

# CODE ANALYSIS

## APPLICABLE CODES

	Year		Year
International Building Code	2006	National Electrical Code	2005
International Mechanical Code	2006	Uniform Code for Building Conservation	
International Fire Code	2006	ADA Accessibility Guidelines	
International Energy Conservation Code	2006		

THIS PROJECT INCLUDES REPLACING STEAM, CONDENSATE AND DOMESTIC WATER PIPING.

# UTAH NATIONAL GUARD MANTI PIPING REPLACEMENT

## DFCM PROJECT NO.08287470 MANTI, UTAH 84642

A. Occupancy and Group: EXISTING NATIONAL GUARD ARMORY

Change in Use: Yes  No  Mixed Occupancy: Yes  No   
Special Use and Occupancy (e.g. High Rise, Covered Mall): N.G. ARMORY

B. Seismic Design Category: D Design Wind Speed: 90 mph

C. Type of Construction (circle one):

I I II II III III IV V V  
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): EXISTING BLOCK AND FACE BRICK

North: \_\_\_\_\_ South: \_\_\_\_\_ East: \_\_\_\_\_ West: \_\_\_\_\_

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

F. Sprinklers:  
Required: NO Provided: NO Type of Sprinkler System: \_\_\_\_\_

G. Number of Stories: 2 Building Height: 25'

H. Actual Area per Floor (square feet): 18,707 SF

I. Tabular Area: N/A

J. Area Modifications: NONE

$$a) A_a = A_t + \left[ \frac{A_t I_r}{100} \right] + \left[ \frac{A_t I_s}{100} \right] \quad I_r = 100 \left[ \frac{F}{P} - 0.25 \right] \frac{W}{30}$$

b) Sum of the Ratio Calculations for Mixed Occupancies:

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

c) Total Allowable Area for:

- One Story: \_\_\_\_\_
- Two Story:  $A_a(2)$  \_\_\_\_\_
- Three Story:  $A_a(3)$  \_\_\_\_\_

d) Unlimited Area Building: Yes  No  Code Section: \_\_\_\_\_

K. Fire Resistance Rating Requirements for Building Elements (hours). EXISTING 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: EXISTING

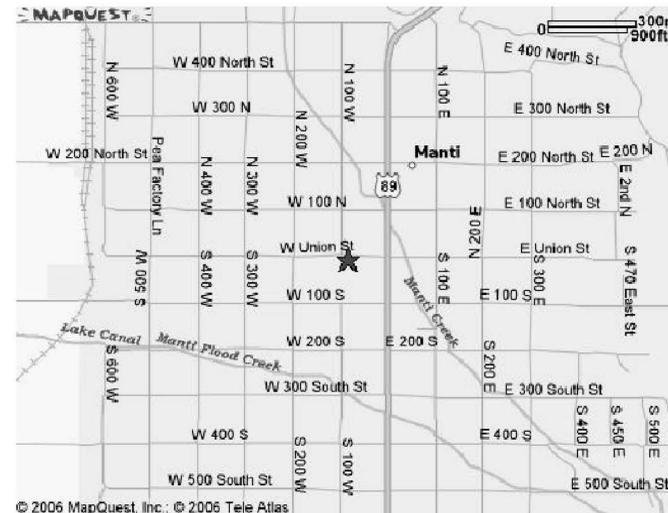
Exit Width Required: N/A Exit Width Provided: N/A

M. Minimum Number of Required Plumbing Facilities: EXISTING

- Water Closets - Required (m) \_\_\_\_\_ (f) \_\_\_\_\_ Provided (m) \_\_\_\_\_ (f) \_\_\_\_\_
- Lavatories - Required (m) \_\_\_\_\_ (f) \_\_\_\_\_ Provided (m) \_\_\_\_\_ (f) \_\_\_\_\_
- Bath Tubs or Showers: \_\_\_\_\_
- Drinking Fountains: \_\_\_\_\_ Service Sinks: \_\_\_\_\_

### FOOTNOTES:

- 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.
- Additional Code Information shall be provided at the discretion of the Building Official for Complex Buildings. Including, but not limited to:
  - High Rise Requirements.
  - Atriums.
  - Performance Based Criteria.
  - Means or Egress Analysis.
  - Fire Assembly Locator Sheet.
  - Exterior and Interior Accessibility Route.
  - Fire Stopping, Including Tested Design Number.



MANTI NATIONAL GUARD ARMORY LOCATION



### DRAWING INDEX:

- G001 - COVER SHEET
- P001 - GENERAL PLUMBING NOTES & LEGEND
- PD101 - BASEMENT AND TUNNEL WATER PIPING DEMOLITION PLAN
- PD102 - BASEMENT AND TUNNEL STEAM AND CONDENSATE PIPING DEMOLITION PLAN
- PD103-FIRST FLOOR WATER AND STEAM PIPING DEMOLITION
- PD104 - DEMOLITION PHOTOGRAPHS
- PD105 - DEMOLITION PHOTOGRAPHS
- PD401 - LARGE SCALE EQUIPMENT ROOM WATER PIPING DEMOLITION PLAN
- PD402 - LARGE SCALE EQUIPMENT ROOM STEAM AND CONDENSATE PIPING DEMOLITION PLAN
- PE101 - BASEMENT AND TUNNEL SPACE WATER PIPING PLAN
- PE102 - BASEMENT AND TUNNEL SPACE STEAM PIPING PLAN
- PE103 - FIRST FLOOR NEW WATER AND STEAM PIPING PLAN
- PE401 - LARGE SCALE EQUIPMENT ROOM WATER PIPING PLAN
- PE402 - LARGE SCALE EQUIPMENT ROOM STEAM PIPING PLAN
- PE501 - PLUMBING PIPING DETAILS
- PE502 - PLUMBING PIPING DETAILS
- PE503 - PLUMBING PIPING DETAILS
- PE601 - PLUMBING PIPING SCHEDULES



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**PROJECT NAME & ADDRESS**

**UTAH NATIONAL  
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PIPING  
REPLACEMENT  
DFCM No.08287470**

Manti, Utah

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SHEET TITLE  
**GENERAL PLUMBING  
NOTES AND LEGEND**

SHEET NO.  
**P001**

MECHANICAL LEGEND					
SYMBOL	ABR.	DESCRIPTION	SYMBOL	ABR.	DESCRIPTION
GENERAL TERMINOLOGY			WET SIDE		
(A2)		DETAIL NUMBER DESIGNATION CORRESPONDING WITH GRID LOCATION			PUMP
					REGULATOR
(MA)		MECHANICAL EQUIPMENT DESIGNATION			UNION
1		EQUIPMENT ITEM DESIGNATION			BUTTERFLY VALVE
1		REVISION DESIGNATOR AND NUMBER			GATE VALVE
1		KEY NOTE DESIGNATOR AND NUMBER		CBV	CIRCUIT BALANCING VALVE
	POC	POINT OF CONNECTION		BV	BALL VALVE
	POR	POINT OF REMOVAL			MOTORIZED 2-WAY CONTROL VALVE
GC		GENERAL CONTRACTOR			PRESSURE GAUGE AND GAUGE COCK - WATER
MC		MECHANICAL CONTRACTOR			PRESSURE GAUGE AND GAUGE COCK - STEAM
ATC		CONTROL CONTRACTOR			THERMOMETER AND THERMOWELL
EC		ELECTRICAL CONTRACTOR			DIRECTION OF FLOW
FPC		FIRE PROTECTION CONTROL			ELBOW UP
NIC		NOT IN CONTRACT			ELBOW DOWN
NTS		NOT TO SCALE			TEE UP
C		COMMON			TEE DOWN
NC		NORMALLY CLOSED			EXISTING PIPING TO BE REMOVED
NO		NORMALLY OPEN			EXISTING PIPING TO REMAIN
	AP	ACCESS PANEL			NEW PIPING
		EXISTING EQUIPMENT TO BE REMOVED			PIPE CAP OR PLUG
		EXISTING EQUIPMENT TO REMAIN			FLEXIBLE CONNECTION
		NEW EQUIPMENT			CULINARY COLD WATER
	T-STAT	WALL MOUNTED THERMOSTAT MECHANICAL EQUIPMENT CONTROLLED			CULINARY HOT WATER
					RECIRCULATED CULINARY HOT WATER
					PUMPED CONDENSATE
					CONDENSATE RETURN
					LOW PRESSURE STEAM SUPPLY
					HIGH PRESSURE STEAM SUPPLY

GENERAL NOTES:

**G-1** MECHANICAL INFORMATION IS NOT LIMITED TO THE MECHANICAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR INFORMATION FROM CUCF STANDARDS AND 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 SYSTEMS ACCORDING TO THE TRUE INTENT AND MEANING OF THE CONTRACT DOCUMENTS.

C - THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT WITH PROPER SERVICE ACCESS AND CLEARANCES ACCORDING TO MANUFACTURERS RECOMMENDATIONS. THE CONTRACTOR SHALL REVIEW SUPPLIERS BID PACKAGES FOR COMPLETENESS AND COMPLIANCE TO THE SPECIFICATIONS, SCHEDULES, AND DESIGN INTENT (ALL EQUIPMENT AND METHODS). THE CONTRACTOR SHALL REMOVE AND REINSTALL CORRECTLY AT HIS OWN EXPENSE ANY EQUIPMENT NOT IN COMPLIANCE.

D - THE CONTRACTOR SHALL CONSULT MANUFACTURERS INSTALLATION INSTRUCTIONS FOR SIZES, METHODS, ACCESSORIES, AND CLEARANCES IN SPACE AVAILABLE PRIOR TO BIDDING PROJECT.

E - ANYTHING NOT CLEAR OR IN CONFLICT WILL BE EXPLAINED BY MAKING APPLICATION TO THE ENGINEER IN WRITING.

**G-2** ANY AND ALL ALTERATIONS TO THE SYSTEM SHOWN SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR. ARCHITECT/ENGINEER SHALL BE NOTIFIED IN WRITING PRIOR TO CHANGES.

**G-3** CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATIONS.

**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 MECHANICAL EQUIPMENT 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 SHALL BE INSTALLED AND CONFORM TO THE 2006 EDITION OF THE IMC WITH UTAH ANNOTATIONS AND LOCAL AUTHORITY REQUIREMENTS.

**G-9** ALL PLUMBING SHALL BE INSTALLED AND CONFORM TO THE 2006 EDITION OF THE IPC WITH UTAH ANNOTATIONS AND LOCAL AUTHORITY REQUIREMENTS.

**G-10** ALL MATERIALS SHALL BE NEW AND SHALL BE DOMESTIC MADE.

**G-11** PROVIDE VACUUM BREAKERS AND BACK FLOW PREVENTERS WHERE REQUIRED BY CODE OR WHERE THERE MAY BE ANY POSSIBLE CHANGE FOR CROSS CONTAMINATION. PREVENTERS SHALL BE INSTALLED IN ACCORDANCE WITH IPC WITH UTAH AMMENDMENTS.

**G-12** ALL PLUMBING INFORMATION IS NOT LIMITED TO THE PLUMBING DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING CONDITIONS AND OBSTACLES.

**G-13** THE DRAWINGS ARE DIAGRAMMATIC. BECAUSE OF THE SMALL SCALE OF THE DRAWING, THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL PIPING SHALL BE CHECKED AND COORDINATED WITH THE DRAWINGS AND EXISTING CONDITIONS.

**G-14** ANY AND ALL ALTERATIONS TO THE SYSTEM SHOWN SHALL BE SUBMITTED TO THE ENGINEER IN WRITING PRIOR TO ANY CHANGES. CONTRACTOR SHALL BE RESPONSIBLE IF CHANGES ARE MADE WITHOUT APPROVAL.

**G-15** ALL WATER SYSTEMS SHALL MEET THE REQUIREMENTS OF ANS/NSF STANDARD 61 SECTION 9 (1998), CONCERNING METAL CONTAMINANTS IN THE WATER SYSTEM.

**G-16** WATER PIPING SHALL NOT BE ROUTED IN OUTSIDE WALLS OR ON EXTERIOR SIDE OF BUILDING INSULATION ENVELOPE.

**G-17** WATER HAMMER ARRESTORS SHALL BE INSTALLED IN ALL WATER LINES WITH QUICK OPEN OR QUICK CLOSE VALVES.

**G-18** WATER HAMMER ARRESTOR SCHEDULE:  
TYPE A 1-11 FIXTURE UNITS  
TYPE B 12-32 FIXTURE UNITS  
TYPE C 33-60 FIXTURE UNITS  
TYPE D 61-113 FIXTURE UNITS

**G-19** CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL EXISTING PIPING, CONDITIONS, TIE-INS ETC.

**G-20** ALL CW, HW, HWR, VALVES ETC. SHALL BE INSULATED. INSULATION SHALL BE INSTALLED BY A LICENSED INSULATED CONTRACTOR.

