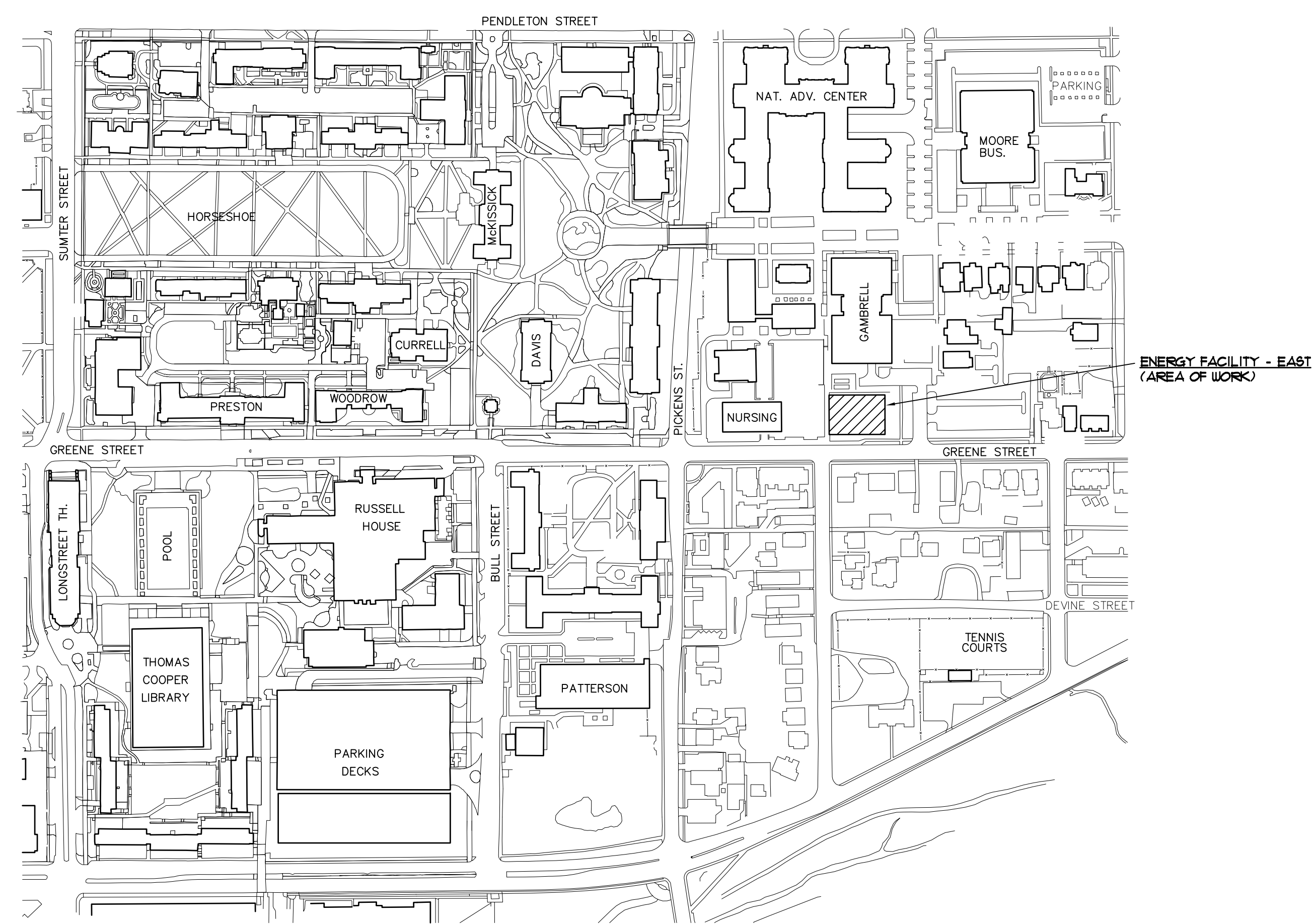


EAST ENERGY DEAERATOR TANK REPLACEMENT

STATE PROJECT NO. H27-1975

THE UNIVERSITY OF SOUTH CAROLINA
COLUMBIA, SOUTH CAROLINA

FACILITIES PLANNING AND CONSTRUCTION



MECHANICAL ENGINEER
MECHANICAL DESIGN, INC.
4403 BROAD RIVER ROAD
COLUMBIA, S.C. 29210
(803) 731-9834

ELECTRICAL ENGINEER
BELKA ENGINEERING ASSOCIATES
7 CLUSTERS COURT
COLUMBIA, S.C. 29210
(803) 731-0650

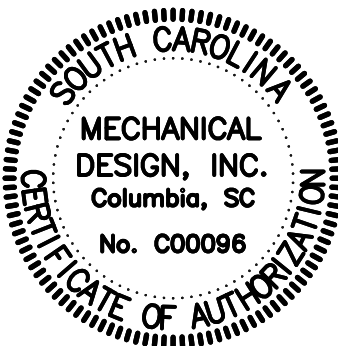
INDEX OF DRAWINGS	
T1	TITLE SHEET
M1	UPPER LEVEL MECHANICAL FLOOR PLAN EAST ENERGY FACILITY - DEMOLITION
M2	UPPER LEVEL MECHANICAL FLOOR PLAN EAST ENERGY FACILITY - RENOVATION
M3	MECHANICAL SCHEDULES AND DETAILS
E1	UPPER LEVEL MECHANICAL ROOM, EAST ENERGY FACILITY - ELECTRICAL DEMOLITION PLAN
E2	UPPER LEVEL MECHANICAL ROOM, EAST ENERGY FACILITY - ELECTRICAL RENOVATION PLAN

