



**SAN ANTONIO WATER SYSTEM
DOS RIOS WATER RECYCLING CENTER SLUDGE BLEND /
THICKENING COMPLEX AUTOMATION PROJECT
SAWS Job No. 13-6504
Solicitation No. B-13-079-MR**

ADDENDUM NO. 2

December 20, 2013

BID DATE: January 8, 2014

2:00 p.m. Central Time

To: All Document Holders of Record

This addendum, applicable to work referenced above, forms a part of the Contract Documents and modifies the original Contract Documents dated November 2013. Acknowledge receipt of this addendum by entering the addendum number and issue date in the spaces provided on submitted copies of the proposals. Failure to do so may subject Bidder to disqualification.

A. GENERAL QUESTIONS/CLARIFICATIONS

1. **Only the attendees listed on the attached Sign-in Sheet for the Mandatory Pre-bid Meeting shall be allowed to bid on this project.**

2. Question: System Controls & Instrumentation (SCI) respectfully requests to be added to the approved Process Control System Integrator (PCIS) list for the SAWS Dos Rios WRC Sludge Blend/Thickening Complex Automation Project.

Response: SCI has been added to the approved list. See Addendum Item C.3.

3. Question: Is Builder's Risk and Pollution Liability required under this project?

Response: No.

4. Question: In Section 17300-6, Paragraph D states that the PCSI shall be one of the following listing: Signature Automation and Control Panel USA (CPUSA). However, in my conversation with Mr. Hidalgo, he stated that they engineer software (ASP) but do not build control panels. Can the Engineer specify at least one other SCADA panel builder for the Contractor's selection?

Response: See Addendum Item C.3.

5. Question: Under the Painting Section, what specifically is the contractor required to recoat. Additionally, how will a contractor warrant the coating for 5 years when the general contract warranty is 2 years?

Response: See Addendum Item C.1.

B. BIDDING AND CONTRACT REQUIREMENTS: The following are changes to the Bidding and Contract Requirements:

1. BID PROPOSAL: add Pages BP-4 and BP-5, Statement of Bidder's Experience.

The remainder of the Bid Proposal shall remain the same.

2. SUPPLEMENTAL CONDITIONS

- a. Add the following Supplemental Condition:

"Instructions to Bidders

Replace Paragraph 23 in its entirety as follows:

23. To assist the San Antonio Water System in performing the bid evaluation and subsequent recommendation of award, each and every bidder shall submit the following with their bid. Failure to provide the required information may result in a non-responsive bid:
 - (a) A complete financial statement for your organization that was prepared within the past 12 months, by an independent Certified Public Accountant, and a point of contact for your banking institution.
 - (b) An information packet on company dictating experience, organization and equipment.
 - (c) A statement regarding ability to complete the project within the schedule, taking into account existing commitments.
 - (d) Statement of Bidders Experience within last (2) pages of bid proposal.
 - (e) A completed and signed W-9 Request for Taxpayer Identification Number and Certification form."

The remainder of the Supplemental Conditions shall remain the same.

C. SPECIFICATIONS: The following are changes to the Technical Specifications:

1. SECTION 09900 – PAINTING

- a. Page 09900-1, Paragraph 1.01, A. **Replace with the following:** "Section includes surface preparation and surface finish of the existing five (5) horizontal screw centrifugal pumps and associated suction and discharge piping (that is not already coal tar epoxy coated), valves and appurtenances in the Sludge Blend Complex (up to the StrainPresses) and the four (4) new gravity belt thickener (GBT) feed plug valves in the Thickening Complex."

The remainder of Section 09900, Painting shall remain the same.

2. SECTION 16010 – BASIC ELECTRICAL REQUIREMENTS

- a. Page 16010-2, Paragraph 1.03, B. 2. **Replace with the following:** "Replace existing electromagnetic flow sensor and transmitter on pipe originating from Leon Creek WRC per Section 17310 Field Instruments."
- b. Page 16010-2, Paragraph 1.03, B. 4. **Replace with the following:** "Furnish and install two (3) thermal magnetic circuit breakers in existing MCC-BT to service two (3) proposed pump control panels per Contract Drawings and Section 16050 Basic Electrical Materials and Methods."
- c. Page 16010-2, Paragraph 1.03, B. 5. **Replace with the following:** "Provide additional controls and modify existing controls for five (5) sludge transfer pumps."

The remainder of Section 16010, Basic Electrical Requirements shall remain the same.

3. SECTION 17300 – INSTRUMENTATION GENERAL PROVISIONS

- a. Page 17300-6, Paragraph 1.05, D. **Add the following** companies to the PCSI list:

3. Prime Controls
815 Office Park Circle
Lewisville, Texas 75057
Attention: Gary McNeil
Telephone: 972.221.4849
4. System Controls & Instrumentation
11218 IH-10 East
Converse, TX 78109
Attention: Mark Southwell
Telephone: 210.661.9901

The remainder of Section 17300, Instrumentation General Provisions shall remain the same.

D. DRAWINGS: The following are changes to the Drawings:

1. DRAWING NOS. E-1 THROUGH E-8 - delete these drawings in their entirety and replace with the attached drawings E-1 through E-8.

The remainder of the drawings shall remain the same.


Alissa R. Lockett, P.E.
San Antonio Water System



ACKNOWLEDGEMENT BY BIDDER

Each bidder is requested to acknowledge receipt of this Addendum No. 2 on the Bid Proposal and by his/her signature affixed hereto and to file same as an attachment to his/her bid.

The undersigned acknowledges receipt of this Addendum No.1 and the bid submitted herewith is in accordance with the information and stipulation set forth.

Signature of Bidder

Date

END OF ADDENDUM



MANDATORY PRE-BID MEETING SIGN-IN SHEET

Project: Dos Rios WRC Sludge Blend / Thickening Automation SAWS Job No. 13-6504	Meeting Date: December 9, 2013
Facilitators: Christina Gaydos (Grubb Engineering) Marc Ripley (Contract Administrator)	Place/Room: Dos Rios WRC/O&M Training Room

Name	Company	Phone	E-Mail
Thomas Lerma	CP USA	512-863-3224	tlerma@controlpanels.usa.net
Olaf Landgrebe	Wilking Corp	210-228-9000	WilkingCorp@yahoo.com
ZANE SHULLANBERGER	LAMBDA	830-629-5803	zane@satx.rv.com
Melisa Fichos	Ateeman	210-510-8150	MelisaFichos@go.ATteeman.com
Doug Hoopes	MGC	602-470-5000	bids@mgcccontractors.com
Steve Fritz	JakeCo	210-488-7279	jacoinc@aol.com
Christina Gaydos	Grubb Engineering, Inc	210-658-7250	cgaydos@grubbengineering.com
Alissa Lockett	San Antonio Water	210-233-3401	alockett@saws.org
MARC RIPLEY	SAWS	210-233-3136	mripley@saws.org

Statement of Bidder's Experience

To be considered a responsible bidder, the Bidder (Prime Contractor) must provide an experience record for a minimum of three (3) **successfully completed** similar wastewater treatment plant projects that include installation of variable frequency drives (VFDs), programmable logic controller (PLC) programming in Function Block, and demonstrated ability to not impact plant operations during construction. To be considered a **successfully completed** project, the project should (1) not involve default on the contract, (2) have been completed within the contract time, and (3) not have incurred any owner claims.

Data given must be clear and comprehensive. Include specific project name, facility owner and telephone number, total contract amount and duration, size and number of motors with VFDs, confirmation of PLC programming, and a brief description of how the project work was completed without impacting plant operations. San Antonio Water System in determining the responsible bidder will approve the Bid based on low cost and on Bidder's demonstrated experience and ability to perform the work.

1. Project Name: _____
Facility Owner: _____
Telephone #: _____
Contract Amount: \$ _____ Contract Duration (days): _____
Motors with VFDs: Quantity _____ Size (HP) _____
PLC Programming in Function Block: Yes _____ No _____
Describe how project was completed without impacting plant operations: _____

2. Project Name: _____
Facility Owner: _____
Telephone #: _____
Contract Amount: \$ _____ Contract Duration (days): _____

Motors with VFDs: Quantity _____ Size (HP) _____

PLC Programming in Function Block: Yes _____ No _____

Describe how project was completed without impacting plant operations: _____

3. Project Name: _____

Facility Owner: _____

Telephone #: _____

Contract Amount: \$_____ Contract Duration (days): _____

Motors with VFDs: Quantity _____ Size (HP) _____

PLC Programming in Function Block: Yes _____ No _____

Describe how project was completed without impacting plant operations: _____

This signed Bidder's Experience form and any required supplemental information must be submitted with the Bid Proposal for the Bidder to be considered responsive.

