

ADDENDUM NO. 2
TO THE CONTRACT DOCUMENTS
for the construction of

Date: 6/18/18
Project No.: 691778

SHAMROCK, BLALOCK & HOOPER RESERVOIRS – WATER QUALITY IMPROVEMENTS

CLAYTON COUNTY WATER AUTHORITY
CLAYTON COUNTY, GEORGIA

To All Plan holders and/or Prospective Bidders:

The following changes, additions, and/or deletions are hereby made a part of the Contract Documents for the construction of the Shamrock, Blalock & Hooper Reservoirs – Water Quality Improvements dated June 18, 2018 as fully and completely as if the same were fully set forth therein:

A. **CLARIFICATION**

Response to questions received (response in italics)

1. Section 00 41 00 Bid Form, Part D Cash Allowances includes a heading titled “Cash Allowance for Field and Laboratory Testing” however the schedule only includes line items for surveying, landscaping and unforeseen elements. Please clarify whether field testing (for soils and concrete materials) will be paid for by an allowance.

A \$20,000 allowance for field and laboratory testing is included in contract, see change to the bid form included in this addendum.

2. Section 43 40 01 Paragraph 3.04.A requires the Contractor to fill the tank with 50% sodium hydroxide, 15% sodium hypochlorite and 25% hydrofluosilicic acid.
 - a. Please confirm the proportions of the contents. What is required to fill the remaining 10% of tank volume?
 - b. Is the Contractor required to provide chemicals for any other tanks, or just the Day Tank in Section 43 40 01?

All chemical tanks on the project to be filled as a part of contract, tanks to be filled with 40% ferric chloride solution only. See change to Specification Section 43 40 01 in this addendum.

3. Drawing 08-N-601 Note 1 and 10-D-201 Keynote 1 indicate that the oxygen supply system (including vaporizers, switchers, control panel, etc.) will be provided by others, however Section 01 31 13 Paragraph 1.05B only mentions a leased tank.
 - a. Please clarify the scope of the LOX equipment that will be provided by others.
 - b. Please clarify the scheduled delivery date for the remainder of the LOX equipment.

LOX system scope provided by others includes all the items shown on sheet 10-D-201 (tank, vaporizers, vaporizer switcher, pressure regulator, low temperature shutoff, associated piping and valves etc.). All LOX system equipment shall be ready for installation by February 15th, 2019.

4. Can you provide us with a copy of the shop drawings / submittal for the leased LOX system?

Shop drawings and submittal information cannot be provided, see attached request for bid package for liquid oxygen and tank rental information.

5. Can you provide us with the LOX vendor's scope of supply (and/or agreement) for the LOX system?

See attached request for bid package for liquid oxygen and tank rental for Sharmock and Blalock Reservoirs for scope of supply from LOX vendor.

6. Please refer to Drawings 50-D-101 and 50-D-201 for the Ferric Chloride Storage Tank replacement at Hooper Reservoir. Can you clarify whether a new concrete pad is required for the new tank?

Contractor to plan on using existing pad.

7. Please refer to Section 40 27 00 Piping Schedule.
- a. Lining/Coating column is blank for all lines. Can you confirm that no lining/coating of any pipe is required?
 - b. Lining/Coating column heading includes reference for Footnote 2 which is not include. Please provide Footnote 2 if it applies to this project.
 - c. No color is specified for exposed ALP and GOX. Can you confirm that these lines are not required to be painted?

No lining/ coating of any pipe is required; reference to footnote 2 does not apply. See change to Specification Section 40 27 00 in this addendum.

8. Drawing 15-D-201 Section "A" includes a containment curb. Can you provide the layout of this curb in plan view?

No containment curb is needed.

9. Drawing 05-C-202 shows a relocated power pole. Can you confirm the new power pole and removal of existing is not in the contract?

Removal of existing power pole and relocation of new power pole is included in the contract.

10. Can you provide elevations for the existing RW piping at the chemical injection points? Refer to Drawings 05-Y-203 (1 ea) and 05-Y-206 (2 ea) for locations.
There is only 1 chemical injection manhole for this project. It is located on 05-Y-203. The detail for this manhole, including estimated RW pipeline elevation is shown on Drawing 05-Y-203.
The detail for the chemical manholes shown on 05-Y-206 is found on Standard Detail 3305-710. This is not an injection manhole. See Standard Detail for clarification.

11. Supplementary Conditions, Article 7.10D makes reference to prevailing wages. Are we required to comply with Davis-Bacon wage rates for this project?

No, there is no federal funding of this work and therefore is not subject to Davis-Bacon.

12. Based on our preliminary CPM schedule we believe an additional 90 days is needed to substantially complete the work at the Shamrock/Blalock Reservoirs Site. We are waiting for the equipment suppliers to confirm lead times, but we typically experience at least 6 months just for procurement, submittals, approval and delivery of the PAC system equipment. Also, depending on the timing of Project NTP and the LOX equipment not being delivered until 2/15/19, delivery of the LOX equipment could become just as critical to the schedule. Please advise if substantial completion for the Shamrock/Blalock Reservoir Improvements can be revised to 240 days.

See attached addendum for revision of contract times. If owner supplied equipment does not arrive by date specified in contract, Contract Times will be modified by Change Order.

13. Please confirm the utility transformers and utility power meters shown on drawings 05-Y-201 and 05-Y-203 are to be provided and installed by the utility company and are not part of this contract.

Yes this is correct, but contractor is responsible for supplying and installing meter can and for coordination with utility on meter socket type.

14. Please confirm the primary conduit, conductors, and terminations for the utility transformers shown on drawings 05-Y-201 and 05-Y-203 are by the utility company and are not part of this contract.

Contractor is responsible for conduit and pull string. The utility pulls the conductors and terminates at the transformer and meter can.

15. Keynote 3 on drawing 15-E-201 references “existing panel 020-CP located in the Raw Water Pumping Station Electrical Room. See Site Plan.” This building and panel is not shown/labeled on the drawings. Please provide location of Raw Water Pumping Station Electrical Room and panel 020-CP.

Raw water pump station label added on sheet 05-Y-206. See attached reference documents for location of electrical room and panel 020-CP.

16. Please confirm the electrical power and control conduit/wire requirements for the LOX system, beyond the one 1”C-[A2] control conduit shown on drawing 10-E-201, are not a part of this contract and will be provided by others

Correct, that portion of the scope is under the packaged system provider.

17. Keynotes 1, 7, and 8 on drawing 50-E-201 reference existing MCCs 50MCC1 & 50MCC2, and existing panel 500CP.
- a. Please provide nameplate information with manufacturer and model number for 50MCC1 & 50MCC2.
 - b. Please provide location of 50MCC1, 50MCC2, and 500CP in order to capture the conduit/wire runs per keynotes 7 and 8 between the MCCs and 500CP.

See attached reference documents for additional information on 50MCC1,2 and 500 CP.

18. Keynote 6 on drawing 50-E-201 references providing a breaker in existing 50SWBD for a new water heater.
- a. Please provide nameplate information with manufacturer, model number, and breaker type for 50SWBD.
 - b. Please provide location of 50SWBD in order to capture power conduit/wire for the new water heater.

See attached reference documents for additional information on 500SWBD.

19. Drawing 08-N-603 shows an analog input and output in bold between existing 500CP and existing 502CP1. Please confirm if these are new circuits with new conduit and wire, and if new, please provide location of 500CP.

Signals between 500CP and 502CP1 will be new circuits with new conduit and wire. See attached reference documents for location of 500CP

20. We have utilized your Clayton County website for MBE, WBE, DBE, and SLBE sources of contacts for solicitation purposes. We would like to solicit from additional sources, if available. Any assistance or leads to potential sources of MBE, WBE, DBE, and SLBE Firms and/or contacts on this bid package would be greatly appreciated.

It is recommended that you visit the websites of the below listed agencies to access their list of certified vendors.

- *City of Atlanta Office of Contract Compliance*
- *DeKalb County Office of Purchasing and Contracting*

- Clayton County Government Central Services
- Georgia Department of Transportation

B. PART 1, PROCUREMENT REQUIREMENTS

1. Section 00 41 00, Bid Form

Page 3, Paragraph D, DELETE and REPLACE with the following:

A. CASH ALLOWANCES

Cash Allowance for Field and Laboratory Testing:

Bidder agrees that the products and services, as further described in the Supplementary Conditions for the tests required in individual technical specification sections, will be furnished and paid for on a cash allowance basis.

Bidder further acknowledges that the cash allowance includes only those costs described in Section 01 29 00, Payment Procedures, and that all other costs associated with testing are included in the Lump Sum Bid.

Item	Description	Allowance
1.	Field and Laboratory Testing	\$20,000
2.	Construction Verification Surveying	\$10,000
3.	Landscaping	\$60,000
4.	Unforeseen Work Elements	\$250,000
Total Amount For Allowances		\$340,000

TOTAL AMOUNT OF CASH ALLOWANCES: \$340,000.

C. PART 2, CONTRACTING REQUIREMENTS

1. Section 00 52 00, Agreement

Page 1, Paragraph 3.1.1, DELETE and REPLACE with the following:

3.1.1 Contractor shall achieve substantial completion of the Shamrock/ Blalock portion of the work excluding the PAC system within 165 days from the date the Contract Times commence to run as provided in paragraph SC-4.01 A of

the Supplementary Conditions. Contractor will achieve substantial completion for the Hooper Reservoir improvements and the PAC system within 240 days from the date the Contract Times commence to run as provided in paragraph SC-4.01 A of the Supplementary Conditions. All Work will be finally completed and ready for payment in accordance with paragraph 15.06 of the General Conditions within 300 days from the date the Contract Times commence to run.

D. **PART 3, SPECIFICATIONS**

1. Section 01 31 13 PROJECT COORDINATION

Page 3, Paragraph 1.05.B, DELETE “tank” and REPLACE with “system”

2. Section 40 27 00.00 PROCESS PIPING – GENERAL

Supplement 2, DELETE notation for footnote 2 for lining/coating header.

3. Section 43 40 01, POLYETHYLENE STORAGE TANK

Page 9, Paragraph 3.04.A and B, DELETE and REPLACE with the following:

- A. Fill storage tanks with 40 percent ferric chloride solution prior to functional and performance testing. Replace chemicals used during testing and provide Owner with full tanks of chemical prior to Contract Closeout.
- B. Coordinate with Owner to ensure delivered ferric chloride solution adheres to Owner’s specifications for the chemical.

4. Section 43 40 02, FIBERGLASS REINFORCED PLASTIC TANK

Page 7, Paragraph 3.04 DELETE and REPLACE with the following:

3.04 CHEMICALS SUPPLIED BY CONTRACTOR

- A. Fill storage tanks with 40 percent ferric chloride solution prior to functional and performance testing. Replace chemicals used during testing and provide Owner with full tanks of chemical prior to Contract Closeout.
- B. Coordinate with Owner to ensure delivered ferric chloride solution adheres to Owner’s specifications for the chemical.

3.05 SUPPLEMENTS

A. The supplements listed below, following “End of Section,” are part of this specification.

1. Tank Data Sheet.

E. **DRAWINGS**

1. 15-D-201, Section A DELETE containment curb symbol and text.
2. DELETE the following Drawings and REPLACE with the attached.
 - 05-Y-206

F. **FOR REFERENCE ONLY**

1. The following select sheets from Record Drawing Documents for WJ Hooper Water Production Plant Improvements – Phase II
 - a. 2-E-1 through 2-E-5
 - b. 50-E-1 through 50-E-10
2. Record drawings are provided for reference only and may not reflect current site conditions.
3. Request for Bid – Liquid Oxygen and Tank Rental for Shamrock and Blalock Reservoirs – Division 4 Specifications.

674010A.GN1

All Bidders shall acknowledge receipt and acceptance of this Addendum No. 2 in the Bid Form or by submitting the Addendum with the bid package. Bid Forms submitted without acknowledgment or without this Addendum will be considered in nonconformance.

CH2M HILL



Project Engineer

Appended hereto and part of Addendum No. 2:

Drawing:

05-Y-206

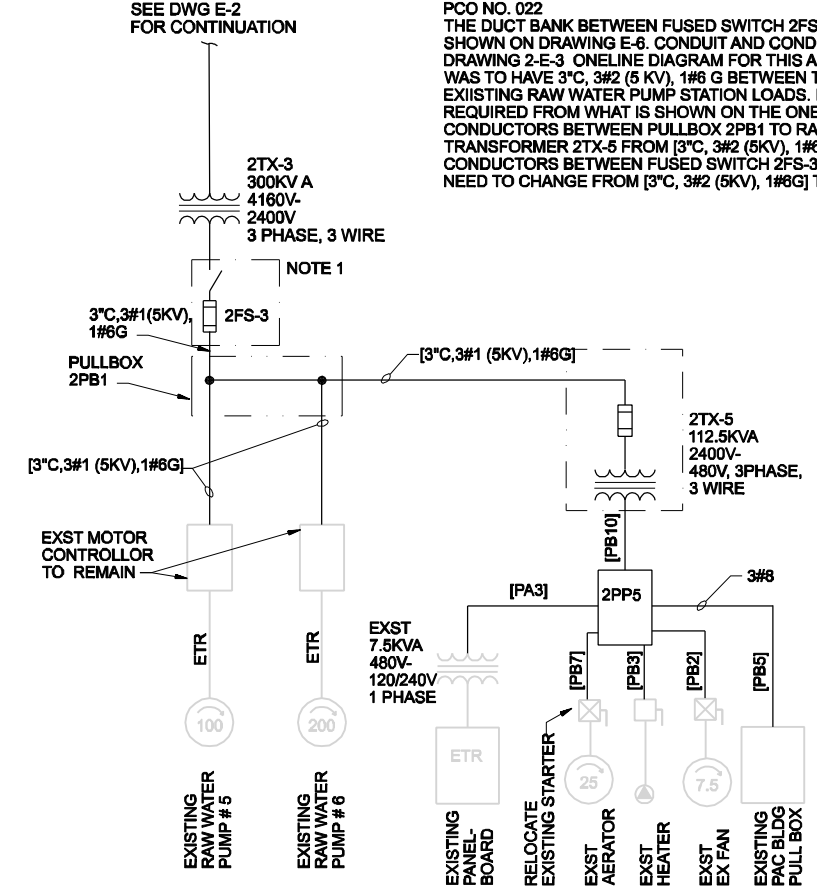
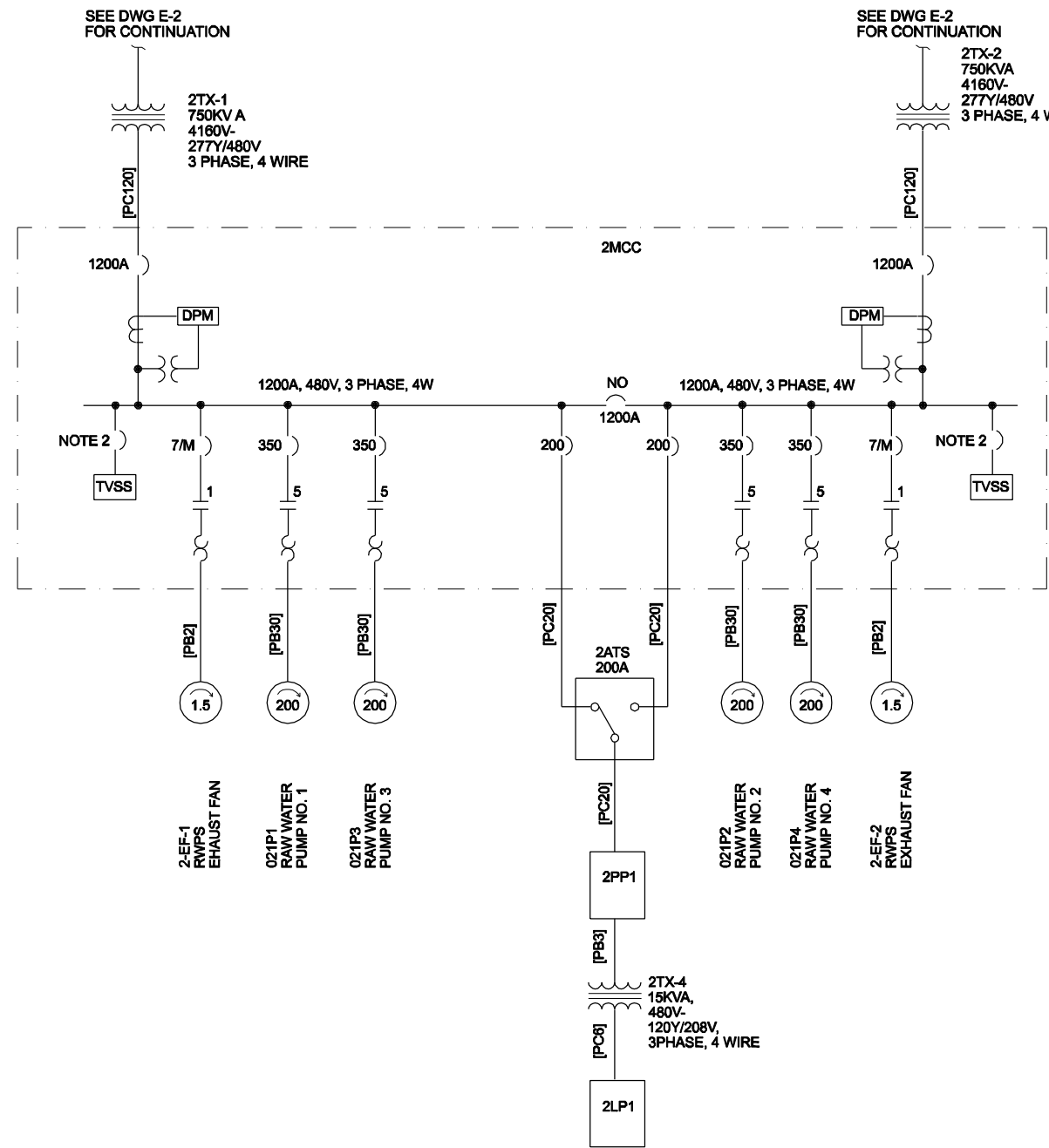
Reference Documents:

