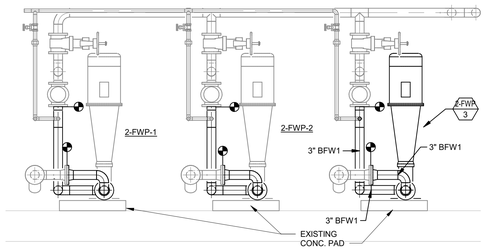
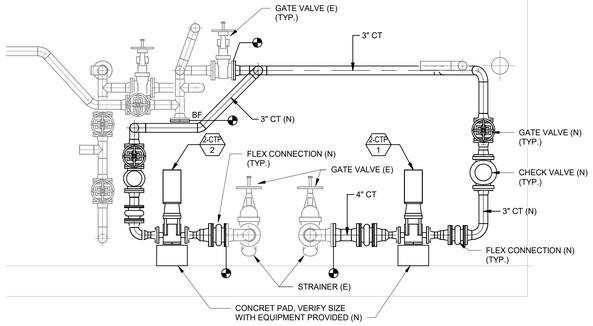
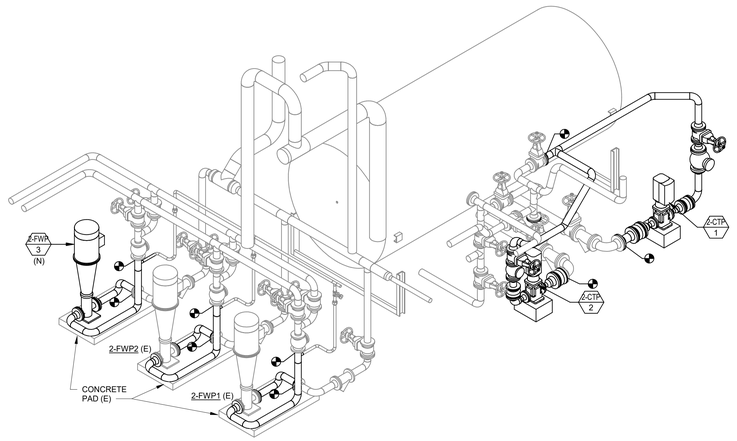


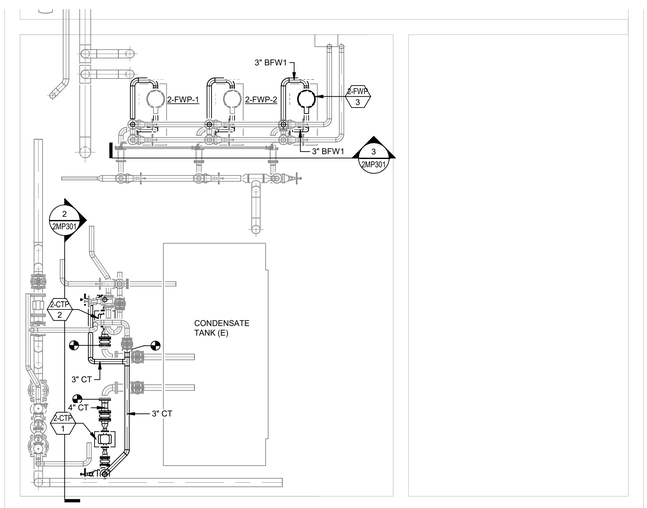
3 SECTION AT PUMP 2-FWP-3
SCALE: 1/2" = 1'-0"



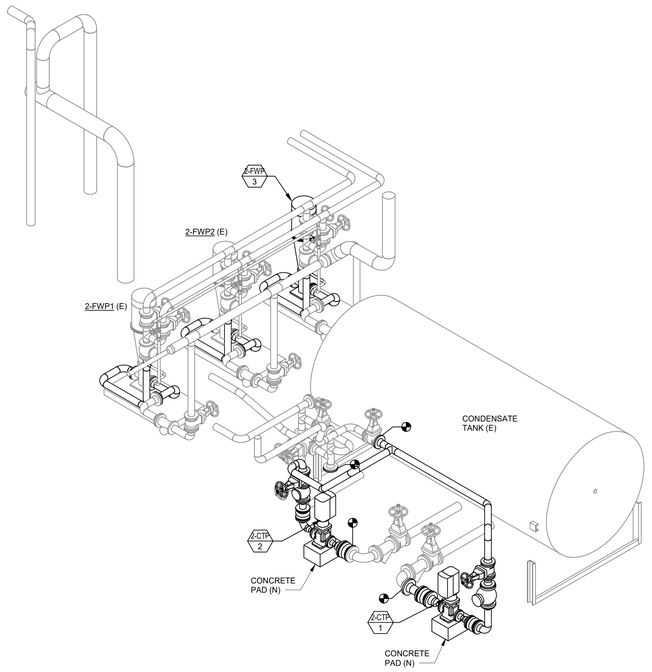
2 SECTION AT PUMPS 2-CTP1 & 2
SCALE: 1/2" = 1'-0"



5 MECHANICAL PIPING ISOMETRIC -FWP
SCALE:



1 FIRST FLOOR PLAN
SCALE: 1/4" = 1'-0"



4 MECHANICAL PIPING ISOMETRIC - CTP
SCALE:

100% CD SUBMITTAL

Revisions:	Date:

CONSULTANTS:

STAMP

PROFESSIONAL MECHANICAL ENGINEER
GREGORY T. KRONAIZL
E-5521
STATE OF NEBRASKA
May 14, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | COLORADO SPRINGS | SIDNEY
farris-usa.com
FE#:202013

Drawing Title: MECHANICAL PARITAL PLAN, SECTIONS AND ISOMETRIC

Approved:

Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES

Location: OMAHA, NE

Issue Date: 05-14-2021 | Checked: GTK | Drawn: CWK

Project Number: 636-19-301

Building Number: 1

Drawing Number: 2MP301

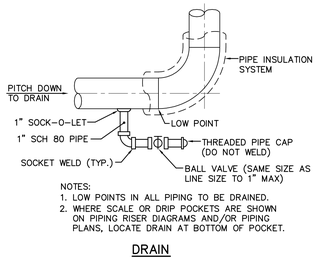
Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

C:\Users\cwk\Documents\202013 - ME Central - R20_cwiffle@farris-usa.com.rvt

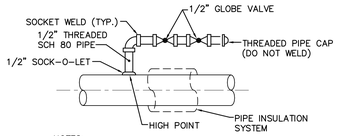
5/14/2021 9:54:33 AM

VA FORM 08 - 6231



NOTES:
1. LOW POINTS IN ALL PIPING TO BE DRAINED.
2. WHERE SCALE OR DRIP POCKETS ARE SHOWN ON PIPING RISER DIAGRAMS AND/OR PIPING PLANS, LOCATE DRAIN AT BOTTOM OF POCKET.

