BOILER REPLACEMENT AT

SCHOOL OF ENGINEERING

FOR

ALABAMA A&M UNIVERSITY

NORMAL, ALABAMA

SHEET TITLES
MECHANICAL
M101 - MECHANICAL DEMOLITION & RENOVATIONFLOOR PLANS M102 - MECHANICAL SCHEDULES & DETAILS

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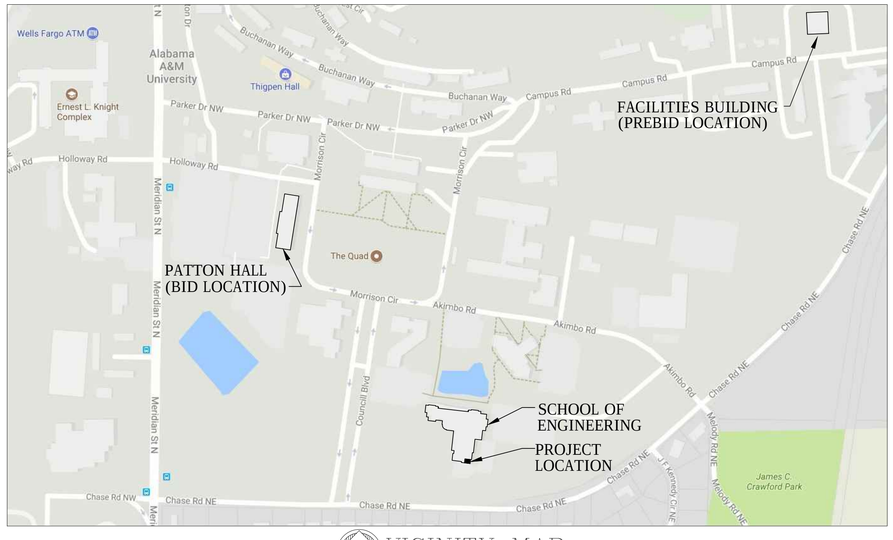
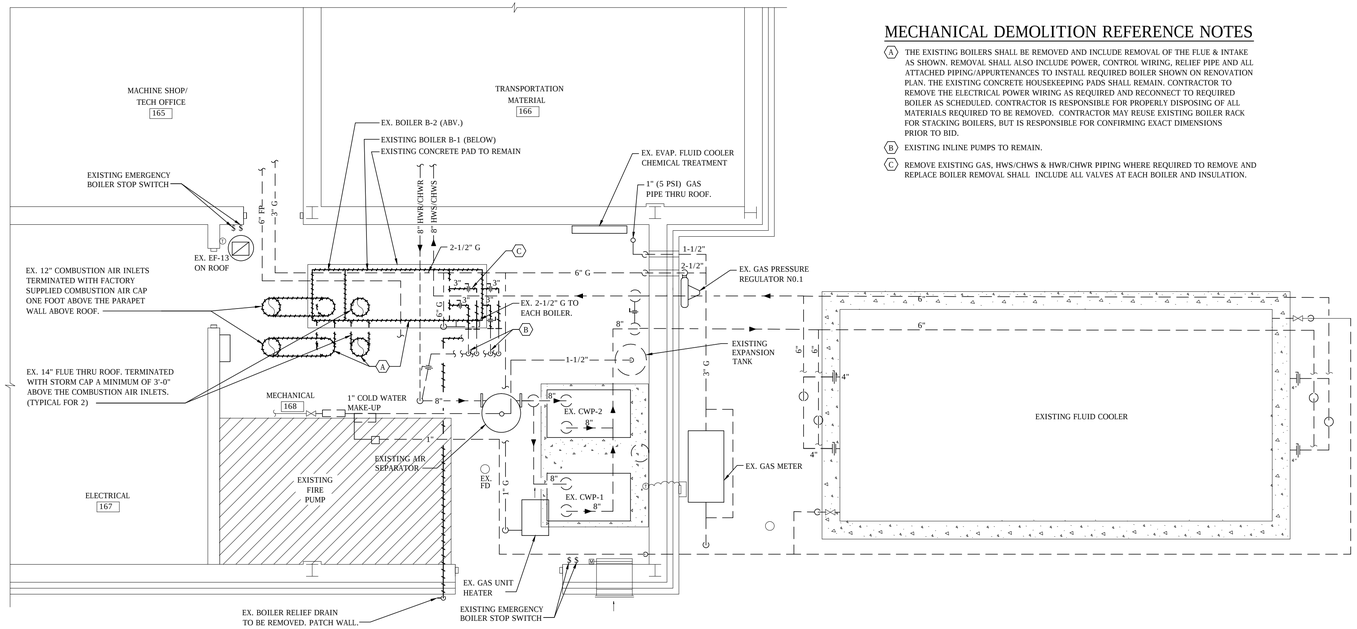
Alabama A&M University