**G-21** THIS CONTRACTOR SHALL CONTRACT WITH A DESIGN BUILD ELECTRICAL CONTRACTOR TO DESIGN AND INSTALL THE ELECTRICAL PORTION OF THIS PROJECT i.e. PUMP CONTROLS AND ELECTRICAL. ALL ELECTRICAL SHALL CONFORM TOT HE MOST CURRENT NEC AND LOCAL CODES, AS WELL AS THE DFCM DESIGN AND CONSTRUCTION STANDARDS.

**G-22** THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE DRAINING DOWN AND RE-FILLING OF ALL SYSTEMS NECESSARY TO COMPLETE THE WORK OUTLINED BY THIS PROJECT. THIS INCLUDES PROVIDING THE REQUIRED CHEMICAL TREATMENT WHEN RE-FILLING THE SYSTEM.

SHEET NOTES

SHEET NOTES:

- ① REMOVE GALVANIZED PIPING AND DIELECTRIC UNION BACK TO POINT OF THE COPPER PIPING, IN THIS APPROXIMATE LOCATION.
- ② REMOVE GALVANIZED DOMESTIC WATER PIPING, INSULATION, RODS, HANGERS ETC.
- ③ SEE SHEET PD401 FOR LARGE SCALE DEMOLITION PLAN THIS AREA.
- ④ CUT EXISTING CONCRETE FLOOR TO REMOVE EXISTING WATER PIPING UNDER FLOOR.
- ⑤ ALL VALVES IN GOOD CONDITION AT WATER HEADER LOCATION SHALL BE RETURNED TO OWNER.
- ⑥ SEE PHOTO A3 SHEET PD402.
- ⑦ SEE PHOTO A4 SHEET PD402.
- ⑧ EXCAVATE AND REMOVE EXISTING MAIN TO METER DISCHARGE CONNECTION INCLUDING ANY GRASS, LANDSCAPE, SIDEWALKS ETC. DISTURBED BY EXCAVATION AND PIPING REMOVAL.
- ⑨ REMOVE EXISTING PRV STATION, VALVES ETC.
- ⑩ DISCONNECT GALVANIZED WATER PIPING IN THIS AREA. PIPING SHALL REMAIN IN PLACE.

GENERAL NOTES:

- 1. INTENT OF THIS PROJECT IS TO REMOVE ALL GALVANIZED DOMESTIC WATER PIPING.
- 2. VERIFY WITH MAINTENANCE STAFF ALL ITEMS THAT ARE TO BE SALVAGED TO OWNER.
- 3. PIPING ON THIS SHEET IS OVER HEAD AND IN TUNNEL UNLESS NOTED OTHERWISE.

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REPLACEMENT**

**DFCM No.08287470**

Manti, Utah

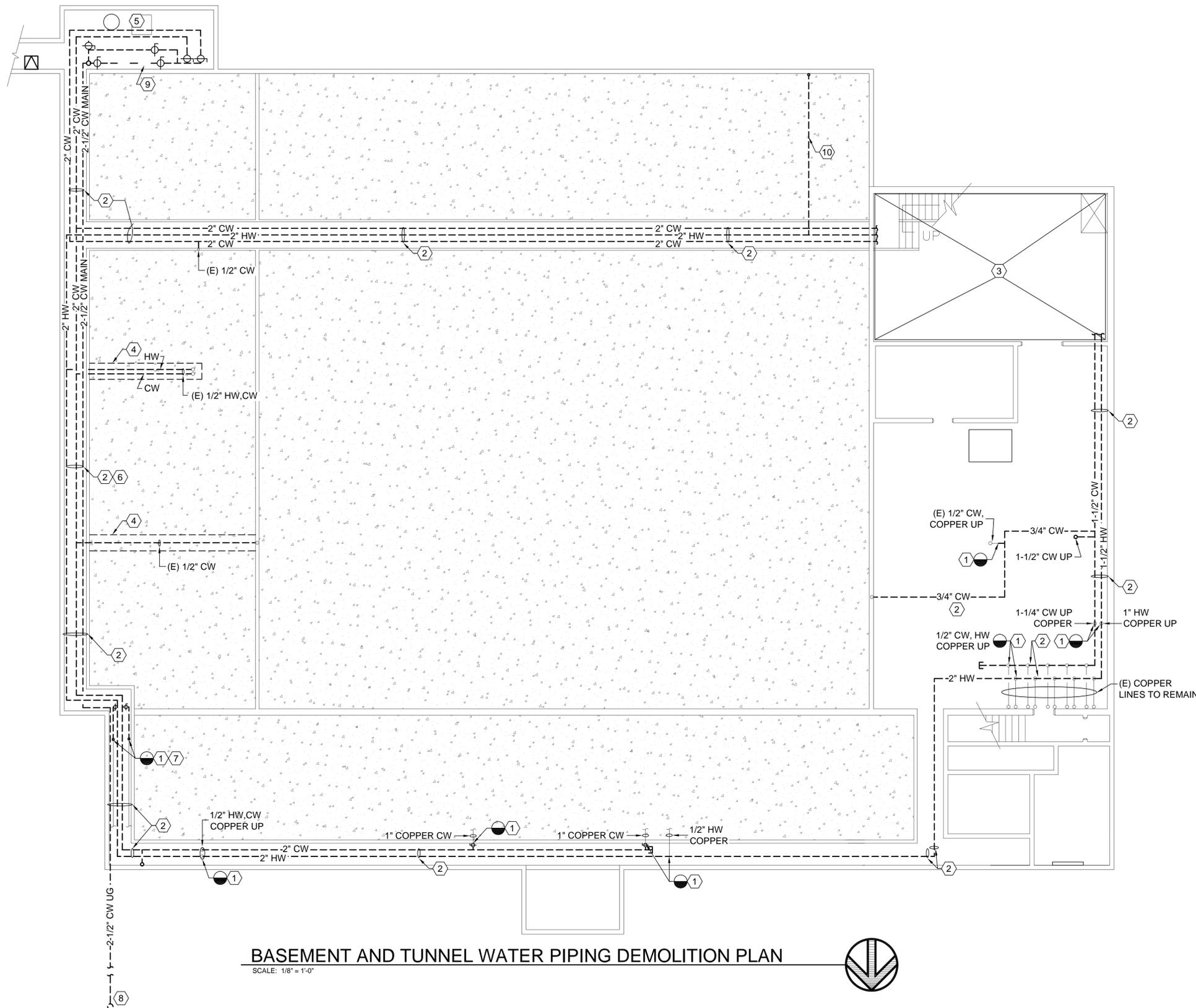
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**SLW**  
DRAWN BY:  
**STAFF**  
CHECKED BY:  
**WP**  
DATE:  
**3/31/2009**  
WHW JOB NO.:  
**09002**



SHEET TITLE  
**BASEMENT AND TUNNEL  
WATER PIPING  
DEMOLITION PLAN**

SHEET NO.  
**PD101**



**BASEMENT AND TUNNEL WATER PIPING DEMOLITION PLAN**

SCALE: 1/8" = 1'-0"



SHEET NOTES

- ① SEE SHEET PD402 FOR LARGE SCALE DEMOLITION PLAN THIS AREA.
- ② FLOOR SHALL BE SAW CUT TO REMOVE AND REPLACE EXISTING STEAM AND CONDENSATE LINES.
- ③ FIELD VERIFY LOCATION BEFORE CUTTING FLOORING.
- ④ EXISTING SUMP PUMP AND ASSOCIATED PLUMBING SHALL REMAIN.
- ⑤ REMOVE ALL STEAM AND CONDENSATE PIPING, VALVES, STRAINERS, ETC. FROM THIS AREA. SEE SHEET PD105 DEMOLITION PHOTOS FOR DETAILS.
- ⑥ REMOVE EXISTING CONDENSATE TANK, PUMPS, AND ASSOCIATED VALVES ETC.
- ⑦ EXISTING PIPING RUNNING UP WALL TO GYM UNIT SHALL REMAIN. SEE PD103 FOR CONTINUATION.
- ⑧ REMOVE ALL EXISTING STEAM AND CONDENSATE PIPING, HANGERS, ANCHORS, AND INSULATION ETC. UP TO POINT OF CONNECTION WITH EXISTING CONVECTORS.
- ⑨ UNIT HEATER SHALL REMAIN. REMOVE ALL PIPING, TRAPS, VALVES ETC.
- ⑩ PIPING RUN UNDER FLOOR SHALL BE DISCONNECTED AND ABANDONED IN PLACE.

GENERAL NOTES:

1. THE DESIGN INTENT OF DEMOLITION IS TO REMOVE ALL STEAM AND CONDENSATE PIPING INCLUDING ALL ASSOCIATED VALVES, TRAPS, AND PUMPS UP TO BOILER CONNECTION.
2. VERIFY WITH MAINTENANCE STAFF ALL ITEMS THAT ARE TO BE SALVAGED BY OWNER.
3. PIPING ON THIS SHEET IS OVER HEAD AND/OR IN TUNNEL UNLESS NOTED OTHERWISE.
4. ALL PIPE LOCATIONS ARE TO BE FIELD VERIFIED BY CONTRACTOR PRIOR TO DEMOLITION.
5. SEE SHEET PD104 FOR CONTINUATION OF STEAM AND CONDENSATE PIPING.

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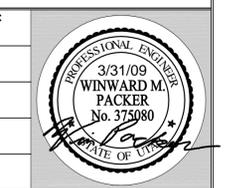
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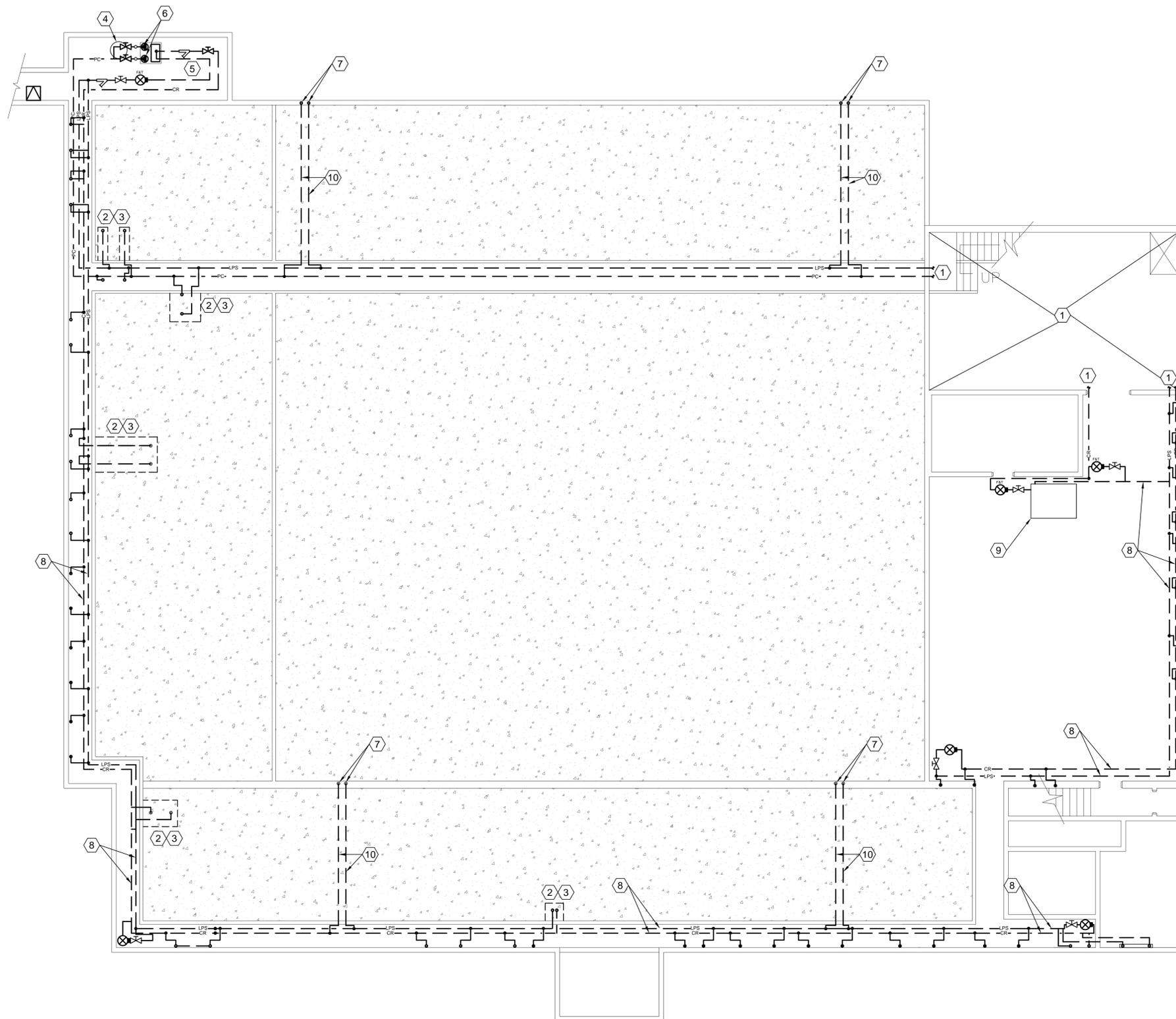
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SHEET TITLE  
**BASEMENT AND TUNNEL  
STEAM AND CONDENSATE  
PIPING DEMOLITION PLAN**

SHEET NO.  
**PD102**



**BASEMENT AND TUNNEL STEAM PIPING DEMOLITION PLAN**

SCALE: 1/8" = 1'-0"



SHEET NOTES

- SHEET NOTES:
- ① REMOVE ALL GALVANIZED PIPING SERVING PLUMBING FIXTURES. EXISTING COPPER PIPING SHALL REMAIN.
  - ② PLUMBING FIXTURES SHALL REMAIN.
  - ③ SEE SHEET PD101 AND PD102 FOR APPROXIMATE LOCATION OF PIPING UNDER FLOOR. CONTRACTOR SHALL FIELD VERIFY FOR EXACT LOCATION.
  - ④ EXISTING CONVECTOR SHALL REMAIN.
  - ⑤ REMOVE STEAM AND CONDENSATE PIPING AND ALL VALVES, TRAPS, ETC. SERVING EXISTING AHU COILS.
  - ⑥ EXISTING PIPING RISING UP WALL SHALL REMAIN.

