CODE ANALYSIS

APPLICABLE CODES

	Year		Year
International Building Code	2006	National Electrical Code	2008
International Mechanical Code	2006	Uniform Code for	
International Plumbing Code	2006	Building Conservation	
International Fire Code	2006	ADA Accessibility	
International Energy Conservation Code	2006	Guidelines	

A. Occupancy and Group: S-1 EXISTING CENTRAL HEATING PLANT

Change in Use: Yes _____ No X Mixed Occupancy: Yes _____ No X
Special Use and Occupancy (e.g. High Rise, Covered Mall): CENTRAL HEATING PLANT

B. Seismic Design Category: _____ Design Wind Speed: 90 MPH FOR STACKS

C. Type of Construction (circle one):

I A | I B | II A | II B | III A | III B | IV HT | V A | (V B)

D. Fire Resistance Rating Requirements for the Exterior Walls based on the fire separation distance (in hours): N/A EXISTING BUILDING/FIRE ALARMS ARE EXISTING
North: EXIST South: EXIST East: EXIST West: EXIST

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

F: Sprinklers:

Required: NO Provided: NO Type of Sprinkler System: N/A

G: Number of Stories: TWO Building Height: 32' BASEMENT - FIRST FLOOR

H: Actual Area per Floor (square feet): LOWER FLOOR - 5400 SQ. Ft.
UPPER FLOOR - 1326 SQ. Ft.

I: Tabular Area: N/A

J: Area Modifications: No additions or changes to bldg. Boiler replacement only.

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

b) Sum of the Ratio Calculations for Mixed Occupancies: N/A

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

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

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: FLUCTUATES-BETWEEN ONE TO FOUR

Exit Width Required: _____ Exit Width Provided: 21 L.F. - 5 EXITS
EXISTING LOWER LEVEL-3 EXITS
EXISTING UPPER LEVEL-4 EXITS

M. Minimum Number of Required Plumbing Facilities: 2 EXISTING TOILET ROOMS
Two lower level and one upper level and one breakroom. All are unisex facilities.
a) Water Closets - Required (m) 2 (f) _____ Provided (m) 2 (f) _____
b) Lavatories - Required (m) 2 (f) _____ Provided (m) 2 (f) _____
c) Bath Tubs or (Showers) 1
d) Drinking Fountains: 2 Service Sinks: 1
e) Urinals: 0 Provided: 0
f) One - 2 Compartment stainless steel cabinet mounted sink.

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.

SCOPE OF WORK
THE CENTRAL HEATING PLANT AT SUU IS CONSTRUCTED USING CMU WITH FACE BRICK WALL, STEEL JOISTS AND STEEL DECKING. FLOORS ARE CONCRETE. THE LOWER LEVEL IS OPEN TO THE ROOF AND IS WHERE THE BOILERS ARE LOCATED. THE OFFICES ARE ON THE MEZZANINE LEVEL. WE ARE NOT CHANGING OR ADDING ANYTHING TO THE BUILDING. WE ARE REPLACING AN EXISTING FAILED BOILER WITH A NEW BOILER.

LIST OF DEFERRED SUBMITTALS :

1. SEISMIC ANCHORS FOR BOILER PURCHASED.
2. SEISMIC RESTRAINTS FOR 4" AND ABOVE PIPING.

SPECIAL INSPECTIONS:

1. SEE DRAWINGS G002.

DRAWING INDEX:

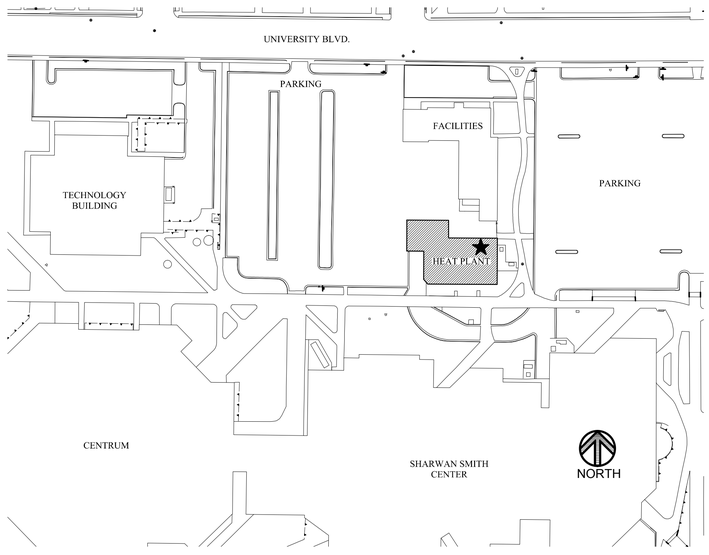
SOUTHERN UTAH UNIVERSITY
HEATING PLANT - BOILER REPLACEMENT

DFCM PROJECT NO. #09239730
CEDAR CITY, UTAH

State of Utah—Department of Administrative Services

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT

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



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03/01/10
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MISCELLANEOUS AREAS: These inspections are recommended by the Architect/Engineer and approved by DFCM.			
Item	Continuous	Periodic	Detailed Instructions and Frequencies
Soil backfill (specify locations and frequency)		X	Fill for boiler foundation and floor drain. compaction tests and material verification
Reinforcement for interior slab on grade (specify locations and frequency)		X	Inspection for boiler foundation reinforceing steel to be as detailed on drawings
Concrete testing for interior slab on grade (specify locations and frequency)		X	Inspection and testing for boiler foundation. Verify mix, slab thickness three strengths tests. 7 days 14 days 27 days
Inspection of seismic resistance (specify locations and frequency)		X	Blowdown separator, boiler no 1, 6" steam branch - visual after installation and verification with submittals
Steam and water line welding (specify locations and frequency)		X	New 6" steam branch from new boiler to existing header. Visual
Seismic supports for electrical raceways, cable trays and lights		X	Verify seismic details with installation of seismic for electrical
Seismic supports for plumbing lines including gas, water, and steam and condensate		X	Visual for 6" steam branch piping, and 4" gas piping
Seismic bracing for mechanical units both on slab and suspended		X	Visual for anchoring of boiler to foundation and blowdown separator to floor. Verify that installation matches dwgs. and submittals

PIER FOUNDATIONS (IBC 1704.9) -Helical piers for boiler foundation			
Item	Continuous	Periodic	Detailed Instructions and Frequencies
Observe drilling operation and reporting	X		Verify set up, materials, equipment, and methods used for drilling
Verify placement & installation data	X		Verify that the boiler purchased matches the locations of the piers

Special Inspector's shall:

- Be approved by the Building Official prior to performing any duties;
- Provide proof of licensure as a special inspector by the State of Utah for each type of inspection;
- Inspection reports are to meet the requirement of IBC 1704.1.2 and DFCM standards;
- Inspection reports art to be submitted to the code consultant, architect, DFCM project manager, and the State of Utah Building Official within 48 hrs. of inspection;
- A final inspection report shall be submitted following completion of the project documenting the type of special inspections performed and a statement indicating that the structure is in compliance with the drawings, specifications and applicable codes. IBC 1702.1.2

Updated October 8, 2009

SPECIAL INSPECTION AND TESTING UNDER THE PROVISIONS OF IBC 1704 AND FOR MISCELLANEOUS AREAS

FABRICATORS (IBC 1704.2) -NOT REQUIRED IN DOCUMENTS-

STEEL (IBC 1704.3)			
Item	Continuous	Periodic	Detailed Instructions and Frequencies
Welding (1704.3.1)		X	Visual inspection of new welds.
Multipass fillet welds		X	All structural steel welds shall be inspected.
Roof deck welds		X	Roof deck welds when replacing the part of roof removed for boiler access
Reinforcement Steel		X	Visual inspection for size and placement of boiler foundation reinforcement
Steel frame joint detail		X	Inspect only if existing steel is cut for removal of roof for boiler access

CONCRETE CONSTRUCTION (IBC 1704.4)			
Item	Continuous	Periodic	Detailed Instructions and Frequencies
Materials (1704.4.1)	X		Visual inspection of all materials used for concrete installation. compare with specifications
Steel Placement	X		verify that rebar is installed per dwgs. and specifications including size and location
Bolts prior & during placement	X		Inspect all anchor bolts for diam and length for boiler, piping supports, and blowdown separator. Compare with drawings
Use of required design mix		X	Provide specifications at each pour or delivery. Take samples for strength testing
Concrete sampling for strength test, slump, air content, and temperauure of concrete	X		Sample each delivery for strength, slump and air content.
Concrete & shotcrete placement	X		Watch and verify concrete installation and finish
Curing temperature and tecniques		X	verify that curing is in accordance with specifications
Form work		X	Verify form work for the new boiler foundation

MASONRY CONSTRUCTION (IBC 1704.5) -NOT REQUIRED IN DOCUMENTS-

WOOD CONSTRUCTION (IBC 1704.6) - NOT PROVIDED IN DOCUMENTS-

SOIL CONSTRUCTION (IBC 1704.7)			
Item	Continuous	Periodic	Detailed Instructions and Frequencies
Structural fill material		X	Verify compaction of fill per the specifications
Backfill soils materials		X	Verify soils material with specifications, source of soils etc.
Backfill soil densities	X		Verify densities and compaction of backfill with specifications

PILE FOUNDATIONS (IBC 1704.8) -NOT PROVIDED IN DOCUMENTS-

SPRAYED FIRE-RESISTANT MATERIAL (IBC 1704.10) -NOT PROVIDED IN DOCUMENTS-

MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS (IBC 1704.11)-NOT PROVIDED-

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) (IBC 1704.12) -NOT PROVIDED-

ALTERNITIVE CONSTRUCTION METHODS OR MATERIALS (IBC 1704.13)-NOT PROVIDED-

EPOXY (IBC 1704.13)			
Item	Continuous	Periodic	Detailed Instructions and Frequencies
Material and installation (specify locations)		X	Verify location and type of material. coordinate with specifications

SMOKE CONTROL (IBC 1704.14) -NOT PROVIDED-

Special inspection for seismic resistance (IBC 1707)			
Item	Continuous	Periodic	Detailed Instructions and Frequencies
Pier foundations (1707.5)		X	verify that reinforcement matches the drawings
Mechanical & electrical items (1707.8)		X	Verify anchoring of boiler, blowdown serarator and piping 4" and above Match details on drawings and deferred submittal

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PROJECT NAME & ADDRESS

SUU BOILER PLANT BOILER REPLACEMENT

DFCM #09239730

Cedar City, Utah

MARK	DATE	REVISION

PROJECT MANAGER: WP
DRAWN BY: LGD
CHECKED BY: SLW
DATE: 03/01/10
WHW JOB NO.: 09047

PROFESSIONAL ENGINEER
03/01/10
WINWARD M. PACKER
No. 375080
STATE OF UTAH

SHEET TITLE

SPECIAL INSPECTIONS AND TESTING

SHEET NO.

G002

MECHANICAL LEGEND

SYMBOL	ABR.	DESCRIPTION
GENERAL TERMINOLOGY		
A / ME-101		SECTION LETTER DESIGNATION SECTION DRAWN ON THIS SHEET
A2		DETAIL NUMBER DESIGNATION CORRESPONDING WITH GRID LOCATION
AH / 1		MECHANICAL EQUIPMENT DESIGNATION EQUIPMENT ITEM DESIGNATION
1		REVISION DESIGNATOR AND NUMBER
1		KEY NOTE DESIGNATOR AND NUMBER
	POC	POINT OF CONNECTION
	POR	POINT OF REMOVAL
AFF		ABOVE FINISHED FLOOR
℄ EL.		CENTER LINE ELEVATION
GC		GENERAL CONTRACTOR
MC		MECHANICAL CONTRACTOR
EC		ELECTRICAL CONTRACTOR
CC		CONTROLS CONTRACTOR
NIC		NOT IN CONTRACT
NTS		NOT TO SCALE
SYMBOL	ABR.	DESCRIPTION
		EXISTING EQUIPMENT TO BE REMOVED
		EXISTING EQUIPMENT TO REMAIN
		NEW EQUIPMENT

SYMBOL	ABR.	DESCRIPTION
WET SIDE		
		UNION
		MANUAL ACTUATOR (BALL, BUTTERFLY, NEEDLE, ETC. VALVES)
		MANUAL ACTUATOR (GATE, GLOBE, S&D, OS&Y, ETC. VALVES)
		THREADED OR SWEAT VALVE CONNECTION
		NEEDLE VALVE
		FLANGED VALVE CONNECTION
		BUTTERFLY VALVE
		GATE VALVE
		CHECK VALVE
	PRV	PRESSURE REDUCING VALVE
	CBV	CIRCUIT BALANCING VALVE
	BV	BALL VALVE
P	PRV	PRESSURE RELIEF VALVE
		AUTOMATIC AIR VENT
		MANUAL AIR VENT
		STRAINER
		STRAINER W/ PLUGGED BLOW OFF
	VTI	VENTURI
		PRESSURE GAUGE AND GAUGE COCK - WATER
		THERMOMETER AND THERMOWELL
	TW	THERMOWELL
		DIRECTION OF FLOW
		GLOBE VALVE
		VERTICAL PUMPS
		PRESSURE GAUGE WITH SIPHON LOOP STEAM

SYMBOL	ABR.	DESCRIPTION
WET SIDE CONT		
		SLOPE
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		EXISTING PIPING TO BE REMOVED
		EXISTING PIPING TO REMAIN
		NEW PIPING
		PIPE CAP OR PLUG
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
— G —		NATURAL GAS PIPING
— - —	CW	CULINARY COLD WATER
— D —		EQUIPMENT DRAIN
— HPR —		HIGH PRESSURE RETURN
— PC —		PUMPED CONDENSATE
— BFW —		BOILER FEEDWATER
— FOS —		FUEL OIL SUPPLY
— FOR —		FUEL OIL RETURN
— AS —		ATOMIZING STEAM
— A —		ATOMIZING AIR
— CF —		CHEMICAL FEED
— MU —		MAKE-UP WATER
— ++ —		SOFT WATER
— – V – –		VENT PIPING

GENERAL NOTES:

G-1 MECHANICAL INFORMATION IS NOT LIMITED TO THE MECHANICAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENTS INCLUDING DRAWINGS BY OTHER DISCIPLINES AND SPECIFICATIONS. SITE CONDITIONS SHALL ALSO BE COORDINATED.

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 SUBMITTED TO THE ENGINEER PRIOR TO CHANGES FOR APPROVAL. THIS DOES NOT INCLUDE PIPING CHANGES NOTED IN G-4 BELOW. 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.

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 SHEET METAL DUCT SIZES SHOWN ON DRAWINGS ARE FREE AREA DIMENSIONS.

G-7 THE MECHANICAL CONTRACTOR SHALL VERIFY MOTOR VOLTAGES WITH THE ELECTRICAL DRAWING BEFORE ORDERING MOTORIZED EQUIPMENT AND CONTROLS.

G-8 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-9 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-10 ALL MECHANICAL AND PLUMBING SHALL BE INSTALLED AND CONFORM TO THE 2006 EDITION OF THE IMC AND IPC WITH UTAH ANNOTATIONS AND REQUIREMENTS.

G-11 THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE DRAINING DOWN AND RE-FILLING OF ALL SYSTEMS NECESSARY TO COMPLETE THE WORK OUTLINED BY THIS PROJECT.

G-12 ALL PIPING, MATERIALS, ETC. SHALL BE NEW AND DOMESTIC MADE UNLESS SPECIFICALLY AUTHORIZED IN WRITING PRIOR TO BID.

G-13 CONTRACTOR WILL NOT BE ALLOWED TO USE OWNERS WINCH AND TROLLEY. CONTRACTOR MAY USE OWNERS i BEAM, BUT SHALL USE HIS OWN WINCH AND TROLLEY. CONTRACTOR SHALL BE RESPONSIBLE FOR ELECTRICAL POWER TO WINCH.

G-14 THE OWNER'S GENIE LIFT SHALL NOT BE USED BY CONTRACTOR.

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PROJECT NAME & ADDRESS

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Cedar City, Utah

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PROJECT MANAGER: WP
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WHW JOB NO.: 09047

PROFESSIONAL ENGINEER 03/01/10 WINWARD M. PACKER No. 375080 STATE OF UTAH

SHEET TITLE

GENERAL NOTES AND LEGEND

SHEET NO.

G003

GENERAL STRUCTURAL NOTES

GENERAL

1. The structural notes are intended to complement the project specifications. Specific notes and details in the drawings shall govern over the structural notes and typical details.
2. Typical details and sections shall apply where specific details are not shown.
3. The contractor shall verify all site conditions and dimensions. If actual conditions differ from those shown in the contract drawings, the contractor shall immediately notify the architect/engineer before proceeding with the fabrication or construction of any effected elements.
4. Omissions or conflicts between the contract drawings and/or specifications shall be brought to the attention of the architect/engineer before proceeding with any work involved. In case of conflict, follow the most stringent requirement as directed by the architect/engineer at no additional cost to the owner.
5. The contractor shall submit a written request to the architect/engineer before proceeding with any changes, substitutions or modifications. Any work done by the contractor before receiving written approval will be at the contractor's risk.
6. The contractor shall coordinate with all trades any items that are to be integrated into the structural system such as openings, penetrations, mechanical and electrical equipment, etc. Sizes and locations of mechanical and other equipment that differs from those shown on the contract drawings shall be reported to the architect/engineer.
7. The contractor shall provide adequate shoring and bracing as required for his method of erection. Shoring and bracing shall remain in place until final connections for the permanent members are completed. The building shall not be considered stable until all connections are completed. Walls shall not be considered self-supporting and shall be braced until the roof system is completed.
8. Site observations by BHB Consulting Engineers, P.C.'s field representative shall not be construed as approval of construction procedures nor special inspection.
9. Detailing and shop drawing production for structural elements will require information (including dimensions) contained in the architectural, structural and/or other consultants' drawings. The structural drawings shall be used in conjunction with the architectural and other consultant's drawings. Some dimensions and elements such as elevations, depressions, slopes, mechanical housekeeping pads, etc. are not shown in the structural drawings. All dimensions shown on structural drawings shall be verified by contractor with architectural, mechanical and electrical drawings.
10. Review of shop drawing submittals by BHB Consulting Engineers, P.C. is for general compliance only and is not intended for approval. The shop drawing review shall not relieve the contractor from the responsibility of completing the project according to the contract documents.
11. Shop drawings made from reproductions of the contract drawings will be rejected unless the contractor signs a release agreement prior to the shop drawings being reviewed.
12. Only an authorized representative of BHB Consulting Engineers, P.C. may make changes to these contract drawings. BHB Consulting Engineers, P.C. shall not be held responsible or liable for any claims arising directly or indirectly from changes made without written authorization by an authorized representative of BHB Consulting Engineers, P.C.

BASIS OF DESIGN

1. Governing Building Code — International Building Code 2006
2. Seismic Loads
   a. Occupancy Category — II
   b. Seismic Importance Factor, I_e — 1.0
   c. Seismic Design Category — D
   d. Mapped Spectral Acceleration
      S_S = 0.70g S_1 = 0.22g
   e. Soil Site Class — D
   f. Soil Site Coefficients
      F_a = 1.24 F_v = 1.95
   g. 5% Damped Design Spectral Response Acceleration
      $S_{DS} = 2/3 * F_a * S_S = 0.58g$ $S_{D1} = 2/3 * F_V * S_1 = 0.29g$
   h. Component Response Modification Coefficient — R_p = 2.5
   i. Component Amplification Factor — 1.0
   j. W — Dead Loads of Structure
   k. Base Shear — $V = C_S * W = 0.28\,W$ (Strength Design)
   l. Analysis Procedure — Equivalent Lateral Force (Static)
3. Wind Loads
   a. Wind Velocity (3 Second Gust) — 90 mph
   b. Exposure Type — C
   c. Wind Importance Factor, I_W — 1.00
   d. Internal Pressure Coefficient, GC_{pi} — +/-0.18
   e. Topographic Factor, K_{zt} — 1.0

FOUNDATION

1. Soils Investigation Report: None
2. Soil bearing pressure: 1500 psf – Assumed. Contractor shall verify at time of construction.
3. Clear excavations of debris and loose soil prior to placing footings. All footings shall bear on undisturbed natural sub-grade or engineered compacted fill as noted in these drawings.

