STEAM LINE FROM BENNET HALL TO STEAM PIT SA11

FOR LOTO ONLY EXCEPT FOR SHT 2

00-7200 GENERAL CONDITIONS:

1) ALL WORK IS NEW UNLESS INDICATED TO BE EXISTING, REUSED, OR RELOCATED.

2) LOCATION OF EXISTING UTILITIES SHOWN MAY NOT BE ACCURATE NOR COMPLETE. FIELD VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION.

3) ANY EXISTING CONSTRUCTION TO REMAIN SHALL BE REPAIRED IF DAMAGED DURING THIS PROJECT.

4) KEEP WORK SITE IN AN ORDERLY CONDITION. DURING CONSTRUCTION, THE SITE IS TO BE LEFT FREE DRAINING. AT THE COMPLETION OF EACH DAY, REMOVE ALL WASTE AND LEAVE THE SITE IN A CONDITION ACCEPTABLE TO THE OWNER. DISPOSE OF ALL WASTE PER FEDERAL, STATE, AND LOCAL REGULATIONS. ALL THE EXCAVATED SOIL SHALL BE DISPOSED OFF SITE AND SUBMIT THE BILL OF LADEN.

5) THE INTENT OF THESE DOCUMENTS IS TO INCLUDE ALL THINGS NECESSARY FOR THE PROPER PERFORMANCE OF THE WORK. THESE DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING TO ALL. WORK NOT COVERED IN THESE DOCUMENTS IS NOT REQUIRED UNLESS IT IS NECESSARY TO PRODUCE THE INTENDED RESULTS.

6) CUSTOMARY CARE AND REVIEW WAS USED TO PREPARE THESE DRAWINGS. ALL THE DIMENSIONS SHALL BE DOUBLED CHECKED TO INSURE THEY ARE CORRECT. IT IS THE COMPLETE RESPONSIBILITY OF THE CONTRACTOR TO CHECK ALL DIMENSIONS BEFORE ORDERING, INSTALLATION, FABRICATION, ETC OF ANY MATERIALS. THIS INCLUDES REVIEW OF ALL INSTALLATION INSTRUCTIONS. MATERIALS LISTED IN THE BID SPECS AND DRAWINGS ARE FOR BIDDING INFORMATION. THE ACTUAL QUANTITIES NEEDED TO PERFORM THE WORK SHALL BE THE RESPONSIBILITY OF THE WINNING CONTRACTOR.

7) INSTALL ALL PRODUCTS FOLLOWING THE MANUFACTURERS RECOMMENDATIONS. IF A CONFLICT OCCURS CONTACT THE ENGINEER. SUBMIT A CATALOG CUT OF ALL PRODUCTS.

8) ANY CHANGE TO THE DRAWINGS OR SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. CHANGES WITHOUT AN APPROVED, WRITTEN CHANGE ORDER WILL BE REMOVED AT THE CONTRACTOR'S EXPENSE.THE COST OF ADDITIONAL DESIGN WORK DUE TO ERRORS OR OMISSION IN CONSTRUCTION SHALL BE BORNE BY THE CONTRACTOR.

9) CONTRACTOR PROPOSED VALUE ENGINEERING: THE CONTRACTOR IS RESPONSIBLE FOR ALL CHANGES NECESSARY IF THE OPTION IS SELECTED AND SHALL COORDINATE ALL DETAILS. THE COST OF ADDITIONAL DESIGN WORK AND REVIEW NECESSITATED BY THIS OPTION SHALL BE BORNE BY THE CONTRACTOR.

10) THE INTENT OF THIS DESIGN IS TO COMPLY WITH THE FOLLOWING CODES AND ARE PART OF THE SPECS: 1) 2009 INTERNATIONAL BUILDING CODE 2) ASME B31.1 POWER PIPING

11) OR EQUALS CAN BE SUBSTITUTED ONLY AFTER THE OR EQUAL IS SUBMITTED FOR APPROVAL. A LISTED PRODUCT IS THE OR EQUALS SPECS AND MUST BE EQUAL OR BETTER.