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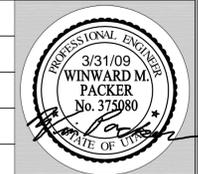
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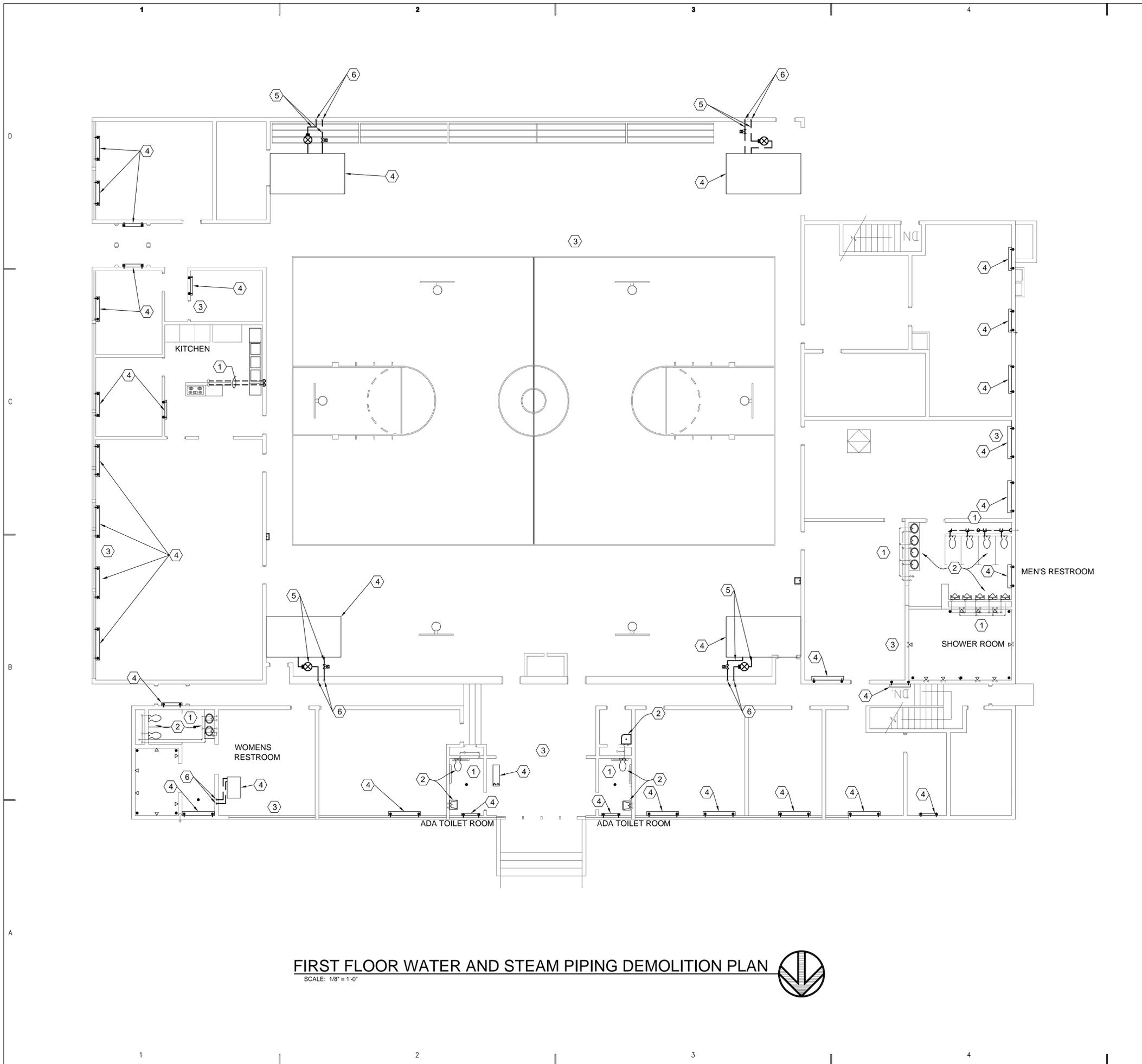
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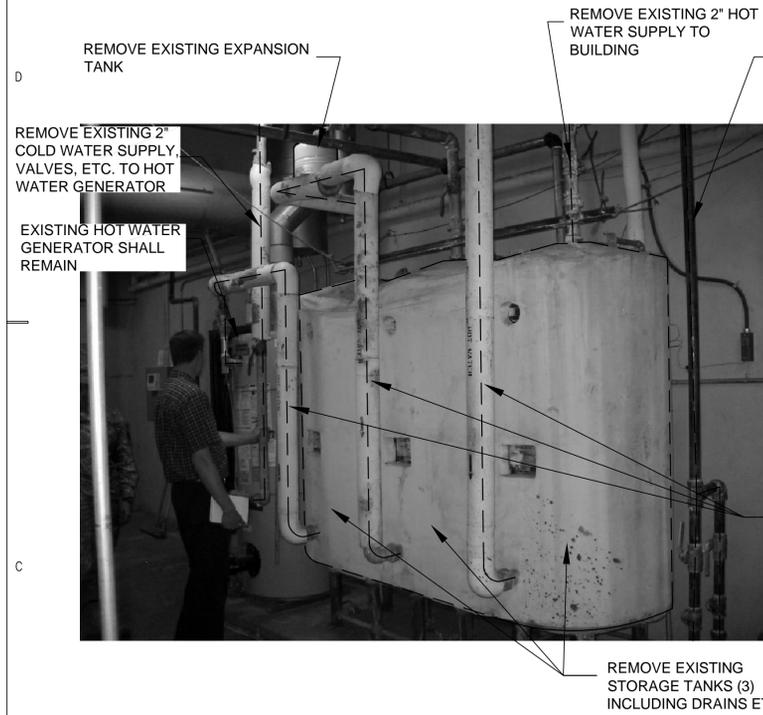
SHEET TITLE  
**FIRST FLOOR WATER AND**  
**STEAM PIPING**  
**DEMOLITION PLAN**

SHEET NO.  
**PD103**

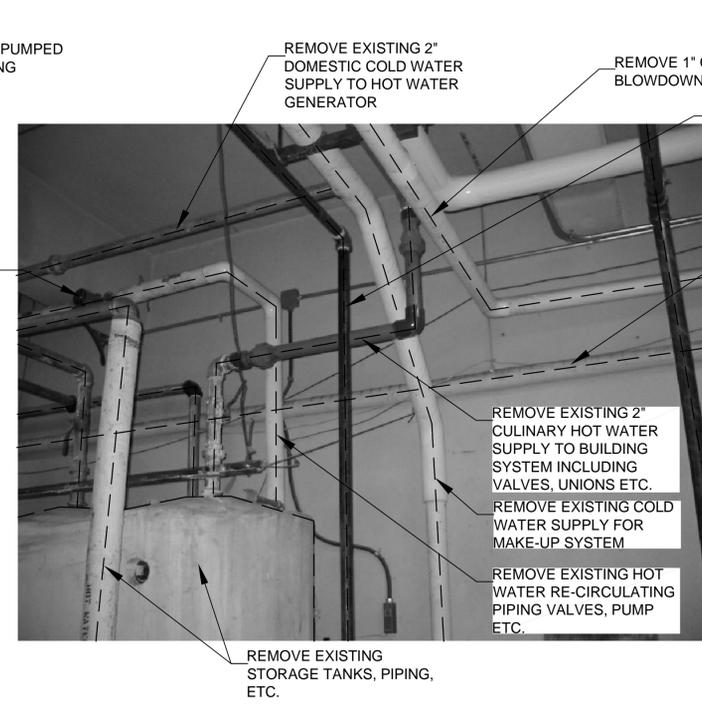


**FIRST FLOOR WATER AND STEAM PIPING DEMOLITION PLAN**  
 SCALE: 1/8" = 1'-0"

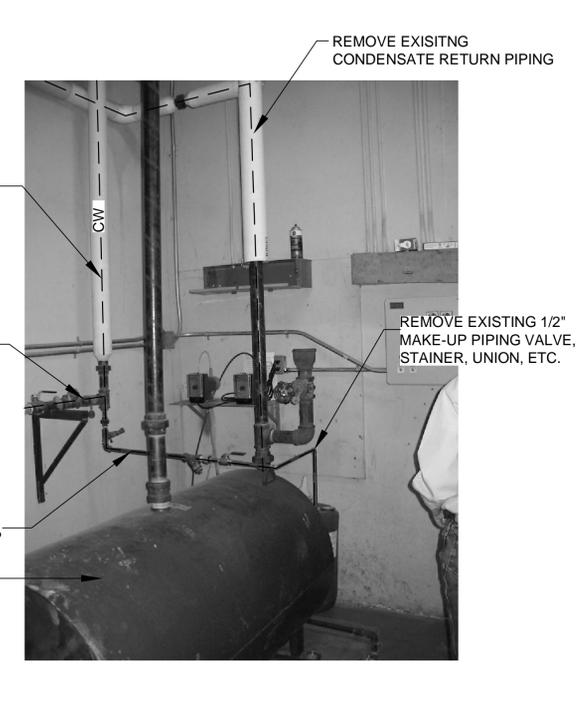
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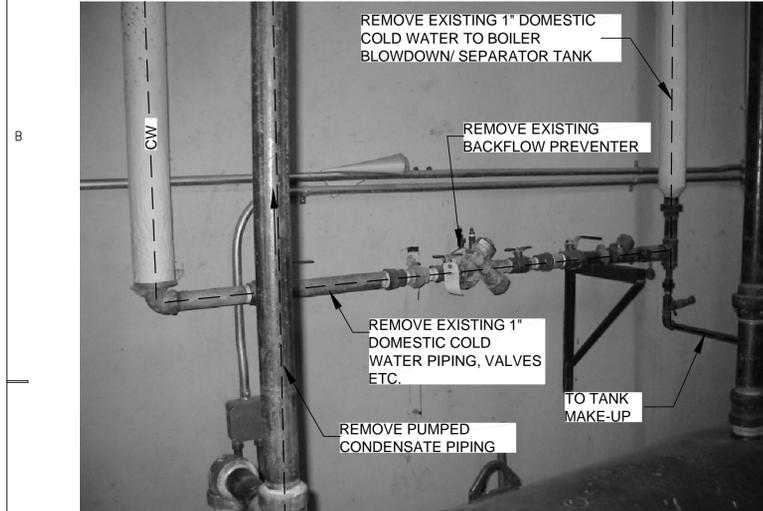
**C1** EXISTING DOMESTIC HOT WATER GENERATOR SYSTEM  
SCALE: NONE



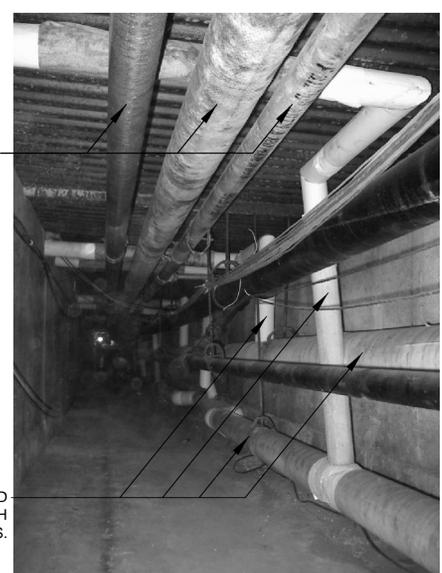
**C2** EXISTING EQUIPMENT ROOM PLUMBING PIPING  
SCALE: NONE