2-E-1 through 2-E-5

50-E-1 through 50-E-10

Request for Bid – Liquid Oxygen and Tank Rental for Shamrock and Blalock Reservoirs – Division 4

END OF ADDENDUM

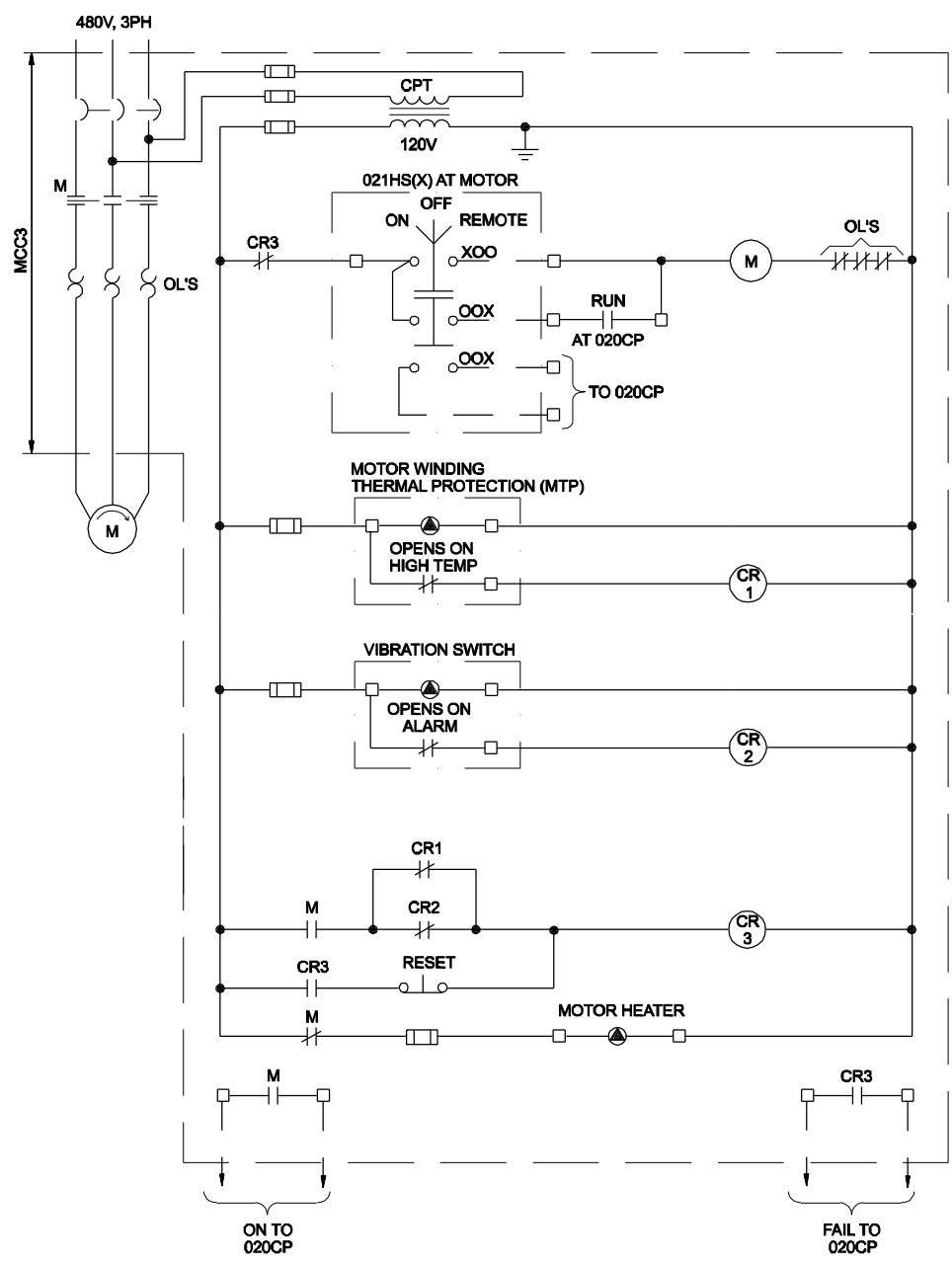


EXISTING RAW WATER PUMP STATION NO. 2

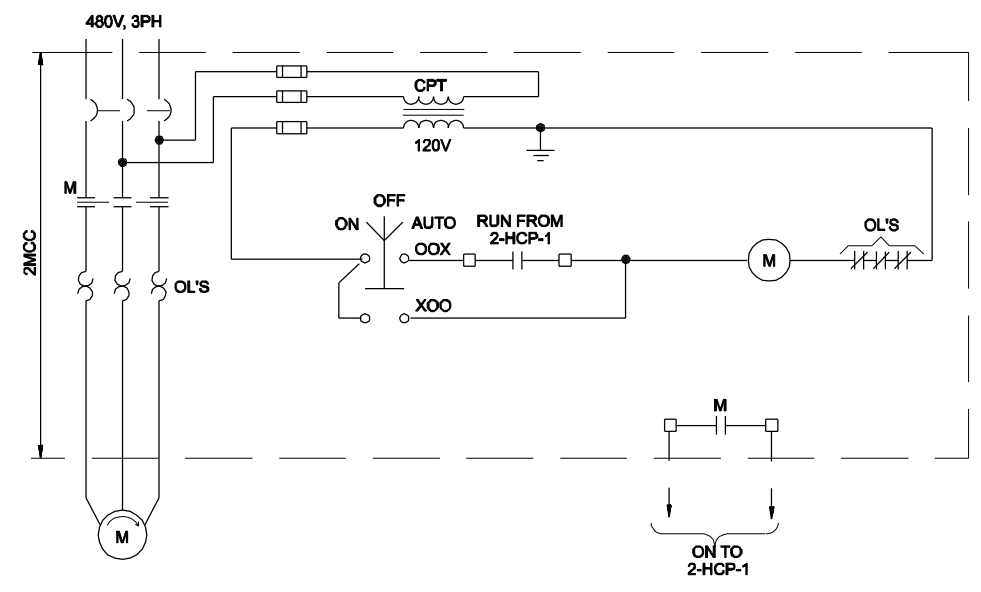
- NOTES:**
1. PROVIDE MEDIUM VOLTAGE METAL ENCLOSED 3 POLE LOAD INTERRUPTER SWITCH, RATED 5KV, 200A. FREE STANDING OUTDOOR NEMA 250 TYPE 3R ENCLOSURE. SWITCH SHALL BE UL LISTED WITH CURRENT LIMITING FUSES. FACTOR INSTALLED AUXILIARY SWITCH, STRIP HEATER AND PROVISIONS FOR A LOCK OPEN. SWITCH SHALL BE SQUARE D MINIBREAK MODEL HVMB305200 OR EQUAL.
 2. SIZE CIRCUIT BREAKER PER MANUFACTURERS RECOMMENDATIONS.

PCO NO. 022
 THE DUCT BANK BETWEEN FUSED SWITCH 2FS-3 AND PULLBOX 2PB1 IS NOT SHOWN ON DRAWING E-6. CONDUIT AND CONDUCTORS ARE SHOWN ON DRAWING 2-E-3 ONELINE DIAGRAM FOR THIS AREA. THE DESIGN INTENT WAS TO HAVE 3" C, 3#2 (5 KV), 1#6 G BETWEEN THE FUSED SWITCH AND ALL EXISTING RAW WATER PUMP STATION LOADS. HOWEVER A CHANGE IS REQUIRED FROM WHAT IS SHOWN ON THE ONELINE DIAGRAM. CHANGE CONDUCTORS BETWEEN PULLBOX 2PB1 TO RAW WATER PUMPS AND TRANSFORMER 2TX-5 FROM [3" C, 3#2 (5KV), 1#6G] TO [3" C, 3#1 (5KV), 1#6G]. CONDUCTORS BETWEEN FUSED SWITCH 2FS-3 AND PULLBOX 2PB1 ALSO NEED TO CHANGE FROM [3" C, 3#2 (5KV), 1#6G] TO [3" C, 3#1 (5KV), 1#6G].

DSGN K. HORTON DR 978002e03d.dgn N. ADAMS CHK P. KESKAR APVD K. HORTON	RECORD DRAWINGS REVISIONS DRAWN BY G. HARTLEY DATE MAY, 2006 THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CH2MHILL	CLAYTON COUNTY WATER AUTHORITY W. J. HOOPER WATER PRODUCTION PLANT IMPROVEMENTS - PHASE II MORROW, GEORGIA	ELECTRICAL RAW WATER PUMP STATION ONE-LINE DIAGRAM	DWG 2-E-3 DATE APRIL 2003 PROJ 169760.CD
	REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.					
	RECORD DRAWINGS					
	30-MAY-2006 17:09:05 978002e03d.dwg					



RAW WATER PUMPS 021P(X)
X=1,2,3,4



EXHAUST FANS
2-EF-1
2-EF-2

DSGN	K. HORTON
DR	978002a04d.dgn N. ADAMS
CHK	P. KESKAR
APVD	K. HORTON

RECORD DRAWINGS
 REVISIONS DRAWN BY G. HARTLEY DATE MAY, 2006
 THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 0 [] 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.



CLAYTON COUNTY
 WATER AUTHORITY
 W. J. HOOPER WATER PRODUCTION PLANT
 IMPROVEMENTS - PHASE II
 MORROW, GEORGIA

ELECTRICAL
**RAW WATER PUMP STATION
 CONTROL DIAGRAMS**

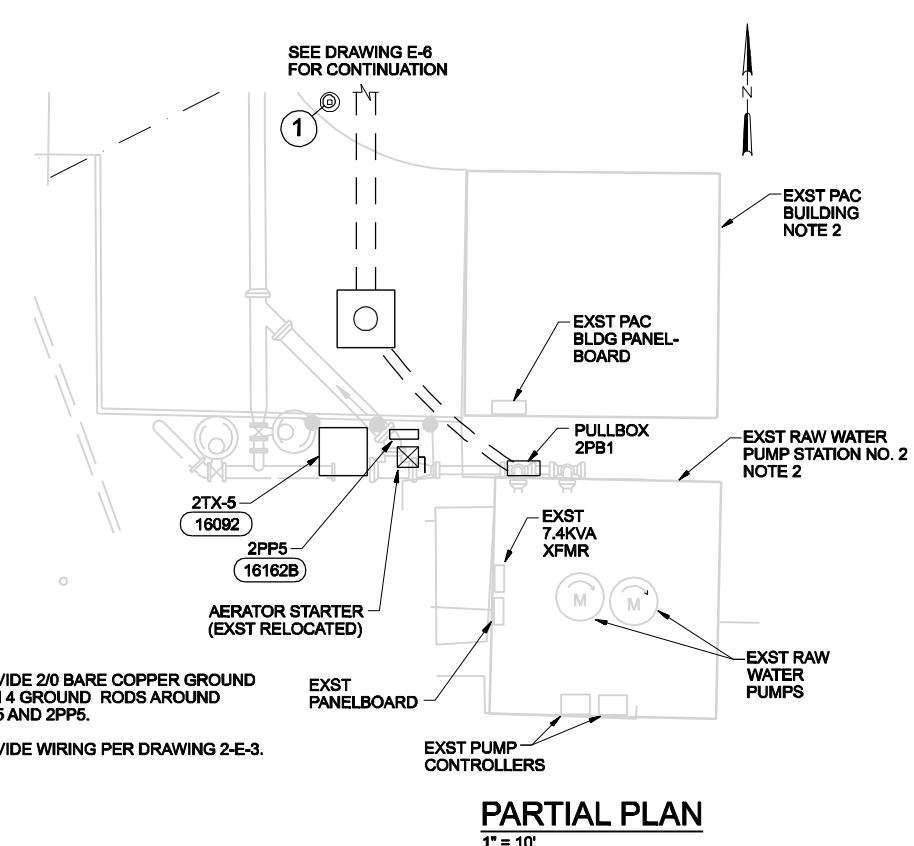
DWG	2-E-4
DATE	APRIL 2003
PROJ	169760.CD

REUSE OF DOCUMENTS: CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.
 THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL.
 RECORD DRAWINGS

FOYD IN KVA			CIRCUIT DESCRIPTION					FOYD IN KVA		
V	B	O	BK#	CKL	CKL	BK#	CIRCUIT DESCRIPTION	V	B	O
			503	4	5	503	2TX-5	20		
				3	4			20		
				2	3			20		
			503	1	2	503	5-1H-1	33		
				0	1			33		
				11	12			33		
				12	13	503	5-1H-5	33		
				13	14			33		
				14	15			33		
				15	16	503	5-1H-3	33		
				16	17			33		
				17	18			33		
				18	19	503	5-1H-1	33		
				19	20			33		
				20	21	503	5-1H-3	33		
				21	22			33		
				22	23	503	5-1H-1	33		
				23	24			33		
				24	25	503	5-1H-3	33		
				25	26			33		
				26	27	503	5-1H-1	33		
				27	28			33		
				28	29	503	5-1H-3	33		
				29	30			33		
				30	31	503	5-1H-1	33		
				31	32			33		
				32	33	503	5-1H-3	33		
				33	34			33		
				34	35	503	5-1H-1	33		
				35	36			33		
				36	37	503	5-1H-3	33		
				37	38			33		
				38	39	503	5-1H-1	33		
				39	40			33		
				40	41	503	5-1H-3	33		
				41	42			33		
00	00	00	TOTAL					554	554	554

FOYD IN KVA			CIRCUIT DESCRIPTION					FOYD IN KVA		
V	B	O	BK#	CKL	CKL	BK#	CIRCUIT DESCRIPTION	V	B	O
			503	4	5	503	2TX-5	20		
				3	4			20		
				2	3			20		
			503	1	2	503	5-1H-1	33		
				0	1			33		
				11	12			33		
				12	13	503	5-1H-5	33		
				13	14			33		
				14	15			33		
				15	16	503	5-1H-3	33		
				16	17			33		
				17	18			33		
				18	19	503	5-1H-1	33		
				19	20			33		
				20	21	503	5-1H-3	33		
				21	22			33		
				22	23	503	5-1H-1	33		
				23	24			33		
				24	25	503	5-1H-3	33		
				25	26			33		
				26	27	503	5-1H-1	33		
				27	28			33		
				28	29	503	5-1H-3	33		
				29	30			33		
				30	31	503	5-1H-1	33		
				31	32			33		
				32	33	503	5-1H-3	33		
				33	34			33		
				34	35	503	5-1H-1	33		
				35	36			33		
				36	37	503	5-1H-3	33		
				37	38			33		
				38	39	503	5-1H-1	33		
				39	40			33		
				40	41	503	5-1H-3	33		
				41	42			33		
40	54	10	TOTAL					444	444	444

