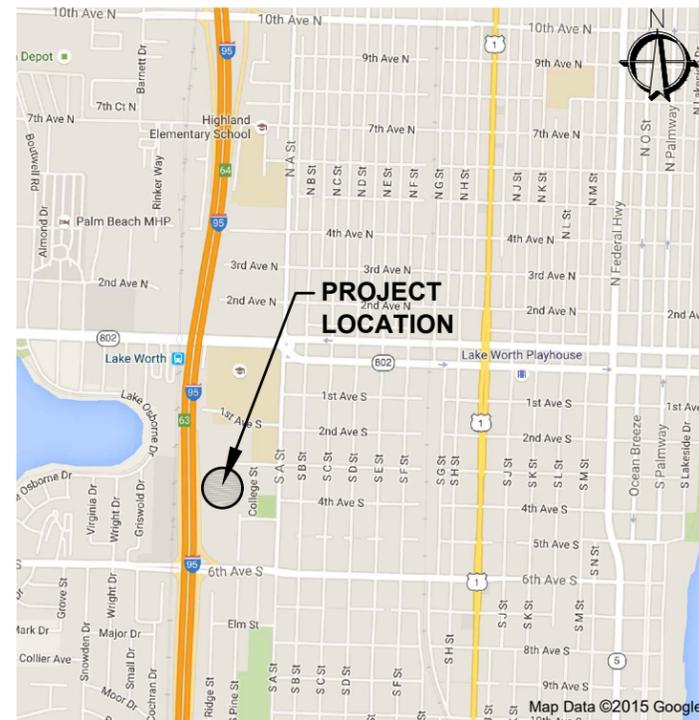


WATER TREATMENT PLANT HIGH SERVICE PUMP IMPROVEMENTS

PREPARED FOR
CITY OF LAKE WORTH
PALM BEACH COUNTY, FLORIDA
PROJECT NO. WT 1504
IFB # 16-116
MAY 2016



VICINITY MAP

N.T.S.

SECTION 21, TOWNSHIP 44 SOUTH, RANGE 43 EAST



CITY COMMISSION

PAM TRIOLO, MAYOR
SCOTT MAXWELL, VICE MAYOR
CHRISTOPHER MCVOY
ANDY AMOROSO
RYAN MAIER
BRIAN SHIELDS, P.E.- WATER UTILITIES DIRECTOR
JULIA PARHAM, P.E.- WATER UTILITIES ENGINEER

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
C0-1	COVER
C0-2	KEY SHEET
C1-1	FIRST FLOOR PLAN
C1-2	PUMP ROOM DEMOLITION PLAN
C1-3	PUMP ROOM FLOOR PLAN AND DETAILS
C1-4	AMMONIA SYSTEM BOOSTER PUMP AND WATER SOFTENER
C1-5	AMMONIA SYSTEM BOOSTER PUMP AND WATER SOFTENER
E-1	ELECTRICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES
E-2	PUMP ROOM ELECTRICAL FLOOR PLAN
E-3	EXISTING SIGNAL LINE POWER DIAGRAM
E-4	PARTIAL SECOND FLOOR ELECTRICAL PLAN
E-5	ELEMENTARY CONTROL DIAGRAMS
TOTAL NO. OF SHEETS 12	



PLOT DATE: May 04, 2016 - 1:46pm XREFS: IMAGES: I:\w_u_wu_2\m1\000\maps\p1\1.png I:\w_u_wu_2\m1\000\maps\p1\2.png

1" = 1" SCALE BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING

NO.	DATE	BY	REVISION
1	4/22/16	MNF	REVISED SHEET C1-1 ADDED SHEETS C1-4 AND C1-5 PER LWU
2	2/26/16	MNF	REMOVED SHEETS C1-4 AND C1-5 ADDED SHEETS E-1, E-2, E-3 AND E-4 PER LWU

BID DRAWING SET

SEAL
JOHN R. LEEMON
FLORIDA P.E. NO. 41645
DATE

FLORIDA E.B. NO. 48

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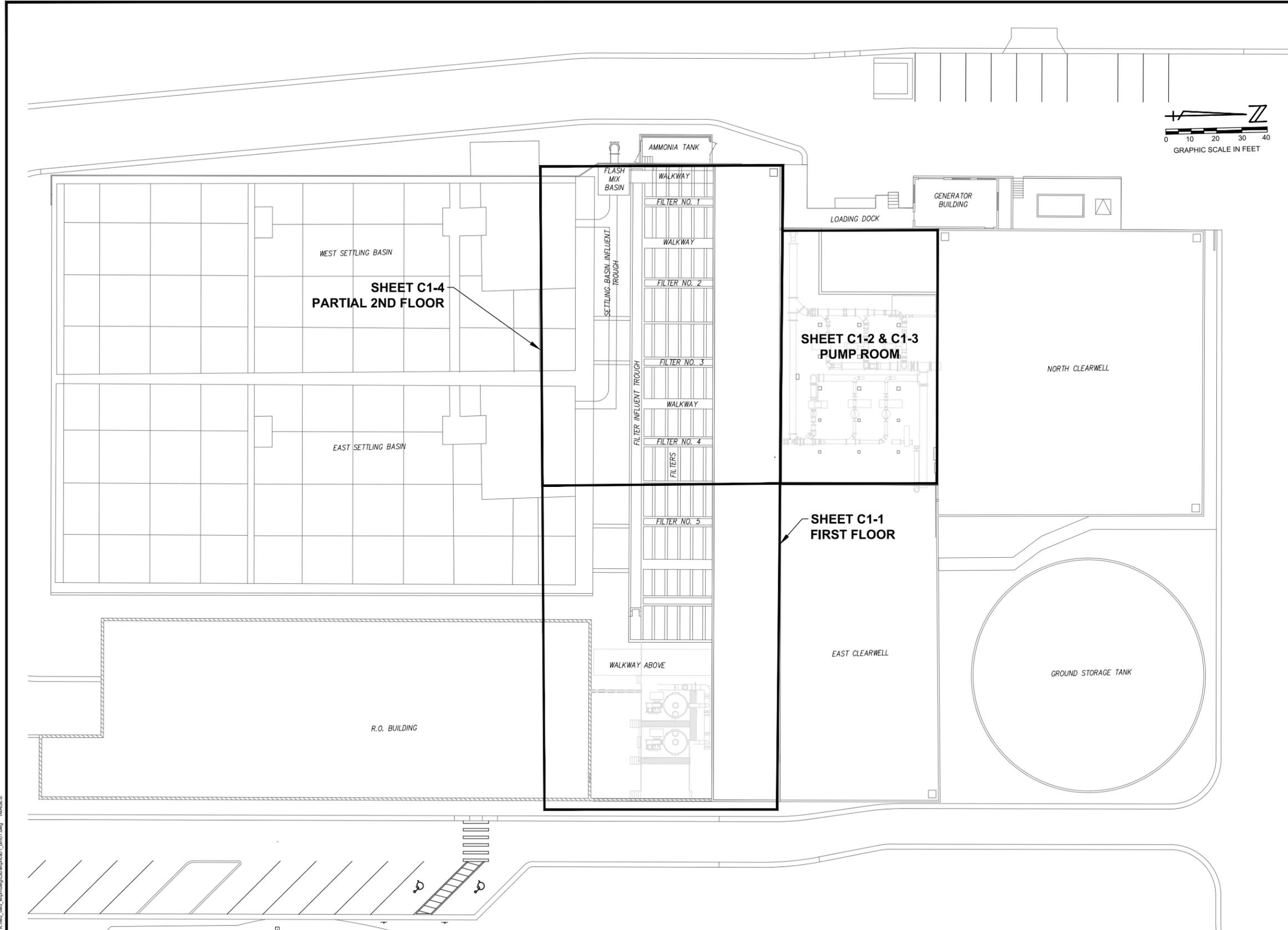
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FIELD: ---
DRAWN: YM/MNF
DESIGN: JRL
APPR: GGG
SCALE: AS SHOWN

