GBT FEED PUMP :3 LOCAL/REMOTE SWITCH	LOCAL/REMOTE
25	Y	GBT FEED PUMPS CONTROL PANEL :1	GBT FEED PUMPS CONTROL PANEL :1
26	Z	GBT FEED PUMP :1 MOTOR SPACE HEATER	MOTOR HEATER ON
27	AA	GBT FEED PUMP :2 MOTOR SPACE HEATER	MOTOR HEATER ON
28	BB	GBT FEED PUMP :3 MOTOR SPACE HEATER	MOTOR HEATER ON
29	CC	NPW SEAL WATER LOW ALARM	SEAL WATER LOW ALARM

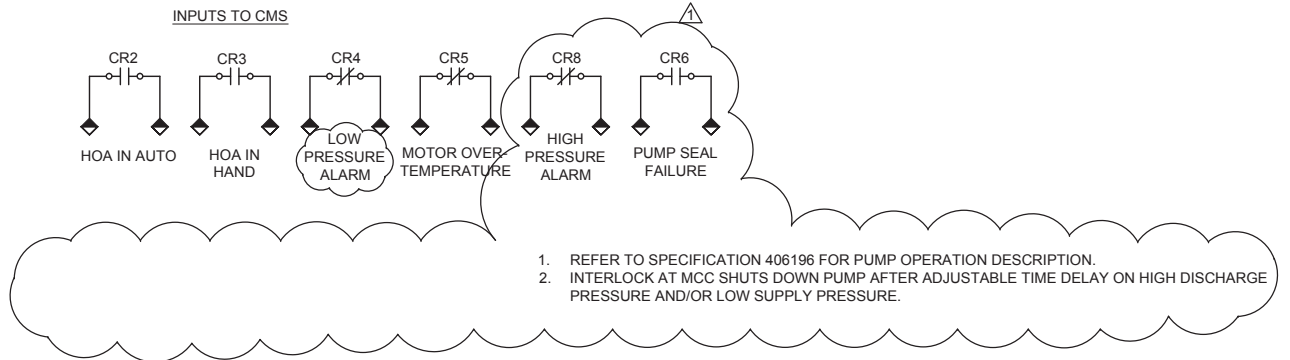


- NOTES
- SECTION SHOWN WITH OUTER DOORS REMOVED.
  - INDIVIDUAL CIRCUIT BREAKERS HANDLE MECHANISMS FOR PUMP MOTORS WILL NOT PENETRATE SWING PANEL.
  - AIR CONDITIONER NOT SHOWN. CONTRACTOR SHALL PROVIDE CLOSED LOOP AIR CONDITIONER SIZED BASED ON BUT NOT LIMITED TO HEAT LOAD OF INTERNAL EQUIPMENT, INCLUDING ADDITIONAL HEAT LOAD AS GENERATED BY FUTURE VFD FOR PUMP 5 OR PUMP 6. INSULATION SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR IN ALL PANELS WITH AIR CONDITIONERS.
  - BOTH PANELS SHALL BE LOCATED IN EXISTING POLYMER BUILDING COMPRESSOR ROOM. REFER TO SHEETS E-03 AND E-09 FOR DETAILS.
  - SPACE ON BACK PANEL SHALL BE ALLOTTED FOR FUTURE EQUIPMENT SERVING PUMPS 5&6

**A** GBT FEED PUMPS CONTROL PANEL LAYOUT  
SCALE: N.T.S.

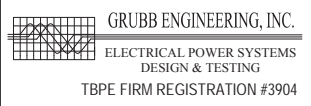


- LEGEND**
- ◆ TERMINAL POINT IN SPECIFIED AREA INDICATED BY CONTROL DIAGRAM DESCRIPTION. DARK SIDE INDICATES CONNECTION INTERNAL TO PANEL.
  - || NORMALLY OPEN CONTACT
  - ∩ NORMALLY CLOSED CONTACT
  - FUSED
  - VFD VARIABLE FREQUENCY DRIVE
  - CMS CENTRAL MONITORING SYSTEM
  - SSOLS SOLID STATE OVERLOADS



1. REFER TO SPECIFICATION 406196 FOR PUMP OPERATION DESCRIPTION.
2. INTERLOCK AT MCC SHUTS DOWN PUMP AFTER ADJUSTABLE TIME DELAY ON HIGH DISCHARGE PRESSURE AND/OR LOW SUPPLY PRESSURE.