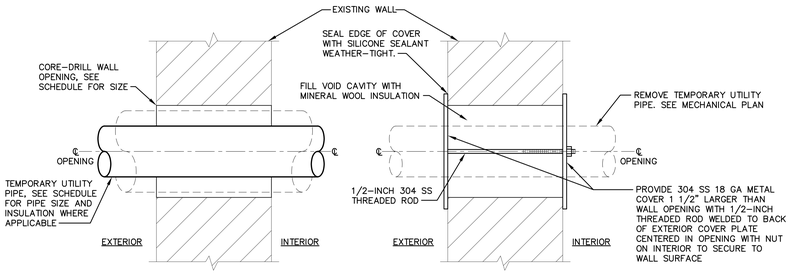
DRAIN



NOTES:
1. VENT ALL HIGH POINTS INDICATED ON PIPING RISER DIAGRAMS AND/OR PIPING PLANS (STEAM AND STEAM CONDENSATE SYSTEMS).

VENT

VENT AND DRAIN DETAIL 7
NO SCALE 2M501



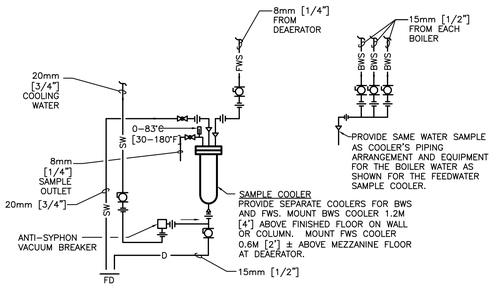
TEMPORARY PIPING INSTALLATION

TEMPORARY PIPING REMOVAL

ELEVATION VIEW

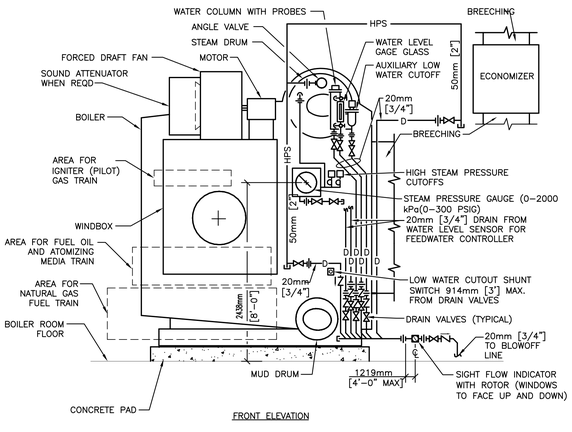
WALL OPENING SCHEDULE		
DESCRIPTION	PIPE SIZE (IN.)	WALL OPENING SIZE (IN.)
NG	4	6
HPS	(2) 6	12
FWPD	3	6
FOS	1 1/4	3
PA	1	3
IA	1	3
BO	1 1/2	3

TEMPORARY UTILITY PIPING WALL PENETRATION DETAIL 8
NO SCALE 2M501



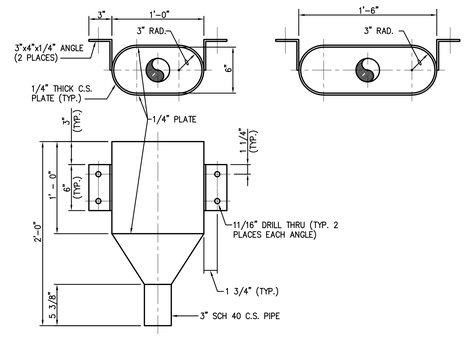
ELEVATION

WATER SAMPLE COOLERS BOILER WATER AND FEEDWATER DETAIL 4
NO SCALE 2M501



FRONT ELEVATION

WATER TUBE BOILER DETAIL 5
NO SCALE 2M501



TYPE F-1

NOTES:
1. ALL WELDED SEAMS.
2. CENTER DRAIN FUNNEL F-1. COORDINATE LOCATION WITH BOILER TRIM LOCATION AND EXISTING FLOOR STRUCTURE.

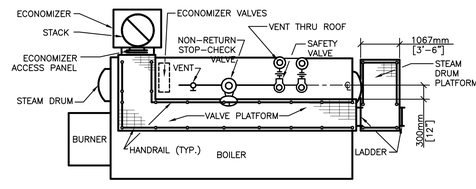
TYPE F-2

NOTES:
1. ALL WELDED SEAMS. TYPE F-2 SIMILAR.

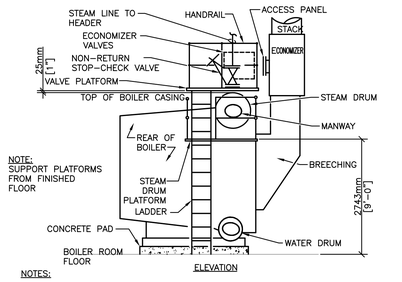
DRAIN FUNNEL DETAIL 6
2M501

SCALE: 1 1/2 INCHES = 1 FOOT

0 6" 1' 2'



PLAN VIEW

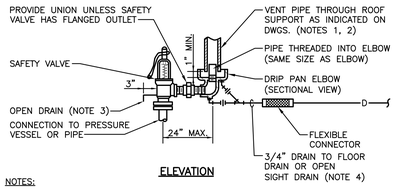


ELEVATION

NOTES:

1. PLATFORM ACCESS MUST BE PROVIDED TO PERFORM MAINTENANCE AND OPERATIONAL TASKS TO DRUM SAFETY RELIEF VALVES, NON-RETURN VALVE, AND ECONOMIZER VALVES AND INSTRUMENTS.
2. REFER TO ARCHITECTURAL, MECHANICAL, AND STRUCTURAL PLANS FOR LAYOUT REQUIREMENTS.