Contractor

By

Title

Date

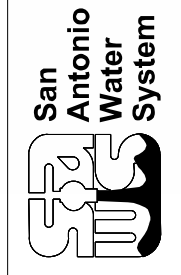


REVISIONS	
No.	Description
1	ADDENDUM #2

Date	Appr.
12/20/13	CKG

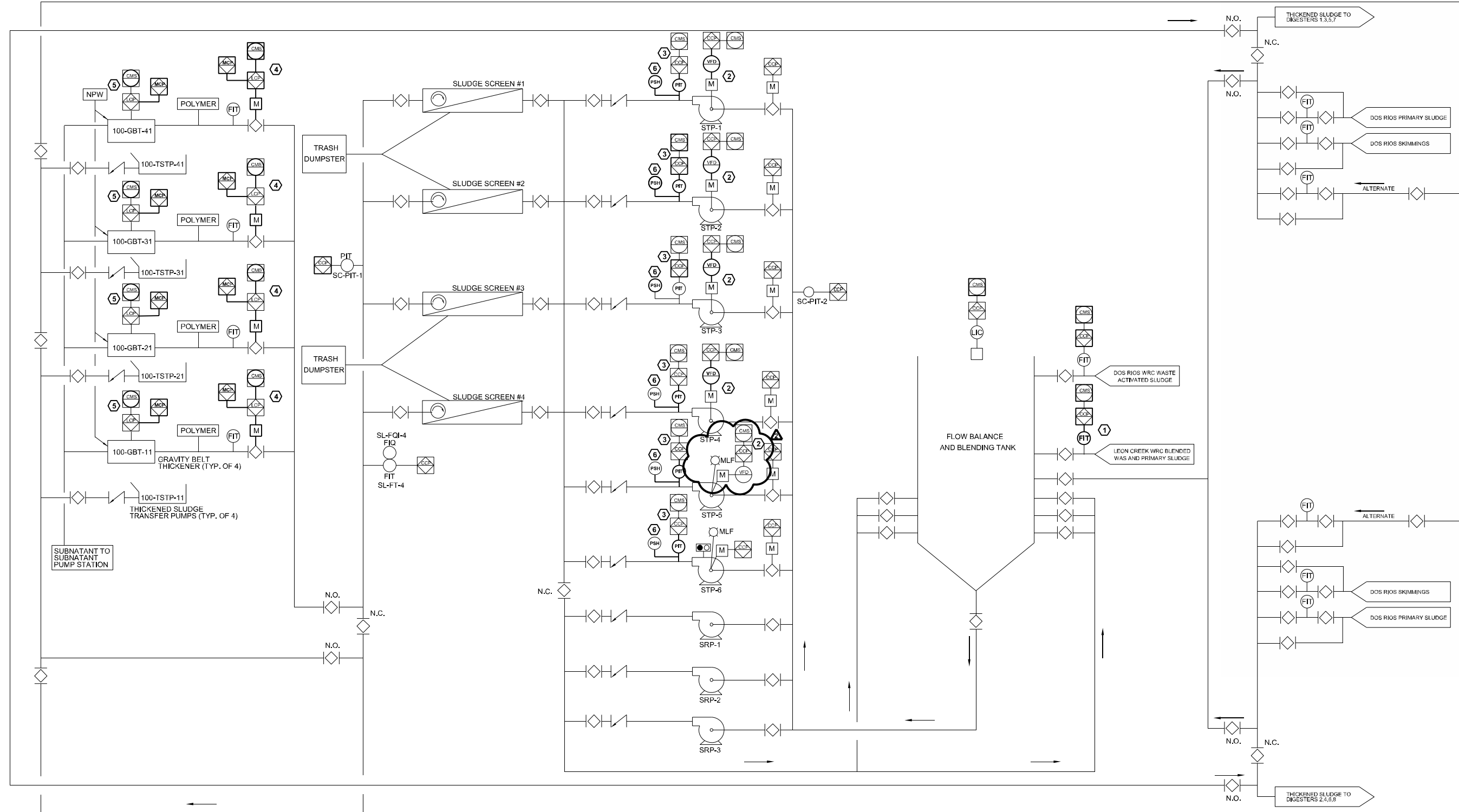
INFORMATION	
GRUBB ENGINEERING, INC.	ELECTRICAL POWER SYSTEMS DESIGN & TESTING
TBE PERM REGISTRATION #3904	
3128 SMOKEY BROOKS, SAN ANTONIO, TEXAS 78238	
PHONE: 210.682.7750 FAX: 210.682.9893	

Date: 11/20/2013	Drawn by: SG
Designed by: CKG	Checked by: RDG
Scale: AS NOTED	Approved by: RDG
Map No: XXX-XXX	



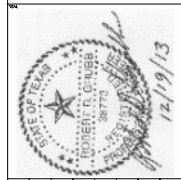
DOS RIOS SLUDGE BLEND/THICKENING COMPLEX AUTOMATION PROJECT

PROCESS & INSTRUMENTATION DIAGRAM



INSTRUMENT SYMBOLS		ABBREVIATIONS	
	SYMBOLS		FIELD MOUNTED INSTRUMENT
	PUMP		LOCAL CONTROL PANEL MOUNTED INSTRUMENT
	PLUG VALVE		POINTS MONITORED/CONTROLLED BY LCP PLC OR MASTER PLC
			POINTS MONITORED/CONTROLLED BY CMS
		CCP	CENTRAL CONTROL PANEL - SLUDGE PROCESSING FACILITY
		CMS	CENTRAL MONITORING SYSTEM
		FIT	FLOW INDICATING TRANSMITTER
		FIQ	FLOW INDICATING TOTALIZER
		GBT	GRAVITY BELT THICKENER
		LCP	LOCAL CONTROL PANEL
		LIC	LEVEL INDICATING CONTROLLER
		MCP	MASTER PLC PANEL - GBT AREA
		PSH	PRESSURE SWITCH - HIGH
		SRP	SLUDGE RECIRCULATION PUMP
		STP	SLUDGE TRANSFER PUMP
		TSTP	THICKENED SLUDGE TRANSFER PUMP
		PIT	PRESSURE INDICATING TRANSMITTER

- KEYED NOTES:**
- EXISTING ELECTROMAGNETIC FLOW SENSOR AND METER PAIR SHALL BE REPLACED IN-PLACE ALONG WITH ASSOCIATED CONDUITS AND CABLES.
 - PROPOSED VFD SHALL BE CONNECTED TO EXISTING CENTRAL CONTROL PANEL PLC VIA ETHERNET CONNECTION PER SHEET E-6 DETAIL C. THE EXISTING CCP PLC WILL THEN COMMUNICATE VFD POINTS TO THE CMS VIA EXISTING CONNECTION. REFER TO SPECIFICATION 17305 APPENDIX A FOR I/O POINTS LIST.
 - EXISTING DISCHARGE PRESSURE TRANSMITTER SHALL BE REPLACED AND PROPOSED PRESSURE SWITCH FOR HIGH DISCHARGE PRESSURE SHALL BE ADDED PER SPECIFICATION 17310.
 - PROPOSED CONTROLLER FOR MOTOR OPERATED VALVE SHALL BE ADDED. CONTROLLER SHALL BE CONNECTED TO THE EXISTING RESPECTIVE GBT LOCAL CONTROL PANEL WHICH CURRENTLY COMMUNICATES WITH THE CENTRAL MONITORING SYSTEM. AN ETHERNET CONNECTION SHALL BE ADDED IN BETWEEN EACH OF THE GBT LOCAL CONTROL PANEL PLCs AND APPROVED ETHERNET SWITCH LOCATED IN THE GBT MASTER PLC PANEL.
 - EACH GBT VFD IS CURRENTLY MONITORED/CONTROLLED BY ITS RESPECTIVE PLC WHICH COMMUNICATES WITH THE CMS. THE CMS HAS THE CAPABILITY TO MANUALLY OVERRIDE COMMANDS FROM THE LOCAL PLC. THROUGH THE CONNECTION AS PROPOSED IN NOTE 4, EACH OF THE VFDs WILL BE CONTROLLED PRIMARILY VIA THE MASTER PLC VIA THE VFD'S RESPECTIVE LOCAL PLC.
 - REPLACEMENT PRESSURE SWITCH POSITION WILL BE CONNECTED TO CORRESPONDING SLUDGE TRANSFER PUMPS LOCAL CONTROL PANEL.



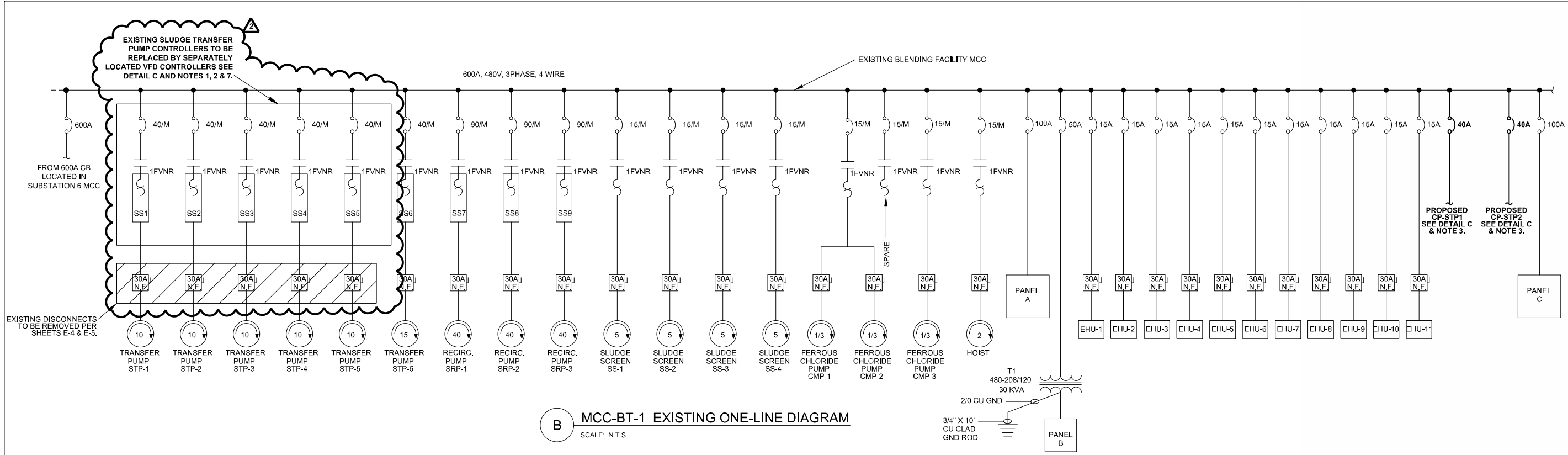
REVISIONS	Date	Appr'd	Dwn.
	12/20/13	CKG	SG