**A** RECIRCULATION PUMP MOTOR DIAGRAM  
SCALE: N.T.S. (TYPICAL PER RECIRCULATION PUMPS 1-2)



SAN ANTONIO WATER SYSTEM



DOS RIOS WRC - SLUDGE BLENDING FACILITIES EXPANSION

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SHEET TITLE

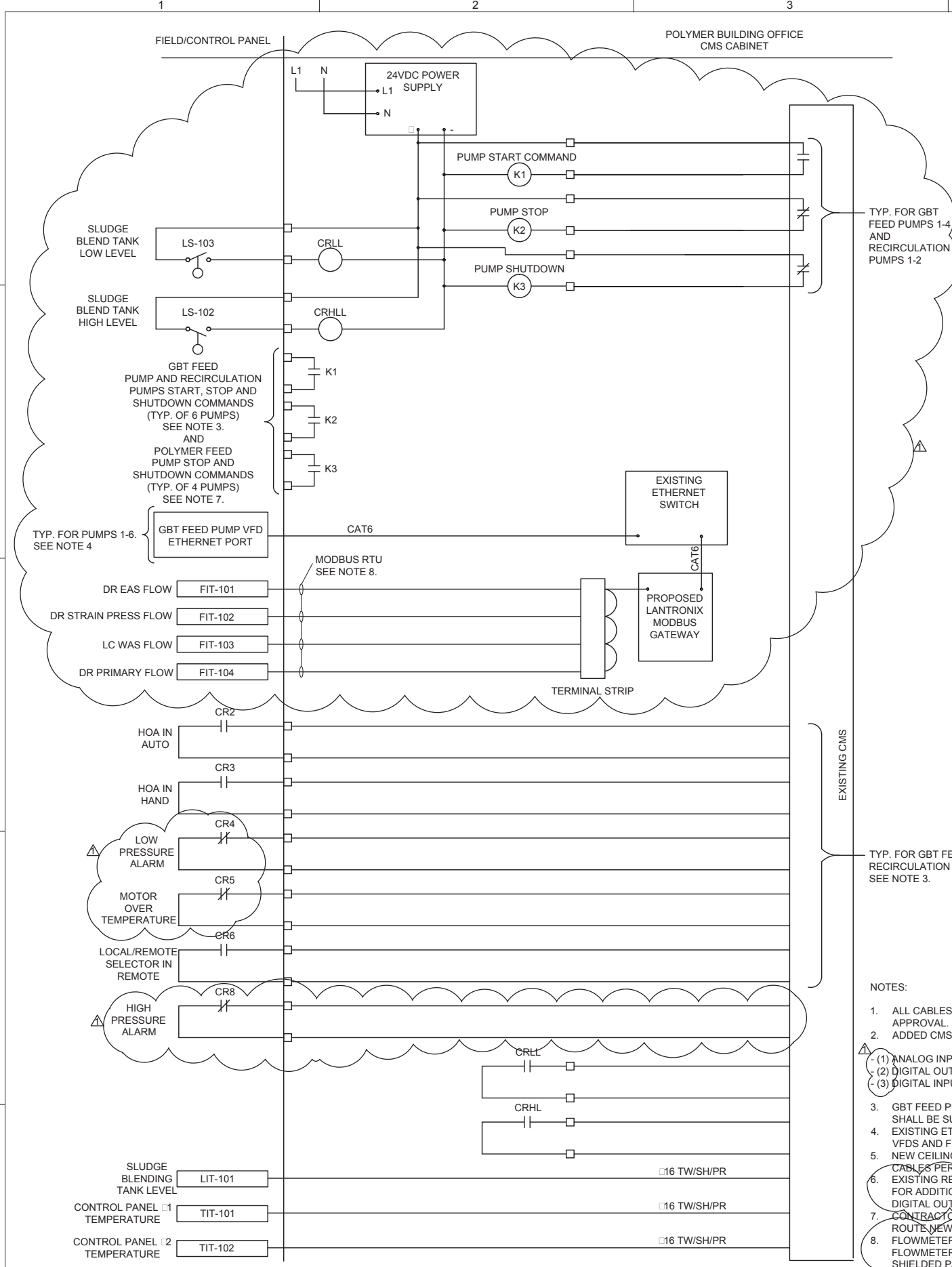
ELECTRICAL

RECIRCULATION PUMP MOTOR CONTROL DIAGRAM

SCALE:

SHEET **E-12**  
50 OF 54