CODE REVIEW INFORMATION	
PROJECT DESIGNED IN ACCORDANCE WITH:	
1.	International Building Code - 2009 Edition.
2.	International Plumbing Code - 2009 Edition.
3.	International Mechanical Code - 2009 Edition.
4.	National Electric Code - 2008 Edition.
5.	Seismic Design Category C

SYMBOLS	
	NEW MATERIALS
	MATERIALS TO BE REMOVED
	MATERIALS TO REMAIN
	PIPE TURNING DOWN
	STEAM PIPE
	PUMPED CONDENSATE
	BOILER FEED PIPE
	HIGH TEMPERATURE CONDENSATE
	MAKE-UP WATER PIPE FROM WATER SOFTNER
	GATE VALVE, UNLESS OTHERWISE NOTED
	CONTROL VALVE
	RELIEF VALVE
	NEW FLOW METER
	CONNECT NEW TO EXISTING



SPECIAL NOTE:
CONTRACTOR IS REQ'D TO VISIT PROJECT SITE
PRIOR TO SUBMITTING BID AND THOROUGHLY
FAMILIARIZE HIMSELF WITH ALL EXIST CONDITIONS
RELATING TO THIS PROJECT. SUBMISSION OF A
BID WILL BE CONSIDERED AS EVIDENCE THAT
THE CONTRACTOR HAS VISITED THE SITE OF WORK.



**MECHANICAL
DESIGN
INC.**

4403 Broad River Road
Columbia, S.C. 29210
(803) 731-9834
(803) 731-9837 FAX
CONTACT: Danny Wilds
DATE: 12/01/12
COMM. No. 122968

CAMPUS PLANNING
AND CONSTRUCTION
COLUMBIA, SC 29208

CHECKED BY: CDW	DRAWN BY: CDW	DATE: 01 Dec 12	DESCRIPTION	REV.
ORG.	DATE			

PROJECT TITLE: EAST ENERGY DEAERATOR TANK REPLACEMENT
(H27-1975)

University of South Carolina

SHEET:

T1

1 OF 1

SHEET IN SET:

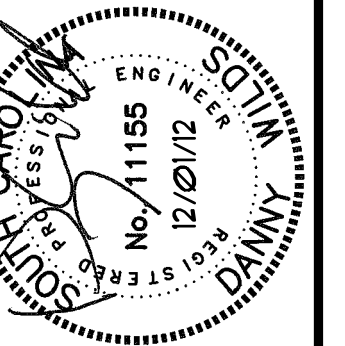
OF



SCALE: 1/8"==1'-0"

- (D1) REMOVE DEAERATOR COMPLETE INCLUDING PIPING INDICATED BY HATCHING, CONTROLS, AND HOUSEKEEPING PAD.
- (D2) REMOVE OVERFLOW AND DRAIN PIPES INDICATED BY HATCHING COMPLETE INCLUDING HANGERS AND SUPPORTS. REMOVE DOWN TO FLOOR LEVEL.
- (D3) REMOVE VENT PIPING AND SAFETY VALVE DISCHARGE PIPES INDICATED BY HATCHING COMPLETE INCLUDING HANGERS AND SUPPORTS.
- (D4) REMOVE 3" STEAM PIPE CONNECTION TO H.P. STEAM HEADER COMPLETE INCLUDING GATE VALVES, STRAINERS, PRESSURE REDUCING VALVES, HANGERS, AND SUPPORTS.
- (D5) REMOVE 3" MAKE-UP WATER PIPE INDICATED BY HATCHING COMPLETE INCLUDING GATE VALVES, FLOW METER, 51-FR08 PIPE, HANGERS, AND SUPPORTS. REMOVE DOWN TO FLOOR LEVEL.

ASBESTOS ABATEMENT NOTE:
INSULATION ON STEAM, CONDENSATE RETURN PIPING,
AND EQUIPMENT WILL BE ABATED UNDER SEPARATE
CONTRACT. COORDINATE WITH ABATEMENT CONTRACTOR
FOR PIPES AND EQUIPMENT TO BE ABATED.



CAMPUS PLANNING
AND CONSTRUCTION
COLUMBIA, SC 29208

REV.	DESCRIPTION	DATE	ORIG. BY	DRAWN BY	CDW
		15 June 12			CDW

(H27-1975)

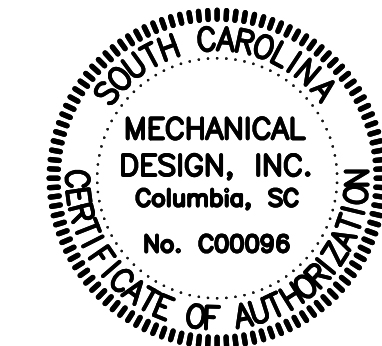
EET:

1

3

EET IN SET:

F

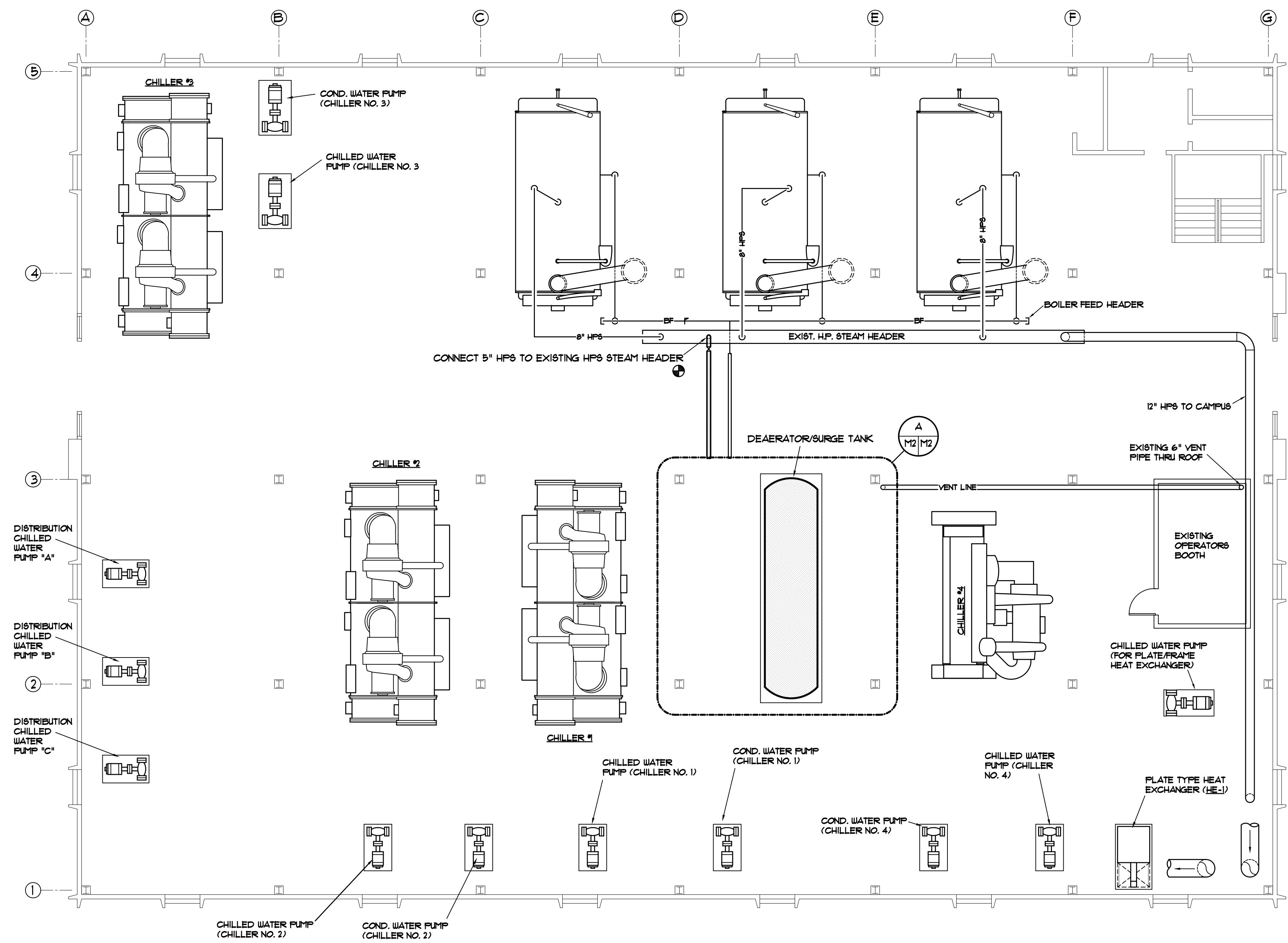


**MECHANICAL
DESIGN
INC.**

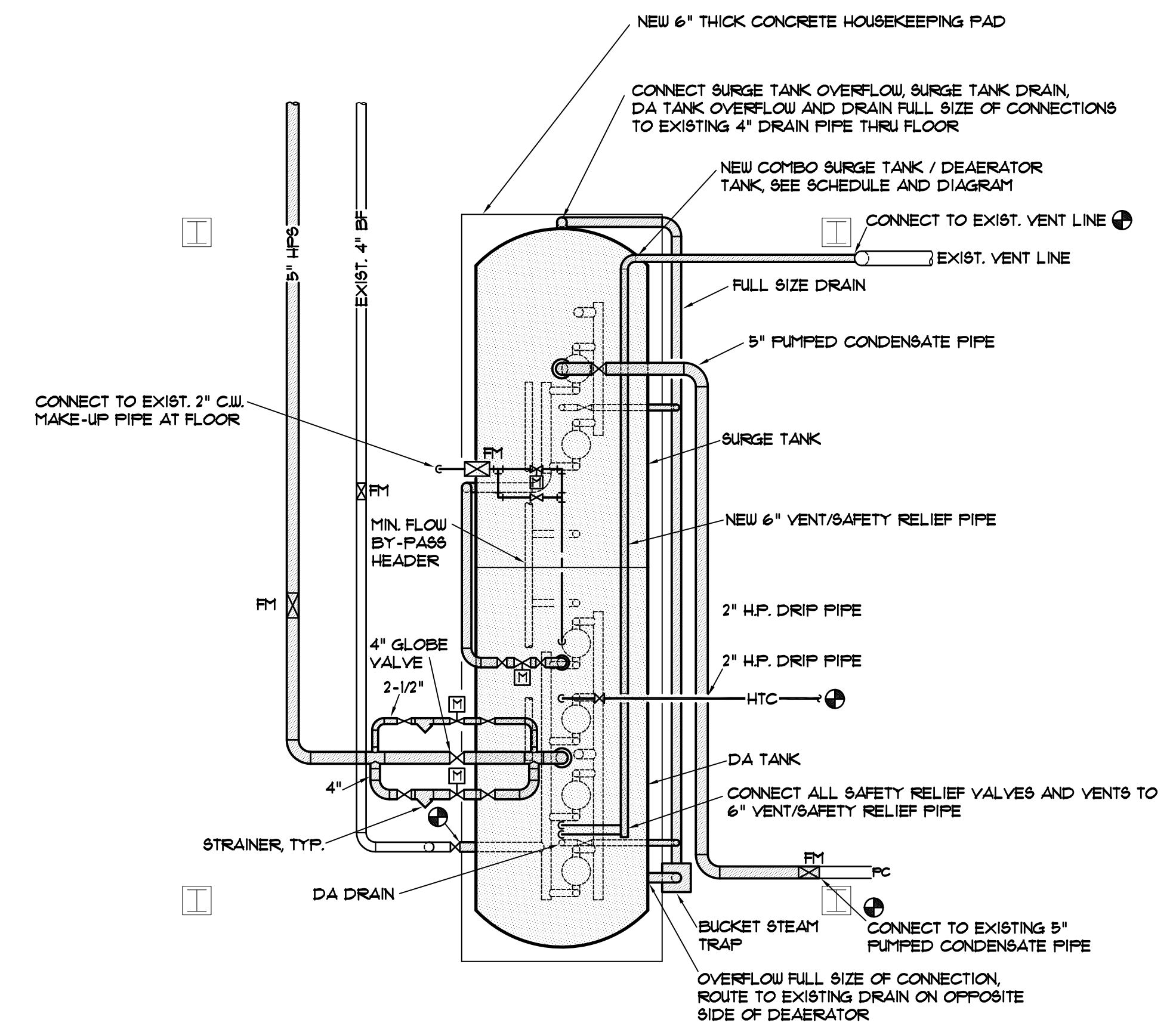
CONTACT: Danny Wilds

DATE: 06/25/12

COMM. NO. 122968



UPPER LEVEL MECHANICAL FLOOR PLAN - EAST ENERGY FACILITY - RENOVATION
 SCALE: 1/8" = 1'-0"



DEAERATOR PARTIAL PLAN
 SCALE: 1/4" = 1'-0"

