

## ADDENDUM

Project: Ragsdale High School Boiler Replacement Project

Project Number: 082423

Addendum Number: 1

Issue Date: January 24, 2024

This Addendum is hereby made a part of the Contract Documents to the same extent as if originally included therein. This Addendum must be acknowledged on the Form of Proposal.

The following additions, deletions, clarifications and modifications are hereby made a part of the contract for the above referenced project.

### DRAWINGS

Item No. 1: Sheet M2.1

1. Revisions to pump B-3 and B-4.

Item No. 2: Sheet M3.1

1. Added plans for the demolition plan and new plan for the Shop Building Boiler Replacement (alternate 2 and 3).
2. Modified the schedules to show boiler, air separator, and expansion tank for the boiler replacement.

Item No. 3: Sheet E3.1:

1. New sheet that shows power for the shop building boiler.

Please submit any additional questions and comments as soon as you are able. We will issue a response as part of the next addendum.

End of Addendum

# BOILER REPLACEMENT FOR LUCY C. RAGSDALE HIGH SCHOOL

1000 LUCY RAGSDALE DRIVE  
JAMESTOWN, NC 27282

GUILFORD COUNTY SCHOOL PROJECT MANAGER: TRACY NANCE  
PALMA ENGINEERS PROJECT NUMBER: 082423

OWNER



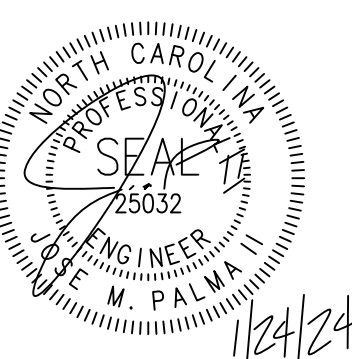
712 NORTH EUGENE STREET, GREENSBORO, NC 27401

DESIGNER



info@palma-engineers.com  
P:(336)209-0431  
NC LIC# P-0380

PO Box 18822  
Greensboro, NC 27419



APPENDIX B  
BUILDING CODE SUMMARY  
FOR ALL COMMERCIAL PROJECTS  
(EXCEPT 12 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)

Name of Project: **LUCY C. RAGSDALE BOILER RENOVATION PROJECT**  
Address: **1000 LUCY RAGSDALE DRIVE, JAMESTOWN, NC 27282**  
Proposed Use: **BOILER REPLACEMENT**  
Owner or Authorized Agent: **TRACY NANCE** Phone # **336-370-2394**  
Owned By:  City/County  Private  State  County  
Code Enforcement Justification:  City **JAMESTOWN, NC**  County

LEAD DESIGN PROFESSIONAL: **JOEL PALMA, PE**

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-Mail
Architectural					
Landscape Architect/Civil					
Electrical	<b>PALMA ENGINEERS</b>	<b>JOEL PALMA</b>	<b>NCY 025032</b>	<b>336-894-6501</b>	<b>joel@palma-engineering.com</b>
Fire Alarm					
Plumbing					
Mechanical	<b>PALMA ENGINEERS</b>	<b>JOEL PALMA</b>	<b>NCY 025032</b>	<b>336-894-6501</b>	<b>joel@palma-engineering.com</b>
Sprinkler-Standpipe					
Structural					
Retaining Wall >5' High					
Other-Health Department					

2009 EDITION OF NC CODE FOR:  New Construction  Addition  Upfit  
EXISTING:  Reconstruction  Alteration  Repair  
CONSTRUCTED ORIGINAL USE \_\_\_\_\_ RENOVATED \_\_\_\_\_ CURRENT USE \_\_\_\_\_

BUILDING DATA  
Construction Type:  I-A  II-A  III-A  IV  V-A  
 I-B  II-B  III-B  V-B  
Mixed Construction:  No  Yes Types: \_\_\_\_\_  
Sprinklers:  No  Partial  Yes  NFPA 13  NFPA 13R  NFPA 13D  
Standpipes:  No  Yes Class  I  II  III  Wet  Dry  
Fire District:  No  Yes Flood Hazard Area  No  Yes  
Building Height: **38'-0"** Number of Stories: **2**  
Mezzanine:  No  Yes

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL (SQ FT)
Basement	N/A	0	N/A
1st Floor			
Mezzanine			
2nd Floor			
3rd Floor			
TOTAL GROSS AREA: N/A sq. ft.			

ALLOWABLE AREA  
Primary Occupancy:  Assembly  A-1  A-2  A-3  A-4  A-5  
 Business  Educational  Factory  F-1 Moderate  F-2 Low  
Hazardous  H-1 Detonate  H-2 Deflagrate  H-3 Combust  H-4 Health  H-5 HPM  
Institutional  I-1  I-2  I-3  I-4  
I-3 Use Condition  1  2  3  4  5  
 Mercantile Residential  R-1  R-2  R-3  R-4  
Storage  S-1 Moderate  S-2 Low  High-piled  
 Utility and Miscellaneous  Parking Garage  Open  Enclosed  Repair Garage

Secondary Occupancy:  
Special Uses:  402  403  404  405  406  407  408  409  410  411  412  
 413  414  415  416  417  418  419  420  421  422  423  
Special Provisions:  509.2  509.3  509.4  509.6  509.7  509.8  
Mixed Occupancy:  No  Yes Separation: \_\_\_\_\_ Hr. Exception: \_\_\_\_\_  
 Incidental Use Separation (508.2)  
This separation is not exempt as a Non-Separated Use (see exceptions).  
 Non-Separated Use (508.3.2)  
The required type of construction for the building shall be determined by applying the height and the area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.  
 Separated Use (508.3.3) - See below for calculations.  
For each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.  
Actual Area of Occupancy A + Actual Area of Occupancy B  
Allowable Area of Occupancy A + Allowable Area of Occupancy B < or = 1

1. Frontage area increases from Section 506.2 area computed thus:  
a. Perimeter which fronts a public way or open space having 20 feet minimum width = \_\_\_\_\_ (F)  
b. Total Building Perimeter = \_\_\_\_\_ (P)  
c. Ratio (F/P) = \_\_\_\_\_ (F/P)  
d. W = Minimum Width of public way = \_\_\_\_\_ (W)  
e. Percent of frontage increase I = 100 [(F/P-0.25)W/30 = \_\_\_\_\_ (%)  
2. The sprinkler increase per Section 506.3 is as follows:  
a. Multi-story building I<sub>s</sub> = 200%  
b. Single story building I<sub>s</sub> = 300%  
3. Unlimited area applicable under conditions of Sections Group B, F, M, S, A-3, A-4 (507);  
Group A motion picture (507.10); covered mall buildings (402.6); and H-2 aircraft paint hangers (507.8).  
4. Maximum Building Area = total number of stories in the building x E (506.4).  
5. The maximum area of parking garages must comply with 406.3.5. The maximum area of air traffic control towers must comply with 412.1.2

FIRE PROTECTION REQUIREMENTS 601

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING		DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	DESIGN # FOR RATED PEN.	DESIGN # FOR RATED JOINTS
		REQ'D	PROVIDED (w/ NA REDUCTION) *				
Structural frame,	0	0	0	A SERIES			
Including columns,	0	0	0				
girders, trusses	0	0	0				
Bearing Walls	0	0	0				
Exterior	0	0	0				
North	0	0	0				
East	0	0	0				
West	0	0	0				
South	0	0	0				
Interior	0	0	0				
Nonbearing walls and partitions	0	0	0				
Exterior	0	0	0				
North	0	0	0				
East	0	0	0				
West	0	0	0				
South	0	0	0				
Floor construction Including supporting beams and joist	0	0	0				
Roof construction Including supporting beams and joist	0	0	0				
Shafts - Exit	0	0	0				
Shafts - Other	0	0	0				
Corridor Separation	0	0	0				
Occupancy Separation	0	0	0				
Party/Fire Wall Sep.	0	0	0				
Smoke Barrier Sep.	0	0	0				
Tenant Separation	0	0	0				

\* Indicate section number permitting reduction

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting:  No  Yes  
Exit Signs:  No  Yes  
Fire Alarm:  No  Yes  
Smoke Detection Systems:  No  Yes  
Panic Hardware:  No  Yes