**C4** EXISTING STEAM SYSTEM MAKE-UP WATER SYSTEM  
SCALE: NONE



**A1** EXISTING WATER MAKE-UP FEED SYSTEM  
SCALE: NONE



**A3** PIPING IN TUNNEL  
SCALE: NONE



**A4** COPPER PIPING IN TUNNEL  
SCALE: NONE

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DEMOLITION PHOTOGRAPHS

SHEET NO. **PD104**

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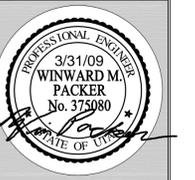
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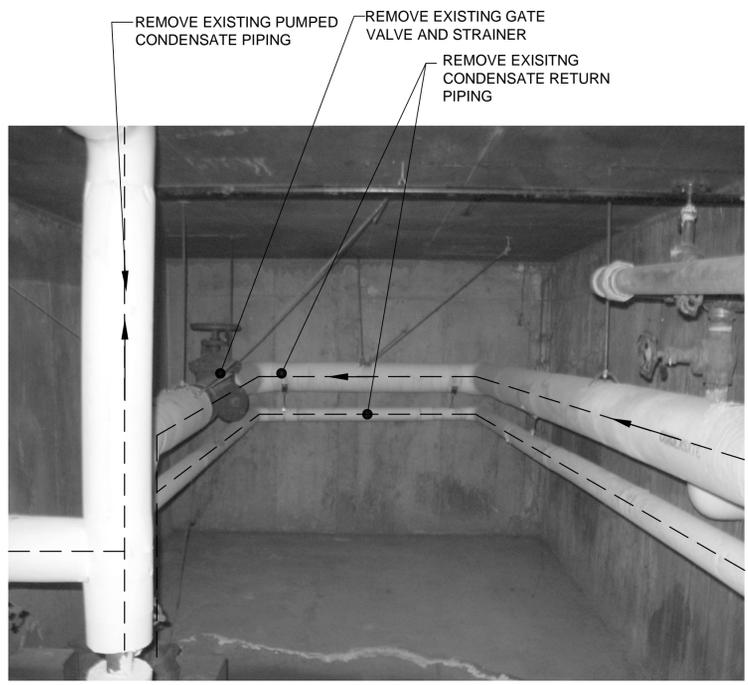
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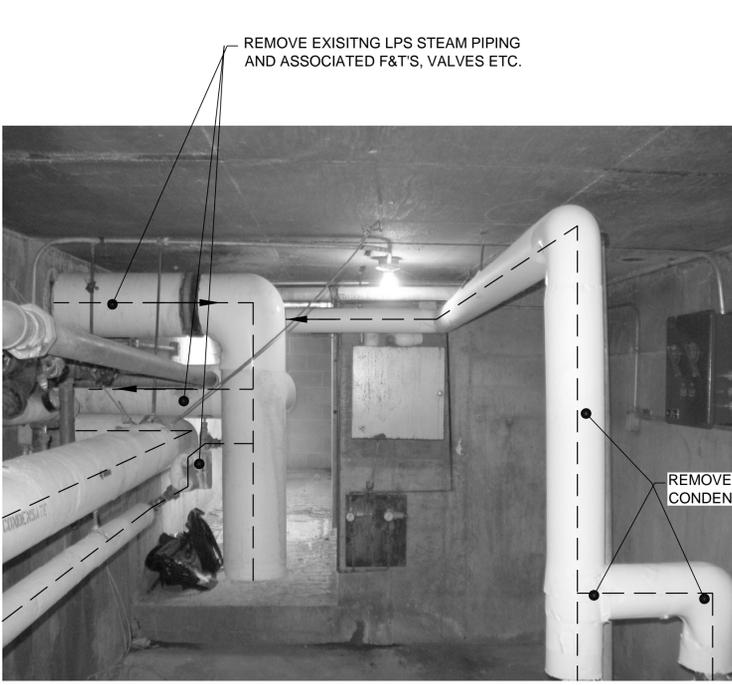


SHEET TITLE  
**DEMOLITION  
PHOTOGRAPHS**

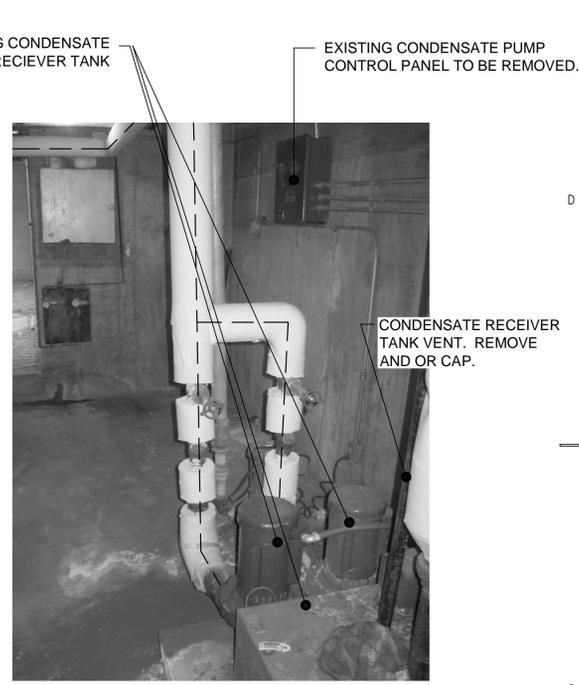
SHEET NO.  
**PD105**



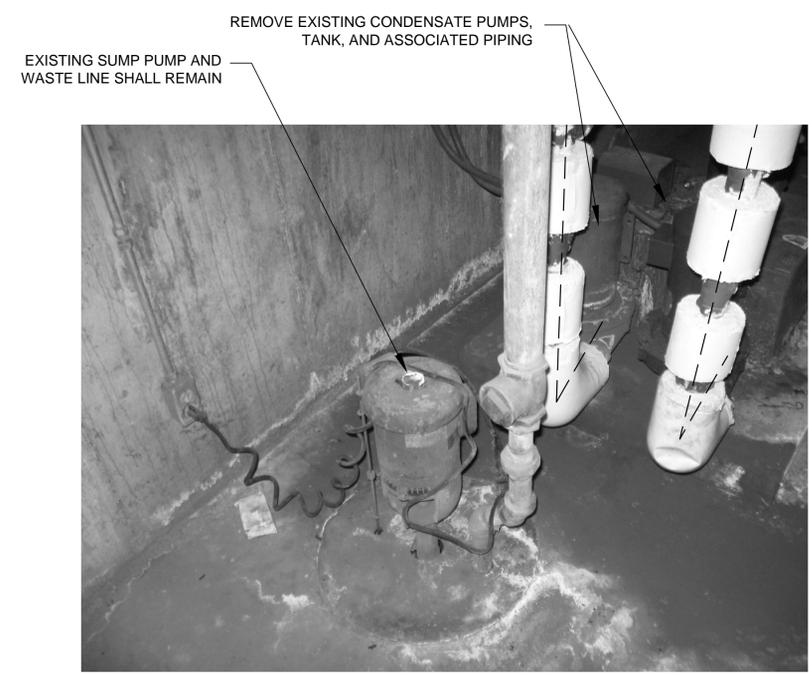
**C1** CONDENSATE PIPING IN SECONDARY MECHANICAL ROOM (TUNNEL ACCESS AREA)  
SCALE: NONE



**C3** STEAM AND CONDENSATE PIPING IN SECONDARY MECHANICAL ROOM (TUNNEL ACCESS AREA)  
SCALE: NONE



**C4** CONDENSATE PUMPS IN SECONDARY MECHANICAL ROOM  
SCALE: NONE



**A1** MECHANICAL ROOM EQUIPMENT (TUNNEL ACCESS AREA)  
SCALE: NONE

SHEET NOTES

SHEET NOTES:

- ① REMOVE EXISTING HOT WATER STORAGE TANKS, PIPING, DRAINS, VALVES ETC.
- ② EXISTING HOT WATER GENERATOR SHALL REMAIN.
- ③ REMOVE AND REPLACE CULINARY HW PIPING.
- ④ REMOVE AND REPLACE CULINARY CW PIPING.
- ⑤ EXISTING STAIRWELL.
- ⑥ EXISTING SUMP PUMP SHALL REMAIN.
- ⑦ EXISTING DRAINS SHALL REMAIN.
- ⑧ EXISTING STEAM BOILER SHALL REMAIN.
- ⑨ EXISTING CONDENSATE RECEIVER TANK SHALL REMAIN.
- ⑩ REMOVE EXISTING CW MAKE-UP FOR STEAM SYSTEM COMPLETE WITH VALVES, BACKFLOW PREVENTOR ETC.
- ⑪ BLOW DOWN SEPARATER SHALL REMAIN.
- ⑫ CONCRETE BASE SHALL REMAIN.
- ⑬ EXISTING COMPRESSOR SHALL REMAIN.
- ⑭ REMOVE EXISTING HOT WATER RECIRCULATING PUMPS.
- ⑮ REMOVE AND REPLACE CULINARY HOT WATER RECIRCULATING PIPING.
- ⑯ FIELD VERIFY ALL PIPING LOCATIONS AND SIZES.
- ⑰ EXISTING PIPE OPENINGS IN WALL SHALL REMAIN.
- ⑱ THIS COLD WATER PIPING IS ACTUALLY ON TOP. PIPING IS SHOWN THIS WAY FOR CLARITY.
- ⑲ SEE SHEET PD101 FOR CONTINUATION.

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PROJECT NAME & ADDRESS

**UTAH NATIONAL  
GUARD, MANTI  
PIPING  
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DFCM No.08287470**

Manti, Utah

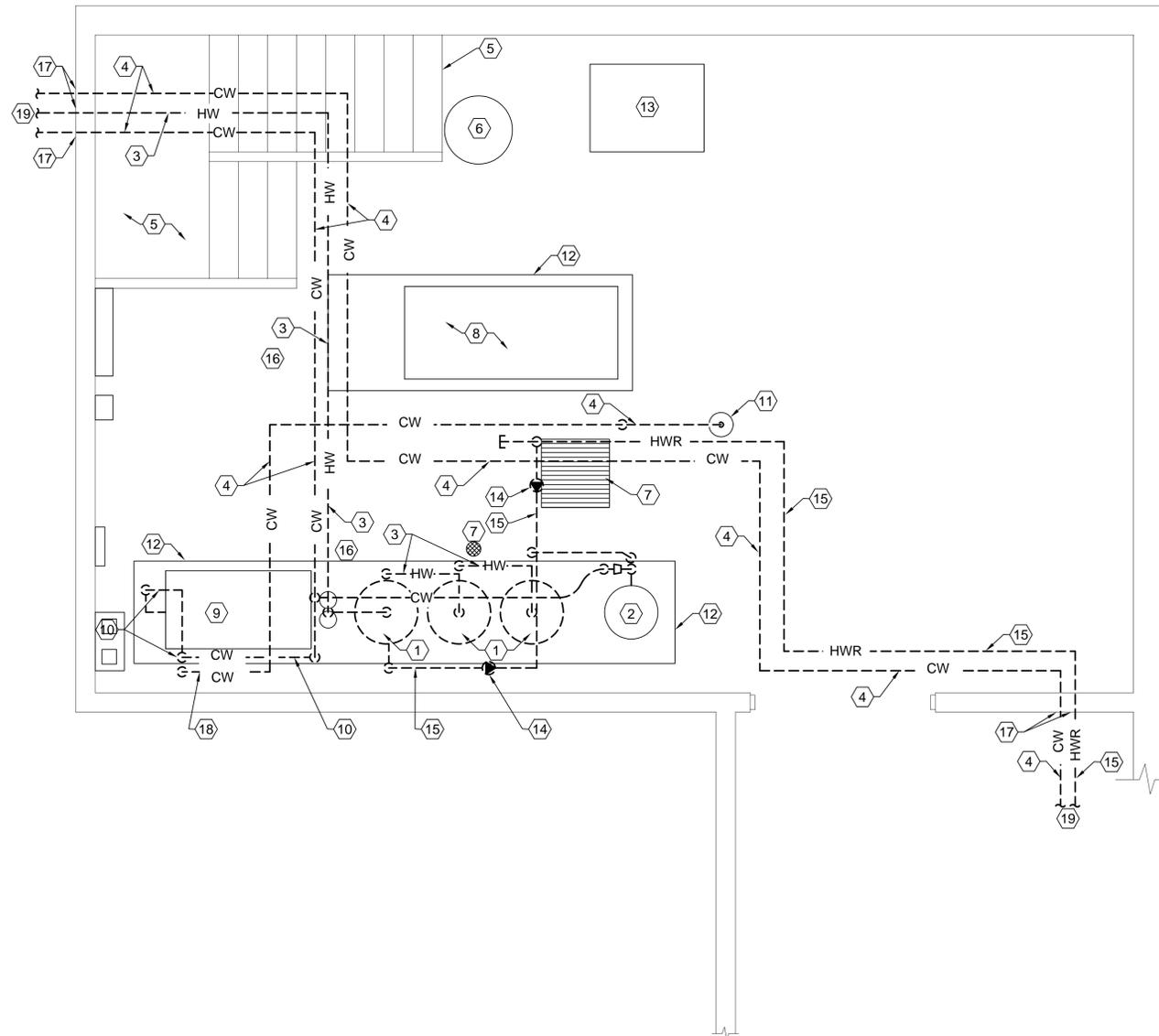
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**WP**  
DATE:  
**3/31/2009**  
WHW JOB NO.:  
**09002**