**A** CMS INTERFACE PANEL CONNECTIONS  
SCALE: N.T.S.

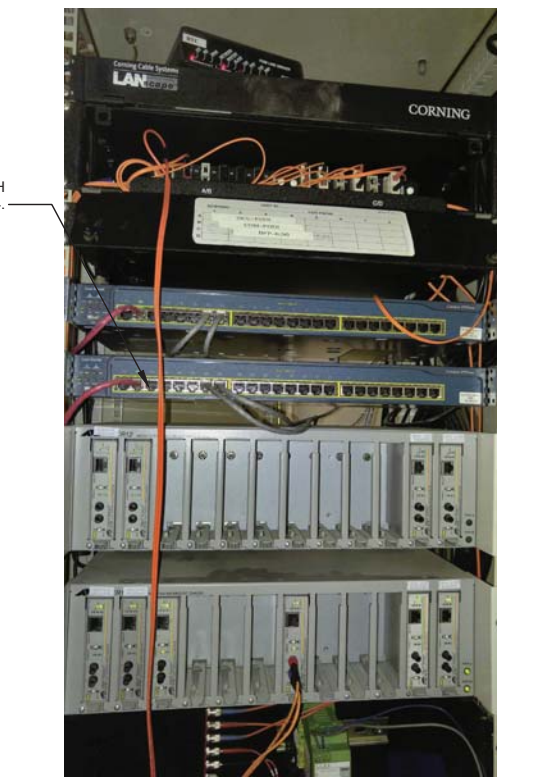
◆ TERMINAL POINT IN CMS INTERFACE PANEL  
DARK SIDE INDICATES CONNECTION INTERNAL TO PANEL.



**B** EXISTING CMS CABINET  
SCALE: N.T.S.



**C** EXISTING CMS CABINET-CABLE ROUTING  
SCALE: N.T.S.



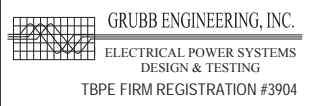
**D** EXISTING CMS CABINET-ETHERNET SWITCHES  
SCALE: N.T.S.