VICINITY MAP
SCALE: NONE

Alabama A&M University



DEMOLITION

MECHANICAL FLOOR PLAN

SCALE: 1/4" = 1'-0"

MECHANICAL DEMOLITION REFERENCE NOTES

(A) THE EXISTING BOILERS SHALL BE REMOVED AND INCLUDE REMOVAL OF THE FLUE & INTAKE AS SHOWN. REMOVAL SHALL ALSO INCLUDE POWER, CONTROL WIRING, RELIEF PIPE AND ALL ATTACHED PIPING/APPURTENANCES TO INSTALL REQUIRED BOILER SHOWN ON RENOVATION PLAN. THE EXISTING CONCRETE HOUSEKEEPING PADS SHALL REMAIN. CONTRACTOR TO REMOVE THE ELECTRICAL POWER WIRING AS REQUIRED AND RECONNECT TO REQUIRED BOILER AS SCHEDULED. CONTRACTOR IS RESPONSIBLE FOR PROPERLY DISPOSING OF ALL MATERIALS REQUIRED TO BE REMOVED. CONTRACTOR MAY REUSE EXISTING BOILER RACK FOR STACKING BOILERS, BUT IS RESPONSIBLE FOR CONFIRMING EXACT DIMENSIONS PRIOR TO BID.

(B) EXISTING INLINE PUMPS TO REMAIN.

(C) REMOVE EXISTING GAS, HWS/CHWS & HWR/CHWR PIPING WHERE REQUIRED TO REMOVE AND REPLACE BOILER REMOVAL SHALL INCLUDE ALL VALVES AT EACH BOILER AND INSULATION.

MECHANICAL LEGEND

—CW—	DOMESTIC COLD WATER
—G—	GAS PIPE (PRESSURE)
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
MU	MAKEUP WATER PIPING
	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	NOTE REFERENCE SYMBOL
AS-1	AIR SEPARATOR WITH DESIGNATION
B-1	BOILER WITH DESIGNATION
	BUTTERFLY VALVE

GAS NOTES:

1. THE EXISTING GAS METER SHALL REMAIN AS THE CURRENT GAS DEMAND FOR EXISTING AND NEW BOILERS DID NOT CHANGE.
2. ALL EXPOSED GAS PIPING SHALL BE STENCIL LABELED AT BEGINNING, ALL ENDS, AND AT 6' FOOT INTERVALS DESIGNATING GAS PRESSURE. SEE IDENTIFICATION SPECIFICATION.
3. ALL EXPOSED PIPING SHALL BE PRIMED, PAINTED AND STENCIL LABELED PRESSURE/SERVICE.

GENERAL MECHANICAL NOTES:

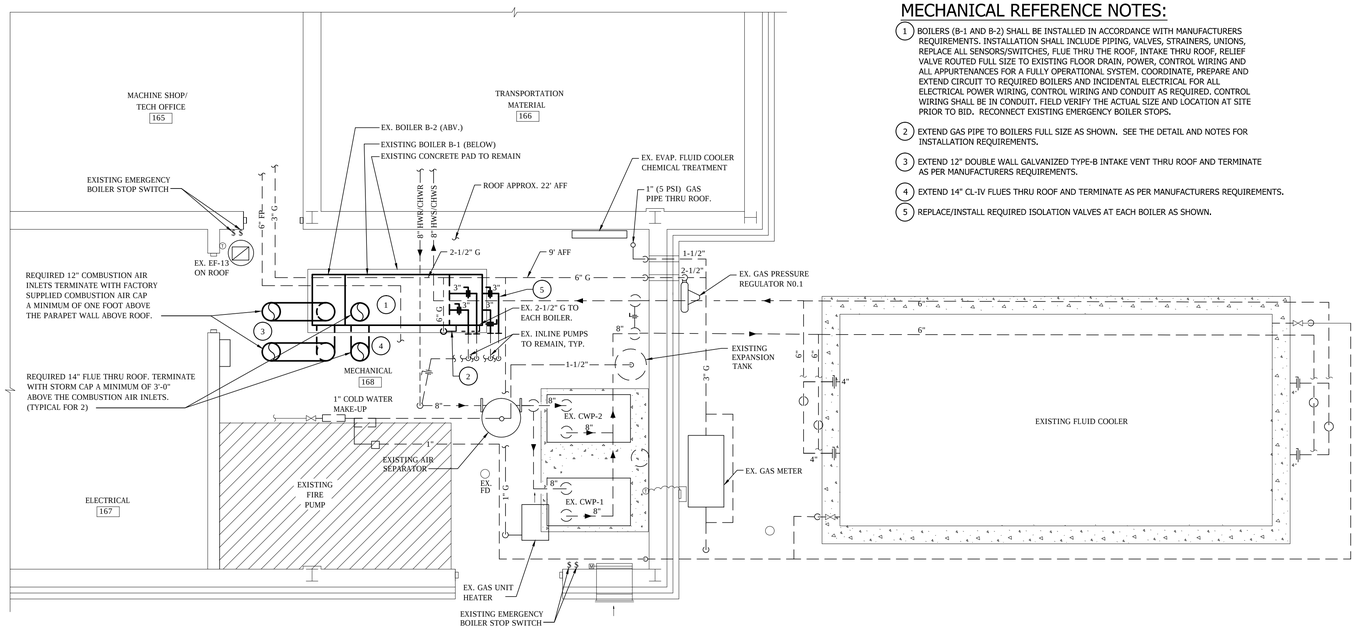
1. CONTRACTOR SHALL COORDINATE WITH AAMU REPRESENTATIVES 48 HOURS PRIOR TO ANY REQUIRED SHUT DOWNS. CONTRACTOR SHALL NOT SHUT-DOWN ANY SYSTEM UNTIL THEY HAVE WRITTEN APPROVAL.
2. THERE IS NO KNOWLEDGE OF ANY EXISTING ASBESTOS. IF ASBESTOS IS DISCOVERED, STOP WORK AND CONTACT THE OWNER REPRESENTATIVE AND ENGINEER IMMEDIATELY.
3. EXISTING ROOF PENETRATION SIZE TO BE CONFIRMED BY CONTRACTOR PRIOR TO BID. ANY ROOF WORK OR PENETRATIONS OF ROOF SHALL BE COMPLETED BY AN APPROVED ROOFING CONTRACTOR OR BY COMPANY THAT MAINTAINS EXISTING WARRANTY OF ROOF. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH OWNER AND ROOFING CONTRACTOR TO INSURE THAT THE ROOF WARRANTY IS NOT VOIDED DUE TO NECESSARY PENETRATION MODIFICATIONS. THE ROOFING CONTRACTOR MUST BE LICENSED TO MAKE THOSE REPAIRS AND MAINTAIN THE WARRANTY. THE ROOF OPENING WILL NOT BE LEFT OPEN DURING CONSTRUCTION. TEMPORARY CAPPING MATERIALS MUST BE INSTALLED UNTIL THE ROOF REPAIRS ARE MADE OR WORK IS COMPLETE.
4. CONTRACTOR TO REPAIR LEAK AT EXISTING RECIRCULATING PUMP CONNECTIONS AND MAKE NECESSARY REPAIRS.
5. CONTRACTOR IS TO TURN IN BOILER SUBMITTAL'S WITHIN 3 DAYS OF NOTICE TO PROCEED.
6. ONE BOILER IS TO REMAIN OPERATIONAL AT ALL TIMES.

HYDRONIC BOILERS CONTROLS

WHENEVER THERE IS A HEATING DEMAND DURING OCCUPIED PERIODS. THE BOILERS SHALL BE CONTROLLED BY THEIR OWN MICROPROCESSOR TO CONTROL ALL BOILER FUNCTIONS, INCLUDING OUTDOOR AIR RESET AND PUMPS. A CONTROL CARD COMPATIBLE WITH SIEMENS TALON INTERFACE SHALL BE PROVIDED FOR FUTURE BAS INTERFACE WITH SIEMENS TALON CONTROL SYSTEM. ONCE CONNECTED ALL POINTS READABLE AND WRITABLE SHALL BE MAPPED INTO THE BAS SYSTEM.

OUTDOOR RESET:
THE BOILER CONTROLS SHALL MAINTAIN SET POINT OF 160°F WITH SUPPLY TEMPERATURE RESET BASED ON OUTSIDE AIR TEMPERATURE AS FOLLOWS:
IF OUTSIDE AIR TEMP IS </= TO 40°F HW TEMP SHALL BE 160°F
IF OUTSIDE AIR TEMP IS BETWEEN 40°F AND 70°F SUPPLY TEMPERATURE SET POINT WILL RESET WITH MINIMUM HOT WATER TEMP OF 120°F AT 70°F OUTSIDE AIR TEMP.

