MECHANICAL GENERAL NOTES:

1. WORK IN THIS SECTION INCLUDES THE PROVIDING OF LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND AUTHORITIES HAVING JURISDICTION.

2. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. FOLLOW DRAWINGS IN LAYING OUT WORK AND CHECK DRAWINGS OF OTHER TRADES TO VERIFY SPACE CONDITIONS. MAINTAIN HEADROOM AND SPACE CONDITIONS.

3. SCALED AND FIGURED DIMENSIONS ARE APPROXIMATE AND ARE FOR ESTIMATING PURPOSES ONLY. BEFORE PROCEEDING WITH WORK, CHECK AND VERIFY ALL DIMENSIONS.

4. MAKE ADJUSTMENTS THAT MAY BE NECESSARY OR REQUIRED IN ORDER TO RESOLVE SPACE PROBLEMS.

5. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEW JERSEY UNIFORM CONSTRUCTION CODE AND ADOPTED (AS AMENDED) SUB CODES STANDARDS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

- INTERNATIONAL BULDING CODE NEW JERSEY EDITION/ 2021
- NAPHCC NATIONAL STANDARD PLUMBING CODE / 2021
- NFPA 70 NATIONAL ELECTRIC CODE / 2020
- ASHRAE 901-2010 ENERGY CODE
- INTERNATIONAL MECHANICAL CODE / 2021
- INTERNATIONAL FUEL GAS CODE / 2021

6. CONTRACTOR SHALL BE RESPONSIBLE TO APPLY FOR AND PROCURE ALL REQUIRED PERMITS, CERTIFICATES AND AGENCY APPROVALS. ALL DOCUMENTS REQUIRED IN ADDITION TO THE CONTRACT DOCUMENTS SHALL BE PROVIDED BY THE CONTRACTOR. PROVIDE COPIES OF ALL REQUIRED CERTIFICATIONS AND APPROVALS TO THE OWNER.

7. ALL WORK SHALL BE PERFORMED IN A WORKMANLIKE AND PROFESSIONAL MANNER CONSISTENT WITH ALL APPLICABLE INDUSTRY STANDARDS. SYSTEM INSTALLATIONS SHALL CONFORM WITH ALL APPLICABLE INDUSTRY STANDARDS.

8. BEFORE SUBMITTING PROPOSAL THE CONTRACTOR SHALL VISIT AND CAREFULLY EXAMINE THOSE PORTIONS OF THE SITE AND/OR PRESENT BUILDINGS AFFECTED BY THIS WORK SO AS TO FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND THE DIFFICULTIES ASSOCIATED WITH THE EXECUTION OF THE WORK. THESE DIFFICULTIES INCLUDE AVAILABILITY OF THE EQUIPMENT AND MATERIALS. REPORT IN WRITING ANY CONDITIONS WHICH MIGHT ADVERSELY AFFECT THEIR WORK.

9. NO CONSIDERATION OR ADDITIONAL PAYMENTS WILL BE GRANTED FOR ANY ALLEGED MISUNDERSTANDING OF THE MATERIALS TO BE FURNISHED OR WORK TO BE DONE, IT BEING UNDERSTOOD THAT THE SUBMISSION OF A PROPOSAL IS AN AGREEMENT TO ALL CONDITIONS REFERRED TO HEREIN OR INDICATED ON THE PLANS.

10. COORDINATE WITH OWNER AND GENERAL CONTRACTOR SCHEDULING OF ALL WORK SUCH THAT ANY REQUIRED OVERTIME IS INCLUDED AT NO ADDITIONAL COST.

11. PROVIDE THREE SETS OF OPERATION AND MAINTENANCE MANUALS COVERING ALL INSTALLED EQUIPMENT ITEMS TO THE OWNER. THE O&M MANUALS SHALL ALSO INCLUDE AS-BUILT DRAWINGS AND BALANCING REPORT.

12. CONTRACTOR SHALL ENGAGE THE SERVICES OF AN APPROVED TESTING AND BALANCING CONTRACTOR WITH NEBB OR AABC CERTIFICATION. CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL NECESSARY ADJUSTMENTS TO OBTAIN FLOW RATES AS INDICATED ON DRAWINGS. PROVIDE A FINAL TEST REPORT INCLUDING BUT NOT LIMITED TO THE FOLLOWING: CFM, STATIC PRESSURE, COOLING/HEATING COIL DISCHARGE TEMPERATURE, & FINAL FAN RPM.

13. THE CONTRACTOR SHALL LABEL ALL PIPING AND EQUIPMENT.

14. CONTRACTOR SHALL MAKE TESTS AT HIS OWN EXPENSE, AS REQUIRED BY OWNER AND/OR ANY INSPECTION DEPARTMENT. TEST SHALL BE MADE TO VERIFY WHETHER THE SYSTEM AND EQUIPMENT INSTALLED COMPLY WITH THE SPECIFICATIONS AND ARE IN PROPER WORKING ORDER.

15. AS A PART OF THIS CONTRACT, ALL WORK AND EQUIPMENT FURNISHED AND INSTALLED SHALL BE COVERED UNDER A FULL TWO YEAR GUARANTEE. THE WARRANTY SHALL COMMENCE ON THE DATE OF THE OWNER'S FINAL ACCEPTANCE.

16. PROVIDE DIELECTRIC ISOLATORS BETWEEN DISSIMILAR METALS.

17. IT IS NOT INTENDED THAT THE PLANS OR SPECIFICATIONS SHOW OR STATE EVERY DETAILED REQUIREMENT OF THE WORK, BUT RATHER THAT THEY FURNISH ADEQUATE INFORMATION FOR THE CONTRACTOR TO MAKE COMPLETELY APPROVED INSTALLATION.

18. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING, WITHOUT ADDITIONAL CHARGE, ANY EXISTING WORK DAMAGED BY HIM DURING THE COURSE OF THIS CONSTRUCTION.

19. MECHANICAL CONTRACTOR SHALL PROVIDE NECESSARY CONTROLS AND INSTALLATION OF EQUIPMENT SUPPLIED BY THE UNIT MANUFACTURER TO MEET THE OPERATIONAL REQUIREMENTS OF THE MANUFACTURER SPECIFICATION. THE BAS MANUFACTURER WILL PROVIDE THE CONTROLS AND INSTALLATION REQUIRED TO MEET THE SEQUENCE OF OPERATION. MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE BMS CONTRACTOR TO PROVIDE A COMPLETE FUNCTIONING SYSTEM.

20. CONTRACTOR SHALL LEAVE ALL SYSTEMS IN PROPER WORKING ORDER AND SHALL, WITHOUT ADDITIONAL CHARGE, REPLACE ANY WORK, MATERIALS, OR EQUIPMENT FURNISHED AND INSTALLED BY HIM UNDER HIS CONTRACT WHICH DEVELOPS DEFECTS, EXCEPT FROM ORDINARY WEAR AND TEAR, WITHIN TWO (2) YEARS FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER.

21. (RESERVED)

22. ALL CONSTRUCTION DEBRIS SHALL BE DISPOSED OF AS PER THE DIRECTION OF OWNER.

23. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL MAJOR MANUFACTURED ITEMS REQUIRED ON THIS PROJECT. PURCHASE OR INSTALLATION OF EQUIPMENT OR SYSTEM COMPONENTS PRIOR TO APPROVAL OF SHOP DRAWINGS IS FORBIDDEN. APPROVAL OF SHOP OR SETTING DRAWINGS SHALL ONLY BE CONSTRUED TO APPLY TO GENERAL LAYOUT AND CONFORMANCE TO THE DESIGN CONCEPT OF THE PROJECT AND FOR COMPLIANCE WITH THE GENERAL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE RESPONSIBILITY FOR ANY DEVIATION FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL REMAIN THE CONTRACTOR'S UNLESS HE HAS, IN WRITING, SPECIFICALLY CALLED ATTENTION TO SUCH DEVIATIONS AT THE TIME OF SUBMISSION AND HAS RECEIVED WRITTEN APPROVAL OF SUCH DEVIATIONS FROM THE OWNER.

24. CONTRACTOR SHALL PROVIDE PRODUCT DATA INCLUDING INSTALLATION AND STARTUP INSTRUCTIONS FOR ALL EQUIPMENT PROVIDED BY HIM. SUBMITTALS SHALL INCLUDE PERFORMANCE DATA, DETAILED SHOP DRAWINGS, WIRING DIAGRAMS AND MAINTENANCE INSTRUCTIONS.

25. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH MANUFACTURERS WRITTEN INSTALLATION INSTRUCTIONS.

26. CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS STEEL SHAPES, HANGER RODS, STRAPS, ETC. REQUIRED FOR ALL SYSTEM INSTALLATIONS. PROVIDE ALL SEISMIC RESTRAINTS AS REQUIRED BY THE INTERNATIONAL BUILDING CODE.

27. PROVIDE ALL CUTTING AND PATCHING AS REQUIRED. COORDINATE THIS WORK WITH THE CONSTRUCTION MANAGER.

28. SEAL ALL EXTERIOR WALL PENETRATIONS WEATHER TIGHT. PROVIDE FIRE RATED SLEEVES AT ALL FIRE WALL PENETRATIONS AND SEAL AROUND ALL PIPE WITH FIRE STOP SEALANT. COORDINATE PENETRATIONS AND FIRE STOPPING WITH THE CONSTRUCTION MANAGER.

29. AT THE COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE TO THE OWNER COMPLETE AND ACCURATE "AS CONSTRUCTED DOCUMENTATION" FOR ALL SYSTEMS INSTALLED OR ALTERED UNDER THIS CONTRACT.

MECHANICAL GENERAL SPECIFICATIONS:

PART 1 - GENERAL

GENERAL:

A. THE MECHANICAL CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TOOLS, TRANSPORTATION, EQUIPMENT, SERVICES AND FACILITIES REQUIRED FOR THE HVAC MODIFICATION WORK AND OTHER MECHANICAL WORK AS SHOWN ON THIS DOCUMENTS. ALL FIXTURES, DEVICES AND EQUIPMENT SHOWN, NOTED OR REQUIRED ON THE DRAWINGS, AND/OR CONTAINED HEREIN SHALL BE FURNISHED, INSTALLED, TESTED AND MADE READY FOR SATISFACTORY OPERATION.

B. THE MECHANICAL CONTRACTOR IS TO COORDINATE WITH OTHER TRADES AND OWNER FOR EQUIPMENT LOCATIONS AND CLEARANCES REQUIRED FOR EQUIPMENT. CONTRACTOR TO COORDINATE AND MODIFY LAYOUT ACCORDINGLY.

C. THE MECHANICAL CONTRACTOR SHALL FURNISH ALL PERMITS, CERTIFICATES, INSPECTIONS, ETC. AND PAY ALL FEES LEVIED BY STATE, LOCAL AND MUNICIPAL AUTHORITIES HAVING JURISDICTION OVER WORK DONE UNDER THIS CONTRACT.

SHOP DRAWING SUBMITTAL:

A. THE CONTRACTOR SHALL SUBMIT, IN A TIMELY MANNER, ALL SUBMITTALS FOR APPROVAL BY THE ENGINEER. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR INSTALL ANY MATERIALS UNTIL THE ENGINEER HAS MADE FINAL APPROVAL ON THE SUBMITTALS.

B. PREPARE COORDINATION DRAWINGS TO A SCALE OF 1/4"=1'-0" OR LARGER, DETAILING MAJOR ELEMENTS, COMPONENTS, AND SYSTEMS OR MECHANICAL EQUIPMENT AND MATERIALS IN RELATIONSHIP WITH OTHER SYSTEMS, INSTALLATIONS, AND BUILDING COMPONENTS.

C. SUBMIT SHOP DRAWING FOR THE FOLLOWING:
1. BOILERS
2. PUMPS AND ACCESSORIES
3. EXPANSION TANKS
4. BOILER VENTING SYSTEM
5. VFD DRIVES

COORDINATION:

A. POWER WIRING TO MECHANICAL EQUIPMENT, MOTOR CONTROLLERS AND CONTROL PANELS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.

B. HVAC CONTROL WIRING SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR.

C. ALL NON-FACTORY FURNISHED MOTOR CONTROLLERS, MOTOR STARTERS AND DISCONNECTS SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR.

D. DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE WITH LOCKABLE HANDLE. DISCONNECTS FOR ALL ELECTRICALLY DRIVEN HVAC EQUIPMENT SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.

PART 2 - PRODUCT

REFER TO BOOK SPECIFICATION.

PART 3 - TESTING, ADJUSTING AND BALANCING

A. BEFORE COMMENCING WITH THE BALANCING OF THE EXISTING BUILDING HOT WATER SYSTEM, THE SYSTEM SHALL BE THOROUGHLY LEAK FREE AND ANY AIR PRESENT SHALL BE VENTED AND PURGED.

B. CLEANING THE AIR SYSTEMS:
1. BEFORE FINAL ADJUSTMENT AND BALANCING, CHEESE CLOTH SHALL BE PLACED OVER EACH DUCT OPENING FOR ENTRAINING PARTICLES DURING THE CLEANING OPERATION. OPERATE ALL SYSTEMS FOR A MINIMUM OF FOUR (4) HOURS. AFTER THIS PERIOD, REMOVE ALL FILTERS. CLEAN ALL SUPPLY DUCTS, GRILLES AND REGISTERS, IN ALL UNITS, USING A VACUUM CLEANER AND BRUSH. FILTERS SHALL BE REPLACED.

C. BALANCING THE AIR SYSTEMS:
1. OPERATE ALL SYSTEMS FOR AS LONG AS NECESSARY TO TEST AIR FLOW AT ALL OPENINGS. ADJUST DAMPERS, FANS, AND SHEAVES UNTIL EVEN DISTRIBUTION AND REQUIRED CFM OF AIR IS OBTAINED THROUGHOUT. SUBMIT FOR APPROVAL FOUR (4) TEST REPORTS SHOWING ALL PERTINENT OPERATING DATA SUCH AS CFM AND FPM AT EACH OUTLET, FAN RPM, MOTOR CURRENT, ETC., SHALL BE SUBMITTED FOR PERMANENT RECORD. DURING ADJUSTING PERIOD, MAKE ALL NECESSARY SETTINGS AND ADJUSTMENTS OF TEMPERATURE REGULATING EQUIPMENT. TEST REPORTS SHALL BE CERTIFIED BY A NEBB OR AABS LICENSED PROFESSIONAL ENGINEER WHO SHALL BE A MEMBER OF THE BALANCING FIRM.

D. PERFORMANCE:
1. AIR DISTRIBUTION DEVICES OF MANUFACTURERS OTHER THAN THOSE SCHEDULED SHALL MATCH DESIGN, FEATURES, CAPACITY AND DIMENSIONS OF MODEL NUMBER SCHEDULED. AIR DISTRIBUTION DEVICES SHALL BE SELECTED FOR PROPER THROW WITH A MAXIMUM NC LEVEL OF 30. BALANCE ALL NEW DIFFUSERS TO AIR QUANTITIES INDICATED. ALL DIFFUSERS ARE INDICATED BY A TAG INDICATING THE DIFFUSER MARK, NECK SIZE, AND CFM. DIFFUSERS SHALL BE AS SCHEDULED ON THE MECHANICAL DRAWINGS AND/OR ON THE AIR DISTRIBUTION DEVICE SCHEDULE.