12) TESTING IS ONLY REQUIRED AS INDICATED. THE UNIVERSITY RESERVES THE RIGHT TO TEST TO VERIFY QUALITY. IF THE TEST RESULTS SHOWS THE ITEM DOES NOT MEET THE SPECS OR DRAWINGS, THE CONTRACTOR SHALL PAY FOR ALL TESTING AND REWORK.

13) THE FOLLOWING IS A LIST OF MOST SAFETY PERMITS REQUIRED:
13.1) THE CONTRACTOR SHALL OBTAIN DIG SAFE PERMITS AS REQUIRED TO PERFORM MECHANICAL EXCAVATION WORK.
13.2) THE CONTRACTOR SHALL COMPLETE AND SUBMIT TO UNIVERSITY MAINE FM SAFETY, THE TRENCHING AND EXCAVATION NOTIFICATION FORM REQUIRED TO PERFORM MECHANICAL EXCAVATION WORK.
13.3) THE CONTRACTOR SHALL PROVIDE REQUIRED NOTIFICATIONS, AND OBTAIN OK TO PROCEED, FROM THE UNIVERSITY OR OTHER CONTROLLING AUTHORITY, PRIOR TO PERFORMING CONFINED SPACE WORK OR HOT WORK, WHICH TAKES PLACE ON UMAINE PROPERTY.
13.4) THE CONTRACTOR SHALL PROVIDE ALL MANPOWER NECESSARY TO PERFORM CONFINED SPACE MONITORING (I.E. HOLE WATCH) AND HOT WORK MONITORING (I.E. FIRE WATCH).
13.5) THE CONTRACTOR SHALL NOTIFY THE UNIVERSITY FM SAFETY TO REQUEST A CHANGE IN THE CLASSIFICATION OF THE CONFINED SPACE. THAT IS, CHANGE FROM PERMIT-REQUIRED CONFINED SPACE TO NON-PERMIT CONFINED SPACE OR BACK TO A PERMIT-REQUIRED CONFINED SPACE

01-1100 SUMMARY OF WORK

1) THE INTENT IS TO COMPLETE THE WORK ON THIS DRAWING SET SO AS TO MINIMIZE THE NUMBER OF BUILDINGS WITH STAM INTERRUPTIONS ALONG LONG ROAD DURING OTHER FUTURE WORK SUCH AS THE 2022 REPLACEMENT OF STEAM PIT SA10.

2) THE WORK IS TO BE COMPLETED BETWEEN 9 TO 15 MAY 2022 INCLUSIVE.

3) COORDINATE ANY ASBESTOS ABATEMENT WITH UM ABATEMENT COORDINATOR & CONTRACTOR

22-0719 PIPING INSULATION

1) INSULATION SHALL BE PROVIDED PER THE ENERGY CONSERVATION (EC) SPECIFICATIONS. REMOVABLE JACKETING / INSULATION BLANKETS SHALL BE PROVIDED FOR FLANGED VALVES . ALL THE PIPING IN THE PIT SHALL BE INSULATED. THE FOLLOWING DESCRIBES WHAT NEEDS INSULATION:

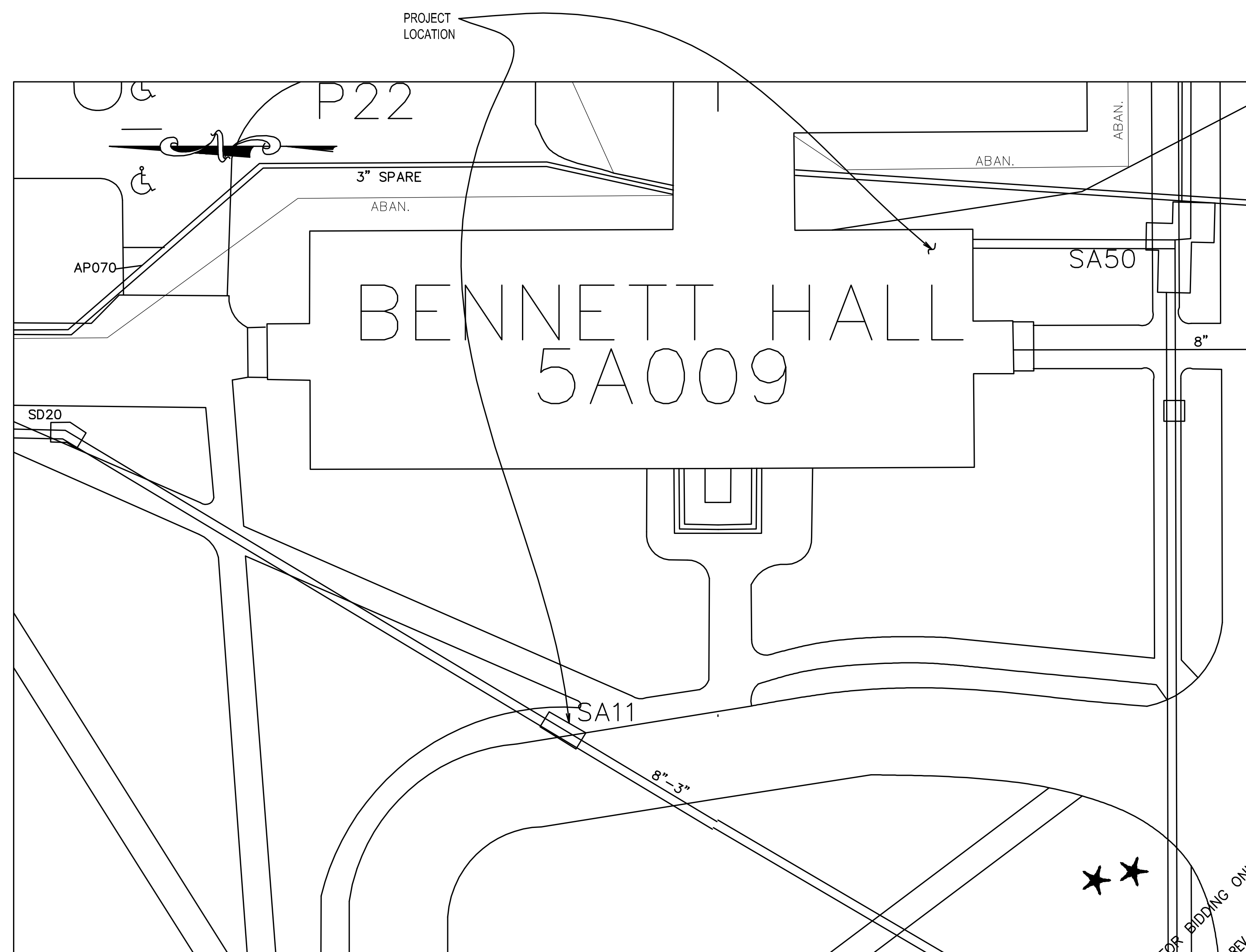
A) STEAM PIPE (366F) IN THE PIT: INSULATE PER EC SPECS.

B) CONDENSATE PIPING (366F) IN THE PIT: INSULATE PER EC SPECS.

23-2213 STEAM & CONDENSATE PIPING

1) EACH PIPING SYSTEM HAS A MATCHING SPECIFICATION TABLE. THE TABLE IS ALL INCLUSIVE EXCEPT FOR THE INSULATION. THE ENGINEER SHALL BE WITNESS TO ALL THE REQUIRED TESTING.
CONDENSATE PROVIDE PER S150 SPEC
STEAM PROVIDE PER S150 SPEC

2) FINAL BOLT TORQUING SHALL BE DONE PER THE SPECS. MARK THE ENDS OF THE BOLTS AFTER THE BOLTS ARE TORQUED.