STORY NO.	DESCRIPTION AND USE	(A) BLDG. AREA PER STORY (ACTUAL)	(B) TABLE 503.3 AREA	(C) AREA FOR FRONTAGE INCREASE 1	(D) AREA FOR SPRINKLER INCREASE 2	(E) ALLOWABLE AREA OR UNLIMITED 3	(F) MAXIMUM BUILDING AREA 4
BASEMENT	EDUCATIONAL	1,190	14,500				14,500

USE GROUP OR SPACE DESCRIPTION	AREA <sup>1</sup> sq. ft.	AREA PER <sup>1</sup> OCCUPANT (TABLE 1004.1.2)	EGRESS WIDTH PER OCCUPANT (TABLE 1005.1)				EXIT WIDTH (in) <sup>2, 3, 4, 5, 6</sup>			
			STAIR	LEVEL	STAIR	LEVEL	STAIR	LEVEL		
BOILER ROOM	1,190	1,190/300 (GROSS)=4	0.30	0.20	90.0	90.0	77.0*	90.0		
* EXEMPT PER 1015.3										

1. See Table 1004.1.1 to determine whether net or gross area is applicable.  
See definition "Area, Gross" and "Area, Net" (Section 1002)  
2. The sprinkler increase per Section 506.3 is as follows:  
c. Multi-story building I<sub>s</sub> = 200 percent  
d. Single story building I<sub>s</sub> = 300 percent  
3. Minimum stairway width (Section 1009); min. corridor width (Section 1016.2; min. door width (Section 1008.1)  
4. Minimum width of exit passageway (Section 1020.2)  
5. The loss of one means of egress shall not reduce the available capacity to less than 50 percent of the total required (Section 1005.1)  
6. Assembly Occupancies (Section 1024)

STRUCTURAL REQUIREMENTS: NONE FOR THIS PROJECT

MECHANICAL/ELECTRICAL/PLUMBING REQUIREMENTS: SEE ATTACHED

PLUMBING FIXTURE REQUIREMENTS: NONE FOR THIS PROJECT

FLOOR, ROOM OR SPACE DESIGNATION	MINIMUM <sup>2</sup> NUMBER OF EXITS		TRAVEL DISTANCE		ARRANGEMENT MEANS OF EGRESS <sup>3</sup> (SECTION 1013.1)	
	REQ'D	SHOWN ON PLANS	ALLOWABLE TRAVEL DISTANCE (TABLE 1015.1)(H)	ACTUAL TRAVEL DISTANCE SHOWN ON PLANS (H)	REQUIRED DIST. BETWEEN EXIT DOORS (ft)	ACTUAL DIST. SHOWN ON PLANS (ft)
BOILER ROOM (LOWER) 2 PER IBC 1015.3	2	2	200 (UNSPRINKLED)	60'-0"	29'-0"	28'-0"

SCHEDULES OF DRAWINGS

- COVER SHEET  
M0.1 MECHANICAL LEGENDS AND NOTES  
M1.1 BOILER ROOM PARTIAL DEMOLITION PLAN  
M2.1 BOILER ROOM PARTIAL EQUIPMENT AND PIPING PLAN  
M3.1 SCHEDULES  
M4.1 CONTROL DIAGRAMS  
M5.1 DETAILS  
E0.1 ELECTRICAL LEGENDS AND NOTES  
E1.1 BOILER ROOM POWER PARTIAL DEMOLITION PLAN  
E2.1 BOILER ROOM POWER PARTIAL PLAN

ALTERNATE BID SUMMARY

- ALT. 1: REPLACE PUMP P-9, PUMP P-10, AIR SEPARATOR AS-1, EXPANSION TANK ET-1, AND ASSOCIATED PIPING AND PIPE FITTINGS.  
ALT. 2: PROVIDE NEW BOILER AND ASSOCIATED FLUE VENT, PIPING, AND POWER FOR THE SHOP BUILDING.  
ALT. 3: PROVIDE NEW AIR SEPARATOR AND EXPANSION TANK FOR THE SHOP BUILDING.

LEGEND

- EQUIPMENT TO BE DEMOLISHED  
 KEY NOTE  
 KEYED CONSTRUCTION NOTE  
 DRAWING REVISION NOTE

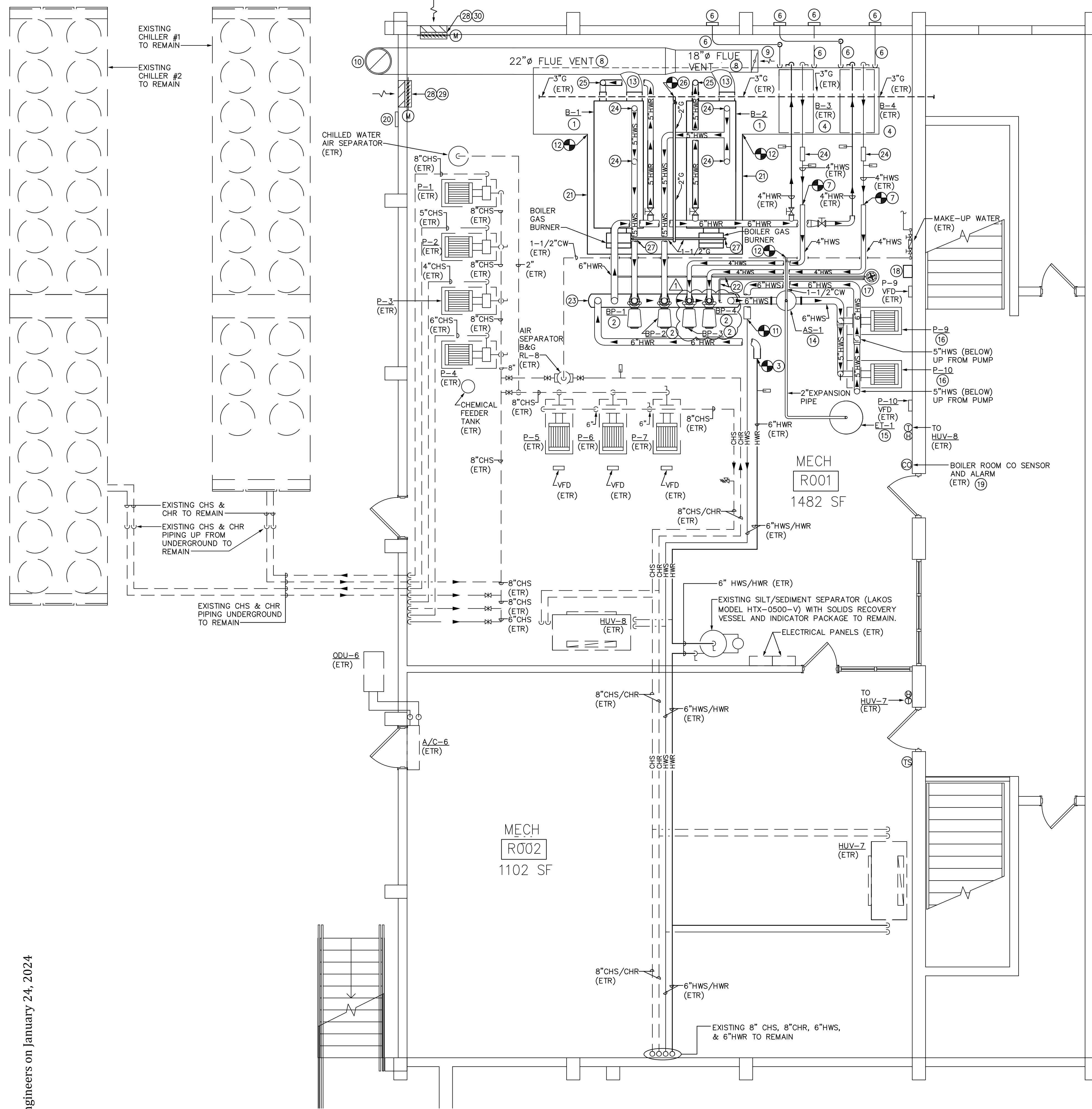
NOTE TO PLAN REVIEWER

THIS PROJECT MERELY INVOLVES REPLACEMENT OF THE BOILER, PUMPS, AND ASSOCIATED BOILER ACCESSORIES. THERE ARE NO BUILDING MODIFICATIONS ASSOCIATED WITH THIS PROJECT.