- NOTES:
- ALL CABLES, CONNECTORS AND PINOUT CONNECTIONS SHALL BE SUBMITTED TO OWNER FOR APPROVAL.
  - ADDED CMS I/O MODULES SHALL CONSIST OF:
    - (1) ANALOG INPUT MODULE - EMERSON 5X00070G03
    - (2) DIGITAL OUTPUT MODULE - EMERSON 1C31122G01
    - (3) DIGITAL INPUT MODULE - EMERSON 1C3123G03
  - GBT FEED PUMPS 5 & 6 WILL BE ADDED BY OTHERS IN THE FUTURE. ALL CONDUITS AS SHOWN SHALL BE SUPPLIED AS PART OF THIS PROJECT.
  - EXISTING ETHERNET SWITCH SHALL BE UTILIZED FOR ADDED CONNECTIONS TO GBT FEED PUMP VFDS AND FLOWMETERS.
  - NEW CEILING PENETRATIONS, CABLE, CONDUIT AND PULLBOX SHALL BE ADDED TO ROUTE NEW CABLES PER DETAIL A.
  - EXISTING RELAYS SHALL BE REPLACED WITH SPST RELAYS AND RECONNECTED TO CREATE SPACE FOR ADDITIONAL RELAYS. CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT. ADDITIONAL DIGITAL OUTPUT RELAYS FOR ALL ADDED DIGITAL OUTPUTS AS PART OF THIS PROJECT.
  - CONTRACTOR SHALL USE EXISTING CONDUITS FROM CMS PULLBOX TO POLYMER FEED PUMPS TO ROUTE NEW CABLES AS SHOWN.
  - FLOWMETERS SHALL BE DAISY CHAINED IN THE POLYMER BUILDING OFFICE CABINET. EACH FLOWMETER IS TO BE CONNECTED TO THE MODBUS GATEWAY WITH A BELDEN 9841 TWISTED SHIELDED PAIR CABLE. REFER TO SPECIFICATION 16120.

FURNISH NEW DIGITAL INPUT/OUTPUT CARDS TO ACCOMMODATE NEW I/O PER DETAIL A AND NOTE 2. PLEASE NOTE THAT FOUR(4) SPARE BASES ARE EXISTING.

SEE NOTE 6.

EXISTING CMS CABINET PULLBOX SEE NOTE 5.



SAN ANTONIO WATER SYSTEM



DOS RIOS WRC - SLUDGE BLENDING FACILITIES EXPANSION

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SHEET TITLE  
ELECTRICAL  
CMS INTERCONNECT

