

CODE ANALYSIS

APPLICABLE CODES

	Year		Year
International Building Code	2009	National Electrical Code	2008
International Mechanical Code	2009	Uniform Code for Building Conservation	
International Plumbing Code	2009	ADA Accessibility Guidelines	
International Fire Code	2009		
International Energy Conservation Code	2009		

A. Occupancy and Group: NO BUILDINGS INVOLVED
 Change in Use: Yes No Mixed Occupancy: Yes No
 Special Use and Occupancy (e.g. High Rise, Covered Mall): N/A

B. Seismic Design Category: _____ Design Wind Speed: N/A mph

C. Type of Construction (circle one): N/A - NO BUILDING

<u>I</u>	<u>I</u>	<u>II</u>	<u>II</u>	<u>III</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>V</u>
A	B	A	B	A	B	HT	A	B

D. Fire Resistance Rating Requirements for the Exterior Walls based on the fire separation distance (in hours): N/A
 North: _____ South: _____ East: _____ West: _____

E. Mixed Occupancies: N/A Nonseparated Uses: N/A

F. Sprinklers: N/A
 Required: N/A Provided: N/A Type of Sprinkler System: N/A

G. Number of Stories: N/A Building Height: N/A - NO BLDG.

H. Actual Area per Floor (square feet): N/A

I. Tabular Area: N/A

J. Area Modifications: N/A
 a) $A_a = A_t + \left[\frac{A_t I_r}{100} \right] + \left[\frac{A_t I_s}{100} \right]$ $I_r = 100 \left[\frac{F}{P} - 0.25 \right] \frac{W}{30}$

b) Sum of the Ratio Calculations for Mixed Occupancies:

$$\frac{\text{Actual Area}}{\text{Allowable Area}} \leq 1$$

c) Total Allowable Area for:

- 1) One Story: _____
- 2) Two Story: $A_a(2)$ _____
- 3) Three Story: $A_a(3)$ _____

d) Unlimited Area Building: Yes No Code Section: _____

K. Fire Resistance Rating Requirements for Building Elements (hours): N/A - NO BLDG.

Element	Hours	Assembly Listing	Element	Hours	Assembly Listing
Exterior Bearing Walls			Floors - Ceiling Floors		
Interior Bearing Walls			Roofs - Ceiling Roofs		
Exterior Non-Bearing Walls			Exterior Doors and Windows		
Structural Frame			Shaft Enclosures		
Partitions - Permanent			Fire Walls		
Fire Barriers			Fire Partitions		
			Smoke Partitions		

L. Design Occupant Load: N/A - NO BLDG.

Exit Width Required: N/A Exit Width Provided: N/A

M. Minimum Number of Required Plumbing Facilities: N/A

- a) Water Closets - Required (m) _____ (f) _____ Provided (m) _____ (f) _____
- b) Lavatories - Required (m) _____ (f) _____ Provided (m) _____ (f) _____
- c) Bath Tubs or Showers: _____
- d) Drinking Fountains: _____ Service Sinks: _____

FOOTNOTES:

- 1) In case of conflict with the U.S. Department of Justice Federal Registers Parts I through V - ADA Guidelines and specific reference to the International Building Code Accessibility Chapters, the more restrictive requirement shall govern.
- 2) Additional Code Information shall be provided at the discretion of the Building Official for Complex Buildings. Including, but not limited to:
 - a) High Rise Requirements.
 - b) Atriums.
 - c) Performance Based Criteria.
 - d) Means or Egress Analysis.
 - e) Fire Assembly Locator Sheet.
 - f) Exterior and Interior Accessibility Route.
 - g) Fire Stopping, Including Tested Design Number.

COLLEGE OF EASTERN UTAH UNDERGROUND STEAM LINE AND DATA ROOM CHILLER REPLACEMENT DFCM #10183610



State of Utah—Department of Administrative Services

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT

4110 State Office Building / Salt Lake City, Utah 84114 / 538-3018

SPECIAL INSPECTIONS SEE SHEET G002.

1. CONCRETE CONSTRUCTION - SIDEWALK, FIRE LANES, CURB AND GUTTER AND PATCHING AT EXISTING STEAM MANHOLE.
2. SOILS: BACKFILL, COMPACTION, AND MATERIAL.
3. EXTERIOR INSULATION: UNDERGROUND GILSULATE AROUND STEAM AND CONDENSATE PIPING.
4. MISCELLANEOUS - TESTING OF CONCRETE, SOILS, ASPHALT ETC. SEE G002.

DRAWING INDEX:

GENERAL:

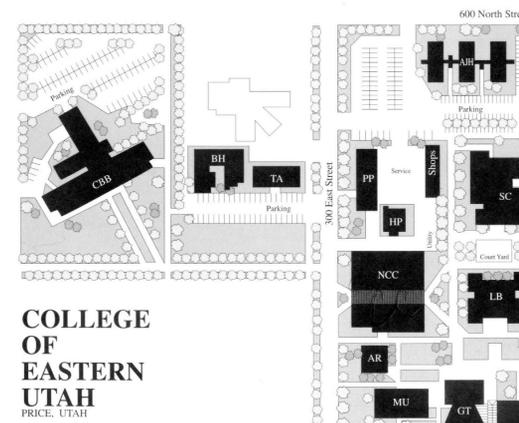
- G001--- TITLE SHEET
 G002--- SPECIAL INSPECTIONS AND TESTING
 G003--- GENERAL NOTES AND LEGEND

MECHANICAL:

- MS101- MECHANICAL SITE PLAN
 ME501- MECHANICAL DETAILS
 ME502- MECHANICAL DETAILS
 ME503- STEAM LINE DETAILS

PROJECT DESCRIPTION:

THIS PROJECT IS ALL EXTERIOR UNDERGROUND WORK. THE BUSINESS BUILDING MECHANICAL ROOM WILL BE ENTERED TO MAKE A NEW STEAM AND CONDENSATE CONNECTION TO EXISTING INSIDE THIS ROOM. THE REPLACEMENT OF SIDEWALKS, CURB AND GUTTERS, SOD, CONCRETE PATCHES SHALL BE A PART OF THIS PACKAGE WHERE THESE ITEMS ARE DESTROYED BY THE EXCAVATION.