REVISIONS:

	ADDENDUM 1: DESIGN REVISIONS	1/24/24





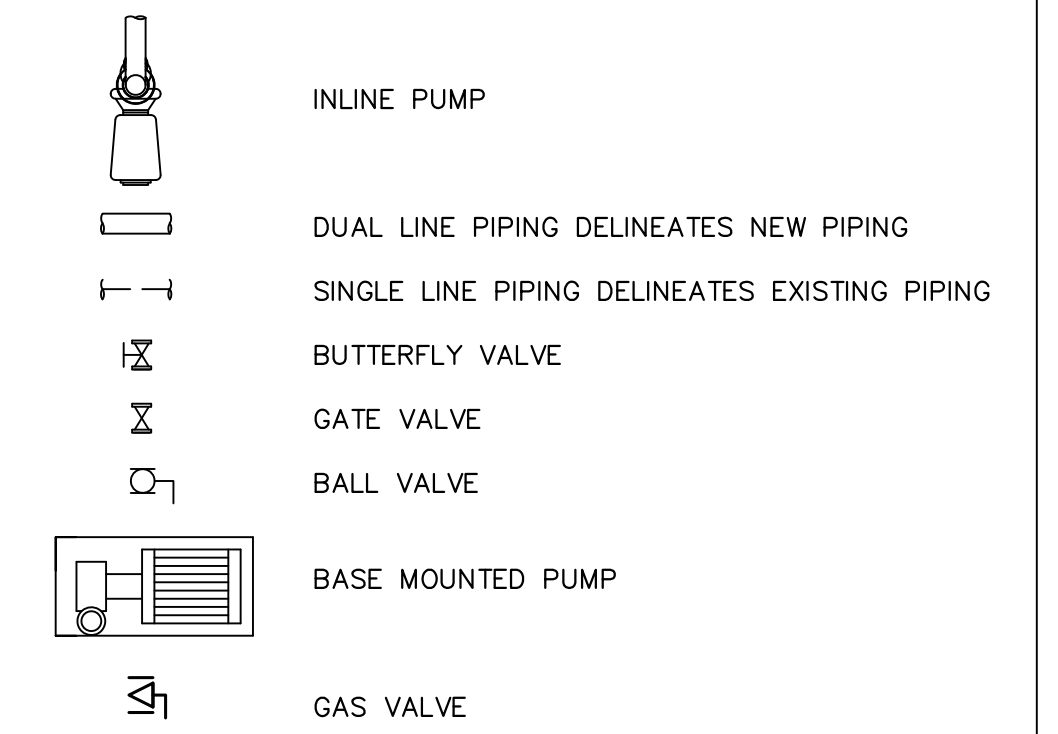
### BOILER ROOM PARTIAL EQUIPMENT AND PIPING PLAN

1/4" = 1'-0"

#### KEY NOTES:

- 1 NEW BOILER. SEE BOILER SCHEDULE.
- 2 NEW PRIMARY BOILER IN-LINE PUMP MOUNTED VERTICALLY ON THE SUPPLY HEADER. MOUNT THE PUMP SO THAT IT IS A MINIMUM OF 30" ABOVE THE SUPPLY HEADER PIPE. SEE PUMP SCHEDULE AND BOILER DIAGRAM.
- 3 CONNECT THE NEW 6" HWR TO THE EXISTING 6"HWR AS SHOWN
- 4 EXISTING CONDENSING BOILER TO REMAIN
- 5 NOT USED
- 6 EXISTING CONDENSING BOILER COMBUSTION AND FLUE EXHAUST DUCT AND WALL PENETRATION TO REMAIN.
- 7 CONNECT THE 4"HWS AND 4"HWR FROM THE EXISTING CONDENSING BOILER TO THE NEW HEATING HOT WATER HEADER. PROVIDE GATE VALVE AT CONNECTION.
- 8 MAIN FLUE VENT DUCT MOUNTED AT MINIMUM 72" AFF ROUTED POSITIVELY SLOPED (MINIMUM 30") FROM THE COMBUSTION MAKE-UP AIR INTAKE TO THE EXTERIOR PENETRATION.
- 9 PROVIDE MINIMUM 16" COMBUSTION MAKE-UP COUNTER BALANCED BACKDRAFT DAMPER AT THE END OF THE FLUE VENT SET TO OPEN AT MINIMUM OF 0.01"WG (ADJUSTABLE) OF NEGATIVE PRESSURE.
- 10 22" VERTICAL FLUE VENT ROUTED EXPOSED ON THE EXTERIOR WALL FROM THE BOILER ROOM UP TO A MINIMUM OF 36" ABOVE THE HIGHEST POINT OF THE ROOF (WITHIN 10 FEET). SEE VERTICAL FLUE VENT DUCT DETAIL. PROVIDE NEW 24" DOUBLE WALL MINIMUM 18 GAUGE GALVANIZED STEEL ROUND FLUE VENT THROUGH NEW WALL OPENING. SEE WALL PENETRATION DETAIL ON SHEET M3.2. EXTEND THROUGH WALL AND VERTICAL AT A HEIGHT TO MEET THE BUILDING CODE. PATCHING AND REPAIR OF THE WALL SHALL BE DONE BY A QUALIFIED MASONRY CONTRACTOR TO MATCH THE EXISTING WALL. (CONTRACTOR IS TO PROVIDE MASONRY CONTRACTOR DOCUMENTATION TO ENGINEER).
- 11 CONNECT THE NEW 6"HWS TO THE EXISTING 6"HWS AS SHOWN.
- 12 CONNECT THE NEW 1-1/2"CW MAKE-UP TO THE NEW 1-1/2"CW MAKE-UP WATER PIPE.
- 13 16" FLUE EXHAUST DUCT FROM THE BOILER TO THE MAIN FLUE VENT DUCT. ROUTE SO THAT IT IS POSITIVELY SLOPES UP (MINIMUM 30") UP TO THE MAIN FLUE VENT
- 14 NEW INLINE SUSPENDED AIR SEPARATOR (AS-1). SEE SCHEDULE.
- 15 NEW FLOOR MOUNTED EXPANSION TANK (ET-1) TO BE MOUNTED ON THE SAME PAD AS THE DEMOLISHED EXPANSION TANK.
- 16 NEW BASE MOUNTED HEATING HOT WATER PUMP. SEE SCHEDULE. MOUNT ON THE EXISTING SEISMIC PAD.
- 17 NEW CHEMICAL FEEDER TANK. PROCURE COMPLETE CHEMICAL FEEDER SYSTEM FROM OWNER RETAINED CHEMICAL FEED CONTRACTOR. PROVIDE 1" CHEMICAL FEED SUPPLY AND RETURN PIPING, OR SIZING AS RECOMMENDED BY THE CHEMICAL TREATMENT COMPANY, FROM CHEMICAL FEEDER TO THE 6" HWS AND 6" HWR.
- 18 MOUNT CHEMICAL MONITORING PANEL ON THE WALL ADJACENT TO THE CHEMICAL FEEDER.
- 19 EXISTING EMERGENCY BOILER SHUT-OFF SWITCH. CONNECT NEW BOILER TO THE SHUT-OFF SWITCH SO THAT THE NEW BOILERS ARE SHUT-DOWN ALONG WITH THE EXISTING BOILERS WHEN THE SWITCH IS PRESSED. SEE CONTROL DIAGRAM ON SHEET M3.1.
- 20 WALL MOUNTED TEMPERATURE ELEMENT WITH RAIN SHIELD. MOUNT AT 8'-0" ABOVE GRADE.
- 21 EXTEND AND PROVIDE NEW CONCRETE HOUSEKEEPING PAD TO ENCOMPASS THE NEW BOILERS SO THAT THE NEW PAD IS A MINIMUM OF 6" WIDER AND LONGER THAN THE PERIMETER OF THE COMBINED AREA OF THE NEW BOILERS. CONNECT AND MATCH HEIGHT OF THE NEW CONCRETE PAD TO THE EXISTING BOILER PAD.
- 22 1" CHEMICAL FEED PIPES FROM THE CHEMICAL FEED TANK TO THE SUPPLY HEADER AND RETURN PIPING.
- 23 12" x 11'-0" LONG HEATING HOT WATER HEADER PIPE. NOTE THAT THE PIPE IS PURPOSELY OVERSIZED. MOUNT THE HEADER AT APPROXIMATELY 12" AFF WITH THE PUMPS AT 48" AFF (SEE PUMP DETAIL) AND ISOLATION VALVES OF EACH HEADER TAP AT 6" ABOVE THE HEADER (APPROX. 30" AFF).
- 24 REMOVE AND RELOCATE THE EXISTING PRIMARY INLINE PUMPS ON THE HEATING HOT WATER HEADER AS DENOTED BY KEY NOTE 5. REPLACE THE PUMP WITH 4" HWS PIPE TO MATCH EXISTING.
- 24 4" HWS UP FROM THE BOILER HEATING HOT WATER CONNECTION
- 25 5" HWR DOWN TO BOILER HEATING HOT WATER RETURN CONNECTION.
- 26 CONNECT THE NEW 2" G TO THE EXISTING 3"G, AND ROUTE AT THE SAME ELEVATION. PROVIDE GAS VALVE AT THE TAP.
- 27 1-1/2"G DOWN TO THE BOILER BURNER GAS CONNECTION. PROVIDE GAS TRAIN (GAS VALVE, GAS REGULATOR, STRAINER, AND GAS VENT).
- 28 24" x 42"H COMBUSTION AIR INTAKE LOUVER, SAME OR EQUAL TO RUSKIN ELF375DX, AND MOTORIZED CONTROL DAMPER, SAME OR EQUAL TO RUSKIN CD-50. PROVIDE LINTEL ABOVE THE DAMPER AS NEEDED AND RECOMMENDED BY MANUFACTURER. DAMPER SHALL OPEN WHEN THE BOILER IT IS INTERLOCKED WITH IS ENERGIZED.
- 29 LOUVER 1. INTERLOCK WITH BOILER B-1.
- 30 LOUVER 2. INTERLOCK WITH BOILER B-2.