EARTHWORK

1. Prior to construction, the contractor shall verify that the soil conditions are adequate for 1,500 psf allowable soil bearing pressure. If needed, structural fill shall be provided beneath footings.
2. Clearing: Remove all existing structures and associated foundations, slabs, fencing, asphalt, concrete, and incidental structures as necessary for project completion. The pad area shall be stripped of all vegetation, topsoil and debris. Following stripping, all fill soils and any remaining loose natural soils shall be excavated to expose competent natural soils.
3. Proof roll the pad area with normal compaction equipment to check for the presence of unsuitable fills, soft spots, or other undesirable materials or conditions. Remove sub-grade materials that are unsuitable and replace with compacted structural fill or 2,000 psi lean concrete.

CONCRETE

1. Materials, unless noted otherwise:
   a. Normal weight aggregates — ASTM C 33
   b. Reinforcing Steel — ASTM 615 Grade 60 (Fy = 60 ksi) Use Grade 40 (Fy = 40 ksi) for field bent dowels with spacings indicated reduced by 1/3.
   c. Deformed Bar Anchors (DBA) — ASTM A496
   d. Headed Stud Anchors (HSA) — ASTM A108
   e. Anchor Rods — ASTM F1554, Grade 36, with ASTM A563 heavy hex nuts and ASTM F436 hardened washers Grade A

   Admixtures:
   i. Air-entraining admixtures comply with ASTM C 260 (when used).
   ii Calcium chloride shall not be added to the concrete mix.
   f. Type I/II cement complying with ASTM C-150 shall be used for all concrete.
   g. The water/cement ratios shall meet the requirements of ACI 318.
   h. Provide air entraining as recommended by ACI 318.
   i. No aluminum conduit or product containing aluminum or any other material injurious to concrete shall be embedded in concrete.
2. Compressive strengths of concrete at 28 days shall be as follows:
   a. Footings ..... 4,000 psi
   b. Interior Slabs on Grade ..... 4,000 psi
3. The contractor shall be responsible for the design, detailing, care, placement and removal of all formwork and shores.
   a. Supporting forms and shoring shall not be removed until structural members have acquired sufficient strength to safely support their own weight and any construction load to which they may be subjected. In no case, however, shall forms and shoring be removed in less than 24 hours after concrete placement.
4. Reinforcement shall have the following concrete cover:
   Cast-in-place Concrete: ..... Clear Cover
   a. Cast against and permanently exposed to earth ..... 3"
   b. Formed concrete exposed to earth or weather:
      #6 thru #18 bars ..... 2"
      #5 and smaller bars ..... 1-1/2"
   c. Concrete not exposed to weather or in contact with ground:
      Slabs, Walls, Joists: #11 bars and smaller ..... 3/4"
      Beams, Columns: Primary Reinf., Ties, Stirrups, Spirals ..... 1-1/2"
5. Construction
   a. Use chairs or other support devices recommended by the CRSI to support and tie reinforcement bars prior to placing concrete. Reinforcing steel for slabs on grade shall be adequately supported on precast concrete units. Lifting the reinforcing off the grade during placement of concrete is not permitted.
   b. Concrete to be mechanically consolidated during placement per ACI standards.
   c. Contractor shall coordinate placement of all openings, curbs, dowels, sleeves, conduits, bolts, inserts and other embedded items prior to concrete placement.
   d. All embeds and dowels shall be securely tied to formwork or to adjacent reinforcing prior to the placement of concrete.
   e. No pipes, ducts, sleeves, etc shall be placed in structural concrete unless specifically detailed or approved by the structural engineer. Penetrations through walls when approved shall be built into the wall prior to concrete placement. Penetrations will not be allowed in footings or grade beams unless detailed. Piping shall be routed around these elements and footings stepped to avoid piping.
   f. Reinforcing Bars shall not be welded. Do not substitute reinforcing bars for DBAs or HSAs.
6. Detailing:
   a. Lap splice lengths shall be detailed to comply with the "Concrete Reinforcing Bar Lap Splice Schedule" on sheet S- 501. Splices may be made with mechanical splices capable of 125% tension capacity of the bar being spliced. Mechanical splices shall be the positive connecting type coupler and shall meet all International Building Code requirements. Use "Cadweld", "Lenton" Standard Couplers, "Bar-Lock" or equal with internal protector. If mechanical splices are used, splices or couplers on adjacent bars shall be staggered a minimum of 24" apart along the longitudinal axis of the reinforcing bars.
   b. At joints provide reinforcing dowels to match the member reinforcing, unless noted otherwise.

EPOXY

1. For concrete, the epoxy shall be HIT RE 500-SD by Hilti Corporation, Epcon G5 by ITW Redhead, Powers PE1000 + by Powers Fasteners Inc, or SET-XP by Simpson Strong Tie. Epcon G5 shall not be used in crack concrete or for seismic applications.
2. All drilled holes for bars or anchors rods 1" in diameter and smaller shall be 1/8 inch larger in diameter than the bar of anchor rod being installed. All drilled holes for bars or anchors rods greater than 1" in diameter shall be 1/4 inch larger in diameter than the bar of anchor rod being installed.
3. After drilling the proper size hole, clean the walls and bottom of the drilled hole of all dust and debris using a nylon brush in conjunction with oil free compressed air. The hole shall be free of dust, debris and standing water.
4. Follow all of the manufacturer's recommendations for epoxy installation.

METAL DECKING

1. Steel deck shall comply with the latest requirements of the Steel Deck Institute.
2. All deck shall be 3-span continuous minimum. In areas where 3-span conditions are not possible, the contractor shall provide heavier gage deck as required to provide the equivalent loading of the deck under a three span condition.
3. Steel roof deck shall not be used to support loads from plumbing, HVAC ducts, light fixtures, architectural elements or equipment of any kind, unless specifically noted. Light weight suspended acoustical ceilings with a total weight of 50 lbs per attachment may be hung from roof deck. The hangers shall be staggered to distribute the loads over multiple deck flutes.
4. All deck supporting members shall be dry before welding.
5. Clinch seams before welding interlocking seams.
6. Where deck is to receive sprayed-on fire proofing, painted deck shall be coated with special paint that will allow the sprayed-on fire proofing to adhere to the painted deck.

Steel Roof Deck

a. Steel roof deck shall be 1.1/2" deep X 20 gage minimum painted, type "B" wide rib deck with interlocking side seams with the following properties:

	20 Gage
Minimum S (in^3/ft) =	0.234
Minimum I (in^4/ft) =	0.213

b. Minimum allowable deck diaphragm shear values shall be 700 lb/ft. for a 7'-0" deck span.
c. Weld steel roof deck to supporting framing members with 3/4" diameter puddle welds at the following spacings (Closer spacing may be used to develop minimum shear requirements.):
   i. 6" o.c. to all supports perpendicular to deck corrugations (7 welds per 36" sheet).
   ii. 6" o.c. to all supports parallel to deck corrugations.
d. Hilti power driven fasteners are acceptable as an alternative to welds provided the connection meets the diaphragm shear capacity given above. Call Hilti at 800-879-8000 extension 6337 for connection information comparison. If Hilti power driven fasteners are used, the contractor shall submit Hilti's calculations to the Architect/Engineer for review. Also if Hilti power driven fasteners are used, a Hilti representative shall be present before the decking is installed to make sure the installer is properly trained in using the equipment. The Hilti representative shall also make a site visit the day after deck has been started to be installed to verify the power driven fasteners are being installed correctly.
e. Attach interlocking seams with 1 1/2" long top seam welds at 12" o.c. maximum or with Verco PunchLok System at 8" o.c. maximum, with ASC Delta Grip System at 15" o.c. maximum or with Whe eling Gator-Seismic Shearloc at 4" o.c maximum. Closer spacing may be used to develop minimum shear requirements. A standard button punch can **not** be used in place of Verco PunchLok, DeltaGrip or Gator-Seismic Shearloc.
f. Provide a 2-inch minimum bearing and a 4-inch lap at the splice points.

SPECIAL INSPECTION AND QUALITY ASSURANCE

Special inspection and quality assurance, as required by section 1704 thru 1709 of the IBC, shall be provided by an independent agency employed by the owner unless waived by the building official. The contractor shall coordinate and cooperate with the required inspections. All testing and inspection reports shall be sent within 24 hours of the test to the architect, engineer, building official and contractor for review. Special inspection during fabrication is not required if the fabricator is registered and approved to perform such work with out special inspection. Items requiring special inspection and quality assurance are:

1. Concrete placement (IBC Section 1704.4)
   a. Continuous special inspection shall be provided
   b. Cylinders, slump, temperature and air-entrainment shall be done for every 50 cubic yards or each day's production if the day's production is less than 50 cubic yards.
   c. Protection of concrete during cold and hot weather
2. Bolts installed in concrete (IBC Section 1704.4)
   a. All bolts shall be special inspected prior to and during concrete placement.
3. Embeds and Inserts installed in concrete (IBC Section 1704.4)
   a. All embeds and inserts shall be special inspected prior to and during concrete placement.
4. Concrete reinforcing steel placement (IBC Section 1704.4)
   a. All Reinforcing shall be special inspected prior to concrete placement.
7. Structural welding, including steel deck (IBC 1707.2 and 1704.3)
   a. Periodic special inspection of roof decks.
   b. Periodic special inspection of single pass fillet welds less than or equal to 5/16"
   c. Continuous special inspection of single pass fillet welds greater than 5/16" and multi-pass fillet welds.
   d. Continuous special inspection of complete and partial penetration welds.
8. Metal deck using mechanical attachments (IBC Section 1704.13)
   a. Periodic special inspection of roof decks. Special inspection shall be done to verify size and spacing of shot pins / screws for deck attachment to the supporting structural. Also special inspection shall be done to verify spacing and size of seam attachments.
9. Mini-piers construction (Such as Screw Piers or Micro Piles) (IBC Section 1704.8 & 9)
   a. Continuous special inspection shall be performed.
20. Epoxy Anchors (IBC Section 1704.13)
   b. Special inspection shall verify all drilled holes' size and depth prior to installation of epoxy and anchor rod.

SITE OBSERVATIONS BY STRUCTURAL ENGINEER

Site observations, as required by IBC section 1709, shall be done by the Engineer of Record or an approved subordinate at the stages of construction listed below. The contractor shall notify the engineer when he has reached the construction stage listed below and before the work to be observed is covered up, walled in or becomes otherwise hidden from view or in-accessible to any necessary corrections. At the conclusion of the project, the structural observer shall submit to the building official a written statement that the site visits have been made and identify any reported deficiencies that to the best of the structural observer's knowledge have not been resolved (See 1709.1).

1. No structural observations are required by code.

DEFERRED SUBMITTALS

For the purpose of this section, deferred submittals are defined as per section 106.3.4.2 of the IBC. Submittal documents for deferred submittal items shall be submitted to the engineer, architect and building official for their review for general conformance with the design of the building. Deferred structural submittals for this project are:

1. None

LEGEND OF MARKS AND ABREVIATIONS

AB	ANCHOR BOLT(S)
ABV	ABOVE
ALT	ALTERNATE
APPROX	APPROXIMATE
ARCH	ARCHITECT(URAL)
BLDG	BUILDING
BLW	BELOW
BM	BEAM
BOT	BOTTOM
BRG	BEARING
BTWN	BETWEEN
CC	CENTER-TO CENTER
C.J.	CONST/CONTROL JOINT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CTR	CENTER
CW-x	CONCRETE WALL
DB	DECK BEARING
DBA	DEFORMED BAR ANCHOR
DBE	DECK BEARING ELEVATION
DBL	DOUBLE
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DWG	DRAWING
DWL	DOWEL
EA	EACH
E.F.	EACH FACE
E.J.	EXPANSION JOINT
ELEC	ELECTRICAL
ELEV	ELEVATION
EQUIP	EQUIPMENT
EQ	EQUAL
E.W.	EACH WAY
EXST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FC-x	CONTINUOUS FOOTING MARK
F.D.	FLOOR DRAIN
FDN	FOUNDATION
F.F.	FINISHED FLOOR
FR-x	RECTANGULAR FOOTING MARK
FS-x	SQUARE FOOTING MARK
FT	FOOT
FTG	FOOTING
FTS-x	THICKEN SLAB MARK
GA	GAUGE
GALV	GALVANIZED
GSN	GENERAL STRUCTURAL NOTES
HB	HORIZONTAL BRIDGING
HORIZ	HORIZONTAL
HSA	HEADED STUD ANCHOR
HT	HEIGHT
ICBO	INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS
IBC	INTERNATIONAL BUILDING CODE
I.F.	INSIDE FACE
IN.	INCH
INT	INTERIOR
JT	JOINT
JIST	JOIST
k	KIP(S) = 1000 POUNDS
KLF	KIPS PER LINEAL FOOT
KSF	KIPS PER SQUARE FOOT
LBS	POUNDS
LF	LINEAL FOOT
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LSV	LONG SIDE VERTICAL
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O.C.	ON CENTER
O.F.	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
PCF	POUNDS PER CUBIC FOOT
PL	PLATE
PLF	POUNDS PER LINEAL FOOT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
REINF	REINFORCING
REQ'D	REQUIRED
R.D.	ROOF DRAIN
RTU	ROOF TOP UNITS
SHT	SHEET
SI	SPECIAL INSPECTION
SIM	SIMILAR
SMU	SUSPENDED MECHANICAL UNITS
SOG	SLAB-ON-GRADE
SQ	SQUARE
STAG	STAGGERED
STD	STANDARD
STL	STEEL
STR	STRUCTURAL
STS	SELF TAPPING SCREWS
T&B	TOP AND BOTTOM
TEMP	TEMPERATURE
THDS	THREADS
T.O.	TOP OF
TOC	TOP OF CONCRETE
TOD	TOP OF DECK
TOF	TOP OF FOOTING
TOW	TOP OF WALL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
W/	WITH
WT	WALL THICKNESS
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH

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PROJECT NAME & ADDRESS

SUU BOILER PLANT BOILER REPLACEMENT

DFCM No. 09239730

Cedar City, Utah

MARK	DATE	REVISION

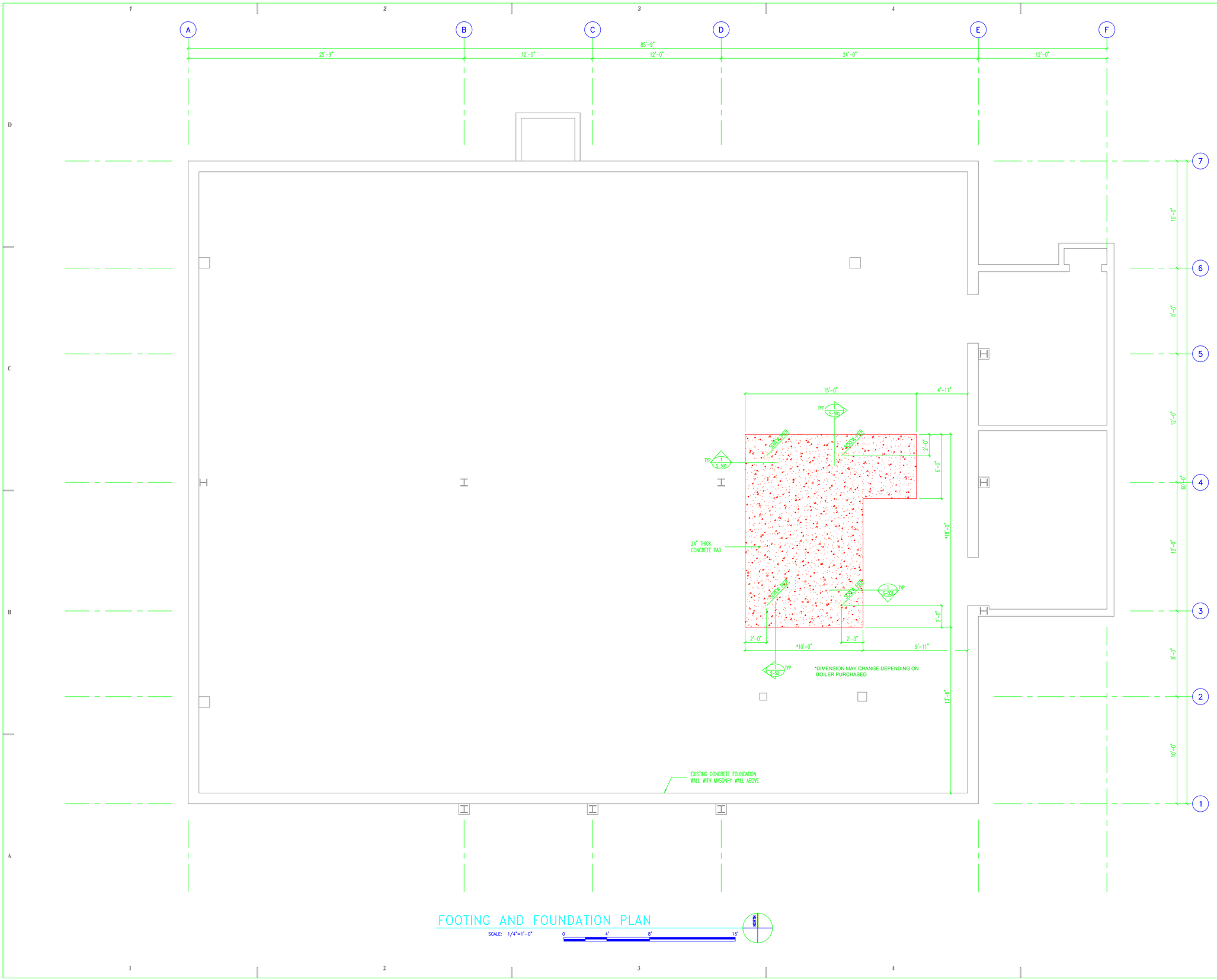
PROJECT MANAGER: RS
DRAWN BY: JBM
CHECKED BY: GMc
DATE: 03/01/10
BHB JOB NO.: 10062

SHEET TITLE

GENERAL STRUCTURAL NOTES

SHEET NO.