INFORMATION
 CRUBB ENGINEERING, INC.
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 TBP# PRM REGISTRATION #3904
 3128 SMOKEY BROOKS, SAN ANTONIO, TEXAS 78238
 (817) 210-8877 FAX 210-668-0903

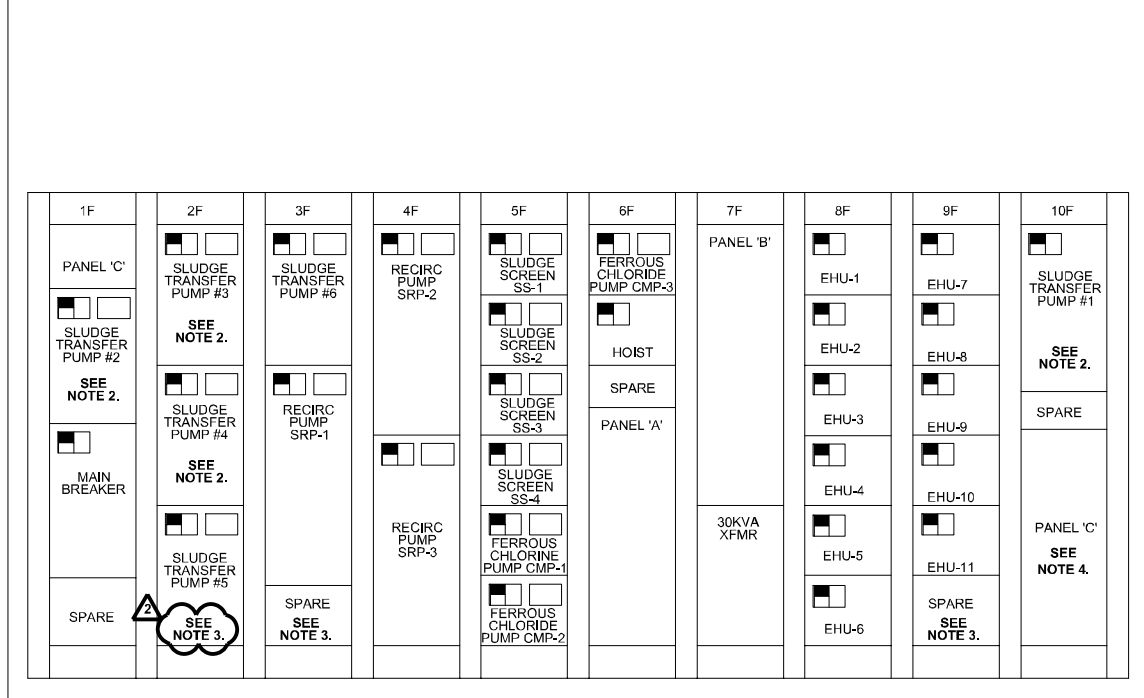
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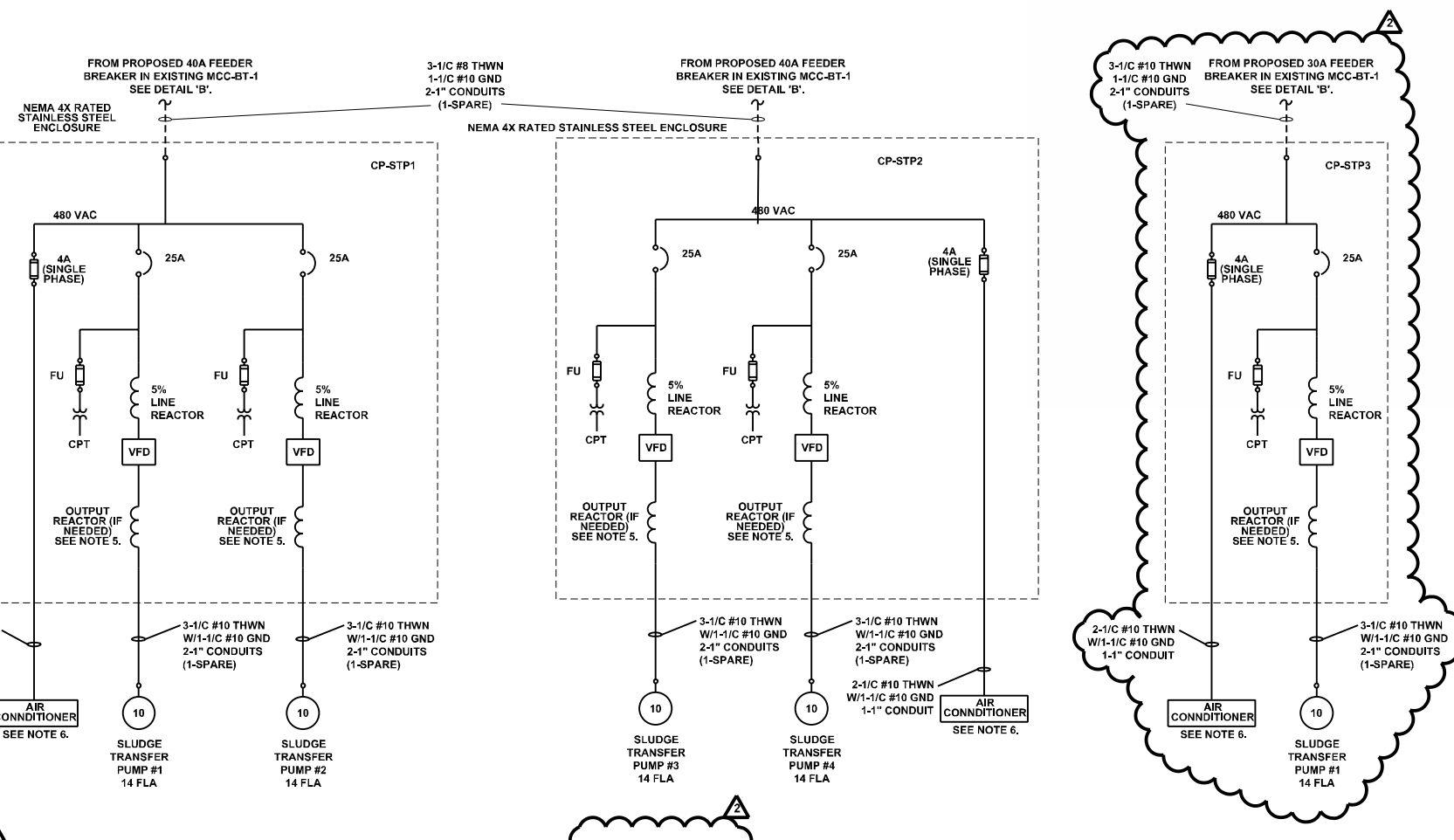
**DOS RIOS SLUDGE BLENDING/THICKENING
 COMPLEX AUTOMATION PROJECT**
 MODIFICATIONS TO EXISTING
 MCC-BT-1 AND PROPOSED CONTROL
 PANELS



B MCC-BT-1 EXISTING ONE-LINE DIAGRAM
 SCALE: N.T.S.

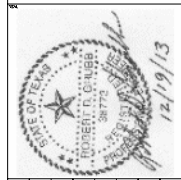


A EXISTING MCC-BT-1 FRONT ELEVATION
 SCALE: N.T.S.



C CP-STP1, CP-STP2 AND CP-STP3 ELECTRICAL ONE-LINE DIAGRAMS
 SCALE: N.T.S.

- NOTES:**
- TRANSFER PUMPS 1 THROUGH 5 SHALL BE CONTROLLED VIA PROPOSED CONTROL PANELS AS SHOWN WITH CLOSED LOOP NEMA 4X RATED AIR CONDITIONER AS INDICATED TO LENGTHEN VFD LIFE.
 - EXISTING EQUIPMENT AS ASSOCIATED WITH ABANDONED MCC CUBICLES SHALL BE REMOVED ALONG WITH ASSOCIATED CABLES AFTER THE LOAD HAS BE RECONNECTED ENTIRELY TO PROPOSED CONTROL PANEL. CUBICLES SHALL THEN BE TAGGED AS SPACES.
 - CONTRACTOR SHALL PROVIDE TWO 40A THERMAL MAGNETIC BREAKERS TO BE MOUNTED IN SPARE EQUIPPED CUBICLES TO FEED PROPOSED CONTROL PANELS CP-STP1 AND CP-STP2. CONTRACTOR SHALL PROVIDE TAGS FOR CUBICLES LABELED CP-STP1 AND CP-STP2 FEEDER, RESPECTIVELY.
 - POWER FOR THE INSTRUMENT HEAT TRACE SHALL BE SOURCED FROM EXISTING POWER PANEL(S) LOCATED IN EXISTING MCC-BT-1.
 - VARIABLE FREQUENCY DRIVE MANUFACTURER TO DETERMINE IF OUTPUT REACTOR IS REQUIRED.
 - CLOSED LOOP AIR CONDITIONER SHALL BE MCLEAN T2D0245G401.
 - EXISTING STARTER AND MOTOR CIRCUIT PROTECTOR SHALL BE REPLACED BY 30A THERMAL MAGNETIC CIRCUIT BREAKER WHICH WILL SERVICE REPLACEMENT VFD FOR SLUDGE TRANSFER PUMP No. 5.