WATER TREATMENT PLANT
HIGH SERVICE PUMP
IMPROVEMENTS
CITY OF LAKE WORTH
PALM BEACH COUNTY, FLORIDA

DATE: MAY 2016
P.A. NO. B5015.00
DWG. NO. 44-43-28-304
SHEET: C0-1



GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REMOVAL, DISPOSAL, ABANDONMENT AND RELOCATIONS NECESSARY TO COMPLETE THE WORK. CONTRACTOR SHALL USE CAUTION WHEN WORKING IN THE VICINITY OF EXISTING STRUCTURES (ABOVE OR BELOW GRADE). CONTRACTOR SHALL USE MEANS AND METHODS SUITABLE TO PROTECT EXISTING STRUCTURES DURING CONSTRUCTION OPERATIONS.
2. ALL MATERIALS IN CONTACT WITH THE PRODUCT WATER MUST BE N.S.F. APPROVED.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING AND INSTALLING APPROPRIATE SPOOL PIECES AND ANY SPECIAL FITTINGS WHEN CONNECTING EXISTING PIPING TO PROPOSED PIPING, WHETHER SHOWN OR NOT.
4. ALL SMALL DIAMETER PIPING SHALL BE SUPPORTED FROM THE WALLS AND FLOORS USING UNISTRUT. NON-METALLIC UNISTRUT SHALL BE MEDIUM DUTY CHANNEL "SERIES V" AICKINSTRUT OR EQUAL.
5. ALL PIPE CLAMPS, BOLTS, NUTS, WASHERS, FASTENERS, AND MISCELLANEOUS HARDWARE SHALL BE 316 SS UNLESS OTHERWISE NOTED.
6. PAINT ALL DISTURBED AREAS TO MATCH ADJACENT AREAS.
7. CONTRACTOR SHALL INSTALL A COMPLETE FUNCTIONAL WORKING SYSTEM TO THE FULL INTENT AS SHOWN ON THE DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
8. ALL BALL VALVES, SIZES 1/2" TO 4" SHALL BE OF TRUE UNION DESIGN WITH TWO-WAY BLOCKING CAPABILITY. ALL O-RINGS SHALL BE EPDM OR FKM WITH PTFE SEATS. PTFE SEATS SHALL HAVE ELASTOMERIC BACKING CUSHION OF THE SAME MATERIAL AS THE VALVES SEALS. STEM SHALL HAVE DOUBLE O-RINGS AND BE OF BLOWOUT-PROOF DESIGN. THE VALVE HANDLE SHALL DOUBLE AS CARRIER REMOVAL AND/OR TIGHTENING TOOL. ISO MOUNTING PAD SHALL BE INTEGRALLY MOLDED TO VALVE BODY FOR ACTUATION. ALL BALL VALVES USED FOR SODIUM HYPOCHLORITE SERVICE SHALL BE VENTED TO AVOID ENTRAPMENT OF VAPORS. BALL VALVES MUST CARRY A TWO-YEAR GUARANTEE, AS MANUFACTURED BY ASAHI/AMERICA, INC., OR APPROVED EQUAL.

SHEET C1-4
PARTIAL 2ND FLOOR

SHEET C1-2 & C1-3
PUMP ROOM

SHEET C1-1
FIRST FLOOR

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ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

KEY SHEET

WATER TREATMENT PLANT
HIGH SERVICE PUMP IMPROVEMENTS
CITY OF LAKE WORTH
PALM BEACH COUNTY, FLORIDA

DATE: MAY 2016
P.A. NO. B5015.00
DWG. NO. 44-43-28-304
SHEET: C0-2

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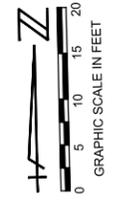
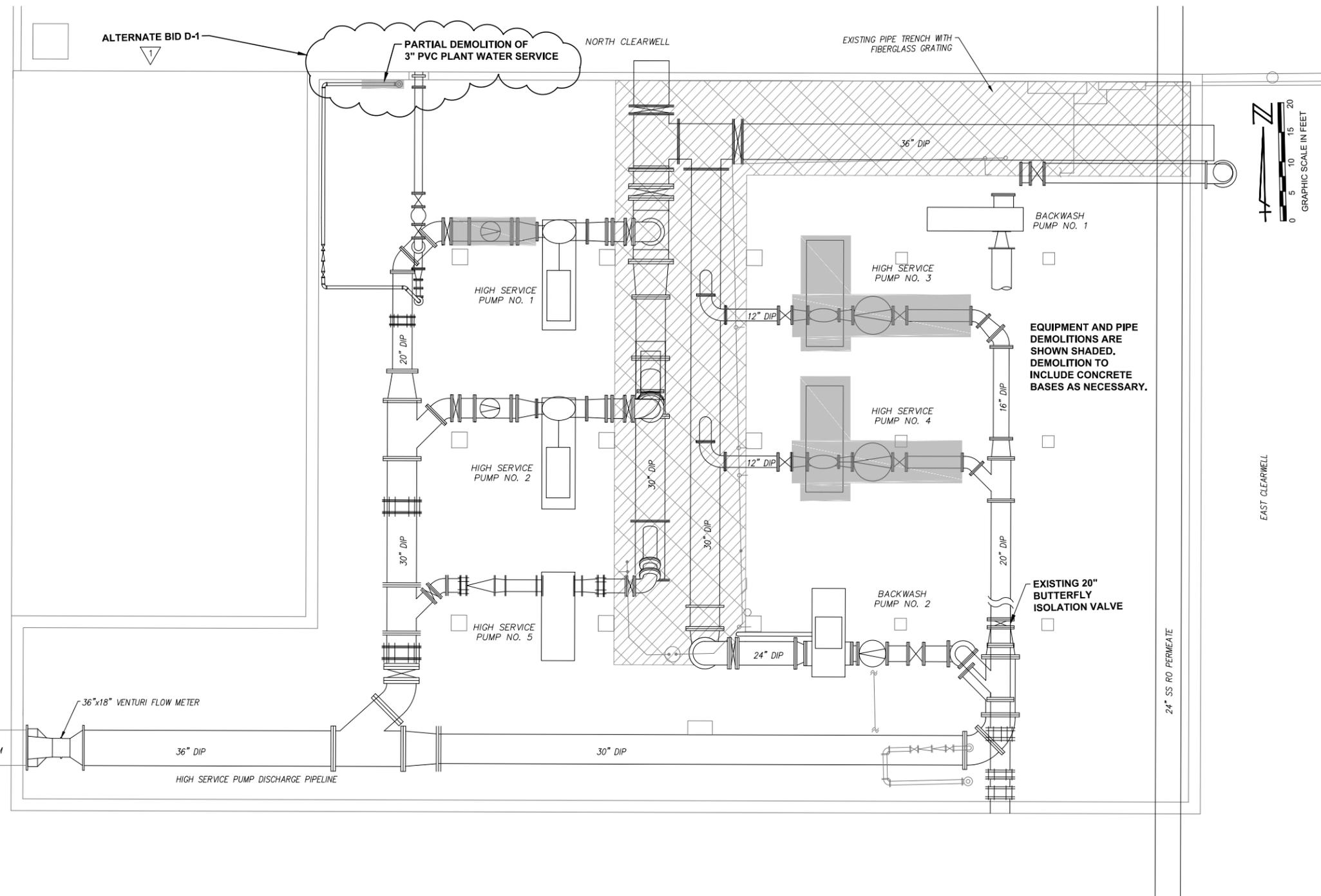
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EAST CLEARWELL

24" SS RO PERMEATE

HIGH SERVICE PUMP AND PIPING REPLACEMENT NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS OF EXISTING AND PROPOSED PUMPS, PIPING, FITTINGS, ETC. REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. EXISTING VALVES THAT ARE REMOVED SHALL REMAIN PROPERTY OF OWNER.
3. INSTALLATION OF PROPOSED PUMPS AND PIPING WILL REQUIRE SHUTDOWN OF EAST HIGH SERVICE PUMPS VIA THE EXISTING 20" BUTTERFLY VALVE. ALL OTHER PUMPS SHALL REMAIN FULLY OPERATIONAL.
4. SCHEDULING OF PUMP REPLACEMENTS SHALL BE COORDINATED WITH THE RESPECTIVE ELECTRICAL CONTROL AND VARIABLE FREQUENCY DRIVE REPLACEMENT FOR THAT PUMP.
5. EACH PIPE SECTION SHALL BE SUPPORTED INDIVIDUALLY. PROVIDE NECESSARY PIPE SUPPORTS AND/OR MODIFY EXISTING SUPPORTS. PROPOSED PIPE SHALL NOT BE SUPPORTED FROM PUMPS, EXISTING PIPING, OR FLEXIBLE EXPANSION JOINTS.
6. PLANT WATER SERVICE MUST REMAIN IN SERVICE TO THE MAXIMUM EXTENT POSSIBLE. CONTRACTOR SHALL USE MEANS AND METHODS TO MINIMIZE SHUT DOWN TIME AND RETURN THE SERVICE TO OPERATION AS SOON AS POSSIBLE.

SUGGESTED HIGH SERVICE PUMP REPLACEMENT SEQUENCE:

THE GOAL OF HIGH SERVICE PUMP NOS. 3 AND 4 REPLACEMENT IS TO KEEP ONE PUMP IN OPERATION FOR A MAJORITY OF THE TIME WHILE REPLACING THE OTHER PUMP. CONTRACTOR MUST COORDINATE WITH OWNER AND ENGINEER TO SCHEDULE EQUIPMENT OUTAGES. ALL PARTS MUST BE ON SITE PRIOR TO TAKING HIGH SERVICE PUMP(S) OUT OF SERVICE. THE FOLLOWING SEQUENCE IS SUGGESTED FOR THIS WORK:

1. CLOSE EXISTING 20-INCH ISOLATION VALVE FOR EAST HIGH SERVICE PUMP DISCHARGE PIPELINE AND HIGH SERVICE PUMP NOS. 3 AND 4 SUCTION VALVES.
2. DEMOLISH HIGH SERVICE PUMP NO. 4 AND APPURTENANCES AND PARTIAL HIGH SERVICE PUMP NO. 3 DISCHARGE PIPE.
3. INSTALL DISCHARGE BUTTERFLY VALVE AT 45 BEND FOR HIGH SERVICE PUMP NOS. 3 AND 4. RECONNECT HIGH SERVICE PUMP NO. 3 DISCHARGE PIPELINE WITH DRESSER COUPLING FOR TEMPORARY OPERATION.
4. DISINFECT HIGH SERVICE PUMP NO. 3 DISCHARGE PIPELINE AND 20-INCH EAST HIGH SERVICE PUMP DISCHARGE PIPELINE TO BUTTERFLY VALVE, CONDUCT BACTERIOLOGICAL SAMPLING, AND OBTAIN HEALTH DEPARTMENT APPROVAL TO PLACE THIS PIPELINE BACK IN SERVICE.
5. RETURN HIGH SERVICE PUMP NO. 3 TO SERVICE.
6. CONSTRUCT NEW HIGH SERVICE PUMP NO. 4 AND APPURTENANCES.
7. DISINFECT, CONDUCT BACTERIOLOGICAL SAMPLING, AND OBTAIN HEALTH DEPARTMENT APPROVAL TO PLACE PUMP NO. 4 IN SERVICE.
8. CONDUCT STARTUP AND PLACE HIGH SERVICE PUMP NO. 4 IN SERVICE.
9. CLOSE 12-INCH SUCTION AND DISCHARGE VALVE FOR HIGH SERVICE PUMP NO.3.
10. DEMOLISH HIGH SERVICE PUMP NO. 3 AND APPURTENANCES.
11. CONSTRUCT NEW HIGH SERVICE PUMP NO. 3 AND APPURTENANCES.
12. DISINFECT, CONDUCT BACTERIOLOGICAL SAMPLING, AND OBTAIN HEALTH DEPARTMENT APPROVAL TO PLACE PUMP NO. 3 IN SERVICE.
13. CONDUCT STARTUP AND PLACE HIGH SERVICE PUMP NO. 3 IN SERVICE.

CONTRACTOR SHALL SUBMIT ITS PROPOSED REPLACEMENT SEQUENCING TO THE ENGINEER AND OWNER FOR CONCURRENCE BEFORE PROCEEDING.

PUMP ROOM DEMOLITION PLAN

WATER TREATMENT PLANT HIGH SERVICE PUMP IMPROVEMENTS CITY OF LAKE WORTH PALM BEACH COUNTY, FLORIDA	DATE: MAY 2016 P.A. NO. B5015.00 DWG. NO. 44-43-28-304 SHEET: C1-2
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PLOT DATE: May 04, 2016 - 1:47pm REF: K:\w_u_wu_wtphidwg\wpsa01_dwg01.dwg IMAGE: wpsa01.dwg

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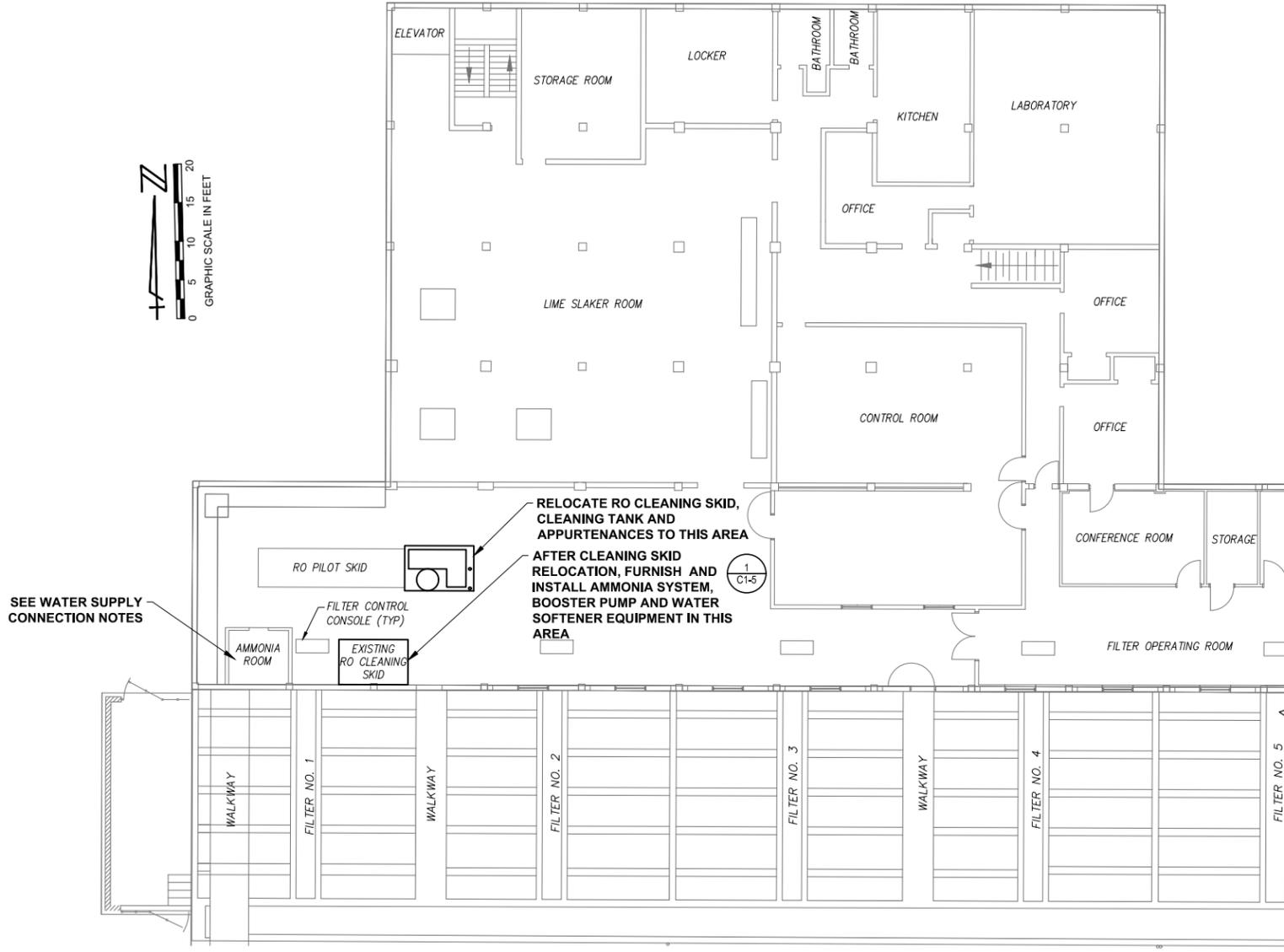
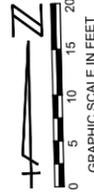
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JOHN R. LEEMON
FLORIDA P.E. NO. 41645
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 T ADJUST ALL SCALED DIMENSIONS ACCORDINGLY



SEE WATER SUPPLY CONNECTION NOTES

RELOCATE RO CLEANING SKID, CLEANING TANK AND APPURTENANCES TO THIS AREA

AFTER CLEANING SKID RELOCATION, FURNISH AND INSTALL AMMONIA SYSTEM, BOOSTER PUMP AND WATER SOFTENER EQUIPMENT IN THIS AREA

1
C1-5

WATER SUPPLY CONNECTION NOTES

1. AFTER BOOSTER PUMP AND WATER SOFTENER SYSTEM IS STARTED UP, DISCONNECT 1" WATER SUPPLY PIPE TO AMMONIA FEED EQUIPMENT AND CAP BELOW FLOOR.
2. CONNECT NEW SOFTENED WATER SUPPLY.