PART 4 - INSTALLATION

EQUIPMENT INSTALLATION:

A. INSTALL EQUIPMENT IN STRICT COMPLIANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTION.

B. INSTALL EQUIPMENT IN STRICT COMPLIANCE WITH STATE AND LOCAL CODES AND APPLICABLE NFPA STANDARDS.

C. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES AROUND SIDES AND OVER TOP OF EQUIPMENT.

D. INSTALL COMPONENTS THAT WERE REMOVED FROM EQUIPMENT FOR SHIPPING PURPOSES.

E. INSTALL COMPONENTS THAT WERE FURNISHED LOOSE WITH EQUIPMENT FOR FIELD INSTALLATION.

F. PROVIDE ALL ELECTRICAL CONTROL AND POWER INTERCONNECT WIRING.

G. COORDINATE EXACT LOCATION OF ALL THERMOSTATS WITH OWNER.

ABBREVIATIONS

A.L	ACOUSTICAL LINING
AC	AIR CONDITIONING
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
APPROX	APPROXIMATE
ATC	AUTOMATIC TEMPERATURE CONTROL
ATM	ATMOSPHERE
AVG	AVERAGE
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNITS
CA	COMPRESSED AIR
CD	CEILING DIFFUSER
CFM	CUBIC FEET OF AIR PER MINUTE
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CL EL	CENTERLINE ELEVATION
CMPR	COMPRESSOR
COND	CONDENSER
CP	CONTROL PANEL
CT	COOLING TOWER
CW	COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
D	DRAIN
DB	DECIBEL
DB	DRY BULB
DEG	DEGREE
DIA, Ø	DIAMETER
EC	ELECTRICAL CONTRACTOR
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EFF	EFFICIENCY
ENT	ENTERING
ER	EXHAUST REGISTER
ERHC	ELECTRIC REHEAT COIL
EWT	ENTERING WATER TEMPERATURE
EX	EXHAUST
EXIST.	EXISTING
EXP	EXPANSION
F	FAHRENHEIT
FA	FACE AREA
FC	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FP	FREEZING POINT
FPM	FEET PER MINUTE
FPU	FAN POWERED UNIT
FRP	FIBERGLASS REINFORCED PLASTIC
FSD	FIRE AND SMOKE DAMPER
FT	FEET
G.C.	GENERAL CONTRACTOR
GA	GAGE OR GAUGE
GPM	GALLONS PER MINUTE
HE	HEAT EXCHANGER
HP	HORSEPOWER
HW	HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HZ	HERTZ
IN.	INCHES
KW	KILOWATT
KWH	KILOWATT HOUR
LBS	POUNDS
LD	LINEAR DIFFUSER
LF	LINEAR FEET
LWT	LEAVING WATER TEMPERATURE
MC	MECHANICAL CONTRACTOR
MAX	MAXIMUM
MBH	BTU PER HOUR (THOUSAND)
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MIN	MINIMUM
N.C.	NORMALLY CLOSED
N.I.C.	NOT IN CONTRACT
N.O.	NORMALLY OPEN
N.T.S.	NOT TO SCALE
N/A	NOT APPLICABLE
NC	NOISE CRITERIA
OA	OUTSIDE AIR
P	PUMP
PC	PUMPED CONDENSATE
PD	PRESSURE DROP
PER	PERFORATED CEILING DIFFUSER
PH	PHASE
PRESS	PRESSURE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
R/B	REMOVE AND BLANK OFF
RA	RETURN AIR
RAG	RETURN AIR GRILL
RCVR	RECEIVER
RD	RETURN AIR DIFFUSER
RECIRC	RECIRCULATE
REG	REGISTER
REV	REVOLUTIONS
RH	RELATIVE HUMIDITY
RLA	RUNNING LOAD AMPS
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SAD	SUPPLY AIR DIFFUSER
SAG	SUPPLY AIR GRILLE
SAR	SUPPLY AIR REGISTER
SD	SMOKE DETECTOR
SD	SUPPLY AIR DIFFUSER
SF	SUPPLY FAN
SP	STATIC PRESSURE
T	THERMOSTAT
TAD	TRANSFER AIR DIFFUSER
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
V	VOLT
V	VENT
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VOL	VOLUME
W	WATT
W	WASTE
W/M	WIRE MESH
WB	WET BULB
WT	WEIGHT

HVAC SYMBOL LEGEND

- DEMOLITION WORK NOTES
- NEW WORK NOTES
- SUPPLY AIR DUCT
- RETURN AIR DUCT
- NEW AIR DIFFUSER
- EXISTING AIR DIFFUSER
- 2-WAY AIR DIFFUSER
- 2-WAY AIR DIFFUSER
- EXISTING SUPPLY AIR DIFFUSER TO BE REMOVED
- NEW RETURN AIR REGISTER
- POINT OF NEW CONNECTION
- THERMOSTAT (T-STAT)
- EXISTING DUCTWORK TO REMAIN
- EXISTING DUCTWORK TO BE REMOVED
- NEW DUCTWORK
- PIPE DROP
- FLEXIBLE DUCT
- FIRE ALARM SYSTEM DUCT MOUNTED PHOTOELECTRIC SMOKE DETECTOR. FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.
- POINT OF TERMINATION
- FIRE DAMPER
- VOLUME DAMPER

MECHANICAL DRAWING LIST:

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SIGNATURE NOT VALID WITHOUT RAISED SEAL — DATE

BUILDING 30/39 BOILER PLANT UPGRADES FOR STOCKTON UNIVERSITY

101 VERA KING FERRIS DRIVE, GALLOWAY, NJ 08205

Project

Project Bid Date

Revisions — By — Date

Sheet Title: MECHANICAL COVERSHEET

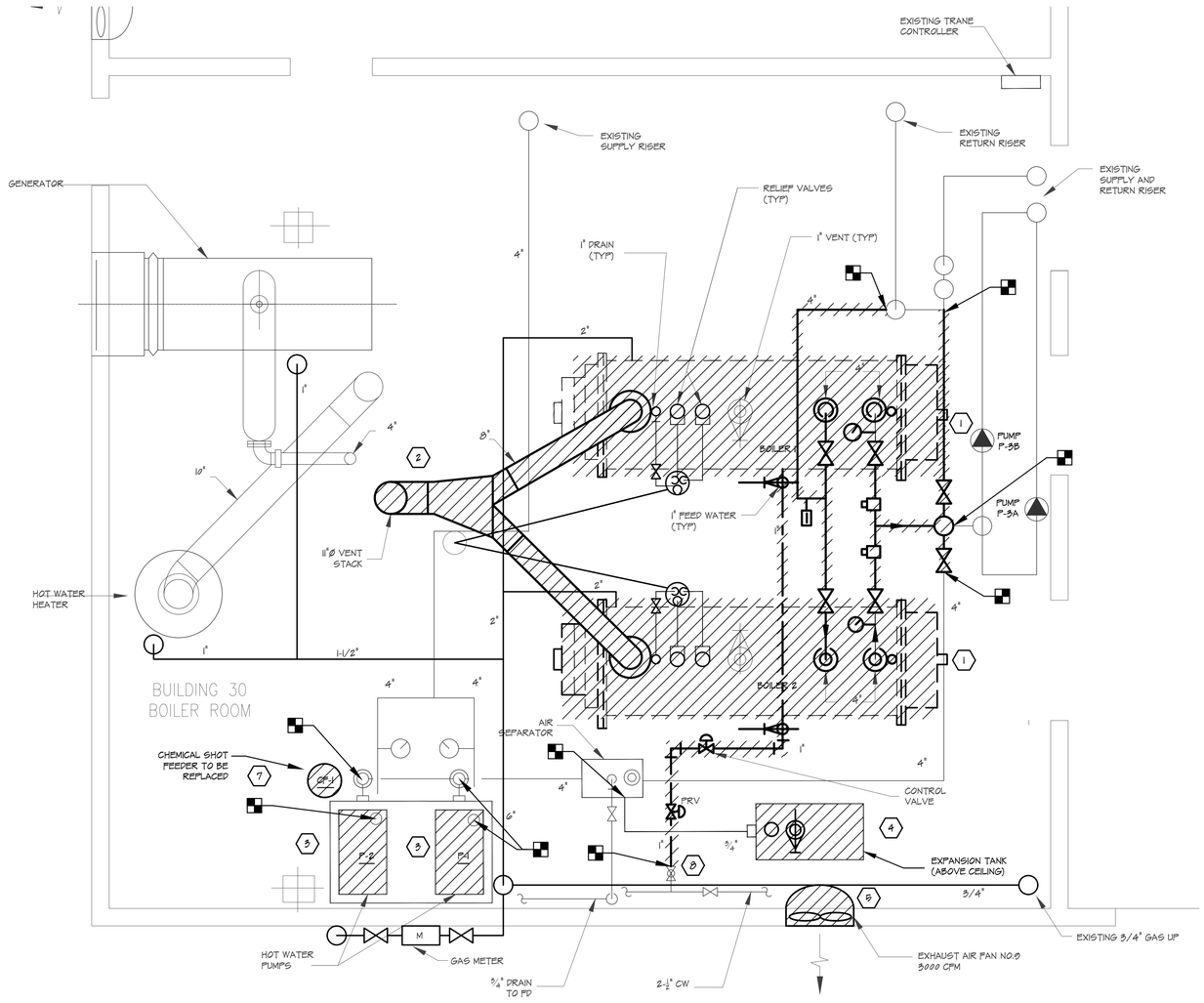
Drawn By: CE/GB

Chk'd By: MW/GB

I OF 13

Sheet No.: M-0

Project No.: HRG-XXXXX



BUILDING 30 MECHANICAL BOILER ROOM DEMOLITION WORK PLAN

I / M-I

SCALE: 1/2" = 1'-0"

DEMOLITION WORK NOTES (#)

1. REMOVE EXISTING NATURAL GAS-FIRED FIRE-TUBE BOILER INCLUDING BOILER, BURNER, BOILER OPERATING CONTROLS, BOILER PRESSURE RELIEF VALVE AND DISCHARGE PIPING, BOILER DRAIN PIPING AND NATURAL GAS TRAIN. TEMPORARILY CAP GAS PIPING IN PREPARATION FOR RECONNECTION AS PART OF NEW WORK SCOPE.
2. REMOVE EXISTING BOILER FLUE PIPING IN MECHANICAL ROOM IN ITS ENTIRETY. REMOVE VERTICAL PORTION OF FLUE PIPING UP THROUGH SECOND FLOOR AND ROOF. PROVIDE TEMPORARY ROOF PATCH TO PREVENT WATER INFILTRATION DURING NEW WORK.
3. REMOVE BOILER PRIMARY LOOP PUMPS P-1 AND P-2, INCLUDING PUMPS, PUMP BASES, MOTORS, ISOLATION VALVES, TRIPLE DUTY VALVES, VIBRATION ISOLATION COUPLINGS, AND PRESSURE GAUGES.
4. EXISTING EXPANSION TANK (ABOVE CEILING) TO BE ABANDONED. REMOVE PIPING BACK TO EXISTING AIR SEPARATOR.
5. REMOVE EXISTING EXHAUST FAN, FAN GUARD AND HOUSING. EXISTING THROUGH-WALL LOUVER TO REMAIN.
6. REMOVE EXISTING 3-WAY VALVE AND PORTIONS OF EXISTING RETURN PIPING SHOWN. SUCTION PIPING TO PUMPS P-3A AND P-3B TO REMAIN.
7. REMOVE EXISTING CHEMICAL SHOT FEEDER CF-1. TEMPORARILY CAP PIPING IN PREPARATION FOR RECONNECTION AS PART OF NEW WORK SCOPE.
8. REMOVE EXISTING PRESSURE REGULATING VALVE AND PORTIONS OF DOMESTIC COLD WATER (MAKEUP WATER) PIPING AS SHOWN.

BASE BID SCOPE OF WORK

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Project
BUILDING 30/39 BOILER PLANT UPGRADES
FOR STOCKTON UNIVERSITY
101 VERA KING FERRIS DRIVE, GALLOWAY, NJ 08205

Project Bid Date

Revisions By Date

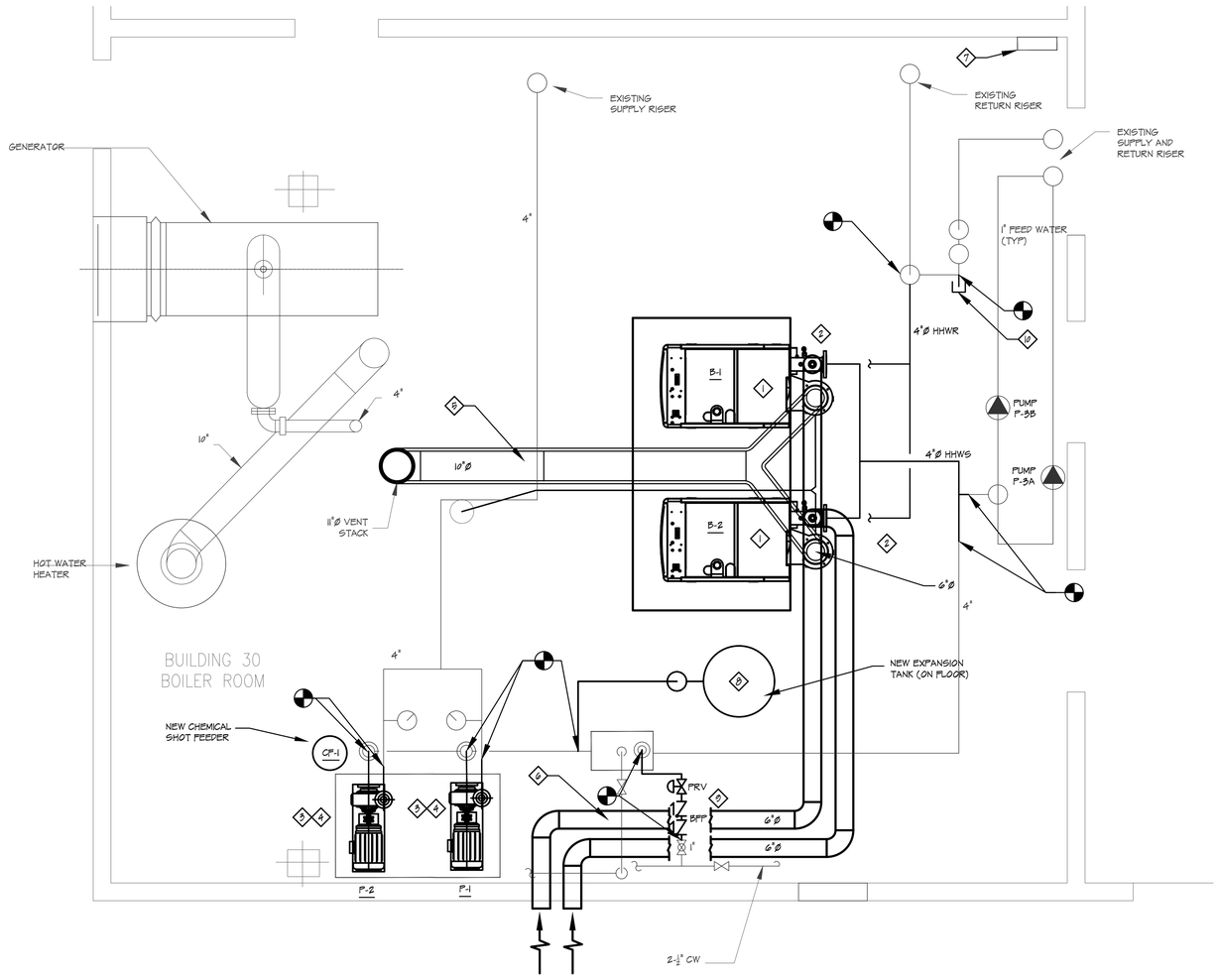
Sheet Title
BUILDING 30 MECHANICAL DEMOLITION WORK PLAN

Drawn By CE/GB
Chk'd By MW/GB
2 OF 13

Sheet No.
M-1

Project No.
HRG-XXXXX

Do Not Scale Drawings – Field check all dimensions prior to start of construction.