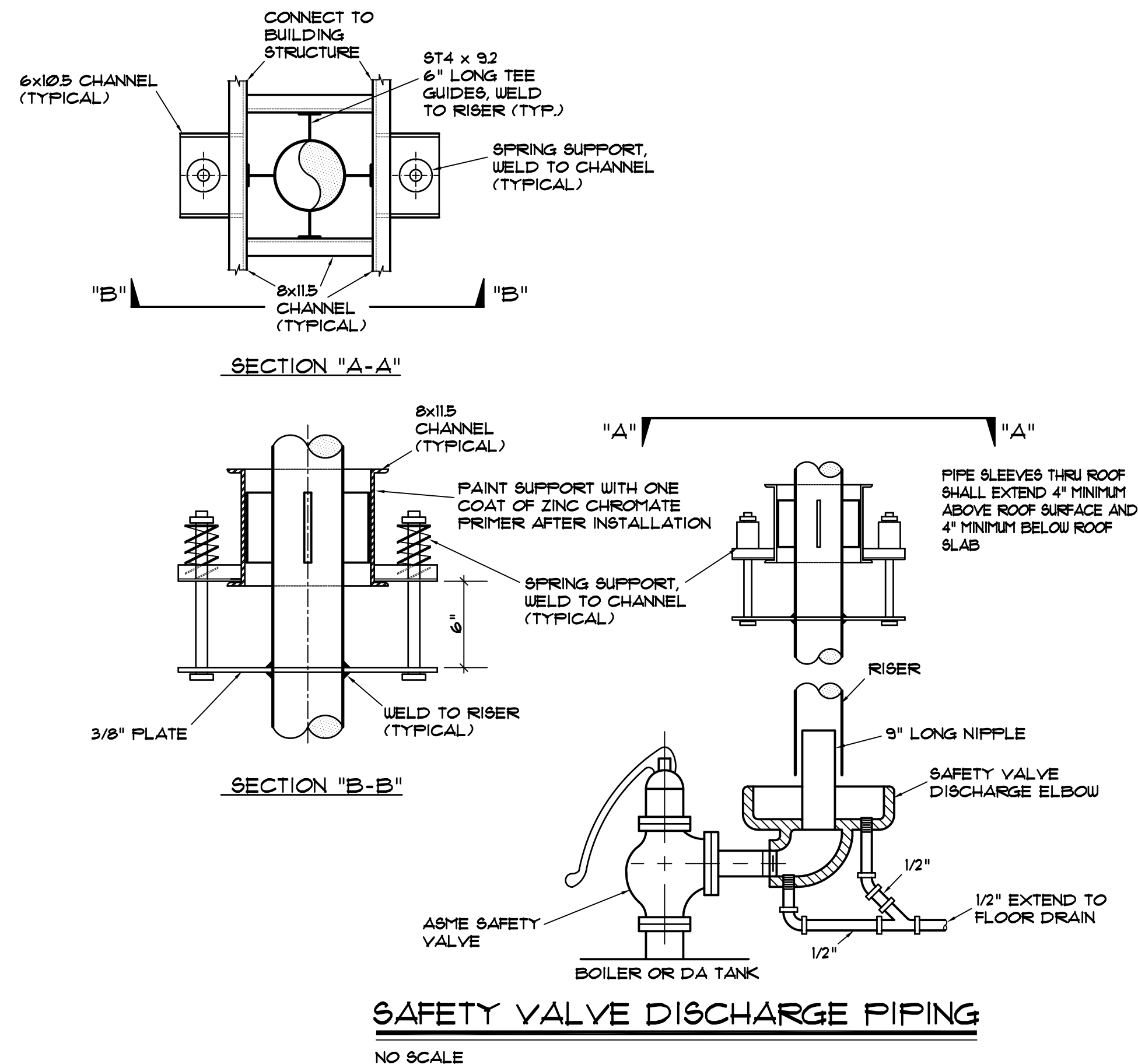


MECHANICAL DESIGN, INC.
 4403 Broad River Road
 Columbia, S.C. 29210
 (803) 731-9834
 (803) 731-9837 FAX
 CONTACT: Danny Wilds
 DATE: 12/01/12 COMM. No. 122968

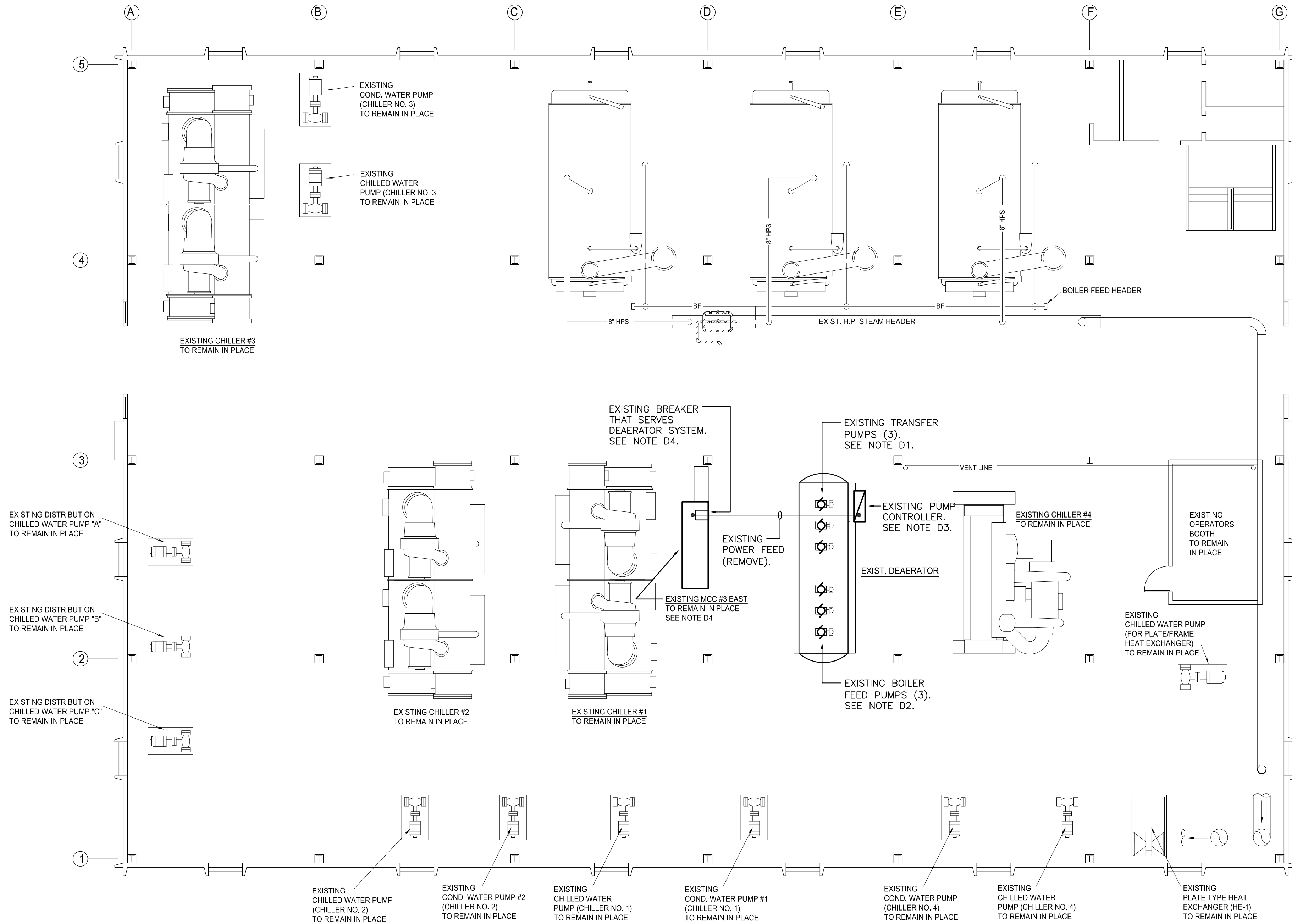
CAMPUS PLANNING AND CONSTRUCTION COLUMBIA, SC 29208	
PROJECT TITLE: EAST ENERGY DEAERATOR TANK REPLACEMENT (H27-1975)	SHEET: M2 2 OF 3 SHEET IN SET: OF
CHECKED BY: CDW DATE: 01 Dec 12 DRAWN BY: CDW DATE: 12/01/12 DESCRIPTION:	BUILDING:
University of South Carolina	