COLLEGE
 OF
 EASTERN
 UTAH
 PRICE, UTAH

MECHANICAL ENGINEER
 WHW ENGINEERING, INC.
 8619 SANDY PARKWAY
 SUITE 101
 SANDY, UTAH 84075
 PHONE: (801) 466-4021 FAX: (801) 466-8536



CONSULTANTS



PROJECT NAME & ADDRESS

**COLLEGE OF EASTERN UTAH
UNDERGROUND STEAM LINE
AND DATA ROOM CHILLER
REPLACEMENT
DFCM#10183610**

Cedar City, Utah

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DRAWN BY:
LGD
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07/15/10
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10023



SHEET TITLE
**MECHANICAL
GENERAL NOTES AND
LEGEND**

SHEET NO.
G003

MECHANICAL LEGEND					
SYMBOL	ABR.	DESCRIPTION	SYMBOL	ABR.	DESCRIPTION
GENERAL TERMINOLOGY			WET SIDE		
		DETAIL NUMBER DESIGNATION CORRESPONDING WITH GRID LOCATION			UNION
		MECHANICAL EQUIPMENT DESIGNATION EQUIPMENT ITEM DESIGNATION			GATE VALVE
		REVISION DESIGNATOR AND NUMBER		BV	BALL VALVE
		KEY NOTE DESIGNATOR AND NUMBER			DIRECTION OF FLOW
	POC	POINT OF CONNECTION			ELBOW UP
	POR	POINT OF REMOVAL			ELBOW DOWN
GC		GENERAL CONTRACTOR			TEE UP
MC		MECHANICAL CONTRACTOR			TEE DOWN
NIC		NOT IN CONTRACT			EXISTING PIPING TO BE REMOVED
NTS		NOT TO SCALE			EXISTING PIPING TO REMAIN
C		COMMON			PIPE CAP OR PLUG
				CW	CULINARY COLD WATER
				PC	PUMPED CONDENSATE
				HPR	HIGH PRESSURE CONDENSATE RETURN
				HPS	HIGH PRESSURE STEAM SUPPLY

GENERAL NOTES:

G-1 MECHANICAL INFORMATION IS NOT LIMITED TO THE MECHANICAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR EXISTING SITE CONDITIONS AND INFORMATION INCLUDING SPECIFICATIONS.

A - EACH DRAWING SHEET AND THE SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND THEY SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH ITEMS SHOWN AND NOTED ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN ALL PLACES. ITEMS IN SPECIFICATIONS OR DRAWINGS LISTED WHICH ARE DIFFERING IN EFFICIENCY OR QUALITY SHALL BE HELD TO THE GREATEST OF: EFFICIENCY, QUALITY OR GOVERNING CODE.

B - THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE INSTALLATION OF THE PIPING SYSTEMS ACCORDING TO THE TRUE INTENT AND MEANING OF THE CONTRACT DOCUMENTS.

C - THE CONTRACTOR SHALL INSTALL ALL PIPING AND GILSULATE ACCORDING TO MANUFACTURERS RECOMMENDATIONS. THE CONTRACTOR SHALL REVIEW SUPPLIERS BID PACKAGES FOR COMPLETENESS AND COMPLIANCE TO THE SPECIFICATIONS, SCHEDULES, AND DESIGN INTENT. THE CONTRACTOR SHALL REMOVE AND RE-INSTALL CORRECTLY AT HIS OWN EXPENSE ANY PIPING, ANCHORS, SUPPORTS, GILSULATE AND EXPANSION LOOPS NOT IN COMPLIANCE.

D - THE CONTRACTOR SHALL CONSULT MANUFACTURERS INSTALLATION INSTRUCTIONS FOR THE GILSULATE INSTALLATION, ACCESSORIES, AND CLEARANCES PRIOR TO BIDDING PROJECT.

E - ANYTHING NOT CLEAR OR IN CONFLICT BEFORE AND AFTER BIDDING SHALL BE EXPLAINED BY MAKING APPLICATION TO THE ENGINEER IN WRITING.

G-2 ANY AND ALL ALTERATIONS TO THE SYSTEM SHOWN SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO CHANGES FOR APPROVAL. CONTRACTOR SHALL NOT START ANY CHANGES UNTIL NOTIFIED IN WRITING. IF CHANGES ARE MADE PRIOR TO APPROVAL CONTRACTOR SHALL TAKE ALL RESPONSIBILITY FOR THE CHANGES MADE AND ALL COSTS RELATING TO FAILURE OR REPLACEMENT OF ALTERATIONS.

G-3 CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATIONS OF EXISTING UNDERGROUND PIPING AND BUILDING CONNECTIONS.

G-4 THE WORKING DRAWINGS ARE DIAGRAMMATIC. THEY DO NOT SHOW EVERY OFFSET, BEND, OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL LOCATIONS FOR NEW PIPING AND BUILDING CONNECTIONS SHALL BE FIELD VERIFIED AND COORDINATED WITH ALL DRAWINGS.

G-5 THE INSTRUCTION TO "PROVIDE" ALSO INCLUDES INSTALLATION.

G-6 SUPPLIERS SHALL REVIEW ALL DRAWINGS AND THE SPECIFICATIONS PRIOR TO SUBMITTING PRICES TO THE CONTRACTOR. ALL QUESTIONS AND DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BIDDING.