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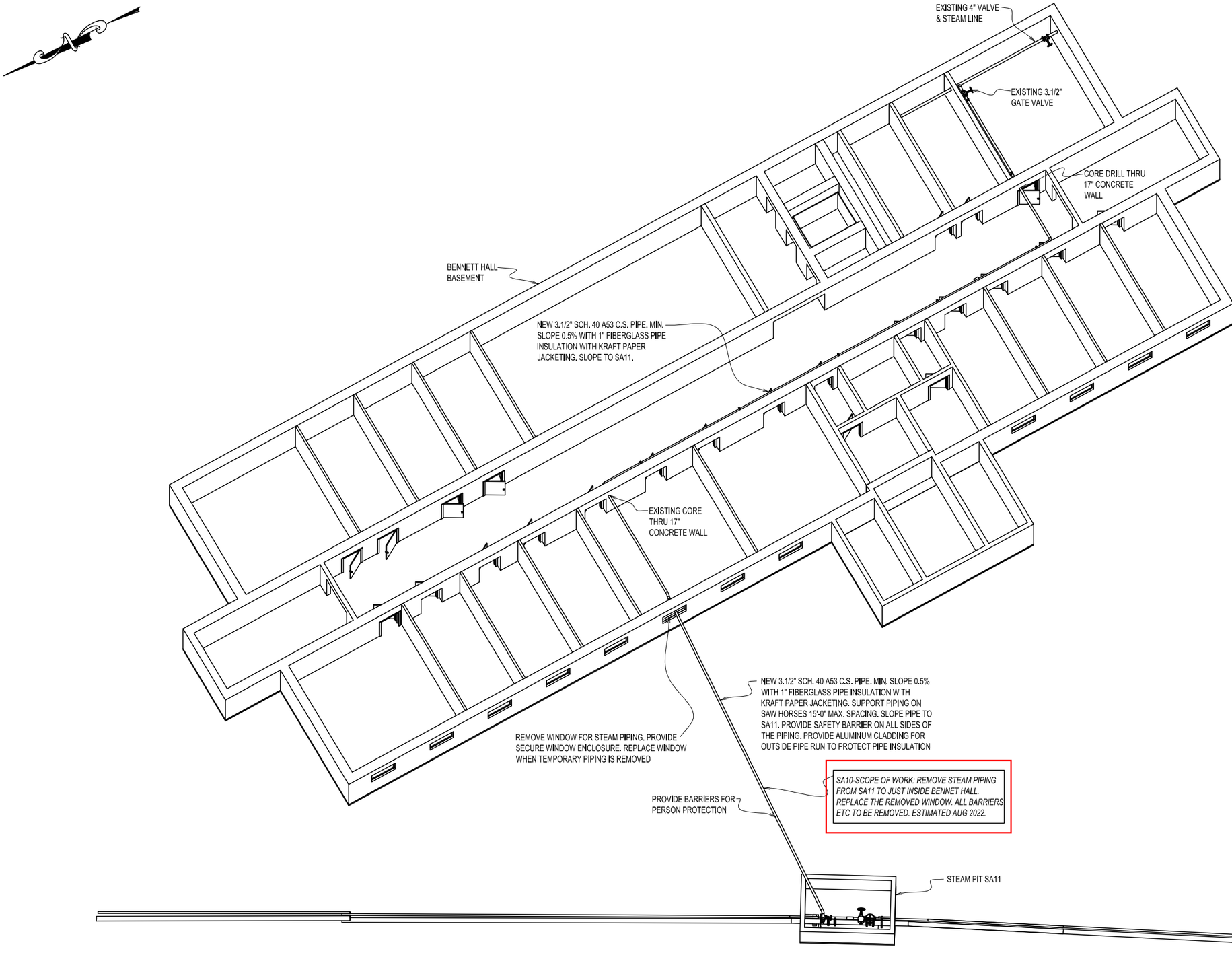
GENERAL NOTES & INDEX
UNIVERSITY OF MAINE @ ORONO
COLLEGE AVE
ORONO, ME 04473