PARTIAL SECOND FLOOR PLAN

AMMONIA SYSTEM BOOSTER PUMP AND WATER SOFTENER

CADD FILE:	4/22/16	MNF	REVISED SHEET C1-1 ADDED SHEETS C1-4 AND C1-5 PER LWU
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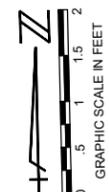
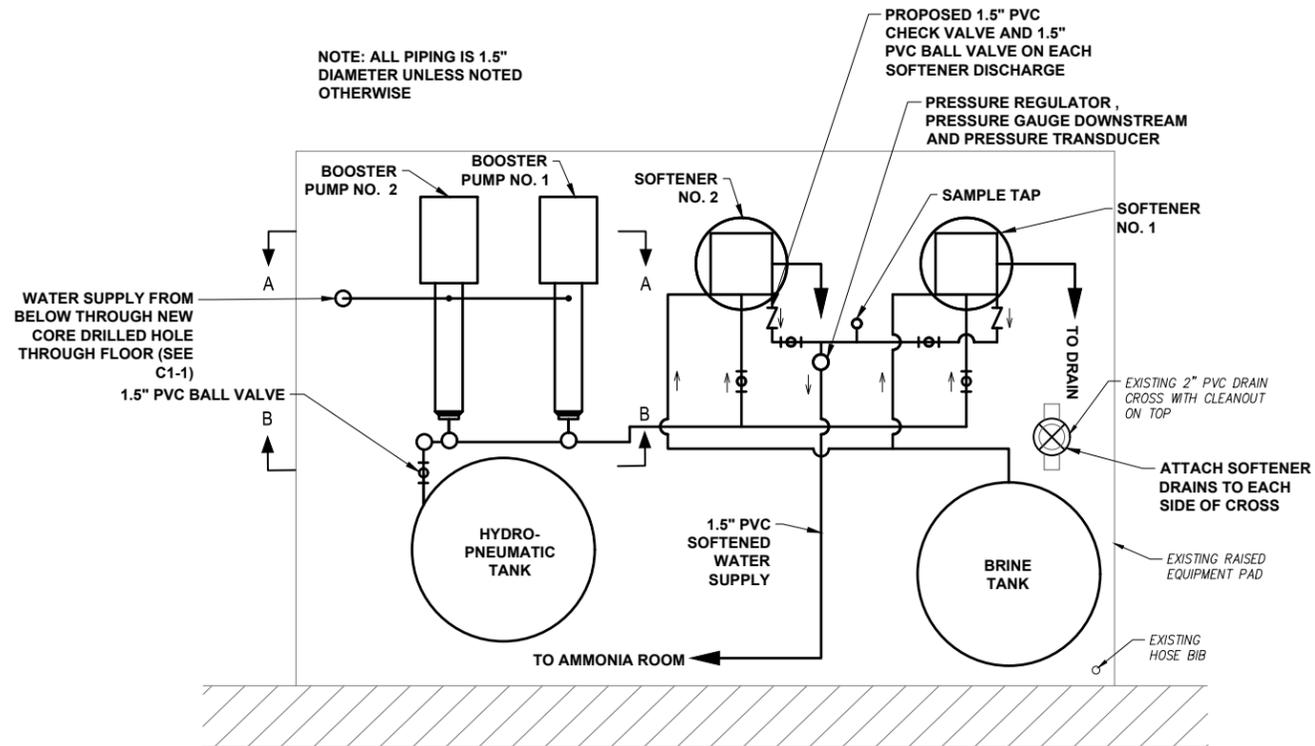
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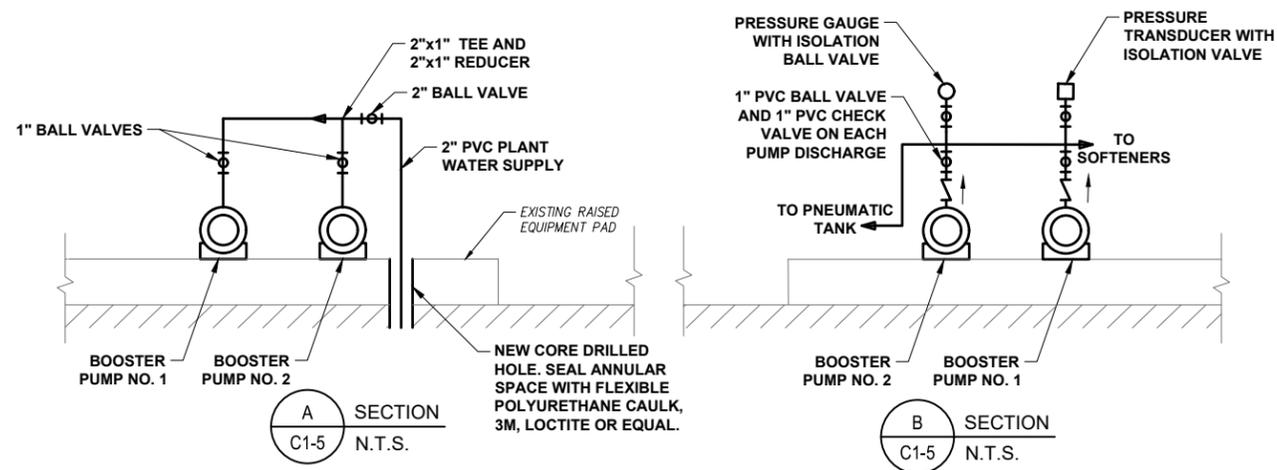
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WATER TREATMENT PLANT
 HIGH SERVICE PUMP
 IMPROVEMENTS
 CITY OF LAKE WORTH
 PALM BEACH COUNTY, FLORIDA

DATE: MAY 2016
 P.A. NO. B5015.00
 DWG. NO. 44-43-28-304
 SHEET: C1-4



1 AMMONIA SYSTEM BOOSTER PUMP AND WATER SOFTENER
C1-5 N.T.S.



A SECTION
C1-5 N.T.S.

B SECTION
C1-5 N.T.S.

AMMONIA SYSTEM BOOSTER PUMP AND SOFTENING SYSTEM SHALL CONSIST OF:

1. TWO MULTISTAGE 304 STAINLESS STEEL BOOSTER PUMPS RATED FOR CONTINUOUS DUTY, MINIMUM CAPACITY EACH OF 12 GPM @ 80 PSIG, MINIMUM ONE HORSEPOWER TEFC MOTOR FOR OPERATION ON 115/230 VOLT SINGLE PHASE 60 HERTZ SERVICE. NOTE THAT AVAILABLE SUCTION PRESSURE MAY RANGE FROM +/- 20 PSI TO 40 PSI. PUMP SHALL BE GOULDS WATER TECHNOLOGY MODEL 10GB OR EQUAL.
2. TWO WATER SOFTENER SYSTEMS CAPABLE OF INDEPENDENT CONTINUOUS OPERATION TO PRODUCE A MINIMUM 16 GPM FLOW EACH. ONE SYSTEM SHALL REMAIN ONLINE WHILE THE OTHER SYSTEM COMPLETES THE BACKWASH CYCLE. THE SYSTEMS SHALL BE DESIGNED TO OPERATE WITHOUT AN ELECTRIC POWER SOURCE. THE SOFTENER SYSTEMS SHALL BE KINETICO MODEL CP213S WATER SOFTENERS OR EQUAL.
3. ONE 75 GALLON MINIMUM POLYETHYLENE BRINE TANK WITH APPROXIMATE DIMENSIONS OF 24-INCHES DIAMETER BY 40-INCHES HIGH.
4. ONE FIBERGLASS HYDRO- PNEUMATIC TANK WITH AIR BLADDER, MINIMUM SIZE 110 GALLONS. TANK SHALL BE FLEX-LITE MODEL FL40 OR EQUAL.
5. ONE HEAVY DUTY PRESSURE REGULATOR SUITABLE FOR PRESSURE REGULATION FROM 5 TO 125 PSI WITH PVC BODY AND 1.5-INCH NPT THREADED CONNECTIONS. REGULATOR SHALL BE MODEL PRHM100V-PV BY PLAST-O-MATIC VALVES, INC. OR EQUAL.
6. PRESSURE GAUGES SHALL BE 4 1/2-INCH DIAMETER 316 STAINLESS STEEL CASE, GLYCERIN FILLED GAUGES. PROVIDE SUITABLE GAUGE PRESSURE RANGE FOR EACH APPLICATION POINT. PROVIDE 1/4 TURN ISOLATION BALL VALVES FOR EACH GAUGE.
7. PRESSURE TRANSDUCER - SEE ELECTRICAL DRAWINGS AND SPECIFICATIONS.
8. SCHEDULE 80 PVC PIPE, FITTINGS, AND VALVES TO PROVIDE A COMPLETE SYSTEM AS SHOWN ON THE DRAWINGS. VALVES SHALL BE TRUE UNION DESIGN 1/4 TURN BALL VALVES BY ASAHI/AMERICA, INC.
9. ALL MATERIALS AND PRODUCTS SHALL BE NSF-61 APPROVED AND SUITABLE FOR CONTACT WITH POTABLE WATER.
10. ALL MATERIALS AND PRODUCTS SHALL BE RATED FOR OPERATION AT 150 PSI MINIMUM.
11. DISINFECT ALL MATERIALS AND PRODUCTS IN CONTACT WITH POTABLE WATER AND OBTAIN BACTERIOLOGICAL SAMPLES PER SPECIFICATIONS. HEALTH DEPARTMENT APPROVAL MUST BE OBTAINED PRIOR TO PLACING SYSTEM IN OPERATION.
12. CONTRACTOR SHALL PROVIDE AMMONIA INJECTOR THROAT AND TAIL PIECE ASSEMBLIES AS MAY BE NECESSARY FOR OPERATION AT THE NEW PRESSURE CONDITION. PROVIDE THE SERVICE OF THE EXISTING AMMONIA FEED SYSTEM TECHNICAL SERVICE REPRESENTATIVE TO COORDINATE THIS WORK AND CHECK ALL OPERATIONS.
13. CONTRACTOR SHALL PROVIDE A COMPLETE OPERABLE SYSTEM, SHALL PROVIDE START-UP SERVICES, AND SHALL PROVIDE OPERATOR TRAINING.