G-7 CONTRACTOR SHALL THOROUGHLY REVIEW AND SIGN SUBMITTALS FOR COMPLETENESS AND COMPLIANCE TO THE SPECIFICATIONS PRIOR TO ENGINEERS REVIEW. SUPPLIERS SHALL HIGHLIGHT OR MARK ALL INFORMATION REQUIRED TO SHOW COMPLIANCE TO THE SPECIFICATIONS. ALL REQUESTED EXCEPTIONS TO THE SPECIFICATIONS, OR SCHEDULES SHALL BE CLEARLY NOTED AND EXPLAINED. SUBMITTAL REVIEW AND ACCEPTANCE IS FOR DESIGN CONCEPT ONLY, AND DOES NOT AT ANY TIME RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO MEET SPECIFICATIONS, CAPACITIES, OR DESIGN INTENT.

G-8 ALL MECHANICAL WORK SHALL CONFORM TO THE 2009 EDITION OF THE IMC AND IPC WITH UTAH ANNOTATIONS AND LOCAL AUTHORITY REQUIREMENTS.

G-9 ALL PIPING, MATERIALS, ETC. SHALL BE NEW AND DOMESTIC MADE.

CONSULTANTS



PROJECT NAME & ADDRESS

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UNDERGROUND STEAM LINE
AND DATA ROOM CHILLER
REPLACEMENT
DFCM#10183610**

Cedar City, Utah

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SHEET TITLE

MECHANICAL SITE PLAN

SHEET NO.

MS101

SHEET NOTES:

- 19 THIS AREA IS ENCLOSED WITH A CONCRETE FLOOR WITH AN AIR COOLED CONDENSING UNIT WITH REFRIGERANT PIPING AND AN ELECTRICAL GENERATOR. CONTRACTOR HAS THE OPTION OF EXCAVATING UNDER THE SLAB OR REMOVING AIR COOLED CONDENSER AND THAT PART OF THE CONCRETE FLOOR. THE COOLING UNIT SERVES THE MUSEUM AND CANNOT BE DOWN. IF CONTRACTOR REMOVES UNIT HE MUST RE-CONNECT THE PIPING BACK INTO THE UNIT UNTIL AREA IS COMPLETED. REPLACE ALL REMOVED CONCRETE SLAB AND PADS.
- 20 EXISTING AIR COOLED CONDENSING UNIT.
- 21 EXISTING ELECTRICAL GENERATOR.
- 22 MAKE NEW EXPANSION JOINT WHERE NEW SIDEWALK CONNECTS TO EXISTING.
- 23 INCREASE FROM A 2" HPR TO A 3" AT NEW CONNECTION.

SHEET NOTES:

- 15 RE-USE EXISTING ANCHOR INSIDE MECHANICAL ROOM.
- 16 EXISTING HPS AND HPR SHALL REMAIN.
- 17 PROVIDE A 3" HPS STUB-OUT WITH CAP FOR FUTURE FEED TO DORMS. MAKE STUB-OUT SAME DISTANCE AS HPR.
- 18 PROVIDE A 2" HPR STUB-OUT WITH CAP FOR FUTURE FEED TO DORMS. MAKE STUB-OUT 3'-0" FROM MAIN.

SHEET NOTES:

- 11 REMOVE EXISTING CONCRETE APRON AND FIRE LANE WHERE REQUIRED BY PATH OF NEW STEAM AND CONDENSATE PIPING. REPLACE AS SHOWN ON DETAIL C4/ME502.
- 12 REPLACE CURB AND GUTTER IF REQUIRED AFTER EXCAVATION. REPLACE AS SHOWN ON DETAIL A1/ME502.
- 13 REMOVE AND REPLACE EXISTING SIDEWALK. MATCH EXISTING SIDEWALK FOR WIDTH, DEPTH, AND LENGTH. FIELD DETERMINE EXTENT OF REMOVAL AND REPLACEMENT.
- 14 FIELD VERIFY TIE-IN LOCATION INTO EXISTING BUSINESS BUILDING. CUT AND REMOVE EXISTING STEAM AND CONDENSATE PIPING IN THE BUILDING AND ANYWHERE ELSE IT IS IN CONTACT OR CONFLICT WITH NEW PIPING.

SHEET NOTES:

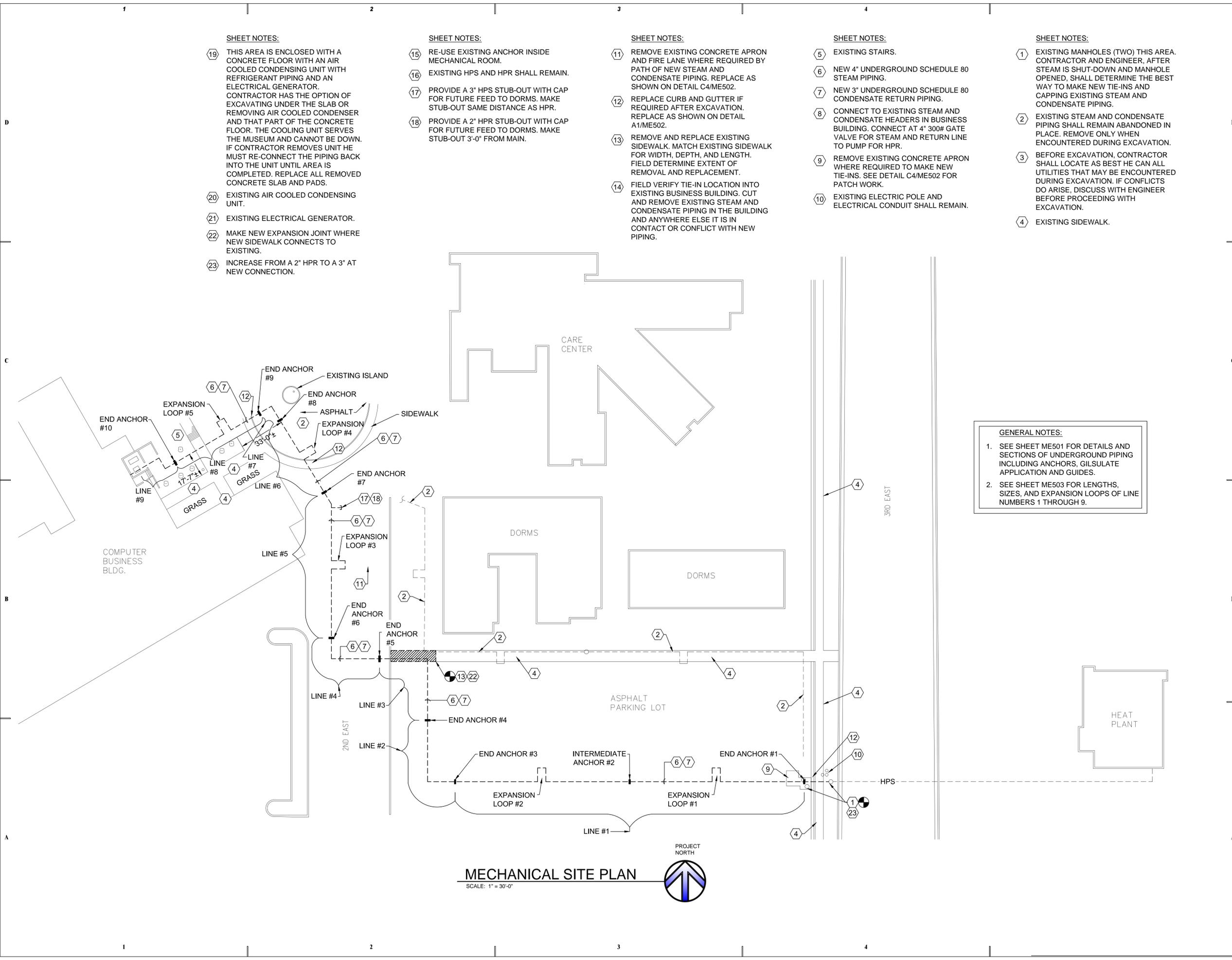
- 5 EXISTING STAIRS.
- 6 NEW 4" UNDERGROUND SCHEDULE 80 STEAM PIPING.
- 7 NEW 3" UNDERGROUND SCHEDULE 80 CONDENSATE RETURN PIPING.
- 8 CONNECT TO EXISTING STEAM AND CONDENSATE HEADERS IN BUSINESS BUILDING. CONNECT AT 4" 300# GATE VALVE FOR STEAM AND RETURN LINE TO PUMP FOR HPR.
- 9 REMOVE EXISTING CONCRETE APRON WHERE REQUIRED TO MAKE NEW TIE-INS. SEE DETAIL C4/ME502 FOR PATCH WORK.
- 10 EXISTING ELECTRIC POLE AND ELECTRICAL CONDUIT SHALL REMAIN.

SHEET NOTES:

- 1 EXISTING MANHOLES (TWO) THIS AREA. CONTRACTOR AND ENGINEER, AFTER STEAM IS SHUT-DOWN AND MANHOLE OPENED, SHALL DETERMINE THE BEST WAY TO MAKE NEW TIE-INS AND CAPPING EXISTING STEAM AND CONDENSATE PIPING.
- 2 EXISTING STEAM AND CONDENSATE PIPING SHALL REMAIN ABANDONED IN PLACE. REMOVE ONLY WHEN ENCOUNTERED DURING EXCAVATION.
- 3 BEFORE EXCAVATION, CONTRACTOR SHALL LOCATE AS BEST HE CAN ALL UTILITIES THAT MAY BE ENCOUNTERED DURING EXCAVATION. IF CONFLICTS DO ARISE, DISCUSS WITH ENGINEER BEFORE PROCEEDING WITH EXCAVATION.
- 4 EXISTING SIDEWALK.

GENERAL NOTES:

1. SEE SHEET ME501 FOR DETAILS AND SECTIONS OF UNDERGROUND PIPING INCLUDING ANCHORS, GILSULATE APPLICATION AND GUIDES.
2. SEE SHEET ME503 FOR LENGTHS, SIZES, AND EXPANSION LOOPS OF LINE NUMBERS 1 THROUGH 9.

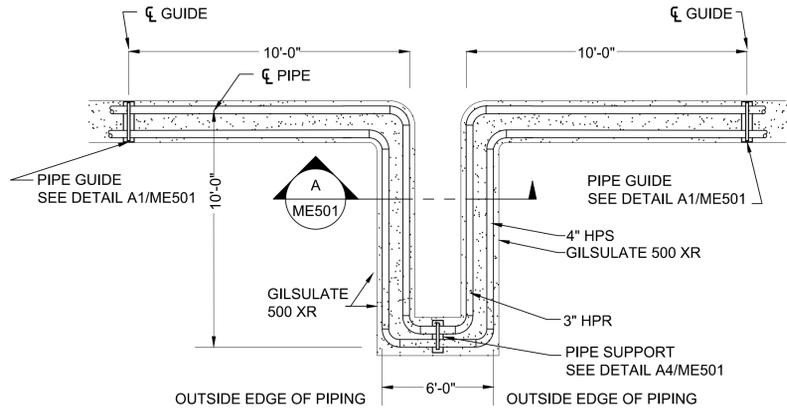


MECHANICAL SITE PLAN

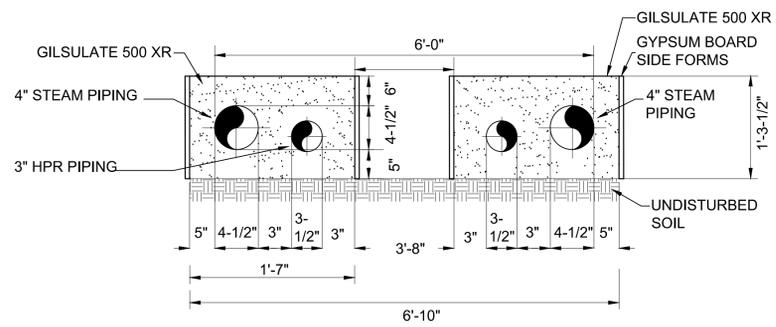
SCALE: 1" = 30'-0"