UPON COMPLETION OF THE FUTURE BAS INTERFACE, THE SIEMENS TALON SHALL PERFORM THE FOLLOWING IN ADDITION TO ENABLING AND DISABLING BOILERS:
START/STOP BOILER(S) AND MONITOR STATUS OF ALL SENSORS REQUIRED/INSTALLED
MONITOR/MODIFY BOILER(S) DISCHARGE TEMPERATURE
MONITOR/MODIFY BOILER(S) INLET TEMPERATURE
MONITOR OUTSIDE AIR TEMPERATURE
MONITOR FLUE TEMPERATURE
MONITOR BOILER LOOP RETURN TEMPERATURE
MONITOR BOILER LOOP SUPPLY TEMPERATURE



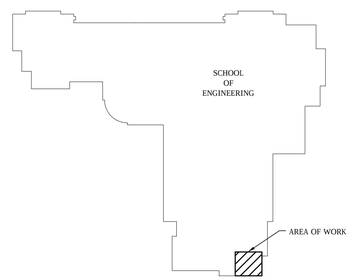
MECHANICAL REFERENCE NOTES:

1. BOILERS (B-1 AND B-2) SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS. INSTALLATION SHALL INCLUDE PIPING, VALVES, STRAINERS, UNIONS, REPLACE ALL SENSORS/SWITCHES, FLUE THRU THE ROOF, INTAKE THRU ROOF, RELIEF VALVE ROUTED FULL SIZE TO EXISTING FLOOR DRAIN, POWER, CONTROL WIRING AND ALL APPURTENANCES FOR A FULLY OPERATIONAL SYSTEM. COORDINATE, PREPARE AND EXTEND CIRCUIT TO REQUIRED BOILERS AND INCIDENTAL ELECTRICAL FOR ALL ELECTRICAL POWER WIRING, CONTROL WIRING AND CONDUIT AS REQUIRED. CONTROL WIRING SHALL BE IN CONDUIT. FIELD VERIFY THE ACTUAL SIZE AND LOCATION AT SITE PRIOR TO BID. RECONNECT EXISTING EMERGENCY BOILER STOPS.
2. EXTEND GAS PIPE TO BOILERS FULL SIZE AS SHOWN. SEE THE DETAIL AND NOTES FOR INSTALLATION REQUIREMENTS.
3. EXTEND 12" DOUBLE WALL GALVANIZED TYPE-B INTAKE VENT THRU ROOF AND TERMINATE AS PER MANUFACTURERS REQUIREMENTS.
4. EXTEND 14" CL-IV FLUES THRU ROOF AND TERMINATE AS PER MANUFACTURERS REQUIREMENTS.
5. REPLACE/INSTALL REQUIRED ISOLATION VALVES AT EACH BOILER AS SHOWN.

RENOVATION

MECHANICAL FLOOR PLAN

SCALE: 1/4" = 1'-0"



KEY PLAN

SCALE: NONE

ALABAMA REGISTERED
No. 15067
PROFESSIONAL
5/2/18
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MECHANICAL DEMOLITION PLAN

DATE: 5/2/18
DRAWN BY: MGL
CHECKED BY: JKM
REVISIONS:

SHEET NO.
M101
OF
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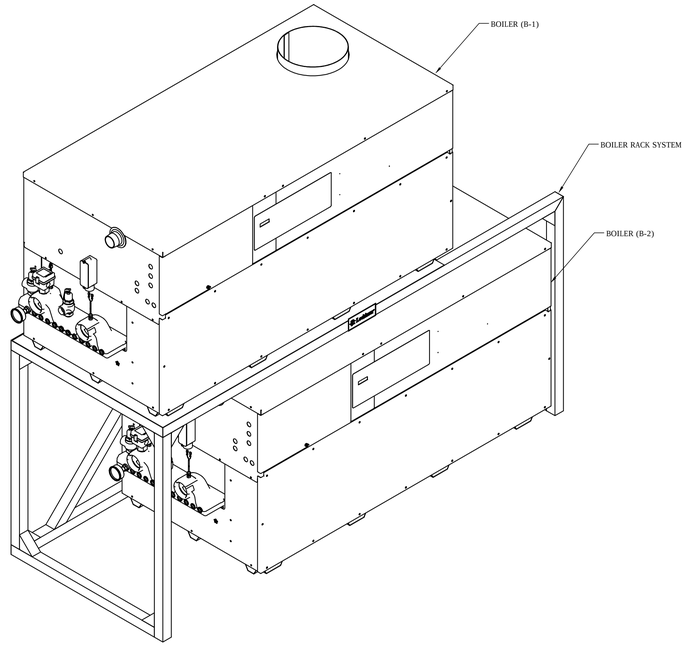


NOTES:
1. REFER TO FLOOR PLANS, SCHEDULES, BOILER PIPING DETAILS, SPECIFICATIONS AND MANUFACTURERS INSTALLATION MANUAL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. EXISTING STAND/RACK CAN BE REUSED WITH BASIS OF DESIGN BOILERS ONLY.