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AMMONIA SYSTEM BOOSTER PUMP AND WATER SOFTENER

WATER TREATMENT PLANT
HIGH SERVICE PUMP
IMPROVEMENTS
CITY OF LAKE WORTH
PALM BEACH COUNTY, FLORIDA

DATE:	MAY 2016
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SHEET:	C1-5

SYMBOLS

	EXPOSED CONDUIT		MOTOR, (NUMBER INDICATES HORSEPOWER)
	CONDUIT RUN IN WALLS, CEILING SPACE, OR IN CONCRETE SLAB ABOVE		ELECTRICAL ENCLOSURE OUTLINE
	HOME RUN TO PANEL "5P1" CIRCUITS #2, 4, 6. PULL #12 AWG (MINIMUM) CONDUCTORS AS REQUIRED FOR NUMBER OF CIRCUITS SHOWN IN A 3/4" (MINIMUM) CONDUIT. PROVIDE #12 NEUTRAL CONDUCTOR AS REQ'D. PULL #12 AWG (MINIMUM) INSULATED GROUND WIRE IN EACH CONDUIT. HOME RUNS WITHOUT CIRCUIT IDENTIFICATION SHALL BE 2#12 & 1#12G-3/4"		CONTROL RELAY OR COIL EXAMPLE { TD2 TIME DELAY RELAY NO. 2 CR1 CONTROL RELAY NO. 1 M1 STARTER NO. 1 MAIN COIL
	CONDUIT BENDS TOWARD OBSERVER		N.O. CONTACT, CONTROL RELAY NO. 1, CONTACT NO. 2
	CONDUIT BENDS AWAY FROM OBSERVER		N.C. CONTACT, CONTROL RELAY NO. 2, CONTACT NO. 1
	CONDUIT CAPPED		FLOAT TYPE LIQUID LEVEL SWITCH, CLOSING ON RISING LEVEL
	FLEXIBLE LIQUID-TIGHT CONDUIT CONNECTION		FLOAT TYPE LIQUID LEVEL SWITCH, OPENING ON RISING LEVEL
	INDICATES CONDUIT NUMBER SEE CONDUIT AND CABLE SCHEDULE		NORMALLY CLOSED PUSH-BUTTON MOMENTARY OPEN
	EXIT SIGN, UNIVERSAL MOUNTING, SHADED AREA INDICATES SINGLE OR DOUBLE FACED, ARROWS INDICATE EGRESS DIRECTION		TWO-POSITION SELECTOR SWITCH: H - HAND, M - MANUAL, R - REMOTE, L - LOCAL A - AUTOMATIC, O - OFF
	TYPE "A" WALL BRACKET INCANDESCENT, MERCURY VAPOR OR SIMILAR LAMP FIXTURE.		THREE POSITION SELECTOR SWITCH, (SAME AS ABOVE)
	TYPE "A" FLUORESCENT LIGHTING FIXTURE		SINGLE POLE TOGGLE SWITCH, ("ON-OFF", ETC.)
	TYPE "A" BATTERY EMERGENCY LIGHT FIXTURE		GROUND CONNECTION
	SINGLE POLE SWITCH. (WP, W/ WEATHERPROOF COVER)		OVERLOAD RELAY CONTACTS (MAGNETIC)
	SINGLE POLE SWITCH. "o" INDICATES CIRCUIT CONTROLLED.		FUSE
	THREE-WAY SWITCH		INDICATING LIGHT: A-AMBER OP-OPALESCENT B-BLUE P-PURPLE C-CLEAR R-RED G-GREEN W-WHITE NE-NEON Y-YELLOW O-ORANGE
	MANUAL MOTOR STARTER		ELAPSED TIME METER
	DENOTES REFERENCE TO NOTE 1 I.E. - "SEE ELECTRICAL NOTE 1"		DISCONNECT SWITCH (SCHEMATIC)
	120V DUPLEX RECEPTACLE, NEMA CONFIGURATION 5-20.		FUSE
	240V RECEPTACLE		OVERLOAD COIL
	SPECIAL PURPOSE OUTLET		BATTERY
	DISCONNECT SWITCH (PLAN VIEW)		TIMED CONTACTS - CONTACT ACTION DELAYED AFTER COIL IS: ENERGIZED
	FUSED DISCONNECT SWITCH (PLAN VIEW)		NORMALLY OPEN WITH TIME DELAY CLOSING
	PANELBOARD		NORMALLY CLOSED WITH TIME DELAY OPENING
	MISCELLANEOUS EQUIPMENT		FIELD TERMINATION
	THERMOSTAT		REMOTE WIRING
	COMBINATION MAGNETIC STARTER. SIZE AS INDICATED TYPE DESIGNATIONS ARE AS FOLLOWS: (FVNR) FULL VOLTAGE NON-REVERSING (RVNR) REDUCED VOLTAGE NON-REVERSING (REV) REVERSING (2S2W) TWO SPEED, TWO WINDING		DETAIL CALL OUT SEE DETAIL X, SHEET Y
	MOLDED CASE CIRCUIT BREAKER SIZE AND NUMBER OF POLES AS INDICATED. (LOCK) PADLOCKABLE (NON-AUTO) NON-AUTOMATIC (MCP) MOTOR CIRCUIT PROTECTOR (CL) CURRENT LIMITING		PHASE INSTANTANEOUS AND TIME OVERCURRENT RELAY
	DRY-TYPE TRANSFORMER WITH GROUNDED SECONDARY, KVA SIZE & VOLTAGE AS NOTED		GROUND TIME OVERCURRENT RELAY (RESIDUAL SENSING)
	CURRENT TRANSFORMER & RATIO (X)-QUANTITY		LIMIT SWITCH (N.C.)
	POWER TRANSFORMER		LIMIT SWITCH (N.O.)
	FLOAT SWITCH		
	PUSHBUTTON		
	SELECTOR SWITCH		

ABBREVIATIONS

A	AMPERE	NC	NORMALLY CLOSED
AHU	AIR HANDLING UNIT	NEC	NATIONAL ELECTRICAL CODE
AIC	AVAILABLE FAULT CURRENT (SYMMETRICAL)	NO	NORMALLY OPEN, NUMBER
ATS	AUTOMATIC TRANSFER SWITCH	NTS	NOT TO SCALE
AWG	AMERICAN WIRE GAUGE	OL	OVERLOAD RELAY
BKR	BREAKER	P	POLE
CPT	CONTROL POWER TRANSFORMER	PC	POWER CONDITIONER
CU	CONDENSING UNIT	PF	POWER FACTOR
DIA	DIAMETER	PH, Ø	PHASE
DIA	DIAMETER	PLC	PROGRAMMABLE LOGIC CONTROLLER
EF	EXHAUST FAN	PM	PHASE MONITOR
FPL	FLORIDA POWER AND LIGHT COMPANY	PNL	PANEL
G	GROUND	PSI	PER SQUARE INCH
GFCI	GROUND FAULT CIRCUIT INTERRUPTING	PVC	POLYVINYL CHLORIDE
HP	HORSEPOWER	RGS	RIGID GALVANIZED STEEL
INST	INSTANTANEOUS	RTU	REMOTE TERMINAL UNIT
J-BOX	JUNCTION BOX	SCH	SCHEDULE
KCML	THOUSAND CIRCULAR MILS	SH	SHIELDED
KV	KILOVOLT	SS	STAINLESS STEEL
KVA	KILO (1000) VOLT AMPS	TYP	TYPICAL
KW	KILOWATTS	V	VOLTAGE, VOLTS
MAX	MAXIMUM	W	WATTS, WIRE
MCB	MAIN CIRCUIT BREAKER	WP	WEATHERPROOF
MCC	MOTOR CONTROL CENTER		
MIN	MINUTES, MINIMUM		
MLO	MAIN LUGS ONLY		
N	NEUTRAL		

GENERAL NOTES

- IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH ALL LOCAL UTILITIES, AND TO MEET ALL OF THEIR INSTALLATION REQUIREMENTS. ALL LABOR, EQUIPMENT OR MATERIALS NECESSARY TO MEET THESE REQUIREMENTS IS TO BE INCLUDED IN THE BID. THE CONTRACTOR SHALL OBTAIN, DELIVER AND INSTALL ALL CONDUITS, PULL-BOXES AND EQUIPMENT AS REQUIRED BY THE UTILITIES TO THEIR SPECIFICATIONS.
- THE INSTALLATION SHALL MEET ALL REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL CODES HAVING JURISDICTION.
- AN EQUIPMENT GROUND WIRE SIZED PER THE NEC SHALL BE PULLED IN ALL ELECTRICAL CONDUITS, POWER & CONTROL, WHETHER OR NOT INDICATED ON THE PLANS.
- ALL EQUIPMENT AND MATERIALS SHALL BE NEW AND UNUSED AND U.L. LISTED.
- ALL EQUIPMENT FURNISHED AND INSTALLED BY THE CONTRACTOR SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE UNLESS OTHERWISE SPECIFIED.
- COORDINATE ALL EQUIPMENT LOCATIONS WITH THE ENGINEER AND MECHANICAL CONTRACTOR BEFORE ANY INSTALLATION. ALL EQUIPMENT DIMENSIONS AND CONDUIT OPENINGS SHALL BE VERIFIED WITH THE MANUFACTURER'S APPROVED SHOP DRAWINGS PRIOR TO FORMING CONCRETE WORK.
- THE DRAWINGS ARE NOT INTENDED TO SHOW THE EXACT LOCATION OF CONDUIT RUNS. THESE ARE TO BE COORDINATED WITH THE OTHER TRADES SO THAT CONFLICTS ARE AVOIDED.