FOYD IN KVA			CIRCUIT DESCRIPTION					FOYD IN KVA		
V	B	O	BK#	CKL	CKL	BK#	CIRCUIT DESCRIPTION	V	B	O
			503	4	5	503	EXHAUST FAN	50		
				3	4			50		
				2	3			50		
			503	1	2	503	LVC BRIFING	20		
				0	1			20		
				11	12			20		
				12	13	503	BLVCE	20		
				13	14			20		
				14	15			20		
				15	16			20		
				16	17			20		
				17	18			20		
				18	19			20		
				19	20			20		
				20	21			20		
				21	22			20		
				22	23			20		
				23	24			20		
				24	25			20		
				25	26			20		
				26	27			20		
				27	28			20		
				28	29			20		
				29	30			20		
				30	31			20		
				31	32			20		
				32	33			20		
				33	34			20		
				34	35			20		
				35	36			20		
				36	37			20		
				37	38			20		
				38	39			20		
				39	40			20		
				40	41			20		
				41	42			20		
14	14	14	TOTAL					242	242	242



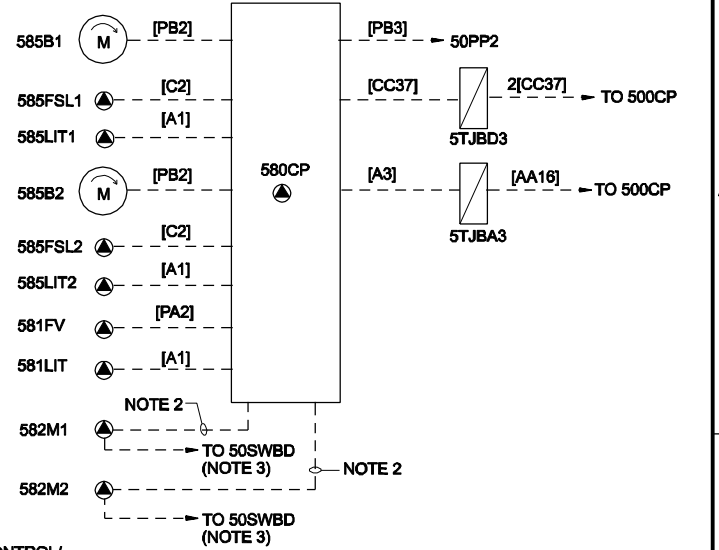
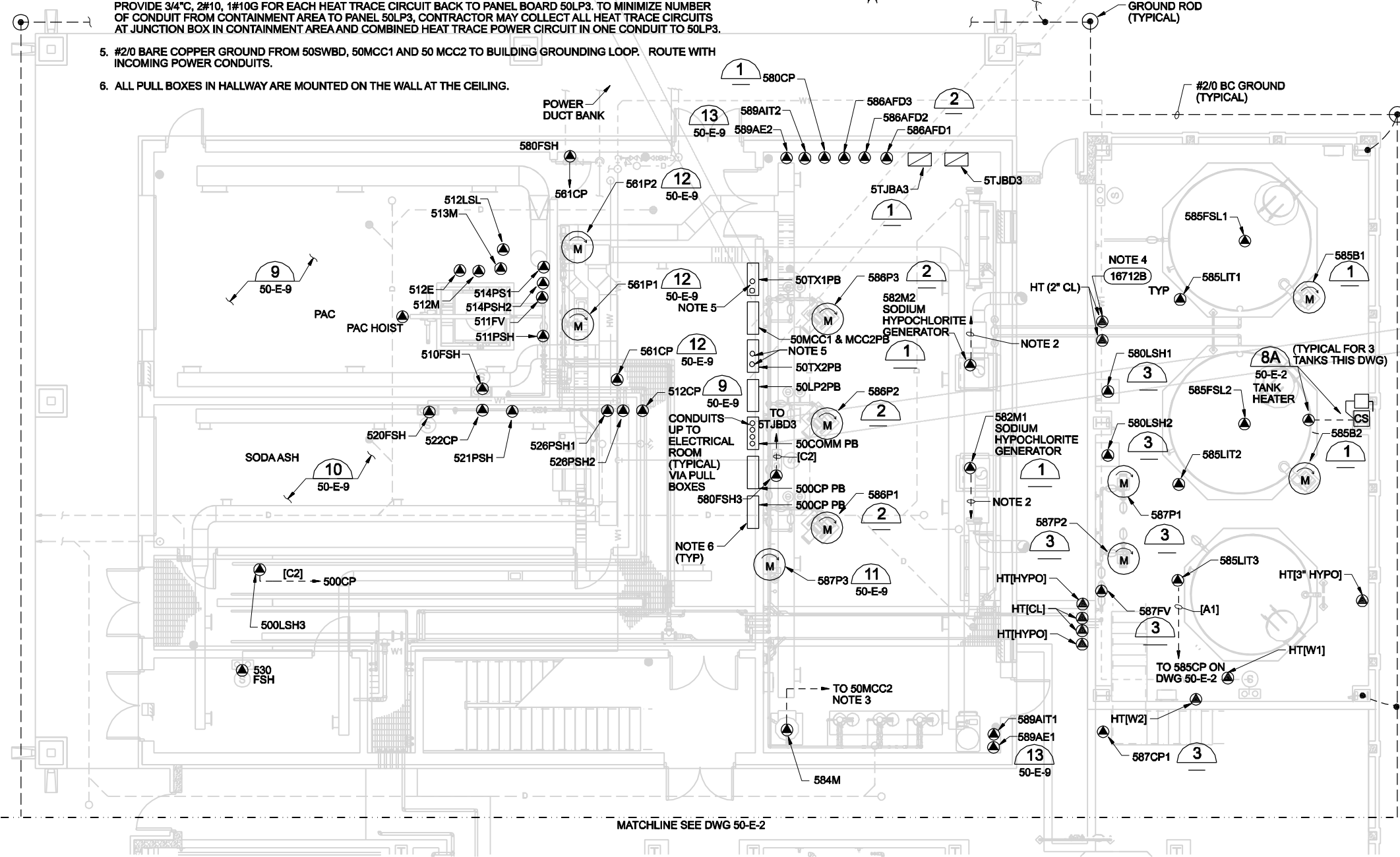
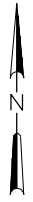
DSGN K. HORTON DR 978002e05d.dgn N. ADAMS CHK P. KESKAR APVD K. HORTON	RECORD DRAWINGS REVISIONS DRAWN BY G. HARTLEY DATE MAY, 2006 THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 [] 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CH2MHILL	CLAYTON COUNTY WATER AUTHORITY W. J. HOOPER WATER PRODUCTION PLANT IMPROVEMENTS - PHASE II MORROW, GEORGIA	ELECTRICAL RAW WATER PUMP STATION PANEL SCHEDULES AND PARTIAL PLAN	DWG 2-E-5 DATE APRIL 2003 PROJ 169760.CD
--	---	--	-----------------	--	--	--

REUSE OF DOCUMENTS: CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL. THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL.

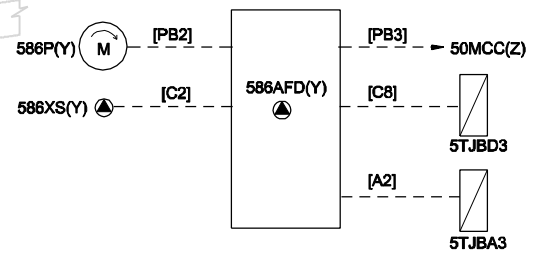
NOTES:

1. AVOID CONDUIT PENETRATIONS TO CONTAINMENT SLAB OR INSIDE SURFACE OF CONTAINMENT WALL. CONDUIT CONCEALED IN WALL SHALL EXIT FROM TOP OF CONTAINMENT WALL.
2. ALL FEEDER CABLES BETWEEN THE RECTIFIER OF THE SODIUM HYPOCHLORITE GENERATORS AND THE REST OF THE UNIT SHALL BE PROVIDED BY THE MANUFACTURER. COORDINATE CONDUIT SIZE WITH MANUFACTURER.
3. SEE ONE LINE DIAGRAM FOR ADDITIONAL CIRCUIT DESIGNATIONS.
4. SEE MECH PLANS FOR ALL PIPES REQUIRING HEAT TRACE. MOUNT GFI RECEPTACLE ABOVE CONTAINMENT WALL. PROVIDE 3/4" C, 2#10, 1#10G FOR EACH HEAT TRACE CIRCUIT BACK TO PANEL BOARD 50LP3. TO MINIMIZE NUMBER OF CONDUIT FROM CONTAINMENT AREA TO PANEL 50LP3, CONTRACTOR MAY COLLECT ALL HEAT TRACE CIRCUITS AT JUNCTION BOX IN CONTAINMENT AREA AND COMBINED HEAT TRACE POWER CIRCUIT IN ONE CONDUIT TO 50LP3.
5. #2/0 BARE COPPER GROUND FROM 50SWBD, 50MCC1 AND 50 MCC2 TO BUILDING GROUNDING LOOP. ROUTE WITH INCOMING POWER CONDUITS.
6. ALL PULL BOXES IN HALLWAY ARE MOUNTED ON THE WALL AT THE CEILING.

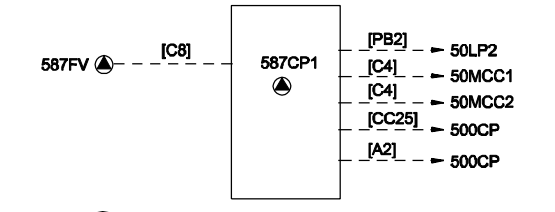
SEE DRAWING E-4 FOR CONTINUATION



WIRING DIAGRAM 1
SODIUM HYPOCHLORITE GENERATION SYSTEM



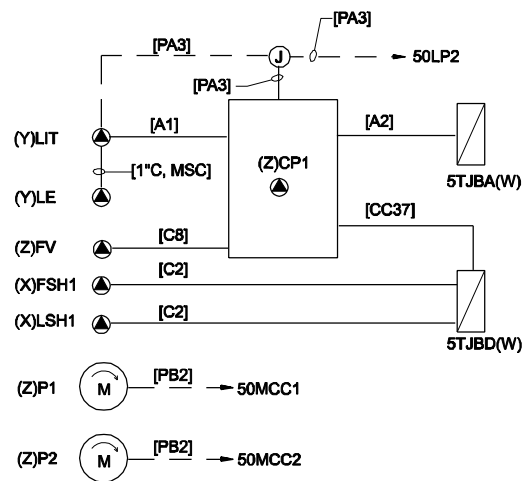
WIRING DIAGRAM 2
SODIUM HYPOCHLORITE FEED PUMP
Z = 1, WHERE Y = 1, 3
Z = 2, WHERE Y = 2



WIRING DIAGRAM 3
SODIUM HYPOCHLORITE TRANSFER PUMP

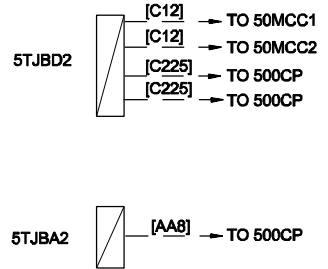
FIRST FLOOR PLAN - NORTH
3/16"=1'-0"

DSGN K. HORTON DR 978050e01d.dgn N. ADAMS CHK P. KESKAR APVD K. HORTON	RECORD DRAWINGS REVISIONS DRAWN BY G. HARTLEY DATE MAY, 2006 THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0" = 1' IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CH2MHILL	CLAYTON COUNTY WATER AUTHORITY W. J. HOOPER WATER PRODUCTION PLANT IMPROVEMENTS - PHASE II MORROW, GEORGIA	ELECTRICAL CHEMICAL FEED FACILITY FIRST FLOOR PROCESS PLAN AND WIRING DIAGRAMS	DWG 50-E-1 DATE APRIL 2003 PROJ 169760.CD
	REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.					
	RECORD DRAWINGS					
	13-JUN-2006 11:02:16 978050e01d.dwg					

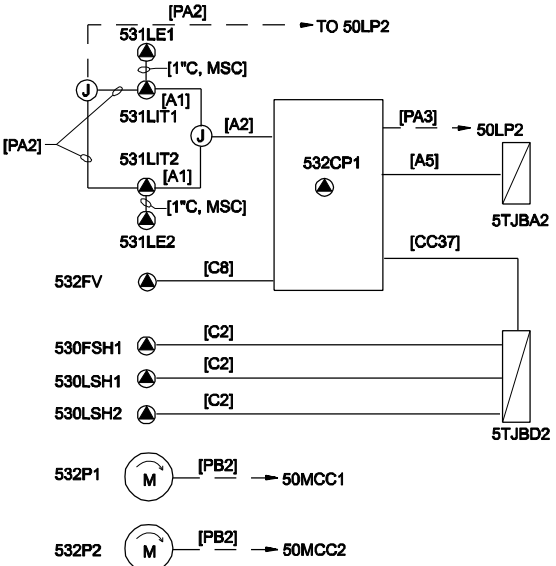


WIRING DIAGRAM 4
50-E-1, 50-E-2

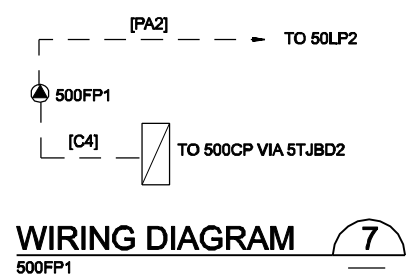
DESCRIPTION	(W)	(X)	(Y)	(Z)
FLUORIDE STORAGE TANK AREA	1	500	501	502
PHOSPHORIC ACID STORAGE TANK AREA	1	540	541	542
HYDROCHLORIC ACID STORAGE TANK AREA	1	590	591	592
SODIUM CHLORITE STORAGE TANK AREA	2	600	601	602



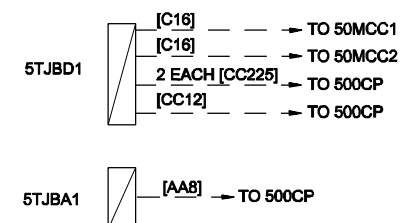
WIRING DIAGRAM 5



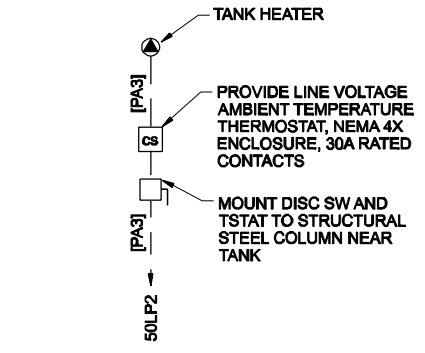
WIRING DIAGRAM 6
COAGULANT STORAGE TANK AREA