S-001



FOOTING AND FOUNDATION PLAN

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

NORTH

0 4' 8' 16'

State of Utah
Department of Administrative Services

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Construction & Management
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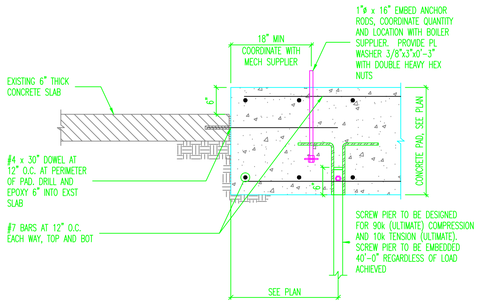
SHEET TITLE
FOOTING AND FOUNDATION PLAN

SHEET NO.
S-101



1 PAD BEARING ON SCREW PIERS

NO SCALE

10062D01

CONCRETE REINFORCING BAR LAP SPLICE SCHEDULE

BAR SIZE	f'c = 3000psi				f'c = 4000psi				f'c = 5000psi				f'c = 6000psi			
	REGULAR		TOP		REGULAR		TOP		REGULAR		TOP		REGULAR		TOP	
	CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
#3	13"	17"	17"	21"	12"	16"	16"	21"	12"	16"	16"	21"	12"	16"	16"	21"
#4	17"	22"	22"	28"	15"	19"	19"	25"	13"	17"	17"	22"	12"	16"	16"	21"
#5	21"	27"	27"	35"	18"	24"	24"	31"	16"	21"	21"	27"	15"	19"	19"	25"
#6	27"	36"	36"	46"	24"	31"	31"	40"	21"	28"	28"	36"	20"	25"	25"	33"
#7	37"	48"	48"	63"	32"	42"	42"	54"	29"	38"	38"	49"	27"	34"	34"	44"
#8	49"	64"	64"	82"	42"	55"	55"	71"	38"	49"	49"	64"	35"	45"	45"	58"
#9	62"	80"	80"	104"	54"	70"	70"	90"	48"	62"	62"	81"	44"	57"	57"	74"
#10	78"	102"	102"	132"	68"	88"	88"	115"	61"	79"	79"	102"	56"	72"	72"	94"
#11	96"	125"	125"	162"	83"	108"	108"	141"	76"	97"	97"	126"	68"	88"	88"	115"

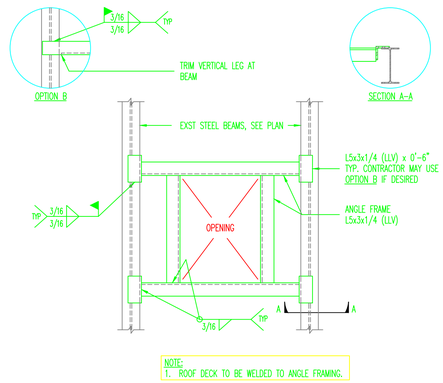
CONCRETE REINFORCING BAR LAP SPLICE NOTES:

1. THIS SCHEDULE SHALL BE USED FOR ALL BAR SPLICES IN CONCRETE WALLS, UNLESS NOTED OTHERWISE.
2. CLASS 'A' SPLICES MAY BE USED ONLY IN CASES WHERE 50% OR LESS OF THE BARS ARE SPLICED WITHIN THE LAP SPLICE LENGTH.
3. CLASS 'B' SPLICES SHALL BE USED FOR ALL SPLICES UNLESS THE REQUIREMENTS OF NOTE No. 2 ABOVE ARE MET.
4. TIES AND STIRRUPS SHALL NOT BE SPLICED.
5. SPLICES FOR BUNDLED BARS:
   a. FOR BUNDLED BARS OF THREE OR LESS, LAP SPLICE LENGTHS SHALL BE MULTIPLIED BY 1.2.
   b. FOR BUNDLED BARS OF FOUR OR MORE, LAP SPLICE LENGTHS SHALL BE MULTIPLIED BY 1.33.
   c. INDIVIDUAL BAR SPLICES WITHIN A BUNDLE SHALL NOT OVERLAP.
   d. ENTIRE BUNDLES SHALL NOT BE LAP SPLICED.
6. FOR ALL LIGHTWEIGHT CONCRETE, LAP LENGTHS SHALL BE MULTIPLIED BY 1.3.
7. FOR ALL EPOXY COATED BARS, LAP LENGTHS SHALL BE MULTIPLIED BY 1.3 FOR TOP BARS AND 1.5 FOR REGULAR BARS.
8. TOP BARS ARE CLASSIFIED AS HORIZONTAL BARS WHERE 12", OR MORE, OF FRESH CONCRETE IS CAST BELOW THE REINFORCING BAR.
9. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.

2 CONCRETE REINFORCING BAR LAP SPLICE SCHEDULE

NO SCALE

10062_CONC_REINF-01



NOTE:
1. ROOF DECK TO BE WELDED TO ANGLE FRAMING.

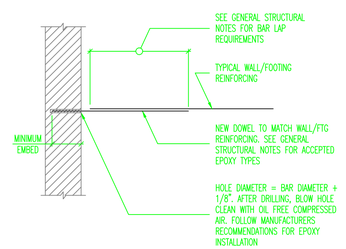
3 TYPICAL ROOF OPENING DETAIL [PLAN VIEW]

NO SCALE

2171-21-6

EPOXY DOWEL EMBED SCHEDULE

DOWEL SIZE	MINIMUM EMBEDMENT INTO EXISTING CONCRETE
#4	6.1/2"
#5	7.1/2"
#6	10"
#7	1'-1"
#8	1'-4"



5 EPOXY DOWEL EMBED SCHEDULE

NO SCALE

10062_CONC_EPOXY-01

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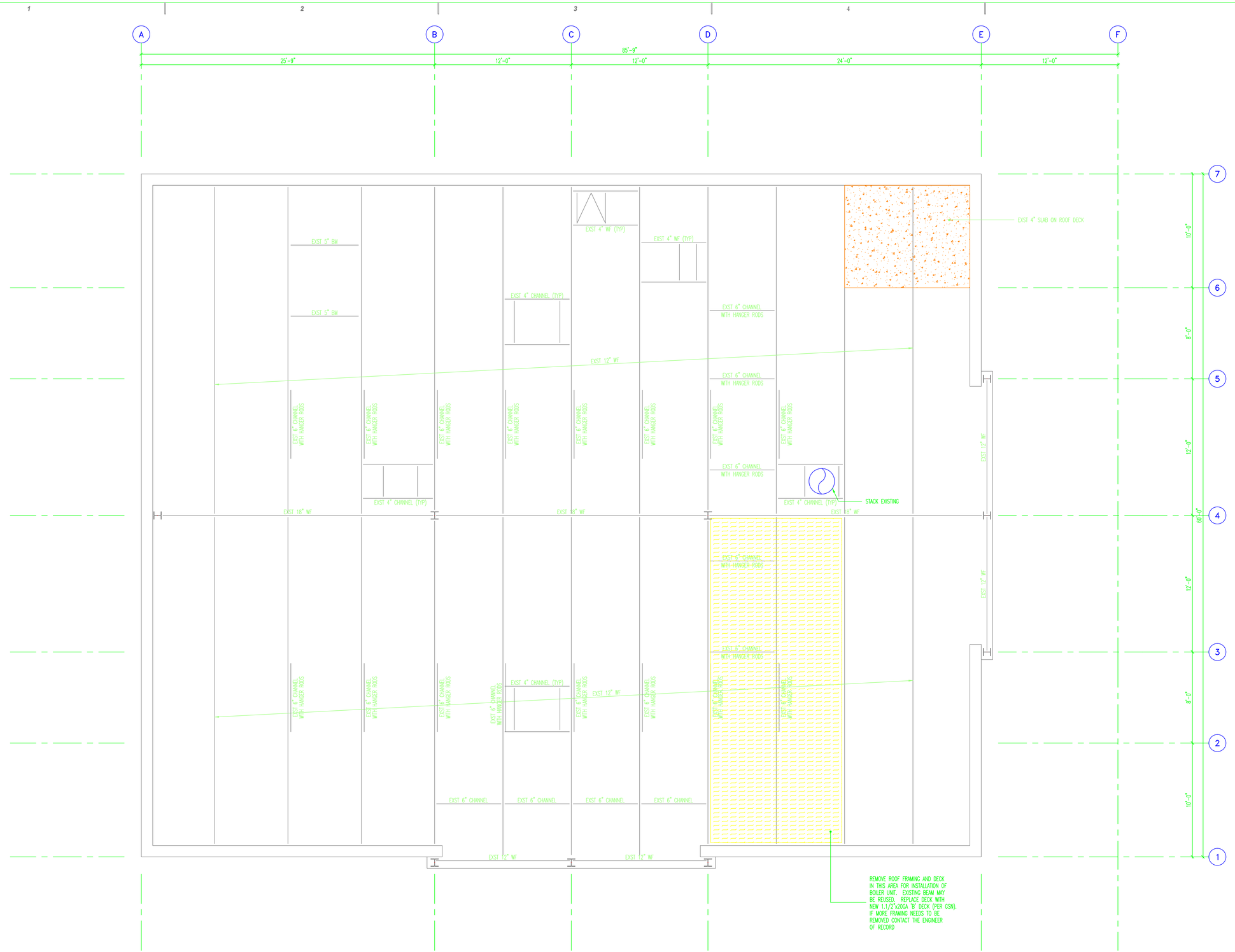
BHB JOB NO.: 10062

SHEET TITLE: STRUCTURAL DETAILS

SHEET NO.: S-501



ROOF FRAMING PLAN

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

0 4' 8' 16'

NORTH

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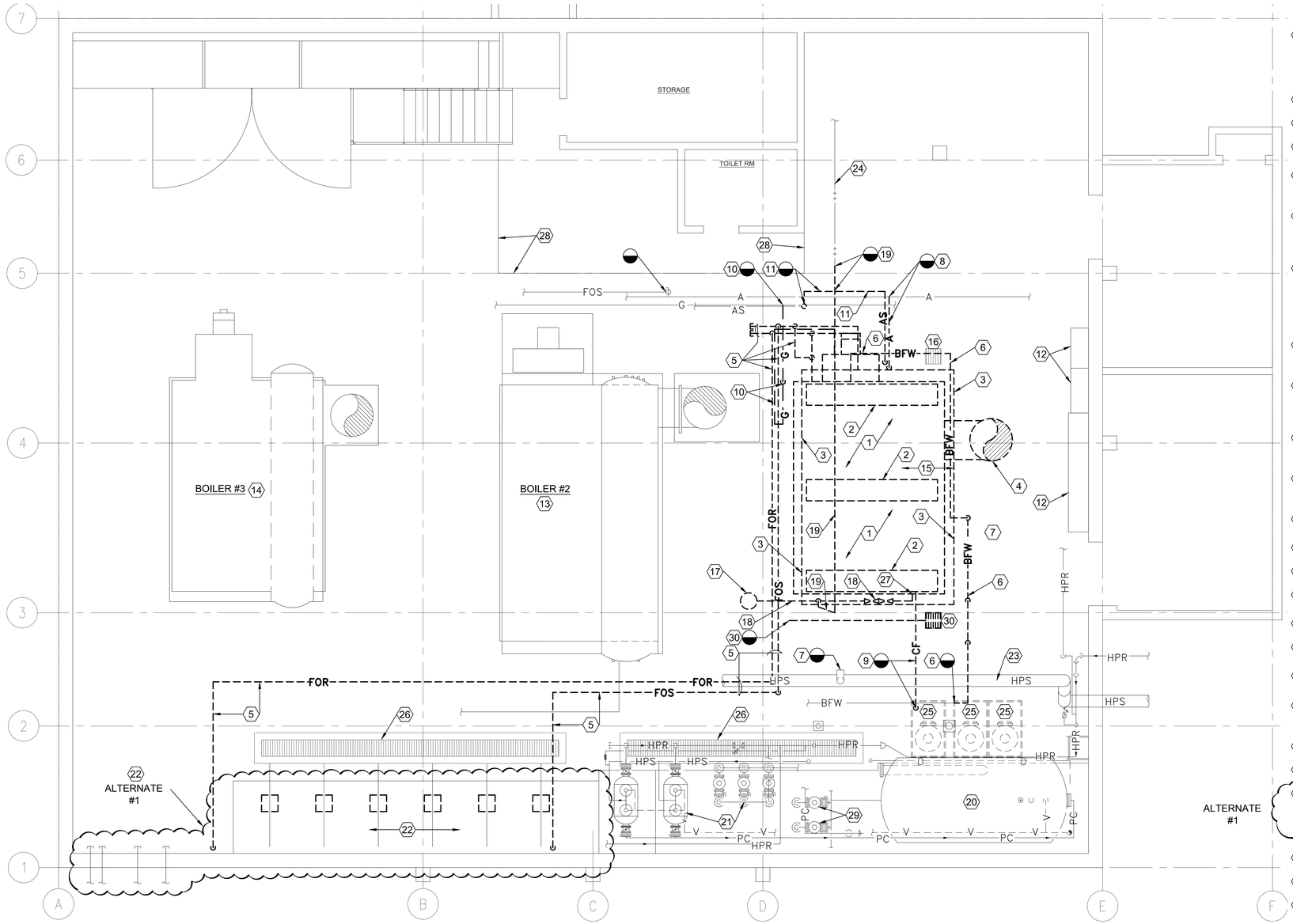
SHEET TITLE: ROOF FRAMING PLAN

SHEET NO. S-111



MECHANICAL DEMOLITION FLOOR PLAN

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

SHEET NOTES:

1. REMOVE EXISTING BOILER #1 COMPLETE WITH BURNER, FAN, MOTOR, DUCTWORK, PIPING, ELECTRICAL, AND ANY ITEMS ASSOCIATED WITH EXISTING BOILER AND ITS OPERATION. THE DEMOLITION OF THE BOILER AND STACK SHALL BE PROVIDED BY OTHERS DUE TO ASBESTOS IN THE BOILER.
2. REMOVE EXISTING CONCRETE SUPPORT STRUCTURES.
3. REMOVE EXISTING CONCRETE BOILER PAD AND EXISTING FILL.
4. REMOVE EXISTING BOILER STACK AND SUPPORTS INSIDE BOILER ROOM.
5. REMOVE EXISTING FUEL OIL PIPING, VALVES, CONTROLS, HANGERS, AND ANY ASSOCIATED ITEMS FROM BURNER CONNECTION TO SOURCE.
6. REMOVE EXISTING BOILER FEED WATER PIPING, CONTROL STATION, HANGERS, VALVES ETC. FROM BOILER CONNECTION TO THIS POINT. PROVIDE NEW VALVE AND CAP UNTIL NEW BOILER IS INSTALLED AND PIPING CAN BE EXTENDED.
7. REMOVE EXISTING STEAM SUPPLY LINE, VALVES ETC. FROM NEW BOILER TO CONNECTION IN STEAM HEADER. REMOVE AND PROTECT FLOW RECORDER FOR RE-USE. CONNECTION INTO HEADER SHALL REMAIN. EXISTING STEAM BLOW-OFF PIPING VALVE AND PIPING THROUGH ROOF SHALL BE RE-USED AND CONNECTED BACK TO NEW 6"Ø HEADER.
8. REMOVE EXISTING AIR ATOMIZATION PIPING, VALVES, ETC. FROM EXISTING BURNER CONNECTION TO HEADER. PROVIDE NEW VALVE AND CAP.
9. REMOVE EXISTING CHEMICAL FEED PIPING, TUBING ETC. FROM BOILER STEAM DRUM CONNECTION TO SOURCE. PROVIDE NEW VALVE AND CAP UNTIL NEW BOILER IS INSTALLED AND PIPING CAN BE EXTENDED.
10. REMOVE EXISTING GAS PIPING FROM BURNER CONNECTION TO HEADER COMPLETE WITH VALVES, SUPPORTS, CONTROLS ETC. PROVIDE NEW VALVE AND CAP.
11. REMOVE EXISTING ATOMIZING STEAM FROM THIS LOCATION TO BURNER CONNECTION. PROVIDE NEW VALVE AND CAP UNTIL NEW BOILER IS INSTALLED AND NEW PIPING CAN BE EXTENDED.
12. EXISTING ELECTRICAL GEAR AND MOTOR CONTROL CENTER. SEE ELECTRICAL DRAWINGS.
13. EXISTING BOILER #2 SHALL REMAIN.
14. EXISTING BOILER #3 SHALL REMAIN.
15. REMOVE EXISTING PLATFORM AND LADDER AND SET ASIDE FOR RE-USE WITH NEW BOILER.
16. EXISTING FLOOR DRAINS SHALL REMAIN.
17. REMOVE EXISTING BLOWDOWN SEPARATOR AND ALL ASSOCIATED ITEMS.
18. REMOVE EXISTING INTERMINTENT BLOWDOWN PIPING, VALVES, ETC. FROM MUD DRUM CONNECTION TO SEPARATOR.
19. REMOVE EXISTING SOFTWATER TO A POINT TO BE OUT OF THE WAY OF PLACING THE NEW BOILER. PROVIDE NEW VALVE AND CAP UNTIL NEW BOILER IS INSTALLED AND PIPING CAN BE EXTENDED.
20. EXISTING SURGE TANK AND DEAERATOR SHALL REMAIN.
21. EXISTING BOILER FEEDWATER PUMPS SHALL REMAIN.
22. REMOVE ALL EXISTING No. 6 OIL PUMPING STATION INCLUDING PUMPS, EXCHANGERS, CONTROLS, ELECTRICAL, PIPING, STEAM PIPING, CONDENSATE PIPING, TRAPS, VALVES, SUPPORTS, HANGERS, AND ALL OIL RELATED ITEMS. CAP OIL PIPING AT WALL PENETRATIONS.
23. EXISTING STEAM HEADER SHALL REMAIN.
24. SOFT WATER FROM SOFTENERS TO POINT SHOWN SHALL REMAIN.
25. EXISTING CHEMICAL FEED TANKS AND CARTS SHALL BE RELOCATED TO AREA OF REMOVED No. 6 OIL PUMPING STATION IF ALTERNATE #1 IS ACCEPTED. IF NOT ACCEPTED, FEED TANKS SHALL REMAIN AS-IS. SEE SHEET ME101.
26. EXISTING TRENCH DRAINS SHALL REMAIN.
27. REMOVE EXISTING CONTINUOUS BLOWDOWN PIPING, VALVES ETC. FROM STEAM DRUM CONNECTION TO CONNECTION ON MANUAL BLOWDOWN PIPING.
28. EDGE OF MEZZANINE.
29. EXISTING CONDENSATE TRANSFER PUMPS SHALL REMAIN.
30. REMOVE EXISTING FLOOR DRAIN AND PIPING TO LOCATION SHOWN. SEE LARGE SCALE DETAIL A4/ME401.

NOTES:

1. THE PURPOSE AND INTENT OF THE DEMOLITION OF BOILER #1 IS TO REMOVE ALL ITEMS ASSOCIATED WITH BOILER #1 INCLUDING PIPING, CONTROLS, ELECTRICAL, SUPPORTS, HANGERS, FILL UNDER BOILER ETC. THE BOILER ITSELF SHALL BE REMOVED BY THE ASBESTOS TEAM.
2. IF CONSTRUCTION IS DURING HOT WEATHER THE NEW VALVES AND CAPS WILL NOT BE NECESSARY AS THE PLANT WILL BE SHUT DOWN.

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PROJECT NAME & ADDRESS

SUU BOILER PLANT BOILER REPLACEMENT

DFCM #09239730

Cedar City, Utah

MARK	DATE	REVISION

PROJECT MANAGER: WP
DRAWN BY: LGD
CHECKED BY: SLW
DATE: 03/01/10
WHW JOB NO.: 09047

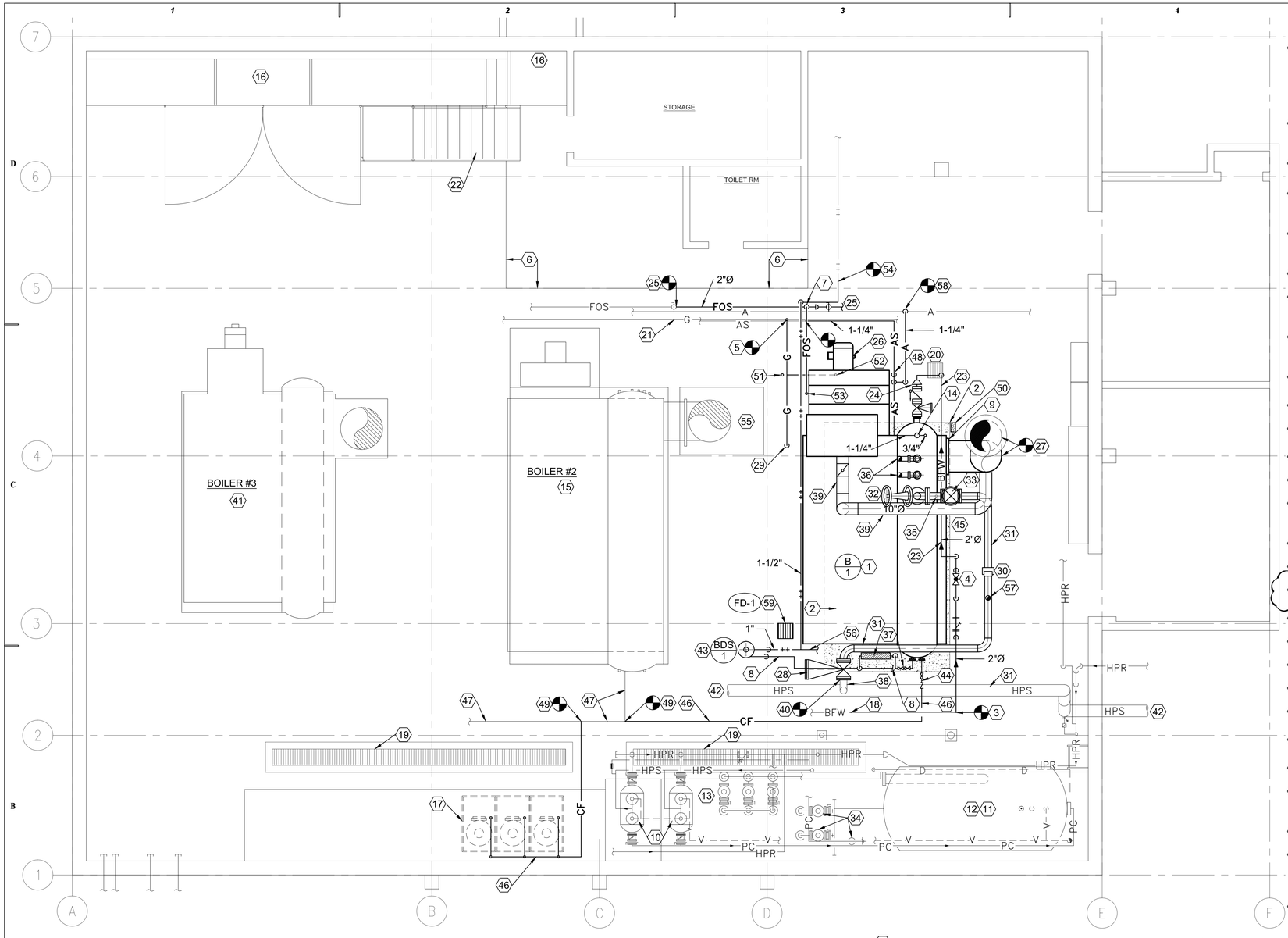
PROFESSIONAL ENGINEER 03/01/10 WINWARD M. PACKER No. 375080 STATE OF UTAH

SHEET TITLE

MECHANICAL DEMOLITION FLOOR PLAN

SHEET NO.