ACCESS PLATFORM ARRANGEMENT D-TYPE WATER TUBE BOILER DETAIL 1
NO SCALE 2M501

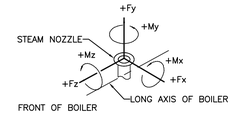


ELEVATION

NOTES:

1. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, SIZE THE VENT PIPE SO THAT STEAM IS NOT BLOWN OUT AT THE VENT PIPE ENTRANCE. UTILIZE THE CALCULATION METHOD CONTAINED IN ANSI B31.1. POWER PIPING CODE, APPENDIX II.
2. VENT PIPE SHALL TERMINATE 6' MIN. ABOVE FINISHED ROOF.
3. DISCHARGE OF DRAIN MUST BE DIRECTED AWAY FROM PLATFORMS OR OTHER AREAS WHICH PERSONNEL MAY OCCUPY.
4. DO NOT CONNECT ANY OTHER DRAIN TO THE DRIP PAN ELBOW DRAIN PIPE.
5. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

STEAM SAFETY VALVE 2
NO SCALE 2M501



ISOMETRIC VIEW

TABLE OF FORCES AND MOMENTS DUE TO THERMAL EXPANSION AND WEIGHT OF STEAM LEAD AND VALVES

BOILER NO.	Fx LB [Kg]	Fy LB [Kg]	Fz LB [Kg]	Mx FT LB [J]	My FT LB [J]	Mz FT LB [J]
2-BWT1	-35[---]	-125[---]	18[---]	298[---]	115[---]	-853[---]
2-BWT2	16[---]	-94[---]	95[---]	318[---]	-307[---]	-265[---]
2-BWT3	63[---]	-49[---]	82[---]	201[---]	-283[---]	397[---]

NOTES:
1. BOILERS SHALL BE DESIGNED TO WITHSTAND THE FORCES AND MOMENTS SHOWN ABOVE.
2. ADD ANY F_Y FORCE (500 LB [230 Kg] MINIMUM) AS AN ESTIMATION OF THE WEIGHT EFFECT OF THE STEAM LEAD AND VALVE ON THE BOILER. BOILER AND PIPE HANGER SUPPLIERS SHALL COORDINATE TO DETERMINE THE EXACT F_Y FORCE WHICH WILL BE IMPOSED ON THE STEAM NOZZLES.

FORCES AND MOMENTS ON BOILER STEAM NOZZLES 3
NO SCALE 2M501

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

GREGORY T. KRONAIZL E-5503 PROFESSIONAL MECHANICAL ENGINEER STATE OF NEBRASKA
May 17, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz & ASSOCIATES, INC.
SDVOSB
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941
CLH PROJECT NO: 18-013

Drawing Title: MECHANICAL - DETAILS

Approved: Project Director

Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES

Location: OMAHA, NE

Date: 05-14-2021 | Checked: GTK | Drawn: CWK

Project Number: 636-19-301

Building Number: 2

Drawing Number: 2M501

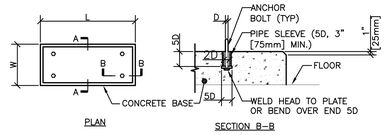
Dwg. X of X

Office of Construction and Facilities Management

Department of Veterans Affairs

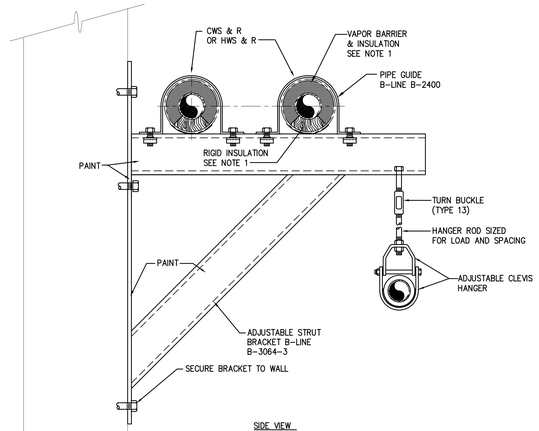
VA FORM 08-6231

0:\2020\202017\CAD\Mechanical\202013_2M501.dwg 2M501 5/14/21 9:18am CWK



NOTE:
L & W DIMENSIONS SHALL BE 6" [150mm] GREATER THAN THE EQUIPMENT BASE PLATE.

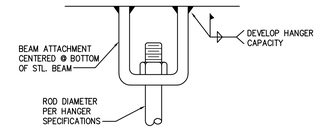
CONCRETE EQUIPMENT BASES @ PUMPS DETAIL 6
NO SCALE 2M502

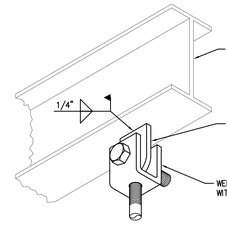


SIDE VIEW

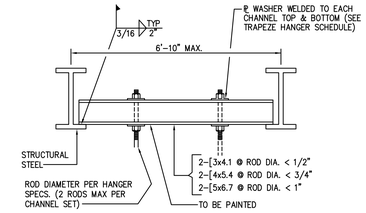
NOTE:
1. OPTIONS: CALCIUM SILICATE SHIELD, GALVANIZED STEEL JACKET AND LOAD BEARING PLATE.