DATE:1/25/22
SCALE: NOTED
DRAWN: SRT
JOB NO: 19300P
SHEET 1



ISOMETRIC VIEW OF BENNETT HALL & STEAM PIT SA11

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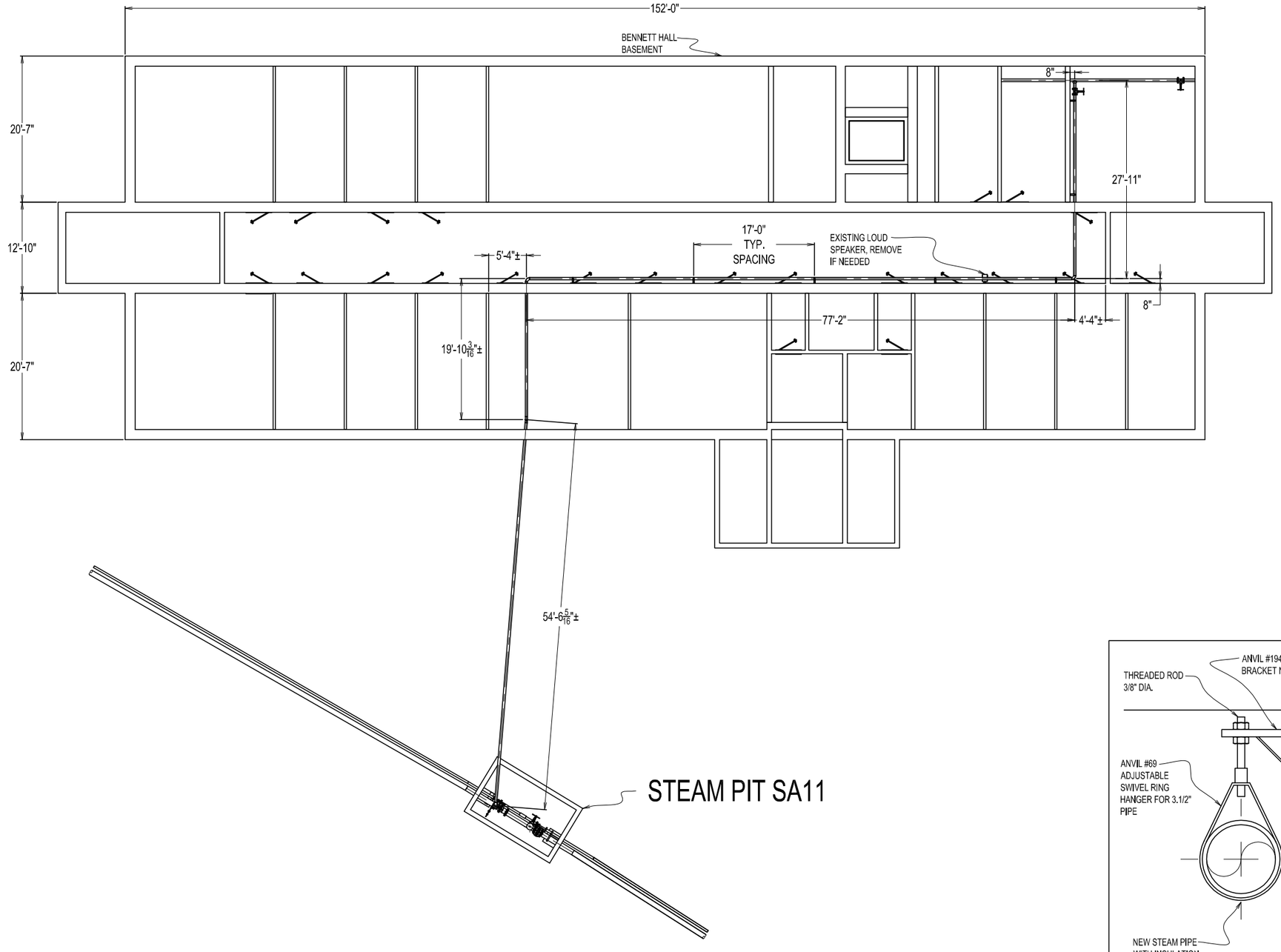
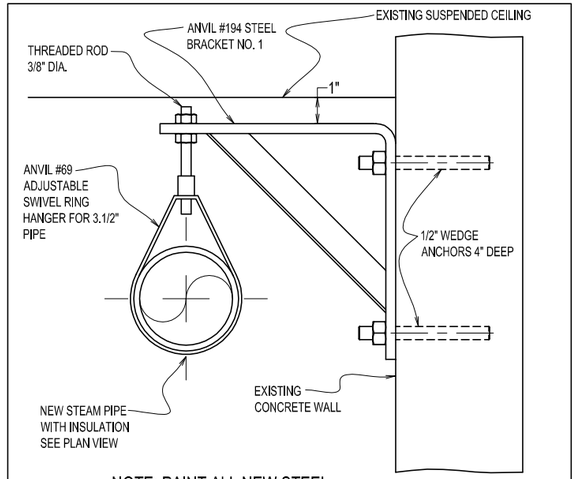