1 / M-2 BUILDING 30 MECHANICAL BOILER ROOM NEW WORK PLAN

SCALE: 1/2" = 1'-0"

NEW WORK NOTES ◇

1. INSTALL NEW AERCO BOILERS B-1 AND B-2 ON NEW 4" THICK CONCRETE HOUSEKEEPING PAD. PAINT HOUSEKEEPING PAD YELLOW. NEW HOUSEKEEPING PAD SHALL EXTEND BETWEEN THE TWO BOILERS. INSTALL NEW CONDENSATE TRAPS AT REAR OF EACH BOILER (SEE DETAIL ON M4), AND ROUTE PVC DISCHARGE PIPE TO EXISTING FLOOR DRAIN.
2. EXTEND EXISTING 4" HEATING HOT WATER SUPPLY AND RETURN PIPING TO EACH BOILER. INSTALL 4" MANUAL ISOLATION BUTTERFLY VALVE, AND CONNECT TO 4" FLANGED BOILER RETURN WATER CONNECTION. PIPING TO BE INSULATED WITH 1-1/2" THICK FIBERGLASS PIPE INSULATION.
3. EXTEND NEW 4" HEATING HOT WATER SUPPLY PIPING TO SUCTION SIDE OF NEW PUMPS P-1 AND P-2. INSTALL NEW BOILER SUPPLY WATER TEMPERATURE SENSOR. SUPPORT PIPING USING PIPE HANGERS SUPPORTED FROM EXISTING CEILING JOISTS. PIPING TO BE INSULATED WITH 1-1/2" THICK FIBERGLASS PIPE INSULATION.
4. INSTALL NEW CIRCULATING PUMP P-1 AND P-2 ON EXISTING CONCRETE HOUSEKEEPING PAD. PAINT EXISTING HOUSEKEEPING PADS YELLOW. INSTALL SUCTION DIFFUSER, ISOLATION VALVES, VIBRATION ISOLATION COUPLINGS AND TRIPLE DUTY VALVES (SEE DETAIL FOR FURTHER INFORMATION).
5. INSTALL NEW HEAT FAB, SAF-T VENT CI PLUS, DOUBLE WALL, AL29-4C STAINLESS STEEL SPECIAL GAS VENT SYSTEM FOR NEW BOILERS. INSTALL NEW SLEEVE THROUGH ROOF (SEE BOILER VENTING DETAIL FOR FURTHER REQUIREMENTS). SEAL ROOF PENETRATION WEATHER TIGHT.
6. INSTALL NEW 6" PVC COMBUSTION AIR INTAKE PIPING FOR EACH NEW BOILER. INSTALL "GOOSENECK AND BIRD SCREEN". PROVIDE NEW WALL PENETRATIONS, SLEEVE, FLASHING, AND REPAIR/PATCHING.
7. EXTEND LOW VOLTAGE CONTROL WIRING FROM NEW BOILERS AND CONNECT TO EXISTING TRANE BUILDING AUTOMATION SYSTEM. INTEGRATE NEW BOILER OPERATIONS WITH EXISTING SYSTEM. EXTEND NEW BOILER PLANT CONTROL POINTS AND BACNET COMMUNICATIONS TO EXISTING TRANE TRACER CONTROLLERS AND INTEGRATE INTO EXISTING BMS (SEE BOILER CONTROL WIRING DETAILS FOR FURTHER INFORMATION).
8. INSTALL NEW EXPANSION TANK ON FLOOR. EXTEND PIPING BACK TO EXISTING AIR SEPARATOR.
9. INSTALL NEW BACKFLOW PREVENTER AND PRESSSURE REDUCING VALVE AND EXTEND MAKE-UP WATER PIPING TO AIR SEPARATOR. PROVIDE NEW AIR VENT AT TOP OF AIR SEPARATOR.
10. INSTALL NEW PIPE CAP ON RETURN WATER LINE.

BASE BID SCOPE OF WORK

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BUILDING 30/39 BOILER PLANT UPGRADES
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Project Bid Date

Revisions | By | Date

Sheet Title
BUILDING 30 MECHANICAL NEW WORK PLAN

Drawn By: CE/GB
Chk'd By: MW/GB
2 OF 13

Sheet No.
M-2

Project No.
HRG-XXXXX

NATURAL GAS-FIRED BOILER SCHEDULE

TAG	LOCATION	BOILER TYPE	INPUT (MBH)	NET OUTPUT (MBH)	EWT (°F)	LWT (°F)	OPERATING EFFICIENCY	AHRI THERMAL EFFICIENCY	DESIGN FLOW RATE (GPM)	WATER SIDE PRESSURE DROP (PSI)	OPERATING PRESSURE (PSIG)	RELIEF VALVE PRESSURE (PSIG)	BOILER PRESSURE RATING (PSIG)	BOILER CAPACITY (GAL.)	NATURAL GAS INLET PRESSURE (IN W.C.)	OPERATING WEIGHT (LBS.)	DIMENSIONS L X W X H (IN.)	ELECTRICAL REQ.			BASIS OF DESIGN MANUFACTURER/MODEL	NOTES
																		V/Ph/Hz	MCA	MOPD		
B-1	Mech Room	Condensing Fire Tube	1,500	1,305	160	180	87%	94.6%	120	2.45	18	30	160	44	4 - 14	1,654	34 x 44 x 78	120/1/60	20	30	Aerco Model BMK Standard 1500 with Edge[i]	1,2,3,4,5,6,7
B-2	Mech Room	Condensing Fire Tube	1,500	1,305	160	180	87%	94.6%	120	2.45	18	30	160	44	4 - 14	1,654	34 x 44 x 78	120/1/60	20	30	Aerco Model BMK Standard 1500 with Edge[i]	1,2,3,4,5,6,7

NOTES: **1**. Approvals: UL/FM/CSD-1. **2**. Minimum Turndown Ratio 20:1. **3**. Provide motorized isolation valves for each boiler. **4**. Provide boiler sequencing control with HW reset. **5**. Provide condensate neutralizer for each boiler and common flue drains. **6.** Provide adjustable automatic reset high limit control, manual reset high limit control with max. 210° F setpoint, electronic probe low water cutoff control, pressure relief valve, 2" Maxitrol RV-91 gas pressure regulator, and combination temperature/pressure gauge with each boiler. **7.** Provide onboard BST header temperature sensor, outdoor air temperature sensor kit, and Protonode gateway.

REDUCED PRESSURE ZONE BACKFLOW PREVENTER SCHEDULE

TAG	LOCATION	MAKE	MODEL	SIZE	MAX. WORKING PRESSURE	NOTES
BFP	Mech Room	Watts	LF909-QT	1"	175 Psi	1,2

NOTES: **1.** Provide full port, ball valve shutoffs. **2.** Provide Watts 909AG-C air gap fitting and drain line routed to floor drain.

PRESSURE REDUCING VALVE SCHEDULE

TAG	LOCATION	MAKE	MODEL	SIZE	MAX. WORKING PRESSURE	NOTES
PRV	Mech Room	Watts	LF25AUB-LP-G-Z3	1"	300 Psi	1,2

NOTES: **1.** Low pressure range, 10-35 psi. **2.** Provide gauge tapping and 0-35 psi pressure gauge.

CHEMICAL SHOT FEEDER SCHEDULE

TAG	LOCATION	MAKE	MODEL	FILTER	CAPACITY	MAX. PRESSURE	WEIGHT	DIMENSIONS (H x DIA.)
CF-1	Mech Room	Neptune	VTF-10HP	FBK-10	Approx. 10 gal.	300 psi	60 lbs.	36" x 10"

PUMP SCHEDULE

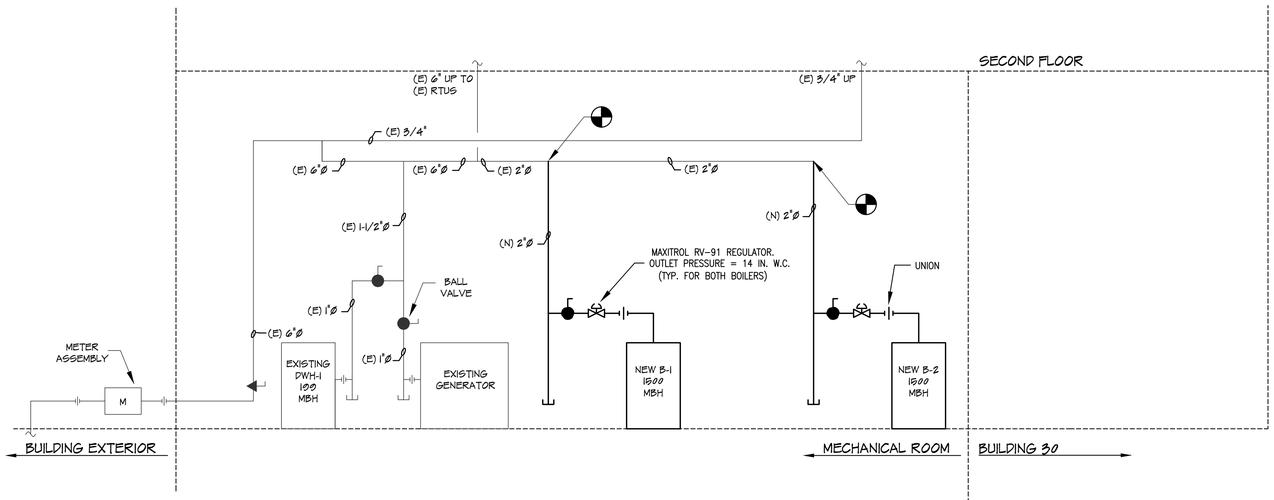
TAG	LOCATION	PUMP TYPE	FLUID TYPE	SERVICE	FLOW (GPM)	HEAD (FT)	RPM	MODEL	IMPELLER DIA. (INCHES)	NPSH REQ. (FT)	PUMP EFFICIENCY	BRAKE HP @ DUTY PT	MOTOR HP	MOTOR TYPE	ELECTRICAL REQ.			BASIS OF DESIGN MANUFACTURER/MODEL	NOTES
															V/Ph/Hz	MCA	MOPD		
P-1	Boiler Room	Base-Mounted, End-Suction	Water	Heating Hot Water	216	35	1160	2510C	9.30	5	77.0%	2.48	3	ODP	460/3/60	6.1	15	Taco FI2510C	1,2,3,4,5,6
P-2	Boiler Room	Base-Mounted, End-Suction	Water	Heating Hot Water	216	35	1160	2510C	9.30	5	77.0%	2.48	3	ODP	460/3/60	6.1	15	Taco FI2510C	1,2,3,4,5,6

NOTES: **1**. Starter Type: VFD. Provide ABB ACH580-01-07A3-4 VFD with Main Disconnect Switch. **2**. Pump motor is premeium efficiency, inverter-rated. **3**. Connection sizes are 3" suction x 2 1/2" discharge. Provide suction isolation butterfly valve, suction diffuser, reducing couplings, vibration isolation couplings, and triple duty valve. **4**. Pressure classification = 125 psi. **5**. Pump motor to be provided with AEGIS shaft grounding rings. **6**. Provide Mason Industries KSL pump inertia base.

EXPANSION TANK SCHEDULE (HOT WATER SYSTEM)

TAG	LOCATION	SERVICE	REQ.TANK VOLUME (GAL)	REQ. ACCEPTANCE VOLUME (GAL)	ACTUAL TANK VOLUME (GAL)	ACTUAL ACCEPTANCE VOLUME (GAL)	MODEL	MAX. WP (PSIG)	MAX. OPER. TEMP. (°F)	SHIPPING WEIGHT (LBS)	BASIS OF DESIGN MANUFACTURER/MODEL	NOTES
ET-1	Boiler Room	Hot Water	74.0	29.6	67.0	34.0	CBX254-125	125.0	240	280	Taco CBX254-125	1,2,3

NOTES: **1**. ASME Certified. **2**. Vertical Tank Configuration. **3**. Pre-charged, Bladder-Type Tank.