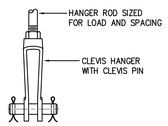
HANGER BRACKET DETAIL 3
NO SCALE 2M502

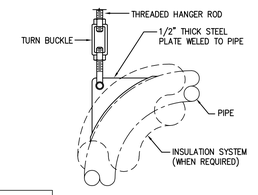


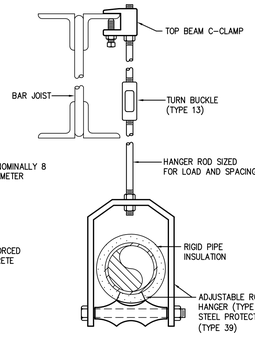


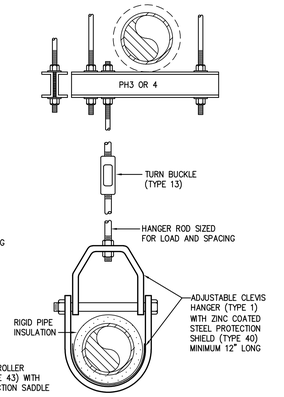
MT-1

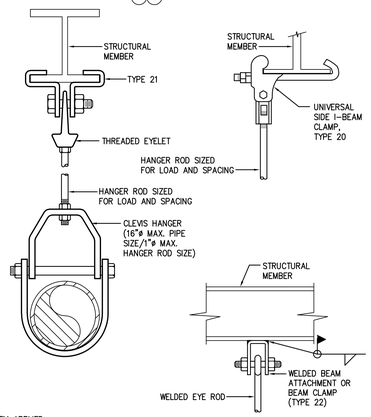






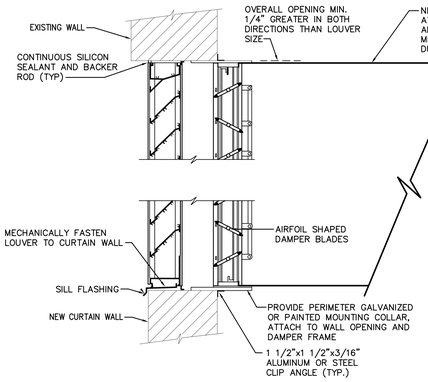




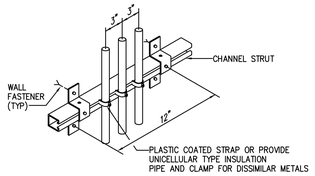


GENERAL NOTES:
1. PAINT PIPE HANGER SAME COLOR AS PIPE TO BE SUPPORTED.
2. PIPE HANGERS SHALL BE OVERSIZED TO ACCOMMODATE INSULATION SYSTEM APPLIED.
3. MISC. WELD TYPES, SIZES AND LENGTHS FOR CONNECTION OF SUPPORT TO FRAMING MEMBERS OR SUPPLEMENTARY STEEL SHALL BE DETERMINED BY CONTRACTOR OR CONTRACTOR'S PIPE SUPPORT MANUFACTURER.

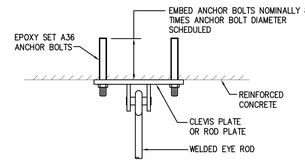
MISC. HANGER DETAILS 1
NO SCALE 2M502

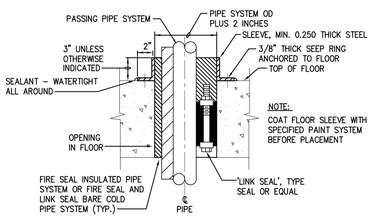


LOUVER/DAMPER ASSEMBLY AT NEW CURTAIN WALL DETAIL 9
NO SCALE 2M502

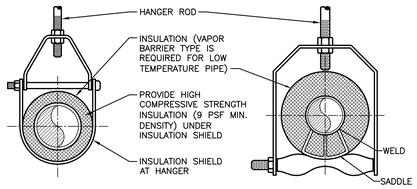


CHANNEL TYPE PIPE SUPPORT DETAIL 4
NO SCALE 2M502



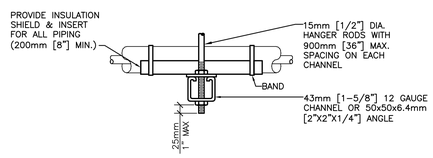


PIPE FLOOR SLEEVE DETAIL 7
NO SCALE 2M502



ADJUSTABLE CLEVIS HANGER TYPE 1 - SEE SPECIFICATIONS

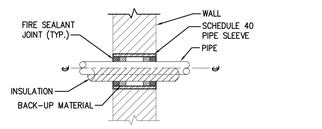
ADJUSTABLE CLEVIS HANGER TYPE 43 - SEE SPECIFICATIONS



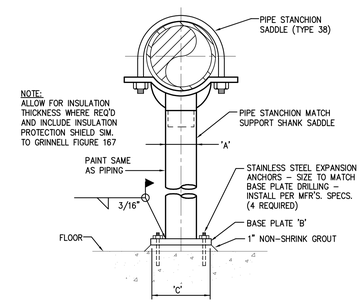
SIDE VIEW TRAPEZE HANGER FOR UP TO 453KG [1000 LB.] UNIFORM LOAD

MAXIMUM PIPE/TUBING SUPPORT SPACING																		
NOM. SIZE	mm [IN]	THRU 20 [THRU ¾]	25 [1]	32 [1¼]	40 [1½]	50 [2]	65 [2½]	75 [3]	100 [4]	125 [5]	150 [6]	200 [8]	250 [10]	300 [12]	350 [14]	400 [16]	450 [18]	500 [20]	600 [24]
PIPE	mm [FT]	2100 [7]	2100 [7]	2100 [7]	2700 [9]	3000 [10]	3400 [11]	3700 [12]	4100 [14]	4900 [16]	5200 [17]	5900 [19]	6700 [22]	7000 [23]	7600 [25]	8200 [27]	8500 [28]	9100 [30]	9600 [32]
TUBING	mm [FT]	1500 [5]	1800 [6]	2100 [7]	2400 [8]	2400 [8]	2700 [9]	3000 [10]	3700 [12]	4000 [13]	4100 [14]	4900 [16]	– –	– –	– –	– –	– –	– –	– –
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.																			