SCALE:  
SHEET **E-13**  
51 OF 54

SECTION(S)	CONDUIT		CABLES			FROM	TO	CIRCUIT
	ID	SIZE	POWER	GROUN/NEUTRAL	CONTROL			
1, 2, 7	1	1.5	3-#3 THWN	1-#6 THWN GND		MCC FT-1	RECIRCULATION PUMP NO. 1 DISCONNECT SWITCH	RECIRCULATION PUMP NO. 1 POWER FEED
1, 2, 7	2	1.5	SPARE			POLYMER BUILDING PULLBOX	RECIRCULATION PUMP NO. 1	SPARE (STUB UP AT RECIRCULATION PUMP NO. 1 AND TO PULL BOX ON POLYMER BUILDING)
1, 2, 7	3	1		2-#10 THWN GROUND	4-#10 THWN	MCC FT-1	RECIRCULATION PUMP NO. 1	RECIRCULATION PUMP NO. 1 MOTOR SPACE HEATER POWER AND MOTOR THERMAL SWITCHES
1, 2, 7	4	1		3-#12 THWN GROUND	6-#12 THWN	MCC FT-1	RECIRCULATION PUMP NO. 1 SUCTION AND DISCHARGE PRESSURE SWITCHES	RECIRCULATION PUMP NO. 1 LOW SUCTION AND HIGH DISCHARGE PRESSURE INPUTS; MOISTURE ALARM
1, 2, 7	5	1		1-#12 THWN GROUND	2-#12 THWN	MCC FT-1	RECIRCULATION PUMP NO. 1 LOCKOUT/STOP PUSHBUTTON	RECIRCULATION PUMP NO. 1 LOCKOUT/STOP
1, 2, 7	6	1	SPARE			POLYMER BUILDING PULLBOX	RECIRCULATION PUMP NO. 1	SPARE (STUB UP AT RECIRCULATION PUMP NO. 1 AND TO PULL BOX ON POLYMER BUILDING)
1, 2, 7	7	1.5	3-#3 THWN	1-#6 THWN GND		MCC FT-2	RECIRCULATION PUMP NO. 2 DISCONNECT SWITCH	RECIRCULATION PUMP NO. 2 POWER FEED
1, 2, 7	8	1.5	SPARE			POLYMER BUILDING PULLBOX	RECIRCULATION PUMP NO. 2	SPARE (STUB UP AT RECIRCULATION PUMP NO. 2 AND TO PULL BOX ON POLYMER BUILDING)
1, 2, 7	9	1		2-#10 THWN GROUND	4-#10 THWN	MCC FT-2	RECIRCULATION PUMP NO. 2	RECIRCULATION PUMP NO. 2 MOTOR SPACE HEATER POWER AND MOTOR THERMAL SWITCHES; MOISTURE ALARM
1, 2, 7	10	1		3-#12 THWN GROUND	6-#12 THWN	MCC FT-2	RECIRCULATION PUMP NO. 2 SUCTION AND DISCHARGE PRESSURE SWITCHES	RECIRCULATION PUMP NO. 2 LOW SUCTION AND HIGH DISCHARGE PRESSURE INPUTS
1, 2, 7	11	1		1-#12 THWN GROUND	2-#12 THWN	MCC FT-2	RECIRCULATION PUMP NO. 2 LOCKOUT/STOP PUSHBUTTON	RECIRCULATION PUMP NO. 2 LOCKOUT/STOP
1, 2, 7	12	1	SPARE			POLYMER BUILDING PULLBOX	RECIRCULATION PUMP NO. 2	SPARE (STUB UP AT RECIRCULATION PUMP NO. 2 AND TO PULL BOX ON POLYMER BUILDING)
1, 2, 3, 4, 5	13	1	3-#4 THWN	1-#8 THWN GND		GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 1 DISCONNECT SWITCH	GBT FEED PUMP NO. 1 POWER FEED
1, 2, 3, 4, 6, 8	14	1	SPARE			GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 1	SPARE (STUB UP AT GBT FEED PUMP NO. 1 AND TO GBT PUMP CONTROL PANEL NO. 1)
1, 2, 3, 4, 6, 8	15	1		2-#10 THWN GROUND	4-#10 THWN	GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 1	GBT FEED PUMP NO. 1 MOTOR SPACE HEATER POWER AND MOTOR THERMAL SWITCHES
1, 2, 3, 4, 6, 8	16	1		2-#12 THWN GROUND	4-#12 THWN	GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 1 SUCTION AND DISCHARGE PRESSURE SWITCHES	GBT FEED PUMP NO. 1 LOW SUCTION AND HIGH DISCHARGE PRESSURE INPUTS
1, 2, 3, 4, 5	17	1		1-#12 THWN GROUND	2-#12 THWN	GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 1 LOCKOUT/STOP PUSHBUTTON	GBT FEED PUMP NO. 1 LOCKOUT/STOP