BASE BID SCOPE OF WORK

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CERTIFICATE OF AUTHORIZATION: #24GA28138200

MATTHEW DAVID WELLS, N.J.P.E.
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SIGNATURE NOT VALID WITHOUT RAISED SEAL
DATE

Project
BUILDING 30/39 BOILER PLANT UPGRADES
FOR STOCKTON UNIVERSITY
101 VERA KING FERRIS DRIVE, GALLOWAY, NJ 08205

Project Bid Date

Revisions By Date

Sheet Title
BUILDING 30 MECHANICAL SCHEDULES AND NATURAL GAS RISER DIAGRAM

Drawn By CE/GB
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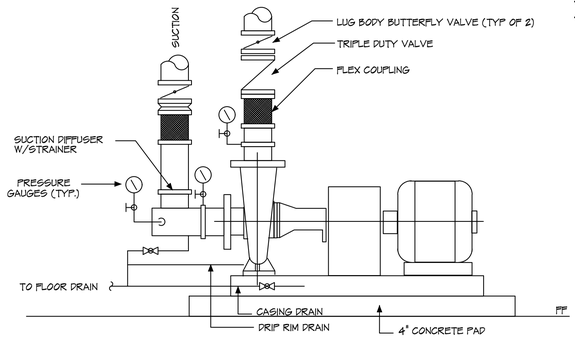
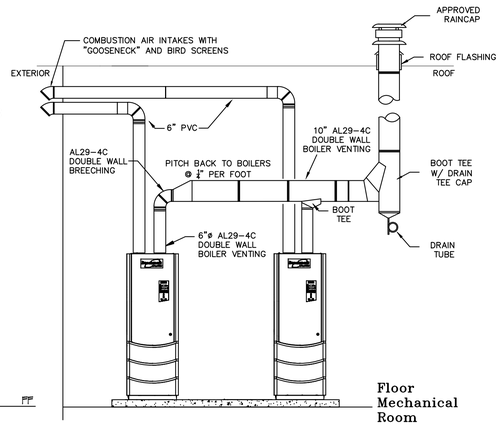
Project No.
HRG-XXXXX



1 M-2 END-SUCTION PUMP DETAIL
SCALE: NO SCALE



2 M-2 BOILER VENTING DETAIL
SCALE: NO SCALE

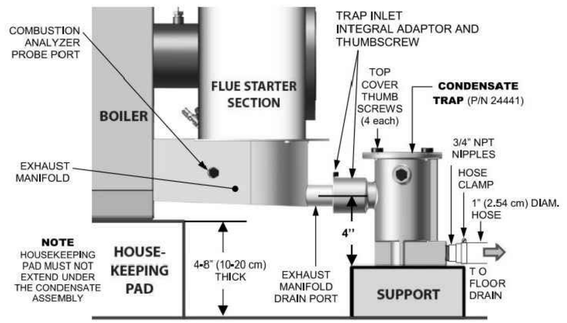
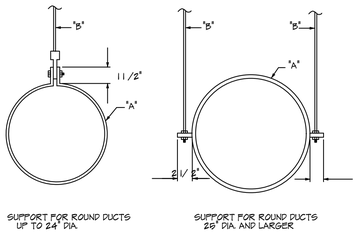


Figure 2-6b: BMK 1500/2000/2500/3000 Sample Condensate Trap Installation

3 M-2 BOILER CONDENSATE TRAP INSTALLATION DETAIL
SCALE: NO SCALE

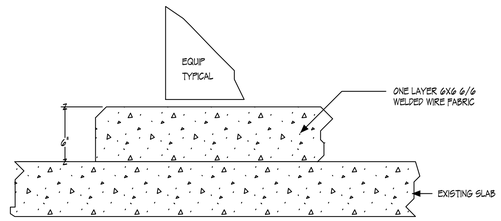
DUCT SIZE	"A" FLAT BAR	"B" ROD DIA.
UP TO 24"	1" x 1/8"	3/8"
25" TO 41"	1" x 1/8"	3/8"
42" AND UP	1 1/2" x 3/16"	1/2"



SUPPORT FOR ROUND DUCTS UP TO 24" DIA.

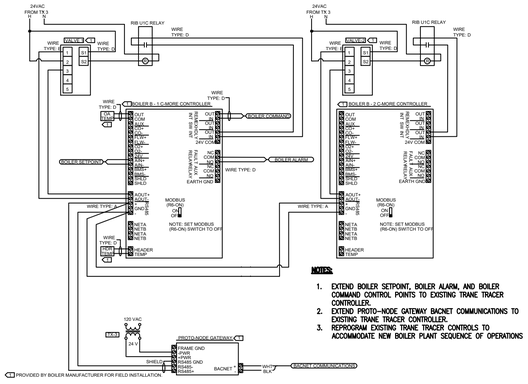
SUPPORT FOR ROUND DUCTS 25" DIA. AND LARGER

4 M-2 DUCTWORK HANGER DETAIL
SCALE: NO SCALE



NOTE: EXTEND PAD HEIGHT AS REQUIRED FOR DRAIN TRAP.

5 M-2 HOUSEKEEPING PAD DETAIL
SCALE: NO SCALE



NOTES:
1. EXTEND BOILER SETPOINT, BOILER ALARM, AND BOILER COMMAND CONTROL POINTS TO EXISTING TRANE TRACER CONTROLLER.
2. EXTEND PROTO-NODE GATEWAY BACNET COMMUNICATIONS TO EXISTING TRANE TRACER CONTROLLER.
3. REPROGRAM EXISTING TRANE TRACER CONTROLS TO ACCOMMODATE NEW BOILER PLANT SEQUENCE OF OPERATIONS

6 M-3 BOILER CONTROL WIRING DETAIL
SCALE: NO SCALE

BASE BID SCOPE OF WORK

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101 VERA KING FERRIS DRIVE, GALLOWAY, NJ 08205

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Sheet Title
BUILDING 30 MECHANICAL DETAILS AND BMS CONTROL DIAGRAM

Drawn By: CE/GB
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5 OF 13

Sheet No.
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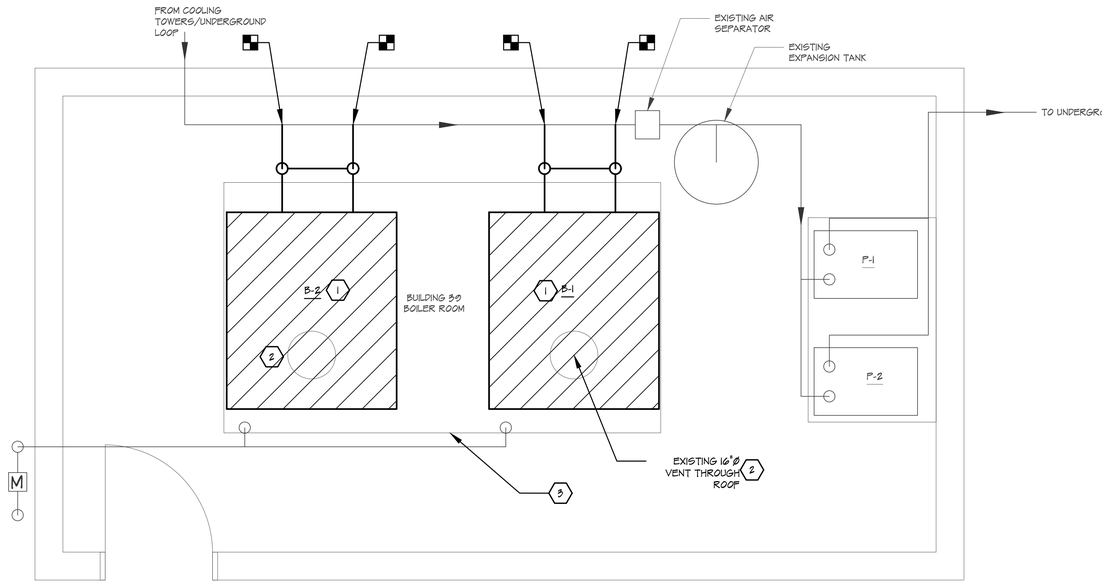
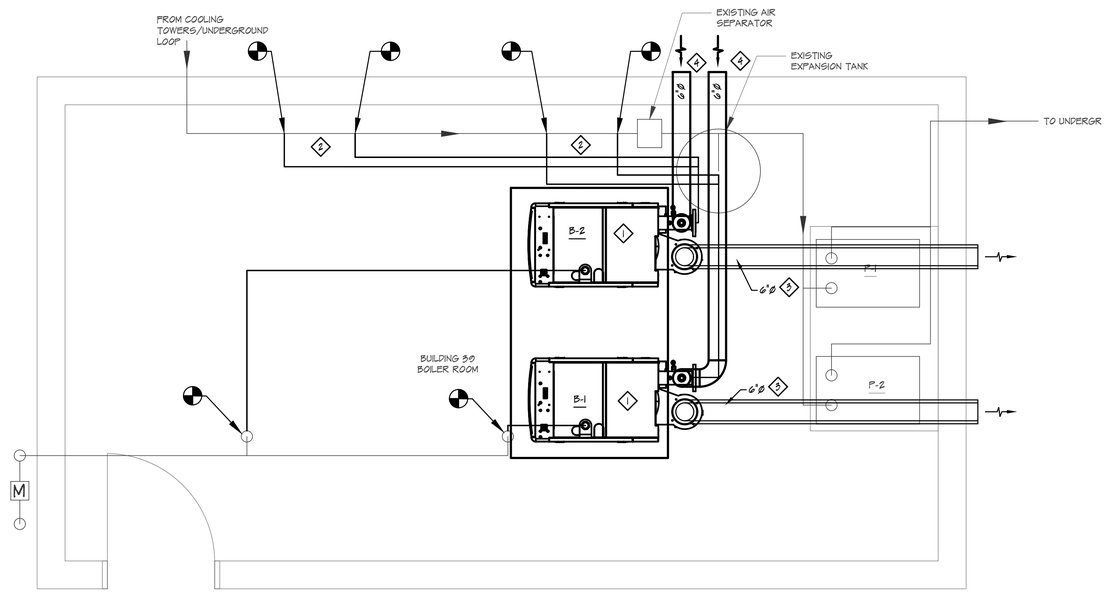
HRG-XXXXX



1 / M-5 BUILDING 39 MECHANICAL BOILER ROOM DEMOLITION WORK PLAN (ALTERNATE-I)
SCALE: 1/2" = 1'-0"

DEMOLITION WORK NOTES ⟨#⟩

1. REMOVE EXISTING NATURAL GAS-FIRED BOILER INCLUDING BOILER, BURNER, IN-LINE CIRCULATOR BOILER OPERATING CONTROLS, BOILER PRESSURE RELIEF VALVE AND DISCHARGE PIPING, BOILER DRAIN PIPING AND NATURAL GAS TRAIN. TEMPORARILY CAP WATER AND GAS PIPING IN PREPARATION FOR RECONNECTION AS PART OF NEW WORK SCOPE.
2. REMOVE EXISTING BOILER FLUE PIPING EXTENDING FROM THE BOILER TO A POINT APPROXIMATELY 18' BELOW THE ROOF PENETRATION POINT. PROVIDE 16' CAP ON EXISTING FLUE PIPING. NOTE THAT THE ROOF IS TO BE REPLACED BY THE OWNER UNDER SEPARATE CONTRACT AND THE REMAINING PORTION OF THE FLUE PIPING WILL BE REMOVED AT THAT TIME.
3. REMOVE EXISTING BOILER CONCRETE HOUSEKEEPING PAD. PATCH FLOOR IN AREAS WHERE PAD IS REMOVED.



2 / M-5 BUILDING 39 MECHANICAL BOILER ROOM DEMOLITION WORK PLAN (ALTERNATE-I)
SCALE: 1/2" = 1'-0"

NEW WORK NOTES ⟨#⟩

1. INSTALL NEW AERCO BOILERS B-1 AND B-2 ON NEW 4" THICK CONCRETE HOUSEKEEPING PAD. PAINT HOUSEKEEPING PAD YELLOW. NEW HOUSEKEEPING PAD SHALL EXTEND BETWEEN THE TWO BOILERS. INSTALL NEW CONDENSATE TRAPS AT REAR OF EACH BOILER (SEE DETAIL ON M-7), AND ROUTE PVC DISCHARGE PIPE TO EXISTING FLOOR DRAIN.
2. EXTEND EXISTING 2" HEATING HOT WATER SUPPLY AND RETURN PIPING TO EACH BOILER. INSTALL NEW IN-LINE CIRCULATING PUMPS BP-1 AND BP-2. PROVIDE NEW 4"X2" REDUCING COUPLINGS. INSTALL 4" MANUAL ISOLATION BUTTERFLY VALVE, AND CONNECT TO 4" FLANGED BOILER RETURN WATER CONNECTION. PIPING TO BE INSULATED WITH 1-1/2" THICK FIBERGLASS PIPE INSULATION.
3. INSTALL NEW HEAT FAB. SAF-T VENT CI PLUS, DOUBLE WALL, AL29-4C STAINLESS STEEL SPECIAL GAS VENT SYSTEM FOR NEW BOILERS. INSTALL NEW SLEEVE THROUGH WALL (SEE BOILER VENTING DETAIL FOR FURTHER REQUIREMENTS). SEAL WALL PENETRATION WEATHER TIGHT.
4. INSTALL NEW 6" PVC COMBUSTION AIR INTAKE PIPING FOR EACH NEW BOILER. INSTALL "GOOSENECK AND BIRD SCREEN". PROVIDE NEW WALL PENETRATIONS, SLEEVE, FLASHING, AND REPAIR/PATCHING.
5. EXTEND LOW VOLTAGE CONTROL WIRING FROM NEW BOILERS AND CONNECT TO EXISTING TRANE BUILDING AUTOMATION SYSTEM. INTEGRATE NEW BOILER OPERATIONS WITH EXISTING SYSTEM. EXTEND NEW BOILER PLANT CONTROL POINTS AND BACNET COMMUNICATIONS TO EXISTING TRANE TRACER CONTROLLERS AND INTEGRATE INTO EXISTING BMS (SEE BOILER CONTROL WIRING DETAILS FOR FURTHER INFORMATION).

ALTERNATE I SCOPE OF WORK

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DATE

Project
BUILDING 30/39 BOILER PLANT UPGRADES
FOR STOCKTON UNIVERSITY
101 VERA KING FERRIS DRIVE, GALLOWAY, NJ 08205

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Sheet Title
BUILDING 39 MECHANICAL DEMOLITION AND NEW WORK PLAN (ALTERNATE-I)

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Project No.
HRG-XXXXX

NATURAL GAS-FIRED BOILER SCHEDULE

TAG	LOCATION	BOILER TYPE	INPUT (MBH)	NET OUTPUT (MBH)	EWT (°F)	LWT (°F)	OPERATING EFFICIENCY	AHRI THERMAL EFFICIENCY	DESIGN FLOW RATE (GPM)	WATER SIDE PRESSURE DROP (PSI)	OPERATING PRESSURE (PSIG)	RELIEF VALVE PRESSURE (PSIG)	BOILER PRESSURE RATING (PSIG)	BOILER CAPACITY (GAL.)	NATURAL GAS INLET PRESSURE (IN W.C.)	OPERATING WEIGHT (LBS.)	DIMENSIONS L X W X H (IN.)	ELECTRICAL REQ. V/Ph/Hz	ELECTRICAL REQ. MCA	ELECTRICAL REQ. MOPD	BASIS OF DESIGN MANUFACTURER/MODEL	NOTES
B-1	Mech Room	Condensing Fire Tube	1,500	1,305	160	180	87%	94.6%	120	2.45	18	30	160	44	4 - 14	1,654	34 x 44 x 78	120/1/60	20	30	Aerco Model BMK Standard 1500 with Edge[i]	1,2,3,4,5,6,7
B-2	Mech Room	Condensing Fire Tube	1,500	1,305	160	180	87%	94.6%	120	2.45	18	30	160	44	4 - 14	1,654	34 x 44 x 78	120/1/60	20	30	Aerco Model BMK Standard 1500 with Edge[i]	1,2,3,4,5,6,7

NOTES: **1**. Approvals: UL/FM/CSD-1. **2**. Minimum Turndown Ratio 20:1. **3**. Provide motorized isolation valves for each boiler. **4**. Provide boiler sequencing control with HW reset. **5**. Provide condensate neutralizer for each boiler and common flue drains. **6.** Provide adjustable automatic reset high limit control, manual reset high limit control with max. 210° F setpoint, electronic probe low water cutoff control, pressure relief valve, 2" Maxitrol RV-91 gas pressure regulator, and combination temperature/pressure gauge with each boiler. **7.** Provide onboard BST header temperature sensor, outdoor air temperature sensor kit, and Protonode gateway.