SHEET TITLE  
**LARGE SCALE EQUIPMENT  
ROOM WATER PIPING  
DEMOLITION PLAN**

SHEET NO.  
**PD401**



**EQUIPMENT ROOM PIPING DEMOLITION PLAN**

SCALE: 3/8" = 1'-0"



1 2 3 4

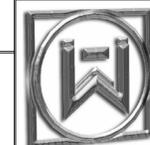
SHEET NOTES

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- ① REMOVE EXISTING STEAM PIPING, HANGERS, INSULATION ETC. FROM INSIDE BOILER ROOM.
- ② REMOVE EXISTING GRAVITY CONDENSATE RETURN PIPING, HANGERS, INSULATION.
- ③ REMOVE EXISTING PUMPED CONDENSATE PUMPING, HANGERS, VALVES ETC.
- ④ REMOVE EXISTING CONDENSATE PUMPS. REMOVE ELECTRICAL CONNECTIONS AND SET ASIDE FOR RECONNECTION TO NEW PUMPS.
- ⑤ REMOVE EXISTING TRAP ASSEMBLY INCLUDING F&T TRAP, VALVE STRAINER, UNIONS, HANGERS ETC.
- ⑥ EXISTING CONDENSATE RECEIVER TANK SHALL REMAIN
- ⑦ EXISTING BOILER SHALL REMAIN.
- ⑧ SEE PLUMBING SHEETS FOR DEMOLITION AND PLUMBING IN THIS AREA.
- ⑨ EXISTING SUMP AND PUMP SHALL REMAIN.
- ⑩ EXISTING CONDENSATE PUMP CONTROLS SHALL REMAIN.
- ⑪ EXISTING ELECTRICAL PANELS, FEEDERS, BREAKER ETC. SHALL REMAIN.
- ⑫ EXISTING CHEMICAL TREATMENT SHELF AND CHEMICAL FEED PUMPS SHALL REMAIN.
- ⑬ SEE PD102 FOR CONTINUATION.

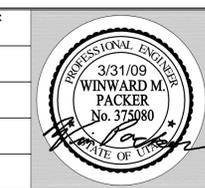
PROJECT NAME & ADDRESS

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REPLACMENT  
DFCM No.08287470**

Manti, Utah

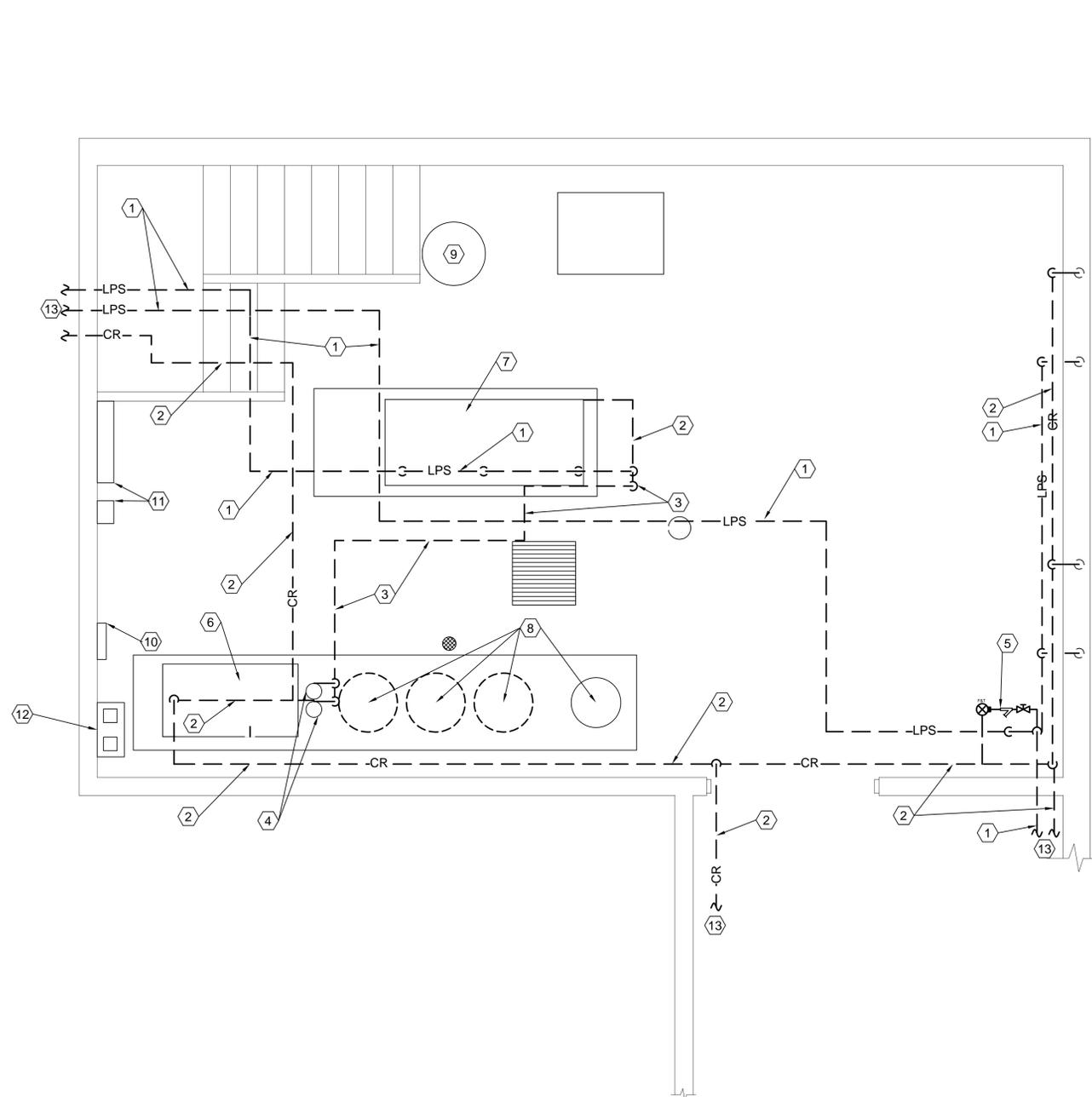
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SHEET TITLE  
**LARGE SCALE EQUIPMENT  
ROOM STEAM AND  
CONDENSATE PIPING  
DEMOLITION PLAN**

SHEET NO.  
**PD402**



**EQUIPMENT ROOM PIPING DEMOLITION PLAN**

SCALE: 3/8" = 1'-0"



1 2 3 4



SHEET NOTES

- ① RUN PIPING AGAINST WALL BELOW CONVECTOR UNIT.
- ② PROVIDE NEW STEAM COIL CONNECTION. SEE DETAIL A1 SHEET PE503.
- ③ SEE LARGE SCALE PIPING PLAN SHEET PE402 FOR CONTINUATION AND PIPING LAYOUT.
- ④ END OF STEAM MAIN. SEE DETAIL C2 SHEET PE502 FOR END OF MAIN TRAP DETAIL.
- ⑤ PROVIDE INLINE SLIP TYPE EXPANSION JOINT WITH 4" COMPRESSION TRAVEL IN STEAM AND CONDENSATE PIPING. INSTALL PER MANUFACTURERS RECOMMENDATIONS WITH ANCHORS AND GUIDES AS NECESSARY.
- ⑥ PROVIDE STEAM AND CONDENSATE PIPING ANCHORS. SEE DETAIL PE501. COORDINATE WITH EXPANSION JOINT MANUFACTURERS FOR RECOMMENDED DISTANCE BETWEEN ANCHOR AND EXPANSION JOINT. INSTALL ANCHORS PER EXP. JOINT MANUFACTURERS RECOMMENDATIONS.
- ⑦ PROVIDE PIPE GUIDES AT EXPANSION JOINTS. SEE DETAIL. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
- ⑧ CORE DRILL MECHANICAL ROOM WALL FOR NEW PIPING PENETRATIONS. FIELD VERIFY EXACT LOCATION.
- ⑨ EXISTING UNIT HEATER SHALL REMAIN.
- ⑩ NEW STEAM AND CONDENSATE PIPING SHALL PENETRATE THROUGH DECK AND RUN ALONG INTERIOR WALL ABOVE. SEE SHEET PE103 FOR CONTINUATION. CONTRACTOR SHALL PROVIDE ALL NECESSARY WALL AND FLOOR PENETRATIONS.
- ⑪ REPLACING THESE LINES SHALL REQUIRE SAW CUTTING OF THE FLOOR, EXCAVATION, BACK-FILL, COMPACTION, AND CONCRETE PATCH.

- GENERAL NOTES:**
- 1. SEE SHEET PE103 FOR PIPING CONTINUATION TO FIRST FLOOR.
  - 2. ALL NEW STEAM AND CONDENSATE SHALL BE INSULATED. SEE SPECIFICATION FOR DETAILS.
  - 3. EXCEPT WHERE NOTED OTHERWISE, STEAM AND CONDENSATE PIPING MAINS SHALL BE SLOPED IN THE SAME DIRECTION AS THE FLOW. BRANCH PIPING SHALL BE SLOPED BACK TO THE MAINS. SEE SPECIFICATIONS.

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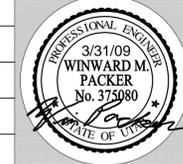
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**DFCM No.08287470**

Manti, Utah

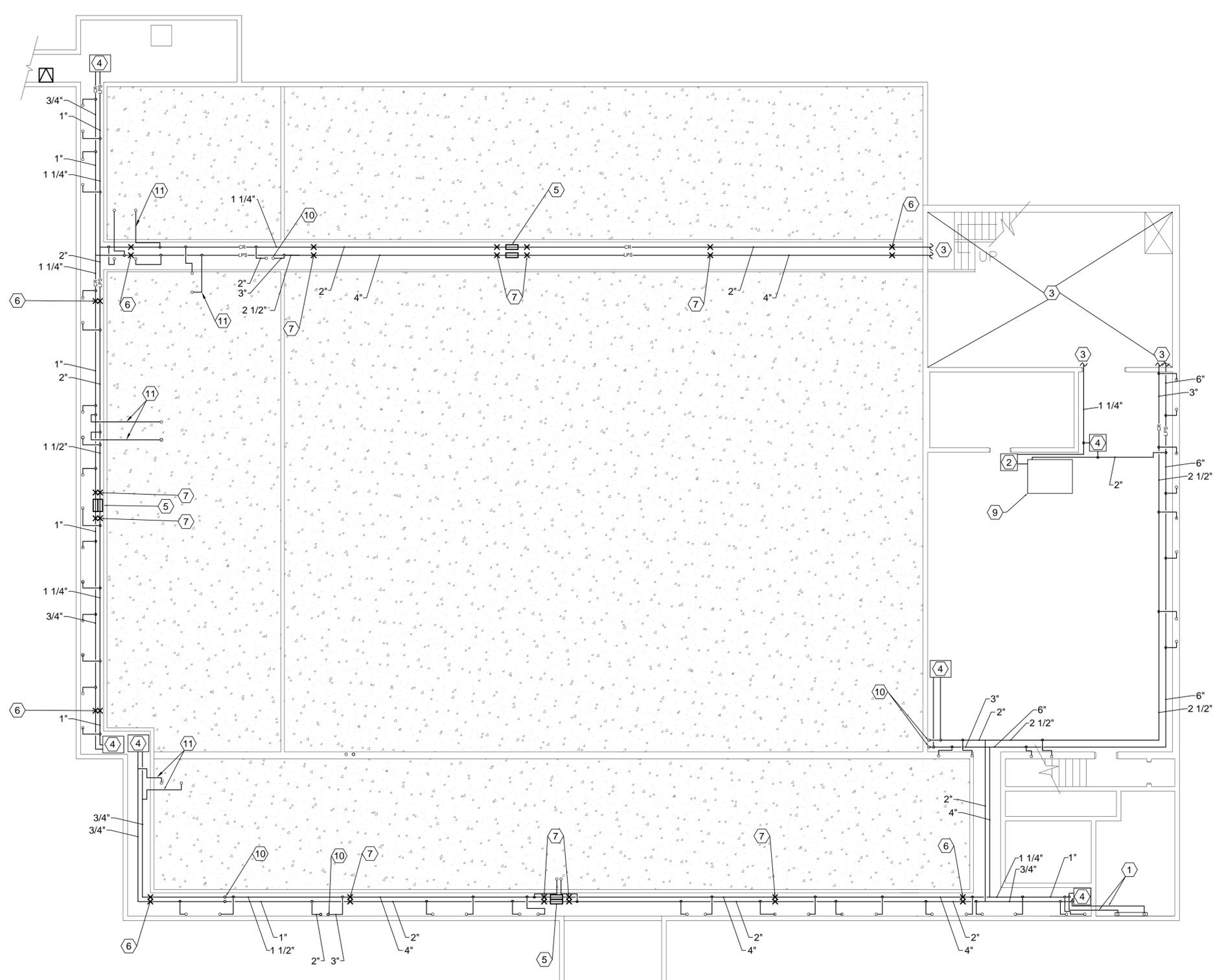
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**BASEMENT AND TUNNEL SPACE STEAM PIPING PLAN**