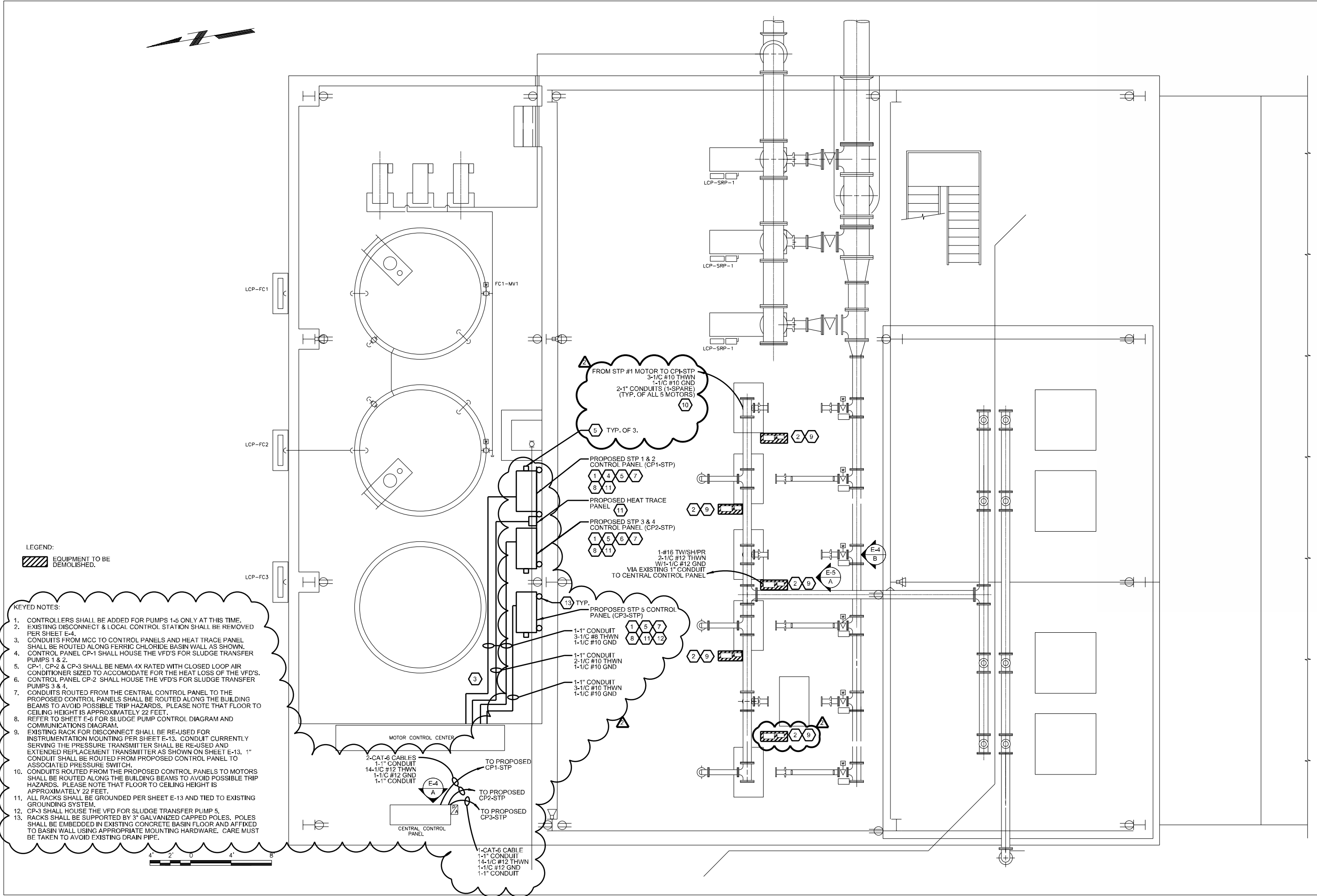
REVISIONS	No.	Description	Dwn.	Approved	Date
	A	ADDENDUM #2	SG	CKG	12/20/13

INFORMATION
 CRUBB ENGINEERING, INC.
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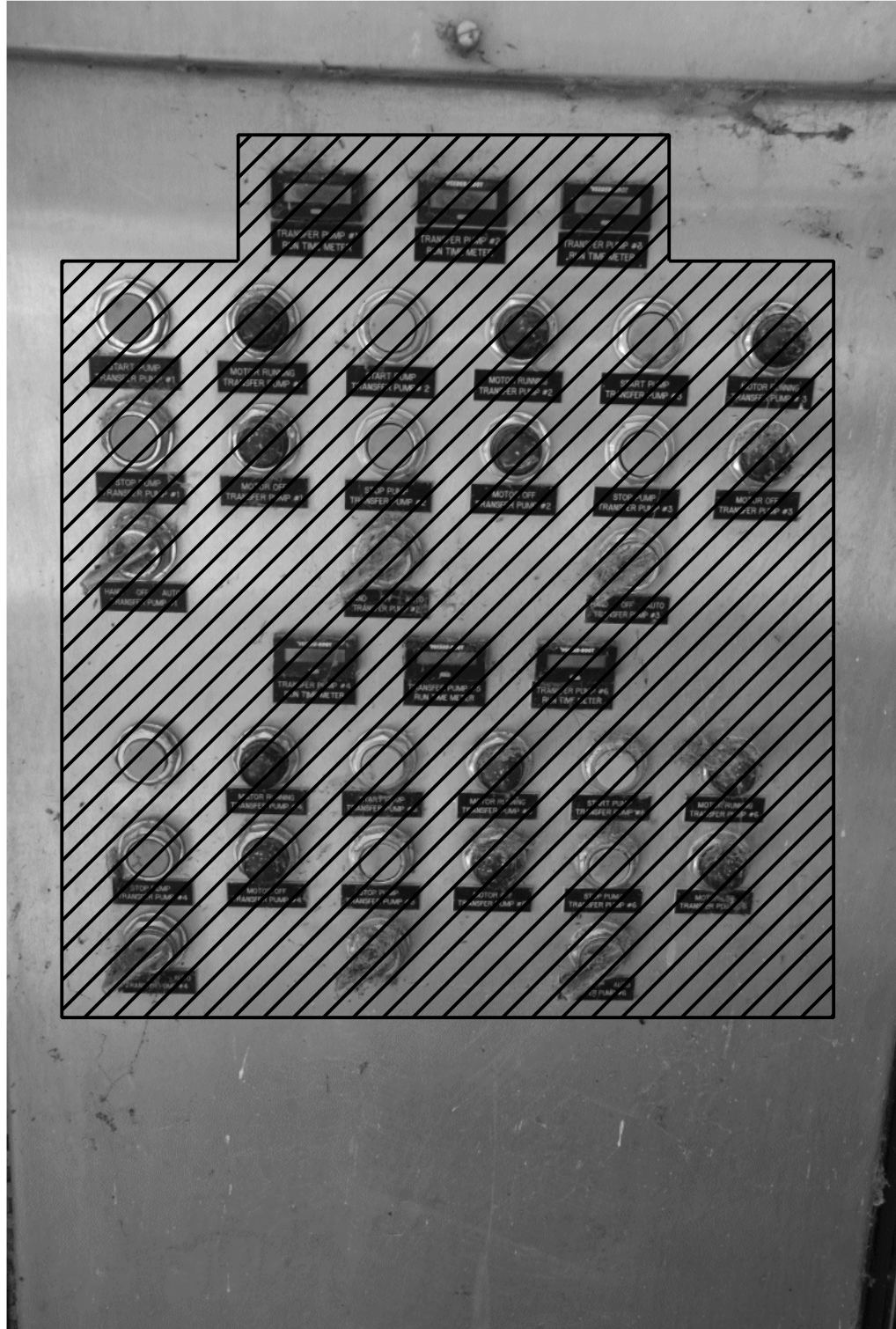
**DOS RIOS SLUDGE BLEND/THICKENING
 COMPLEX AUTOMATION PROJECT**
 SLUDGE BLEND FACILITY -
 MODIFICATIONS TO EQUIPMENT
 & POWER DISTRIBUTION