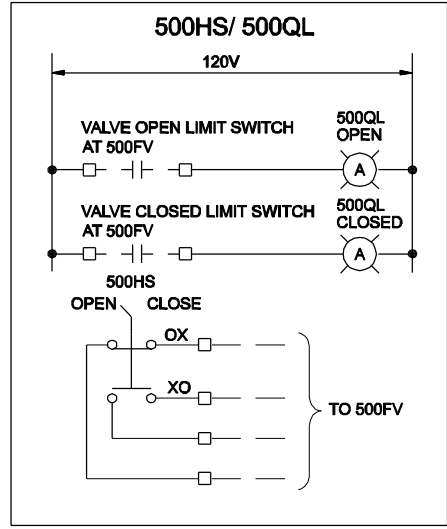
WIRING DIAGRAM 7



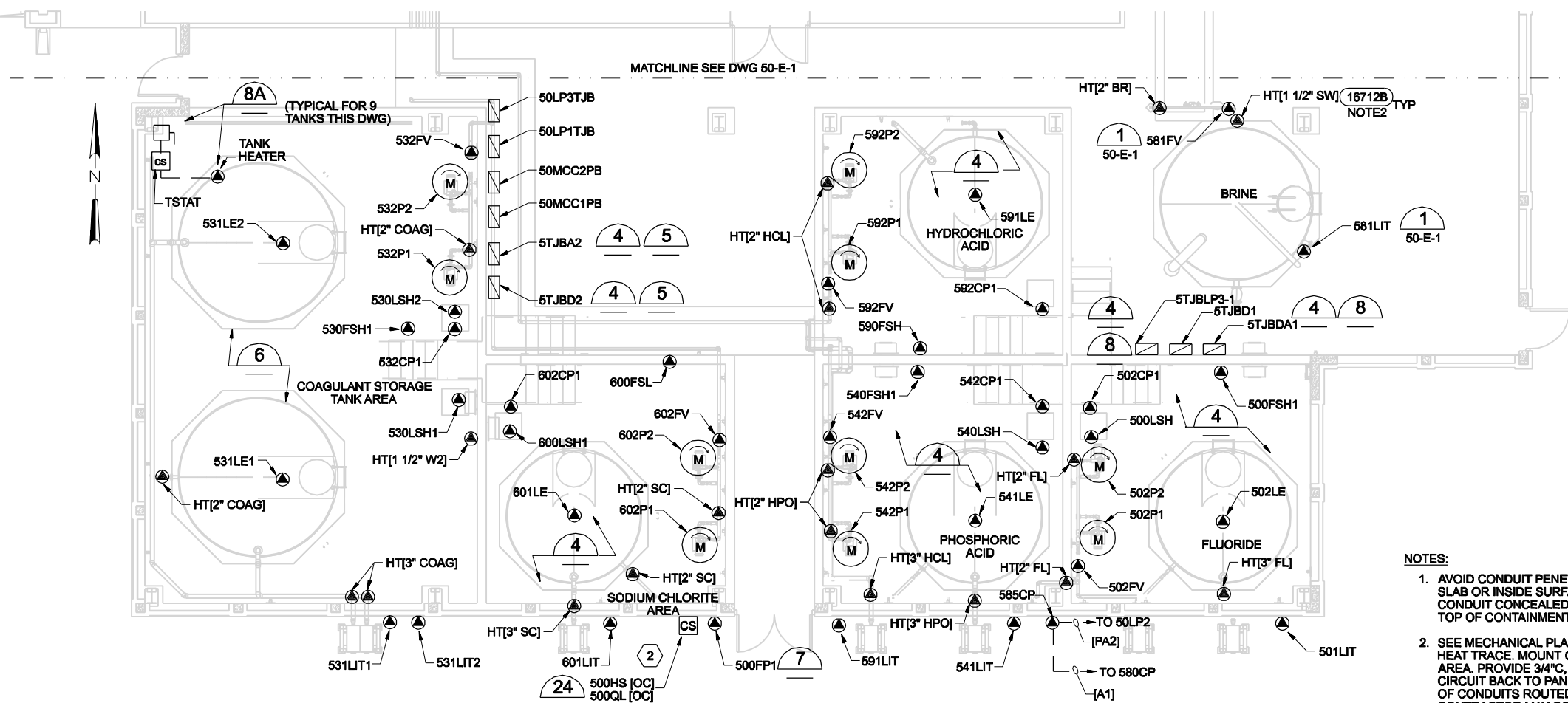
WIRING DIAGRAM 8



WIRING DIAGRAM 8A
TYPICAL FOR TANKS:
501T, 531T1, 531T2, 541T, 581T, 585T1, 585T2, 585T3, 581T, 601T



WIRING DIAGRAM 24
NTS



FIRST FLOOR PLAN - SOUTH
3/16"=1'-0"

- NOTES:**
- AVOID CONDUIT PENETRATIONS TO CONTAINMENT SLAB OR INSIDE SURFACE OF CONTAINMENT WALL. CONDUIT CONCEALED IN WALL SHALL EXIT FROM TOP OF CONTAINMENT WALL.
 - SEE MECHANICAL PLANS FOR ALL PIPES REQUIRING HEAT TRACE. MOUNT GFI RECEPTACLE ABOVE CONTAINMENT AREA. PROVIDE 3/4" C, 2#10, 1#10G FOR EACH HEAT TRACE CIRCUIT BACK TO PANEL BOARD 50LP3. TO MINIMIZE NUMBER OF CONDUITS ROUTED FROM CONTAINMENT AREA, CONTRACTOR MAY COLLECT HEAT TRACE CIRCUITS IN AN AREA TO A JUNCTION BOX AND COMBINED HEAT TRACE POWER CIRCUIT IN ONE CONDUIT TO 50LP3. INCREASE WIRE SIZE AS REQUIRED TO BY NEC FOR DERATING.

DSGN	K. HORTON
DR	978050e03d.dgn N. ADAMS
CHK	P. KESKAR
APVD	K. HORTON

RECORD DRAWINGS
REVISIONS DRAWN BY G. HARTLEY DATE MAY, 2006
THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0" = 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

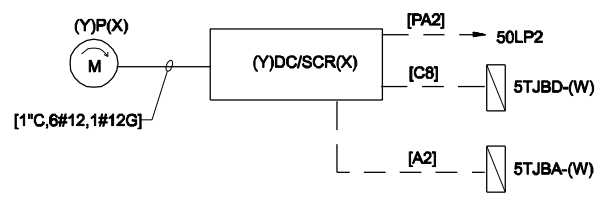
CH2MHILL

CLAYTON COUNTY WATER AUTHORITY
W. J. HOOPER WATER PRODUCTION PLANT IMPROVEMENTS - PHASE II
MORROW, GEORGIA

ELECTRICAL
CHEMICAL FEED FACILITY FIRST FLOOR PROCESS PLAN AND WIRING DIAGRAMS

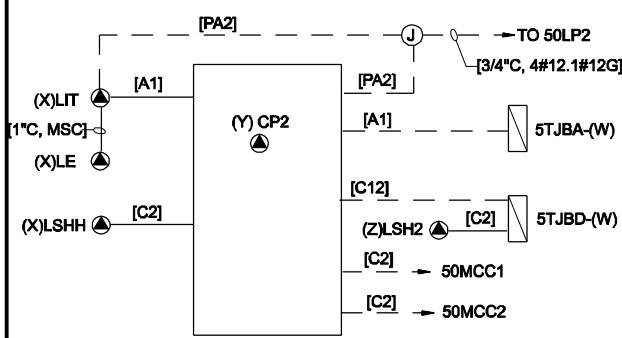
DWG	50-E-2
DATE	APRIL 2003
PROJ	169760.CD

REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2MHILL. CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2MHILL.



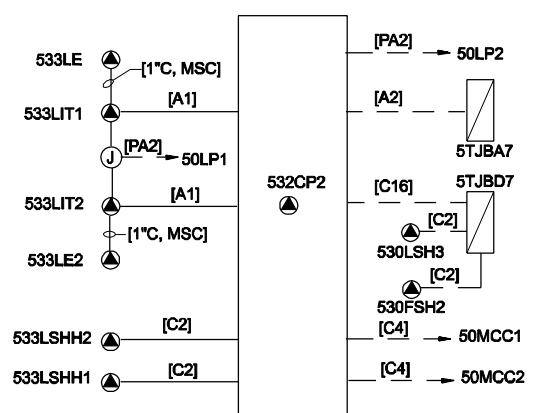
DESCRIPTION	W	X	Y
FLUORIDE FEED PUMP	4	1, 2	504
HYDROCHLORIC ACID FEED PUMP	5	1	584
FLOCCULANT AID POLYMER FEED PUMP	6	1, 2	564
COAGULANT FEED PUMP	7	1, 2, 3	534

WIRING DIAGRAM 14

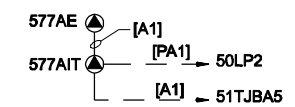


DESCRIPTION	W	X	Y	Z
FLUORIDE DAY TANK AREA	4	503	502	500
PHOSPHORIC ACID DAY TANK AREA	4	543	542	540
SODIUM HYPOCHLORITE DAY TANK AREA	5	588	587	580
HYDROCHLORITE ACID DAY TANK AREA	5	593	592	590
SODIUM CHLORITE DAY TANK AREA	5	603	602	600

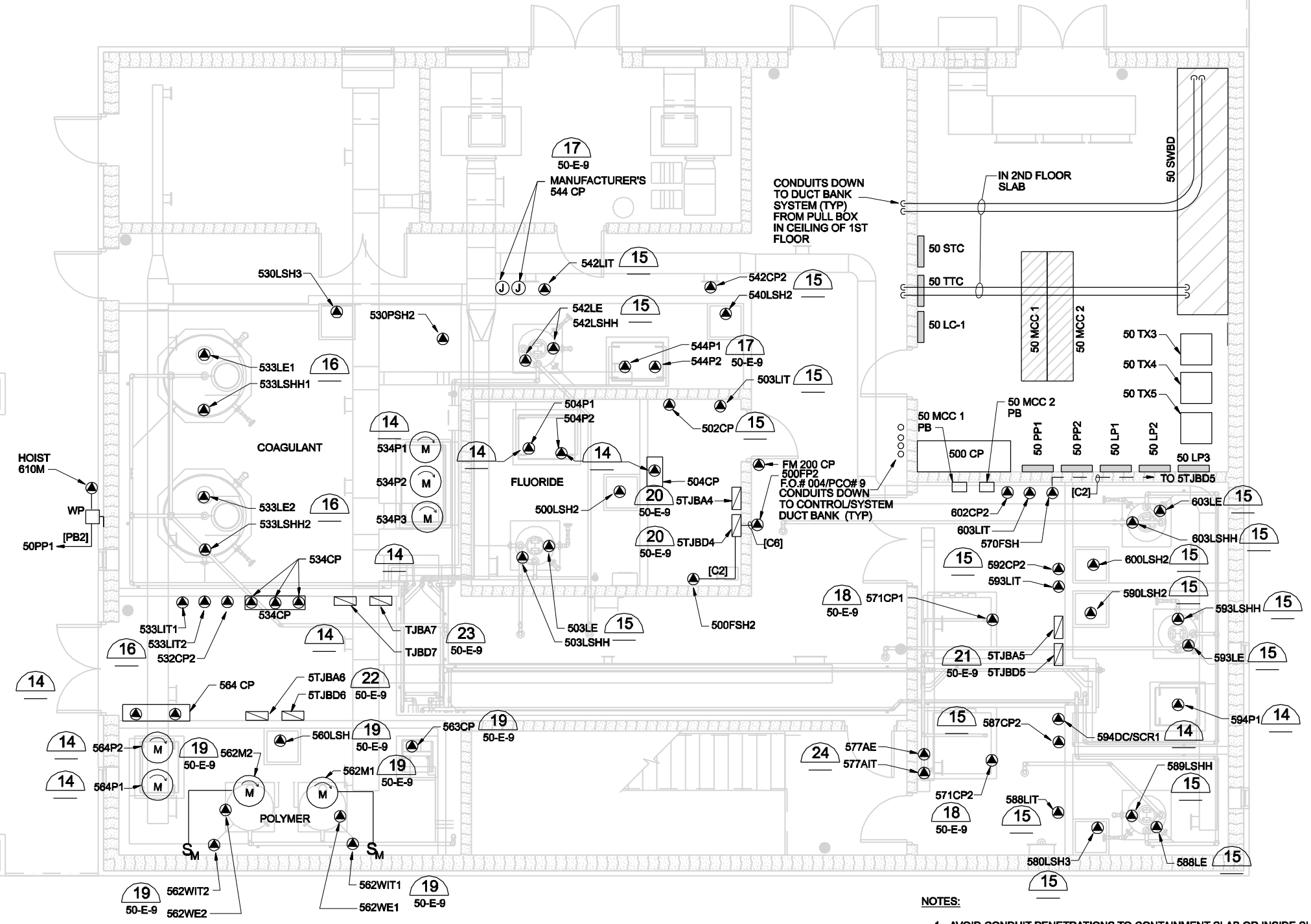
WIRING DIAGRAM 15



WIRING DIAGRAM 16
COAGULANT DAY TANK AREA



WIRING DIAGRAM 17
CHLORINE DIOXIDE GAS DETECTION



PLAN
1/4" = 1'-0"

NOTES:

1. AVOID CONDUIT PENETRATIONS TO CONTAINMENT SLAB OR INSIDE SURFACE OF CONTAINMENT WALL. CONDUIT CONCEALED IN WALL SHALL EXIT FROM TOP OF CONTAINMENT WALL.
- FIELD ORDER NO. 004, DECEMBER 08, 2003:
MOVE 500FPS LOCATION APPROXIMATELY 3' SOUTH TO AVOID CONFLICT WITH FIRE SUPPRESSION SYSTEM PANEL FM200 AND TANK.

132 PCO NO. 009
PROVIDE ONE 3/4" CONDUIT, 2#12 CONDUCTORS, 1#12 GROUND FROM FM200 PANEL TO PANEL BOARD 50LP1. USE SPARE 20A 120V CIRCUIT BREAKER IN PANEL 50LP1 FOR FM200 CONTROL PANEL.

DSGN	K. HORTON
DR	978050e02d.dgn
CHK	P. KESKAR
APVD	K. HORTON

RECORD DRAWINGS
REVISIONS DRAWN BY G. RAVENHILL DATE MAY, 2006
THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

CLAYTON COUNTY WATER AUTHORITY
W. J. HOOPER WATER PRODUCTION PLANT IMPROVEMENTS - PHASE II
MORROW, GEORGIA

ELECTRICAL
CHEMICAL FEED FACILITY SECOND FLOOR PROCESS PLAN AND WIRING DIAGRAMS

DWG	50-E-3
DATE	APRIL 2003
PROJ	169760.CD

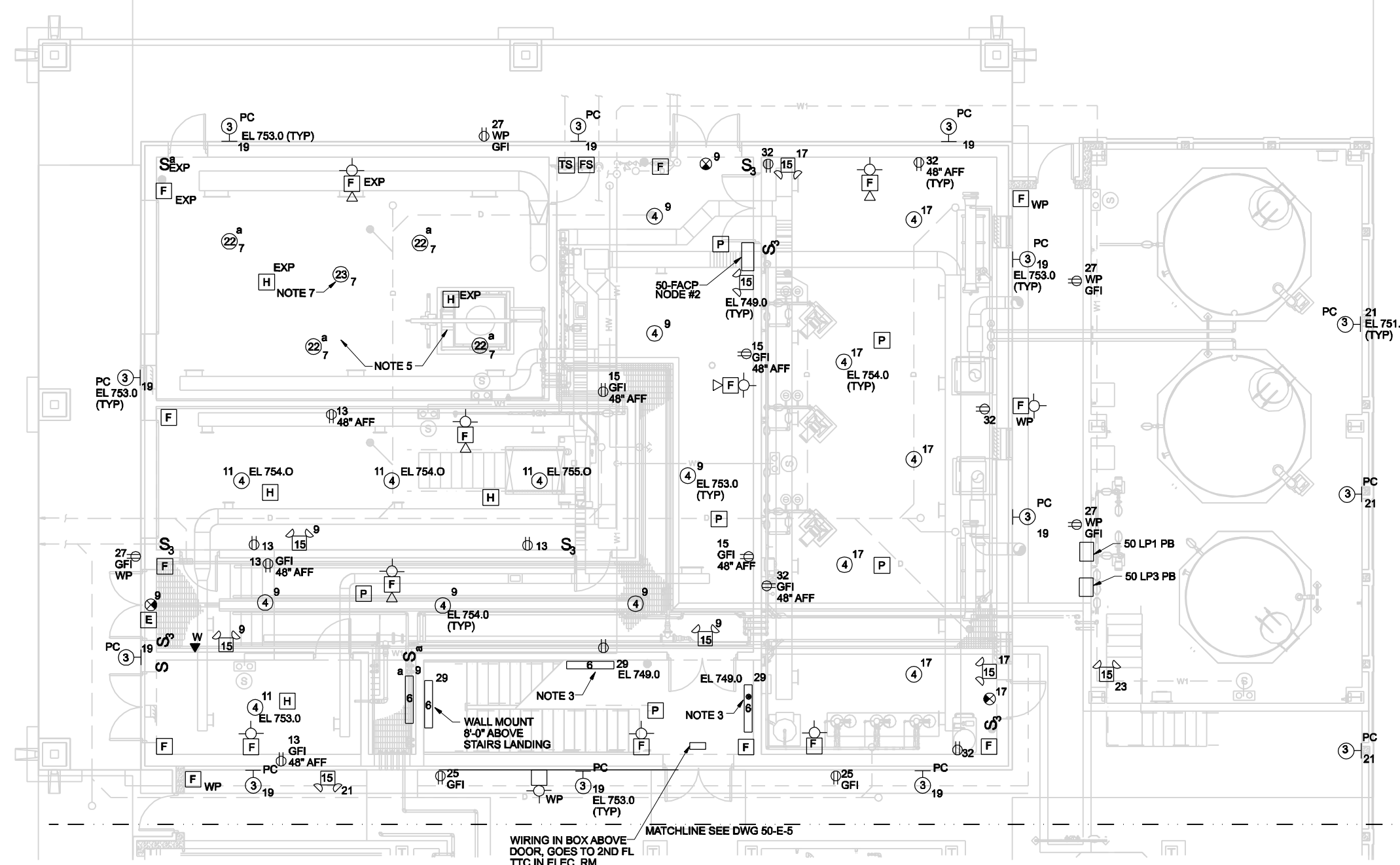
REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL. RECORD DRAWINGS

FIELD ORDER NO. 015:
ON DRAWING 50-E-4, IN THE PAC ROOM TWO (2) EXPLOSION PROOF
RECEPTACLES ARE SHOWN ON THE NORTH AND SOUTH WALLS.
SPECIFICATION SECTION 16050 DOES NOT LIST EXPLOSION
PROOF RECEPTACLES. DELETE THESE RECEPTACLES.