REDUCED PRESSURE ZONE BACKFLOW PREVENTER SCHEDULE

TAG	LOCATION	MAKE	MODEL	SIZE	MAX. WORKING PRESSURE	NOTES
BFP	Mech Room	Watts	LF909-QT	1"	175 Psi	1,2

NOTES: **1.** Provide full port, ball valve shutoffs. **2.** Provide Watts 909AG-C air gap fitting and drain line routed to floor drain.

PRESSURE REDUCING VALVE SCHEDULE

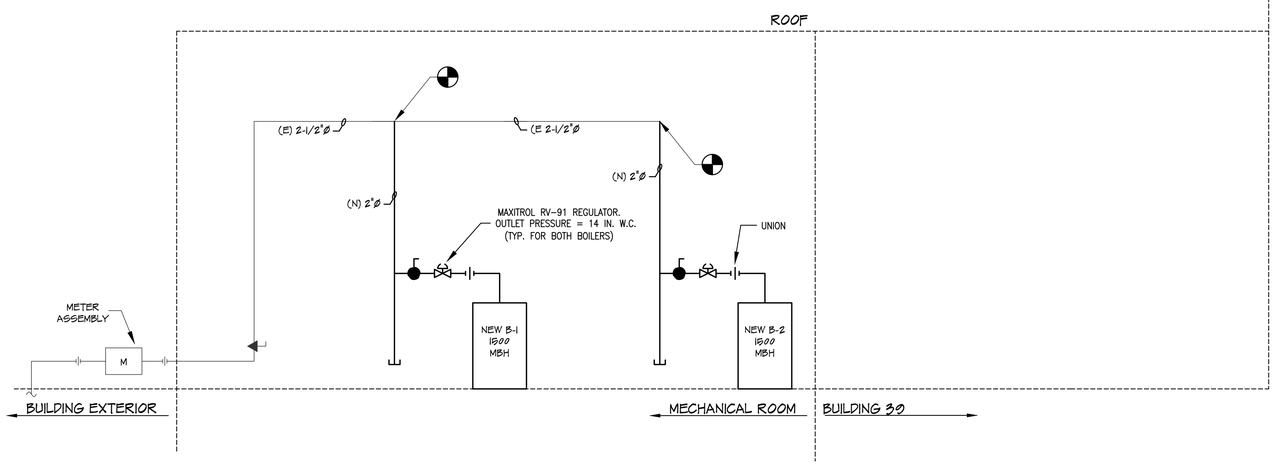
TAG	LOCATION	MAKE	MODEL	SIZE	MAX. WORKING PRESSURE	NOTES
PRV	Mech Room	Watts	LF25AUB-LP-G-Z3	1"	300 Psi	1,2

NOTES: **1.** Low pressure range, 10-35 psi. **2.** Provide gauge tapping and 0-35 psi pressure gauge.

PUMP SCHEDULE

TAG	LOCATION	PUMP TYPE	FLUID TYPE	SERVICE	FLOW (GPM)	HEAD (FT)	RPM	MODEL	IMPELLER DIA. (INCHES)	NPSH REQ. (FT)	PUMP EFFICIENCY	BRAKE HP @ DUTY PT	MOTOR HP	MOTOR TYPE	ELECTRICAL REQ. V/Ph/Hz	ELECTRICAL REQ. MCA	ELECTRICAL REQ. MOPD	BASIS OF DESIGN MANUFACTURER/MODEL	NOTES
BP-1	Boiler Room	In-Line	Water	Heating Hot Water	45	15	1750	1611	4.55	5	56.0%	0.31	0.33	ODP	120/1/60	9.0	15	Taco 1611	1,2,3
BP-2	Boiler Room	In-Line	Water	Heating Hot Water	45	15	1750	1611	4.55	5	56.0%	0.31	0.33	ODP	120/1/60	9.0	15	Taco 1611	1,2,3

NOTES: **1**. Starter Type: Across the line, single-pole, 20-A with 120-volt holding coil. **2**. Connection sizes are 1.5" suction x 1.5" discharge. Provide suction and discharge isolation ball valves, and discharge check valve. **3**. Pressure classification = 125 psi.



ALTERNATE I SCOPE OF WORK

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Project
BUILDING 30/39 BOILER PLANT UPGRADES
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101 VERA KING FERRIS DRIVE, GALLOWAY, NJ 08205

Project Bid Date

Revisions By Date

Sheet Title
BUILDING 30 MECHANICAL SCHEDULES AND NATURAL GAS RISER DIAGRAM (ALTERNATE I)

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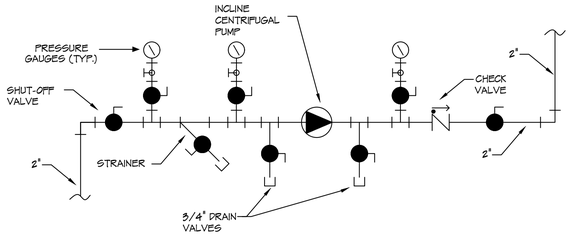
7 OF 13

Sheet No.
M-6

Project No.
HRG-XXXXX



1 M-7 IN-LINE PUMP DETAIL
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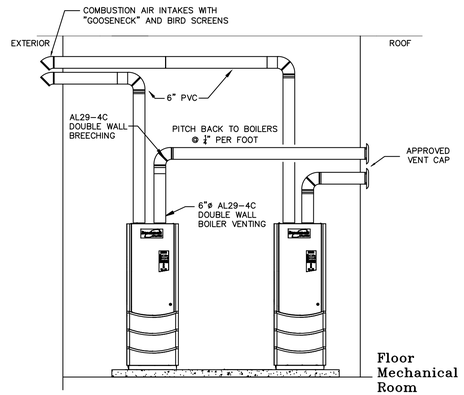


2 M-7 BOILER VENTING DETAIL
SCALE: NO SCALE

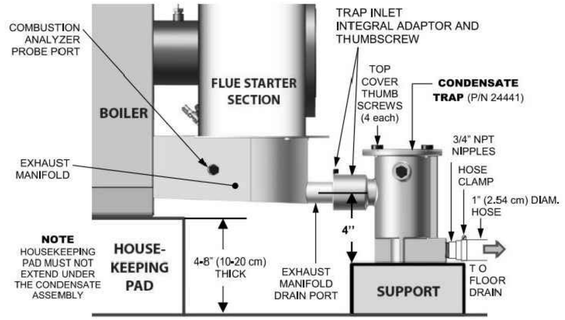
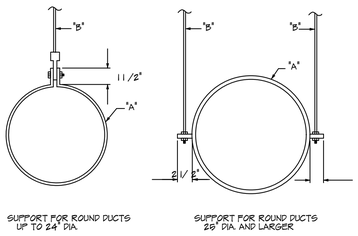


Figure 2-6b: BMK 1500/2000/2500/3000 Sample Condensate Trap Installation

3 M-7 BOILER CONDENSATE TRAP INSTALLATION DETAIL
SCALE: NO SCALE

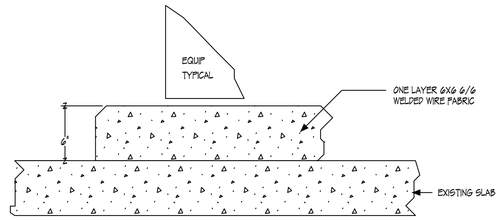
DUCT SIZE	"A" FLAT BAR	"B" ROD DIA.
UP TO 24"	1" x 1/8"	3/8"
25" TO 41"	1" x 1/8"	3/8"
42" AND UP	11/2" x 3/16"	1/2"



SUPPORT FOR ROUND DUCTS UP TO 24" DIA.

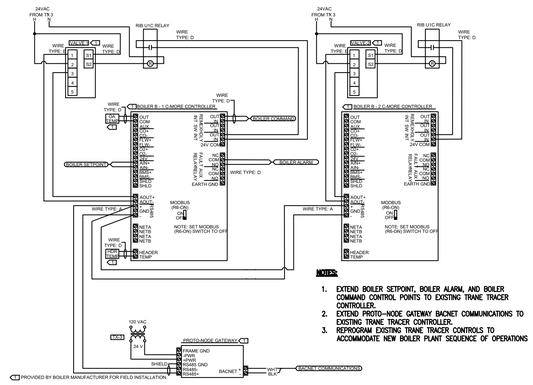
SUPPORT FOR ROUND DUCTS 25" DIA. AND LARGER

4 M-7 DUCTWORK HANGER DETAIL
SCALE: NO SCALE



NOTE: EXTEND PAD HEIGHT AS REQUIRED FOR DRAIN TRAP.

5 M-7 HOUSEKEEPING PAD DETAIL
SCALE: NO SCALE



NOTES:

1. EXTEND BOILER SETPOINT, BOILER ALARM, AND BOILER COMMAND CONTROL POINTS TO EXISTING TRANE TRACER CONTROLLER.
2. EXTEND PROTO-NODE GATEWAY BACNET COMMUNICATIONS TO EXISTING TRANE TRACER CONTROLLER.
3. REPROGRAM EXISTING TRANE TRACER CONTROLS TO ACCOMMODATE NEW BOILER PLANT SEQUENCE OF OPERATIONS

6 M-7 BOILER CONTROL WIRING DETAIL
SCALE: NO SCALE

ALTERNATE I SCOPE OF WORK

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Project Bid Date

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Sheet Title
BUILDING 30 MECHANICAL DETAILS (ALTERNATE I)

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8 OF 13

Sheet No.
M-7

Project No.
HRG-XXXXX

ELECTRICAL GENERAL NOTES & SPECIFICATIONS

1. UNLESS ITEMS OF MATERIAL, EQUIPMENT OR WORK ARE SPECIFICALLY NOTED TO BE PROVIDED OR FURNISHED BY OTHERS, THEY SHALL BE PROVIDED BY THIS CONTRACTOR TO PERFORM THE WORK AS SHOWN AND DESCRIBED ON THE DRAWINGS. ITEMS NOTED AS "FURNISHED BY OWNER" SHALL BE INSTALLED BY THIS CONTRACTOR.

2. WORK SHALL BE IN STRICT ACCORDANCE WITH THE LATEST EDITION (2020) OF THE NATIONAL ELECTRICAL CODE (NFPA 70), UNIFORM CONSTRUCTION CODE, INTERNATIONAL BUILDING CODE AND ALL APPLICABLE STATE AND LOCAL CODES.

3. WORK SHALL BE INSTALLED AND PERFORMED IN A WORKMAN LIKE MANNER CONSISTENT WITH APPLICABLE INDUSTRY STANDARDS.

4. EQUIPMENT INSTALLATIONS SHALL CONFORM TO THE EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS AND ALL APPLICABLE INDUSTRY STANDARDS. INSTALL EQUIPMENT IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

5. BY SUBMITTING THEIR BID, THIS CONTRACTOR WARRANTS THAT HE HAS VISITED THE PROJECT SITE, VIEWED CONDITIONS, MATERIALS AND EQUIPMENT THAT EXIST AND WARRANTS THAT HE IS THOROUGHLY FAMILIAR WITH THE SCOPE OF WORK REQUIRED TO PROVIDE A COMPLETE, FULLY FUNCTIONAL, CODE ACCEPTABLE SYSTEM.

6. COORDINATE INSTALLATION OF WORK WITH EXISTING CONDITIONS AND ALL OTHER SYSTEMS BEING INSTALLED PRIOR TO START OF WORK. ALL SYSTEMS REQUIRED TO BE REMOVED AND REINSTALLED DUE TO THE LACK OF COORDINATION BY THIS CONTRACTOR SHALL BE DONE AT THIS CONTRACTOR'S EXPENSE. WHERE SYSTEMS OR ITEMS ARE INDICATED ON THE DRAWINGS, OR DURING THE COURSE OF CONSTRUCTION ARE FOUND NECESSARY TO BE RELOCATED, REROUTED OR REMOVED AND REINSTALLED, CONTRACTOR SHALL PROVIDE NEW MATERIALS TO MATCH EXISTING MATERIALS, EQUIPMENT, ETC. AS REQUIRED TO PERFORM TASKS INDICATED.

7. WORK REQUIRING THE SHUTDOWN OF ANY EXISTING SYSTEMS SHALL BE COORDINATED SO LENGTH OF DOWN TIME IS MINIMIZED. ALL SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH OWNER PRIOR TO START OF CONSTRUCTION.

8. SYSTEMS SHALL BE LEFT IN PROPER WORKING ORDER. WORK, MATERIALS OR EQUIPMENT FURNISHED AND INSTALLED BY THIS CONTRACTOR UNDER THIS CONTRACT THAT DEVELOPS DEFECTS WITHIN TWO (2) YEARS FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER, OTHER THAN NORMAL WEAR AND TEAR, SHALL BE REPLACED WITHOUT ADDITIONAL CHARGE.

9. IN FINISHED AREAS, CONCEAL RACEWAYS AND WIRING IN WALLS, PIPE CHASES, ABOVE CEILINGS OR UTILITY SPACES, UNLESS INSTALLATION OF SURFACE MOUNTED RACEWAYS HAS THE PRIOR APPROVAL OF THE OWNER.

10. INSTALL RACEWAYS TIGHT TO SLABS, BEAMS, JOISTS, COLUMNS, WALLS, AND OTHER PERMANENT ELEMENTS OF THE BUILDING. ALLOW SUFFICIENT SPACE ABOVE REMOVABLE CEILING PANELS TO ALLOW FOR PANEL REMOVAL.

11. PROVIDE GROUNDING FOR ALL ELECTRICAL ENCLOSURES AND EQUIPMENT AND FOR ALL METAL PIPING IN THE BUILDING (ELECTRICAL CONDUIT, WATER PIPING, SPRINKLER PIPING, ETC.) IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70). CONNECT THE GROUNDING FOR THIS EQUIPMENT TO THE BUILDING'S EXISTING GROUND SYSTEM.

12. PROVIDE LATERAL SEISMIC RESTRAINTS AS REQUIRED IN ACCORDANCE WITH THE LATEST EDITION OF APPLICABLE BUILDING CODE FOR ALL EQUIPMENT AND RACEWAYS AS DESCRIBED WITHIN THE CODE.

13. PROVIDE ALL MISCELLANEOUS STEEL SHAPES, HANGERS, RODS, STRAPS, ETC. REQUIRED FOR THE INSTALLATION OF EQUIPMENT UNDER THIS CONTRACT.

14. PROVIDE APPLICABLE PLUGS OR COVERS FOR ALL OPENINGS IN CONDUIT FITTINGS, J-BOXES, ETC.

15. PROVIDE TEMPORARY LIGHTING AND POWER, AS REQUIRED, DURING CONSTRUCTION. REMOVE WIRING AND DEVICES AT END OF CONSTRUCTION.

16. PROVIDE FIRE RATED SLEEVES AT ALL FIREWALL PENETRATIONS AND SEAL AROUND SLEEVES AND PIPES WITH FIRE STOP SEALANT. THIS CONTRACTOR SHALL HIRE INDIVIDUALS SKILLED IN SUCH WORK TO DO THE SEALING AND FIREPROOFING. THESE INDIVIDUALS HIRED SHALL NORMALLY AND ROUTINELY BE EMPLOYED IN THE SEALING AND FIREPROOFING OCCUPATION.