PIPE HANGERS DETAIL 5
NO SCALE 2M502



PIPE SLEEVE FOR INSULATED/ BARE PIPE ABOVE GRADE DETAIL 8
NO SCALE 2M502



SUPPORT SCHEDULE				
PIPE SIZE	"A" SUPPORT PIPE DIA.	'B' PLATE THICKNESS (IN.)	'C' PLATE SIZE (IN.)	ANCHOR BOLTS DIA.
≤ 4	2"	3/8	8x8	1/2"
≤ 12	3"	1/2	10x10	5/8"
≤ 16	4"	5/8	12x12	5/8"
≤ 24	6"	3/4	14x14	3/4"

PIPE SUPPORT DETAIL 2
NO SCALE 2M502

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

PROFESSIONAL MECHANICAL ENGINEER GREGORY T. KRONAIZL E-5523 STATE OF NEBRASKA
May 14, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, INC. SDVOSB
CLH PROJECT NO: 18-013
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941

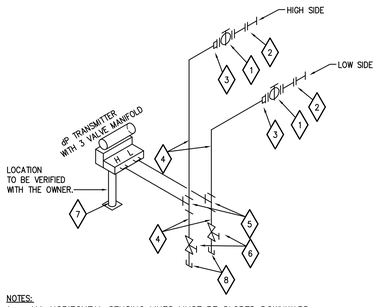
Drawing Title	MECHANICAL - DETAILS
Approved Project Director	
Project Title	OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location	OMAHA, NE
Date	05-14-2021
Checked	GTK
Drawn	CWK
Project Number	636-19-301
Building Number	2
Drawing Number	2M502
Dwg. of X	

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

G:\2020\202013\CAD\Mechanical\202013_2M501.dwg 2M502 5/14/21 9:18am CWK

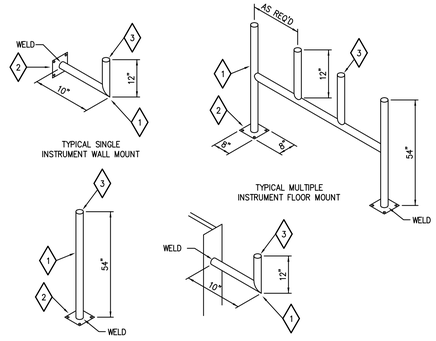
BILL OF MATERIAL FOR TRANSMITTER INSTALLATION		
ITEM	QUANTITY	DESCRIPTION
1	2	1/2" THD. BALL VALVE – NIBCO T-580-S6-R-66-LL OR EQUAL
2	2	1/2"x6" NIPPLE BLK
3	2	1/2" THD x 3/8" COMP
4	AS REQ'D	3/8" TUBING
5	2	3/8" TUBE UNION TEE – 316SS
6	2	3/8" BLOWDOWN VALVE – 316SS – NIBCO T-580-S6-R-66-LL OR EQUAL
7	1	2" SCH 40 PIPE STAND
8	2	THREADED PLUG, OR CAP



NOTES:
1. ALL HORIZONTAL SENSING LINES MUST BE SLOPED DOWNWARD TO THE TRANSMITTER A MINIMUM OF 1 INCH PER FOOT WITH NO POCKETS.
2. CALIBRATE STATIC HEAD OUT OF TRANSMITTER WITH NO FLOW.
3. ALL CONTROL PIPING TUBING SHALL BE 316 STAINLESS STEEL.

TRANSMITTER INSTALLATION DETAIL 10
NO SCALE 2M503

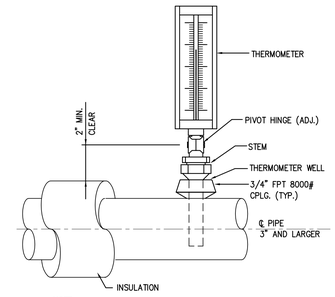
BILL OF MATERIAL FOR STAND INSTALLATION		
ITEM	QUANTITY	DESCRIPTION
1	AS REQ'D	2" SCH 40 BLACK PIPE
2	AS REQ'D	1/4" X 8" X 8" STEEL PLATE
3	AS REQ'D	1/4" STEEL PLATE



TYPICAL SINGLE INSTRUMENT WALL MOUNT
TYPICAL MULTIPLE INSTRUMENT FLOOR MOUNT
TYPICAL SINGLE INSTRUMENT FLOOR MOUNT
TYPICAL SINGLE INSTRUMENT STRUCTURAL MOUNT

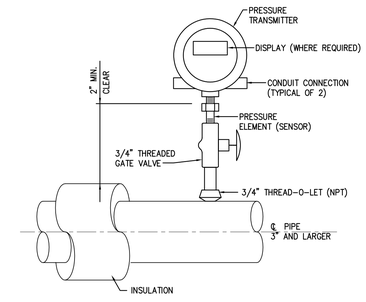
NOTES:
1. BASE PLATES FOR FLOOR OR WALL MOUNTING SHALL BE ANCHORED WITH A MINIMUM OF 1/2" EXPANSION OR STUD TYPE ANCHORS. BASE PLATES SHALL BE GROUTED WHEN ATTACHED TO CONCRETE FLOOR.
2. THE OPEN END OF THE PIPE STAND SHALL BE CAPPED WITH 1/4" STEEL PLATE, WELDED AND GROUND SMOOTH. THE CAP DIAMETER SHALL NOT EXCEED THE OUTSIDE DIAMETER OF THE PIPE BEING CAPPED.
3. EXACT INSTRUMENT STAND TYPE AND LOCATION TO BE DETERMINED IN FIELD.
4. ALL STANDS ARE TO HAVE A PRIMER FINISH.
5. NO TRANSMITTER IS TO BE MOUNTED MORE THAN 60" ABOVE WALKWAY.