PLAN VIEW OF BENNETT HALL & STEAM PIT SA11

SCALE: 1/16 IN. = 1 FT.



TYPICAL PIPE SUPPORT

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PLAN VIEW OF BENNETT HALL & STEAM PIT SA11

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SHEET 3

FORESIGHT ENGINEERING		PIPE INSULATION FOR ENERGY CONSERVATION	REVISION MINERAL WOOL 0
PIPE	B	MINERAL WOOL INSULATION, K=0.36 @ 300°F, ASTM C547	
JACKET	15	ALUMINUM CORRUGATED OR EMBOSSED 0.016" ALLOY 5005 OT 3003 WITH KRAFT PAPER VAPOR BARRIER	
FITTINGS		MINERAL WOOL INSULATION, K=0.36 @ 300°F, ASTM C547	
CEMENT		NONE	
BANDS		ALUMINUM BANDS, 1/2" WIDE 0.020" THICK, ASTM B209, ALLOY 3003 OR 5005	
SCREW FASTENERS		304 STAINLESS STEEL, HEX HEAD SEALER TAPPING SCREWS, WITH WASHERS, ASTM A193	
WIRE		STAINLESS STEEL OR MONEL WIRE 16 GAUGE, 0.0625", ASTM A580, TP 316 OR MONEL, SOFT TEMPER	
MESH		GALVANIZED CARBON STEEL, 1" MESH, 20 GAUGE WIRE, 0.034", ASTM A390 CLASS 3	
RIVETS		STAINLESS STEEL, POP RIVET, DOME HEAD, 3/16" , AISI TP 316	
FITTING COVERS		DIE-FORMED FABRICATED ALUMINUM OR GORE TYPE, 0.024" THICK, ASTM B209, 1100, CHILDERS AS APPROVED	
JOINT SEALANT		NONE	

INSULATION THICKNESS TABLE (THICKNESS IN INCHES)

FLUID TEMP	NOMINAL PIPE SIZE IN INCHES (NPS)										
DEG. F	1½	2	3	4	6	8	10	12	14	16	18
100–199											
200–299											
300–399	STEAM 2"										
400–499	CONDENSATE 1"										
500–599											
600–799											
800–1000											

1. FOR SIZES SMALLER THAN 1.5 NPS USE INSULATION THICKNESS SHOWN FOR 1.5 NPS.
2. FOR SIZES LARGER THAN 18.0 NPS AND FLAT AREAS USE THICKNESS SHOWN FOR 18.0 NPS.