MD101



MECHANICAL FLOOR PLAN

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

SHEET NOTES:

1. NEW 30,000 #1HR BOILER, NO. 1, LOCATE AS SHOWN. FIELD VERIFY ROUTING OF BOILER PATH FROM ROOF TO PAD. SEE STRUCTURAL DRAWINGS FOR FOUNDATION AND ROOF DETAILS. ALL PIPING, CONDUIT, LIGHTS, SUPPORTS ETC. IN THE WAY OF THE BOILER PATH FROM THE ROOF TO THE FLOOR, SHALL BE REMOVED AND REPLACED. THE REPLACEMENT SHALL TAKE PLACE AFTER BOILER IS SET.
2. NEW BOILER CONCRETE PAD. SEE STRUCTURAL DRAWINGS FOR DETAILS. COORDINATE WITH BOILER FOOTPRINT PURCHASED BY CONTRACTOR.
3. CONNECT NEW BOILER FEED WATER TO EXISTING AT THIS LOCATION. FIELD VERIFY EXACT LOCATION. SEE PIPING ISOMETRIC A4/ME901.
4. INSTALL NEW BOILER FEEDWATER CONTROL STATION PROVIDED BY BOILER MANUFACTURER. SEE PIPING ISOMETRIC A4/ME901. MATCH EXISTING CONTROLS. SEE SHEET ME703.
5. CONNECT NEW 3" GAS PIPING TO EXISTING 4" GAS PIPING AT THIS APPROXIMATE LOCATION. FIELD VERIFY EXACT LOCATION. SEE GAS PIPING ISOMETRIC C3/ME901.
6. EDGE OF MEZZANINE.
7. CONNECT NEW FUEL OIL PIPING TO EXISTING AT THIS APPROXIMATE LOCATION. FIELD VERIFY EXACT LOCATION. SEE STEAM AND OIL ATOMIZATION PIPING DETAIL A2/ME601.
8. PROVIDE 1-1/2" INTERMITTENT BOILER BLOWDOWN PIPING COMPLETE WITH TANDEM VALVES, SUPPORTS, ETC. SEE DETAIL A2 AND C2/ME402.
9. INSTALL NEW FLEXIBLE STACK CONNECTION TO NEW BOILER PROVIDED BY BOILER MANUFACTURER INSTALLED BY CONTRACTOR..
10. EXISTING STEAM POWERED CONDENSATE PUMPS SHALL REMAIN.
11. EXISTING DEAERATOR ABOVE CONDENSATE RECEIVER TANK SHALL REMAIN.
12. EXISTING CONDENSATE RECEIVER TANK SHALL REMAIN.
13. EXISTING BOILER FEEDWATER PUMPS SHALL REMAIN.
14. 1-1/4" STEAM VENT CONNECTION AND VALVE. EXTEND AND CONNECT TO 1-1/4" STEAM ATOMIZATION PIPING AS SHOWN. 3/4" VENT VALVE SHALL BE PROVIDED WITH MUFFLER. SEE MUFFLER DETAIL A4/ME601.
15. EXISTING BOILER No.2 SHALL REMAIN.
16. EXISTING DOOR TO GRADE.
17. EXISTING CHEMICAL FEED TANKS AND PUMPS SHALL REMAIN AND BE RELOCATED AS SHOWN. ALTERNATE No1.
18. EXISTING BOILER FEEDWATER PIPING SHALL REMAIN.
19. EXISTING TRENCH DRAIN SYSTEM SHALL REMAIN.
20. EXISTING FLOOR DRAIN SHALL REMAIN.
21. EXISTING 4" GAS PIPING SHALL REMAIN.
22. EXISTING STAIRS FROM BOILER ROOM FLOOR TO EXIT AND LOADING DOCK.
23. 2" BOILER FEEDWATER PIPING TO STEAM DRUM FEEDWATER CONNECTION. SEE ISOMETRIC A4/ME901.
24. 2-1/2"x2" REDUCER.
25. REMOVE 1"Ø F.O.S PIPING FROM EXISTING VALVE TO PAST NEW BOILER No.1. RE-CONNECT BACK INTO 1" F.O.S SERVING EXTERIOR GENERATOR DAY TANK.
26. NEW FD FAN MOTOR PROVIDED BY BOILER MANUFACTURER.
27. NEW 27" BOILER STACK CONNECT TO EXISTING 36" STACK BELOW ROOF PENETRATION. SEE DETAIL A2/ME502. OFFSET TO MATCH EXISTING STACK. RE-USE EXISTING STACK FROM JUST BELOW ROOF TO TOP OF EXTERIOR STACK.
28. 6" - 300# GATE VALVE WITH CHAIN WHEEL HANDLE. INSTALL DURING DEMOLITION AND PROVIDE BLIND FLANGE UNTIL NEW STEAM PIPING IN INSTALLED.
29. DROP GAS LINE DOWN AND CONNECT TO GAS TRAIN. SEE GAS TRAIN ISOMETRIC SHEET C3/ME901.
30. RE-INSTALL EXISTING REMOVED STEAM FLOW METER AND TRANSMITTER. INSTALL WITH THE LENGTH UPSTREAM AND DOWNSTREAM REQUIRED BY MANUFACTURER.
31. NEW 6" STEAM PIPING. SUPPORT FROM OVERHEAD STRUCTURAL WITH CLEVIS TYPE HANGERS.
32. INSTALL 6" - 300# NON RETURN ANGLE VALVE PROVIDED BY BOILER MANUFACTURER.
33. INSTALL 6" - 300# GATE VALVE PROVIDED BY BOILER MANUFACTURER.
34. EXISTING CONDENSATE TRANSFER PUMPS SHALL REMAIN.
35. INSTALL SPOOL PIECE WITH DRAIN AND VALVE PROVIDED BY BOILER MANUFACTURER. EXTENT 3/4" DRAIN LINE FROM DRAIN VALVE TO EXISTING FLOOR SINK.
36. INSTALL RELIEF VALVES AND RELIEF PIPING THROUGH ROOF. USE EXISTING ROOF OPENINGS FOR NEW PIPING. MODIFY TO MATCH NEW PIPING. SEE DETAIL C4/ME501.
37. SEE DETAIL A1/ME501 FOR DETAIL OF CONTINUOUS BLOWDOWN PIPING THIS AREA.
38. EXISTING 6" - 90° ELL SHALL REMAIN.
39. NEW 10" DIA. F.G.R DUCT- PROVIDED BY BOILER MANUFACTURER AND INSTALLED BY THIS CONTRACTOR.
40. CONNECT NEW 6" SCH 80 PIPE AND 300# FLANGE TO EXISTING 90° ELL.
41. EXISTING BOILER No.3 SHALL REMAIN.
42. EXISTING 10" STEAM HEADER SHALL REMAIN.
43. NEW BLOWDOWN SEPARATOR. CONNECT TO EXISTING 3" VENT THRU ROOF. SEE DETAIL C1/ME501.
44. INSTALL 1/2" GATE VALVE AND 1/2" CHECK VALVE ON CHEMICAL FEED PIPING. VALVES PROVIDED BY BOILER MANUFACTURER.
45. RE-INSTALL LADDER AND CATWALK IN THIS APPROXIMATE LOCATION. COORDINATE WITH USER FOR EXACT LOCATION.
46. NEW STAINLESS STEEL TUBING SHALL BE INSTALLED INSIDE A 1" CONDUIT PIPE SUPPORTED FROM OVERHEAD STRUCTURE, FROM NEW CONNECTION TO NEW BOILER No1.
47. EXISTING CHEMICAL FEED PIPING SHALL REMAIN.
48. 1-1/4" ATOMIZING STEAM SUPPLY DROP TO CONNECTION ON BURNER. PROVIDE 1-1/4" 800# GATE VALVE AND 1-1/4" TO 3/4" REDUCER AT BURNER CONNECTION.
49. CONNECT NEW 1" CONDUIT WITH INTERIOR CHEMICAL FEED STAINLESS STEAL TUBING INTO EXISTING AT THIS LOCATION. FIELD VERIFY EXACT LOCATION. SEE AND MATCH EXISTING INSTALLATION.
50. PROVIDE FINISHED PANEL WITH REMOTE PRESSURE AND TEMPERATURE GAUGES WHERE DIRECTED BY OWNER.
51. 2" GAS VENT THRU ROOF. FIELD VERIFY ROUTING TO MISS STRUCTURAL, ELECTRICAL, AND PIPING ETC. COORDINATE WITH EXISTING REMOVED GAS VENT THROUGH ROOF AND USE EXISTING OPENING IF POSSIBLE.
52. ROUTE PILOT GAS VENT BETWEEN BURNER AND FAN AND CONNECT TO 2" GAS VENT.
53. DROP 1" F.O.S. TO BURNER. SEE F.O.S FLOW SHEET.
54. CONNECT NEW 1-1/2" SOFT WATER AT THIS LOCATION AND ROUTE NEW PIPING AS SHOWN. FIELD VERIFY ROUTING OF NEW PIPING.
55. EXISTING BOILER No.2 ECONOMIZER FOUNDATION.
56. 1/2" SOFT WATER TO SAMPLE COOLER. SEE DETAIL A1/ME501.
57. RE-CONNECT EXISTING 4" STEAM BLOW OFF PIPING AND VALVE TO NEW 6" STEAM SUPPLY.
58. CONNECT NEW 1-1/4" ATOMIZING AIR INTO EXISTING AIR PIPING AT THIS APPROXIMATE LOCATION. FIELD VERIFY EXACT LOCATION.
59. NEW 4" FLOOR DRAIN. SEE LARGE SCALE DRAIN DETAIL A4/ME401.

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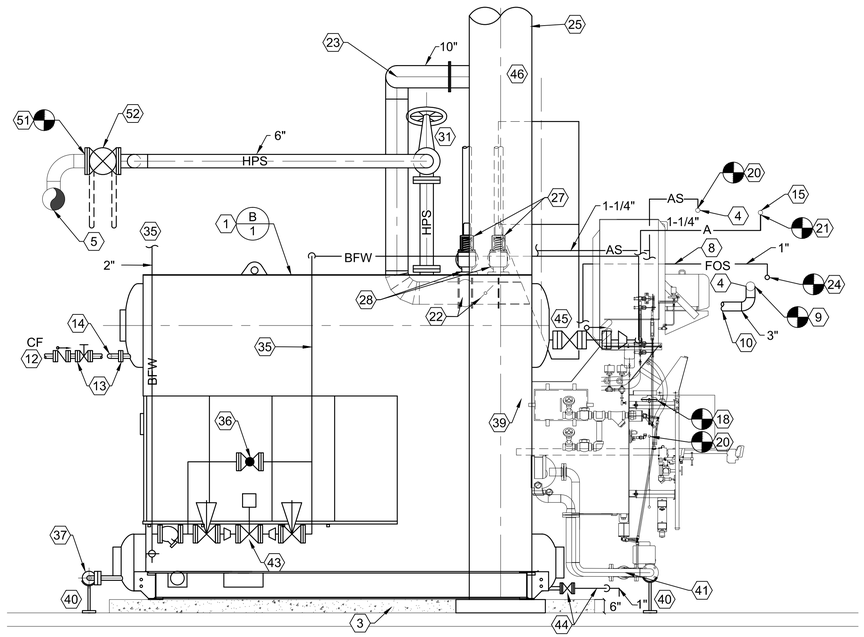
SHEET TITLE

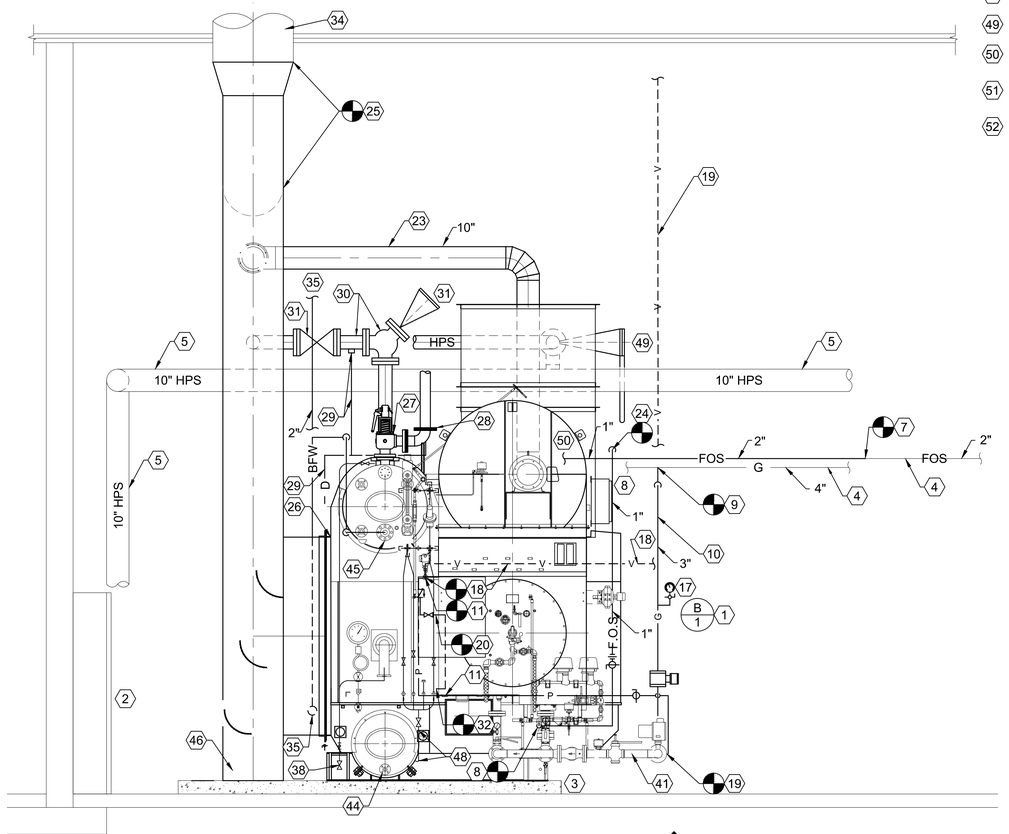
MECHANICAL FLOOR PLAN

SHEET NO.

ME101



SIDE ELEVATION
SCALE: 3/8" = 1'-0"
B
ME201



FRONT ELEVATION
SCALE: 3/8" = 1'-0"
A
ME201

SHEET NOTES:

34 EXISTING STACK SHALL REMAIN.

35 NEW 2" BOILER FEEDWATER SUPPLY.

36 2"- 300# BY-PASS GLOBE VALVE PROVIDED BY BOILER MANUFACTURER AND INSTALLED BY CONTRACTOR.

37 NEW BLOWDOWN PIPING TO BLOWDOWN SEPARATOR. SEE SHEET ME401. TANDEM VALVES SHALL BE PROVIDED BY BOILER MANUFACTURER AND INSTALLED BY CONTRACTOR. PIPING FROM BOILER TO TANDUM VALVES SHALL BE CODE PIPING.

38 EXTEND 3/4" SOOT BLOWER DRAIN PIPING AND TERMINATE WITH 3/4"- 800# GATE VALVE. EXTEND DRAIN TO EXISTING FLOOR SINK.

39 BOILER STACK CONNECTION.

40 FLOOR PIPE SUPPORT. SEE DETAIL A4/ME502.

41 GAS TRAIN PROVIDED BY BOILER MANUFACTURER INSTALLED BY CONTRACTOR.

42 PILOT BALL VALVE.

43 NEW BOILER FEEDWATER CONTROL STATION INCLUDING CONTROL VALVE, GATE VALVES ETC. SHALL BE PROVIDED BY BOILER MANUFACTURER AND INSTALLED BY CONTRACTOR.

44 PROVIDE 1" 800# FLANGE AND 1" 800# VALVE AND ROUTE TO EXISTING FLOOR SINK.

45 NEW BOILER FEEDWATER GATE VALVE AND CHECK VALVE- 300# 2-1/2". PROVIDED BY BOILER MANUFACTURER AND INSTALLED BY CONTRACTOR.

46 EXTEND STACK DOWN TO CONCRETE FOUNDATION.

47 NEW BOILER SHALL HAVE THE FOLLOWING MAJOR PIPING CONNECTIONS:
- a. BOILER FEED WATER - 2/1/2"
- b. NATURAL GAS - 3"
- c. FUEL OIL SUPPLY - 1"
- d. ATOMIZATION STEAM - 1-1/4"
- e. ATOMIZATION AIR - 1"
- f. MAIN STEAM SUPPLY - 6"
- g. CONTINUOUS BLOWDOWN - 1"
- h. INTERMITTENT BLOWDOWN - 1-1/2"
- i. CHEMICAL FEED - 1/2"

48 PROVIDE 1" DRAIN AND VALVE. EXTEND TO EXISTING FLOOR SINK.

49 6" - 300# GATE VALVE WITH CHAIN WHEEL.

50 REDUCE F.O.S FROM 2" TO 1" AND CONNECT TO EXISTING 1" F.O.S TO EXTERIOR EMERGENCY GENERATOR DAY TANK.

51 CONNECT NEW 6" SCH 80 PIPE AND 300# FLANGE TO EXISTING 90° ELL.

52 PROVIDE NEW 6" - 300# GATE VALVE WITH CHAIN AND CHAIN OPERATOR.

SHEET NOTES:

1 NEW 30,000 #1HR BOILER. CONTRACTOR SHALL INSTALL BOILER AS INDICATED AND PER MANUFACTURER'S INSTRUCTIONS. CONTRACTOR SHALL HAVE INSTALLATION INSTRUCTIONS FROM BOILER MANUFACTURER BEFORE INSTALLATION OF BOILER.

2 EXISTING ELECTRICAL EQUIPMENT SHALL REMAIN. SEE ELECTRICAL FOR REQUIRED CHANGES.

3 NEW BOILER FOUNDATION. SEE STRUCTURAL DRAWINGS FOR DETAILS.

4 EXISTING PIPING SHALL REMAIN.

5 EXISTING 10" STEAM HEADER SHALL REMAIN.

6 NEW 1" SCH. 80 FUEL OIL SUPPLY.

7 CONNECT NEW 2" F.O.S FROM EXISTING VALVE NEXT TO BOILER No.2 TO CONNECTION AT NEW BOILER No.1.

8 1" SCH. 80 FUEL OIL SUPPLY TO CONNECTION ON BURNER. FIELD VERIFY ROUTING OF PIPING TO BURNER CONNECTION. PROVIDE 1" 600# BALL VALVE.

9 CONNECT NEW 3" GAS PIPING TO EXISTING 4" GAS PIPING MAIN. SEE PLAN VIEW SHEET ME101 FIELD VERIFY EXACT LOCATION FOR TIE-IN.

10 NEW 3" NATURAL GAS. CONNECT TO GAS TRAIN PROVIDED WITH BOILER. CONTRACTOR SHALL INSTALL THE GAS TRAIN THAT WILL BE SHIPPED LOOSE WITH THE BOILER. SEE GAS ISOMETRIC C3/ME901.