17. UNLESS DIRECTED OTHERWISE, ALL CUTTING AND PATCHING OF NEW AND EXISTING WALLS, CEILINGS OR FLOORS FOR REMOVALS OR INSTALLATION OF EQUIPMENT, IS THE RESPONSIBILITY OF THE CONTRACTOR WHOSE WORK PENETRATES THE OPENING. THE CONTRACTOR RESPONSIBLE SHALL HIRE INDIVIDUALS SKILLED IN SUCH WORK TO DO THE PATCHING AND PAINTING. THESE INDIVIDUALS HIRED SHALL NORMALLY AND ROUTINELY BE EMPLOYED IN THE PATCHING AND PAINTING OCCUPATION. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING, WITHOUT ADDITIONAL CHARGE, ANY EXISTING WORK DAMAGED BY HIM DURING THE COURSE OF THIS CONSTRUCTION.

18. VERIFY AFTER ALL WORK IS COMPLETED THAT ALL OPENINGS IN WALLS AND CEILINGS ARE PATCHED AND PAINTED TO MATCH EXISTING SURFACES.

19. APPLY FOR AND PROCURE ALL REQUIRED PERMITS, CERTIFICATES, AND AGENCY APPROVALS REQUIRED FOR THE LAWFUL PROSECUTION OF THE WORK UNLESS OTHERWISE DIRECTED. PROVIDE THE OWNER WITH COPIES OF ALL REQUIRED CERTIFICATIONS AND APPROVALS.

20. PROVIDE THE OWNER WITH COMPLETE AND ACCURATE "AS INSTALLED DOCUMENTATION" AT THE COMPLETION OF THE PROJECT.

21. PROVIDE TESTS AS REQUIRED BY THE OWNER OR ANY INSPECTION DEPARTMENT. TESTS SHALL VERIFY WHETHER THE EQUIPMENT AND SYSTEMS INSTALLED COMPLY WITH THE SPECIFICATIONS AND ARE IN PROPER WORKING ORDER. PROVIDE TEST RESULTS TO THE OWNER.

22. EQUIPMENT LISTED IN THESE DOCUMENTS BY MANUFACTURE AND MODEL NUMBER ESTABLISHES A STANDARD OF QUALITY FOR THE EQUIPMENT. EQUAL SUBSTITUTES MAY BE ACCEPTABLE. WRITTEN APPROVAL OF THE PROPOSED SUBSTITUTION IS REQUIRED PRIOR TO PURCHASE OR INSTALLATION.

23. SUBMIT SHOP DRAWINGS FOR ALL MAJOR MANUFACTURED ITEMS REQUIRED ON THIS PROJECT. A MINIMUM OF 4 COPIES SHALL BE SUBMITTED. EQUIPMENT OR SYSTEM COMPONENTS SHALL NOT BE PURCHASED OR INSTALLED PRIOR TO CONTRACTORS RECEIPT OF THE REVIEWED SHOP DRAWINGS. REVIEW OF SHOP OR INSTALLATION DRAWINGS SHALL ONLY BE CONSTRUED TO APPLY TO GENERAL LAYOUT AND CONFORMANCE OF THE EQUIPMENT TO THE DESIGN CONCEPT OF THE PROJECT AND FOR CONFORMANCE WITH THE GENERAL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE RESPONSIBILITY FOR DEVIATIONS FROM THE CONTRACT DOCUMENTS SHALL BE THE CONTRACTOR'S UNLESS THE CONTRACTOR HAS, IN WRITING, SPECIFICALLY CALLED ATTENTION TO SUCH DEVIATIONS AT THE TIME OF SUBMISSION AND HAS RECEIVED WRITTEN APPROVAL OF SUCH DEVIATIONS FROM THE OWNER.

24. PROVIDE PRODUCT DATA INCLUDING INSTALLATION AND STARTUP INSTRUCTIONS FOR ALL EQUIPMENT SUPPLIED UNDER THIS CONTRACT PRIOR TO PURCHASE. SUBMITTALS SHALL INCLUDE PERFORMANCE DATA, WIRING DIAGRAMS, AND MAINTENANCE INSTRUCTIONS.

25. ALL WIRING SHALL BE COPPER TYPE THHN (INTERIOR) AND THWN (EXTERIOR).

26. ALL LIGHTING CIRCUIT HOMERUNS SHALL BE MINIMUM #10 AWG.

27. WIRING AND ASSOCIATED RACEWAYS NOT SHOWN ON THE DRAWINGS SHALL BE SIZED PER THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) UNLESS NOTED OTHERWISE.

28. RACEWAYS:

- EXPOSED INDOOR: ELECTRICAL METALLIC TUBING (EMT) OR AS INDICATED
- CONCEALED INDOOR: EMT, FLEXIBLE METAL CONDUIT OR AS INDICATED
- IN CONCRETE SLAB: GALVANIZED RIGID STEEL, PVC, OR AS INDICATED
- FINAL CONNECTIONS TO EQUIPMENT SUBJECT TO VIBRATION, MOVEMENT, OR ADJUSTMENT: 3'-0" MINIMUM LENGTH OF LIQUID TIGHT FLEXIBLE METAL CONDUIT.
- CONNECTION TO LIGHT FIXTURES: 6'-0" MAXIMUM LENGTH OF FLEXIBLE ARMOR CLAD CABLE, TYPE AC OR MC.
- MINIMUM RACEWAY SIZE IS: 3/4" FOR POWER WIRING.
  1/2" FOR SIGNAL & CONTROL CABLING

29. ALL SIZING OF EQUIPMENT FOR CONNECTION TO MECHANICAL EQUIPMENT IS BASED ON MECHANICAL EQUIPMENT THAT IS SPECIFIED. THIS CONTRACTOR SHALL VERIFY ALL POWER REQUIREMENTS FOR ACTUAL EQUIPMENT INSTALLED. COORDINATE ANY MODIFICATIONS WITH THE ENGINEER PRIOR TO INSTALLATION.

30. ALL CUTTING AND PATCHING OF ROOF SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR UNLESS DIRECTED OTHERWISE. RESPONSIBLE CONTRACTOR SHALL SECURE THE SERVICES OF THE INSTALLED ROOFING MANUFACTURER'S CERTIFIED ROOFING TECHNICIAN PRIOR TO ANY PENETRATIONS OF EXISTING ROOFING ARE MADE TO MAINTAIN ANY WARRANTIES OF NEW OR EXISTING ROOF SYSTEM. ALL PENETRATIONS SHALL BE SEALED WATER-TIGHT

31. ALL ELECTRICAL PANELS WITHIN CONTRACT AREA SHALL BE PROVIDED WITH UP-TO-DATE, TYPED INDEX CARDS MOUNTED IN PLASTIC HOLDERS ON THE INSIDE OF EACH ENCLOSURE DOOR.

32. THE FACILITY OPERATIONS SHALL REMAIN FUNCTIONAL DURING CONSTRUCTION. THIS CONTRACTOR SHALL PROVIDE FULL DUST BARRIER ENCLOSURES AROUND ALL CONSTRUCTION AND KEEP ALL AREAS CLEAR OF ALL DIRT AND DEBRIS. THIS CONTRACTOR SHALL THOROUGHLY COORDINATE, AND SCHEDULE CONSTRUCTION WITH GENERAL CONTRACTOR AND THE OWNER PRIOR TO

33. THE FACILITY OPERATIONS SHALL REMAIN FUNCTIONAL DURING CONSTRUCTION. THIS CONTRACTOR SHALL PROVIDE FULL DUST BARRIER ENCLOSURES AROUND ALL CONSTRUCTION AND KEEP ALL AREAS CLEAR OF ALL DIRT AND DEBRIS. THIS CONTRACTOR SHALL THOROUGHLY COORDINATE, AND SCHEDULE CONSTRUCTION WITH GENERAL CONTRACTOR AND THE OWNER PRIOR TO COMMENCING CONSTRUCTION.

34. PROVIDE NAMEPLATES CONSTRUCTED OF 1/16" INCH THICK LAMINATED MATERIAL. ENGRAVE THROUGH COLORED SURFACE MATERIAL TO CONTRASTING COLORED SUB-LAYER. USE RECEPTACLE LABELS BY ELECTRONIC LABELER BROTHER P-TOUCH, MODEL PT-20/28, DYMO TAPE OR APPROVED EQUAL. ALSO, UTILIZE BLCK NON-ERASE MARKER TO PRINT INFO ON INSIDE OF RESPECTIVE FACEPLATES.

- ELECTRICAL FACEPLATE PROVIDE PANEL & CIRCUIT NUMBER
- IT OUTLET PROVIDE DROP IDENTIFICATION. COORDINATE ID WITH STOCKTON IT PERSONNEL

ELECTRICAL SYMBOLS LEGEND

- XX-X — CONDUIT AND/OR WIRING HOMERUN TO PANELBOARD. TEXT INDICATES PANEL DESIGNATION AND CIRCUIT NUMBER.
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- CONDUIT WITH CAP UNLESS OTHERWISE NOTED)
- DEMOLITION OR NEW WORK
- EXISTING TO REMAIN
- UNFUSED DISCONNECT SWITCH
- FLUSH WALL MOUNTED JUNCTION BOX OR JUNCTION BOX ABOVE CEILING
- WALL OUTLET BOX FOR TELEPHONE W/ 1"C (W/ PULL CORD) TO ABOVE ACCESSIBLE FINISHED CEILING MOUNTED AT 18" AFF UNLESS OTHERWISE NOTED
- WALL OUTLET BOX FOR DATA W/ 1"C (W/ PULL CORD) TO ABOVE ACCESSIBLE FINISHED CEILING MOUNTED AT 18" AFF UNLESS OTHERWISE NOTED
- (S)A — ADDRESSABLE DUAL TECHNOLOGY FIRE ALARM SYSTEM SMOKE DETECTOR WITH AUDIBLE BASE
- (H)A — ADDRESSABLE FIRE ALARM SYSTEM RATE-OF RISE/FIXED TEMP HEAT DETECTOR WITH AUDIBLE BASE
- (D) — ADDRESSABLE FIRE ALARM SYSTEM DUCT DETECTOR WITH REMOTE TEST SWITCH
- F — FIRE ALARM SYSTEM ADDRESSABLE MANUAL PULL STATION - SIMPLEX MODEL #4099-0001
- H# — FIRE ALARM SYSTEM AUDIO/VISUAL UNIT - SIMPLEX MODEL 4903-9426 ("#" INDICATES CANDELLA LEVEL)
- # — FIRE ALARM SYSTEM VISUAL UNIT - SIMPLEX MODEL #4904-9169 ("#" INDICATES CANDELLA LEVEL)
- 208/120V BRANCH CIRCUIT PANELBOARD - FLUSH MOUNTED
- WALL OUTLET BOX AND 120V, 20 AMP DUPLEX CONVENIENCE RECEPTACLE MOUNTED 18" ABOVE FINISHED UNLESS OTHERWISE NOTED. (+ INDICATES MOUNTED AT COUNTERTOP HEIGHT) COORDINATE LOCATION WITH ARCHITECTURAL PLANS
- WALL OUTLET BOX AND 120V, 20 AMP GFI RECEPTACLE ("CT" INDICATES MOUNTED AT COUNTERTOP HEIGHT. COORDINATE LOCATION WITH ARCHITECTURAL PLANS
- WALL OUTLET BOX AND 120V, 20 AMP QUADRAPLEX RECEPTACLE MOUNTED 18" AFF UNLESS OTHERWISE NOTED. (+ INDICATES MOUNTED AT COUNTERTOP HEIGHT. COORDINATE LOCATION WITH ARCHITECTURAL PLANS
- 2X2 FLUORESCENT LIGHTING FIXTURE
- EM — 2X2 FLUORESCENT LIGHTING FIXTURE ON UNSWITCHED CIRCUIT FOR NIGHT LIGHTING - EM INDICATES FIXTURE PROVIDED W/ INTERNAL BATTERY BACK-UP
- 1X4 FLUORESCENT LIGHTING FIXTURE - LETTER "A" INDICATES TYPE
- RECESSED LED DOWNLIGHT LIGHT
- CEILING OUTLET BOX AND ILLUMINATED EXIT SIGN (SHADED QUADRANT INDICATES FACE). DIRECTIONAL ARROWS AS INDICATED ON PLANS. LETTER "A" INDICATES TYPE
- RECESSED LED STRIP LIGHT
- RIBBON LIGHT
- Sa — WALL OUTLET BOX AND SINGLE POLE TOGGLE-TYPE SWITCH - 20 AMP, MOUNTED 54" AFF UNLESS OTHERWISE NOTED. (LOWER CASE LETTER INDICATES LIGHTS TO BE CONTROLLED. IF NO LETTER IS INDICATED, ALL LIGHTS IN ROOM SHALL BE CONTROLLED)
- S3a — WALL OUTLET BOX AND THREE-WAY TOGGLE TYPE SWITCH - 20 AMP, MOUNTED 54" AFF UNLESS OTHERWISE NOTED. (LOWER CASE LETTER INDICATES LIGHTS TO BE CONTROLLED. IF NO LETTER IS INDICATED, ALL LIGHTS IN ROOM SHALL BE CONTROLLED)
- S3 — WALL OUTLET BOX WITH VOLUME CONTROL SWITCH FOR LOCAL PAGING SPEAKER(S)
- OS — 4"SQ. OUTLET BOX AND OCCUPANCY SENSOR (DUAL TECHNOLOGY TYPE) MOUNTED ON CEILING UNLESS OTHERWISE NOTED.
- OSR — 4"SQ. OUTLET BOX AND RAB OCCUPANCY SENSOR MOUNTED ON CEILING UNLESS OTHERWISE NOTED
- MD — SECURITY SYSTEM MOTION SENSOR
- DC — SECURITY SYSTEM DOOR CONTACTOR
- SPWP — SECURITY SYSTEM EXTERIOR (WP - WEATHERPROOF SPEAKER)
- SPV — INDOOR PAGING SYSTEM SPEAKER (V INDICATES VOLUME CONTROL INTEGRAL W/ SPEAKER
- EMERGENCY BATTERY PACK
- EMERGENCY LIGHTING REMOTE HEAD
- GRADE MOUNTED OUTLET BOX AND 120V, 20 AMP GFI DUPLEX RECEPTACLE WITH WEATHER PROOF, LOCKING COVER. COORDINATE LOCATION WITH ARCHITECTURAL PLANS.
- AP2 — CEILING MOUNTED WIRELESS ACCESS POINT (NUMBER INDICATES QUANTITY OF CAT6A CABLES)