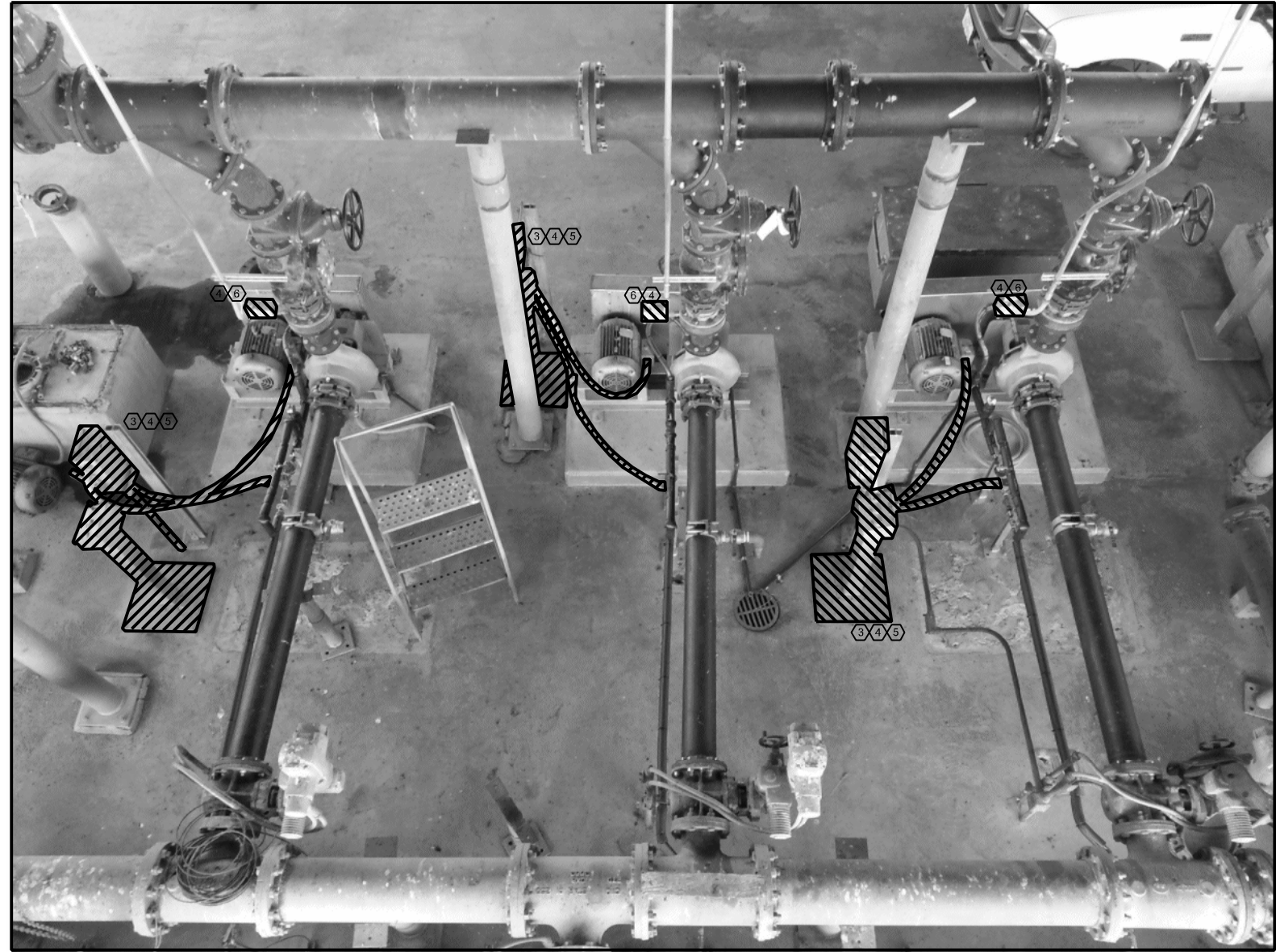
LEGEND:
 EQUIPMENT TO BE DEMOLISHED.

- KEYED NOTES:**
1. CONTROLLERS SHALL BE ADDED FOR PUMPS 1-5 ONLY AT THIS TIME. EXISTING DISCONNECT & LOCAL CONTROL STATION SHALL BE REMOVED PER SHEET E-4.
 2. CONDUITS FROM MCC TO CONTROL PANELS AND HEAT TRACE PANEL SHALL BE ROUTED ALONG FERRIC CHLORIDE BASIN WALL AS SHOWN. CONTROL PANEL CP-1 SHALL HOUSE THE VFD'S FOR SLUDGE TRANSFER PUMPS 1 & 2.
 3. CP-1, CP-2 & CP-3 SHALL BE NEMA 4X RATED WITH CLOSED LOOP AIR CONDITIONER SIZED TO ACCOMMODATE FOR THE HEAT LOSS OF THE VFD'S.
 4. CONTROL PANEL CP-2 SHALL HOUSE THE VFD'S FOR SLUDGE TRANSFER PUMPS 3 & 4.
 5. CONDUITS ROUTED FROM THE CENTRAL CONTROL PANEL TO THE PROPOSED CONTROL PANELS SHALL BE ROUTED ALONG THE BUILDING BEAMS TO AVOID POSSIBLE TRIP HAZARDS. PLEASE NOTE THAT FLOOR TO CEILING HEIGHT IS APPROXIMATELY 22 FEET.
 6. REFER TO SHEET E-6 FOR SLUDGE PUMP CONTROL DIAGRAM AND COMMUNICATIONS DIAGRAM.
 7. EXISTING RACK FOR DISCONNECT SHALL BE RE-USED FOR INSTRUMENTATION MOUNTING PER SHEET E-13. CONDUIT CURRENTLY SERVING THE PRESSURE TRANSMITTER SHALL BE RE-USED AND EXTENDED REPLACEMENT TRANSMITTER AS SHOWN ON SHEET E-13. 1" CONDUIT SHALL BE ROUTED FROM PROPOSED CONTROL PANEL TO ASSOCIATED PRESSURE SWITCH.
 8. CONDUITS ROUTED FROM THE PROPOSED CONTROL PANELS TO MOTORS SHALL BE ROUTED ALONG THE BUILDING BEAMS TO AVOID POSSIBLE TRIP HAZARDS. PLEASE NOTE THAT FLOOR TO CEILING HEIGHT IS APPROXIMATELY 22 FEET.
 9. ALL RACKS SHALL BE GROUNDED PER SHEET E-13 AND TIED TO EXISTING GROUNDING SYSTEM.
 10. CP-3 SHALL HOUSE THE VFD FOR SLUDGE TRANSFER PUMP 5.
 11. RACKS SHALL BE SUPPORTED BY 3" GALVANIZED CAPPED POLES. POLES SHALL BE EMBEDDED IN EXISTING CONCRETE BASIN FLOOR AND AFFIXED TO BASIN WALL USING APPROPRIATE MOUNTING HARDWARE. CARE MUST BE TAKEN TO AVOID EXISTING DRAIN PIPE.





A SLUDGE BLEND CENTRAL CONTROL PANEL (2) (4)
SCALE: N.T.S.



B SLUDGE TRANSFER PUMPS 1-3 MODIFICATION (TYP. OF PUMPS 1-5)
SCALE: N.T.S.

- KEYED NOTES:**
1. ALL PILOT DEVICES SHALL BE REMOVED FROM DOOR AND COMPLETELY DISCONNECTED PER PUMP AFTER PROPOSED PUMP CONTROL PANELS ARE CONNECTED, TESTED AND ENERGIZED. COVER RESULTING HOLES WITH METAL PLATE AFFIXED WITH STAINLESS STEEL SCREWS.
 2. ALL CABLES FEEDING REMOVED DEVICES SHALL BE COMPLETELY REMOVED FROM PANEL AND FROM CONDUIT.
 3. EXISTING DISCONNECT AND LOCAL CONTROL STATION FOR ALL FIVE PUMPS (STP 1-5) SHALL BE REMOVED AFTER MOTOR HAS BEEN DISCONNECTED.
 4. SAWS SHALL HAVE FIRST RIGHT OF REFUSAL REGARDING SALVAGEABLE EQUIPMENT. UNSALVAGEABLE EQUIPMENT SHALL BE DISPOSED OF PROPERLY.
 5. ALL CABLES AND CONDUITS FEEDING DISCONNECT AND LOCAL CONTROL STATION SHALL BE REMOVED.
 6. EXISTING PRESSURE TRANSMITTER SHALL BE REPLACED AND PROPOSED PRESSURE SWITCH SHALL BE ADDED PER SPECIFICATION 17310 AND SHEET E-13.

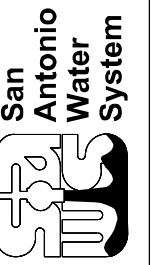
LEGEND:
 EQUIPMENT TO BE DEMOLISHED.



REVISIONS	No.	Description	Dwn.	Approved	Date
	A	ADDENDUM #2	SG	CKG	12/20/13

INFORMATION
 GRUBB ENGINEERING, INC.
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Date: 11/20/2013
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 Approved by: RDG
 Map No.: XXX-XXX



**DOS RIOS SLUDGE BLEND/THICKENING
 COMPLEX AUTOMATION PROJECT**
SELECTED ELECTRICAL DEMOLITION

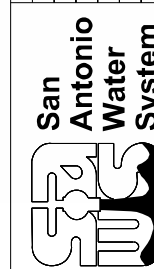


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Description	Date
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INFORMATION

GRUBB ENGINEERING, INC.
ELECTRICAL POWER SYSTEMS
DESIGN & TESTING
TYPE FIRM REGISTRATION #3804
3128 SIDNEY BROOKS, SAN ANTONIO, TEXAS 78238
PH: 210.882.7750 FAX: 210.882.8905

Date: 11/20/2013
Drawn by: SG
Designed by: CKG
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Approved by: RDG
Map No: XXX-XXX