TYPICAL INSTRUMENT STAND INSTALLATION DETAIL 9
NO SCALE 2M503

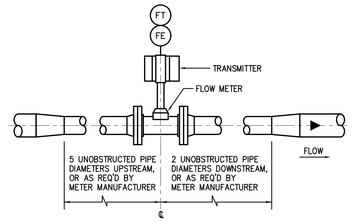


NOTE:
PROVIDE ENLARGE FITTING ON 2 1/2" AND SMALLER PIPE.

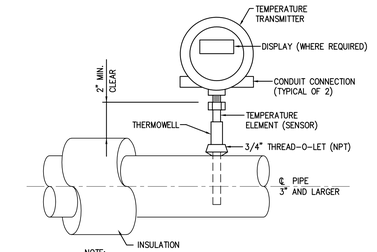
THERMOMETER MOUNTING DETAIL 4
NO SCALE 2M503



PRESSURE TRANSMITTER MOUNTING DETAIL 1
NO SCALE 2M503

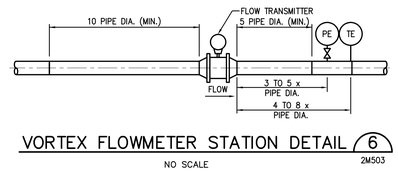


TYPICAL FLOW METER DETAIL 5
NO SCALE 2M503

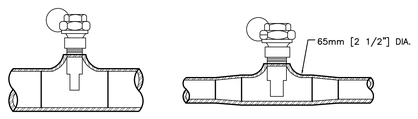


NOTE:
PROVIDE ENLARGE FITTING ON 2 1/2" AND SMALLER PIPE.
REFER TO INSTALLATION OF THERMOWELLS, DETAIL 7.

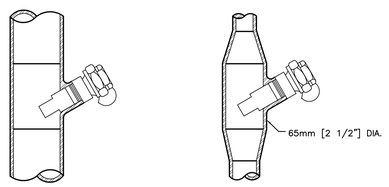
TEMPERATURE SENSOR/ TRANSMITTER WELL MOUNTING DETAIL 2
NO SCALE 2M503



VORTEX FLOWMETER STATION DETAIL 6
NO SCALE 2M503



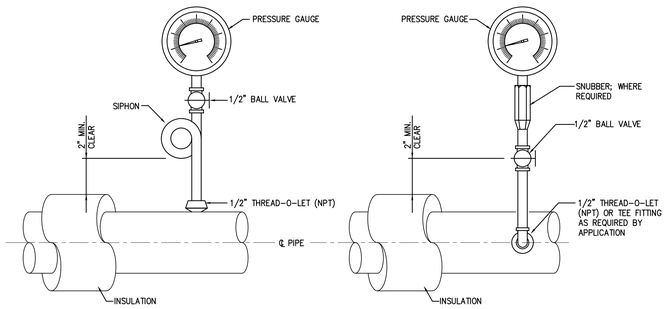
HORIZONTAL



VERTICAL

NOTE:
PROVIDE THE APPROPRIATE WELL DEPTH TO HAVE THE NECESSARY INSULATION STAND-OFF DISTANCE.

INSTALLATION OF THERMOMETER WELLS 7
NO SCALE 2M503



PRESSURE GAUGE MOUNTING DETAIL 3
NO SCALE 2M503

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

PROFESSIONAL MECHANICAL ENGINEER GREGORY T. KRONAIZL E-5523 STATE OF NEBRASKA — May 14, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, INC. SDVOSB
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941
CLH PROJECT NO: 18-013

Drawing Title	MECHANICAL - DETAILS
Approved Project Director	
Project Title	OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location	OMAHA, NE
Date	05-14-2021
Checked	GTK
Drawn	CWK
Project Number	636-19-301
Building Number	2
Drawing Number	2M503
Dwg. of	X

Office of Construction and Facilities Management
Department of Veterans Affairs

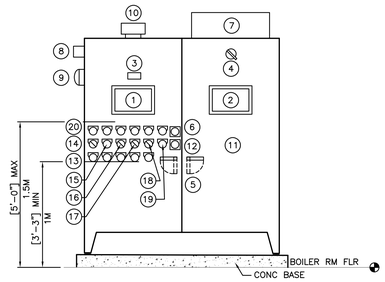
VA FORM 08-6231

G:\2020\202013\CAD\Mechanical\202013_2M501.dwg 2M503 5/14/21 9:19am CWK

LEGEND

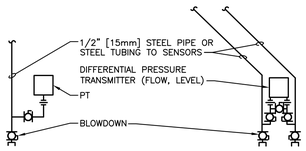
ITEM NO. DESCRIPTION
1. HMI-1 PLC DISPLAY, 10-INCH TOUCH SCREEN
2. HMI-2 PLC DISPLAY, 10-INCH TOUCH SCREEN (REDUNDANT)
3. YB110 DISPLAY
4. NON-FUSED THRU DOOR DISCONNECT SWITCH
5. LOCKABLE PANEL DOOR HANDLE
6. EMERGENCY STOP MUSHROOM BUTTON
7. PANEL AIR CONDITIONER (TOP-MOUNTED)
8. ALARM HORN
9. ALARM BELL
10. ALARM STROBBE LIGHT
11. NEMA 4, FLOOR-MOUNT ENCLOSURE, NOMINAL 5'-0" WIDE x 1'-4" DEEP x 6'-6" HIGH WITH 12-INCH HIGH STAND
12. EMERGENCY GAS SHUT-OFF VALVE CONTROL
13. START/STOP BUTTONS AND PILOT LIGHTS FOR PUMPS
14. VARIABLE FREQUENCY DRIVE (H-O-A)
15. BURNER (ON-OFF)
16. HMI SELECTOR SWITCH (HMI-1/HMI-2)
17. FUEL SELECTOR SWITCH (GAS/OFF/OIL)
18. VFD SELECTOR SWITCH (DRIVE/OFF/BY-PASS)
19. RESET BUTTON
20. ROW OF BURNER PILOT LIGHTS

NOTES:
1. INTERIOR OF PANEL SHALL BE UTILIZED FOR MOUNTING RELAYS, CIRCUIT BREAKERS, FUSES, DISPLAY SCREENS.
2. PROVIDE FRONT ACCESS DOORS FULL HEIGHT AND WIDTH OF PANEL FOR EACH SECTION.
3. CONCRETE BASE MINIMUM 1-1/2 INCH LARGER THAN EQUIPMENT BASE AND 4-INCHES HIGH.
4. SECURE CONTROL PANEL TO CONCRETE BASE WITH FASTENERS AS RECOMMENDED BY PANEL MANUFACTURER.