ELECTRICAL SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES

PLOT DATE: May 05, 2016 - 9:15am XREFS: IMAGES:

BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING
ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

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SEAL
LARRY M. SMITH
FLORIDA P.E. NO. 45997

DATE

FLORIDA E.B. NO. 48

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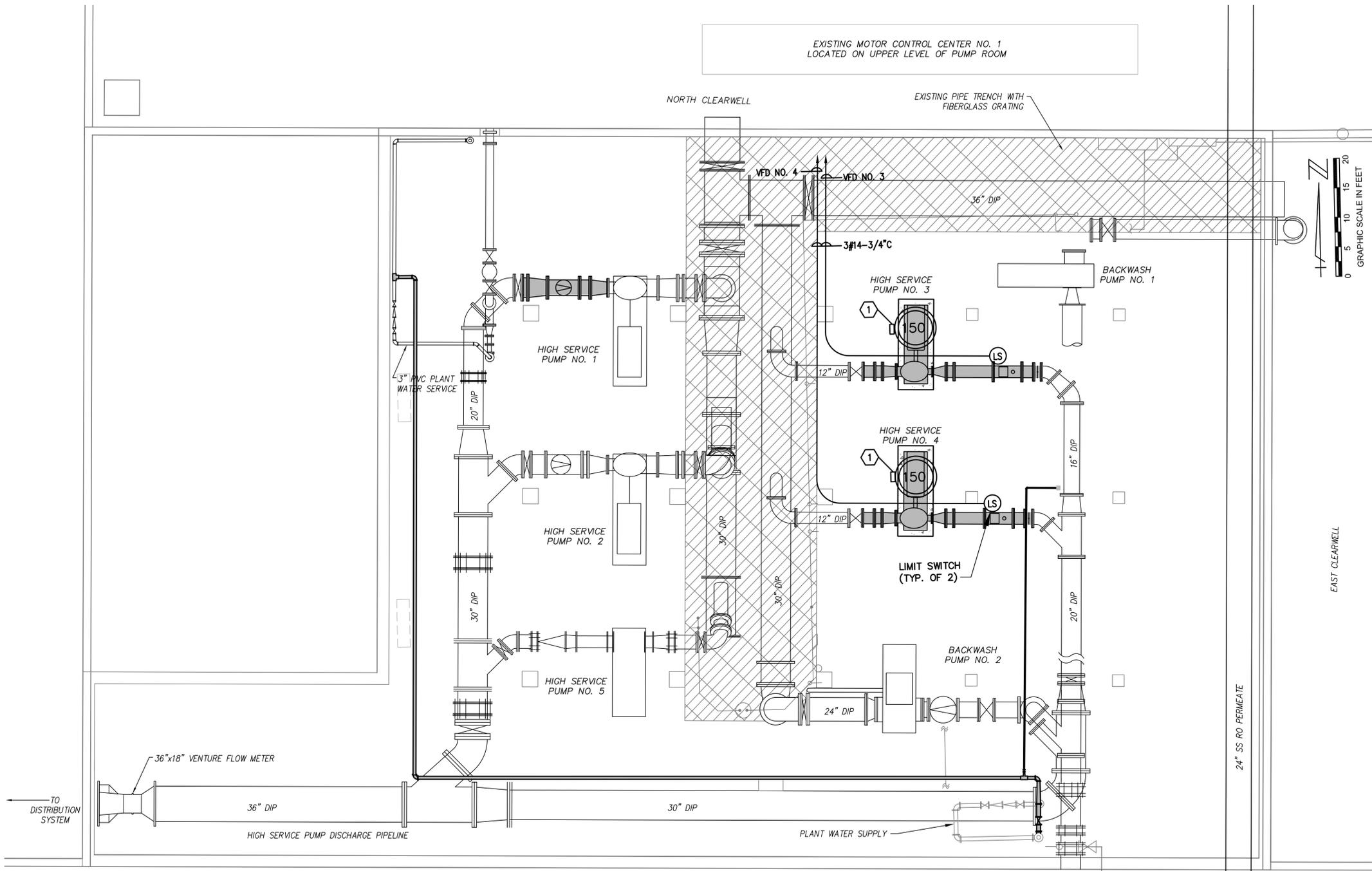
5720 Corporate Way, West Palm Beach, Florida 33407 (561) 683-3113, Fax 478-7248

FLORIDA L.B. NO. 48

FIELD: #####
DRAWN: S.P.H
DESIGN: S.P.H.
APPR: L.M.S.
SCALE: AS SHOWN

WATER TREATMENT PLANT
HIGH SERVICE PUMP
IMPROVEMENTS
CITY OF LAKE WORTH
PALM BEACH COUNTY, FLORIDA

DATE:	MAY 2016
P.A. NO.	B5015.00
DWG. NO.	44-43-28-304
SHEET:	E-1



PUMP ROOM ELECTRICAL PLAN
SCALE: 1/8"=1'-0"

ELECTRICAL NOTES:

- ① DISCONNECT EXISTING MOTOR AND REMOVE WIRE AND CONDUIT BACK TO SOURCE. PROVIDE AND INSTALL NEW CONDUIT AND WIRE. SEE RISER ON DRAWING E-3. MAKE ALL CONNECTIONS NECESSARY FOR A COMPLETE WORKING SYSTEM IN PLACE.

PUMP ROOM ELECTRICAL FLOOR PLAN

PLOT DATE: May 05, 2016 - 9:16am XREFS: wphases01_lined.dwg wphases01_mdb.dwg IMAGES: BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

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FLORIDA L.B. NO. 48

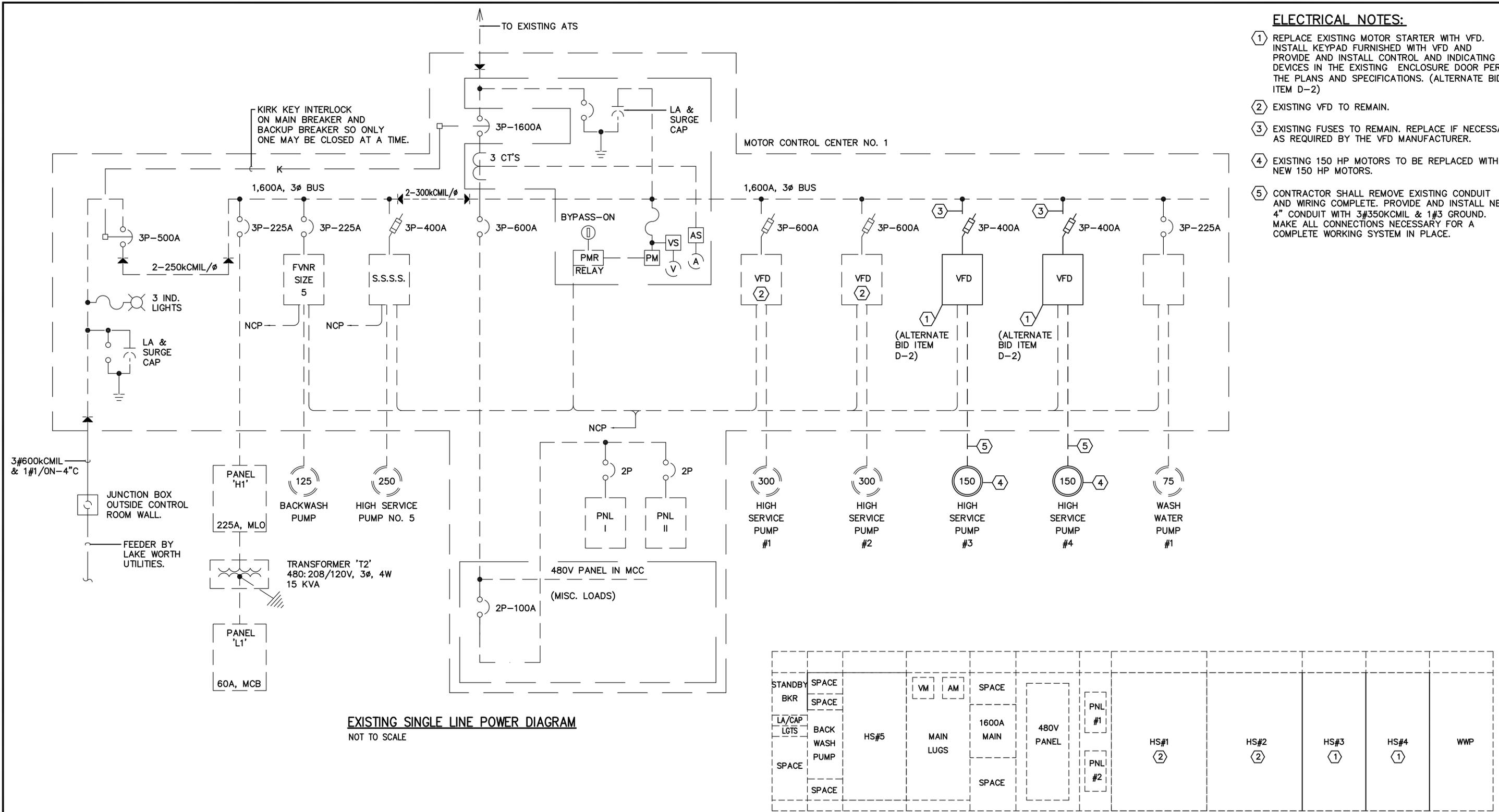
FIELD: ----
DRAWN: S.P.H.
DESIGN: S.P.H.
APPR: L.M.S.
SCALE: AS SHOWN

WATER TREATMENT PLANT
HIGH SERVICE PUMP
IMPROVEMENTS
CITY OF LAKE WORTH
PALM BEACH COUNTY, FLORIDA

DATE: MAY 2016
P.A. NO. B5015.00
DWG. NO. 44-43-28-304
SHEET: E-2

ELECTRICAL NOTES:

- ① REPLACE EXISTING MOTOR STARTER WITH VFD. INSTALL KEYPAD FURNISHED WITH VFD AND PROVIDE AND INSTALL CONTROL AND INDICATING DEVICES IN THE EXISTING ENCLOSURE DOOR PER THE PLANS AND SPECIFICATIONS. (ALTERNATE BID ITEM D-2)
- ② EXISTING VFD TO REMAIN.
- ③ EXISTING FUSES TO REMAIN. REPLACE IF NECESSARY AS REQUIRED BY THE VFD MANUFACTURER.
- ④ EXISTING 150 HP MOTORS TO BE REPLACED WITH NEW 150 HP MOTORS.
- ⑤ CONTRACTOR SHALL REMOVE EXISTING CONDUIT AND WIRING COMPLETE. PROVIDE AND INSTALL NEW 4" CONDUIT WITH 3#350KCML & 1#3 GROUND. MAKE ALL CONNECTIONS NECESSARY FOR A COMPLETE WORKING SYSTEM IN PLACE.