#### PLAN LEGEND



#### BIDDING NOTES

PROVIDE BIDS PER THE FOLLOWING DESCRIPTION:

##### BASE BID

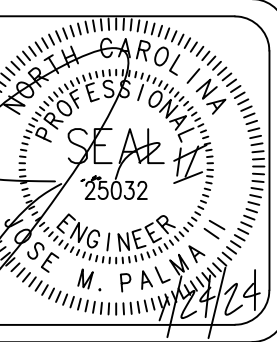
1. DEMOLISH THE FOUR EXISTING CONDENSING BOILERS, AS SHOWN ON DEMO PLAN, AND PROVIDE THE TWO NEW BOILERS, AS SHOWN ON THE NEW BOILER SYSTEM PLAN.
2. DEMOLISH THE FOUR INLINE PRIMARY PUMPS, VALVES, ACCESSORIES, COMBUSTION DUCT, AND FLUE VENT ASSOCIATED WITH THE FOUR CONDENSING BOILERS TO BE DEMOLISHED.
3. DEMOLISH THE EXISTING HEATING HOT WATER SUPPLY AND RETURN PIPING AS SHOWN ON THE DEMOLITION PLAN, AND PROVIDE NEW HEATING HOT WATER SUPPLY AND RETURN PIPING AS SHOWN ON THE NEW BOILER ROOM PLAN.
4. EXTEND THE BOILER CONCRETE PAD TO ACCOMMODATE THE NEW BOILERS AS DESCRIBED ON THE NEW BOILER ROOM PLAN.
5. RELOCATE THE EXISTING CONDENSING BOILER PUMPS TO THE NEW HEATING HOT WATER HEADER AS SHOWN.
6. PROVIDE NEW INLINE PUMPS FOR THE PRIMARY LOOP OF THE NEW BOILERS. MOUNT ON THE NEW HEATING HOT WATER HEADER PIPE.
7. UNDER THE BASE BID, THE SECONDARY HEATING HOT WATER PUMPS, P-9 AND P-10, SHALL BE EXISTING TO REMAIN.
8. UNDER THE BASE BID, THE EXPANSION TANK SHALL BE EXISTING TO REMAIN.
9. UNDER THE BASE BID, THE AIR SEPARATOR SHALL BE EXISTING TO REMAIN.

##### ALTERNATE BID NO. 1

1. DEMOLISH THE EXISTING HEATING HOT WATER SECONDARY PUMPS, P-9 AND P-10, AND REPLACE WITH NEW PUMPS AS SCHEDULED.
2. DEMOLISH THE EXISTING HEATING HOT WATER AIR SEPARATOR AND REPLACE WITH THE NEW AIR SEPARATOR AS SCHEDULED.
3. DEMOLISH THE EXISTING EXPANSION TANK AND REPLACE WITH THE NEW EXPANSION TANK AS SCHEDULED.
4. DEMOLISH AND REPLACE THE IMMEDIATE HEATING HOT WATER PIPING CONNECTED TO PUMP P-9 AND P-10.

#### GENERAL NOTES:

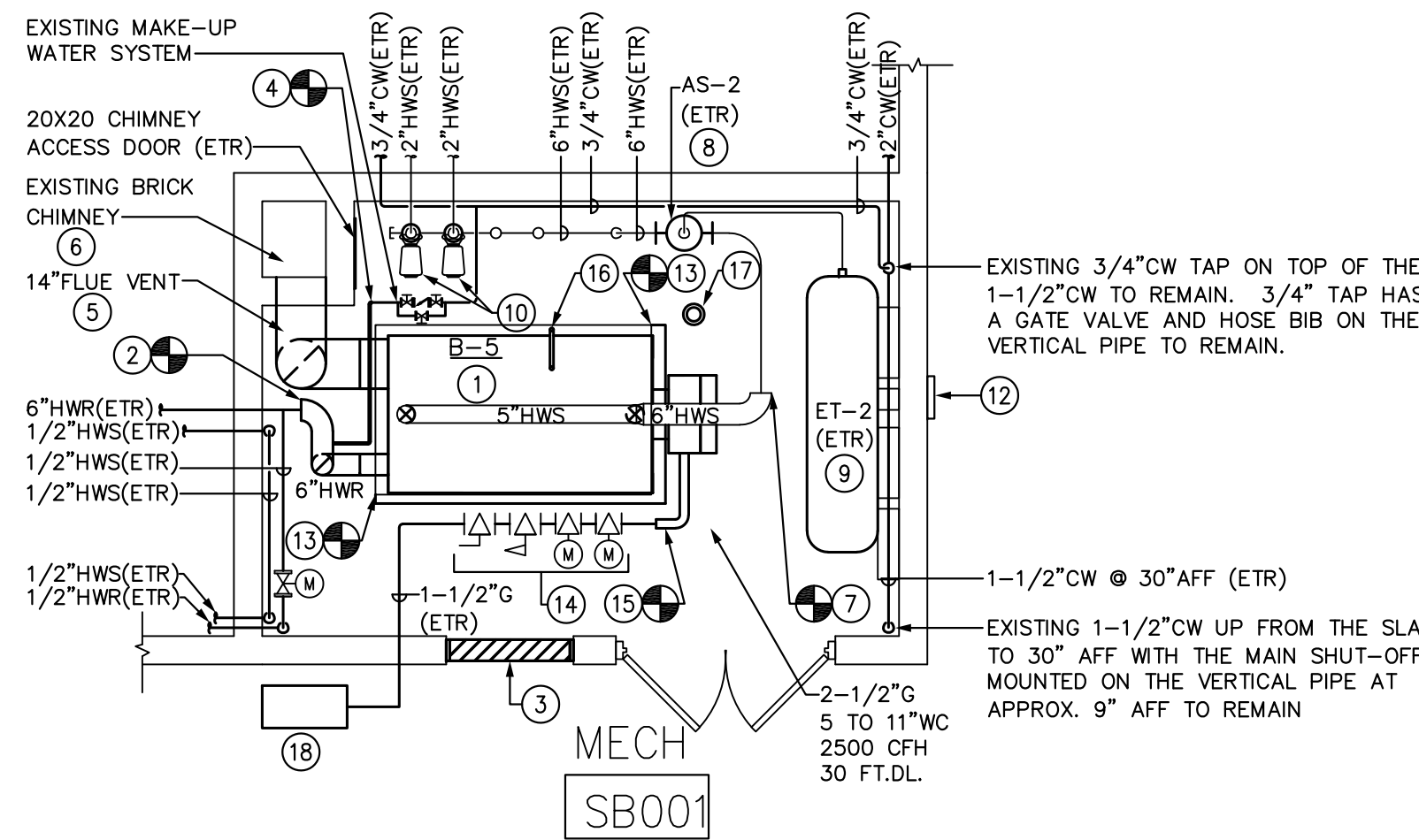
1. ALL PIPING SHOWN IS DIAGRAMMATIC AND MAY NOT NECESSARILY DEPICT THE EXACT ROUTING AND MOUNTING IN ORDER TO CLARIFY PIPING AND EQUIPMENT RELATIONSHIPS.
2. ALL NEW HEATING HOT WATER SUPPLY AND RETURN PIPING SHALL MATCH THE EXISTING HEATING HOT WATER PIPING OR MINIMUM SCHEDULE 40 CS STEEL WITH 2" FIBERGLASS INSULATION WITH CANVAS JACKET.
3. LABEL ALL NEW PIPING WITH SERVICE (HWR OR HWS) AND DIRECTION OF FLOW ARROW.
4. HEATING HOT WATER HEADER SHALL BE SUPPORTED FROM THE FLOOR USING PEDESTAL SUPPORTS SPACED AT 5 FEET APART.
5. HEATING HOT WATER PIPING SHALL BE SUPPORTED AT EVERY PIPE FITTING (ELBOW, REDUCER, ETC.) AND EVERY 5 FEET OF STRAIGHT PIPE RUN.
6. SUPPORT THE AIR SEPARATOR INDEPENDENT OF THE PIPING FROM THE STRUCTURE ABOVE AS RECOMMENDED BY THE MANUFACTURER.
7. THE FLUE VENT DUCT SHALL BE DOUBLE WALL ROUND DUCT. DUCT WALLS SHALL BE MINIMUM 18 GAUGE GALVANIZED STEEL WITH WELDED CONNECTIONS.