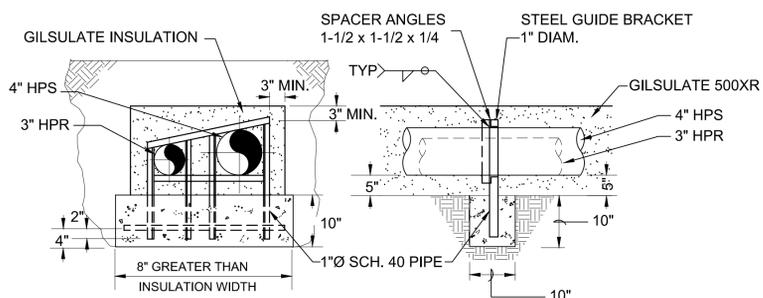
NOTE:
TYPICAL FOR FIVE (5)
EXPANSION LOOPS. SEE
SHEET MS101.



A1 4" HPS 3" HPR
EXPANSION LOOP DETAIL
SCALE: NONE

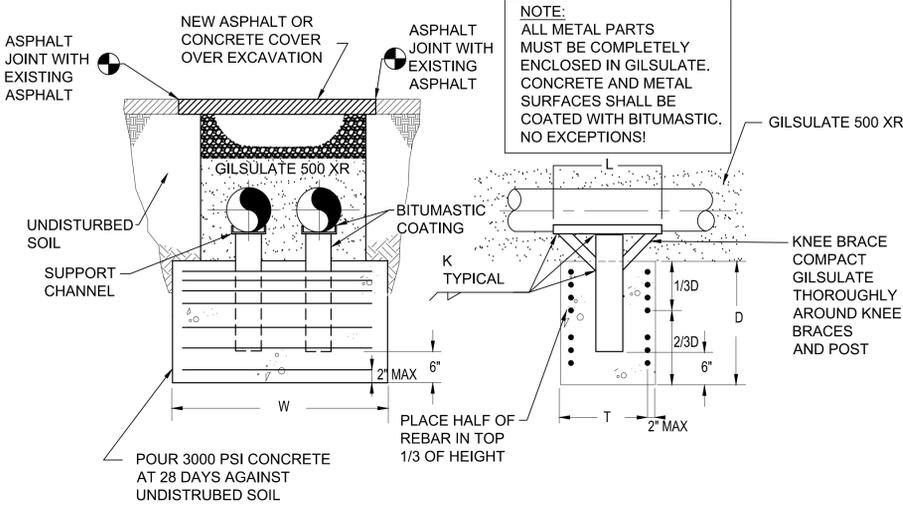


C1 4" HPS & 3" HPR SECTION
SCALE: NONE



NOTE:
ALL METAL PARTS
MUST BE COMPLETELY
ENCLOSED IN GILSULATE.
CONCRETE AND METAL
SURFACES SHALL BE
COATED WITH BITUMASTIC.

A1 DIRECT BURIED PIPING GUIDE DETAIL
SCALE: NONE



C3 DIRECT BURIED PIPING ANCHOR DETAIL
SCALE: NONE

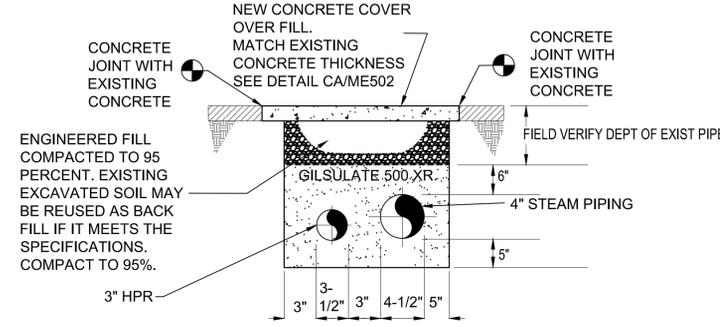
ANCHOR SCHEDULE						
ANCHOR NUMBER	MAX. UNBALANCED PIPE SURFACE AREA SQ. FT.	W (INCHES)	D (INCHES)	T (INCHES)	NO. OF REBARS EA SIDE	SIZE OF REBARS NO.
1	100	36	20	12	5	3
2	100	36	20	12	5	3
3	100	36	20	12	5	3
4	160	44	24	14	7	3
5	220	52	28	16	9	3
6	160	44	24	14	7	3
7	160	44	24	14	7	3
8	100	36	20	12	5	3
9	100	36	20	12	5	3
10	100	36	20	12	5	3
11	EXISTING IN BLDG.					

END ANCHOR SCHEDULE						
PIPE SIZE	SUPPORT CHANNEL		ANCHOR POST I BEAM	KNEE BRACE	FILLET K INCHES	ANCHOR NUMBER
	CHANNEL	L (INCHES)				
3"	NR		5 I 14.75	NR	1/4"	1,3,4,5,6,7,8,9,10,
4"	4 I 5.4	26"	5 I 14.75	* 2-1/2" Ø	1/4"	1,3,4,5,6,7,8,9,10,

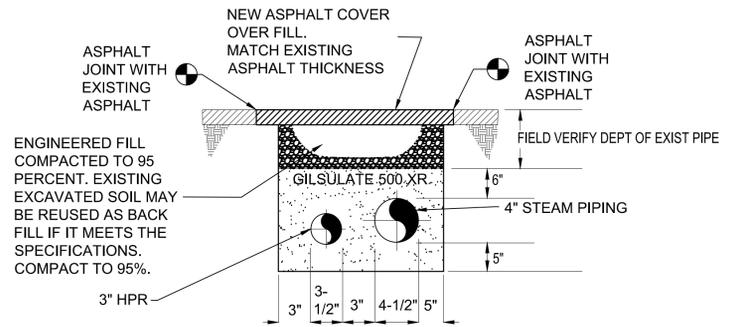
NR = NOT REQUIRED
* = PIPE DIA. SCH 80

INTERMEDIATE ANCHOR SCHEDULE						
PIPE SIZE	SUPPORT CHANNEL		ANCHOR POST I BEAM	KNEE BRACE	FILLET K INCHES	ANCHOR NUMBER
	CHANNEL	L (INCHES)				
3"	NR		5 I 10.0	NR	1/4"	2
4"	NR		6 I 12.5	NR	1/4"	2