EXISTING SINGLE LINE POWER DIAGRAM
NOT TO SCALE

EXISTING MOTOR CONTROL CENTER ELEVATION
NOT TO SCALE

EXISTING SIGNLE LINE POWER DIAGRAM

PLOT DATE: May 05, 2016 - 9:17am XREFS: IMAGES: BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING
ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

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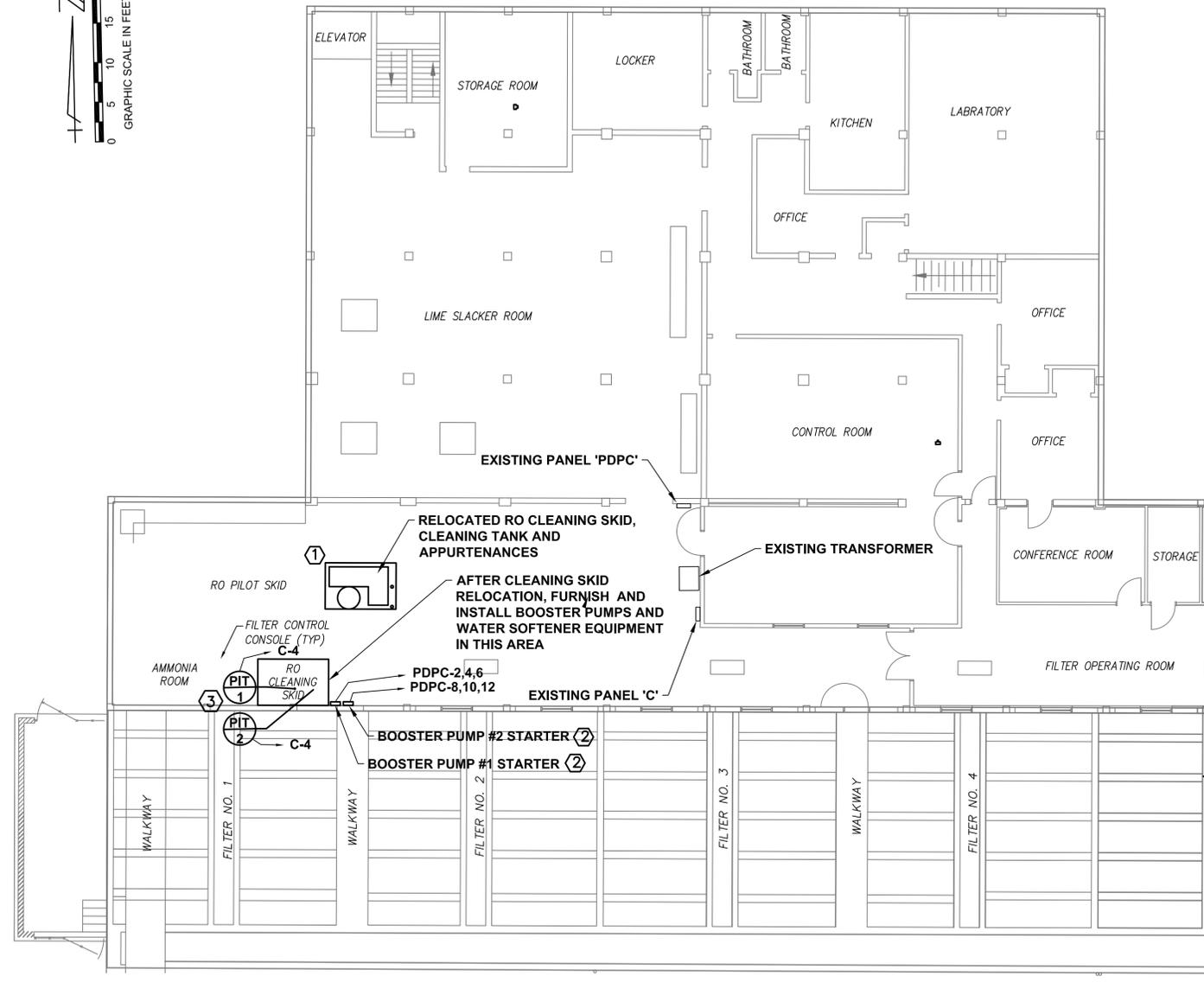
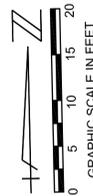
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FLORIDA L.B. NO. 48

FIELD: #####
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DESIGN: S.P.H.
APPR: L.M.S.
SCALE: AS SHOWN

**WATER TREATMENT PLANT
HIGH SERVICE PUMP
IMPROVEMENTS**
CITY OF LAKE WORTH
PALM BEACH COUNTY, FLORIDA

DATE:	MAY 2016
P.A. NO.	B5015.00
DWG. NO.	44-43-28-304
SHEET:	E-3



PUMP ROOM ELECTRICAL PLAN
SCALE: 1/8"=1'-0"

ELECTRICAL NOTES:

- ① CONTRACTOR SHALL DISCONNECT EXISTING WIRING AND CONDUIT FROM EXISTING CONTROL PANEL AND EXTEND CONDUIT, WIRING TO NEW LOCATION. RE-CONNECT EXISTING CONTROL PANEL FOR A COMPLETE WORKING SYSTEM IN PLACE.
- ② CONTRACTOR SHALL PROVIDE AND INSTALL NEW MOTOR STARTER IN NEMA 4X ENCLOSURE. SEE AMMONIA BOOSTER PUMP CONTROL DIAGRAM ON DRAWING E-5. PROVIDE AND INSTALL 3#10, 1#10EG IN 1" C FROM PANEL "PDPC" TO MOTOR. MAKE ALL CONNECTIONS NECESSARY FOR A COMPLETE WORKING SYSTEM IN PLACE. PROVIDE AND INSTALL 8#14-3/4" C FROM THE STARTER TO THE EXISTING PLANT CENTRAL COMPUTER.
- ③ CONTRACTOR SHALL PROVIDE AND INSTALL (2) 2/C#16SH IN 3/4" C FROM EACH PRESSURE TRANSMITTER TO THE PLANT CENTRAL COMPUTER. MAKE ALL CONNECTIONS NECESSARY FOR A COMPLETE WORKING SYSTEM IN PLACE.

EXISTING PANELBOARD 'PDPC' SCHEDULE

WIRE SIZE	BUS AMPS			LOAD	POLES	AMPS	BUS A B C			AMPS	POLES	LOAD	BUS AMPS			WIRE SIZE
	A	B	C				A	B	C				A	B	C	
30							1			2			2		10	
	30			AHU-4 (EXISTING)	3	60	3			4	15	3	AMMONIA BOOSTER PUMP #1	2	10	
		30					5			6			1 HP	2	10	
24				CU-4 (EXISTING)	3	60	9			10	15	3	AMMONIA BOOSTER PUMP #2	2	10	
	24						11			12			1 HP	2	10	
75				TRANSFER C (EXISTING)	3	125	13			14			SPACE			
	75						15			16			SPACE			
				SPACE			17			18			SPACE			
				SPACE			19			20			SPACE			
				SPACE			21			22			SPACE			
				SPACE			23			24			SPACE			
				SPACE			25			26			SPACE			
				SPACE			27			28			SPACE			
				SPACE			29			30			SPACE			
				SPACE			31			32			SPACE			
				SPACE			33			34			SPACE			
				SPACE			35			36			SPACE			
				SPACE			37			38			SPACE			
				SPACE			39			40			SPACE			
				SPACE			41			42			SPACE			

TOTAL AMPS: BUS A 133 BUS B 133 BUS C 133 CONNECTED KVA 110.4
 RATED VOLTAGE: 120/208 120/240 277/480 3 PHASE, 4 WIRE BRANCH POLES 12 18 20 24 30 36 42
 RATED AMPS: 100 225 400 CABINET: SURFACE FLUSH
 NO NEUTRAL BUS GROUND BUS HINGED DOOR ENCLOSURE TYPE: NEMA 1
 BRANCH DEVICES FUSED CIRCUIT BREAKER (BOLT-IN)
 MAIN LUGS ONLY MAIN 225 AMPS BREAKER FUSED SWITCH