11 NEW 1/2" GAS PILOT LINE. CONNECT TO 3/8" GAS PILOT CONNECTION ON BURNER. FIELD VERIFY ROUTING OF PIPING TO BURNER CONNECTION. SEE GAS TRAIN ISOMETRICS C3/ME901.

12 NEW 1/2" CHEMICAL FEED PIPING.

13 INSTALL 1/2" 800# CHECK VALVE AND GATE VALVE PROVIDED BY BOILER MANUFACTURER. PROVIDE 1/2" 300# COMPANION FLANGE AT BOILER CONNECTION.

14 NEW 1" CONTINUOUS BLOWDOWN PIPING SCH. 80 CARBON STEEL. CONNECT TO BOILER CONNECTION WITH 1"- 300# COMPANION FLANGE.

15 EXISTING AIR PIPING SHALL REMAIN.

16 NEW NATURAL GAS METER. SEE SPECIFICATIONS. METER SHALL BE EQUAL TO SAGE IN-LINE MASS FLOWMETER.

17 NEW PRESSURE GAUGE. 0 TO 50 PSIG.

18 NEW VENT PIPING FROM PILOT. FIELD VERIFY ROUTING OF VENT PIPING TO BURNER CONNECTION. CONNECT TO MAIN 2" VTR.

19 CONNECT NEW VENT PIPING CONNECTION ON GAS TRAIN. ROUTE GAS VENT UP AND THRU ROOF. FIELD VERIFY ROUTING OF VENT PIPING. IF POSSIBLE USE EXISTING ROOF OPENING FROM REMOVED VENT. RE-USE EXISTING SUPPORTS ON NEW PIPING PENETRATION.

20 NEW 1-1/4" STEAM ATOMIZATION PIPING FROM EXISTING STEAM SUPPLY LINE. FIELD VERIFY ROUTING OF PIPING TO BURNER CONNECTION. USE SCH. 80 PIPING.

21 NEW 1" ATOMIZATION AIR PIPING CONNECTION TO EXISTING MAIN. FIELD VERIFY EXACT LOCATION FOR TIE-IN.

22 FGR DUCT DAMPER AND FLEX CONNECTION. PROVIDED BY BOILER MANUFACTURER AND INSTALLED BY CONTRACTOR.

23 10" DIA. FLUE GAS RECIRCULATING DUCT. PROVIDE BY BOILER MANUFACTURER AND INSTALLED BY CONTRACTOR.

24 NEW 1"Ø F.O.S CONNECTION TO NEW 2" F.O.S MAIN. FIELD VERIFY EXACT LOCATION FOR TIE-IN.

25 CONNECT NEW 27"Ø STACK TO EXISTING 36"Ø STACK JUST BEFORE ROOF OPENING. OFF SET NEW STACK TO LINE UP WITH EXISTING. SEE DETAIL A2/ME502.

26 FLEX CONNECTION BETWEEN BOILER AND STACK. PROVIDED BY BOILER MANUFACTURER INSTALLED BY CONTRACTOR.

27 TWO NEW PRESSURE RELIEF VALVES PROVIDED BY BOILER MANUFACTURER AND INSTALLED BY CONTRACTOR.

28 PROVIDE DRIP PAN ELL AND DRAIN PAN. ROUTE 3/4" DRAIN PIPING DOWN THE SIDE OF THE BOILER AND TERMINATE WITH 3/4"- 800# GATE VALVE. SEE DETAIL C4/ME501.

29 SPOOL PIECE, NIPPLE, AND DRAIN VALVE SHALL BE PROVIDED BY BOILER MANUFACTURER AND INSTALLED BY CONTRACTOR. PROVIDE 3/4" SCH. 80 DRAIN BETWEEN 6" NON-RETURN ANGLE VALVE AND 6" STOP VALVE. PIPING DRAIN DOWN THE SIDE OF THE BOILER AND TERMINATE WITH 3/4" - 800# VALVE. LOWER VALVE SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR. EXTEND DRAIN LINE TO EXISTING FLOOR SINK.

30 INSTALL NEW 6" STEAM PIPING FROM BOILER CONNECTION TO EXISTING 10" STEAM HEADER. SEE SHEET ME101. PIPING SHALL BE ASME CODE PIPING FROM BOILER CONNECTION TO 6" NON-RETURN ANGLE VALVE.

31 CONTRACTOR SHALL INSTALL 6" - 300# ANGLE NON-RETURN VALVE AND 6" - 300# STOP VALVE PROVIDED BY BOILER MANUFACTURER. PROVIDE 6" - 300# COMPANION FLANGES AT BOILER CONNECTION AND AT VALVE CONNECTIONS.

32 CONDENSATE DRAIN FROM STEAM ATOMIZATION SYSTEM. ROUTE 3/4" SCH. 80 DRAIN LINE TO DRAINAGE SYSTEM.

33 PROVIDE UNIONS WHERE SHOWN AND AS APPLICABLE FOR ACCESS IN PIPING SYSTEM. UNIONS FOR STEAM AND CONDENSATE PIPING SHALL BE SCH. 80.

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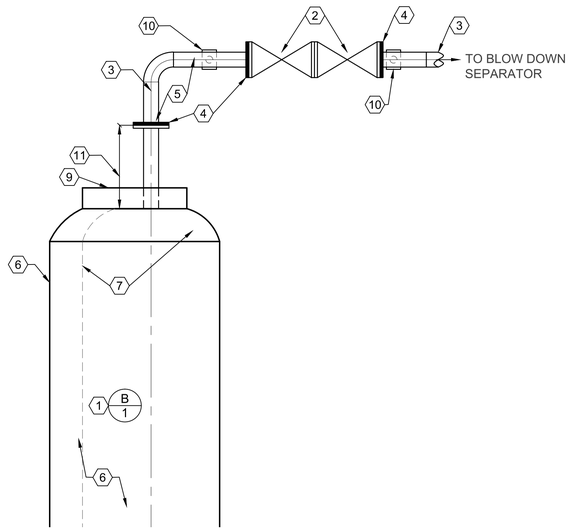
SHEET TITLE

BOILER ELEVATIONS

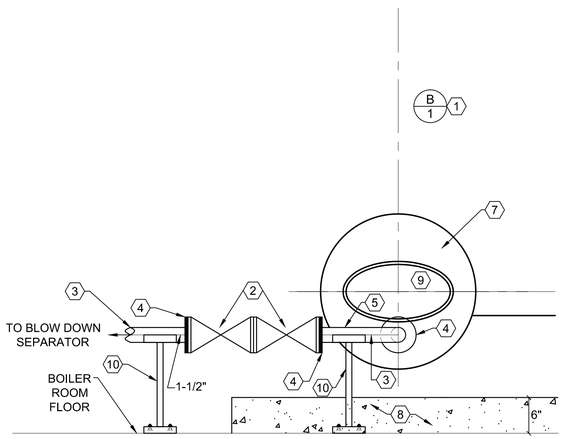
SHEET NO.

ME201



C2 BLOWDOWN PIPING PLAN

SCALE: 1" = 1'-0"

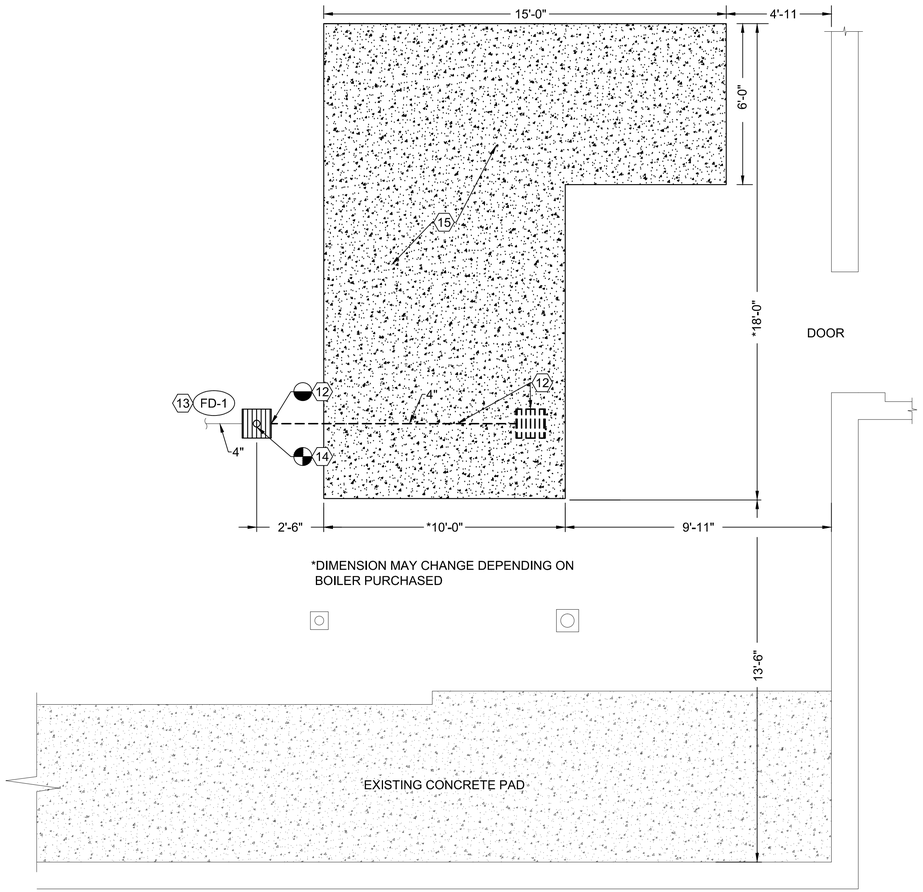


A2 BLOWDOWN PIPING ELEVATION

SCALE: 1" = 1'-0"

SHEET NOTES:

1. NEW 30,000 #/HR STEAM BOILER No.1.
2. LOWER DRUM BLOWOFF TANDEM VALVES PROVIDED BY BOILER MANUFACTURER AND INSTALLED BY THIS CONTRACTOR.
3. 1-1/2" BLOWDOWN PIPING TO FLANGE PROVIDED WITH BOILER.
4. NEW 1-1/2" -300# COMPANION FLANGES.
5. ASME CODE PIPING BETWEEN FLANGES AND FIRST VALVE. WELD ALL JOINTS.
6. 36"Ø STEAM DRUM.
7. 24"Ø LOWER MUD DRUM.
8. NEW BOILER CONCRETE PAD. SEE STRUCTURAL DETAILS ON STRUCTURAL DRAWINGS.
9. BOILER DRUM ACCESS MANWAY.
10. FLOOR SUPPORTS MADE FROM 2" DIA. PIPE AND 8"x8"x3/8" FLOOR PLATE WITH TWO BOLTS. SEE DETAIL A4/ME502.
11. COORDINATE THIS DISTANCE OF CORE PIPING WITH BOILER PURCHASED.
12. REMOVE EXISTING FLOOR DRAIN/SINK AND PIPING TO THIS LOCATION. FIELD VERIFY LOCATION OF WASTE PIPING. DRAWING IS TAKEN FROM RECORD DRAWINGS.
13. PROVIDE NEW 4" HEAVY DUTY FLOOR DRAIN IN THIS APPROXIMATE LOCATION.
14. CONNECT NEW DRAIN INTO EXISTING 4" WASTE PIPING. FIELD VERIFY EXACT LOCATION. NEW PIPING FROM NEW FLOOR DRAIN TO EXISTING PIPING SHALL BE 4" CAST IRON WITH HEAVY DUTY NO HUB, STAINLESS STEEL.
15. NEW BOILER FOUNDATION. THESE DIMENSIONS ARE BASED ON THE BABCOCK AND WILCOX BOILER. DIMENSIONS MAY BE DIFFERENT FOR OTHER BOILER MANUFACTURERS.



A4 FLOOR DRAIN DETAIL

SCALE: NONE

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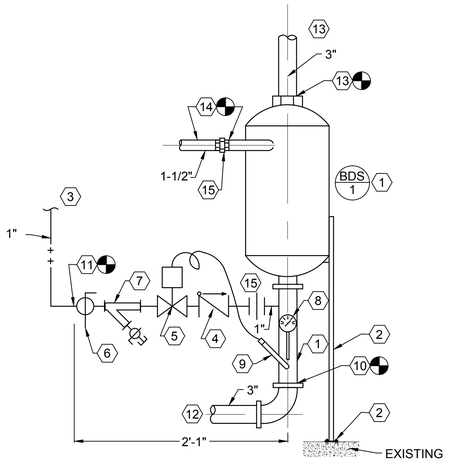
PROFESSIONAL ENGINEER
03/01/10
WINWARD M. PACKER
No. 375080
STATE OF UTAH

SHEET TITLE

LARGE SCALE PLAN AND ELEVATION BLOWDOWN SYSTEM

SHEET NO.

ME401



C1 BOILER BLOWDOWN SEPARATOR DETAIL

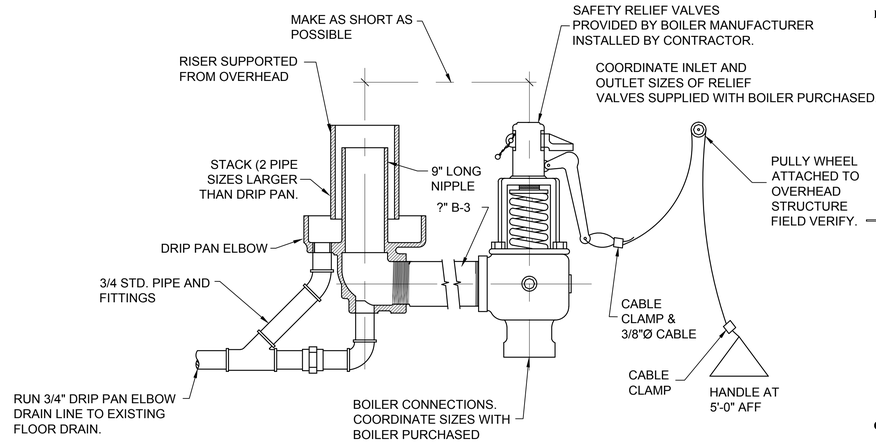
SCALE: NONE

BLOWDOWN SEPARATOR NOTES:

1. PACKAGED BOILER BLOWDOWN SEPARATOR AND COOLER. SEE SCHEDULE SHEET ME601.
2. LEGS FOR SEPARATOR SUPPORT. TYPICAL OF THREE(3). OTHERS LEFT OFF FOR CLARITY OF PIPING. ANCHOR TO FLOOR WITH 3/8"Ø X 2" LONG EXPANSION BOLTS.
3. 1"Ø COLD SOFT WATER SUPPLY. SEE SHEET ME101 FOR CONTINUATION.
4. CHECK VALVE PROVIDED AS PART OF THE PACKAGE.
5. TEMPERATURE REGULATING VALVE PART OF PACKAGE.
6. SHUT-OFF VALVE PART OF PACKAGE.
7. STRAINER PART OF PACKAGE.
8. THERMOMETER PART OF PACKAGE.
9. TEMPERATURE SENSING PROBE PART OF PACKAGE.
10. 3" CONNECTION TO PACKAGED DRAIN BY CONTRACTOR.
11. 1" COLD SOFT WATER CONNECTION TO PACKAGED COLD WATER CONNECTION BY CONTRACTOR.
12. 3" DRAIN TO EXISTING FLOOR DRAIN. SEE SHEET ME101 FOR CONTINUATION.
13. 3" VENT THRU-ROOF. CONTRACTOR SHALL CONNECT TO PACKAGED VENT CONNECTION. MATCH EXISTING ROOF OPENING FROM REMOVED SEPARATOR.
14. 1-1/2" BOILER BLOWDOWN PIPING FROM BOILER. CONNECT TO PACKAGE BLOWDOWN CONNECTION. SEE SHEET ME401 FOR DETAILS.
15. UNION.

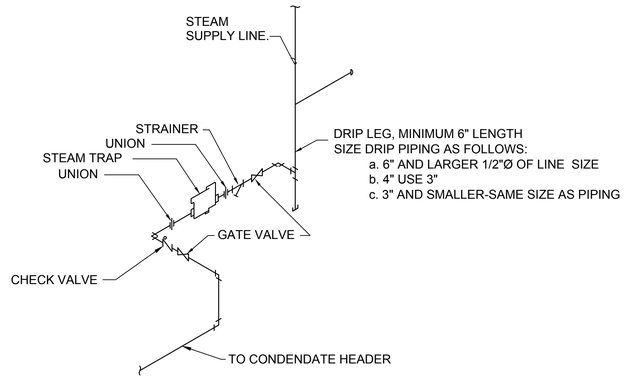
NOTE:

COORDINATE ROOF PENETRATION AND NEW PIPE RISER WITH LOCATION OF EXISTING RELIEF PIPING OPENINGS, JOISTS, ROOF,AND STRUCTURE.



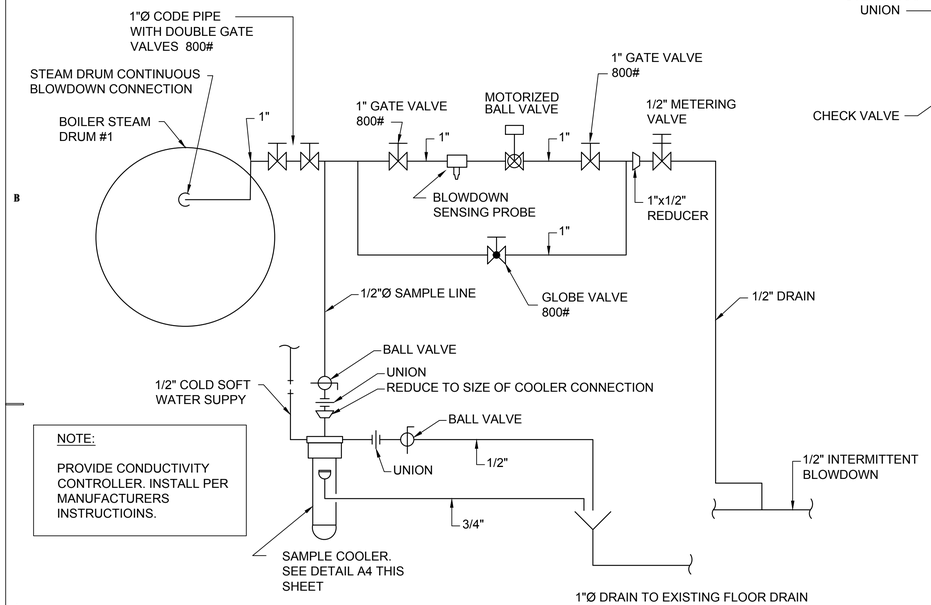
C4 SAFETY VALVE DETAIL

SCALE: NONE



B3 STEAM TRAP DETAIL

SCALE: NONE

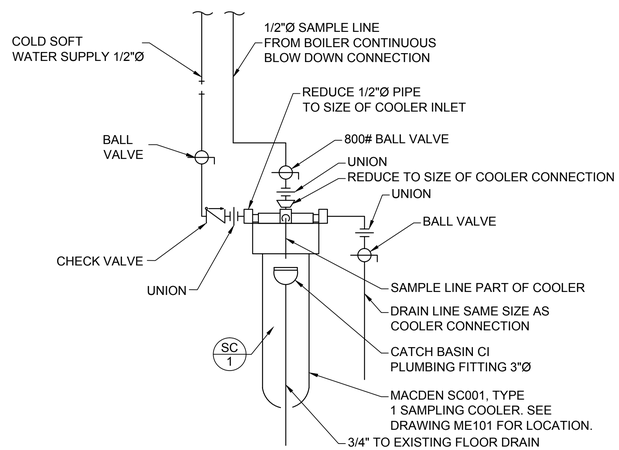


NOTE:

PROVIDE CONDUCTIVITY CONTROLLER. INSTALL PER MANUFACTURERS INSTRUCTIOINS.