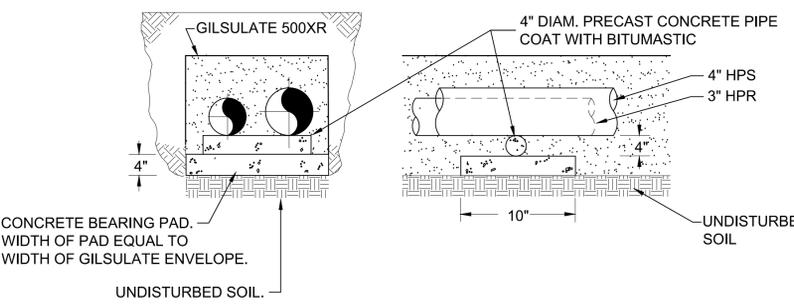
NR = NOT REQUIRED



C4 TYPICAL GILSULATE
INSTALLATION WITHOUT CUSHION DETAIL
SCALE: NONE



B4 TYPICAL GILSULATE
INSTALLATION WITHOUT CUSHION DETAIL
SCALE: NONE



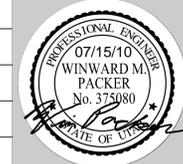
A4 DIRECT BURIED PIPE SUPPORT
AT EXPANSION LOOP DETAIL
SCALE: NONE

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10023
SHEET TITLE:



MECHANICAL
DETAILS
SHEET NO.
ME501

CONSULTANTS



PROJECT NAME & ADDRESS

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Cedar City, Utah

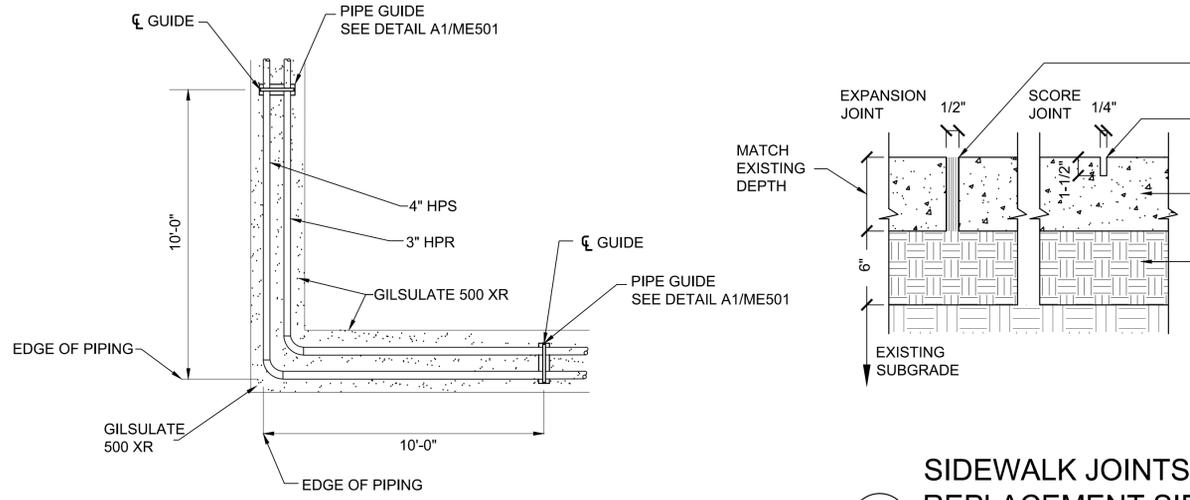
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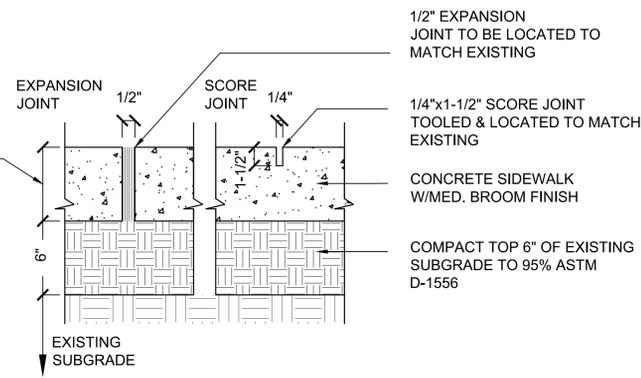


SHEET TITLE
**MECHANICAL
DETAILS**

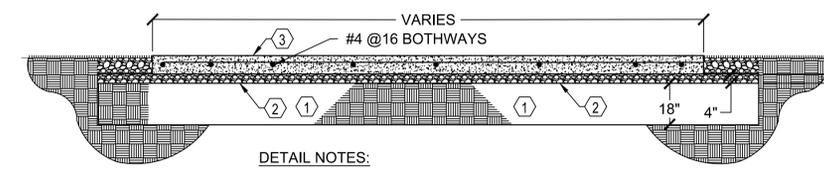
SHEET NO.
ME502



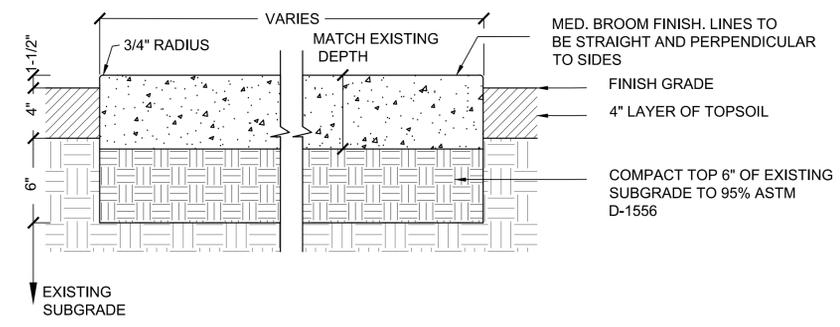
C1 TYPICAL ELBOW EXPANSION DETAIL
SCALE: NONE