ABBREVIATIONS LEGEND

ABBREVIATION	DESCRIPTION
A	AMPERES
AC	AIR CONDITIONING
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
AHU	AIR HANDLING UNIT
AFF	ABOVE FINISHED FLOOR
ARCH	ARCHITECT
AWG	AMERICAN WIRE GAUGE
ATS	AUTOMATIC TRANSFER SWITCH
C	CONDUIT - RACEWAY
CB	CIRCUIT BREAKER
CD	CONTRACT DOCUMENTS
CKT	CIRCUIT
CLG	CEILING
CM	CONSTRUCTION MANAGER
CT	COUNTER TOP
CU	COPPER
DWG	DRAWING
EM	EMERGENCY
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EOL	END OF LINE
EWH	ELECTRIC WATER HEATER
EWC	ELECTRIC WATER COOLER
E/R	EXISTING TO REMAIN
F	FAHRENHEIT
FIXT	FIXTURE
FLA	FULL LOAD AMPS
G	GROUND OR GROUNDING
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPT
HZ	HERTZ
HP	HORSE POWER
ISCA	SHORT CIRCUIT CURRENT RATING
KVA	KILOVOLT AMPERES
KW	KILOWATTS
KWH	KILOWATT HOUR
LSG	LONG TIME, SHORT TIME, GROUND FAULT
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MH	MOUNTING HEIGHT
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE
NL	NIGHT LIGHT
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PNL	PANEL OR PANELBOARD
Ø, PH	PHASE
RTU	ROOF TOP UNIT
SP	SPARE
TBD	TO BE DECIDED
TEL	TELEPHONE
TW/SH	TWISTED/SHIELDED
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
V	VOLT
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
WH	WATER HEATER
XFMR	TRANSFORMER

ELECTRICAL DRAWING LIST:

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WWW.HRGNJ.COM, V 856-404-0572
CERTIFICATE OF AUTHORIZATION: #24GA28138200

MATTHEW DAVID WELLS, N.J.P.E.
PROFESSIONAL ENGINEER, LIC. NO. 24GE04594000

SIGNATURE NOT VALID WITHOUT RAISED SEAL — DATE

Project
BUILDING 30/39 BOILER PLANT UPGRADES
FOR STOCKTON UNIVERSITY
101 VERA KING FERRIS DRIVE, GALLOWAY, NJ 08205

Project Bld Date

Revisions By Date

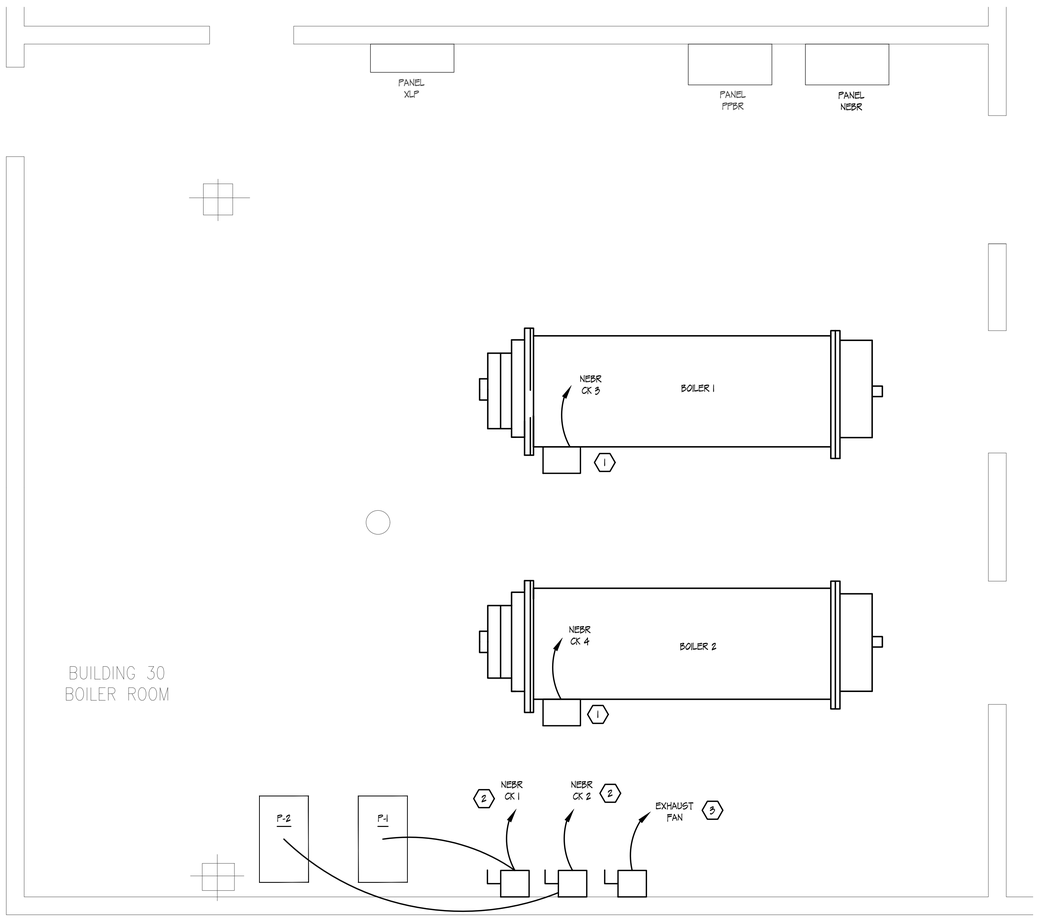
Sheet Title
ELECTRICAL COVERSHEET

Drawn By CE/GB
Chk'd By MW/GB
9 OF 13

Sheet No.
E-0

Project No.
HRG-XXXXX

Do Not Scale Drawings – Field check all dimensions prior to start of construction.

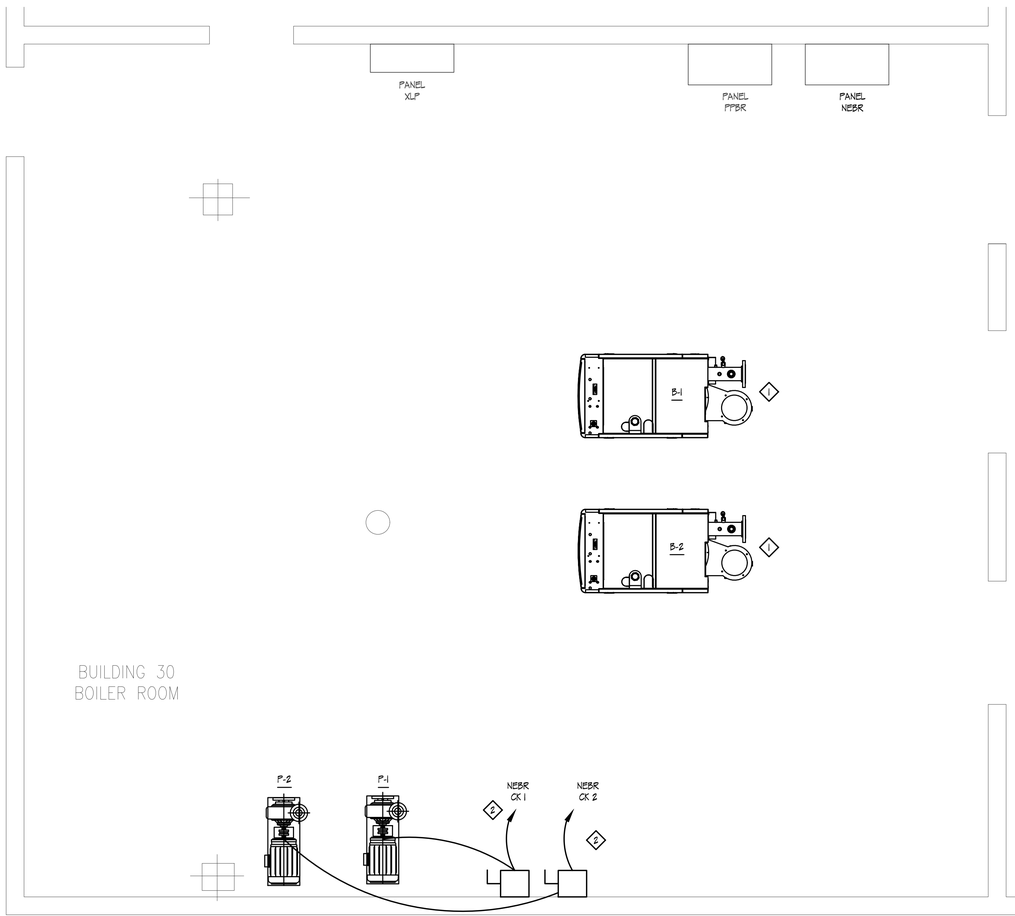


1 / E-1 BUILDING 30 ELECTRICAL BOILER ROOM DEMOLITION WORK PLAN

SCALE: 1/2" = 1'-0"

DEMOLITION WORK NOTES (#)

1. REMOVE POWER CIRCUIT, INCLUDING CONDUIT AND CONDUCTORS FOR BOILERS, BACK TO PANEL NEBR.
2. REMOVE EXISTING MOTOR STARTER. EXISTING CIRCUIT TO REMAIN. DE-ENERGIZE AND TEMPORARILY "SAFE-OFF" CIRCUITS FOR REUSE AS PART OF NEW WORK.
3. REMOVE EXISTING MOTOR STARTER AND POWER CIRCUIT INCLUDING CONDUIT AND CONDUCTORS BACK TO ASSOCIATED POWER DISTRIBUTION PANEL.



2 / E-1 BUILDING 30 ELECTRICAL BOILER ROOM NEW WORK PLAN

SCALE: 1/2" = 1'-0"

NEW WORK NOTES (#)

1. PROVIDE TWO (2), LOCKABLE, SINGLE POLE, 30 AMP, NON-FUSED DISCONNECT SWITCHES FOR NEW BOILERS B-1 AND B-2 (1 FOR EACH BOILER). PROVIDE POWER CIRCUIT FOR EACH BOILER FROM NEAREST 120/208V POWER DISTRIBUTION PANEL. CIRCUITS TO BE (2) #10 AND (1) #10G IN 3/4" CONDUIT. PROVIDE NEW 30 AMP, SINGLE POLE CIRCUIT BREAKERS IN PANEL FP-1 AND UPDATE CIRCUIT DIRECTORY CARD. ROUTE CIRCUITS THROUGH DOUBLE POLE CONTACTOR (SEE DETAIL ON E-2) AND CONNECT TO NEW BOILERS.
2. INSTALL NEW VFD DRIVES FROM NEW PUMPS P-1 AND P-2. VFD DRIVES TO BE ABB ACH580-01-07A3-4 WITH MAIN DISCONNECTING MEANS. RECONNECT TO EXISTING POWER CIRCUITS. EXTEND AND CONNECT POWER CIRCUITS TO NEW PUMPS.

BASE BID SCOPE OF WORK

HRG
ENGINEERING & ENERGY CONSULTING
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DATE

Project
BUILDING 30/39 BOILER PLANT UPGRADES
FOR STOCKTON UNIVERSITY
101 VERA KING FERRIS DRIVE, GALLOWAY, NJ 08205

Project Bid Date

Revisions By Date

Sheet Title
BUILDING 30 ELECTRICAL DEMOLITION WORK PLANS

Drawn By CE/GB
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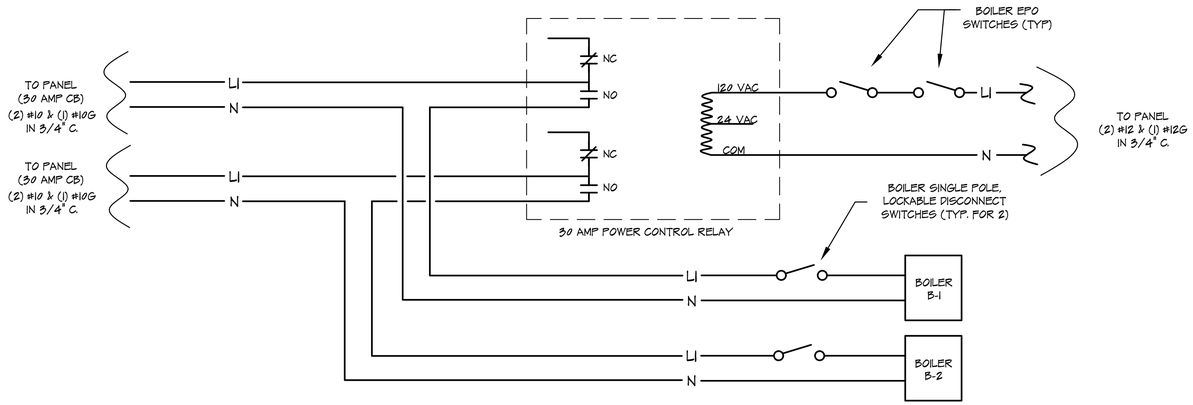
Ø OF 13

Sheet No.
E-1

Project No.
HRG-XXXXX



1 / E-2 BUILDING 30 ELECTRICAL BOILER POWER WIRING SCHEMATIC

SCALE: N/A

BASE BID SCOPE OF WORK

HRG
ENGINEERING & ENERGY CONSULTING
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101 VERA KING FERRIS DRIVE, GALLOWAY, NJ 08205

Project Bid Date

Revisions By Date

Sheet Title
BUILDING 30 ELECTRICAL
BOILER POWER
WIRING SCHEMATIC

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II OF 13

Sheet No.
E-2

Project No.
HRG-XXXXX

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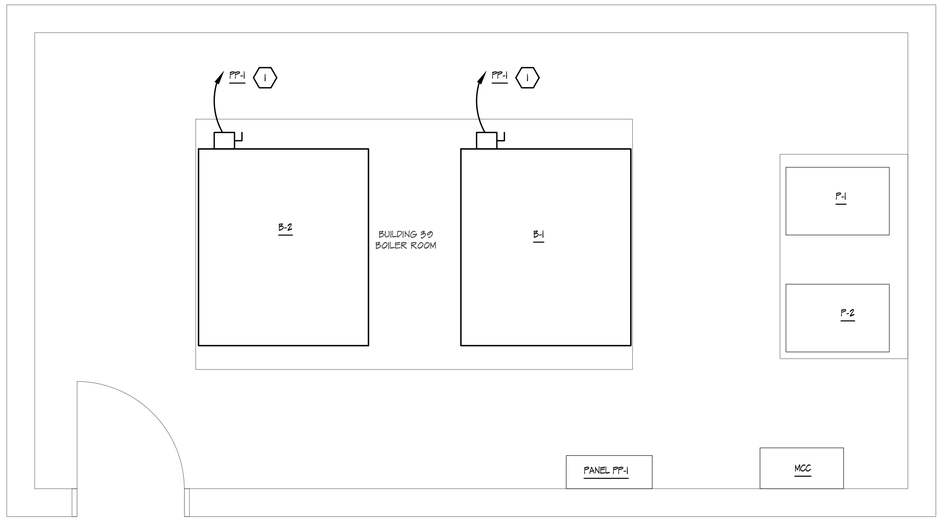
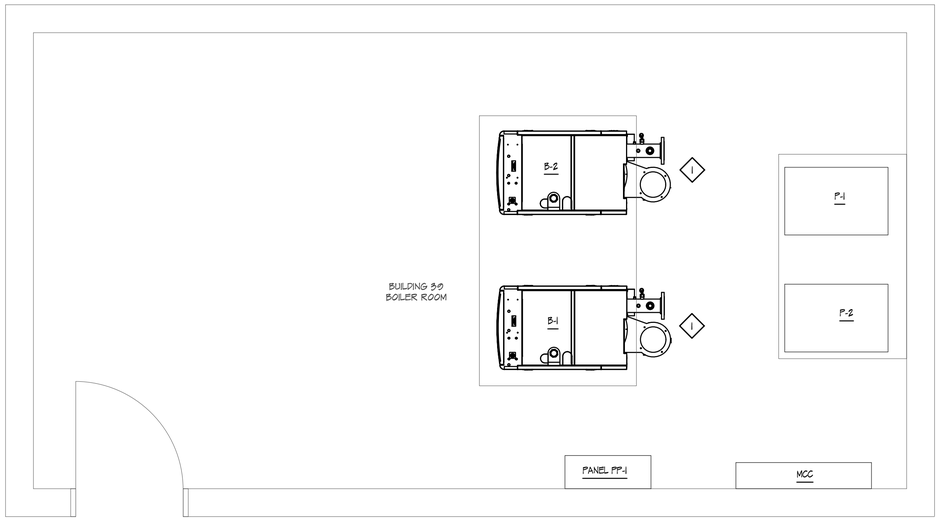