GENERAL NOTES:
1. ALL MATERIALS USED SHALL BE ASBESTOS FREE.
2. WHERE HYDROSTATIC TESTING OF PIPES OR TANKS IS REQUIRED, ALL SUCH TESTS SHALL BE COMPLETED PRIOR TO APPLYING INSULATION OVER TANKS OR OVER WELDS ON PIPE.
3. STEAM TRACERS SHALL BE TESTED WITH STEAM AT OPERATING PRESSURES BEFORE INSULATING. ELECTRICAL TRACING SHALL BE THOROUGHLY TESTED BEFORE INSULATING.

INSULATION INSTALLATION
1. INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURES DIRECTIONS.
2. TO 12" USE WIRE TIES AT 9" C/C 14" AND LARGER USE BANDS 9" C/C.
3. INSTALL DOUBLE LAYER STAGGERED – WIRE 1ST LAYER BAND 2ND LAYER.
4. STAGGER GIRTH JOINTS – BUTT TIGHTLY AND SEAL WITH JOINT CEMENT.
5. USE FACTORY PREMOLDED SHAPES FOR FITTINGS AND BENDS –
6. NOT USED
7. USE EXTENDED LEG INSULATION FOR TRACED LINES.
8. INSULATE TRAPS AND STRAINERS SEPARATELY FOR ACCESS.
9. ANY NAMEPLATES, CODE INSPECTION PLATES, OR STAMPING ARE TO REMAIN VISIBLE AFTER THE INSULATION HAS BEEN APPLIED. THE SURROUNDING INSULATION IS TO BE BEVELED AND SEALED WITH CAULK.
10. NOT USED
11. VALVES, EXPANSION JOINTS AND CONTROL DEVICE BODIES ARE TO BE COVERED WITH CUSTOM-FIT AND REMOVABLE INSULATING BLANKETS. THESE BLANKETS ARE TO BE NOMINAL THICKNESS OF ONE-INCH FIBERGLASS MATTING; SILICONE CLOTH ON THE OUTSIDE, STAINLESS MESS ON THE INSIDE AND SECURED WITH A VELCRO SYSTEM.

JACKETING INSTALLATION
1. INSTALL WITH LONGITUDINAL AND CIRCUMFERENTIAL JOINTS LAPPED 2 IN.
2. HORIZONTAL LINES PLACE LONGITUDINAL JOINT 30° BELOW CENTER LINE.
3. ON VERTICAL LINES APPLY FROM BOTTOM UP AND SHED TO THE WEATHER.
4. INSTALL BANDS AT 12" C/C –1/2 BY 0.020 316SS S-CLIPS IN VERTICALS TO PREVENT SLIPPING.

PIPE INSULATION – 1200 DEG. F MAXIMUM SERVICE TEMPERATURE

S150 (STEAM) CLASS 150, CARBON STEEL- LOW TEMPERATURE (<650F)