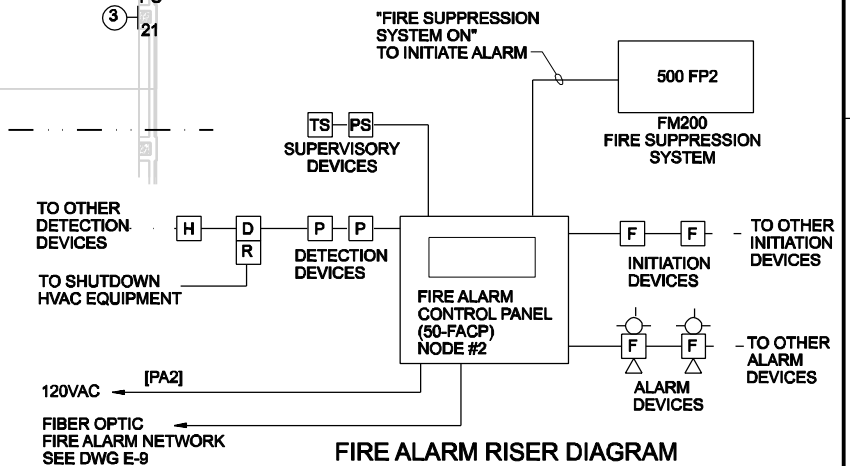
NOTES:

- 120V POWER RECEPTACLES SHALL BE POWERED FROM PANELBOARD 50LP1. PROVIDE 3/4" C, 2#12, 1#12G FROM PANELBOARD TO FIXTURE WHERE CIRCUIT BRANCH CIRCUIT LENGTHS TOTAL LESS THAN 200 FEET. PROVIDE 3/4" C, 2#10, 1#10G WHERE BRANCH CIRCUIT LENGTH TOTALS MORE THAN 200 FEET. RECEPTACLES SHALL BE MOUNTED FLUSH WITH WALL. ROUTE CONDUIT FOR RECEPTACLES CONCEALED IN WALLS OR CONCEALED BELOW FLOOR SLAB.
- LIGHTING FIXTURES SHALL BE POWERED FROM PANELBOARD 50LP1. PROVIDE 3/4" C, 2#12, 1#12G FROM PANELBOARD TO FIXTURE WHERE CIRCUIT BRANCH CIRCUIT LENGTHS TOTAL LESS THAN 200 FEET. PROVIDE 3/4" C, 2#10, 1#10G WHERE BRANCH CIRCUIT LENGTHS TOTAL MORE THAN 200 FEET. ROUTE CONDUIT CONCEALED IN WALLS WHERE PRACTICABLE (SUCH AS HOME RUNS AND SWITCHES). LIGHT SWITCHES SHALL BE MOUNTED FLUSH WITH WALL, CONDUIT TO EXTERIOR MOUNTED LIGHT FIXTURES SHALL BE CONCEALED.
- LIGHT FIXTURE SHALL BE UNSWITCHED.
- CONDUITS SHALL NOT PENETRATE CONTAINMENT AREA.
- THIS ROOM IS CLASSIFIED AS HAZARDOUS, CLASS 2 DIVISION 1, GROUP F PER THE NEC. PROVIDE SUITABLE METHODS AND MATERIALS FOR THIS CLASSIFICATION.
- CONTROLLED VIA PC AND LIGHTING CONTACTOR 50LC1.
- FIXTURE SHALL BE WIRED FOR EMERGENCY OPERATION: FIXTURE SHALL ILLUMINATE ON POWER FAILURE ONLY.

RFI #16
110 VAC EXP. PROOF STROBES MAY BE SUBSTITUTED
W/24 VOC EXP. PROOF STROBES.

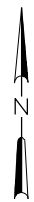


FIRST FLOOR PLAN - NORTH
3/16"=1'-0"



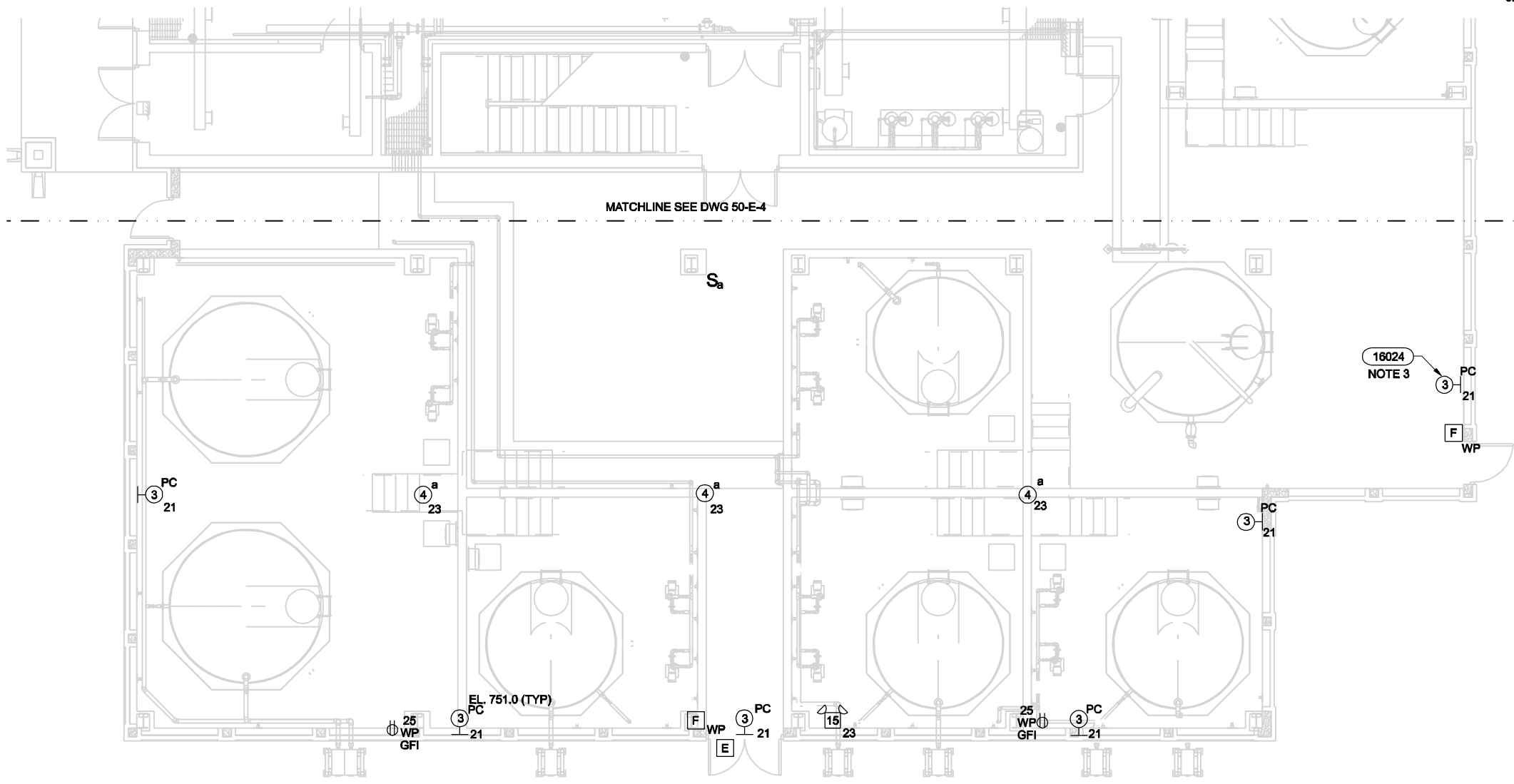
DSGN K. HORTON DR 978050e04d.dgn CHK N. ADAMS P. KESKAR APVD K. HORTON	RECORD DRAWINGS REVISIONS DRAWN BY G. HARTLEY DATE MAY, 2006 THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.		CLAYTON COUNTY WATER AUTHORITY W. J. HOOPER WATER PRODUCTION PLANT IMPROVEMENTS - PHASE II MORROW, GEORGIA	ELECTRICAL CHEMICAL FEED FACILITY FIRST FLOOR FACILITY PLAN	DWG 50-E-4
						DATE APRIL 2003
						PROJ 169760.CD
						02-JUN-2006 10:58:24 978050e04d.dwg

THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2MHILL. REUSE OF DOCUMENTS: CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2MHILL. RECORD DRAWINGS



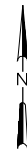
NOTES:

1. 120V POWER RECEPTACLES SHALL BE POWERED FROM PANELBOARD 50LP1. PROVIDE 3/4"C, 2#12, 1#12G FROM PANELBOARD TO FIXTURE WHERE CIRCUIT BRANCH CIRCUIT LENGTHS TOTAL LESS THAN 200 FEET. PROVIDE 3/4"C, 2#10, 1#10G WHERE BRANCH CIRCUIT LENGTH TOTALS MORE THAN 200 FEET. RECEPTACLES SHALL BE MOUNTED FLUSH WITH WALL. ROUTE CONDUIT CONCEALED IN WALLS OR CONCEALED BELOW FLOOR SLAB.
2. LIGHTING FIXTURES SHALL BE POWERED FROM PANELBOARD 50LP1. PROVIDE 3/4"C, 2#12, 1#12G FROM PANELBOARD TO FIXTURE WHERE CIRCUIT BRANCH CIRCUIT LENGTHS TOTAL LESS THAN 200 FEET. PROVIDE 3/4"C, 2#10, 1#10G WHERE BRANCH CIRCUIT LENGTHS TOTAL MORE THAN 200 FEET. ROUTE CONDUIT CONCEALED IN WALLS WHERE PRACTICABLE (SUCH AS HOME RUNS AND SWITCHES). LIGHT SWITCHES SHALL BE MOUNTED FLUSH WITH WALL, CONDUIT TO EXTERIOR MOUNTED LIGHT FIXTURES SHALL BE CONCEALED.
3. CONTROLLED VIA PC AND LIGHTING CONTACTOR 50LC1.



FIRST FLOOR PLAN - SOUTH
3/16"=1'-0"

DSGN K. HORTON DR 978050e07d.dgn N. ADAMS CHK P. KESKAR APVD K. HORTON	RECORD DRAWINGS REVISIONS DRAWN BY <u>G. HARTLEY</u> DATE <u>MAY, 2006</u> THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CH2MHILL	CLAYTON COUNTY WATER AUTHORITY W. J. HOOPER WATER PRODUCTION PLANT IMPROVEMENTS - PHASE II MORROW, GEORGIA	ELECTRICAL CHEMICAL FEED FACILITY FIRST FLOOR FACILITY PLAN	DWG 50-E-5 DATE APRIL 2003 PROJ 169760.CD
	REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL.					
	RECORD DRAWINGS					
	08-MAY-2006 08:31:47 978050e07d.dwg					



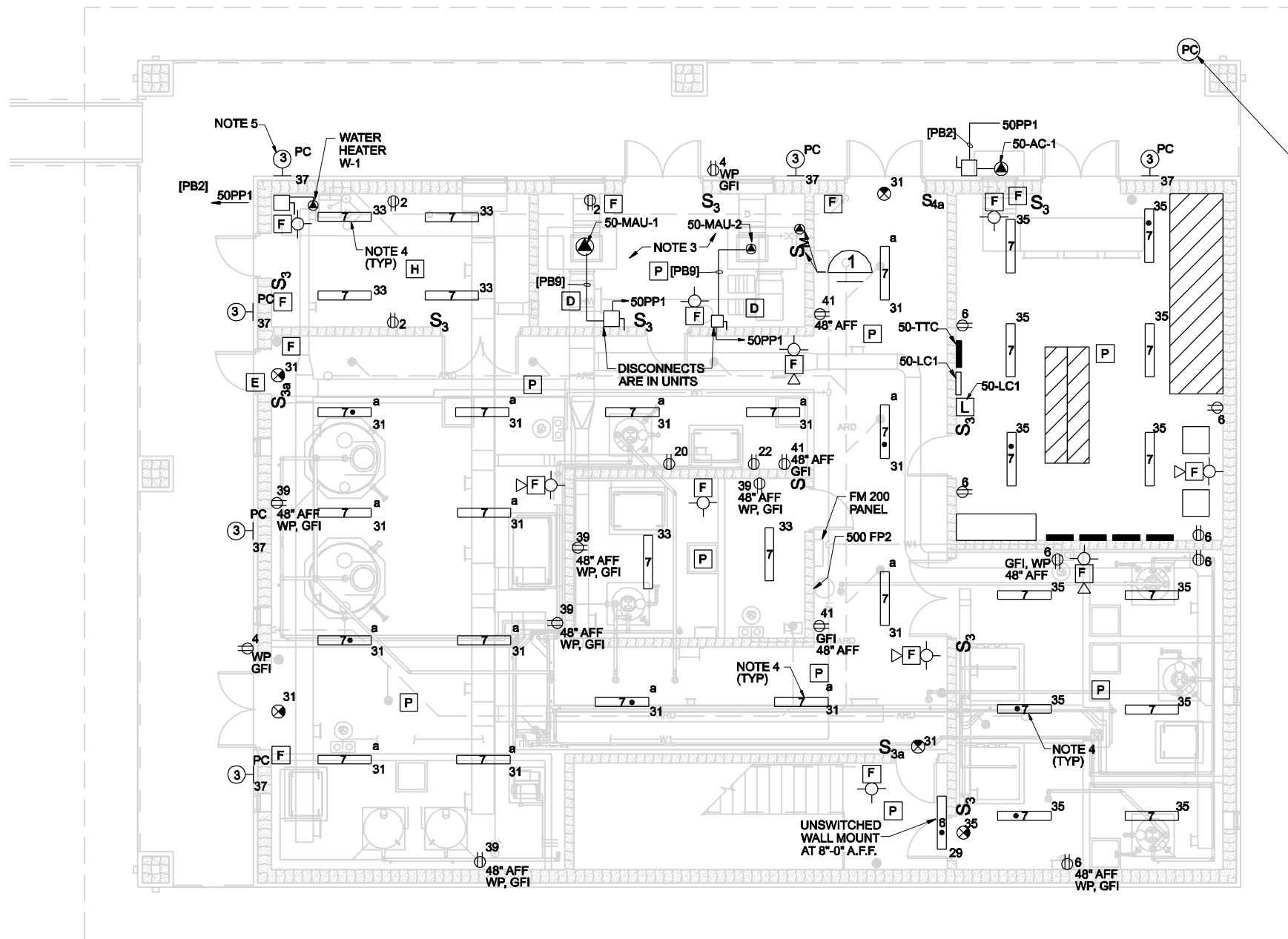
NOTES:

- 120V POWER RECEPTACLES SHALL BE POWERED FROM PANELBOARD 50LP1. PROVIDE 3/4"C, 2#12, 1#12G FROM PANELBOARD TO FIXTURE WHERE CIRCUIT BRANCH CIRCUIT LENGTHS TOTAL LESS THAN 200 FEET. PROVIDE 3/4"C, 2#10, 1#10G WHERE BRANCH CIRCUIT LENGTH TOTALS MORE THAN 200 FEET. RECEPTACLES SHALL BE MOUNTED FLUSH WITH WALL. ROUTE CONDUIT FOR RECEPTACLES CONCEALED IN WALLS OR CONCEALED BELOW FLOOR SLAB.
- PROVIDE 3/4"C, 2#12, 1#12G FROM PANELBOARD TO FIXTURE WHERE CIRCUIT BRANCH CIRCUIT LENGTHS TOTAL LESS THAN 200 FEET. PROVIDE 3/4"C, 2#10, 1#10G WHERE BRANCH CIRCUIT LENGTHS TOTAL MORE THAN 200 FEET. ROUTE CONDUIT CONCEALED IN WALLS WHERE PRACTICABLE (SUCH AS HOME RUNS AND SWITCHES). LIGHT SWITCHES SHALL BE MOUNTED FLUSH WITH WALL. CONDUIT TO EXTERIOR MOUNTED LIGHT
- PROVIDE 4 TYPE 7 LIGHT FIXTURES MOUNTED ON CEILING. FIELD LOCATED TO MINIMIZE INTERFERENCE WITH DUCTWORK. CIRCUIT TO 50LP-33.
- PENDANT MOUNT AT 10'-0" AFF.
- CONTROLLED VIA PC AND LIGHTING CONTACTOR 50LC1.