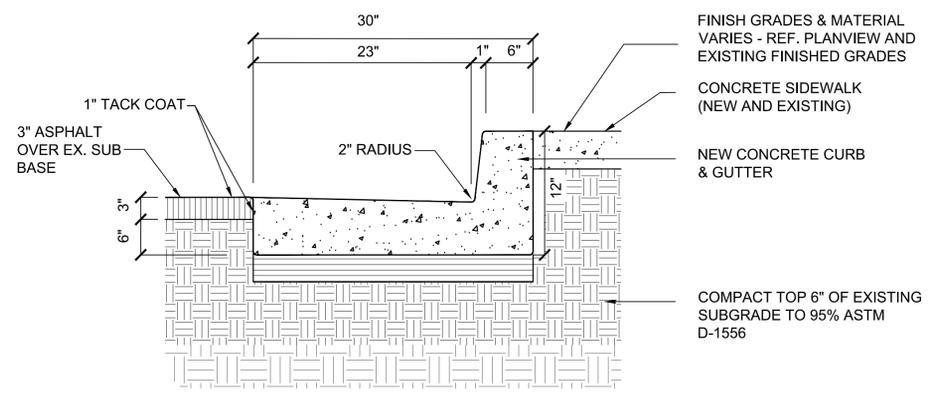
**C2 SIDEWALK JOINTS FOR
REPLACEMENT SIDEWALKS DETAIL**
SCALE: NONE



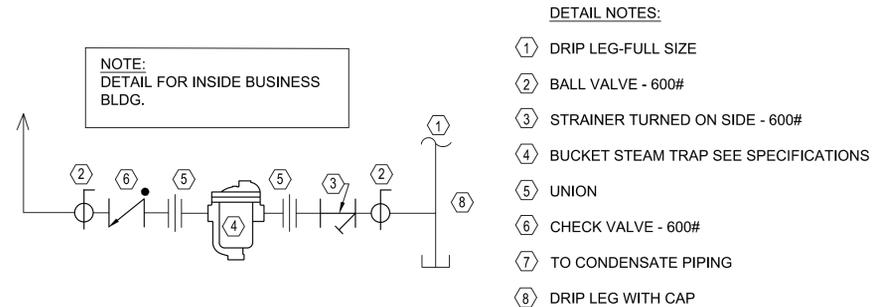
C4 FIRELANE REPLACEMENT DETAIL
SCALE: NONE



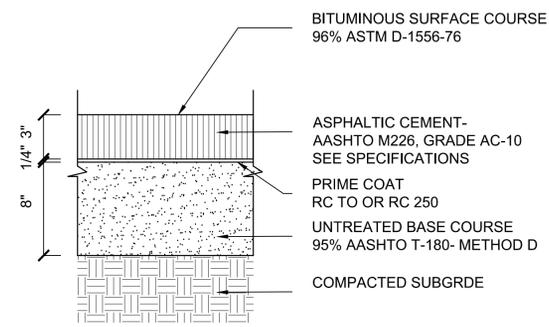
**B1 CONCRETE SIDEWALK
REPAIR AND REPLACEMENT DETAIL**
SCALE: NONE



**A1 CONCRETE CURB
AND GUTTER REPLACEMENT DETAIL**
SCALE: NONE



B4 BUCKET TRAP DETAIL
SCALE: NONE

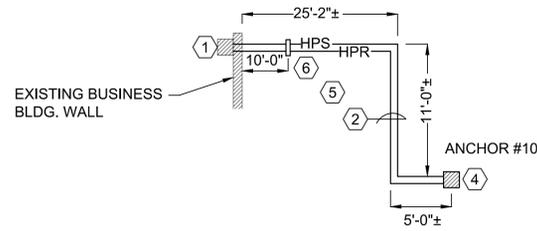
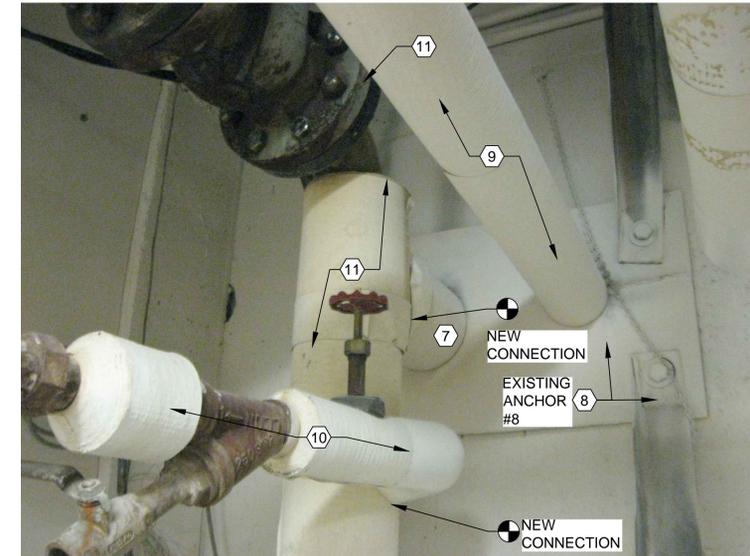