**DOS RIOS SLUDGE BLEND/THICKENING
COMPLEX AUTOMATION PROJECT**

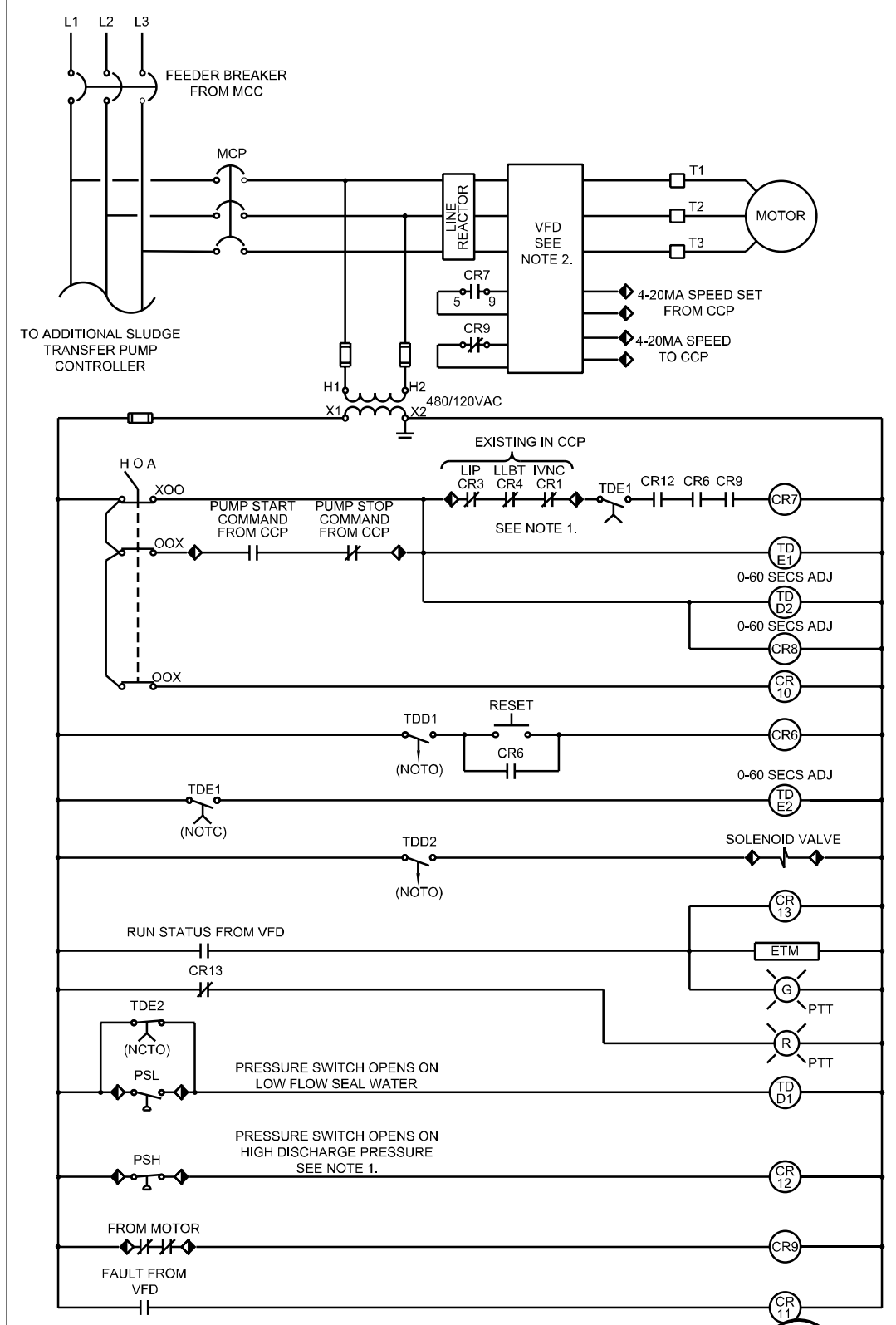
**SELECTED ELECTRICAL
DEMOLITION & MODIFICATIONS**



A MODIFICATIONS TO EXISTING SLUDGE TRANSFER PUMP (TYP. OF 5)
SCALE: N.T.S.

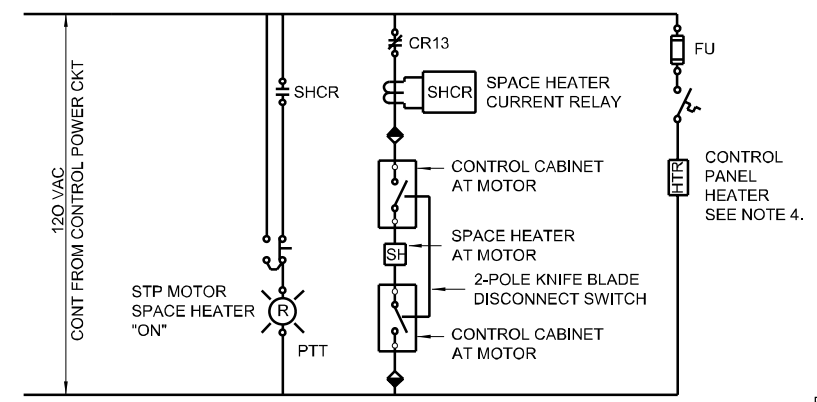
- KEYED NOTES:
- EXISTING DISCONNECT AND LOCAL CONTROL STATION FOR ALL FIVE PUMPS (STP 1-5) SHALL BE REMOVED AFTER MOTOR HAS BEEN DISCONNECTED. EXISTING INSTRUMENT RACK SHALL BE USED FOR INSTRUMENT RACK PER SHEET E-13 DETAIL G.
 - SAWS SHALL HAVE FIRST RIGHT OF REFUSAL REGARDING SALVAGEABLE EQUIPMENT. UNSALVAGEABLE EQUIPMENT SHALL BE DISPOSED OF PROPERLY.
 - ALL CABLES AND CONDUITS FEEDING DISCONNECT AND LOCAL CONTROL STATION SHALL BE REMOVED. MOTOR CABLES AND CONDUIT SHALL BE REPLACED PER SHEET E-3.
 - EXISTING PRESSURE TRANSMITTER SHALL BE REPLACED AND PROPOSED PRESSURE SWITCH SHALL BE ADDED PER SPECIFICATION 17310 AND SHEET E-13.
 - LOCATION OF PROPOSED SLUDGE TRANSFER PUMPS 1-5 VFD PANELS, REFER TO SHEET E-3.

LEGEND:
 EQUIPMENT TO BE DEMOLISHED.



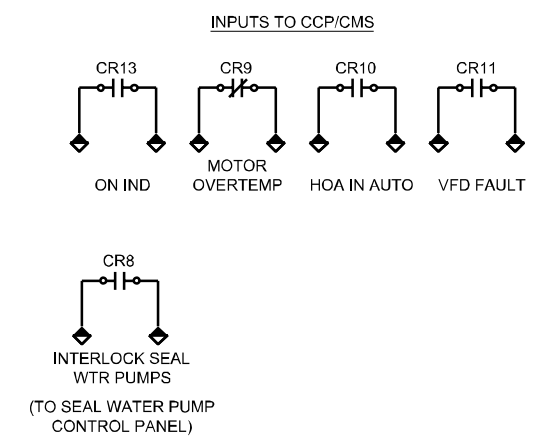
A SLUDGE TRANSFER PUMP MOTOR DIAGRAM (TYPICAL PER STP PUMPS 1-5)
SCALE: N.T.S.

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



B MOTOR SPACE HEATER/CONTROL PANEL HEATER CIRCUIT
SCALE: N.T.S.

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

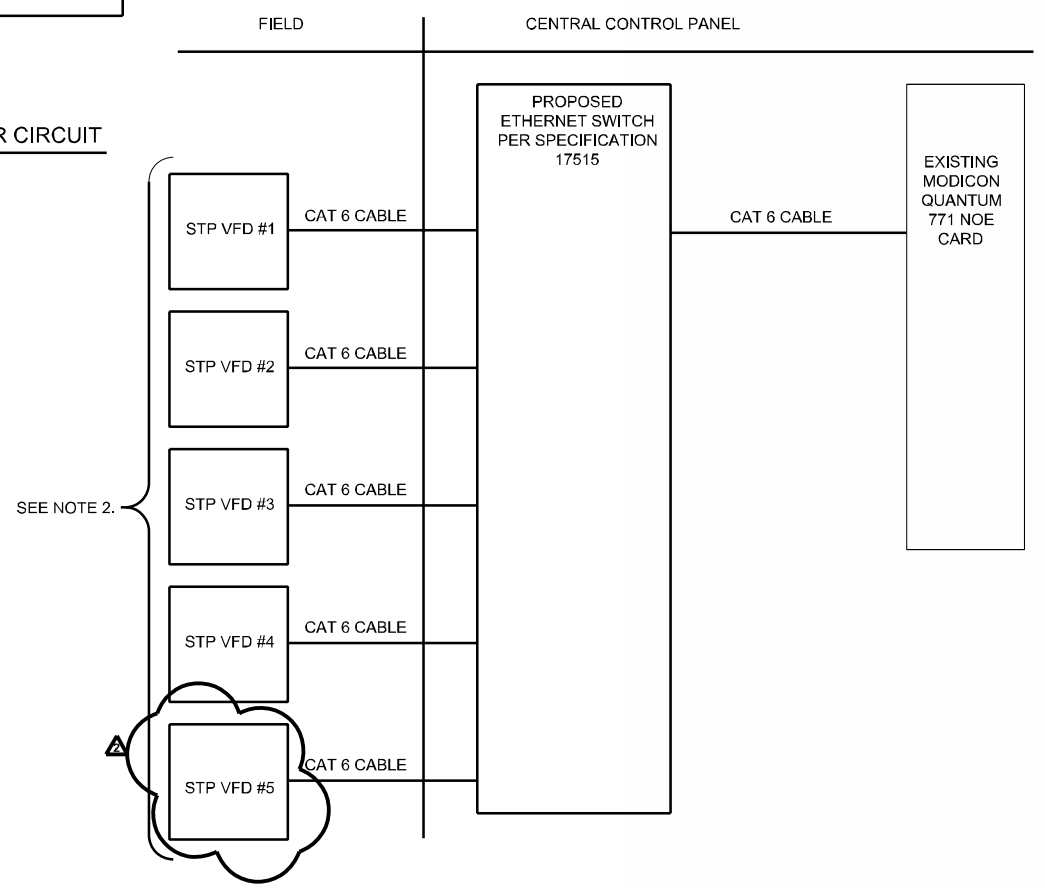


C CENTRAL CONTROL PANEL CONNECTIONS
SCALE: N.T.S.