REV#	REVISION	DATE
1	ADDENDUM 1: DESIGN REVISIONS	1/24/24

DRAWN BY:	CDM
CHECKED BY:	JMP
DATE:	1/10/24
PROJECT NO.:	082423
SHEET NUMBER	





**KEY NOTES:**

- 1 NEW BOILER. SEE BOILER SCHEDULE.
- 2 CONNECT THE NEW 6" HWR TO THE EXISTING 6"HWR AS SHOWN
- 3 EXISTING WALL MOUNTED 36x84 COMBUSTION AIR INTAKE LOUVER TO REMAIN.
- 4 CONNECT THE NEW 1/2" BOILER MAKE-UP WATER PIPE TO THE EXISTING 1/2" BOILER MAKE-UP WATER PIPE AS SHOWN.
- 5 14" FLUE VENT FROM BOILER FLUE VENT CONNECTION TO THE CHIMNEY. MODIFY THE CHIMNEY OPENING TO ACCOMMODATE THE NEW FLUE VENT (MODIFY FROM APPROX. 10" TO 14"). PROVIDE NEW 14" DOUBLE WALL MINIMUM 18 GAUGE GALVANIZED STEEL ROUND FLUE VENT TO THE CHIMNEY WALL PENETRATION. CONTRACTOR IS TO USE THE SERVICES OF A PROFESSIONAL MASON FOR ALL MASONRY MODIFICATIONS.
- 6 PROVIDE MINIMUM 18 GAUGE CHIMNEY LINER FROM THE BASE OF THE CHIMNEY TO THE TOP.
- 7 CONNECT THE NEW 6"HWS TO THE EXISTING 6"HWS AS SHOWN.
- 8 EXISTING SUSPENDED, INLINE MOUNTED AIR SEPARATOR TO REMAIN. AS PART OF ALTERNATE 3, PROVIDE NEW AIR SEPARATOR.
- 9 EXISTING SUSPENDED, HORIZONTAL EXPANSION TANK TO REMAIN. AS PART OF ALTERNATE 3, PROVIDE NEW EXPANSION TANK AND 1" PIPING BETWEEN AIR SEPARATOR AND EXPANSION TANK.
- 10 EXISTING INLINE HOT WATER PUMP TO REMAIN.
- 11 NEW EMERGENCY BOILER SHUT-OFF SWITCH. CONNECT NEW BOILER TO THE SHUT-OFF SWITCH SO THAT THE NEW BOILER IS SHUT-DOWN.
- 12 WALL MOUNTED TEMPERATURE ELEMENT WITH RAIN SHIELD. MOUNT AT 8'-0" ABOVE GRADE.
- 13 EXTEND CONCRETE HOUSEKEEPING PAD TO ENCOMPASS THE NEW BOILER SO THAT THE NEW PAD IS A MINIMUM OF 6" WIDER AND LONGER THAN THE PERIMETER OF THE NEW BOILER (EXTEND APPROXIMATELY BY 4" LENGTHWISE AND BY 3" WIDTHWISE). CONNECT AND MATCH HEIGHT OF THE NEW CONCRETE PAD TO THE EXISTING BOILER PAD. CONTRACTOR MAY ALSO CHOOSE TO DEMO AND PROVIDE NEW CONCRETE PAD ENTIRELY.
- 14 RELOCATE AND RE-USE THE EXISTING GAS TRAIN FOR THE NEW BOILER.
- 15 CONNECT THE EXISTING 1-1/2"G TO THE NEW BOILER. PROVIDE NEW CS40 PIPING TO MATCH EXISTING AS NEEDED.
- 16 PROVIDE TEMPERATURE AND PRESSURE RELIEF VALVE AND PIPE DOWN TO 1" OF THE FLOOR. MATCH BOILER T&P CONNECTION SIZE.
- 17 EXISTING FLOOR DRAIN TO REMAIN. COVER AND PROTECT DURING CONSTRUCTION.
- 18 EXISTING 2 PSIG MAIN GAS METER AND REGULATOR TO REMAIN

**GENERAL NOTES:**

1. ALL PIPING SHOWN IS DIAGRAMMATIC AND MAY NOT NECESSARILY DEPICT THE EXACT ROUTING AND MOUNTING IN ORDER TO CLARIFY PIPING AND EQUIPMENT RELATIONSHIPS.
2. ALL NEW HEATING HOT WATER SUPPLY AND RETURN PIPING SHALL MATCH THE EXISTING HEATING HOT WATER PIPING OR MINIMUM SCHEDULE 40 CS STEEL WITH 2" FIBERGLASS INSULATION WITH CANVAS JACKET.
3. LABEL ALL NEW PIPING WITH SERVICE (HWR OR HWS) AND DIRECTION OF FLOW ARROW.
4. HEATING HOT WATER PIPING SHALL BE SUPPORTED AT EVERY PIPE FITTING (ELBOW, REDUCER, ETC.) AND EVERY 5 FEET OF STRAIGHT PIPE RUN.
5. SUPPORT THE AIR SEPARATOR AND EXPANSION TANK INDEPENDENT OF THE PIPING FROM THE STRUCTURE ABOVE AS RECOMMENDED BY THE MANUFACTURER.
6. THE FLUE VENT DUCT SHALL BE DOUBLE WALL ROUND DUCT. DUCT WALLS SHALL BE MINIMUM 18 GAUGE GALVANIZED STEEL WITH WELDED CONNECTIONS INSIDE THE MECHANICAL ROOM.