1, 2, 3, 4, 6, 8	18	1	SPARE			GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 1	SPARE (STUB UP AT GBT FEED PUMP NO. 1 AND TO GBT PUMP CONTROL PANEL NO. 1)
1, 2, 3, 4, 5	19	1	3-#4 THWN	1-#8 THWN GND		GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 2 DISCONNECT SWITCH	GBT FEED PUMP NO. 2 POWER FEED
1, 2, 3, 4, 6, 8	20	1	SPARE			GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 2	SPARE (STUB UP AT GBT FEED PUMP NO. 2 AND TO GBT PUMP CONTROL PANEL NO. 1)
1, 2, 3, 4, 6, 8	21	1		2-#10 THWN GROUND	4-#10 THWN	GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 2	GBT FEED PUMP NO. 2 MOTOR SPACE HEATER POWER AND MOTOR THERMAL SWITCHES
1, 2, 3, 4, 6, 8	22	1		2-#12 THWN GROUND	4-#12 THWN	GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 2 SUCTION AND DISCHARGE PRESSURE SWITCHES	GBT FEED PUMP NO. 2 LOW SUCTION AND HIGH DISCHARGE PRESSURE INPUTS
1, 2, 3, 4, 5	23	1		1-#12 THWN GROUND	2-#12 THWN	GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 2 LOCKOUT/STOP PUSHBUTTON	GBT FEED PUMP NO. 2 LOCKOUT/STOP
1, 2, 3, 4, 6, 8	24	1	SPARE			GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMP NO. 2	SPARE (STUB UP AT GBT FEED PUMP NO. 2 AND TO GBT PUMP CONTROL PANEL NO. 1)
1, 2, 3, 4, 5	25	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMPS DISCONNECTS RACK	SPARE (STUB UP AT GBT FEED PUMPS RACK AND AT GBT PUMP CONTROL PANEL NO. 1)
1, 2, 3, 4, 6, 8	26	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 1	FUTURE GBT FEED PUMP NO. 5 LOCATION	SPARE (STUB UP AT FUTURE GBT FEED PUMP NO. 5 LOCATION AND TO GBT PUMP CONTROL PANEL NO. 1)
1, 2, 3, 4, 6, 8	27	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 1	FUTURE GBT FEED PUMP NO. 5 LOCATION	SPARE (STUB UP AT FUTURE GBT FEED PUMP NO. 5 LOCATION AND TO GBT PUMP CONTROL PANEL NO. 1)
1, 2, 3, 4, 6, 8	28	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 1	FUTURE GBT FEED PUMP NO. 5 LOCATION	SPARE (STUB UP AT FUTURE GBT FEED PUMP NO. 5 LOCATION AND TO GBT PUMP CONTROL PANEL NO. 1)
1, 2, 3, 4, 5	29	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 1	GBT FEED PUMPS DISCONNECTS RACK	SPARE (STUB UP AT GBT FEED PUMPS RACK AND AT GBT PUMP CONTROL PANEL NO. 1)
1, 2, 3, 4, 6, 8	30	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 1	FUTURE GBT FEED PUMP NO. 5 LOCATION	SPARE (STUB UP AT FUTURE GBT FEED PUMP NO. 5 LOCATION AND TO GBT PUMP CONTROL PANEL NO. 1)
1, 2, 3, 4, 5	31	1	3-#4 THWN	1-#8 THWN GND		GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 3 DISCONNECT SWITCH	GBT FEED PUMP NO. 3 POWER FEED
1, 2, 3, 4, 6, 8	32	1	SPARE			GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 3	SPARE (STUB UP AT GBT FEED PUMP NO. 3 AND TO GBT PUMP CONTROL PANEL NO. 2)
1, 2, 3, 4, 6, 8	33	1		2-#10 THWN GROUND	4-#10 THWN	GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 3	GBT FEED PUMP NO. 3 MOTOR SPACE HEATER POWER AND MOTOR THERMAL SWITCHES