A4 ASPHALT PATCHING SECTION DETAIL
SCALE: NONE

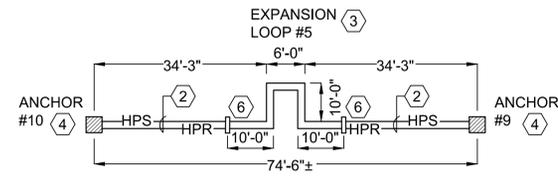
CONSULTANTS



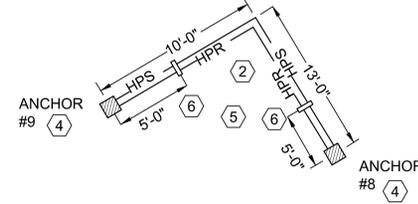
- SHEET NOTES:**
- 1 EXISTING ANCHOR SHALL BE RE-USED AFTER EXISTING PIPING HAS BEEN CUT AWAY AND ANCHOR CLEANED AND MODIFIED.
 - 2 PROVIDE NEW 4" SCH. 80 HPS AND 3" HPR EMBEDDED IN GILSULATE 500XR. SEE TYPICAL SECTION SHEET ME501.
 - 3 EXPANSION LOOPS ARE TYPICAL. SEE TYPICAL EXPANSION LOOP DETAIL C1/ME501.
 - 4 SEE SHEET ME501 FOR ANCHOR REQUIREMENTS i.e. WIDTH, LENGTH, DEPTH, AND REINFORCEMENT.
 - 5 SEE DETAIL SHEET ME501 FOR TYPICAL JUNCTIONS AND CONNECTIONS.
 - 6 PIPE GUIDE. SEE DETAIL A1/ME501.
 - 7 REMOVE EXISTING STEAM PIPING.
 - 8 EXISTING ANCHOR SHALL REMAIN. CUT EXISTING PIPING AWAY AND CLEAN FOR WELDING OF NEW PIPING TO EXISTING ANCHOR.
 - 9 REMOVE EXISTING HPR PIPING AND REPLACE WITH NEW.
 - 10 REMOVE THIS TRAP AND VALVES AND REPLACE WITH NEW. SEE DETAIL B4/ME502.
 - 11 REMOVE EXISTING STEAM PIPING FROM VALVE FLANGE TO DRIP LEG AND REPLACE WITH NEW WITH CONNECTION FROM NEW EXTERIOR PIPING.



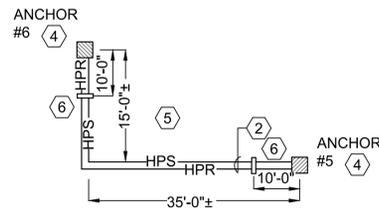
LINE #9 DETAIL
SCALE: NONE



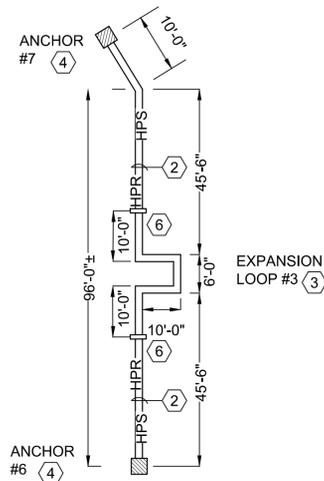
LINE #8 DETAIL
SCALE: NONE



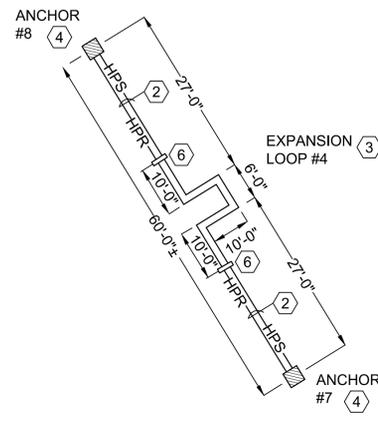
LINE #7 DETAIL
SCALE: NONE



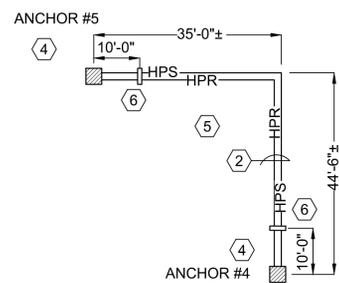
LINE #4 DETAIL
SCALE: NONE



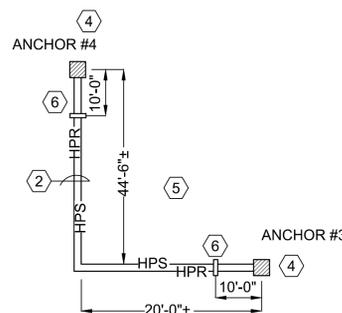
LINE #5 DETAIL
SCALE: NONE



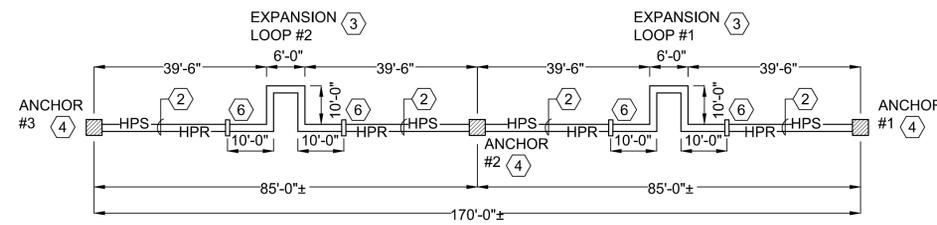
LINE #6 DETAIL
SCALE: NONE



LINE #3 DETAIL
SCALE: NONE



LINE #2 DETAIL
SCALE: NONE



LINE #1 DETAIL
SCALE: NONE

PROJECT NAME & ADDRESS

**COLLEGE OF EASTERN UTAH
UNDERGROUND STEAM LINE
AND DATA ROOM CHILLER
REPLACEMENT
DFCM#10183610**

Cedar City, Utah

MARK	DATE	REVISION

PROJECT MANAGER:
WP
DRAWN BY:
LGD
CHECKED BY:
SLW
DATE:
07/15/10
WHW JOB NO.:
10023



SHEET TITLE
STEAM LINE DETAILS

SHEET NO.
ME503