FIELD ORDER NO. 018

THE WATER HEATER POTENTIALLY CONFLICTS WITH THE DUCTWORK FOR 50-MAU-2 AND THE FIRE SPRINKLER FEED FROM THE FIRST FLOOR. ON DRAWING 50-P-2, RELOCATE THE WATER HEATER FROM THE MECHANICAL ROOM (ROOM 50-203) ON THE SECOND FLOOR TO THE MAINTENANCE ROOM (ROOM 50-207). INSTALL WATER HEATER JUST WEST OF SINK SSK-1 AND ROUTE HIGH PRESSURE RELIEF VALVE PIPING INTO SSK-1. ON DRAWING 50-E-6, RELOCATE THE HOT WATER BOOSTER PUMP SHOWN IN DETAIL 1 TO THE MAINTENANCE ROOM ALONG WITH THE HOT WATER HEATER. RELOCATE CORRESPONDING CIRCUITS FOR THE WATER HEATER AND BOOSTER PUMP. CONVERT ADJACENT DUPLEX RECEPTACLE IN MAINTENANCE ROOM TO GFI TYPE.

- (110) THE WATER HEATER FOR CHEMICAL BUILDING DOES NOT REQUIRE A RECIRCULATING BOOSTER PUMP SYSTEM. THE POWER REQUIREMENT FOR THE ELECTRIC WATER HEATER NEEDS TO BE RELOCATED.



FIELD ORDER NO. 004, DECEMBER 08, 2003: CHANGE PANEL TAGGED "500FP2" SHOWN OUTSIDE FLUORIDE PUMP ROOM TO "FM200 FIRE SUPPRESSION SYSTEM PANEL"

SECOND FLOOR PLAN
3/16" = 1'-0"

CCIR NO. 013
ON 50-E-8, TRANSFORMER 50TX5 WAS ADDED AS A RESULT OF ADDENDUM #3. DRAWING 50-E-6 DOES NOT SHOW THE LOCATION FOR TRANSFORMER 50TX5. THERE SHOULD BE SPACE NEXT TO 50TX3 AND 50TX4 TO SET 50TX5 IF THE TRANSFORMERS ARE MOUNTED CLOSER TOGETHER THEN SHOWN ON DRAWING 50-E-8. THE CONTRACTOR MAY CHOOSE TO MOUNT 50TX5 NEXT TO PANEL 50LP3 IF THIS IS AN EASIER LOCATION, HOWEVER, BE SURE FOUR FEET MINIMUM IS MAINTAINED BETWEEN ANY EQUIPMENT AND THE MCC'S IN THE MIDDLE OF THE ELECTRICAL ROOM.

DSGN	K. HORTON
DR	976050e06d.dgn
CHK	P. KESKAR
APVD	K. HORTON

RECORD DRAWINGS	
REVISIONS DRAWN BY	G. HARTLEY DATE MAY, 2006
THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.	

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 = 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.



CLAYTON COUNTY WATER AUTHORITY
W. J. HOOPER WATER PRODUCTION PLANT IMPROVEMENTS - PHASE II
MORROW, GEORGIA

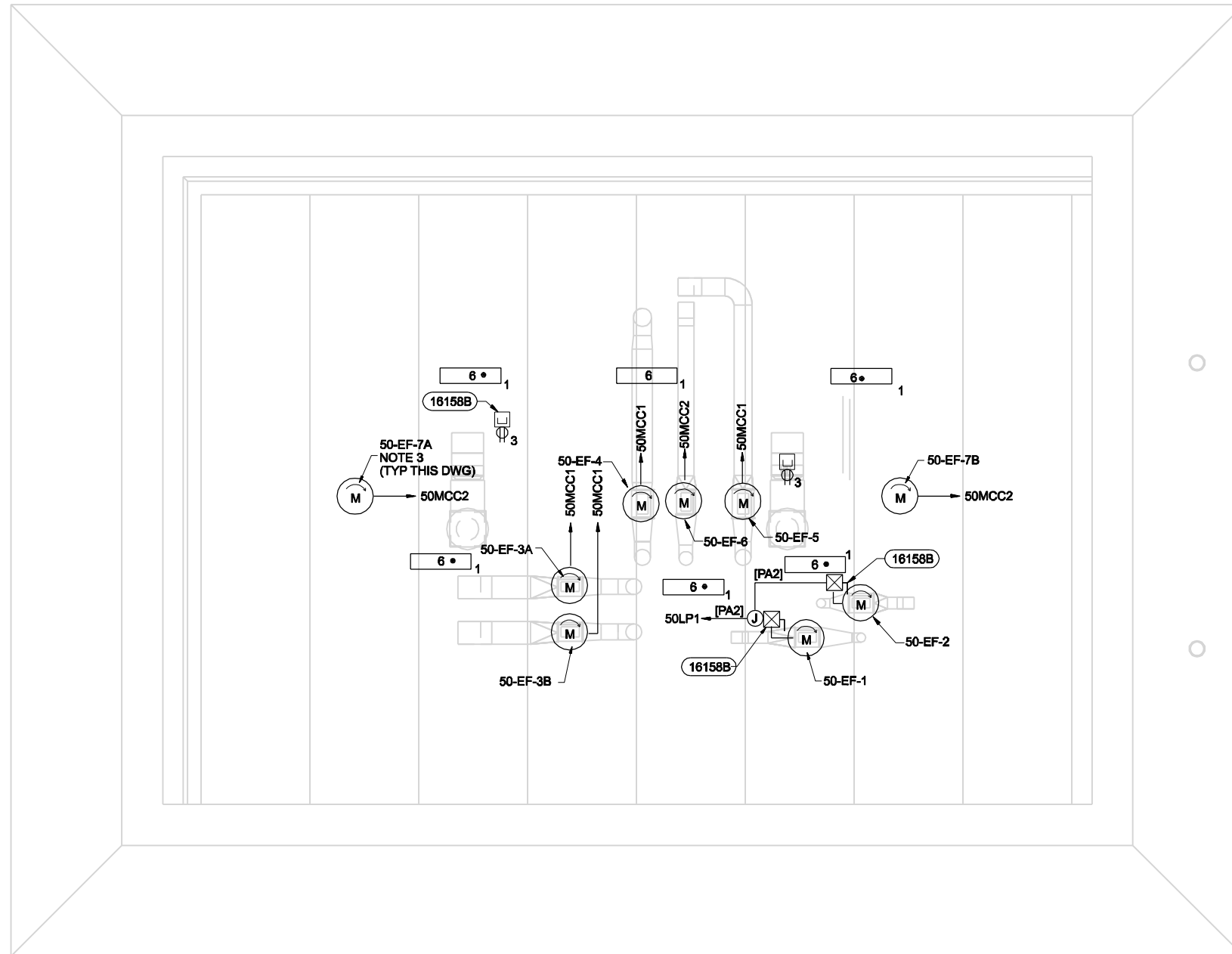
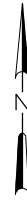
ELECTRICAL
CHEMICAL FEED FACILITY SECOND FLOOR FACILITY PLAN

DWG	50-E-6
DATE	APRIL 2003
PROJ	169760.CD

REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL. RECORD DRAWINGS

NOTES:

- 120V POWER RECEPTACLES AND LIGHT FIXTURES SHALL BE POWERED FROM PANELBOARD 50LP1. PROVIDE 3/4"C, 2#12, 1#12G FROM PANELBOARD TO FIXTURE. ROUTE CONDUIT EXPOSED FROM FIXTURE TO PANELBOARD.
- SUPPORT LIGHT FIXTURES FROM ROOF TRUSSE AT 8'-0" AFF. PROVIDE LIGHT SWITCH IN ATTIC AREA NEAR TOP OF HATCH.
- DISCONNECTS FOR EXHAUST FANS ARE SPECIFIED UNDER DIVISION 15.



ATTIC PLAN
3/16"=1'-0"

DSGN	K. HORTON
DR	978050e10d.dgn N. ADAMS
CHK	P. KESKAR
APVD	K. HORTON

RECORD DRAWINGS

REVISIONS DRAWN BY _____ DATE _____
 THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

VERIFY SCALE

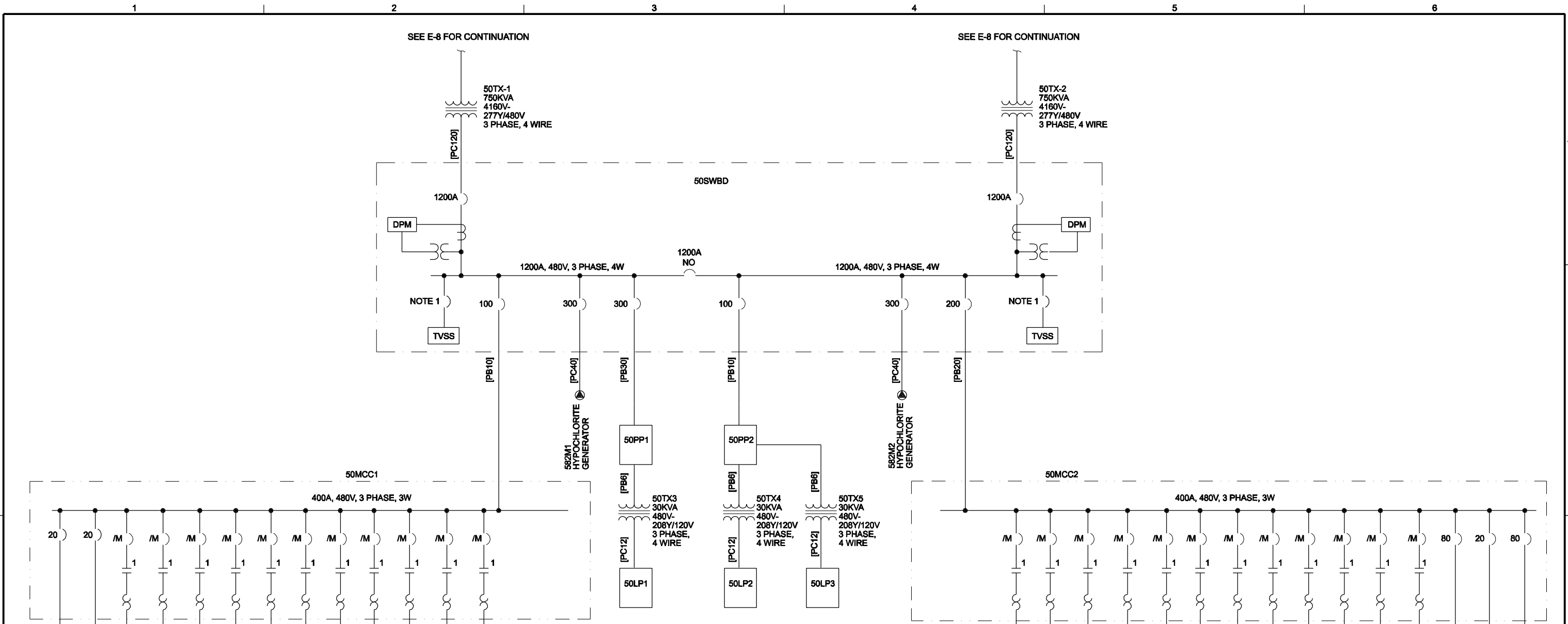
BAR IS ONE INCH ON ORIGINAL DRAWING.
 0 ██████████ 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

CLAYTON COUNTY
 WATER AUTHORITY
 W. J. HOOPER WATER PRODUCTION PLANT
 IMPROVEMENTS - PHASE II
 MORROW, GEORGIA

ELECTRICAL
 CHEMICAL FEED FACILITY
 ATTIC PLAN

DWG	50-E-7
DATE	APRIL 2003
PROJ	169760.CD



SEE E-8 FOR CONTINUATION

SEE E-8 FOR CONTINUATION

CCIR NO. 013
 ON 50-E-8, TRANSFORMER 50TX5 WAS ADDED AS A RESULT OF ADDENDUM #3. DRAWING 50-E-8 DOES NOT SHOW THE LOCATION FOR TRANSFORMER 50TX5. THERE SHOULD BE SPACE NEXT TO 50TX3 AND 50TX4 TO SET 50TX5 IF THE TRANSFORMERS ARE MOUNTED CLOSER TOGETHER THEN SHOWN ON DRAWING 50-E-8. THE CONTRACTOR MAY CHOOSE TO MOUNT 50TX5 NEXT TO PANEL 50LP3 IF THIS IS AN EASIER LOCATION, HOWEVER, BE SURE FOUR FEET MINIMUM IS MAINTAINED BETWEEN ANY EQUIPMENT AND THE MCC'S IN THE MIDDLE OF THE ELECTRICAL ROOM.

PCO NO. 046A
 PLEASE MAKE THE FOLLOWING ELECTRICAL REVISIONS TO SODIUM HYPOCHLORITE SYSTEM GENERATOR/RECTIFIERS 582M1 AND 582M2:

PROVIDE AND INSTALL (REPLACE) THE TWO (2) EXISTING HYPOCHLORITE 400A FEEDER CIRCUIT BREAKERS IN 50SWBD WITH TWO (2) 300A CIRCUIT BREAKERS. PROVIDE CREDIT AMOUNT FOR RETURNED 400A CIRCUIT BREAKERS OR TURN OVER TO CCWA AS SPARES.

PROVIDE AND INSTALL PERMANENT MEANS FOR LOCKING NEW 300 A BREAKERS IN OPEN POSITION.

CABLE AND CONDUIT FEEDER FROM 50SWBD TO RECTIFIERS 582M1 AND 582M2 TO REMAIN TO SAME (SEE 50-E-8).

PROVIDE AND INSTALL POWER DISTRIBUTION BLOCK (SQUARE D CLASS 9080 TYPE LB, #LBA385202 OR EQUAL) IN EACH OF THE TWO (2) RECTIFIER CABINETS 582M1 AND 582M2.

IN EACH RECTIFIER CABINET (582M1 AND 582M2):

LAND FEEDER 3 PHASE POWER WIRES (6 TOTAL CONDUCTORS) ON DISTRIBUTION BLOCK PROVIDE AND INSTALL THREE (3) #3/0 CONDUCTORS FROM DISTRIBUTION BLOCK TO EXISTING RECTIFIER CONTACTOR. LAND FEEDER NEUTRAL AND GROUND CONDUCTORS TO FRAME OF CABINET.

NOTES:
 1. SIZE CIRCUIT BREAKER PER MANUFACTURERS RECOMMENDATION.