1, 2, 3, 4, 6, 8	34	1		2-#12 THWN GROUND	4-#12 THWN	GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 3 SUCTION AND DISCHARGE PRESSURE SWITCHES	GBT FEED PUMP NO. 3 LOW SUCTION AND HIGH DISCHARGE PRESSURE INPUTS
1, 2, 3, 4, 5	35	1		1-#12 THWN GROUND	2-#12 THWN	GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 3 LOCKOUT/STOP PUSHBUTTON	GBT FEED PUMP NO. 3 LOCKOUT/STOP
1, 2, 3, 4, 6, 8	36	1	SPARE			GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 3	SPARE (STUB UP AT GBT FEED PUMP NO. 3 AND TO GBT PUMP CONTROL PANEL NO. 2)
1, 2, 3, 4, 5	37	1	3-#4 THWN	1-#8 THWN GND		GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 4 DISCONNECT SWITCH	GBT FEED PUMP NO. 4 POWER FEED
1, 2, 3, 4, 6, 8	38	1	SPARE			GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 4	SPARE (STUB UP AT GBT FEED PUMP NO. 4 AND TO GBT PUMP CONTROL PANEL NO. 2)
1, 2, 3, 4, 6, 8	39	1		2-#10 THWN GROUND	4-#10 THWN	GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 4	GBT FEED PUMP NO. 4 MOTOR SPACE HEATER POWER AND MOTOR THERMAL SWITCHES
1, 2, 3, 4, 6, 8	40	1		2-#12 THWN GROUND	4-#12 THWN	GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 4 SUCTION AND DISCHARGE PRESSURE SWITCHES	GBT FEED PUMP NO. 4 LOW SUCTION AND HIGH DISCHARGE PRESSURE INPUTS
1, 2, 3, 4, 5	41	1		1-#12 THWN GROUND	2-#12 THWN	GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 4 LOCKOUT/STOP PUSHBUTTON	GBT FEED PUMP NO. 4 LOCKOUT/STOP
1, 2, 3, 4, 6, 8	42	1	SPARE			GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMP NO. 4	SPARE (STUB UP AT GBT FEED PUMP NO. 4 AND TO GBT PUMP CONTROL PANEL NO. 2)
1, 2, 3, 4, 5	43	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMPS DISCONNECTS RACK	SPARE (STUB UP AT GBT FEED PUMPS RACK AND AT GBT PUMP CONTROL PANEL NO. 2)
1, 2, 3, 4, 6, 8	44	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 2	FUTURE GBT FEED PUMP NO. 6 LOCATION	SPARE (STUB UP AT FUTURE GBT FEED PUMP NO. 5 LOCATION AND TO GBT PUMP CONTROL PANEL NO. 2)
1, 2, 3, 4, 6, 8	45	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 2	FUTURE GBT FEED PUMP NO. 6 LOCATION	SPARE (STUB UP AT FUTURE GBT FEED PUMP NO. 5 LOCATION AND TO GBT PUMP CONTROL PANEL NO. 2)
1, 2, 3, 4, 6, 8	46	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 2	FUTURE GBT FEED PUMP NO. 6 LOCATION	SPARE (STUB UP AT FUTURE GBT FEED PUMP NO. 5 LOCATION AND TO GBT PUMP CONTROL PANEL NO. 2)
1, 2, 3, 4, 5	47	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 2	GBT FEED PUMPS DISCONNECTS RACK	SPARE (STUB UP AT GBT FEED PUMPS RACK AND AT GBT PUMP CONTROL PANEL NO. 2)
1, 2, 3, 4, 6, 8	48	1	SPARE FOR FUTURE			GBT PUMP CONTROL PANEL NO. 2	FUTURE GBT FEED PUMP NO. 6 LOCATION	SPARE (STUB UP AT FUTURE GBT FEED PUMP NO. 5 LOCATION AND TO GBT PUMP CONTROL PANEL NO. 2)
1, 2, 3, 4, 6, 8	49	1		1-#12 THWN GROUND	2-#12 THWN	GBT PUMP CONTROL PANEL NO. 1	NPW PRESSURE SWITCH	LOW SEAL WATER PUMP CONTROL PANELS AND TO CMS
9, 10, 11	50	1			RS485 T W/SH	I/O CABINET IN POLYMER BUILDING	LEON CREEK WAS FLOWMETER (FIT-103)	LEON CREEK WAS FLOW MODBUS RS485