EXISTING PANELBOARD 'C' SCHEDULE

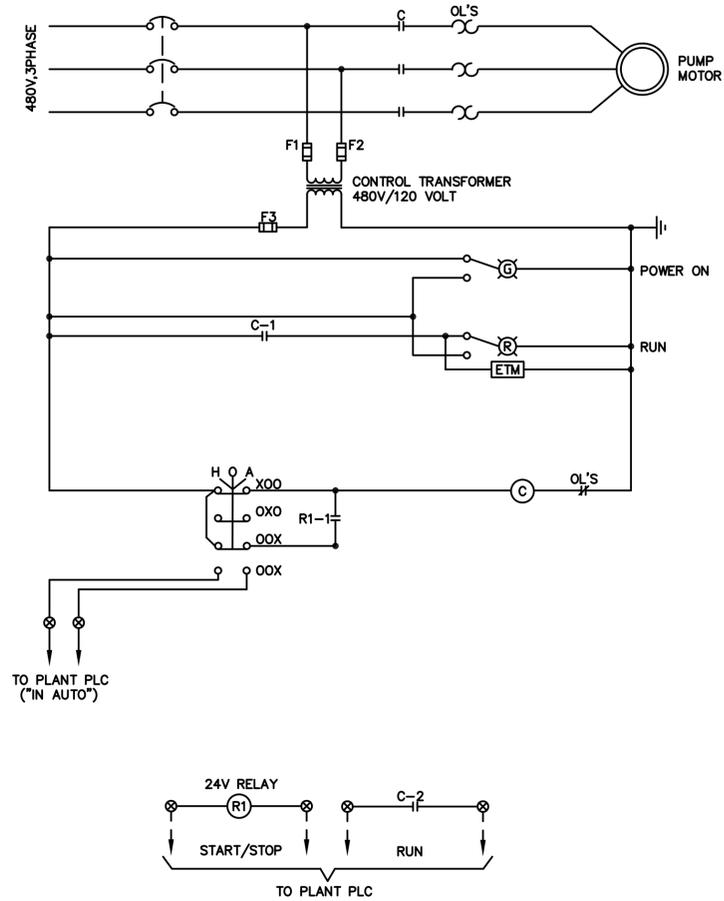
WIRE SIZE	BUS AMPS			LOAD	POLES	AMPS	BUS A B C			AMPS	POLES	LOAD	BUS AMPS			WIRE SIZE
	A	B	C				A	B	C				A	B	C	
30							1			2	20	1	RECEPT (EXISTING)	1.5		
	30			PNL NC-3 (EXISTING)	3	100	3			4	20	1	PRESSURE TRANSMITTERS (NEW)	2	12	
		30					5			6	20	1	RECEPT (EXISTING)			
2				CONTROL LIGHTS (EXISTING)	1	20	7			8	20	1	RECEPT (EXISTING)	2		
	3			QUAD RECEPT. (EXISTING)	1	20	9			10	20	1	RECEPT (EXISTING)	2		
		2		CONTROL LIGHTING (EXISTING)	1	20	11			12	20	1	RECEPT (EXISTING)		2	
2				CONTROL LIGHTS (EXISTING)	1	20	13			14	20	1	RECEPT (EXISTING)	2		
	1.5			CONTROL RM RECEPT (EXISTING)	1	20	15			16	20	1	RECEPT (EXISTING)	2		
		1		WEATHER STATION (EXISTING)	1	20	17			18	20	1	RECEPT (EXISTING)	2	2	
5				SCADA UPS (EXISTING)	1	20	19			20	20	1	RECEPT (EXISTING)	2		
				SPACE			21			22	20	1	TV RECEPT (EXISTING)	2		
				SPACE			23			24			SPACE			
				SPACE			25			26			SPACE			
				SPACE			27			28			SPACE			
				SPACE			29			30			SPACE			
				SPACE			31			32			SPACE			
				SPACE			33			34			SPACE			
				SPACE			35			36			SPACE			
30							37			38	20	1	SPARE			
	30			PNL C1 (EXISTING)	3	100	39			40	20	1	SPARE			
		30					41			42	20	1	SPARE			

TOTAL AMPS: BUS A 76.5 BUS B 72.5 BUS C 69 CONNECTED KVA 26.2
 RATED VOLTAGE: 120/208 120/240 277/480 3 PHASE, 4 WIRE BRANCH POLES 12 18 20 24 30 36 42
 RATED AMPS: 100 225 400 CABINET: SURFACE FLUSH
 NO NEUTRAL BUS GROUND BUS HINGED DOOR ENCLOSURE TYPE: NEMA 1
 BRANCH DEVICES FUSED CIRCUIT BREAKER (BOLT-IN)
 MAIN LUGS ONLY MAIN 225 AMPS BREAKER FUSED SWITCH

PARTIAL SECOND FLOOR ELECTRICAL PLAN

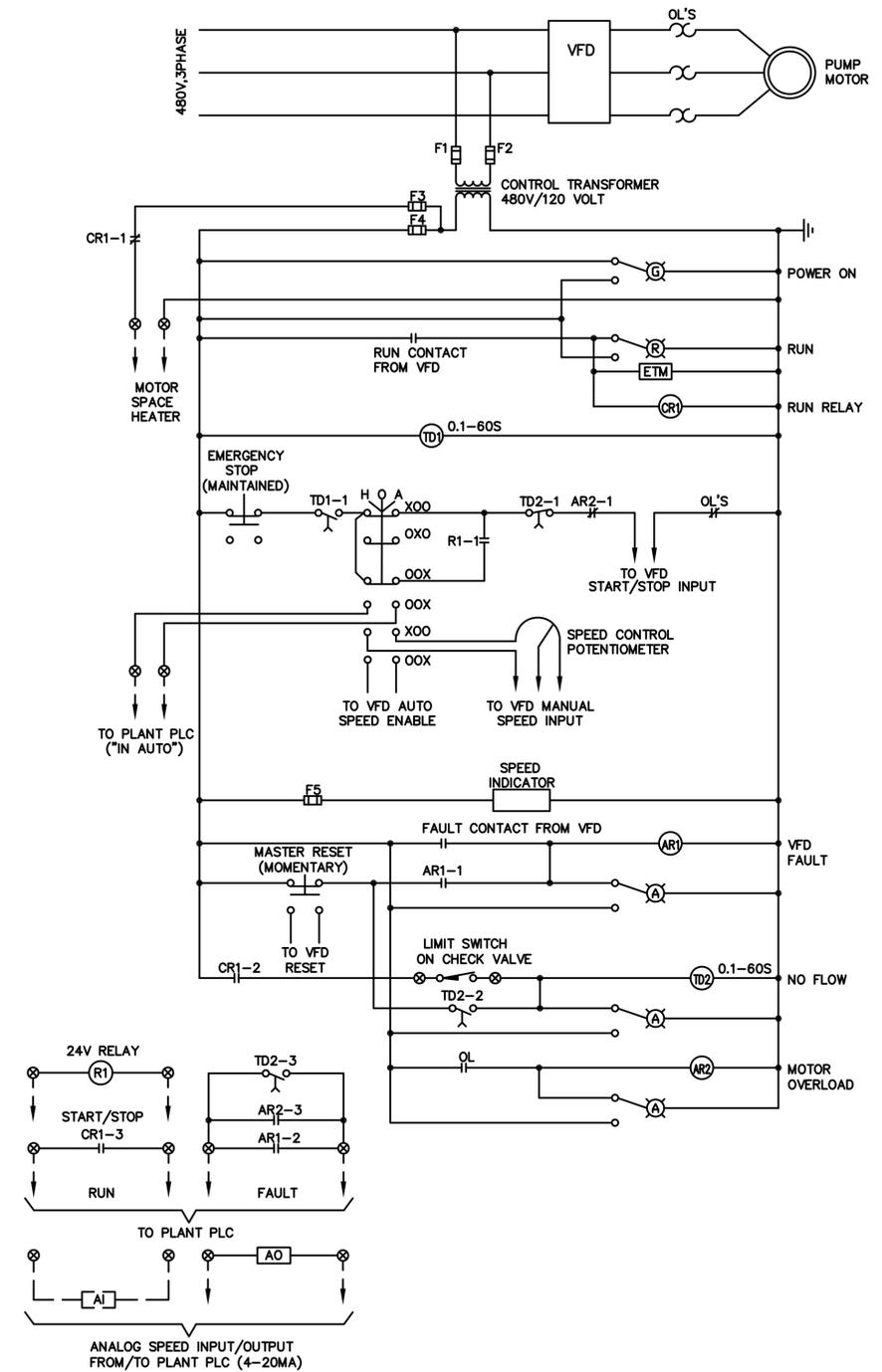
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<p>CADD FILE: 1 4-26-16 SPH M:\SEC 2015\515026 MR- LWU WTR... S15026 E-4.dwg</p>		<p>ADDED SHEET REVISION</p>		<p>NO. DATE BY</p>	



AMMONIA BOOSTER PUMP CONTROL DIAGRAM
TYPICAL FOR 2

NOTE: CONTRACTOR SHALL PROVIDE AND INSTALL COMBINATION MOTOR STARTER IN NEMA 4X ENCLOSURE. STARTER SHALL BE PROVIDED WITH MOTOR CIRCUIT PROTECTION BREAKER/DISCONNECT (PAD-LOCKABLE IN THE "OFF" POSITION) HOA SWITCH, LIGHTS, ETC. AS PER SCHEMATIC. MAKE ALL CONNECTIONS NECESSARY FOR A COMPLETE WORKING SYSTEM IN PLACE.



HIGH SERVICE PUMPS VFD CONTROL DIAGRAM

PLOT DATE: May 05, 2016 - 9:18am XREFS: IMAGES:
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ELEMENTARY CONTROL DIAGRAMS

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	NO. DATE BY REVISION					