A1 SURFACE BLOW-OFF DETAIL

SCALE: NONE



A4 BOILER SAMPLING COOLER DETAIL

SCALE: NONE

State of Utah
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EMAIL: excellence@whw-engineering.com

PROJECT NAME & ADDRESS

SUU BOILER PLANT BOILER REPLACEMENT

DFCM #09239730

Cedar City, Utah

MARK	DATE	REVISION

PROJECT MANAGER: WP
DRAWN BY: LGD
CHECKED BY: SLW
DATE: 03/01/10
WHW JOB NO.: 09047

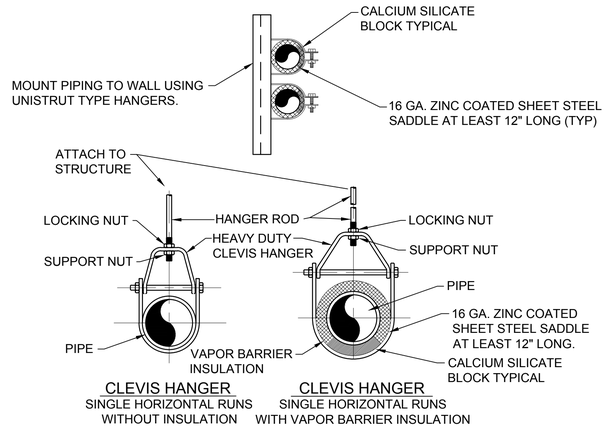
PROFESSIONAL ENGINEER
03/01/10
WINWARD M. PACKER
No. 375080
STATE OF UTAH

SHEET TITLE

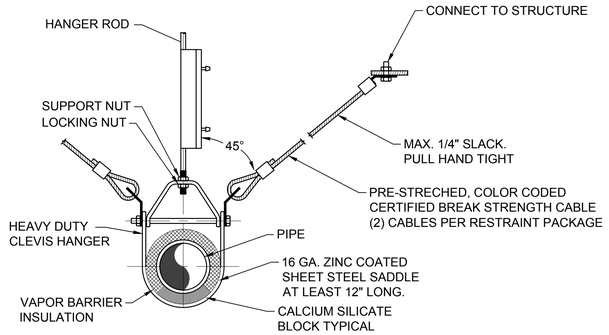
MECHANICAL DETAILS

SHEET NO.

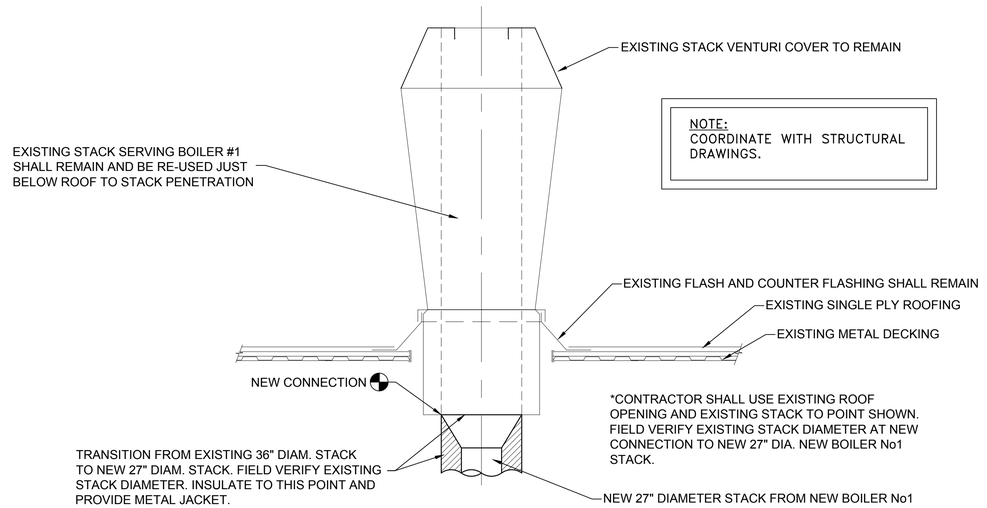
ME501



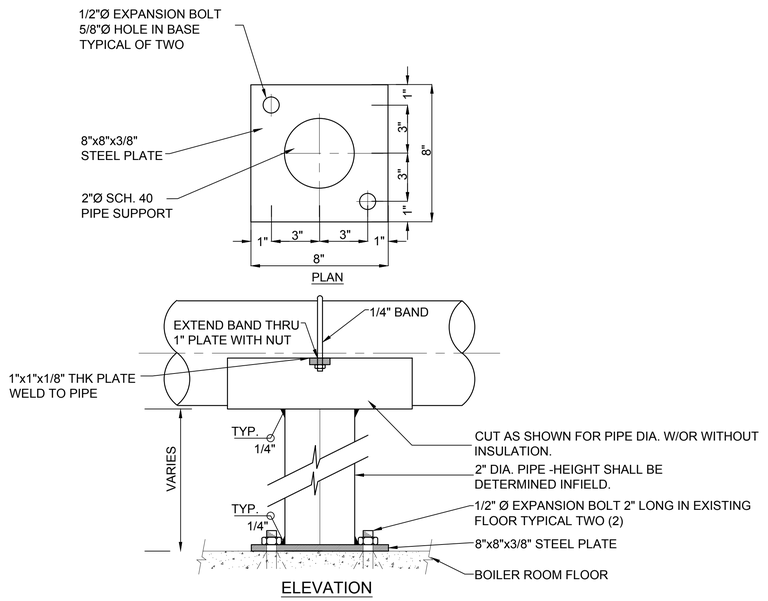
C1 PIPE HANGER DETAIL
SCALE: NONE



FOR PIPING 4" AND ABOVE
C4 SEISMIC SWAY BRACING DETAILS
SCALE: NONE



A2 BOILER STACK DETAIL NEW BOILER No. 1
SCALE: NONE



A4 FLOOR PIPING SUPPORT DETAIL
SCALE: NONE

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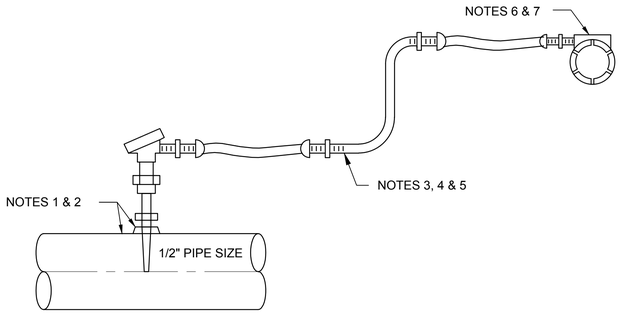
PROFESSIONAL ENGINEER
03/01/10
WINWARD M. PACKER
No. 375080
STATE OF UTAH

SHEET TITLE
MECHANICAL DETAILS

SHEET NO.
ME502

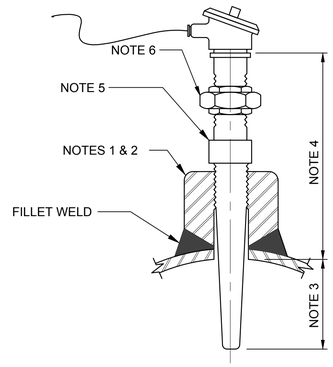


NOTES:

1. SEE SPECIFICATIONS FOR PIPE REQUIREMENTS.
2. SEE DETAIL C3 FOR RTD WITH THERMOWELL.
3. SEE ELECTRICAL SPECIFICATIONS FOR ELECTRICAL RACEWAY AND CABLE REQUIREMENTS.
4. SEE DETAIL A4 THIS SHEET FOR CONDUIT CONNECTIONS.
5. PROVIDE TWISTED SHIELD TRIAD CABLE FOR RTD EXTENSION WIRE FROM TEMPERATURE ELEMENT TO TEMPERATURE TRANSMITTER.
6. SEE DETAIL B4 FOR TRANSMITTER MOUNTING.
7. PROVIDE TWISTED SHIELDED PAIR CABLE FOR INSTRUMENT CIRCUIT.

C1 TEMPERATURE TRANSMITTER AIR, GAS, STEAM, AND WATER SERVICE DETAIL

SCALE: NONE

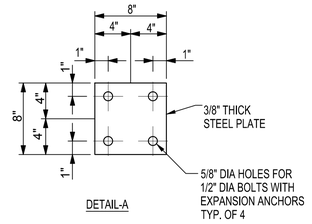


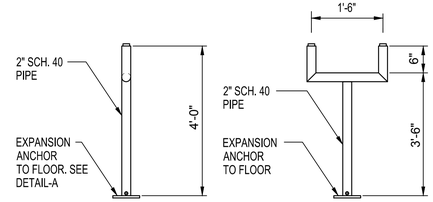
NOTES:

1. SEE SPECIFICATIONS FOR PIPE REQUIREMENTS.
2. INSTALL THREADOLET IN ACCORDANCE WITH INSTALLATION DETAIL A1 AND A3 THIS SHEET.
3. LIMIT INSERTION LENGTH TO 1/2 DIAMETER OF PIPE TO MAX LENGTH OF 4".
4. DIMENSION AS REQUIRED TO PLACE CONNECTION ABOVE INSULATION. REFER TO SPECIFICATIONS FOR INSULATION CLASS AND THICKNESS.
5. SEE DETAIL C1 FOR TEMPERATURE TRANSMITTER.
6. 1/2" NPT NIPPLE UNION.

C3 RTD WITH THERMOWELL AIR, GAS, STEAM, AND WATER SERVICE DETAIL

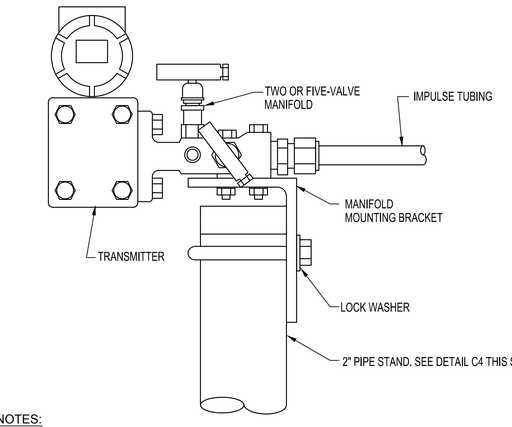
SCALE: NONE





C4 PIPE STAND DETAIL

SCALE: NONE

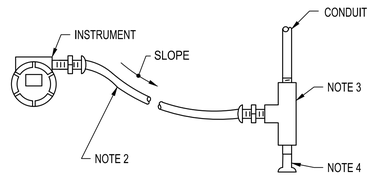


NOTES:

1. MOUNT INDICATOR VISIBLE FROM GRADE AS DIRECTED BY OWNER.

B4 PIPE STAND MOUNTING BRACKET FOR TRANSMITTER DETAIL

SCALE: NONE

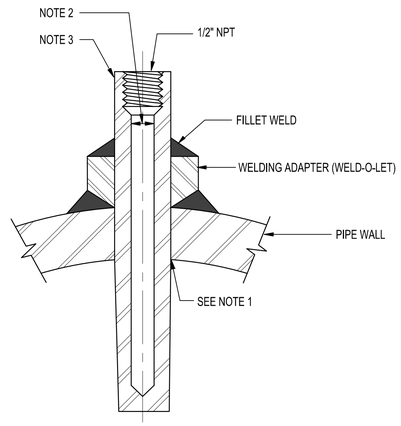


NOTES

1. SEE ELECTRICAL SPECIFICATIONS FOR CABLE AND CONDUIT REQUIREMENTS.
2. PROVIDE FLEXIBLE LIQUID TIGHT CONDUIT (MAXIMUM LENGTH OF 3FT).
3. MOUNT CONDUIT BODY BELOW BODY OF INSTRUMENT TO ALLOW CONDENSATION TO DRAIN FROM CONDUIT.
4. PROVIDE VENT DRAIN ASSEMBLY AT LOWER CONNECTION OF CONDUIT BODY.

A4 INSTRUMENT CONDUIT CONNECTION DETAIL

SCALE: NONE

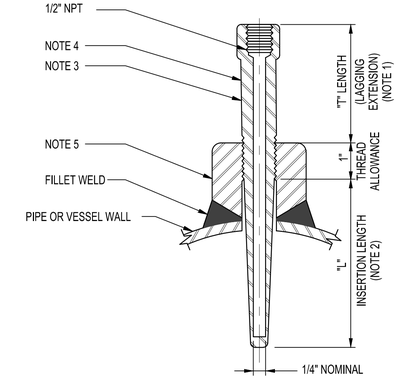


NOTES

1. DRILL AND REAM PIPE TO NOMINAL OUTSIDE DIAMETER OF THERMOWELL. TOLERENCE SHALL BE -.0005" TO +.000", TO ALLOW SLIGHT INTERFERENCE FIT.
2. PROVIDE THERMOMETER AND THERMOCOUPLE WELLS AS REQUIRED TO ACCOMMODATE DEVICE (0.387 INCH MAXIMUM.)
3. WELL MATERIAL SHALL MATCH PIPE MATERIAL UNLESS OTHERWISE NOTED. SEE SPECIFICATIONS.

A1 WELDED THERMOWELL DETAIL

SCALE: NONE



NOTES:

1. "T" LAGGING EXTENSION, AS REQUIRED TO PLACE CONNECTION ABOVE INSULATION. SEE SPECIFICATIONS FOR INSULATION CLASS AND INSULATION THICKNESS.
2. "L" INSERTION LENGTH, 1/2 DIAMETER OF PIPE MAXIMUM LENGTH OF 4". MANUFACTURER'S STANDARD INSERTION LENGTH NEAREST TO REQUIRED LENGTH WILL BE APPLICABLE.
3. SEE SPECIFICATIONS FOR THERMOWELL CONSTRUCTION.
4. WELL MATERIAL SHALL MATCH PIPE MATERIAL.
5. PROVIDE WELDING ADAPTER FOR STEEL ALLOY WELLS, REDUCING TEE WITH ADAPTER AS REQUIRED.

A3 THREADED THERMOWELL DETAIL

SCALE: NONE

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PROJECT NAME & ADDRESS

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DFCM #09239730

Cedar City, Utah

MARK	DATE	REVISION

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WHW JOB NO.: 09047

PROFESSIONAL ENGINEER 03/01/10 WINWARD M. PACKER No. 375080 STATE OF UTAH

SHEET TITLE

BOILER CONTROLS DETAILS

SHEET NO.

ME503

BOILER SCHEDULE

SYMBOL	DESIGN CAPACITY LBS/HR	DESIGN PRESSURE PSIG	OPERATING PRESSURE PSIG	FURNACE VOL. (CU. FT.)	TYPE	BOILER CONVECTION HEATING (SQ. FT.)	FURNACE HEATING SURFACE (SQ. FT.)	ASME TOTAL BOILER HEATING SURFACE SQ. FT.	FORCED DRAFT FAN MOTOR HP	WEIGHT LBS.			MAKE AND MODEL
										EMPTY	HYDRO	OPERATIONAL	
B 1	30,000	150	80 TO 100	633	D	2071	432	2503	25	47,500	62,600	58,400	B&W FM9-48

1. BOILER IS FITTED WITH A COEN BURNER MODEL DELTA LOW NOx.
2. PROVIDE 120V CONTROL CIRCUIT.
3. PROVIDE 208/60/3ϕ SERVICE FOR 25 HP FAN MOTOR. SEE ELECTRICAL DRAWINGS.

PLUMBING FIXTURE SCHEDULE

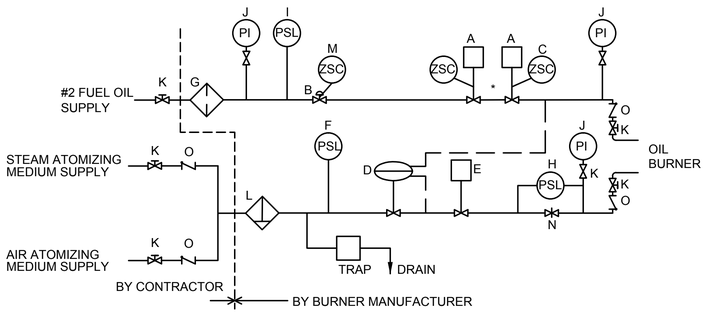
SYMBOL	FIXTURE	INDIVIDUAL LINE SIZES					REMARKS
		TRAP	WASTE	VENT	COLD WATER	HOT WATER	
FD-1	FLOOR DRAIN	-	4"	-	-	-	1

1. PROVIDE ZURN MODEL Z610-12" SQUARE TOP, HEAVY DUTY DRAIN, 4" NO HUB OUTLET, SUSPENDED SEDIMENT BUCKET, EQUAL BY JR SMITH AND WADE.

BLOWDOWN SEPARATOR

SYMBOL	NO.	HEIGHT	DIAM.	INLET	DRAIN	VENT	AUTOMATIC AFTERCOOLER			
							HEIGHT	DIA.	DRAIN	WATER INLET
BDS 1	1	29-11/16"	14"	1-1/2" SCREWED	3" SCREWED	3" SCREWED	12"	3"	3"	1" *

1. PROVIDE WITH SUPPORT LEGS SO DIMENSION FROM FLOOR TO VENT OULET IS 4'-5-11/16."
2. DIMENSIONS BASED ON A LATTNER MODEL 1450 SEPARATOR AND MODEL 301A AUTO AFTERCOOLER.
3. SEE DETAIL C1/ME501.



A. SAFETY SHUTOFF VALVE, SPRING CLOSING (NC)

B. OIL FLOW CONTROL VALVE

C. CLOSED POSITION INTERLOCK ON SAFETY SHUTOFF VALVE

D. ATOMIZING MEDIUM DIFFERENTIAL CONTROL VALVE

E. AUTOMATIC ATOMIZING MEDIUM SHUTOFF VALVE

F. LOW ATOMIZING MEDIUM PRESSURE SWITCH

G. OIL STRAINER

H. ATOMIZING MEDIUM FLOW INTERLOCK DIFFERENTIAL SWITCH OR PRESSURE INTERLOCK SWITCH

I. LOW PRESSURE SWITCH

J. PRESSURE GAUGE

K. MANUAL SHUTOFF VALVE

L. ATOMIZING MEDIUM STRAINER

M. LOW FIRE START SWITCH

N. ATOMIZING MEDIUM FLOW ORIFICE

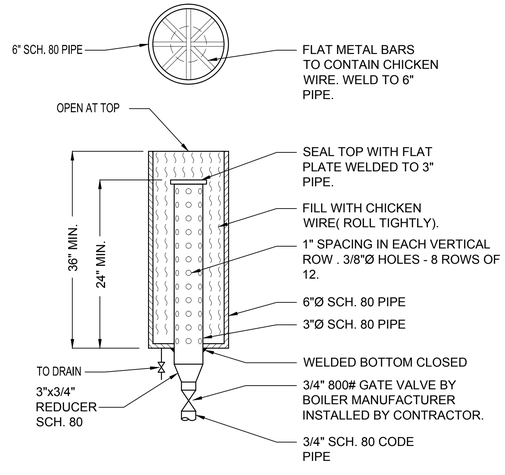
O. CHECK VALVE

SAFETY SHUTDOWN INTERLOCKS (NOT SHOWN)

FLAME DETECTOR(S)
EXCESSIVE STEAM PRESSURE INTERLOCK
AUXILIARY LOW WATER CUTOFF (ONE REQUIRED)

* CAUTION: MEANS SHALL BE PROVIDED TO PREVENT OR RELIEVE EXCESS PRESSURE BETWEEN THESE VALVES.