9, 10, 11	51	1	2-#10 THWN	1-#10 THWN GROUND		POWER PANEL LP FT2	LEON CREEK WAS FLOWMETER (FIT-103)	LEON CREEK WAS FLOWMETER POWER
9, 10, 11	52	1	SPARE			POLYMER BUILDING PULLBOX	LEON CREEK WAS FLOWMETER (FIT-103)	SPARE (STUB UP AT LEON CREEK WAS FLOWMETER AND TO PULL BOX ON POLYMER BUILDING)
9, 10, 11, 12	53	1			RS485 T W/SH	I/O CABINET IN POLYMER BUILDING	DOS RIOS PRIMARY SLUDGE FLOWMETER (FIT-104)	DOS RIOS PRIMARY SLUDGE FLOW MODBUS RS485
9, 10, 11, 12	54	1	2-#10 THWN	1-#10 THWN GROUND		POWER PANEL LP FT2	DOS RIOS PRIMARY SLUDGE FLOWMETER (FIT-104)	DOS RIOS PRIMARY SLUDGE FLOWMETER POWER
9, 10, 11, 12	55	1	SPARE			POLYMER BUILDING PULLBOX	DOS RIOS PRIMARY SLUDGE FLOWMETER (FIT-104)	SPARE (STUB UP AT DOS RIOS PRIMARY SLUDGE FLOWMETER AND TO PULL BOX ON POLYMER BUILDING)
9, 10	56	1			RS485 T W/SH	I/O CABINET IN POLYMER BUILDING	DOS RIOS EXCESS ACTIVATED SLUDGE FLOWMETER (FIT-101)	DOS RIOS EXCESS ACTIVATED SLUDGE FLOW MODBUS RS485
9, 10	57	1	2-#10 THWN	1-#10 THWN GROUND		POWER PANEL LP FT2	DOS RIOS EXCESS ACTIVATED SLUDGE FLOWMETER (FIT-101)	DOS RIOS EXCESS ACTIVATED SLUDGE FLOWMETER POWER
9, 10	58	1	SPARE			POLYMER BUILDING PULLBOX	DOS RIOS EXCESS ACTIVATED SLUDGE FLOWMETER (FIT-101)	SPARE (STUB UP AT DOS RIOS EXCESS ACTIVATED SLUDGE FLOWMETER AND TO PULL BOX ON POLYMER BUILDING)
9, 10, 13	59	1			2x(#16 T W/SH/PR)	I/O CABINET IN POLYMER BUILDING	SLUDGE BLEND TANK LEVEL CONTROLLER	PROPOSED SLUDGE BLEND TANK LEVEL
9, 10, 13	60	1	2-#10 THWN	1-#10 THWN GROUND		POWER PANEL LP FT1	SLUDGE BLEND TANK LEVEL CONTROLLER	SLUDGE BLEND TANK LEVEL TRANSMITTER POWER
9, 10, 13	61	1	SPARE			POLYMER BUILDING PULLBOX	SLUDGE BLEND TANK LEVEL CONTROLLER RACK	SPARE (STUB UP AT SLUDGE BLEND TANK LEVEL CONTROLLER RACK AND TO PULL BOX ON POLYMER BUILDING)
9, 10, 13	62	1		2-#12 THWN GROUND	4-#12 THWN	I/O CABINET IN POLYMER BUILDING	SLUDGE BLEND TANK LEVEL CONTROLLER RACK PULLBOX	PROPOSED SLUDGE BLEND TANK HIGH AND LOW LEVELS TO THE CMS
9, 10, 13	63	1		1-#10 THWN GROUND	2-#10 THWN	POWER PANEL LP FT1	SLUDGE BLEND TANK LEVEL CONTROLLER RACK	RACK LIGHT AND RECEPTACLE POWER
9, 14	64	1			RS485 T W/SH	I/O CABINET IN POLYMER BUILDING	EXISTING SLUDGE BLEND FACILITY FLOWMETER (FIT-102)	EXISTING SLUDGE BLEND FACILITY FLOW MODBUS RS485
9, 14	65	1	SPARE			POLYMER BUILDING PULLBOX	EXISTING SLUDGE BLEND FACILITY FLOWMETER (FIT-102)	SPARE (STUB UP AT EXISTING SLUDGE BLEND FACILITY FLOWMETER AND TO PULL BOX ON POLYMER BUILDING)

CONDUIT SIZE IS DISPLAYED IN INCHES.



SAN ANTONIO WATER SYSTEM



DOS RIOS WRC - SLUDGE BLENDING FACILITIES EXPANSION

NO.	DATE	REVISION	BY
Δ	9/14/16	ADDENDUM #1	JP

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DATE: JULY 27, 2016  
PROJECT NO.: 02196034.0000  
DESIGNED BY: CG  
DRAWN BY: SG  
CHECKED BY: JP

SHEET TITLE  
ELECTRICAL  
CABLE AND CONDUIT LIST

SCALE:  
SHEET **E-14**  
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