ELEVATION

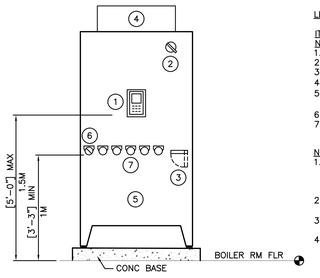
BOILER BURNER CONTROL PANEL 4
NO SCALE 2M504



ELEVATION

NOTES:
1. INSTALLATION OF SENSORS AND TRANSMITTERS SHALL CONFORM TO RECOMMENDATIONS OF MANUFACTURERS OF TRANSMITTERS.

PRESSURE TRANSMITTER INSTALLATION 3
NO SCALE 2M504



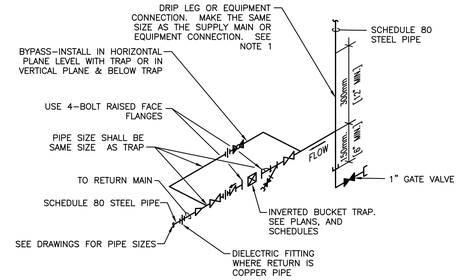
ELEVATION

LEGEND

ITEM NO. DESCRIPTION
1. VFD HMI-HUMAN INTERFACE MODULE
2. THRU DOOR DISCONNECT SWITCH
3. LOCKABLE PANEL DOOR HANDLE
4. PANEL AIR CONDITIONER (TOP-MOUNTED)
5. NEMA 4, FLOOR-MOUNT ENCLOSURE, NOMINAL 3'-0" WIDE x 1'-4" DEEP x 6'-6" HIGH WITH 12-INCH HIGH STAND
6. UPS SWITCH (ON/OFF)
7. ROW OF CURRENT SENSOR PUSH BUTTONS TO TEST

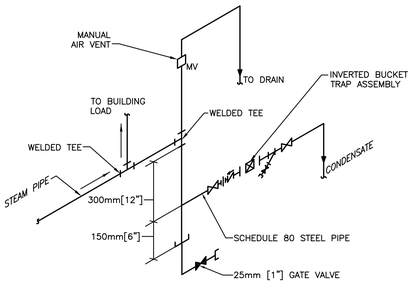
NOTES:
1. INTERIOR OF PANEL SHALL BE UTILIZED FOR MOUNTING RELAYS, VARIABLE FREQUENCY DRIVE, CIRCUIT BREAKERS, CIRCUIT SENSORS, DISTRIBUTION BLOCKS AND UNINTERRUPTABLE POWER SUPPLY, AND OTHER DEVICES.
2. PROVIDE FRONT ACCESS DOORS FULL HEIGHT AND WIDTH OF PANEL.
3. CONCRETE BASE MINIMUM 1-1/2 INCH LARGER THAN EQUIPMENT BASE AND 4-INCHES HIGH.
4. SECURE PANEL TO CONCRETE BASE WITH FASTENERS AS RECOMMENDED BY PANEL MANUFACTURER.

BOILER POWER PANEL 2
NO SCALE 2M504

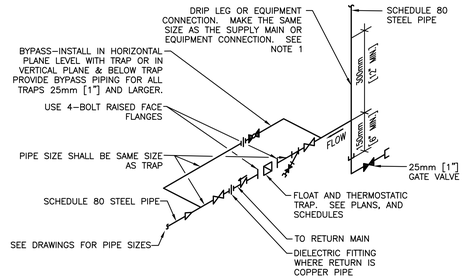


NOTES:
1. ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 300mm [12"] MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 150mm [6"] SCALE POCKET BELOW TRAP INLET.
2. PROVIDE BYPASS PIPING.

INVERTED BUCKET STEAM TRAP ASSEMBLY 1
NO SCALE 2M504

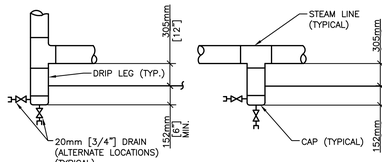


END OF STEAM LINE DRIP TRAP 7
NO SCALE 2M504



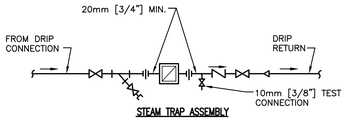
NOTE:
ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 300mm [12"] MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 150mm [6"] SCALE POCKET BELOW TRAP INLET.

FLOAT AND THERMOSTATIC STEAM TRAP ASSEMBLY 6
NO SCALE 2M504



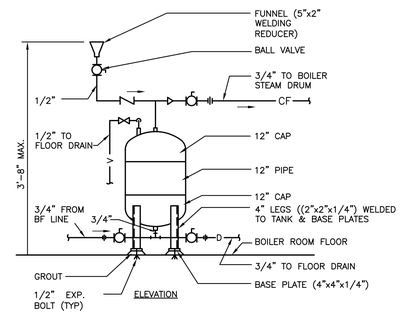
STEAM LINE DRIP POCKET

NOTE:
DRIP POCKET PIPE SIZE SAME AS STEAM MAIN UNLESS OTHERWISE NOTED.



STEAM TRAP ASSEMBLY

STEAM LINE DRIP POCKET AND STEAM TRAP ASSEMBLY 5
NO SCALE 2M504



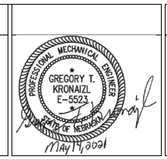
NOTE: NORMAL CHEMICAL FEED SHALL BE WITH A PUMP TYPE SYSTEM. SHOT TYPE SHALL BE USED ONLY FOR BOILER LAYUP.