1 / E-3 BUILDING 30 ELECTRICAL BOILER ROOM DEMOLITION WORK PLAN (ALTERNATE-1)
SCALE: 1/4" = 1'-0"

DEMOLITION WORK NOTES (#)

1. REMOVE POWER CIRCUIT, INCLUDING CONDUIT AND CONDUCTORS FOR BOILERS, BACK TO PANEL FP-1.



2 / E-3 BUILDING 30 ELECTRICAL BOILER ROOM NEW WORK PLAN (ALTERNATE-1)
SCALE: 1/4" = 1'-0"

NEW WORK NOTES (#)

1. PROVIDE TWO (2), LOCKABLE, 30 AMP, SINGLE POLE, NON-FUSED DISCONNECT SWITCHES FOR NEW BOILERS B-1 AND B-2 (1 FOR EACH BOILER). PROVIDE POWER CIRCUIT FOR EACH BOILER FROM PANEL FP-1 CIRCUITS TO BE (2) #10 AND (1) #10G IN 3/4" CONDUIT. PROVIDE NEW 30 AMP, SINGLE POLE CIRCUIT BREAKERS IN PANEL FP-1 AND UPDATE CIRCUIT DIRECTORY CARD. ROUTE CIRCUITS THROUGH DOUBLE POLE CONTACTOR (SEE DETAIL ON E-2) AND CONNECT TO NEW BOILERS.

ALTERNATE 1 SCOPE OF WORK

HRG
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BUILDING 30/39 BOILER PLANT UPGRADES
FOR STOCKTON UNIVERSITY
101 VERA KING FERRIS DRIVE, GALLOWAY, NJ 08205

Project

Project Bid Date

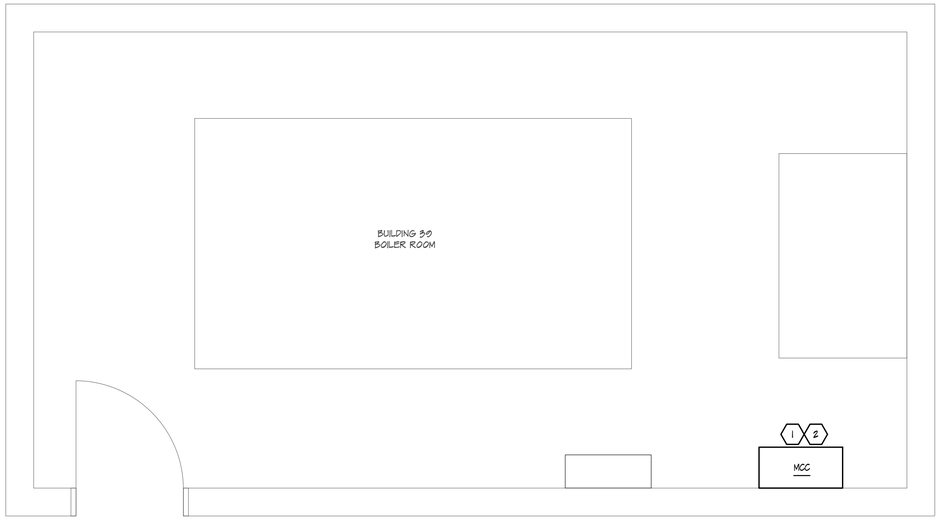
Revisions	By	Date

Sheet Title
BUILDING 30 ELECTRICAL DEMOLITION WORK AND NEW WORK PLANS (ALTERNATE-1)

Drawn By: CE/GB
Chk'd By: MW/GB
12 OF 13

Sheet No.
E-3

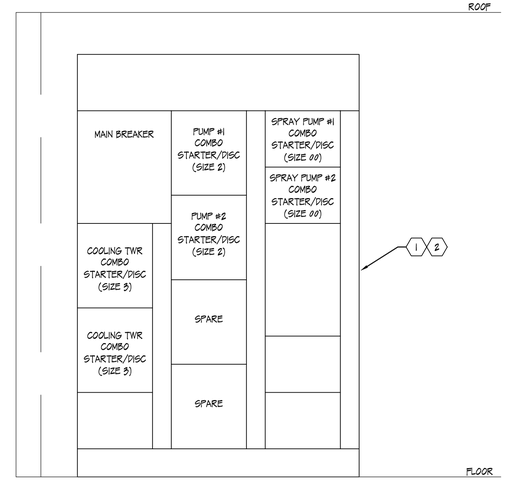
Project No.
HRG-XXXXX



1 E-4 BUILDING 30 ELECTRICAL MCC DEMOLITION WORK PLAN (ALTERNATE-2)
SCALE: 1/4" = 1'-0"

DEMOLITION WORK NOTES ⟨#⟩

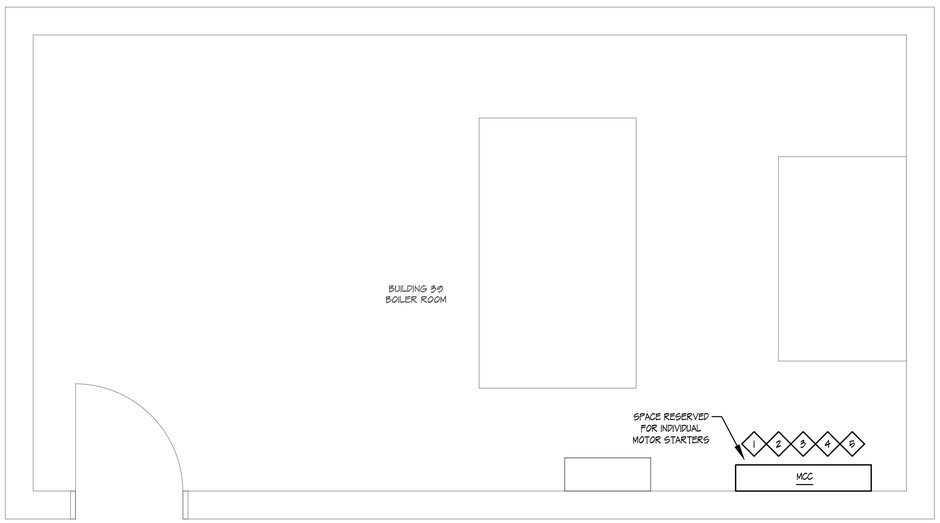
1. COORDINATE WITH STOCKTON MECHANICAL PERSONNEL IN THE "OFF" SEASON. THE SHUTDOWN OF THE EXISTING MCC FOR REMOVAL OF MCC AND INSTALLATION OF NEW PANEL & COMBO STARTER/DISC. SW. UNITS.
2. DISCONNECT ALL WIRES (POWER & CONTROL) FROM EXISTING MOTOR CONTROL EQUIPMENT IN MCC AND PULL BACK WIRING TO A POINT IN THE FIELD FOR REMOVAL OF MCC IN ITS ENTIRETY AND FUTURE EXTENSION/CONNECTION OF THESE WIRES TO EQUIPMENT DURING NEW WORK.



2 E-4 BUILDING 30 ELECTRICAL MCC DEMOLITION WORK PLAN (ALTERNATE-2)
SCALE: 1/4" = 1'-0"

DEMOLITION WORK NOTES ⟨#⟩

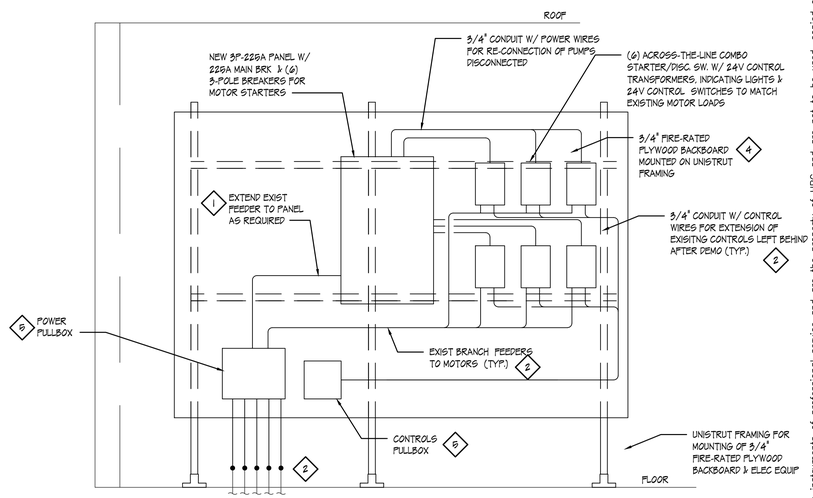
1. COORDINATE WITH STOCKTON MECHANICAL PERSONNEL IN THE "OFF" SEASON. THE SHUTDOWN OF THE EXISTING MCC FOR REMOVAL OF MCC AND INSTALLATION OF NEW PANEL & COMBO STARTER/DISC. SW. UNITS.
2. DISCONNECT ALL WIRES (POWER & CONTROL) FROM EXISTING MOTOR CONTROL EQUIPMENT IN MCC AND PULL BACK WIRING TO A POINT IN THE FIELD FOR REMOVAL OF MCC IN ITS ENTIRETY AND FUTURE EXTENSION/CONNECTION OF THESE WIRES TO EQUIPMENT DURING NEW WORK.



3 E-4 BUILDING 30 ELECTRICAL MCC NEW WORK PLAN (ALTERNATE-2)
SCALE: 1/4" = 1'-0"

NEW WORK NOTES ⟨#⟩

1. EXTEND EXIST INCOMING FEEDER DISCONNECTED DURING DEMO WORK AND CONNECT TO NEW PANEL AS REQUIRED.
2. EXTEND THE EXISTING BRANCH FEEDERS SERVING THE EXISTING PUMPS AND COOLING TOWERS (DISCONNECTED DURING DEMO WORK) AND ASSOCIATED CONTROL WIRES TO NEW RESPECTIVE STARTER/DISC SW. MOUNTED ON 3/4" FIRE-RATED PLYWOOD BACKBOARD AND CONNECT AS REQUIRED.
3. PROVIDE (6) NEW BRANCH FEEDERS TO FEED NEW STARTER/DISC. SW AND CONNECT AS REQUIRED.
4. PROVIDE NEW 3/4" FIRE-RATED PLYWOOD (SIZE AS REQUIRED) MOUNTED ON UNISTRUT FRAME FOR INSTALLATION OF NEW ELECTRICAL EQUIPMENT. PROVIDE A DETAILED SKETCH TO STOCKTON PERSONNEL AND THE ENGINEER OF THEIR PROPOSED LAYOUT OF NEW BACKBOARD AND ASSOCIATED EQUIPMENT/RACEWAYS TO RE-CONNECT EXISTING FEEDERS/CONTROLS DISCONNECTED DURING PROPOSED WORK.
5. PROVIDE NEW PULLBOXES (SIZE AND QUANTITY AS REQUIRED) MOUNTED ON PLYWOOD BACKBOARD TO SPLICE EXISTING BRANCH FEEDERS & CONTROL WIRES TO EXTEND THE CIRCUITS TO THE NEW STARTERS.



4 E-4 BUILDING 30 ELECTRICAL MCC NEW WORK PLAN (ALTERNATE-2)
SCALE: 1/4" = 1'-0"

NEW WORK NOTES ⟨#⟩

1. EXTEND EXIST INCOMING FEEDER DISCONNECTED DURING DEMO WORK AND CONNECT TO NEW PANEL AS REQUIRED.
2. EXTEND THE EXISTING BRANCH FEEDERS SERVING THE EXISTING PUMPS AND COOLING TOWERS (DISCONNECTED DURING DEMO WORK) AND ASSOCIATED CONTROL WIRES TO NEW RESPECTIVE STARTER/DISC SW. MOUNTED ON 3/4" FIRE-RATED PLYWOOD BACKBOARD AND CONNECT AS REQUIRED.
3. PROVIDE (6) NEW BRANCH FEEDERS TO FEED NEW STARTER/DISC. SW AND CONNECT AS REQUIRED.
4. PROVIDE NEW 3/4" FIRE-RATED PLYWOOD (SIZE AS REQUIRED) MOUNTED ON UNISTRUT FRAME FOR INSTALLATION OF NEW ELECTRICAL EQUIPMENT. PROVIDE A DETAILED SKETCH TO STOCKTON PERSONNEL AND THE ENGINEER OF THEIR PROPOSED LAYOUT OF NEW BACKBOARD AND ASSOCIATED EQUIPMENT/RACEWAYS TO RE-CONNECT EXISTING FEEDERS/CONTROLS DISCONNECTED DURING PROPOSED WORK.
5. PROVIDE NEW PULLBOXES (SIZE AND QUANTITY AS REQUIRED) MOUNTED ON PLYWOOD BACKBOARD TO SPLICE EXISTING BRANCH FEEDERS & CONTROL WIRES TO EXTEND THE CIRCUITS TO THE NEW STARTERS.

ALTERNATE 2 SCOPE OF WORK

HRG
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CERTIFICATE OF AUTHORIZATION: #24GA28138200

MATTHEW DAVID WELLS, N.J.P.E.
PROFESSIONAL ENGINEER, LIC. NO. 24GE04594000

SIGNATURE NOT VALID WITHOUT RAISED SEAL
DATE

Project
BUILDING 30/39 BOILER PLANT UPGRADES
FOR STOCKTON UNIVERSITY
101 VERA KING FERRIS DRIVE, GALLOWAY, NJ 08205

Project Bid Date

Revisions By Date

Sheet Title
BUILDING 30 ELECTRICAL DEMOLITION WORK AND NEW WORK PLANS (ALTERNATE-2)

Drawn By CE/GB
Chk'd By MW/GB
15 OF 13

Sheet No.
E-4

Project No.
HRG-XXXXX