**BIDDING NOTES**

PROVIDE BIDS PER THE FOLLOWING DESCRIPTION:

**ALTERNATE BID NO. 2:**

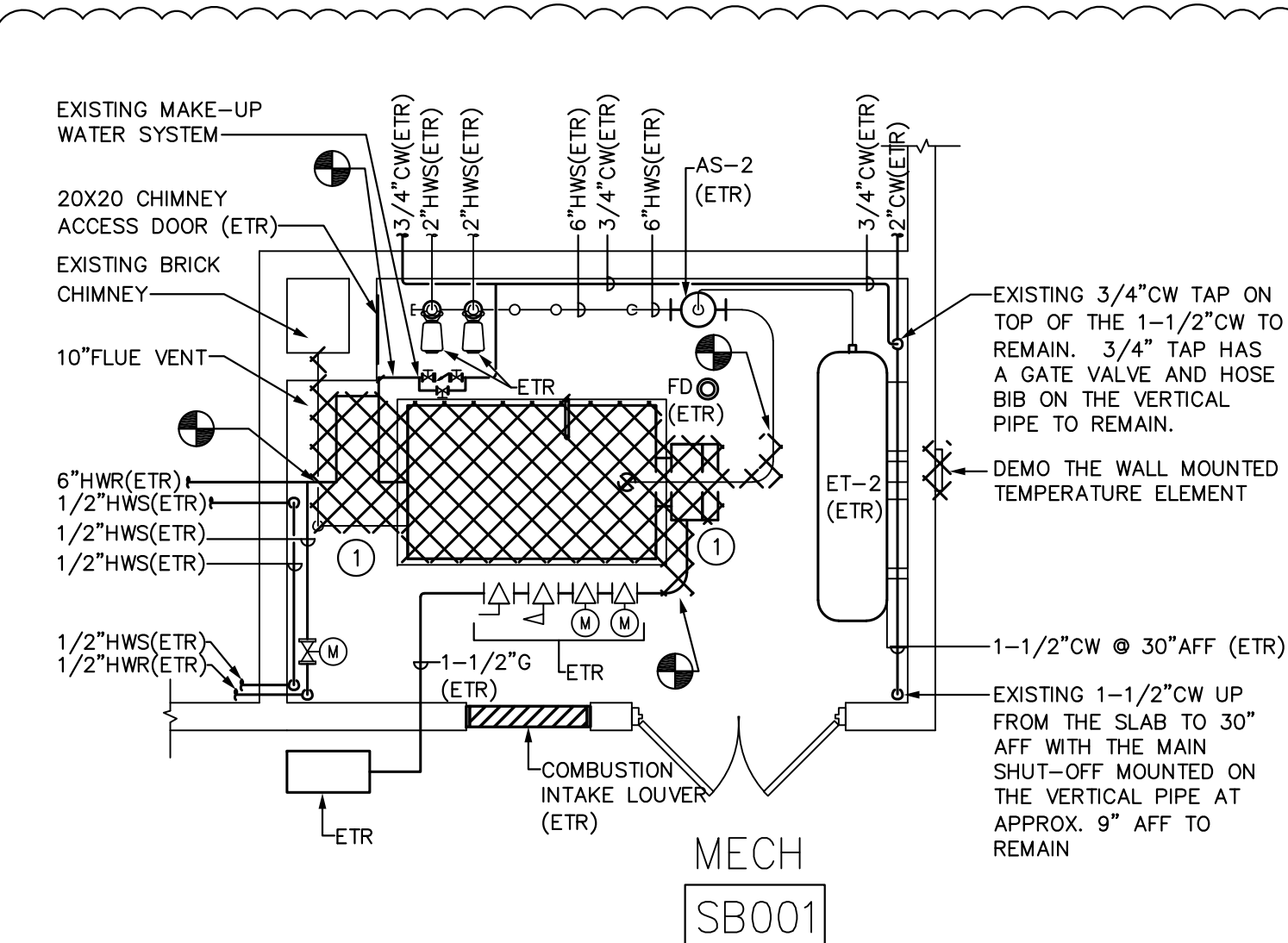
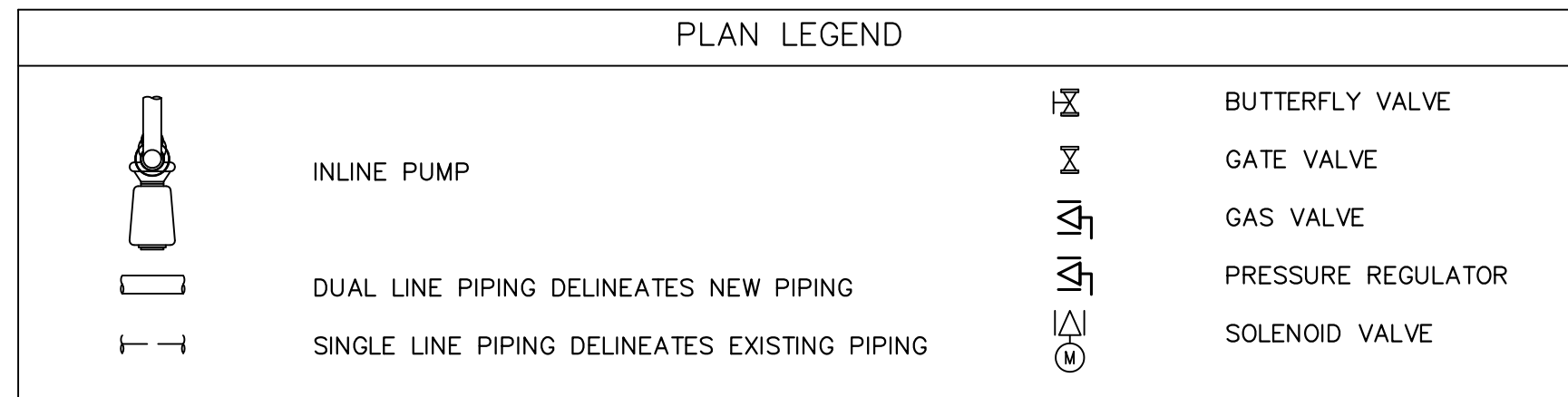
1. DEMOLISH THE EXISTING BOILER, AS SHOWN ON DEMO PLAN, AND PROVIDE THE NEW BOILER, AS SHOWN ON THE SHOP BUILDING BOILER SYSTEM PLAN.
2. DEMOLISH THE EXISTING HEATING HOT WATER SUPPLY AND RETURN PIPING AS SHOWN ON THE DEMOLITION PLAN, AND PROVIDE NEW HEATING HOT WATER SUPPLY AND RETURN PIPING AS SHOWN ON THE NEW SHOP BUILDING BOILER ROOM PLAN.
3. EXTEND THE BOILER CONCRETE PAD TO ACCOMMODATE THE NEW BOILER AS DESCRIBED ON THE NEW SHOP BUILDING BOILER ROOM PLAN.

**ALTERNATE BID NO. 3:**

1. DEMOLISH THE EXISTING AIR SEPARATOR AND EXPANSION TANK
2. PROVIDE NEW AIR SEPARATOR AND EXPANSION TANK AT THE SAME LOCATION AS THE DEMOLISHED AIR SEPARATOR AND EXPANSION TANK.
3. MODIFY AND PROVIDE NEW PIPING, AS NEEDED TO ACCOMMODATE AIR SEPARATOR CONNECTIONS.
4. PROVIDE NEW 1" PIPE BETWEEN AIR SEPARATOR AND EXPANSION TANK.
5. PROVIDE NEW SUPPORTS FOR THE AIR SEPARATOR AND EXPANSION TANK.

**ALTERNATE BID NO. 2: SHOP BUILDING BOILER ROOM PARTIAL EQUIPMENT AND PIPING PLAN**

1/4"=1'-0"



**KEY NOTES:**

- 1 DEMOLISH THE FOLLOWING:
  - A. THE BOILER AND BURNER
  - B. THE HWS AND HWR PIPING TO THE EXTENT SHOWN
  - C. MAKE UP WATER PIPING TO THE EXISTENT SHOWN
  - D. FLUE VENT DUCT COMPLETELY
  - E. POWER TO THE BOILER BURNER

**GENERAL NOTES:**

1. ALL PIPING SHOWN IS DIAGRAMMATIC AND MAY NOT NECESSARILY DEPICT THE EXACT ROUTING AND MOUNTING IN ORDER TO CLARIFY PIPING AND EQUIPMENT RELATIONSHIPS.
2. RE-USE THE EXISTING CONCRETE HOUSEKEEPING PADS OF DEMOLISHED EQUIPMENT FOR NEW EQUIPMENT. EXTEND/PROVIDE NEW CONCRETE PAD AS NEEDED CONNECTED TO THE EXISTING HOUSEKEEPING CONCRETE PAD SO THAT THE PAD FOR EACH NEW EQUIPMENT IS AT LEAST 6" WIDER AND LONGER THAN THE NEW EQUIPMENT.