DEAERATOR / SURGE TANK SCHEDULE ^③																				
CLEAVER-BROOKS MODEL ①	CAPACITY (LBS./HR)	DEAERATOR STORAGE	MAX. OXYGEN CONTENT	PRESSURE RATING	OPERATING PRESSURE	SAT. STEAM SUPPLY PRESS.	BOILER FEED PUMPS (EACH)						SURGE ① STORAGE	TRANSFER PUMPS (EACH)						
							QTY.	GPM	RPM	HEAD	DEAD HEAD	NPSHR		MOTOR	QTY.	GPM	RPM	HEAD	NPSHR	MOTOR
SD-100-1000/1000	100,000	2,000 GAL.S.	0.005 CC./LITER	50 PSIG ⑤	5 PSIG	100 PSIG ②	4	⑥	3,500	135 PSIG	154.5 PSIG	5.0 FT.	15 HP ④ ⑧	2,000 GAL.S.	2	⑥	3,500	100 PSIG	1.0 FT.	20 HP ④ ⑧

- FURNISH DEAERATOR SECTION WITH:**
1. ONE YEAR TOTAL PARTS AND LABOR WARRANTY,
 2. ADVANCED DEARATOR CONTROL (ADAC) WITH TEMPERATURE (SURGE AND DEARATOR) AND DEARATOR PRESSURE,
 3. RELIEF VALVES AND VENT VALVE,
 4. WATER LEVEL GAUGE GLASS ASSEMBLY WITH SHUT-OFF COCKS AND PROTECTIVE RODS TO COVER THE FULL WATER LEVEL TRAVEL, AND MAGNETIC VISUAL INDICATOR,
 5. PIPED RECIRCULATION,
 6. FACTORY WIRING BETWEEN CONTROL PANEL AND PUMP MOTORS,
 7. 3" SELF CONTAINED OVERFLOW TRAP,
 8. (2) PRESSURE REDUCING VALVE AND STRAINERS FOR STEAM SUPPLY PRESSURE AND CONTROL (1/3, 2/3),
 9. HIGH, LOW, AND LOW-LOW WATER ALARM SWITCHES,
 10. 8 FT. HIGH (MIN) HEAVY STRUCTURAL STEEL SUPPORT STAND,
 11. 24" DI. DRYVENT HANWAY (DEARATOR TANK),
 12. TOTALLY ENCLOSED FAN COOLED PUMP MOTORS, HIGH EFFICIENCY, WITH VFD'S AND CURRENT OVERLOAD SWITCHES,
 13. NEMA 12 CONTROL CABINET WITH HINGED COVER INCLUDING VFD'S, FUSED DISCONNECT SWITCHES (FOR ALL SIX PUMPS), AND CONTROL TRANSFORMER (SEE SPECS).
- FURNISH SURGE SECTION WITH:**
1. ONE YEAR TOTAL PARTS AND LABOR WARRANTY,
 2. NPT OPENINGS FOR MAKE-UP, FLOAT, GAUGE GLASS, THERMOMETER, VENT, RETURN, OVERFLOW, DRAIN, AND MINIMUM PUMP BY-PASS,
 3. 20" DIA. HANWAY,
 4. 3" SELF CONTAINED P-TRAP,
 5. TOTALLY ENCLOSED FAN COOLED PUMP MOTORS, HIGH EFFICIENCY, WITH VFD'S AND CURRENT OVERLOAD SWITCHES,
 6. ADVANCED DEARATOR CONTROL (ADAC) WITH TEMPERATURE (SURGE AND DEARATOR) AND DEARATOR PRESSURE,
 7. PIPED RECIRCULATION.



ASBESTOS ABATEMENT NOTE:
INSULATION ON STEAM, CONDENSATE RETURN PIPING,
AND EQUIPMENT WILL BE ABATED UNDER SEPARATE
CONTRACT. COORDINATE WITH ABATEMENT CONTRACTOR
FOR PIPES AND EQUIPMENT TO BE ABATED.



GENERAL CONSTRUCTION NOTES

1. PROVIDE RACEWAY AND WIRING TO ALL DEVICES AND EQUIPMENT INDICATED ON THE CONTRACT DRAWINGS. THE DRAWINGS INDICATE PARTIAL RACEWAY AND WIRING REQUIREMENTS TO HELP CLARIFY THE DESIGN INTENT. WHERE RACEWAY AND/OR WIRING IS NOT INDICATED FOR DEVICES OR EQUIPMENT THE ARRANGEMENT, GROUPING, AND ROUTING SHALL BE PROVIDED IN ACCORDANCE WITH THE 2008 NATIONAL ELECTRICAL CODE.
2. VERIFY ACTUAL MOUNTING LOCATIONS AND ARRANGEMENTS OF EQUIPMENT FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR PRIOR TO ELECTRICAL ROUGH-IN. MAKE ADJUSTMENTS TO THE ELECTRICAL WORK AS REQUIRED TO ACCOMMODATE ACTUAL MOUNTING LOCATIONS.
3. ANY SPLICES PROVIDED IN WIRING SHALL BE MADE WITH SPLIT-BOLTS AND APPROPRIATE TAPE INSULATION OR WITH CRIMPED BUTT SPLICES AND APPROPRIATE TAPE INSULATION. POLARIS TYPE SPLICE DEVICES SHALL NOT BE USED.
4. PROVIDE A GREEN INSULATED GROUND WIRE IN ALL RACEWAYS.
5. PROVIDE ADDITIONAL SUPPORTS FOR CONTROL PANELS, SWITCHES, RACEWAYS, AND OTHER ELECTRICAL EQUIPMENT WHEREVER THE BUILDING STRUCTURE IS NOT SUITABLE FOR DIRECT MOUNTING.
6. CUTTING, DRILLING, FITTING AND PATCHING: PROVIDE CHASES, SLOTS, AND OPENINGS IN EXISTING BUILDING COMPONENTS TO ALLOW FOR ELECTRICAL INSTALLATIONS. PERFORM CUTTING, DRILLING, FITTING, AND PATCHING REQUIRED TO:
 - A) INSTALL EQUIPMENT, MATERIALS, AND RACEWAYS IN EXISTING STRUCTURES.
 - B) REMOVE AND REPLACE DEFECTIVE WORK THAT DOES NOT CONFORM TO REQUIREMENTS OF THE CONTRACT DOCUMENTS.
 - C) UPON WRITTEN INSTRUCTIONS FOR THE ENGINEER, UNCOVER AND RESTORE WORK TO PROVIDE FOR ENGINEER OBSERVATION OF CONCEALED WORK.PATCH EXISTING SURFACES AND BUILDING COMPONENTS USING NEW MATERIALS THAT MATCH EXISTING MATERIALS. PATCHING SHALL BE PERFORMED BY EXPERIENCED INSTALLERS.
7. COORDINATE ALL REQUIRED OUTAGES TO EXISTING ELECTRICAL SERVICES WITH DENNIS GALLAGHER — USC ELECTRICAL MAINTENANCE DEPARTMENT.