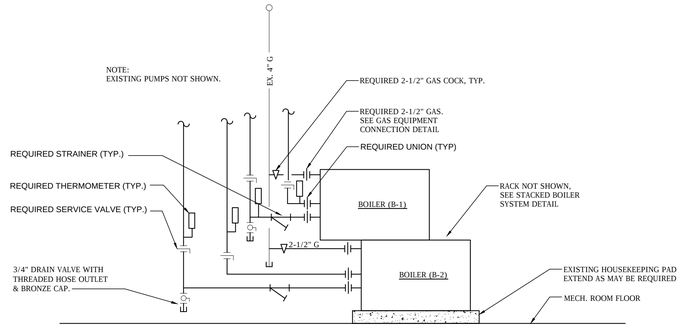
STACKED BOILER DETAIL
NOT TO SCALE

BOILER SCHEDULE

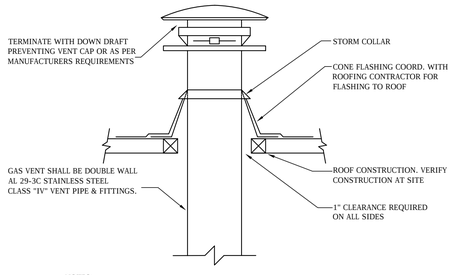
Mark	B-1	B-1
Location	Mechanical 168	Mechanical 168
Serving	HW Loop	HW Loop
Fuel	Natural Gas	Natural Gas
Input, MBH	2,070	2,070
Output, MBH	1,760	1,760
Efficiency	85.0%	85.0%
Water GPM	90	90
Delta T	38.2	38.2
Water PD, Ft.	9.2	9.2
Boiler Volt/Phase	120/1	120/1
Boiler FLA	14	14
Pump Volt/Phase	existing	existing
Pump FLA	n/a	n/a
Manufacturer	Lochinvar	Lochinvar
Model No.	CHN2070	CHN2070
Options	1 - 10	1 - 10
Notes	A, B, C	A, B, C

Options:
1. Provide vent piping and accessories for both the combustion air and flue products along with termination kits and bird screens as required by Manufacturer recommendations. Flue shall be CL-IV stainless steel and intake to be Double wall type-B or equal.
2. Provide CDS1 flow switch and low water cutoff.
3. Provide ASME pressure relief valve per Manufacturer recommendations.
4. Modulating Gas Valve with 4:1 turndown
5. Provide factory mounted and wired Boiler "Smart System Controller".
6. Provide Low and High Gas Pressure Switches.
7. Provide factory start-up.
9. Provide card for each boiler to communicate with Siemens Talon Controls
10. Provide High limit, Auto Reset, adjustable 100-240 deg F.

Notes:
A. Regulatory Agency Requirements shall be CSDI.
B. See Sequence of Controls.
C. Upon completion of the boiler installation, the contractor shall arrange for the State of Alabama Boiler & Pressure Vessel Safety Division inspector to visit the site to inspect the boiler installation. The contractor shall furnish a written report of his findings and comply with all comments.

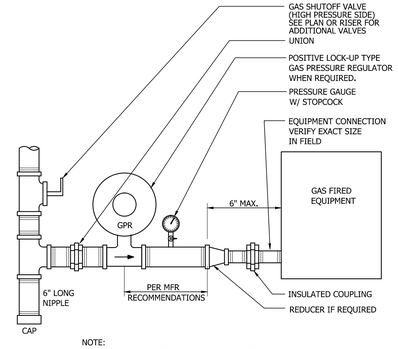


BOILER INSTALLATION DETAIL
NOT TO SCALE



NOTES:
1. REUSE EXISTING ROOF OPENINGS WHERE SIZE ALLOWS. INSTALL FLASHING ON ROOF CURBS AS REQUIRED.
2. SEE GENERAL NOTES IN REGARDS TO ROOF WARRANTY AND REPAIRS.

GAS FLUE DETAIL
NOT TO SCALE



NOTE:
PRIME & PAINT ALL PIPING TO MATCH NEAREST STRUCTURE (INTERIOR AND EXTERIOR). ENGINEER TO APPROVE.

GAS EQUIP. CONNECTION DETAIL
NOT TO SCALE

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