**BIDDING NOTES**

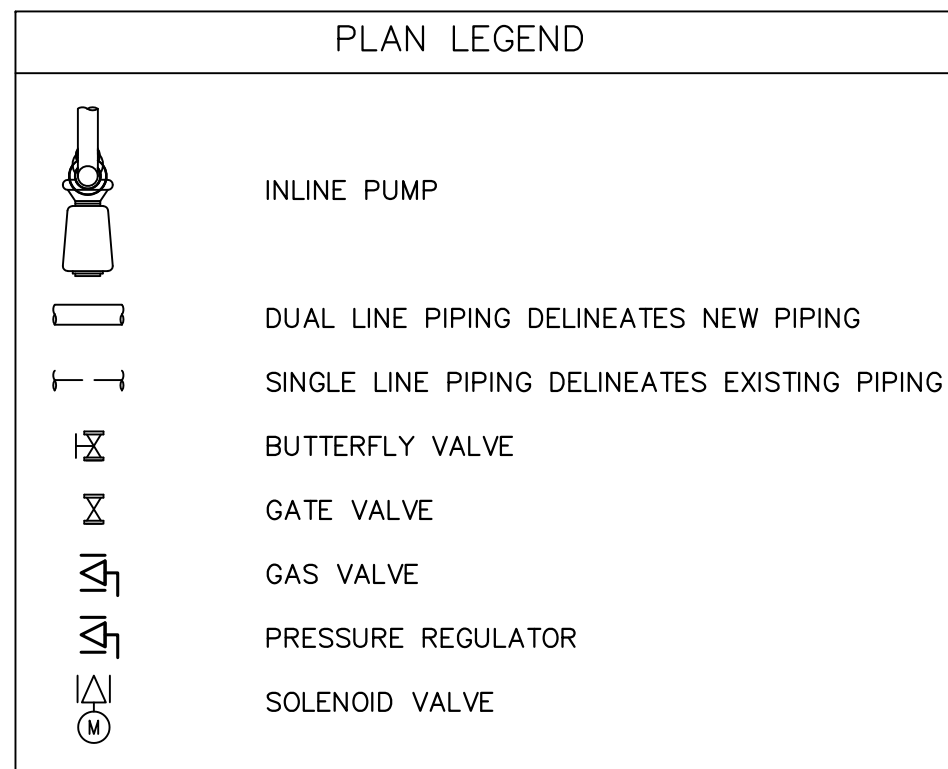
PROVIDE BIDS PER THE FOLLOWING DESCRIPTION:

**ALTERNATE BID NO. 2:**

1. DEMOLISH THE EXISTING BOILER, AS SHOWN ON DEMO PLAN, AND PROVIDE THE NEW BOILER, AS SHOWN ON THE SHOP BUILDING BOILER SYSTEM PLAN.
2. DEMOLISH THE EXISTING HEATING HOT WATER SUPPLY AND RETURN PIPING AS SHOWN ON THE DEMOLITION PLAN, AND PROVIDE NEW HEATING HOT WATER SUPPLY AND RETURN PIPING AS SHOWN ON THE NEW SHOP BUILDING BOILER ROOM PLAN.
3. EXTEND THE BOILER CONCRETE PAD TO ACCOMMODATE THE NEW BOILER AS DESCRIBED ON THE NEW SHOP BUILDING BOILER ROOM PLAN.

**ALTERNATE BID NO. 3:**

1. DEMOLISH THE EXISTING AIR SEPARATOR AND EXPANSION TANK
2. PROVIDE NEW AIR SEPARATOR AND EXPANSION TANK AT THE SAME LOCATION AS THE DEMOLISHED AIR SEPARATOR AND EXPANSION TANK.
3. MODIFY AND PROVIDE NEW PIPING, AS NEEDED TO ACCOMMODATE AIR SEPARATOR CONNECTIONS.
4. PROVIDE NEW 1" PIPE BETWEEN AIR SEPARATOR AND EXPANSION TANK.
5. PROVIDE NEW SUPPORTS FOR THE AIR SEPARATOR AND EXPANSION TANK.



**ALTERNATE BID NO. 2: SHOP BUILDING BOILER ROOM PARTIAL EQUIPMENT AND PIPING PLAN**

1/4"=1'-0"

DESIGNATION	B-1 & B-2	B-5
SERVICE	RAGSDALE HIGH SCHOOL	RAGSDALE HIGH SCHOOL
LOCATION	MAIN BLDG MECH ROOM R001	SHOP BLDG MECH ROOM SB001
BOILER MANUFACTURER	WEIL-MCLAIN	WEIL-MCLAIN
SERIES	88 SERIES II	88 SERIES II
MODEL	1488	1088
BURNER MANUFACTURER	POWER FLAME	POWER FLAME
MAX GAS INPUT (MBH)	4464	2274
HEATING OUTPUT (MBH)	3225	2737
THERMAL EFFICIENCY, %	83.1	83.1
COMBUSTION EFFICIENCY, %	83.4	83.7
TYPE OF FUEL	NATURAL GAS	NATURAL GAS
GAS PRESSURE, IN. WC.	6.4 TO 14	6.4 TO 14
NO. OF GAS TRAINS	2	2
GAS CONNECTIONS, IN.	2 1/2"	2 1/2"
UNIT DIMENSIONS (WxDxH), IN.	44-1/4"W x 114-3/4"L x 65"H	44-1/4"W x 74-3/4"L x 65"H
SUPPLY WATER CONNECTION, IN.	5"	5"
RETURN WATER CONNECTION, IN.	5"	5"
CHIMNEY BREECH SIZE, IN.	16"	16"
POWER, V/PH/Hz	120/1/60	120/1/60
ACCESSORIES	SEE BELOW	SEE BELOW
REMARKS	SEE BELOW	SEE BELOW
WEIGHT, LBS	8748	8748

**ACCESSORIES:**

1. MANUAL MAIN GAS SHUTOFF VALVES
2. DIAPHRAGM GAS VALVE - 2 STAGE WITH REGULATOR
3. MOTORIZED GAS VALVE WITH ACTUATOR (ON/OFF)
4. HIGH GAS PRESSURE SWITCH
5. LOW GAS PRESSURE SWITCH
6. NORMALLY OPEN SOLENOID VENT VALVE
7. MANUAL LEAK CHECKING GAS VALVE
8. LEAK TEST COCK
9. PILOT SHUT-OFF COCK
10. PILOT SOLENOID VALVE
11. PILOT REGULATOR
12. CONTROL PANEL
13. WATER RELIEF VALVE

**REMARKS:**

- A. PROVIDE GAS COCK TO ISOLATE GAS PIPING FROM GAS TRAIN
- B. ALL CONNECTIONS ARE SHOWN DIAGRAMMATICALLY. ADJUST CONNECTION LOCATIONS PER ACTUAL EQUIPMENT PROCURED.
- C. BOILER OUTLETS COMBINE TO A SINGLE HEADER AS THE BOILER WATER SUPPLY.
- D. RETURN WATER WILL ENTER THE BOILER LOW AND THE BOILER PUMP IS IN THE VERTICAL PIPE.
- E. THERE SHALL BE NO OBSTRUCTION (VALVE, ETC.) IN THE COMMON PIPE BETWEEN THE PRIMARY BOILER LOOP AND THE SECONDARY SYSTEM LOOP
- F. PROVIDE SERVICE VALVES, COUPLINGS, UNIONS AND ACCESSORIES TO ALLOW FOR SERVICE ON EQUIPMENT WITHOUT THE REMAINING EQUIPMENT HAVING TO BE SHUT DOWN.
- G. ACCEPTABLE EQUAL BOILER MANUFACTURERS: SMITH, PEERLESS.
- H. SIZE BLOW-OFF VALVE AS PER MANUFACTURER RECOMMENDATIONS.