ITEM	SIZE	SPECIFICATIONS
Pipe	1/2-2	Sch. 80...ASTM A-53/ A-106 Gr B, Seamless Steel Pipe. Note: all threaded pipe must be Schedule 80; otherwise, Schedule 40 is acceptable for this size. Sch. 40...ASTM A-53/ A-106 Gr B, Seamless Steel Pipe.
	2 1/2-10	Sch. 40...ASTM A-53/ A-106 Gr B, Seamless Steel Pipe.
	12-24	0.375 wall thickness... ASTM A-53/ A-106 Gr. B Seamless Steel Pipe
Fittings	1/8-2	3000# SW/ 2000# Threaded, Forged Steel...ASTM A-105, per ANSI B16.11.
	2 1/2-24	BW, Sch. To be same as pipe...ASTM A-234, Gr WPB, Wrought Steel, per ANSI B16.9 / ASTM A-105 manufactured fittings (i.e. Weld-o-lets, etc.).
Unions	1/2-2	3000# SW / Threaded, Forged Steel...ASTM A-105, per ANSI B16.11, steel-to-steel seats.
Cplgs	1/2-2	3000# SW / Threaded, Forged Steel...ASTM A-105, per ANSI B16.11
Flanges	2 1/2-24	Class 150 RFWN, Forged Steel...ASTM A-105, per ANSI B16.5.
Bolts	All sizes	ASTM A-193, Gr B-7, continuous threaded alloy steel studs threaded per ANSI B1.1 Class 2A.
Nuts	All sizes	ASTM A-194, Heavy hex nuts; heat treated, semi finished per ANSI B18.2.2 and B1.1.

Valves			
	Valve Type:	Gate/ G1602W-C	GATE (NON-RISING STEM) NRS-C
	Press. & Temp. Rating	600 or 800 lb. per ANSI B16.34	150lb. per ANSI B16.34
	Type of Connection	Socket Weld	FLANGED
	Size	2" & Smaller	2.5" & LARGER
	Dimensions		MUST INDICATE POSITION LIKE WILLIAMS
	Body Cover	N/A	N/A
	Bonnet Style	Welded	BOLTED
	Screw Configuration	OS & Y	OS &Y (NOTE 1)
	Wedge Type	Solid	FLEXIBLE OR SPLIT
	Seat Ring Type	Integral, Seal-welded or Renewable	STELLITE
	Open indicator:		YES
	1. Body and Bonnet	Forged Steel (ASTM A-105)	CAST STEEL (ASTM A216 GR. WCB)
	2. Wedge Seating Surface	13% Chromium SS	13% Chromium SS
	2b. Disc Seating Surface	N/A	STELLITE
	3. Seat Ring Surface	Stellite	STELLITE
	4. Cover Gasket	N/A	N/A 13% Chromium SS
	4b. Stem	13% Chromium SS	FLEXIBLE GRAPHITE
	5. Packing	Flexible Graphite	SPIRAL WOUND SS W/ GRAPHITE OR
	6. Body to Bonnet Gasket	N/A	CORRUGATED SOFT IRON

Note 1: 16" diameter and larger to be ordered with 90° gear operators.
Note 2: 13% Chromium SS includes: 410 SS, 416 SS, 420 SS and CA 15 SS.
Note 3: End preparation and bore of valves to match equipment connections and piping for the various services specified, as per ANSI B16.25
Power Piping Code Requirements (This applies to all Valves with numbers that end with "-C".)
Each valve shall bear the manufacturer's name or trademark and reference symbol to indicate the service conditions for which the manufacturer guarantees the valve. The marking shall be in accordance with ASME B16.5, B16.34 and MS SP-25. Pressure containing parts shall be stamped with heat numbers that are to be listed on the code certification document. This document shall accompany each valve.

Gaskets	Flanges	(S42A) Class 150, Spiral Wound with external centering ring, ASME B16.20. Winding shall be 304SS with graphite filler, "FLEXITALLIC". Outer Ring shall be carbon steel.
All Welds (Welder/ Testing)	All	1) All welding on metal piping systems shall be done using qualified welding procedures and qualified welders and welding operators in accordance with Section IX of the ASME Boiler and Pressure Vessel Code. All welders shall have evidence of passing the standard qualifications tests within one year. 2) TIG the root. Inspect root by other and document with letter and picture. 3) PRESSURE TEST NOT REQUIRED. 4) THE UNIVERSITY RESERVES THE RIGHT TO RADIOGRAPH ANY WELD. IF WELD FAILS WITH RADIOGRAPH INSPECTION, THE CONTRACTOR SHALL PAY FOR ALL TESTING AND REPAIRS.

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PIPE INSULATION & S150 SPECS
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