A2 STEAM AND OIL ATOMIZATION PIPING DETAIL
SCALE: NONE



A4 STEAM VENT MUFFLER DETAIL
SCALE: NONE

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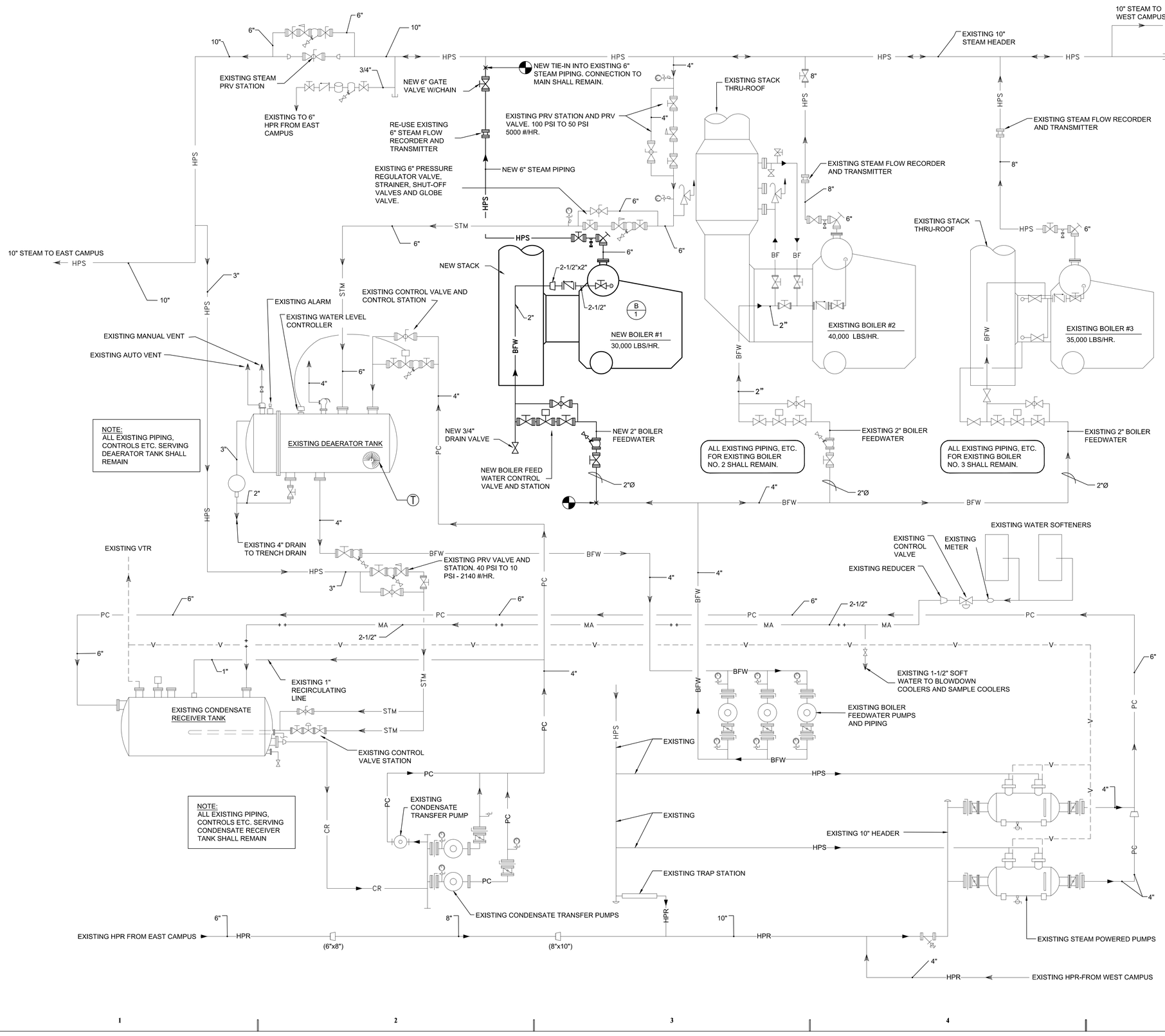
PROFESSIONAL ENGINEER 03/01/10 WINWARD M. PACKER No. 375080 STATE OF UTAH

SHEET TITLE

MECHANICAL SCHEDULES AND DETAILS

SHEET NO.

ME601



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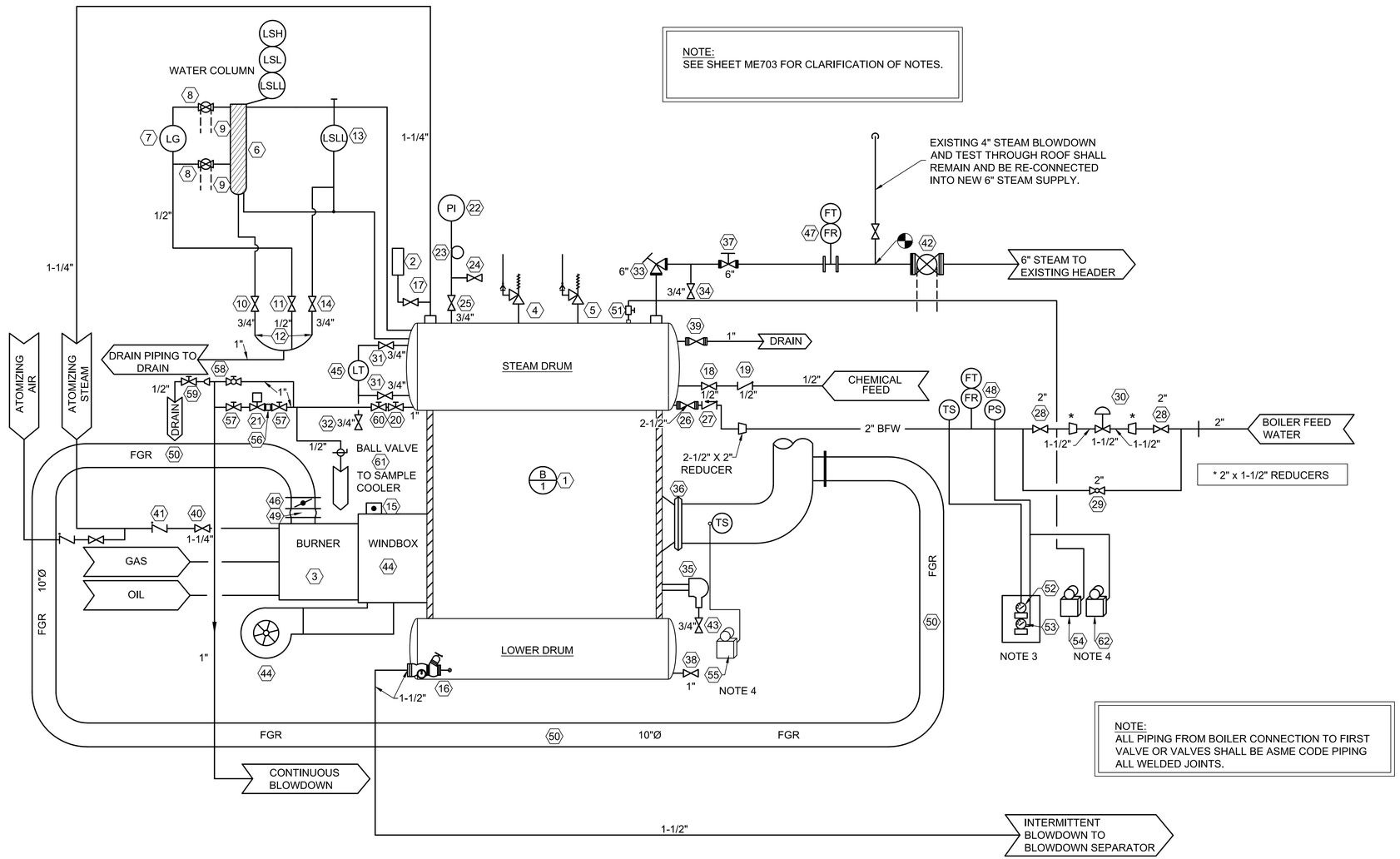
SHEET TITLE

STEAM FLOW DIAGRAM

SHEET NO.

ME701



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STATE OF UTAH

SHEET TITLE

PIPING AND INSTRUMENTATION DIAGRAM

SHEET NO.

ME702

NOTE:
SEE SHEET ME702 FOR NOTE DESIGNATIONS.

P & ID PARTS AND EQUIPMENT SCHEDULE

#	ITEM	PROVIDED BY	INSTALLED BY	SIZE	NOTES
1	BOILER	CONTRACTOR	CONTRACTOR	30,000 #1HR	DESIGN IS AROUND B&W- SEE SCHEDULE
2	MUFFLER	CONTRACTOR	CONTRACTOR	3/4"	SEE DETAIL
3	BURNER	BM	BM	30,000 #1HR	COEN BURNER
4	BOILER RELIEF VALVE	BM	CONTRACTOR	BY BM	SL
5	BOILER RELIEF VALVE	BM	CONTRACTOR	BY BM	SL
6	BOILER WATER COLUMN	BM	BM		
7	BOILER GLASS GAGE	BM	BM		
8	BOILER WATER GAGE VALVES	BM	BM		
9	BOILER WATER COLUMN	BM	BM		
10	WATER COLUMN DRAIN VALVE	BM	BM	3/4", 800 #SW	
11	WATER GAGE DRAIN VALVE	BM	BM	1/2", 800 #SW	
12	DRAIN MANIFOLD	BM	BM		
13	LOW WATER FUEL CUTOFF	BM	BM		
14	LWCO DRAIN VALVE	BM	BM	3/4", 800 #SW	
15	LWFCO BYPASS PUSHBUTTON	BM	BM		
16	LOWER DRUM BLOWOFF VALVE-TANDUM VALVES	BM	CONTRACTOR	1-1/2", 300 #FLG	S.L./WHEEL HANDLES
17	DRUM VENT VALVE	BM	CONTRACTOR	1-1/4", 800 #SW	S.L.
18	CHEM, FEED ISOL. VALVE	BM	CONTRACTOR	1/2", 800 #SW	S.L.
19	CHEM, FEED CHECK VALVE	BM	CONTRACTOR	1/2", 800 #SW	S.L.
20	CONTINUOUS BLOW DOWN ISO. VALVE	BM	CONTRACTOR	3/4", 800 #SW	S.L.
21	CONTINUOUS BLOW DOWN CONTROL VALVE	BM	CONTRACTOR	3/4", 800 #SW	S.L.
22	STM. PRESSURE GAGE	BM	BM		S.L.
23	STM. SYPHON	BM	BM		
24	STM. GAUGE TEST VALVE	BM	BM		
25	STM. GAUGE SHUT-OFF VALVE	BM	BM		
26	FEED WATER STOP VALVE	BM	CONTRACTOR	2-1/2"-300#-FLG	S.L.
27	FEED WATER CHECK VALVE	BM	CONTRACTOR	2-1/2"-300#-FLG	S.L.
28	FEED WATER ISOLATION VALVES	BM	CONTRACTOR	2"-300#-FLG	SHIPPED AS ASSEMBLY
29	FEED WATER CONTROL BYPASS VALVE	BM	CONTRACTOR	2"-300#-FLG	SHIPPED AS ASSEMBLY
30	FEED WATER CONTROL VALVE	BM	CONTRACTOR	1-1/2"-300#-FLG	SHIPPED AS ASSEMBLY

S.L. : SHIPPED LOOSE
SDBV : SHIPPED DIRECTLY BY VENDORS
FLG : FLANGED CONNECTION
SW : SOCKET WELD
NPL : NOMINAL PIPE THREAD
BW: BOILER MANUFACTURER

NOTE:

1. CONTRACTOR, AT THE TIME OF UNLOADING THE ABOVE ITEMS FROM THE BOILER MANUFACTURER, SHALL MAKE AN INVENTORY AND COMPARE WITH THE ITEMS NOTED ABOVE. ANY ITEMS SHOWN TO BE SUPPLIED BY BOILER MANUFACTURER AND NOT PROVIDED, SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND BOILER MANUFACTURER.
2. BOILER MANUFACTURER SHALL PROVIDE AN INSTALLATION MANUAL TO THE CONTRACTOR BEFORE INSTALLATION OF BOILER. CONTRACTOR SHALL BECOME VERY FAMILIAR WITH THESE INSTRUCTIONS AND HAVE ANY QUESTIONS ANSWERED BEFORE INSTALLING THE BOILER.
3. MOUNT GAGES IN A METAL FINISHED PANEL AND SUPPORT FROM FLOOR WITH UNISTRUT. LOCATE PER USER'S DIRECTIONS. PROVIDE IDENTIFICATION PLATE UNDER EACH GAGE.
4. MOUNT RECORDERS ON STEEL PIPE SUPPORTS IN LOCATION REQUIRED BY USER. PROVIDE IDENTIFICATION PLATE UNDER EACH RECORDER.

P & ID PARTS AND EQUIPMENT SCHEDULE CONT.

#	ITEM	PROVIDED BY	INSTALLED BY	SIZE	NOTES
31	DRUM LEVEL TRANS. ISOLATION VALVES	BM	CONTRACTOR	3/4"-800#-SW	S.L.
32	DRUM LEVEL TRANS. DRAIN VALVE	BM	CONTRACTOR	1/2"-800#-SW	S.L.
33	NON-RETURN ANGLE VALVE	BM	CONTRACTOR	6"-300#-FLG	S.L.
34	FREE BLOW DRAIN VALVE AND SPOOL/CODE PIPING	BM	CONTRACTOR	3/4"-800#-SW	S.L.
35	BOILER SOOT BLOWER	BM	BM		
36	BOILER STACK OUTLET EXPANSION JOINT	BM	CONTRACTOR		SDBV
37	STEAM STOP VALVE	BM	CONTRACTOR	6"-300#-FLG	S.L.
38	LOWER DRUM DRAIN VALVE	BM	CONTRACTOR	1"-800#-SW	S.L.
39	STEAM SAMPLE VALVE	BM	CONTRACTOR	1"-800#-SW	S.L.
40	ATOMIZING STEAM STOP VALVE	BM	CONTRACTOR	1-1/4"-800#-SW	S.L.
41	ATOMIZING STEAM CHECK VALVE	BM	CONTRACTOR	1-1/4"-800#-SW	S.L.
42	GATE VALVE WITH CHAIN WHEEL	CONTRACTOR	CONTRACTOR	6"-300#-FLG	
43	SOOT BLOWER DRAIN VALVE	BM	CONTRACTOR	3/4"-800#-SW	S.L.
44	WINDBOX MTD. FD FAN W/ MOTOR & STARTER	BM	BM		
45	DRUM LEVEL TRANSMITTER	BM	CONTRACTOR		S.L.
46	FGR DAMPER ACTUATOR	BM	CONTRACTOR		S.L.
47	EXISTING STEAM FLOW RECORDER & TRANSMITTER	CONTRACTOR	CONTRACTOR		
48	FEED WATER FLOW CONTROLLER	BM	CONTRACTOR	MATCH BOILERS 2&3, ROSEMONT 3051	S.L.
49	FGR EXPANSION JOINT	BM	CONTRACTOR		S.L.
50	FGR 10" DIA. DUCT	BM	CONTRACTOR		S.L.
51	STEAM PRESSURE TRANSMITTER	BM	CONTRACTOR		S.L.
52	BOILER FEEDWATER INLET REMOTE TEMP. GAUGE 0-300 °F	CONTRACTOR	CONTRACTOR	4-1/2"DIAM.	CABINET MTD.
53	BOILER FEEDWATER INLET PRESSURE GAUGE 0-250 PSIG	CONTRACTOR	CONTRACTOR	4-1/2"DIAM.	CABINET MTD.
54	BOILER DRUM PRESSURE TRANSMITTER AND RECORDER	CONTRACTOR	CONTRACTOR	ROSEMONT OR YOKOGAWA	INSTALL PER MANUFACTURER
55	STACK TEMPERATURE TRANSMITTER AND RECORDER	CONTRACTOR	CONTRACTOR	ROSEMONT OR YOKOGAWA	INSTALL PER MANUFACTURER
56	BLOWDOWN SENSING PROBE	CONTRACTOR	CONTRACTOR	3/4"-800#-SW	
57	GATE VALVE	CONTRACTOR	CONTRACTOR	3/4"-800#-SW	
58	GLOBE VALVE	CONTRACTOR	CONTRACTOR	3/4"-800#-SW	
59	METERING VALVE	CONTRACTOR	CONTRACTOR	1/2"-800#-SW	
60	CONTINUOUS BLOWDOWN ISOLATION VALVE	CONTRACTOR	CONTRACTOR	3/4"-800#-SW	
61	BALL VALVE	CONTRACTOR	CONTRACTOR	1/2"-800#-SW	
62	BOILER FEEDWATER PRESSURE TRANSMITTER AND RECORDER	CONTRACTOR	CONTRACTOR		

BM: BOILER MANUFACTURER
S.L. : SHIPPED LOOSE
SDBV : SHIPPED DIRECTLY BY VENDORS
FLG : FLANGED CONNECTION
SW : SOCKET WELD
NPL : NOMINAL PIPE THREAD

NOTE:
ANY VALVES, INSTRUMENTS, FITTING OR ANY ITEM SHIPPED LOOSE SHALL BE INSTALLED BY CONTRACTOR.

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PROJECT NAME & ADDRESS

SUU BOILER PLANT BOILER REPLACEMENT

DFCM #09239730

Cedar City, Utah

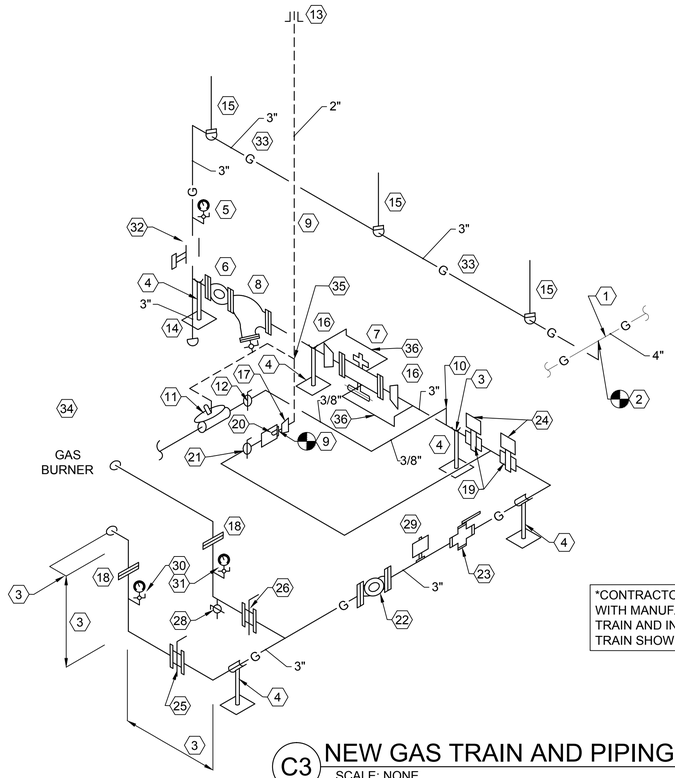
MARK	DATE	REVISION

PROJECT MANAGER: WP
DRAWN BY: LGD
CHECKED BY: SLW
DATE: 03/01/10
WHW JOB NO.: 09047

PROFESSIONAL ENGINEER 03/01/10 WINWARD M. PACKER No. 375080 STATE OF UTAH

SHEET TITLE
PIPING AND INSTRUMENTATION DIAGRAM NOTES

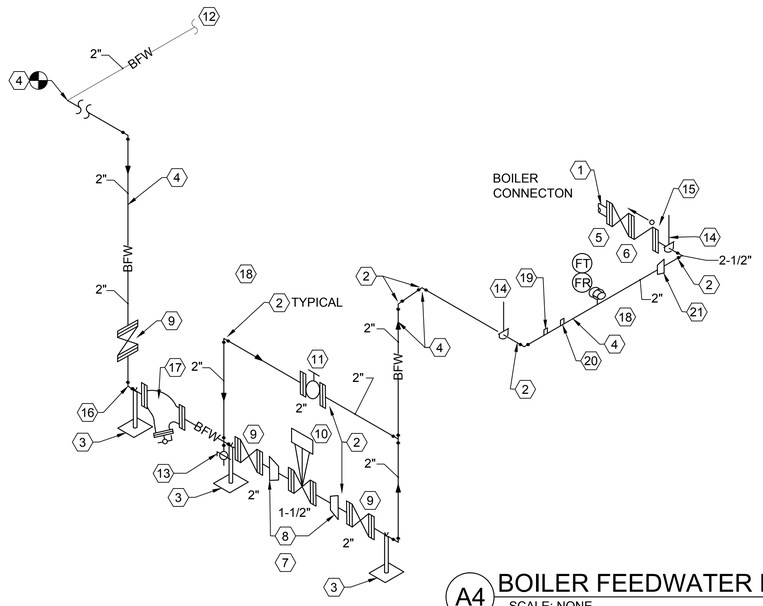
SHEET NO.
ME703



*CONTRACTOR SHALL VERIFY GAS TRAIN WITH MANUFACTURER SUPPLYING THE TRAIN AND INSTALL ACCORDINGLY. GAS TRAIN SHOWN IS FOR A COEN BURNER.