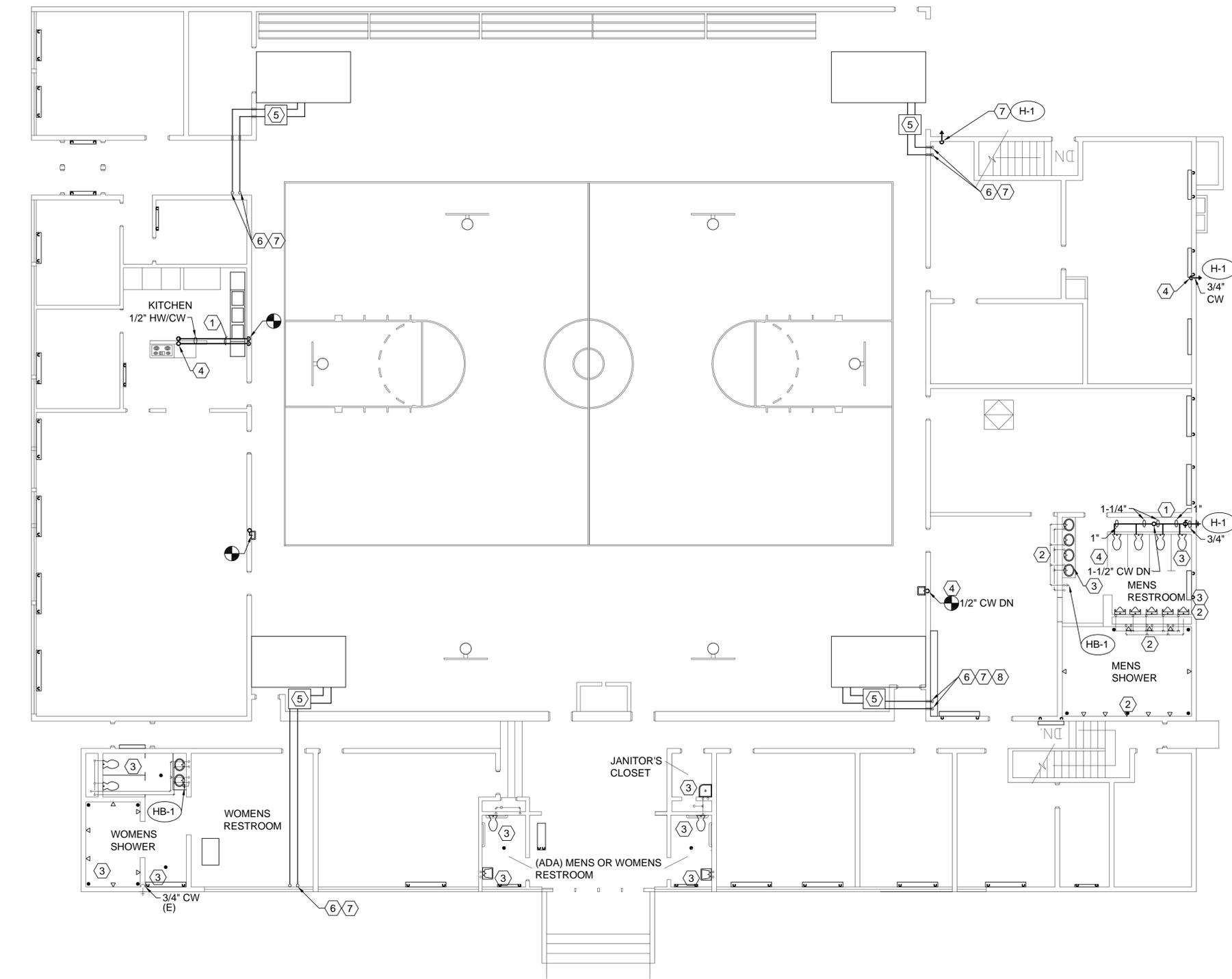
SHEET NO. **PE102**



**BASEMENT AND TUNNEL SPACE STEAM PIPING PLAN**  
SCALE: 1/8" = 1'-0"



1 2 3 4



**FIRST FLOOR NEW WATER AND STEAM PIPING PLAN**  
 SCALE: 1/8" = 1'-0"

**SHEET NOTES**

- ① PROVIDE NEW HW & CW WATER PIPING.
- ② EXISTING COPPER WATER PIPING SERVING THE SHOWERS, LAVATORIES AND URINALS SHALL REMAIN. INSULATE EXISTING PIPING.
- ③ EXISTING PLUMBING FIXTURES AND PIPING SHALL REMAIN.
- ④ SEE SHEETS PE101 AND PE102 FOR WATER AND STEAM PIPING CONTINUATION.
- ⑤ PROVIDE NEW STEAM COIL CONNECTION. SEE DETAIL A1 SHEET PE503.
- ⑥ PIPING SHALL RISE UP TO CEILING AND THEN GO THROUGH WALL AS SHOWN. CONTRACTOR SHALL PROVIDE ALL NECESSARY WALL AND FLOOR PENETRATIONS.
- ⑦ SEE SHEETS PE401 AND PE402 FOR WATER PIPING AND STEAM CONTINUATION.
- ⑧ PIPING SHALL RISE UP THROUGH BACK OF EXISTING LOCKER.

GENERAL NOTES:

- 1. REPLACE ALL VISIBLE GALVANIZED PIPING WITH COPPER.

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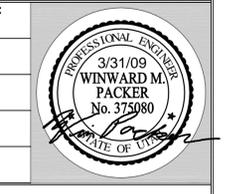
**PROJECT NAME & ADDRESS**

**UTAH NATIONAL GUARD, MANTI PIPING REPLACEMENT**  
**DFCM No.08287470**

Manti, Utah

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SHEET TITLE

**FIRST FLOOR NEW WATER AND STEAM PIPING PLAN**

SHEET NO.

**PE103**

1 2 3 4

SHEET NOTES

SHEET NOTES:

- ① PROVIDE NEW 200 GAL. VERTICAL HOT WATER STORAGE TANK. 32"x77" AND PIPE TO EXISTING HOT WATER HEATER. SEE SHEET PE501 FOR PIPING FLOW SHEET.
- ② EXISTING HOT WATER HEATER SHALL REMAIN.
- ③ EXISTING BOILER.
- ④ EXISTING CONCRETE PAD.
- ⑤ EXISTING AIR COMPRESSOR.
- ⑥ EXISTING FLOOR TRENCH DRAIN.
- ⑦ EXISTING FLOOR DRAIN.
- ⑧ EXISTING CONDENSATE RECEIVER TANK.
- ⑨ EXISTING SUMP AND PUMP SET.
- ⑩ EXISTING STAIRS UP.
- ⑪ EXISTING BLOWDOWN SEPARATOR TANK.
- ⑫ NEW 1" TYPE L COPPER TO BLOWDOWN TANK.
- ⑬ NEW 1" DOMESTIC HOT WATER RECIRCULATING LINE - TYPE L COPPER. ROUTE THROUGH SAME WALL PENETRATION AS EXISTING REMOVED PIPING.
- ⑭ NEW DOMESTIC COLD WATER PIPING. TYPE L COPPER.
- ⑮ RE-USE EXISTING WALL OPENINGS. MODIFY HOLES IF NEW PIPING AND INSULATION WILL NOT FIT THRU EXISTING OPENINGS.
- ⑯ NEW DOMESTIC HOT WATER PIPING. TYPE L COPPER.
- ⑰ ROUTE HWR PIPING TO STORAGE TANK AND CONNECT INTO LOWEST CONNECTION ON STORAGE TANK. SEE SHEET PE501.
- ⑱ NEW BACKFLOW PREVENTER, FUNNEL AND DRAIN TO FLOOR.
- ⑲ NEW INLINE Y- STRAINER.
- ⑳ NEW BALL VALVE.
- ㉑ NEW SOLENOID VALVE- RECONNECT SAME AS EXISTING.
- ㉒ NEW UNION.
- ㉓ NEW INLINE CIRCULATING PUMP. SEE SCHEDULE PE501.
- ㉔ NEW CHECK VALVE.
- ㉕ 1" CW DROP TO ELEVATION OF BLOW DOWN/ SEPARATOR CONNECTION.
- ㉖ APPROXIMATELY 4'-4"  $\epsilon$  OF PIPE TO FLOOR.
- ㉗ APPROXIMATELY 10'-4"  $\epsilon$  OF PIPE TO FLOOR.
- ㉘ APPROXIMATELY 11'-1"  $\epsilon$  OF PIPE TO FLOOR.
- ㉙ APPROXIMATELY 1'-9"  $\epsilon$  OF PIPE TO FLOOR.
- ㉚ APPROXIMATELY 9'-3"  $\epsilon$  OF PIPE TO FLOOR.
- ㉛ APPROXIMATELY 5'-10"  $\epsilon$  OF PIPE TO FLOOR.
- ㉜ APPROXIMATELY 7'-5"  $\epsilon$  OF PIPE TO FLOOR.
- ㉝ SEE SHEET PE101 FOR CONTINUATION.
- ㉞ 2"x1" CONCENTRIC REDUCER.
- ㉟ PROVIDE ISOLATION BALL VALVE FOR EXTERIOR HOSE BIB PIPING. SEE SHEET PE103 FOR CONTINUATION.

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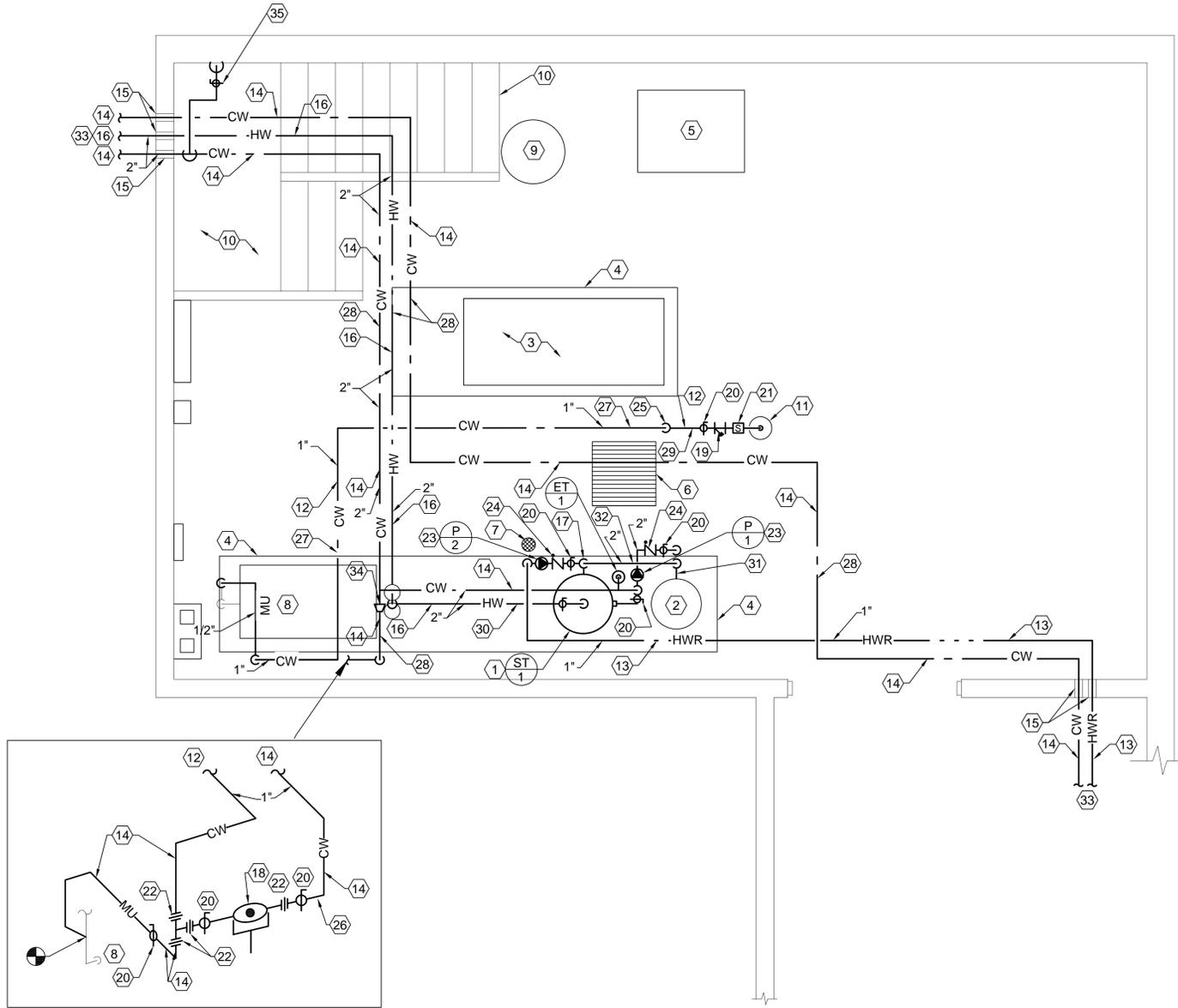
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**09002**