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

NOTES:

- REPLACEMENT HIGH DISCHARGE PRESSURE SWITCH SHALL BE CONNECTED TO CONTROL PANEL AS SHOWN USING NEW CABLES AND CONDUIT PER SHEET E-3.
- VFD'S MUST BE EQUIPPED WITH ETHERNET/IP COMMUNICATION CARDS.
- VFD MUST BE PROGRAMMED WITH BUILT IN TIME DELAY ASSOCIATED WITH MOTOR OVERTEMPERATURE INPUT TO ALLOW FOR MOTOR INTERNAL OVERTEMPERATURE CONTACTS TO CLOSE UPON POWER ENERGIZATION.
- CONTROL PANEL HEATER WILL BE POWERED BY ONE OF THE TWO CONTROL POWER TRANSFORMERS LOCATED FOR THE MOTOR CONTROL CIRCUITS.



C CENTRAL CONTROL PANEL CONNECTIONS
SCALE: N.T.S.

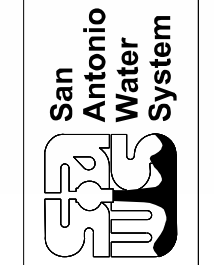
◆ TERMINAL POINT IN CENTRAL CONTROL PANEL
DARK SIDE INDICATES CONNECTION INTERNAL TO PANEL.

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
- CCP CENTRAL CONTROL PANEL
- CMS CENTRAL MONITORING SYSTEM

REVISIONS	Date	Appr'd	Drn.	Description
	12/20/13	CKG	SG	ADDENDUM #2

INFORMATION
GRUBB ENGINEERING, INC.
ELECTRICAL POWER SYSTEMS
DESIGN & TESTING
TUBE FRM REGISTRATION #3904
3128 SIDNEY BROOKS, SAN ANTONIO, TEXAS 78238
PH: 210.682.7750 FAX: 210.682.8993



DOS RIOS SLUDGE BLEND/THICKENING
COMPLEX AUTOMATION PROJECT
PROPOSED SLUDGE TRANSFER
PUMPS MOTOR CONTROL AND
COMMUNICATIONS DIAGRAMS

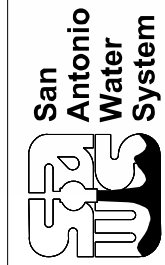


REVISIONS	Date	Appr'd	Drn.
	12/20/13	CKG	SG

INFORMATION

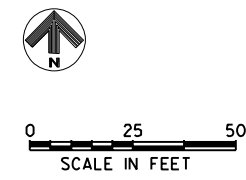
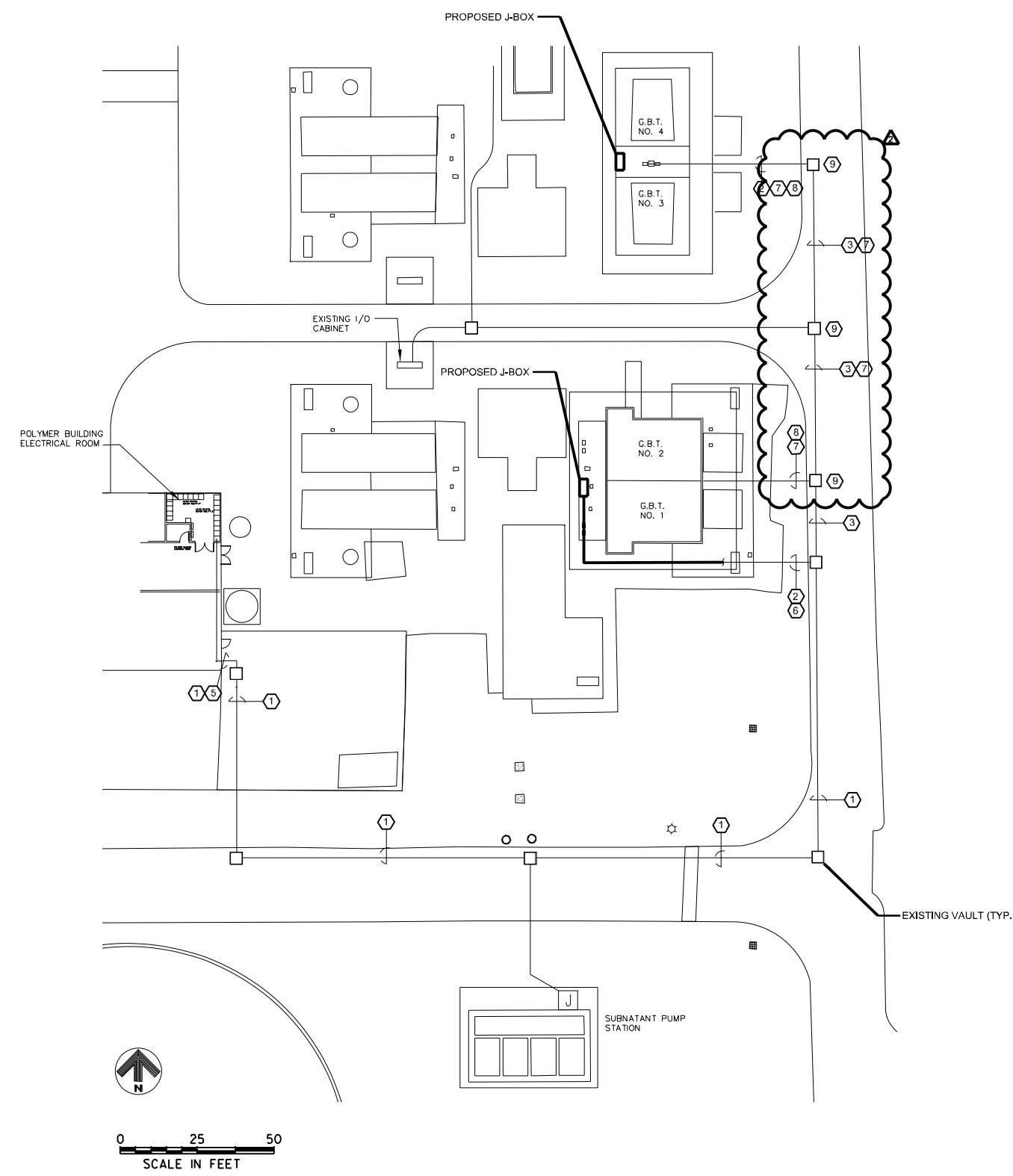
GRUBB ENGINEERING, INC.
ELECTRICAL POWER SYSTEMS
DESIGN & TESTING
TYPE PRM REGISTRATION #3904
3128 SIDNEY BROOKS, SAN ANTONIO, TEXAS 78238
PH: 210-682-7750 FAX: 210-682-9895

Date: 11/20/2013
Drawn by: SG
Designed by: CKG
Checked by: RDG
Scale: AS NOTED
Approved by: RDG
Map No.: XXX-XXX