DSGN	K. HORTON
DR	978050e05d.dgn
CHK	N. ADAMS
	P. KESKAR
APVD	K. HORTON

RECORD DRAWINGS
 REVISIONS DRAWN BY G. HARTLEY DATE MAY, 2006
 THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 0" = 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

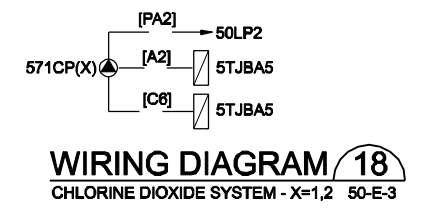
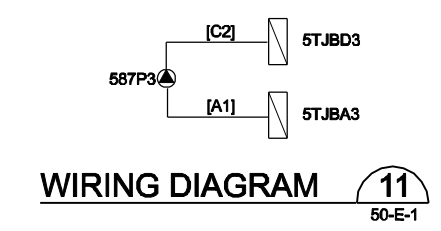
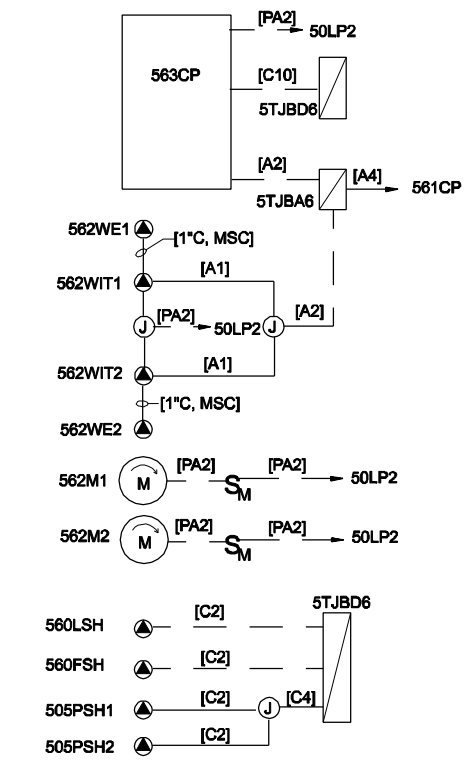
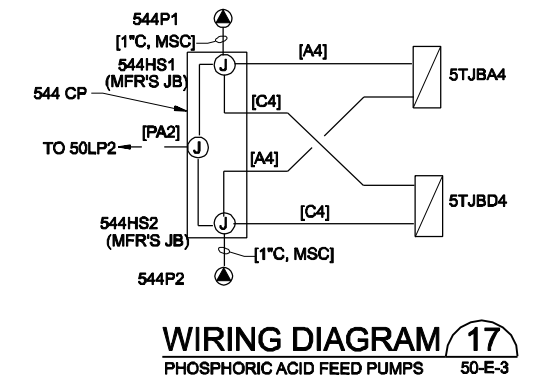
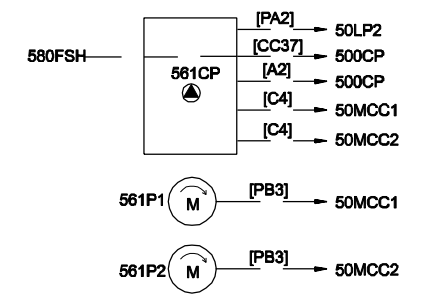
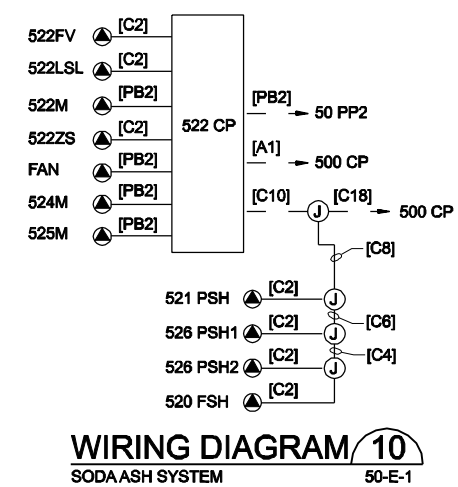
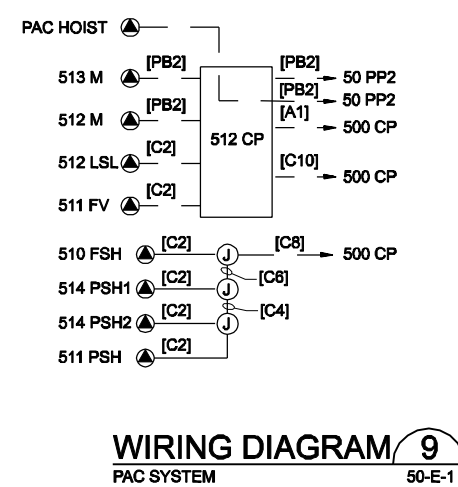
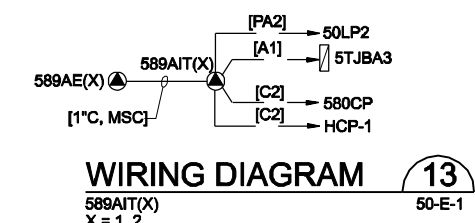
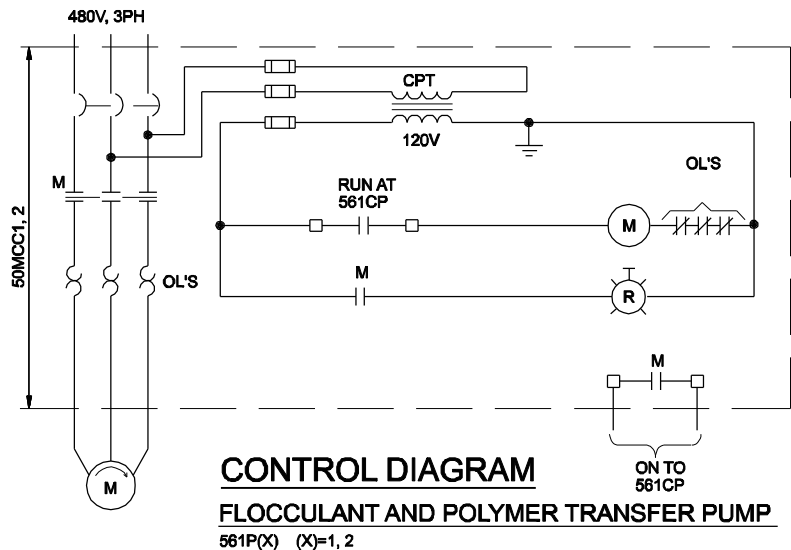
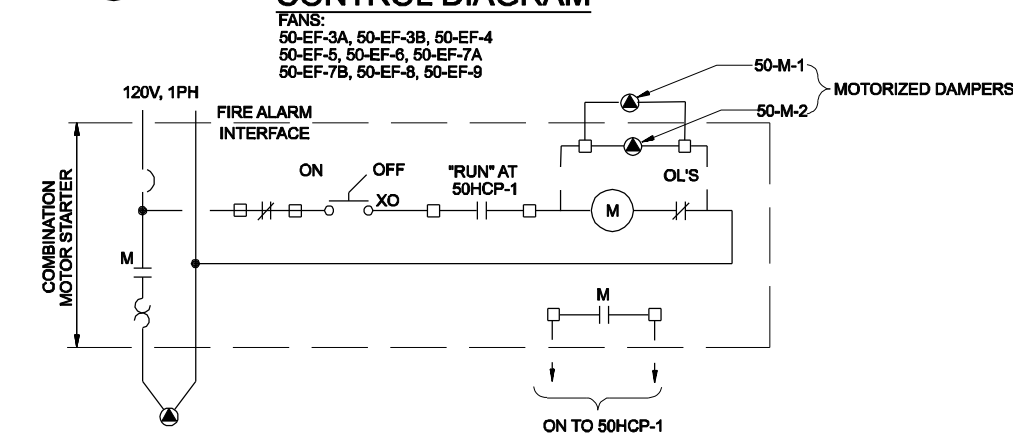
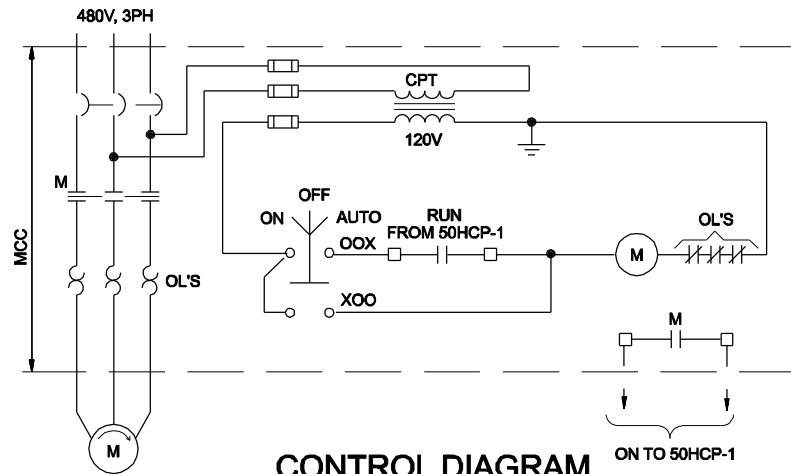
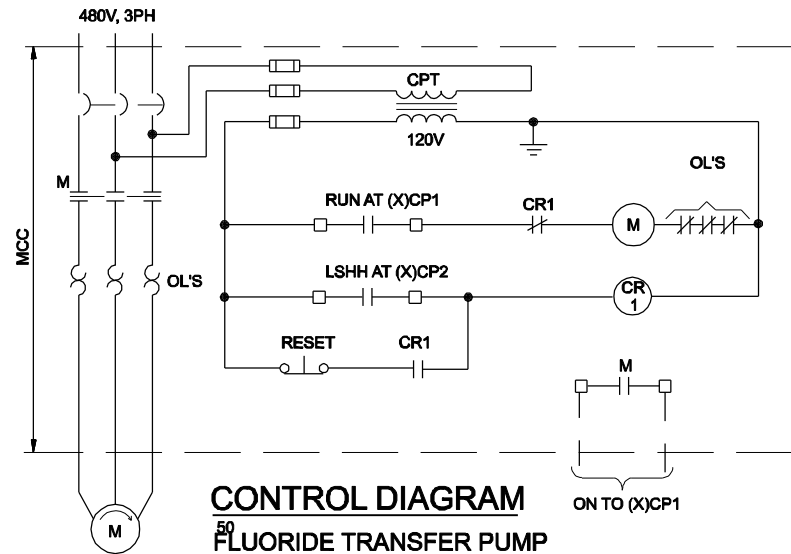


CLAYTON COUNTY WATER AUTHORITY
 W. J. HOOPER WATER PRODUCTION PLANT IMPROVEMENTS - PHASE II
 MORROW, GEORGIA

ELECTRICAL
CHEMICAL FEED FACILITY ONE-LINE DIAGRAM

DWG	50-E-8
DATE	APRIL 2003
PROJ	169760.CD

REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL. CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.



DSGN K. HORTON DR 978050e08d.dgn N. ADAMS CHK P. KESKAR APVD K. HORTON	RECORD DRAWINGS REVISIONS DRAWN BY G. HARTLEY DATE MAY, 2006 THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 [Scale Bar] 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CH2MHILL	CLAYTON COUNTY WATER AUTHORITY W. J. HOOPER WATER PRODUCTION PLANT IMPROVEMENTS - PHASE II MORROW, GEORGIA	ELECTRICAL CHEMICAL FEED FACILITY CONTROL DIAGRAMS AND WIRING DIAGRAMS	DWG 50-E-9 DATE APRIL 2003 PROJ 169760.CD
--	---	--	-----------------	--	--	---

REUSE OF DOCUMENTS: CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL. THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL.

LOAD IN KVA			CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN KVA		
A	B	C							A	B	C
10.0			50-TX-3/ 50LP-1	60/3	1	2	20/3	WATER HEATER W-1	1.5		
	10.0				3	4					
		10.0			5	6					1.5
19.0			50-MAU-1	90/3	7	8	20/3	SPARE			
	19.0				9	10					
		19.0			11	12					
19.0			50-MAU-2	90/3	13	14	20/3	SPARE			
	19.0				15	16					
		19.0			17	18					
4.4			50-AC-1	20/3	19	20	30/3	SPARE			
	4.4				21	22					
		4.4			23	24					
0.6			610M HOIST	20/3	25	26					
	0.6				27	28					
		0.6			29	30					
					31	32					
					33	34					
					35	36					
					37	38					
					39	40					
					41	42					
52.4	52.4	52.4	TOTAL						1.5	1.5	1.5

LOAD IN KVA			CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN KVA		
A	B	C							A	B	C
1.0			SODA ASH SYSTEM 522CP	20/3	1	2	60/3	50TX4/50LP2	10.0		
	1.0				3	4				10.0	
		1.0			5	6					10.0
2.0			PAC SYSTEM 512CP	20/3	7	8	60/3	50TX5/50LP3	7.5		
	2.0				9	10				7.5	
		2.0			11	12					7.5
3.3			SODIUM HYPO 580CP	30/3	13	14	20/3	500FV	0.5		
	3.3				15	16				0.5	
		3.3			17	18					0.5
			SPARE	20/3	19	20	20/3	SPARE			
					21	22					
					23	24					
					25	26					
					27	28					
					29	30					
					31	32					
					33	34					
					35	36					
					37	38					
					39	40					
					41	42					
6.3	6.3	6.3	TOTAL						18.0	18.0	18.0

LOAD IN KVA			CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN KVA		
A	B	C							A	B	C
0.6			LIGHTS: ATTIC	20/1	1	2	20/1	RECEPT: MAINT. MECH	0.5		
	0.4		RECEPT: ATTIC	20/1	3	4	20/1	RECEPT: 2ND FL EXTERIOR		0.4	
		0.7	50EF-1, 50EF-2	20/1	5	6	20/1	RECEPT: ELEC RM			0.5
0.9			LIGHTS: PAC	20/1	7	8	20/1	RECEPT: ELEC. CHLORINE RM	0.5		
	1.4		LIGHTS: POLYMER, CORRIDOR	20/1	9	10	20/1	6 INCH METER BOX		2.0	
		0.8	LIGHTS: SODA ASH, CHEM	20/1	11	12	20/1	8 INCH METER BOX			2.0
0.9			RECEPT: SODA ASH, CORR	20/1	13	14	20/1	4 INCH METER BOX	1.0		
	0.7		RECEPT: POLYMER, CORRIDOR	20/1	15	16	20/2	SITE POLE LIGHTS		1.1	
		1.1	LIGHTS: HYPO GENERATOR RM	20/1	17	18		SITE POLE LIGHTS			1.1
1.1			LIGHTS: EXTERIOR	20/1	19	20	20/1	544P1 RECEPTACLE	0.3		
	0.9		LIGHTS: EXTERIOR	20/1	21	22	20/1	544P2 RECEPTACLE		0.3	
		0.6	LIGHTS: SOUTH CANOPY	20/1	23	24	20/1	SPARE			
0.7			RECEPT: EXTERIOR	20/1	25	26	20/1	SPARE			
	0.7		RECEPT: EXTERIOR	20/1	27	28	20/1	SPARE			
		0.4	LIGHTS: STAIRWELL	20/1	29	30	20/1	SPARE			
1.6			LIGHTS: SULFATE, CORRIDOR	20/1	31	32	20/1	SPARE			
	1.0		LIGHTS: MECH, MAINT, FLUOR	20/1	33	34	20/1	SPARE			
		1.1	LIGHTS: CHLORINE, ELECTRICAL	20/1	35	36	20/1	SPARE			
0.5			LIGHTS: 2ND FL EXTERIOR	20/1	37	38	20/1	SPARE			
	0.9		RECEPT: COAGULANT, FLUOR	20/1	39	40	20/1	SPARE			
		0.6	RECEPT: WALKWAY 201B	20/1	41	42	20/1	SPARE			
8.3	6.0	5.2	TOTAL						2.3	3.8	3.6

LOAD IN KVA			CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN KVA		
A	B	C							A	B	C
1.2			501LIT, 502CP1	20/1	1	2	20/1	504DCSCR1	0.5		
	1.2		541LIT, 542CP1	20/1	3	4	20/1	504DCSCR2		0.5	
		1.2	591LIT, 592CP1	20/1	5	6	20/1	594DCSCR			0.5
1.2			601LIT, 602CP1	20/1	7	8	20/1	594DCSCR1	0.5		
	1.2		503LIT, 502CP2	20/1	9	10	20/1	594DCSCR2		0.5	
		1.2	543LIT, 542CP2	20/1	11	12	20/1	534DCSCR1			0.5
1.2			588LIT, 587CP2	20/1	13	14	20/1	534DCSCR2	0.5		
	1.2		593LIT, 592CP2	20/1	15	16	20/1	534DCSCR3		0.5	
		1.2	603LIT, 602CP2	20/1	17	18	20/1	502CP2			1.0
0.3			LIME SUMP PUMP	20/1	19	20	20/1	583CP	1.0		
	0.2		LIME AREA HEAT TRACE	20/1	21	22	20/1	571CP1		1.0	
		0.4	531LIT1, 531LIT2	20/1	23	24	20/1	571CP2			1.0
1.0			532CP1	20/1	25	26	20/1	532CP2	1.0		
	1.0		500FP1	20/1	27	28	20/1	581CP		1.0	
		1.0	587CP1	20/1	29	30	20/1	581M1			0.3
0.4			562WIT1, 562WIT2	20/1	31	32	20/1	581M2	0.3		
	0.4		533LIT1, 533LIT2	20/1	33	34	20/1	589AIT1		0.2	
		0.5	544JB (544HS1, 544HS2)	20/1	35	36	20/1	589AIT2			0.2
0.2			577AIT	20/1	37	38	20/1	585CP	0.5		
	0.1		500QL [OC]	20/1	39	40	20/1	500FP2		1.0	
			SPARE	20/1	41	42	20/1	500CP			1.0
5.5	5.2	5.5	TOTAL						4.3	4.7	4.5