SHEET TITLE  
**LARGE SCALE EQUIPMENT  
ROOM WATER PIPING PLAN**

SHEET NO.  
**PE401**



**EQUIPMENT ROOM WATER PIPING PLAN**

SCALE: 3/8" = 1'-0"



SHEET NOTES

- ① SEE STEAM TRAP DETAIL SHEET PE502 FOR COMPLETE LAYOUT.
- ② SEE SHEET PE102 FOR CONTINUATION OF STEAM AND CONDENSATE.
- ③ CONNECT NEW PUMPED CONDENSATE PIPING TO EXISTING CONDENSATE PUMPS.
- ④ EXISTING STEAM BOILER SHALL REMAIN. RE-CONNECT TO NEW STEAM AND CONDENSATE PIPING. ANY EXISTING CONTROLS, OR OTHER STEAM AND CONDENSATE SPECIALITIES IN EXISTING PIPING SHALL BE RE-INSTALLED IN NEW PIPING.

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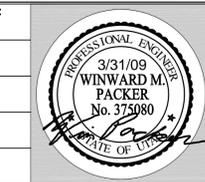
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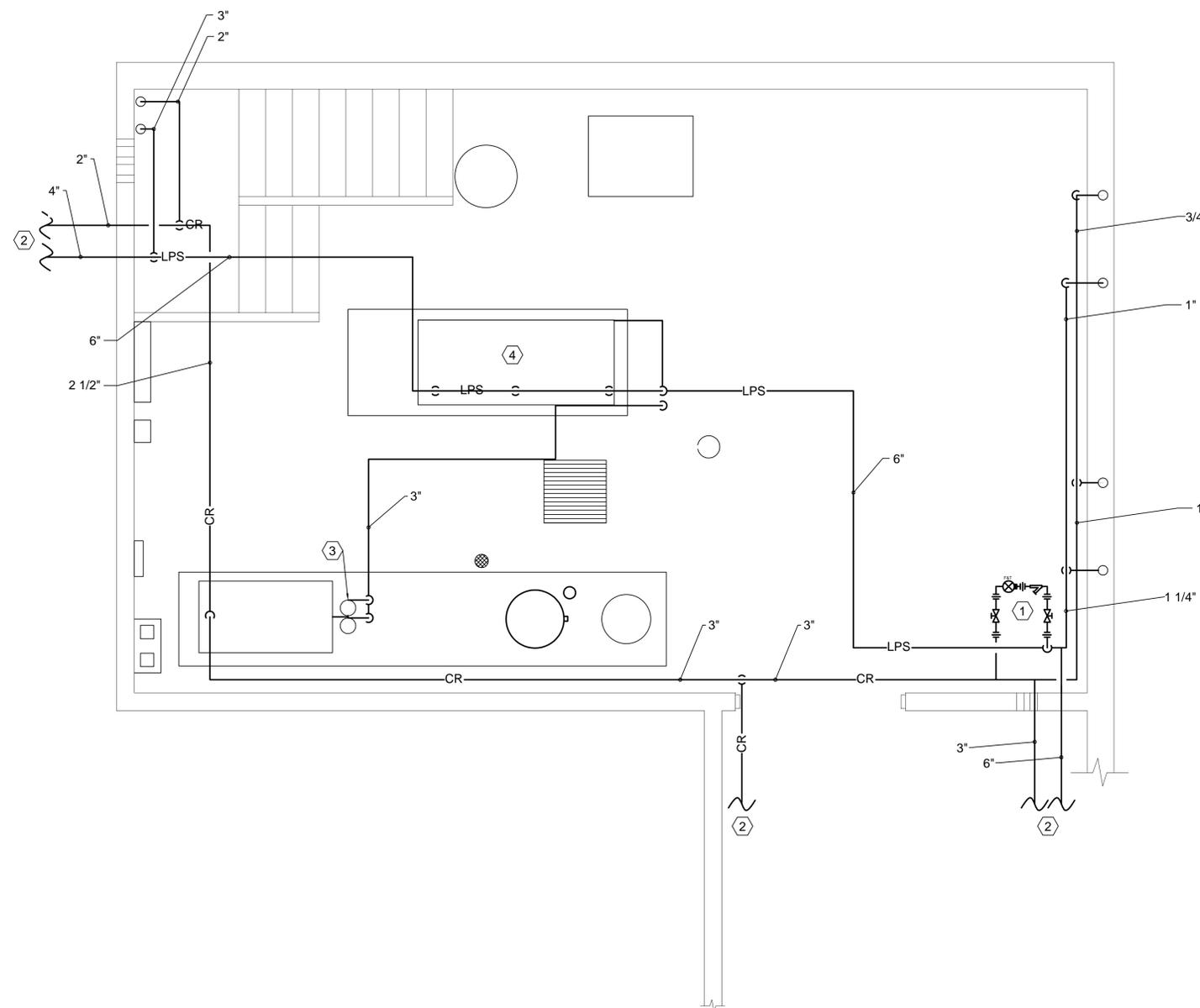
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SHEET TITLE  
**LARGE SCALE EQUIPMENT  
ROOM STEAM PIPING PLAN**

SHEET NO.  
**PE402**



**EQUIPMENT ROOM STEAM PIPING PLAN**

SCALE: 3/8" = 1'-0"



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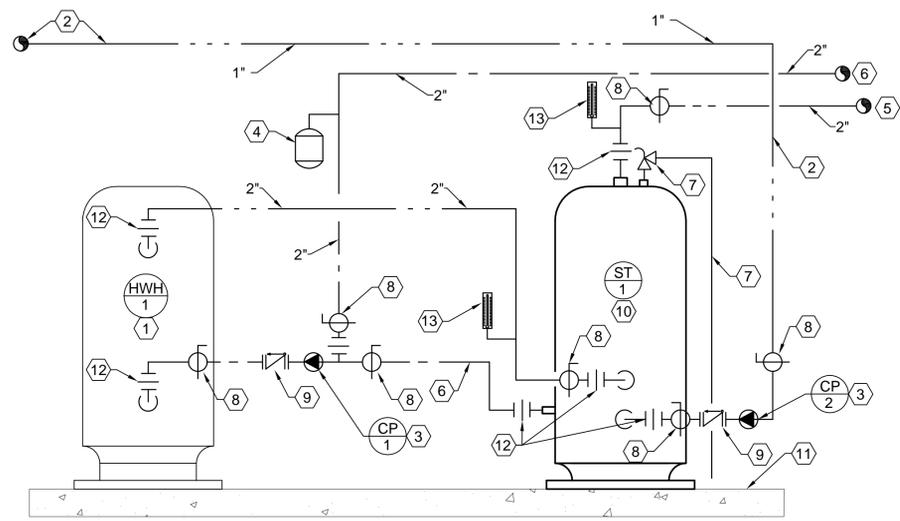
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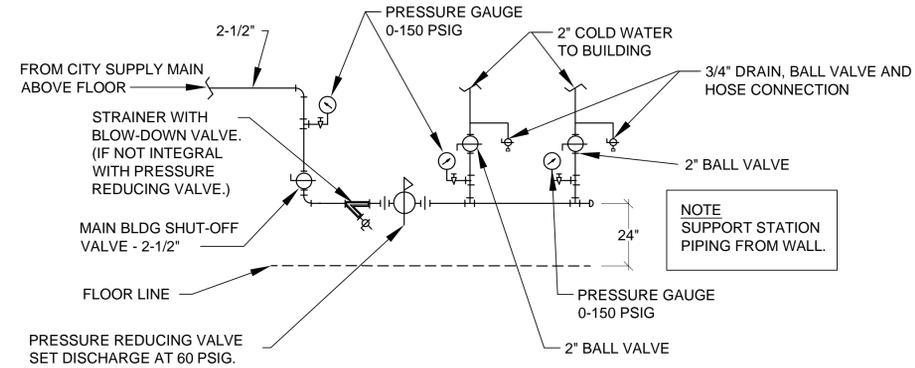
PLUMBING PIPING DETAILS

SHEET NO.  
**PE501**



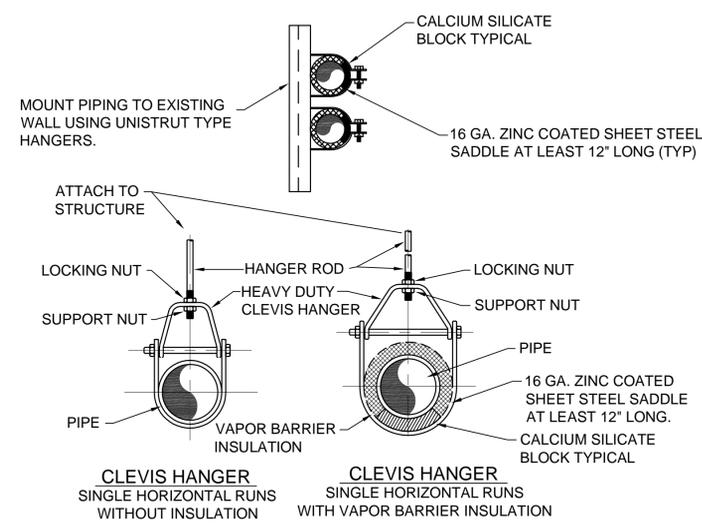
**C1 NEW STORAGE TANK PIPING DETAIL**  
SCALE: NONE

- DETAIL NOTES:
- 1 EXISTING A.O. SMITH - BTP 199, 104, 81 GAL. CAP., 199,000 BTUH INPUT CULINARY HOT WATER HEATER SHALL REMAIN. REMOVE ALL EXISTING HOT AND COLD WATER PIPING ETC.
  - 2 NEW 1" HOT WATER RECIRCULATING TYPE L COPPER PIPING.
  - 3 NEW HOT WATER RECIRCULATING PUMP.
  - 4 NEW THERMAL EXPANSION TANK.
  - 5 NEW 2" CULINARY HOT WATER TYPE L COPPER PIPING TO DOMESTIC HOT WATER SYSTEM. SEE PE401 FOR CONTINUATION.
  - 6 NEW 2" CULINARY COLD WATER TYPE L COPPER PIPING TO EXISTING HOT WATER HEATER. SEE PE401 FOR SOURCE.
  - 7 NEW TEMPERATURE AND PRESSURE RELIEF VALVE TO FLOOR DRAIN. SECURE PIPING AT FLOOR.
  - 8 NEW ALL BRONZE BALL VALVE.
  - 9 NEW ALL BRONZE SWING CHECK VALVE.
  - 10 NEW CULINARY HOT WATER INSULATED STORAGE TANK 200 GAL., 32"Ø x 77" HIGH, VERTICAL.
  - 11 EXISTING CONCRETE PAD.
  - 12 UNION
  - 13 THERMOMETER 0°F TO 150°F

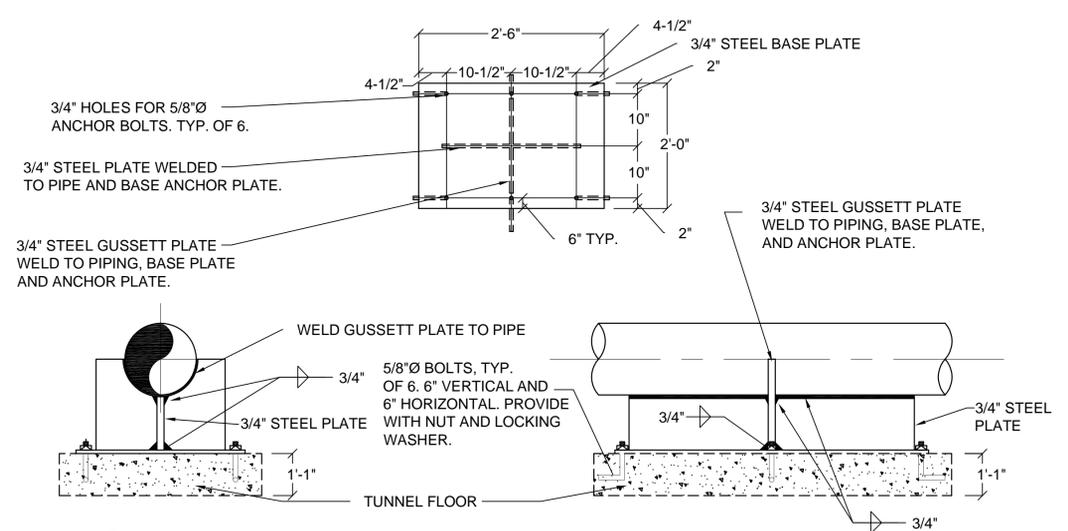


**C4 HORIZONTAL WATER PRESSURE REDUCING STATION DETAIL**  
SCALE: NONE

NOTE:  
1. WHEN HANGER RODS ARE LOCATED WHERE THERE ARE NOT STEEL SUPPORTS DIRECTLY ABOVE THE RODS. CONTRACTOR SHALL SPAN BETWEEN JOISTS WITH 2x2x1/4" ANGLES BACK TO BACK WITH RODS LOCATED BETWEEN THE ANGLES.  
2. TRAPEZE HANGERS ARE ALSO APPROVED FOR USE WHERE MULTIPLE PIPES ARE ROUTED NEXT TO EACH OTHER AT THE SAME ELEVATIONS. SEE SPECIFICATIONS.