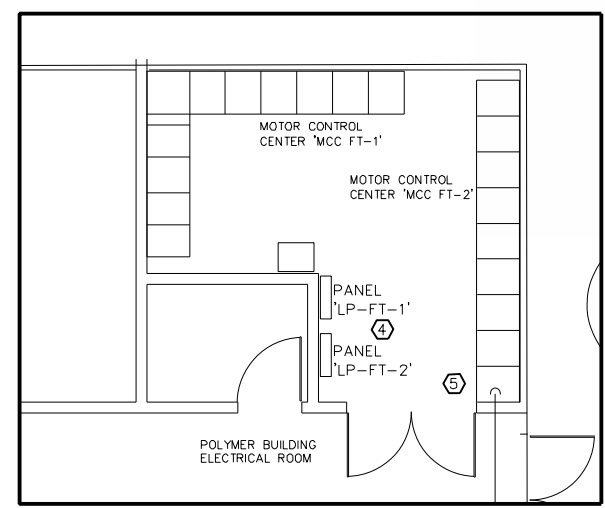
**DOS RIOS SLUDGE BLEND/THICKENING
COMPLEX AUTOMATION PROJECT**

**PROPOSED POWER CABLE ROUTING TO
GBT FLOW CONTROL VALVES**



A PARTIAL SITE PLAN
SCALE: AS SHOWN

- KEYED NOTES:**
- CONTRACTOR SHALL UTILIZE THREE OF THE EXISTING 1" SPARE CONDUITS TO ROUTE CABLES FOR PROPOSED FLOW CONTROL VALVES FEEDING THE GRAVITY BELT THICKENERS AND FOR TRANSFORMER FEEDING GBT MASTER PLC. THE FOLLOWING CABLES SHALL BE ROUTED THROUGH EACH OF THE EXISTING 1" CONDUITS: TO EACH OF THE TWO FLOW CONTROL VALVE JUNCTION BOXES 3-#4 THWN W/1-#10 GND. TO 5KVA TRANSFORMER 2-#2 THWN W/1-#10 GND.
 - CONTRACTOR SHALL UTILIZE ONE OF THE EXISTING 1" SPARE CONDUITS TO ROUTE 3-#4 THWN W/1-#10 GND TO PROPOSED JUNCTION BOX AS SHOWN. SPARE CONDUIT CURRENTLY FEEDS GBT CONTROL PANEL, CONDUIT SHALL BE UNCOUPLED FROM GBT CONTROL PANEL AND EXTENDED USING RIGID ALUMINUM CONDUIT TO JUNCTION BOX. SEE SHEET E-8 FOR CONTINUATION OF CONDUIT/CABLE ROUTING TO FLOW CONTROL VALVES.
 - CONTRACTOR SHALL UTILIZE ONE OF THE EXISTING 1" SPARE CONDUITS TO EXTEND 3-#4 THWN W/1-#10 GND TO EXISTING VAULT AS SHOWN.
 - TWO NEW 3 POLE 30A RATED 208V BREAKERS AND ONE NEW 2 POLE 30A RATED 208V BREAKER SHALL BE ADDED TO EITHER EXISTING LP-FT-1 OR LP-FT-2 DEPENDING UPON WHERE SPARE CIRCUITS ARE AVAILABLE. BREAKERS SHALL FEED FLOW CONTROL VALVES FOR GBTs 1&2 AND GBTs 3&4 AND 5KVA TRANSFORMER, RESPECTIVELY.
 - IF TWO SPARE 1" CONDUITS TO VAULT OUTSIDE OF POLYMER BUILDING ARE NOT EXISTING, NEW ALUMINUM CONDUITS SHALL BE ADDED.
 - CONTRACTOR SHALL UTILIZE ONE OF THE EXISTING 1" SPARE CONDUITS TO ROUTE 2-#2 THWN W/1-#10 GND TO EXISTING VAULT AS SHOWN.
 - CONTRACTOR SHALL UTILIZE ONE OF THE EXISTING 1" SPARE CONDUITS TO ROUTE 2-CAT6 CABLES FOR LOCAL CONTROL PANEL PLC COMMUNICATION WITH MASTER PLC.
 - NEMA 4X JUNCTION BOX SHALL BE ADDED TO SEPARATE CABLES INTO CORRESPONDING LOCAL CONTROL PANEL.
 - COMMUNICATIONS CABLES WITHIN EXISTING VAULTS MUST BE SEPARATED BY APPROPRIATE PERMANENT BARRIER PER NEC.



B EXISTING POLYMER BUILDING ELECTRICAL ROOM PLAN
SCALE: AS SHOWN

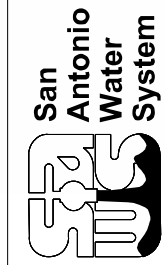


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Approved	CKG

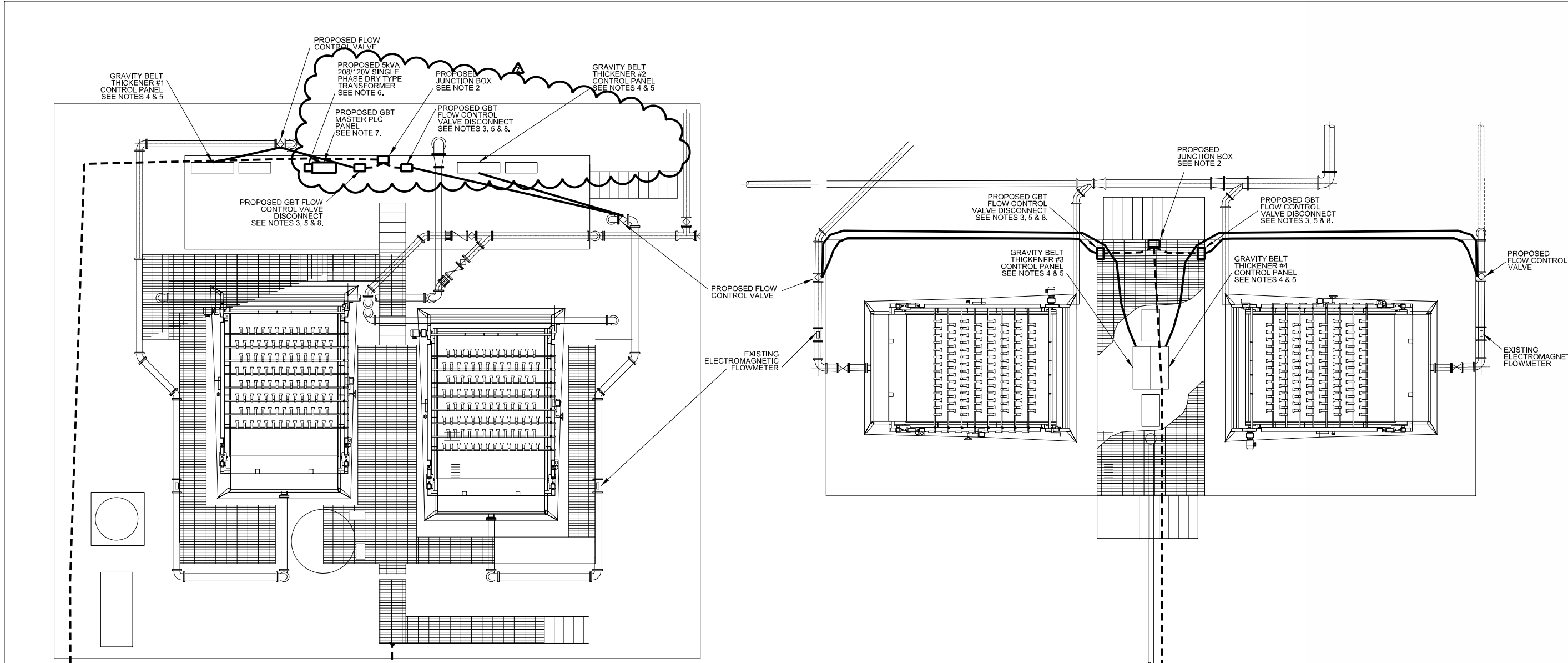
Revisions	Description	No.
Drm.	SG	
ADDENDUM #2		

INFORMATION
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**DOS RIOS SLUDGE BLEND/THICKENING
 COMPLEX AUTOMATION PROJECT**
 MODIFICATION TO EXISTING GRAVITY
 BELT THICKENERS ELECTRICAL SITE
 PLANS



FROM EXISTING VAULT SEE SHEET E-7, NOTES 1 AND 6.

FROM EXISTING VAULT SEE SHEET E-7 AND NOTE 9.

FROM EXISTING VAULTS SEE SHEET E-7, NOTE 1 AND 9.

A EXISTING GRAVITY BELT THICKENERS NO. 1 & 2
SCALE: AS SHOWN

B EXISTING GRAVITY BELT THICKENERS NO. 3 & 4
SCALE: AS SHOWN

- NOTES:
- EXISTING 1" SPARE CONDUIT FROM EXISTING VAULT SHALL BE USED FOR FLOW CONTROL VALVE POWER CABLE ROUTING. EXISTING SPARE CONDUIT ENTERING GBT CONTROL PANEL SHALL BE UNCOUPLED AND EXTENDED TO JUNCTION BOX AS SHOWN. IF NO SPARE CONDUITS EXIST, NEW 1" ALUMINUM CONDUIT SHALL BE ADDED AND ROUTED TO NEW JUNCTION BOX. POWER CABLES SHALL BE CONNECTED TO POWER DISTRIBUTION BLOCKS LOCATED IN JUNCTION BOX. TWO SETS OF CABLES FROM POWER DISTRIBUTION BLOCKS SHALL THEN FEED DISCONNECTS FOR FLOW CONTROL VALVES.
 - NEW 1" ALUMINUM CONDUIT SHALL BE ROUTED FROM DISCONNECT TO VALVE CONTROL PANEL. 4-#10 THWN CABLES (1 GND) SHALL BE ROUTED THROUGH CONDUIT FOR VALVE CONTROL PANEL POWER.
 - TWO NEW 1" ALUMINUM CONDUITS SHALL BE ROUTED FROM GBT CONTROL PANEL TO VALVE CONTROL PANEL. ONE CONDUIT SHALL CONTAIN TWO #16 TW/SH/PR CABLES FOR ANALOG SPEED INPUTS AND OUTPUTS AND THE OTHER CONDUIT SHALL CONTAIN 13-#12 THWN CABLES (1-GROUND) FOR VALVE OPEN/CLOSE/REMOTE CONTROLS.
 - ROUTE CONDUIT ALONG BASIN OUTER WALL AS SHOWN. USE CONDUIT CLAMPS TO AFFIX CONDUIT TO WALL.
 - EXISTING 1" SPARE CONDUIT FROM EXISTING VAULT SHALL BE USED FOR 5KVA TRANSFORMER SERVING GBT MASTER PLC PANEL. ROUTE CAT6 CABLES FROM EXISTING GBT LOCAL CONTROL PANELS 3 & 4 VIA NEW 1" ALUMINUM CONDUITS.
 - COMMUNICATIONS CONDUITS ARE NOT SHOWN FOR CLARITY. FOUR 1" CONDUITS EACH CONTAINING A CAT6 CABLE SHALL BE ROUTED TO EACH OF THE EXISTING GBT LOCAL CONTROL PANELS.
 - REFER TO SPECIFICATION 16412 FOR DISCONNECT REQUIREMENTS.
 - EXISTING 1" SPARE CONDUIT SHALL BE USED FOR CAT6 COMMUNICATIONS CABLES TO GBT LOCAL CONTROL PANELS 1 & 2.
 - NEW JUNCTION BOX SHALL BE ADDED TO SEPARATE CABLES. IF NO SPARE CONDUITS EXIST, NEW 1" ALUMINUM CONDUIT SHALL BE ADDED AND ROUTED TO NEW JUNCTION BOX.