C3 NEW GAS TRAIN AND PIPING ISOMETRIC

SCALE: NONE



A4 BOILER FEEDWATER PIPING ISOMETRIC

SCALE: NONE

FEEDWATER SHEET NOTES:

1. BOILER CONNECTION: ANY PIPING BETWEEN BOILER AND FIRST VALVE SHALL BE ASME CODE PIPE.
2. ALL BFW PIPING JOINTS SHALL BE WELDED AND ALL FLANGES SHALL BE 300#.
3. PROVIDE FLOOR SUPPORTS MADE FROM 2" DIA. PIPE WITH A 8"x8"x3/8" STEEL FLOOR PLATE BOLTED IN TWO PLACES INTO EXISTING CONCRETE FLOOR. SEE DETAIL A4/ME502.
4. PROVIDE NEW BFW PIPING FROM NEW CONNECTION TO EXISTING BFW PIPING TO NEW BOILER CONNECTION.
5. 2-1/2" - 300# FLG. BFW STOP VALVE. PROVIDED BY BOILER MANUFACTURER AND INSTALLED BY CONTRACTOR.
6. 2-1/2" -300# FLG. BFW CHECK VALVE. PROVIDED BY BOILER MANUFACTURER AND INSTALLED BY CONTRACTOR.
7. BFW CONTROL STATION, SHIPPED AS ASSEMBLY FROM BOILER MANUFACTURER AND INSTALLED BY CONTRACTOR.
8. 2"x1-1/2" REDUCERS PROVIDE AND INSTALL IF NOT PROVIDED BY ASSEMBLY.
9. 2" -300# GATE VALVES PROVIDED WITH ASSEMBLY FROM BOILER MANUFACTURER. INSTALLED BY CONTRACTOR.
10. 1-1/2" -300# R.F. FLG. CONTROL VALVE WITH ASSEMBLY FROM BOILER MANUFACTURER. INSTALLED BY CONTRACTOR.
11. 2" -300# GLOBE VALVE. PROVIDED WITH ASSEMBLY FROM BOILER MANUFACTURER. INSTALLED BY CONTRACTOR.
12. EXISTING 2" BOILER FEED WATER.
13. 3/4" DRAIN LINE AND 3/4" - 800# SW VALVE. PROVIDED AND INSTALLED BY CONTRACTOR.
14. HANG FROM OVERHEAD STRUCTURE OR SUPPORT FROM BOILER.
15. 2" -300# COMPANION FLANGE.
16. MOUNT CONTROL STATION 3'-0" FROM FLOOR TO CENTERLINE OF PIPE.
17. 2" -300# FLG'D STRAINER WITH BLOW-DOWN VALVE. PROVIDED AND INSTALLED BY CONTRACTOR.
18. FEEDWATER FLOW TRANSMITTER AND CONTROLLER.
19. THEMOWELL TAP FOR REMOTE TEMPERATURE GAGE. SEE P&ID SHEET ME703
20. PRESSURE TAP FOR REMOTE PRESSURE GAGE. SEE P&ID SHEET ME703.
21. 2-1/2" X 2" REDUCER BY CONTRACTOR.

GAS TRAIN SHEET NOTES:

1. EXISTING 4" GAS PIPING.
2. CONNECT NEW 3" GAS PIPING TO EXISTING 4" GAS PIPING. FIELD VERIFY EXACT LOCATION OF NEW CONNECTION.
3. GAS TRAIN SUPPLIED BY BOILER MANUFACTURER. GAS TRAIN WILL COME BROKEN DOWN. THIS CONTRACTOR SHALL ASSEMBLE GAS TRAIN AND INSTALL ALL PARTS, VALVES ETC. AS SHOWN AND AS REQUIRED.
4. PROVIDE FLOOR SUPPORTS MADE FROM 2" DIA. PIPE WITH A 8"x8"x3/8" STEEL FLOOR PLATE BOLTED IN TWO PLACES INTO CONCRETE FLOOR. SEE DETAIL A4/ME502.
5. PRESSURE GAUGE, SNUBBER, AND VALVE, SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR.
6. 3" -150# FLG'D PLUG VALVE WITH WRENCH HANDLE.
7. GAS PRESSURE REGULATOR. PROVIDED AND INSTALLED BY CONTRACTOR. REGULATOR SHALL REDUCE 20 PSIG GAS TO GAS PRESSURE REQUIRED BY BURNER.
8. 3" -150# FLG'D STRAINER AND STRAINER BLOWDOWN BALL VALVE. PROVIDED AND INSTALLED BY CONTRACTOR.
9. 2" VENT THROUGH ROOF. PROVIDED AND INSTALLED BY CONTRACTOR FROM POINT SHOWN. FIELD VERIFY ROUTING OF VENT PIPING. USE EXISTING ROOF OPENING IF POSSIBLE.
10. 3/8" GAS PILOT TAKE-OFF. PROVIDED AND INSTALLED BY CONTRACTOR.
11. PILOT GAS PRESSURE REGULATOR. PROVIDED AND INSTALLED BY CONTRACTOR.
12. PILOT GAS SHUT-OFF VALVE. PROVIDED AND INSTALLED BY CONTRACTOR.
13. USE EXISTING ROOF OPENING AND SUPPORTS FOR PENETRATION THRU ROOF. FIELD VERIFY.
14. PROVIDE 3" DIRT LEG AND SUPPORT FROM FLOOR.
15. PIPE HANGERS. SEE DETAIL C4/ME503.
16. REDUCER BY CONTRACTOR.
17. REDUCER BY CONTRACTOR.
18. 3" BREAK-A-WAY FLANGES-PART OF GAS TRAIN. SEE NOTE 3 ABOVE.
19. GAS SAFETY SHUT-OFF VALVES AND SWITCHES ASSEMBLY-PART OF GAS TRAIN. SEE NOTE 3 ABOVE. HEAD SHALL FACE OUTWARDS AWAY FROM BURNER.
20. GAS VENT VALVE, PART OF GAS TRAIN. SEE NOTE 3 ABOVE.
21. GAS VENT MANUAL TEST VALVE, PART OF TRAIN. SEE NOTE 3 ABOVE.
22. GAS FLOW CONTROL VALVE - 3" -125# FF, FLG - PART OF GAS TRAIN. SEE NOTE 3 ABOVE.
23. GAS MANUAL SHUT-OFF VALVE - 3" NPT. PART OF GAS TRAIN. SEE NOTE 3 ABOVE.
24. GAS SAFETY SHUT-OFF LEAK TEST VALVES 1/4" NPT -PART OF GAS TRAIN. SEE NOTE 3 ABOVE.
25. INNER SPUD GAS CONTROL VALVE - 3" BUTTERFLY - 125# -PART OF GAS TRAIN. SEE NOTE 3 ABOVE.
26. OUTER SPUD GAS CONTROL VALVE -3" BUTTERFLY -125#- PART OF GAS TRAIN. SEE NOTE 3 ABOVE.
27. GAS FLOW TRIM VALVE - 3" -125# FF FLG. - PART OF GAS TRAIN. SEE NOTE 3 ABOVE.
28. OUTER HEADER CONDENSATE DRAIN VALVE -1/2" NPT BALL- PART OF GAS TRAIN. SEE NOTE 3 ABOVE.
29. HIGH GAS PRESSURE SWITCH -1/4" NPT- PART OF GAS TRAIN. SEE NOTE 3 ABOVE.
30. INNER SPUD GAS PRESSURE GAUGE -2-1/2"Ø -0-30PSI- PART OF GAS TRAIN. SEE NOTE 3 ABOVE.
31. OUTER SPUD GAS PRESSURE GAUGE -2-1/2"Ø -0-30PSI- PART OF GAS TRAIN. SEE NOTE 3 ABOVE
32. NEW GAS METER. SEE SPECIFICATIONS. METER SHALL BE SIZED TO PASS 33,448 SCFH OF NATURAL GAS AT 20 PSIG.
33. GAS PIPING SHALL BE ROUTED OVER HEAD A MINIMUM OF 11'-0" FROM FLOOR TO CENTER LINE OF PIPE. FIELD VERIFY.
34. ALL GAS PIPING JOINTS SHALL BE WELDED EXCEPT WHERE INDICATED.
35. CONNECT VENT FROM PILOT VALVE TO NEW PIPING VENT THRU-ROOF.
36. CONNECT VENT PIPING FROM MAIN PR VALVE AND PILOT. CONNECT TO 3" GAS MAIN AS SHOWN.

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PROJECT NAME & ADDRESS

SUU BOILER PLANT BOILER REPLACEMENT

DFCM #09239730

Cedar City, Utah

MARK	DATE	REVISION

PROJECT MANAGER: WP
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WHW JOB NO.: 09047

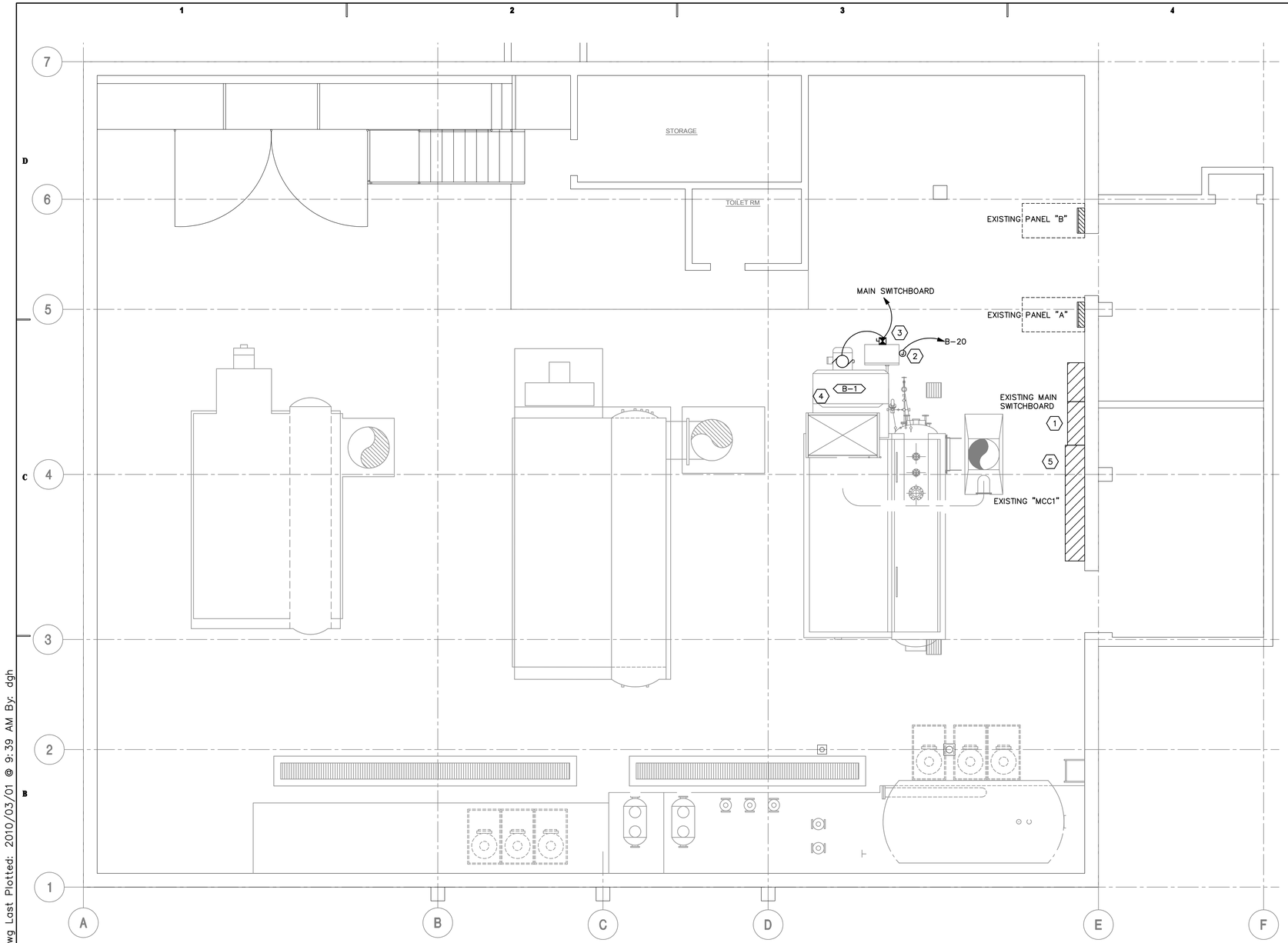
PROFESSIONAL ENGINEER 03/01/10 WINWARD M. PACKER No. 375080 STATE OF UTAH

SHEET TITLE

PIPING ISOMETRICS

SHEET NO.

ME901



SHEET KEYNOTES

1. PROVIDE NEW CUTLER HAMMER ED3150 (150A/3P) BREAKER IN EXISTING MAIN SWITCHBOARD. PRIOR TO ORDERING BREAKER, VERIFY COMPATIBILITY OF BREAKER WITH EXISTING GEAR (EXISTING GEAR IS WESTINGHOUSE).
2. PROVIDE CONNECTIONS TO 120V ITEMS IN BOILER. COORDINATE CONNECTION LOCATION WITH HVAC CONTRACTOR.
3. CIRCUIT TO NEW 150A/3P BREAKER IN EXISTING MAIN SWITCHBOARD (SEE SHEET KEYNOTE 1) WITH 3 #1/0, #6 GR THWN/THHN WIRING IN 2" CONDUIT. PROVIDE NEW STARTER/DISCONNECT COMBO UNIT AS NOTED IN EQUIPMENT SCHEDULE.
4. DISCONNECT POWER TO EXISTING BOILER B-1 AND PULL BACK CONDUIT & WIRING TO "MCC1".
5. PROVIDE DEDUCT ALTERNATE #1 TO CONNECT DIRECTLY TO EXISTING "MCC1" BUCKET (CONTAINING BREAKER & STARTER FOR EXISTING BOILER "B-1") IN LIEU OF PROVIDING NEW STARTER/DISCONNECT ADJACENT TO BOILER & BREAKER IN EXISTING MAIN SWITCHBOARD (SEE SHEET KEYNOTES 1&3). CONNECTIONS TO EXISTING BREAKER/STARTER IN "MCC" TO NEW BOILER "B-1" SHALL BE WITH 3#2, #8 GR IN 1.5" CONDUIT. DEDUCT ALTERNATE #1 TO BE ACCEPTED BY OWNER BASED OFF OF METER TEST RESULTS (TO BE PERFORMED BY OWNER).

A1 ELECTRICAL PLAN
SCALE: 1/4"=1'-0"

0 2' 4' 8'

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Cedar City, Utah

MARK	DATE	REVISION

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LICENSED PROFESSIONAL ENGINEER
No. 5148728
DAVID G. HINCKLEY
STATE OF UTAH

SHEET TITLE
ELECTRICAL PLAN

SHEET NO.
EP101

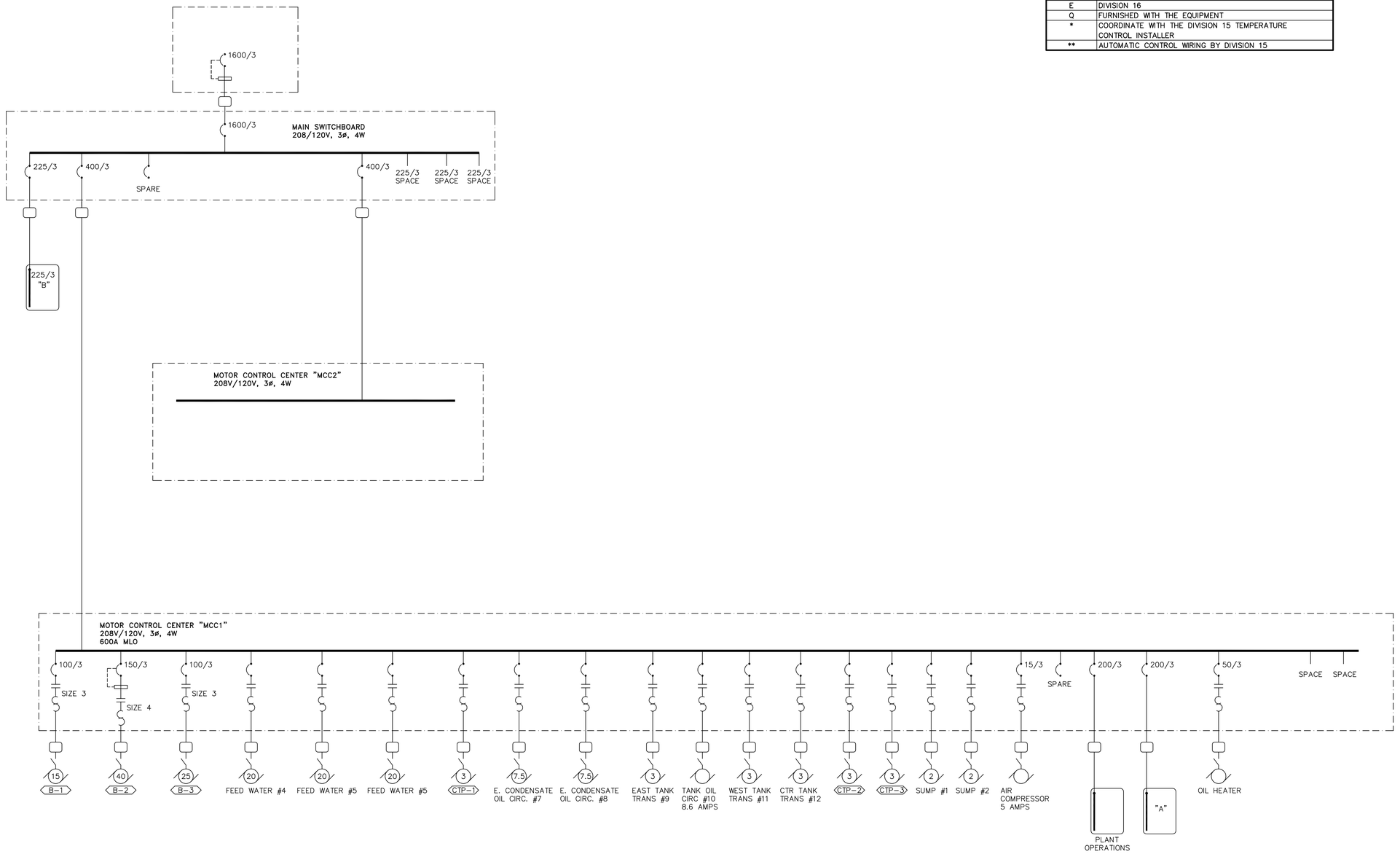
File Name: P:\2010\20100059\1Drawings\3Sheet\59EP101.dwg Last Plotted: 2010/03/01 @ 9:39 AM By: dgh

NEW EQUIPMENT SCHEDULE

MARK	QTY	ITEM DESCRIPTION	LOAD DATA							WIRE AND CONDUIT SIZE	OVERCURRENT PROTECTION			DISCONNECT			STARTER DATA													NOTES	MARK
			HP	kW	MCA	FLA	VOLT	PH	Hz		FURN BY	DEVICE	LOCATION	FURN BY	DEVICE	LOCATION	FURN BY	DEVICE	LOCATION	SIZE	SPEED	CTRL VOLT	SELECTOR SWITCH	PUSH BUTTON	PILOT LAMP	NORMALLY OPEN CONTACTS	NORMALLY CLOSED CONTACTS	PHASE FAILURE RELAY	SCHEMATIC REFERENCE	REMOTE CTRL		
B–1		BOILER	25				208	3	60	3 #1/0, #6 GR 2"C	E	150A/3P CB	PANEL	E	100A/3P FRN–100	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	3			HOA		R,G	2	2					B–1

EQUIPMENT SCHEDULE KEY

E	DIVISION 16
Q	FURNISHED WITH THE EQUIPMENT
*	COORDINATE WITH THE DIVISION 15 TEMPERATURE CONTROL INSTALLER
**	AUTOMATIC CONTROL WIRING BY DIVISION 15



A1 EXISTING ONE–LINE DIAGRAM (SHOWN FOR REFERENCE ONLY)
NO SCALE

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STATE OF UTAH

SHEET TITLE
EXISTING ONE-LINE DIAGRAM & NEW EQUIPMENT SCHEDULE

SHEET NO.
EP601