**A1 PIPE HANGER DETAIL**  
SCALE: NONE



**A3 STEAM AND CONDENSATE PIPE ANCHOR DETAIL**  
SCALE: NONE

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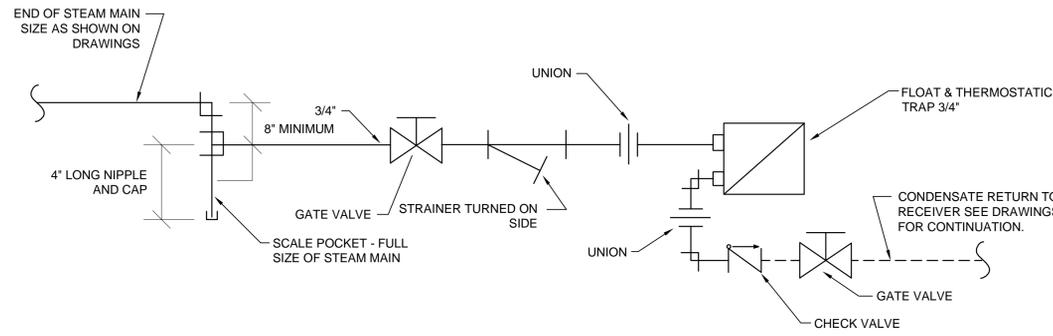
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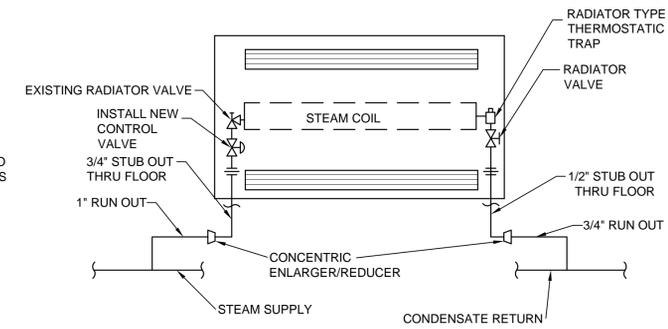


SHEET TITLE  
**PLUMBING PIPING DETAILS**

SHEET NO.  
**PE502**



**C2** END OF MAIN OR RISE & DRIP CONNECTION DETAIL  
SCALE: NONE

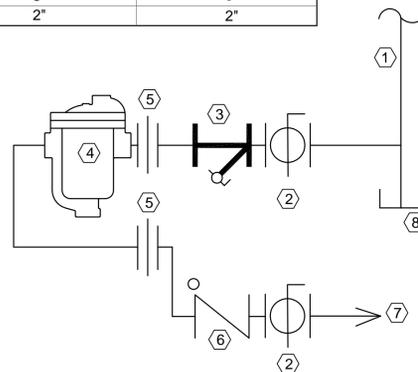


**C4** CONVECTOR DETAIL  
SCALE: NONE

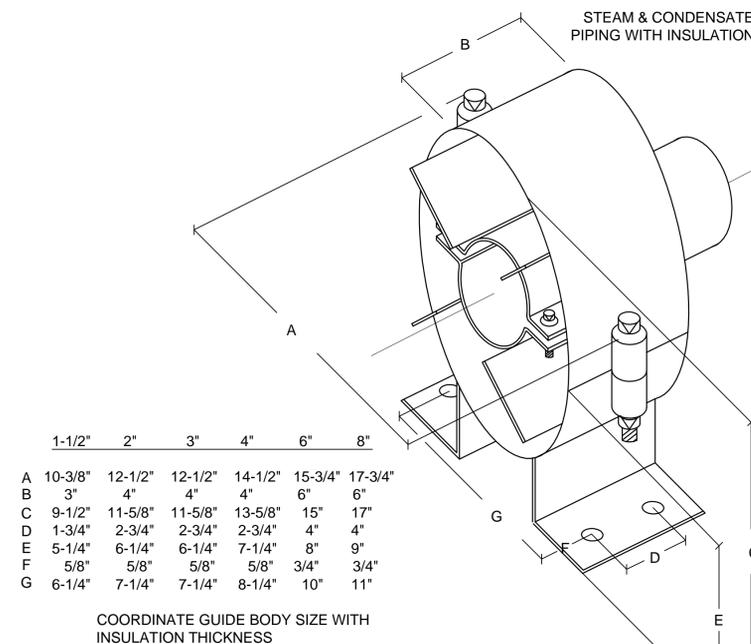
STEAM MAIN PIPE DIAMETER	MINIMUM DIAMETER OF DRIP LEG
6"	4"
4"	3"
3"	3"
2"	2"

DETAIL NOTES:

- ① DRIP LEG (LINE SIZE UP TO 4". FOR 6" AND LARGER, DRIP LEG SHALL BE AT LEAST 1/2 LINE SIZE, BUT NO LESS THAN 4")
- ② BALL VALVE
- ③ STRAINER (INSTALL IN HORIZONTAL)
- ④ INVERTED BUCKET TRAP. SEE SPECIFICATIONS.
- ⑤ UNION
- ⑥ CHECK VALVE
- ⑦ ROUTE CONDENSATE TO GRAVITY FED RETURN LINE.
- ⑧ DIRT LEG WITH CAP



**A2** STEAM TRAP PIPING DETAIL  
SCALE: NONE



**A4** PIPE GUIDE DETAIL  
SCALE: NONE

CONSULTANTS



**WHW  
ENGINEERING INC.**  
PROFESSIONAL MECHANICAL ENGINEERING  
8619 Sandy Parkway Suite 101  
SANDY, UTAH 84070  
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EMAIL: [enr@whw-engineering.com](mailto:enr@whw-engineering.com)

PROJECT NAME & ADDRESS

**UTAH NATIONAL  
GUARD, MANTI  
PIPING  
REPLACMENT  
DFCM No.08287470**

Manti, Utah

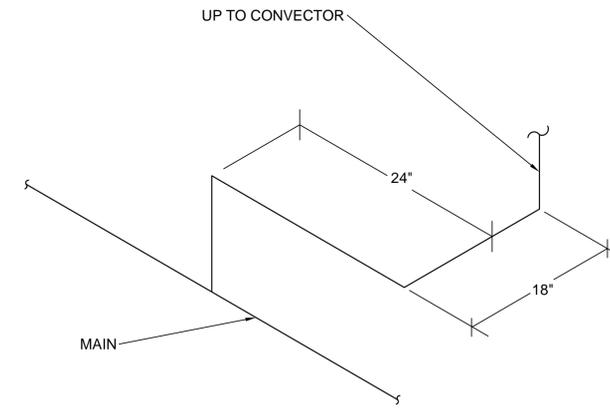
MARK	DATE	REVISION

PROJECT MANAGER:  
**SLW**  
DRAWN BY:  
**STAFF**  
CHECKED BY:  
**WP**  
DATE:  
**3/31/2009**  
WHW JOB NO.:  
**09002**

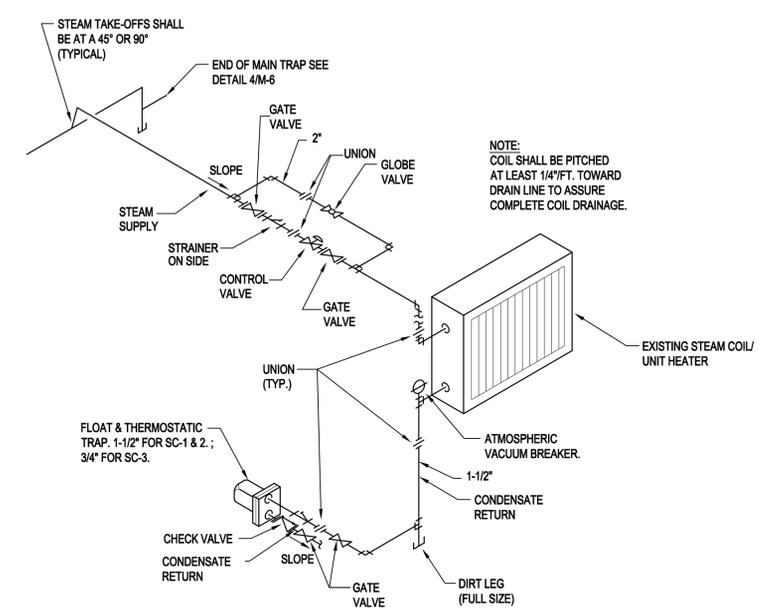


SHEET TITLE  
**PLUMBING PIPING DETAILS**

SHEET NO.  
**PE503**



**C2** SUPPLY AND RETURN BRANCH-SWING JOINT DETAIL  
SCALE: NONE



**A1** STEAM COIL CONNECTION DETAIL  
SCALE: NONE

**CONSULTANTS**



**PLUMBING FIXTURE SCHEDULE**

SYMBOL	FIXTURE	INDIVIDUAL LINE SIZES					REMARKS
		TRAP	WASTE	VENT	COLD WATER	HOT WATER	
(HB-1)	HOSE BIBB	-	-	-	1/2	-	VACUUM BREAKER
(H-1)	HYDRANT	-	-	-	3/4"	-	NON FREEZE WALL HYDRANT W/ VACUM BREAKER

**CIRCULATION PUMP SCHEDULE**

SYMBOL	TYPE	GPM	FT. HEAD	RPM	SUCTION SIZE	DISCHARGE SIZE	MOTOR		SIZE	SERVICE	COMMENTS	SCHEDULE NOTES
							V - Ø - Hz	HP				
(CP 1)	INLINE CIRCULATION PUMP	10	15'	1750	1"	1"	120/1φ/60	1/4	BELL & GOSSETT 1x1x5-1/4	HW RECIRCULATING BETWEEN TANKS	IN-LINE	1,2,3
(CP 2)	INLINE CIRCULATION PUMP	36	20'	1750	1-1/4"	1-1/4"	120/1φ/60	1/3	BELL & GOSSETT 1-1/4x1/4x5-1/4	HW RECIRCUALTING FOR SYSTEM	IN-LINE	1,2,3

- PUMPS SIZED AROUND BELL & GOSSETT SERIES 60.
- ALL PUMPS SHALL BE SIZED IN THE FLAT PART OF THE CURVE.
- SEE SPECIFICATIONS FOR OTHER APPROVED MANUFACTURERS.

**HOT WATER STORAGE TANK SCHEDULE**

SYMBOL	VOLUME (GAL)	DIAMETER (INCH)	HEIGHT (TANK/TOTAL)	INLET (INCH) FLG'D	OUTLET (INCH) FLG'D	DRAIN (INCH) SCR'D	MANUFACTURER AND MODEL #	NOTES
(ST 1)	200						ACE	1

- TANK SHALL BE ASME 125# RATING.

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PROJECT MANAGER:  
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**STAFF**  
CHECKED BY:  
**WP**  
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**3/31/2009**  
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**09002**



SHEET TITLE  
**PLUMBING PIPING  
SCHEDULES**

SHEET NO.  
**PE601**