ELECTRICAL DEMOLITION NOTES

- D1. **TRANSFER PUMPS:** REMOVE 30 HORSEPOWER PUMP MOTORS AND ALL ASSOCIATED RACEWAY AND WIRING. IF OWNER DOES NOT WANT TO SALVAGE MOTORS, LEGALLY DISPOSE OF THEM.
- D2. **BOILER FEED PUMPS:** REMOVE 10 HORSEPOWER PUMP MOTORS AND ALL ASSOCIATED RACEWAY AND WIRING. IF OWNER DOES NOT WANT TO SALVAGE MOTORS, LEGALLY DISPOSE OF THEM.
- D3. **PUMP CONTROLLER:** REMOVE CONTROLLER AND ALL ASSOCIATED POWER AND CONTROL RACEWAY AND WIRING.
- D4. **MOTOR CONTROL CENTER:** THE EXISTING MOTOR CONTROL CENTER IS A 1200-AMP, 480-VOLT CUTLER-HAMMER FREEDOM SERIES 2100 UNIT (#SCU05907 IT.001-ATC, 3 SECTIONS, MANUFACTURED IN MAY 2002, 65,000 A.I.C.). REMOVE EXISTING CIRCUIT BREAKER THAT CURRENTLY SERVES THE DEAERATOR SYSTEM. PROVIDE NEW CIRCUIT BREAKER AS INDICATED ON DRAWING E-2 TO SERVE NEW DEAERATOR SYSTEM.



UPPER LEVEL MECHANICAL ROOM, EAST ENERGY FACILITY - ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



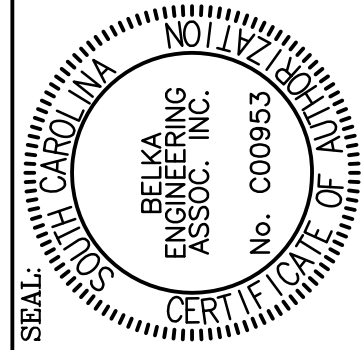
PROJECT TITLE: EAST ENERGY DA TANK REPLACEMENT
H27-1975

SHEET:

E-1
1 OF 2

SHEET IN SET:

OF

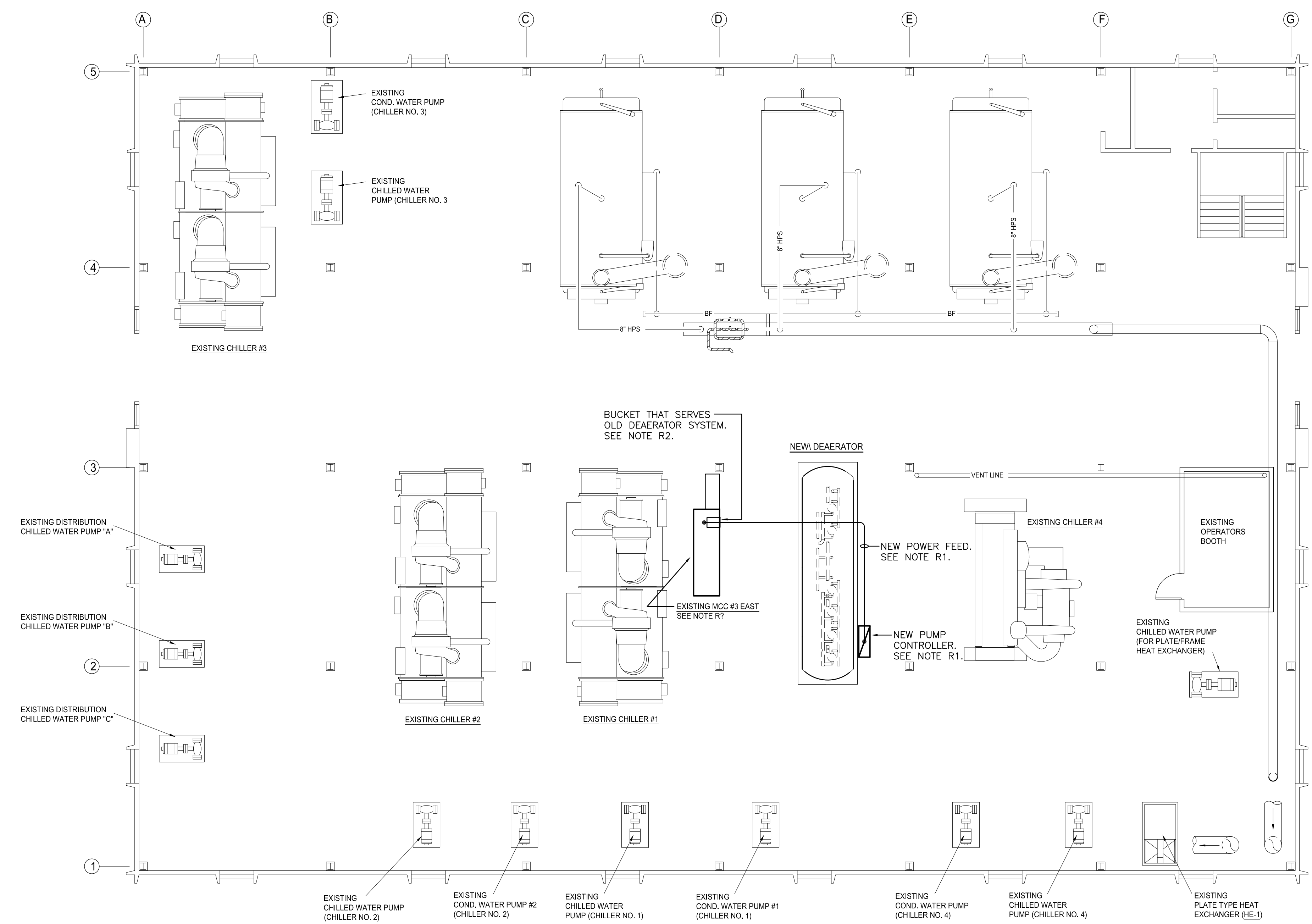


BUILDING: O18	DRAWING:	DATE: 01 DEC 12	DRAWN BY: JWL	CHECKED BY: JWL	REVISIONS			
					DATE	ORIG.	BY	DESCRIPTION
					07 SEP 05			
					21 AUG 06			
					26 MAR 08			
					30 SEP 08			
					03 FEB 10			

University of South Carolina

CAMPUS PLANNING
AND CONSTRUCTION
COLUMBIA, SC 29208

ASBESTOS ABATEMENT NOTE:
INSULATION ON STEAM, CONDENSATE RETURN PIPING,
AND EQUIPMENT WILL BE ABATED UNDER SEPARATE
CONTRACT. COORDINATE WITH ABATEMENT CONTRACTOR
FOR PIPES AND EQUIPMENT TO BE ABATED.



ELECTRICAL RENOVATION NOTES

R1. PUMP CONTROLLER: PUMP CONTROLLER WILL BE FURNISHED WITH NEW AERERATOR SYSTEM BY MECHANICAL CONTRACTOR – VERIFY LOCATION ON AERERATOR UNIT WITH SHOP DRAWINGS. PROVIDE THREE #1/0 THHN CONDUCTORS WITH ONE #6 AWG GROUND WIRE IN 1.25" RMC RACEWAY FROM EXISTING MOTOR CONTROL CENTER TO NEW PUMP CONTROLLER (SINGLE-POINT CONNECTION). PLUG HOLE WHERE EXISTING PUMP CONTROLLER RACEWAY WAS REMOVED FROM MOTOR CONTROL CENTER IF HOLE IS NOT RE-USED.

R2. MOTOR CONTROL CENTER: THE EXISTING MOTOR CONTROL CENTER IS A 1200-AMP, 480-VOLT CUTLER-HAMMER FREEDOM SERIES 2100 UNIT (#SCU05907 IT.001-ATC, 3 SECTIONS, MANUFACTURED IN MAY 2002, 65,000 A.I.C.). PROVIDE A 480-VOLT, 150-AMP, 65,000 A.I.C. RATED, 3-POLE CIRCUIT BREAKER IN EXISTING BUCKET TO SERVE NEW AERERATOR PUMP CONTROLLER. PROVIDE ALL MATERIALS AND LABOR AS REQUIRED TO PROPERLY INSTALL BREAKER IN BUCKET AND PROVIDE ANY BUCKET MODIFICATIONS NECESSARY TO PROPERLY COMPLETE THE INSTALLATION.



UPPER LEVEL MECHANICAL ROOM, EAST ENERGY FACILITY - ELECTRICAL RENOVATION PLAN

SCALE: 1/8" = 1'-0"



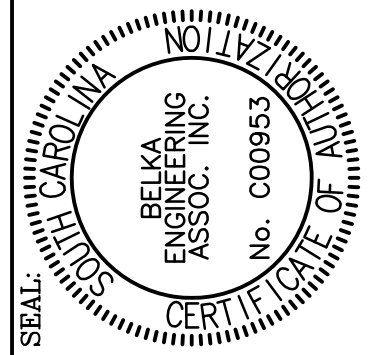
PROJECT TITLE: EAST ENERGY DA TANK REPLACEMENT
H27-1975

SHEET:

E-2
2 OF 2

SHEET IN SET:

OF



BUILDING:	DRAWING:	DATE:	DRAWN BY:	CHECKED BY:
018	01 DEC 12	DATE	JWL	JWL
REV.	DESCRIPTION	DATE	ORIG.	BY
		07SEP05		
		21AUG06		
		26MAR08		
		30SEP08		
		03FEB10		

University of South Carolina

CAMPUS PLANNING
AND CONSTRUCTION
COLUMBIA, SC 29208