BID NOTES	BASE BID	ALTERNATE BID 1
TAG	BP-1,2,3,4/1	P-9 & P-10
MANUFACTURER	ITT BELL & GOSSETT	ITT BELL & GOSSETT
SERIES	60	1510
MODEL	2x2x7	3GB
IMPELLER DIAMETER, IN	6.12	13-1/2"
FLOW, GPM	130	400
HEAD, FT. H2O	25	175
HP	1.5	40
RPM	1800	1750
MINIMUM PUMP EFFICIENCY	63.1	73.9
V/PH/Hz	480/3/60	480/3/60
ACCESSORIES	SEE BELOW	SEE BELOW
REMARKS	SEE BELOW	SEE BELOW

**ACCESSORIES:**

1. BOILER PUMP SHALL HAVE A CALIBRATED BALANCING VALVE ON ITS DISCHARGE WITH A PRESSURE DROP NO GREATER THAN 10". THE VALVE SHALL HAVE PRESSURE/TEMPERATURE (P/T) TEST PORTS FOR MEASURING FLOW AND TEMP.
2. MANUAL SHUTOFF/SERVICE VALVES TO ISOLATE EACH PIECE OF EQUIPMENT, PUMP OR OTHER DEVICE FROM THE REST OF THE SYSTEM.
3. INSTALL UNIONS IN ALL LOCATIONS WHERE THERE WILL NOT BE A JOINT OR FLANGE FOR FUTURE SYSTEM SERVICEABILITY.
4. SECONDARY PUMPS SHALL HAVE A CHECK, SHUTOFF AND CALIBRATED BALANCING VALVE WITH P/T PORTS OR TRIPLE DUTY VALVE ON EACH DISCHARGE.
5. IF PUMPS ARE MOUNTED 48" OR LESS ABOVE THE FINISH FLOOR THE MOTORS SHALL BE SUPPORTED FROM ABOVE TO THE STRUCTURE. WHERE SUPPORT FROM ABOVE IS NOT PROVIDED, PUMPS AND MOTORS SHALL BE SUPPORTED BY PIPE STAND FROM BELOW.

**REMARKS:**

- A. ACCEPTABLE EQUAL MANUFACTURERS: ARMSTRONG PUMP CO., TACO PUMP CO., GRUNDFOS PUMP CO. & GOULDS PUMP CO.

DESIGNATION	AS-1	AS-2
SERVICE	RAGSDALE HIGH SCHOOL	RAGSDALE HIGH SCHOOL
LOCATION	MAIN BLDG MECH RM R001	SHOP BLDG MECH ROOM SB001
MANUFACTURER	ITT BELL & GOSSETT	ITT BELL & GOSSETT
MODEL	RL-6	R-4F
HEAD LOSS, FT.	1.33	1.33
MAX CAPACITY, GPM	850	300
FLANGED OPENING, IN	6"	6"
ACCESSORIES	SEE BELOW	SEE BELOW
REMARKS	SEE BELOW	SEE BELOW

**ACCESSORIES:**

1. HIGH CAPACITY AIR VENT
2. TANK PURGE VALVE (TPV)
3. WALL MOUNTING KIT PER DETAIL OR MANUFACTURER

**REMARKS:**

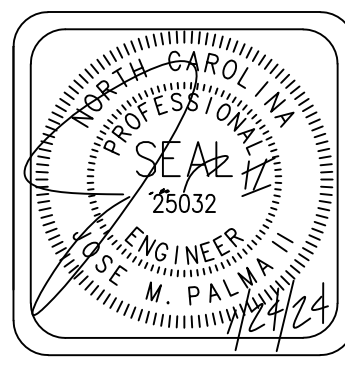
- A. FLANGED CONNECTION. CONFIGURE CONNECTING PIPE TO MATCH CONNECTION WHETHER SHOWN ON PLANS OR NOT.
- B. BELL & GOSSETT IS THE DESIGN BASIS. ARMSTRONG AND TACO ARE ACCEPTABLE EQUAL.

DESIGNATION	ET-1	ET-2
SERVICE	RAGSDALE HIGH SCHOOL	RAGSDALE HIGH SCHOOL
LOCATION	MAIN BLDG MECH ROOM R001	SHOP BLDG MECH ROOM SB001
MANUFACTURER	ITT BELL & GOSSETT	ITT BELL & GOSSETT
MODEL	B-800	B-300
TANK GALLONS	800	300
ACCEPTABLE GALLONS	211	80
REMARKS	SEE BELOW	SEE BELOW

**REMARKS:**

- A. CARBON STEEL SHELL.
- B. HEAVY DUTY BUTYL RUBBER DIAPHRAGM.
- C. FORGED STEEL CONNECTION.
- D. ASME VIII, DIV. I CERTIFIED.
- E. MAX 125 PSI AND 240F RATING.

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 N.C. LIC#P-0380  
**PALMA ENGINEERS**  
 P.O. BOX 5825  
 Greensboro, NC 27415



**BOILER REPLACEMENT**  
 LUCY C. RAGSDALE HIGH SCHOOL  
 1000 LUCY RAGSDALE DRIVE  
 JAMESTOWN, NC 27282

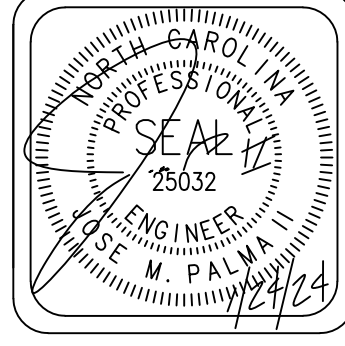
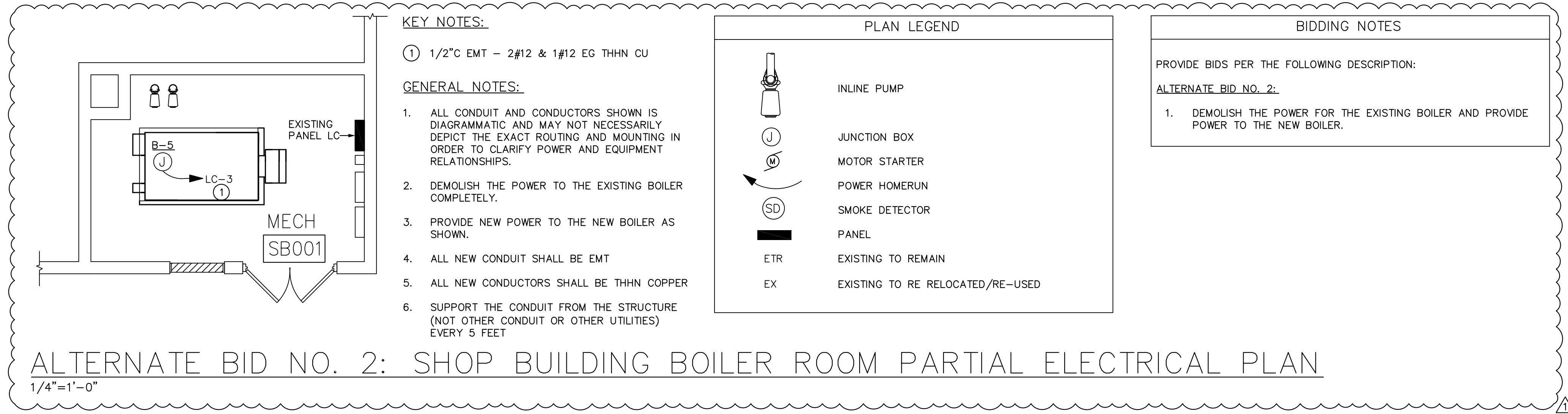
**Guilford County Schools**  
 712 NORTH EUGENE ST., GREENSBORO, NC

REV#	REVISION	DATE
1	DESIGN REVISIONS	1/24/24

DRAWN BY: CDM  
 CHECKED BY: JMP  
 DATE: 1/10/24  
 PROJECT NO.: 082423  
 SHEET NUMBER

**M3.1**





**BOILER REPLACEMENT**  
**LUCY C. RAGSDALE HIGH SCHOOL**  
 1000 LUCY RAGSDALE DRIVE  
 JAMESTOWN, NC 27282



REV#	REVISION	DATE
Δ	ADDENDUM 1: DESIGN REVISIONS	1/24/24

DRAWN BY: CDM  
 CHECKED BY: JMB  
 DATE: 1/10/24  
 PROJECT NO. 082423  
 SHEET NUMBER  
**E3.1**