LOAD IN KVA			CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN KVA		
A	B	C							A	B	C
0.16			HEAT TRACE [2" CL]	20/1	1	2	20/1	HEAT TRACE [2" FL]	0.13		
	0.10		HEAT TRACE [2" CL]	20/1	3	4	20/1	HEAT TRACE [2" FL]		0.32	
		0.10	HEAT TRACE [2" CL]	20/1	5	6	20/1	HEAT TRACE [3" FL]			0.06
0.12			HEAT TRACE [2" CL]	20/1	7	8	20/1	HEAT TRACE [3" HPO]	0.05		
	0.13		HEAT TRACE [2" HYPO]	20/1	9	10	20/1	HEAT TRACE [2" HPO]		0.16	
		0.80	HEAT TRACE [3" HYPO]	20/1	11	12	20/1	HEAT TRACE [2" HPO]			0.22
0.06			HEAT TRACE [3/4" HYPO]	20/1	13	14	20/1	HEAT TRACE [3" HCL]	0.30		
	0.20		HEAT TRACE [W1]	20/1	15	16	20/1	HEAT TRACE [2" HCL]		0.16	
		0.20	HEAT TRACE [W2]	20/1	17	18	20/1	HEAT TRACE [2" HCL]			0.22
0.16			HEAT TRACE [2" SC]	20/1	19	20	20/1	HEAT TRACE [3" COAG]	0.28		
	0.06		HEAT TRACE [3" SC]	20/1	21	22	20/1	HEAT TRACE [3" COAG]		0.15	
		0.20	HEAT TRACE [2" SC]	20/1	23	24	20/1	HEAT TRACE [2" COAG]			0.20
0.10			HEAT TRACE [1 1/2" W2]	20/1	25	26	20/1	HEAT TRACE [2" COAG]	0.13		
	2.10		TANK HEATER 585T1	20/1	27	28	20/1	HEAT TRACE [1 1/2" SW]		0.10	
		2.10	TANK HEATER 585T2	20/1	29	30	20/1	HEAT TRACE [2" BR]			0.10
2.10			TANK HEATER 585T3	20/1	31	32	20/1	TANK HEATER 591T	1.28		
	1.28		TANK HEATER 501T	20/1	33	34	20/1	TANK HEATER 601T		1.28	
		2.10	TANK HEATER 531T1	20/1	35	36	20/1	SPARE			
			TANK HEATER 531T2	20/1	37	38	20/1	SPARE			
2.10			TANK HEATER 541T	20/1	39	40	20/1	SPARE			
	1.28		TANK HEATER 581T	20/1	41	42	20/1	SPARE			
4.82	5.10	7.40	TOTAL						2.13	2.15	0.79

DSGN	K. HORTON
DR	976050e09d.dgn
CHK	N. ADAMS
APVD	P. KESKAR
	K. HORTON

RECORD DRAWINGS
 REVISIONS DRAWN BY G. HARTLEY DATE MAY, 2006
 THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 0" = 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.



CLAYTON COUNTY
 WATER AUTHORITY
 W. J. HOOPER WATER PRODUCTION PLANT
 IMPROVEMENTS - PHASE II
 MORROW, GEORGIA

Division 4

Specifications

Section 1: Project Overview

1.1 Project Background

The Clayton County Water Authority's (CCWA) Shamrock and Blalock Reservoirs have had historical occurrences of algae blooms and water quality fluctuations seasonally. An oxygenation system is being constructed for the Shamrock and Blalock Reservoirs to help mitigate algae blooms and water quality fluctuations. The Shamrock and Blalock Reservoirs are located at 2610 Shamrock Rd., Jonesboro, GA 30236.

1.2 Project Scope

The project consists of providing and installing the equipment listed below, monitoring and filling the tank as required for continuous operation and maintaining the performance of the equipment through the length of the contract according with the specifications outlined on Division 4, Section 2 of this Request for Bid package. The installed components consist of:

- a. Horizontal liquid oxygen storage tank: a 9,000-gallon capacity
- b. Ambient vaporizers: minimum of two parallel units
- c. Automatic flow switcher between vaporizers
- d. Dual line regulator with safety relief bypass and low temperature shut off
- e. All interconnecting piping between oxygen systems components to the gaseous oxygen battery limit connection point
- f. LOX tank level sensor and radio telemetry
- g. Anchoring of LOX tank and vaporizers

The liquid oxygen storage and feed system equipment listed above will be leased from the selected vendor and installed in a facility to be built under a separate contract. The system must provide gaseous oxygen fully vaporized from liquid oxygen in accordance with the attached specifications, on Division 4 Section 3.

1.3 Coordination and Safety

- A. The Vendor shall coordinate work with CCWA staff to prevent any interruptions to operations, customers, and the general public.

Division 4

Specifications

Section 1: Project Overview

- B. The Vendor is responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Vendor will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the Work and other persons who may be affected thereby.
- C. The Vendor shall protect existing and adjacent properties, structures and utilities. Vendor is responsible for any damage to existing and adjacent properties, structures and utilities, and shall make all necessary repairs at no additional costs to CCWA
- D. The Vendor shall provide the names of all staff that will be working on the project and a list of vehicles that will be entering the work site premises during the tank installation process. The vehicle list shall include the following vehicle information: make, model, color, license plate number, and any other information that describes and will help to identify the vehicle as being permitted to be on the premises.
- E. The Vendor shall keep gates to CCWA property locked to prevent access by unauthorized persons, while property is unattended by Vendor's personnel, and shall not allow unauthorized persons entry to CCWA property.
- F. The Vendor shall lock all gates at the end of each work day.

1.4 Acceptance

- A. Full payment for the lump sum cost for tank and vaporizer installation (Bid Form Item 1) will be processed net 30 days upon submission of an Invoice and Affidavit of Completion by the Vendor. The invoice will be verified by the Authority representative, and any changes/corrections to the invoice will require the Contractor to correct and resubmit the invoice. The Authority shall pay the Contractor net 30 days upon receipt of the invoice and upon acceptance of the work in accordance with the specifications. Payments will be made via regular US Mail.
- B. A CCWA Representative shall inspect all components of the Project for compliance with the Contract Documents. The Vendor shall, at all times,

Division 4

Specifications

Section 1: Project Overview

permit and facilitate inspection of work by the CCWA. The presence of a CCWA Representative on the site of work shall not be construed to, in any manner, relieve the Vendor of their responsibility for strict compliance with the Contract Documents. The CCWA Representative shall inform the Vendor when work is deficient from the Contract Documents. Deficiencies shall be addressed in a timely manner as determined by the CCWA Representative.

- C. Final acceptance of the Tank and Vaporizer Installation by the CCWA shall be when the Vendor has met all terms and conditions as set forth by the Contract Documents. The date of Final Acceptance shall be no later than the date the CCWA approves the Vendor's request for payment of the Tank and Vaporizer Installation. Final acceptance shall be written, signed and dated by the CCWA Representative.

END OF SECTION

Division 4 **Specifications**

Section 2: Work Items and Measurement

2.1 General

- A. This Section describes all line items listed on the Bid Form for processing payment.
- B. The basis for payment will be the bid unit prices and/or lump sum amounts included in the Bid Form and the actual quantities of work completed by the Contractor and approved by the CCWA. The CCWA reserves the right to adjust the quantities up or down as necessary to address needs.
- C. Nothing in this Section shall be construed as providing for additional payment beyond the Work Items. No payment will be made for partially completed Work Items. No payment will be made for the completion of excessive quantities of a Work Item as determined by the CCWA.

2.2 Work Items and Measurement

The following descriptions explain the line items listed on the Bid Form:

Item 1: Tank and Vaporizer Installation: Defined as an installed and fully functional and tested system of the following items:

1. Horizontal liquid oxygen storage tank: a 9,000-gallon capacity with pressure relief valves capable of multiple releases during low demand periods, painted tan.
2. Ambient vaporizers: minimum of two parallel units each with a minimum 5,000 standard cubic per feet per hour minute (SCFH).
3. Automatic flow switcher with timer to switch between vaporizers.
4. Dual line regulator with safety relief bypass and low temperature shut off (0-150 psig) to regulate the vaporizer discharge pressure and prevent gas below a temperature of minus 10 degrees Celsius reaching to liquid Oxygen flow control units.
5. All interconnecting piping between oxygen systems components to the gaseous oxygen battery limit connection point located on the outdoor oxygen equipment concrete pad.
6. LOX tank level sensor and radio or cellular telemetry with capability to communicate directly with vendor for scheduling LOX deliveries. Level controller shall include analog contact for connection to plant SCADA.

Division 4 **Specifications**

Section 2: Work Items and Measurement

Vendor is responsible for any and all wiring and electrical connections to the control panel. Level sensor shall be accuracy class of 2.5.

Item 2: Monthly Rental Fee for Holding Tank: Defined as the monthly cost carried out for 36 months for providing and maintaining the 9,000-gallon horizontal LOX Tank.

Item 3: Liquid Oxygen: Defined as the unit liquid oxygen price (per CCF) for liquid oxygen that will be delivered by vendor and stored in the onsite holding tank carried out to the estimated consumption over a three-year period.

END OF SECTION

Division 4

Specifications

Section 3: General Requirements

The Clayton County Water Authority (CCWA) is requesting bids to establish a Master Contract to provide a liquid Oxygen storage and feed system for Source Water Improvement Project. System will be located outdoors in Jonesboro, Georgia with no shading of the equipment.

3.1 Quantity

The estimated annual quantity of liquid Oxygen needed by CCWA is approximately 93,170 CCF per year.

CCWA guarantees no minimum or maximum quantities and will purchase on as needed when needed basis. This represents a three-year estimated quantity.

3.2 Performance Requirements

1. System shall provide gaseous oxygen that has been fully vaporized from liquid oxygen.
2. The anticipated maximum Gaseous Oxygen (GOX) delivery rate is 48 standard cubic feet per minute (SCFM). The anticipated average Gaseous Oxygen (GOX) delivery rate is 24 standard cubic feet per minute (SCFM) 24 hours per day, 270 days per year. The GOX delivery rate may be less than 24 SCFM at times during the year. During winter months, the usage rate will be lower than normal; tank pressure release system shall be designed to release pressure as needed during low demand periods.
3. System shall be designed to operate as described at elevation 810 feet above ocean sea level.

3.3 Monitoring

1. Vendor shall continuously monitor the storage level in the LOX storage tank, schedule and perform LOX deliveries to ensure continuous operation of the system.

3.4 Vendor Requirements – Installation and Tank

Vendors shall submit shop drawings for review and approval by Engineer. Required shop drawing submittals include:

1. The LOX storage and feed system vendor shall have a minimum of ten (10) years of experience in the installation of LOX storage and feed systems of equal

Division 4

Specifications

Section 3: General Requirements

or greater or greater capacity than specified herein. The Vendor shall show evidence of satisfactory service in at least five (5) installations.

2. Tank data, including materials of construction, scaled drawings with dimensions, capacity, weight, tank support locations, anchoring requirements, and grounding requirements.
3. Vaporizer data, including manufacturer's catalog cuts and descriptive literature, detailed scaled drawings with dimensions and footprint, capacity, weight, and anchoring requirements.
4. Instrument data for automatic flow switcher and tank level sensor. Provide manufacturer's catalog cuts and descriptive literature, detailed scaled drawings, and wiring diagrams.
5. Pressure regulator with safety relief bypass and low temperature shut off, including manufacturer's catalog cuts and descriptive literature.
6. Anchoring details, sealed, signed and dated by a civil or structural engineer licensed in the State of Georgia.
7. LOX storage and feed system vendor shall comply with all local ordinances.

3.5 Vendor Requirements – LOX Delivery

1. LOX deliveries shall occur between 7:00 am and 5:00 pm EST.
2. Deliveries shall access the tank site via Dixon Industrial Boulevard, Jonesboro GA and shall provide a lock to be used on an access gate located immediately off of Dixon Industrial Boulevard.
3. LOX storage and feed system vendor shall maintain an adequate tank level at all times as to not interrupt system operation.

3.6 Contractor Responsibilities

1. Concrete pads will be designed and furnished by others. Concrete pad will be cured and ready for the installation of the LOX equipment no later than February 15th, 2019.
2. Gaseous Oxygen (GOX) flow control panel will be located on the oxygen system equipment concrete pad and will be designed and furnished by others.

Division 4

Specifications

Section 3: General Requirements

3. Truck access to the oxygen system equipment concrete pad and equipment protection bollards will be designed and furnished by others.
4. 110V electrical service to the oxygen system equipment concrete pad will be designed and furnished by others.
5. LOX tank lightning protection and LOX tank ground rod will be furnished by others.

3.7 Special Terms and Conditions

1. All tanks will remain property of the successful vendor.
2. Cost per month for storage tank fee is to remain firm for life of the contract, including any subsequent renewal periods.
3. Vendors submitting an approved equal must submit detail specifications with their bids. Specification compliance is required and must be substantiated. Vendors submitting an approved equal are required to provide a detailed description of any and all deviations from the specifications.
4. At the end of the service life of the tank, or completion of the contract, the successful vendor will be required to properly remove the tank at no additional charge to CCWA.
5. All charges are to be detailed on the pricing page provided. No other charges are to be invoiced, e.g. energy charge, surcharge, fuel surcharge, etc.
6. Special Inspections: CCWA will provide IBC-required special inspections of anchorage of equipment to the foundation in accordance with the anchor product's International Code Council (ICC) Evaluation Service Report. Vendors shall notify CCWA's representative 48 hours in advance of anchorage installation to request a special inspector be present during installation of anchors.

3.8 Equipment Requirements

1. Horizontal liquid oxygen storage tank: a 9,000 gallon capacity with pressure relief valves capable of multiple releases during low demand periods, painted tan.

Division 4

Specifications

Section 3: General Requirements

2. Ambient vaporizers: minimum of two parallel units each with a minimum 5,000 standard cubic per feet per hour minute (SCFH).
3. Automatic flow switcher with timer to switch between vaporizers.
4. Dual line regulator with safety relief bypass and low temperature shut off (0-150 psig) to regulate the vaporizer discharge pressure and prevent gas below a temperature of minus 10 degrees Celsius reaching to liquid Oxygen flow control units.
5. All interconnecting piping between oxygen systems components to the gaseous oxygen battery limit connection point located on the outdoor oxygen equipment concrete pad.
6. LOX tank level sensor and radio or cellular telemetry with capability to communicate directly with vendor for scheduling LOX deliveries. Level controller shall include analog contact for connection to plant SCADA. Vendor is responsible for any and all wiring and electrical connections to the control panel. Level sensor shall be accuracy class of 2.5.
7. Anchoring of LOX tank, vaporizers, automatic flow switcher, and low temperature shut off to the concrete pad.
8. Vendor to coordinate their work with the General Contractor that will be furnishing in lake oxygen diffusion system, equipment pad, flow control panels, 110V electrical service, storage tank ground rod and tank lightning protection. Any and all licenses, permits, etc. required by local, state or federal authorities.
9. The oxygen storage and feed system shall be designed and installed in accordance with 2012 International Building Code (IBC); 2014, 2015, 2017 and 2018 Georgia Amendments to IBC; Clayton County Code of Ordinance; NFPA 55; ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, latest addenda, for 250 psig maximum allowable working pressure; industry standards as set forth by the Compressed Gas Association; and all other applicable local agencies. The following are site-specific criteria:
 - a. ASCE 7-10 Wind:
 - i. Ultimate Design Wind Speed, $V_{ult} = 120$ mph
 - ii. Nominal Design Wind Speed, $V_{asd} = 93$ mph
 - iii. Exposure Category: C
 - iv. Risk Category: III

Division 4

Specifications

Section 3: General Requirements

- b. ASCE 7-10 Earthquake:
 - i. Mapped Spectral Response Acceleration at Short Period, $SS=0.168g$
 - ii. Mapped Spectral Response Acceleration at 1 Second Period, $S1=0.086g$
 - iii. Design Spectral Response Acceleration at Short Period, $SDS=0.179g$
 - iv. Design Spectral Response Acceleration at 1 Second Period, $SD1=0.137g$
 - v. Soil Site Class: D
 - vi. Seismic Design Category: C
 - vii. Component Importance Factor, $I_p = 1.5$

- 10. Piping, tanks, and equipment shall be protected with suitable pressure relief valves as required to prevent excessive pressure buildup because of trapped liquid oxygen or vapor. All materials, where applicable, shall be suitable for oxygen gas and cryogenic liquid use. All piping, valves, and equipment shall be cleaned for use in oxygen service in accordance with the Compressed Gas Association. All piping shall be pressure tested at 100 PSI for 20 minutes in the presence of the Owner and the Engineer.

END OF SECTION