BOILER CHEMICAL FEED SYSTEM-SHOT TYPE 8
NO SCALE 2M504

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:



ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

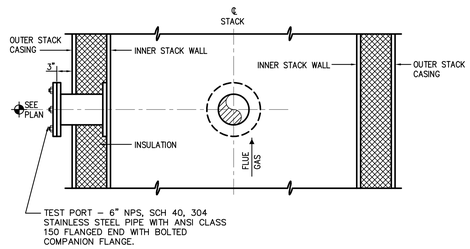
CLH Calvin L. Hinz ARCHITECTS, PC
SDVOSB
CLH PROJECT NO: 18-013
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941

Drawing Title: MECHANICAL - DETAILS
Approved Project Director:
Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location: OMAHA, NE
Date: 05-14-2021
Checked: GTK
Drawn: CWK
Project Number: 636-19-301
Building Number: 2
Drawing Number: 2M504
Dwg. X of X

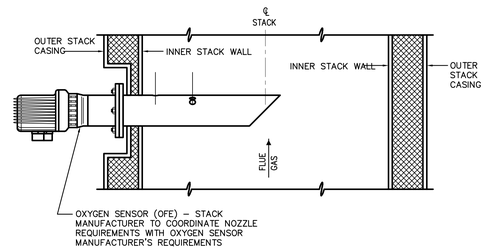
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

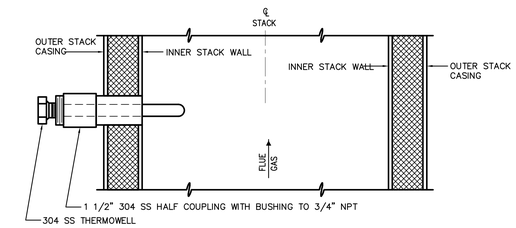
G:\2020\202013\CAD\Mechanical\202013_2M501.dwg 2M504 5/14/21 9:20am CWK



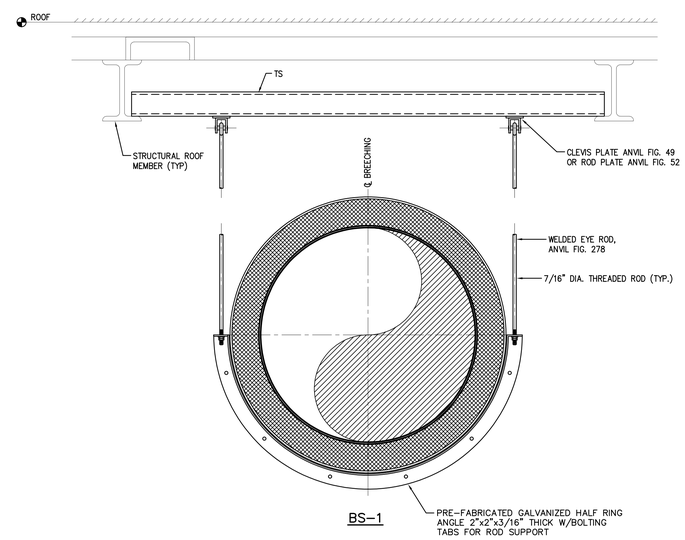
NOx, CO, PM2.5 TEST PORT STACK DETAIL 4
NO SCALE 2M505



OXYGEN SENSOR DETAIL 1
NO SCALE 2M505



TEMPERATURE TRANSMITTER MOUNTING DETAIL 2
NO SCALE 2M505



BREECHING HANGER SUPPORT DETAIL 3
NO SCALE 2M505

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

PROFESSIONAL MECHANICAL ENGINEER
GREGORY T. KRONAIZL
E-5523
STATE OF NEBRASKA
May 14, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, PC
SDVOSB
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941
CLH PROJECT NO: 18-013

Drawing Title: MECHANICAL - DETAILS

Approved Project Director:

Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES

Location: OMAHA, NE

Date: 05-14-2021 | **Checked:** GTK | **Drawn:** CWK

Project Number: 636-19-301

Building Number: 2

Drawing Number: 2M505

Dwg. of X

Office of Construction and Facilities Management

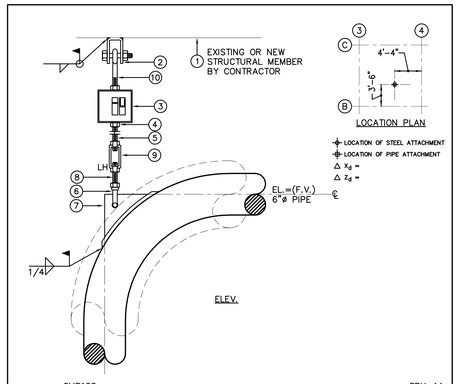
Department of Veterans Affairs

VA FORM 08-6231

G:\2020\202013\CAD\Mechanical\202013_2M501.dwg 2M505 5/14/21 9:20am CWK

GENERAL BOILER PIPING HANGER NOTES:

1. REFER TO SPECIFICATION SECTION 23 21 11, BOILER PLANT PIPING. COORDINATE SUPPORT LOCATIONS WITH BUILDING STRUCTURE PRIOR TO ERECTION OF PIPING AND APPROVED SHOP DRAWINGS.
2. PROJECT DRAWINGS SHOW LOCATIONS FOR STEAM LEAD PIPE SUPPORT IS BASED ON BASIS OF DESIGN OF PARTICULAR BOILER EQUIPMENT LAYOUT AND CONTRACTOR SHALL PROVIDE ENGINEERED HANGER SYSTEM FOR THE BOILER EQUIPMENT FURNISHED INDICATING COMPLIANCE WITH THE MAXIMUM NOZZLE LOADINGS REQUIRED FOR THE BOILER PROVIDED ALL PIPE HANGERS SHALL COMPLY WITH MSS-58 AND MSS SP-127.
3. WHERE LOCATIONS FOR HANGERS DO NOT ALIGN WITH EXISTING STRUCTURAL STEEL MEMBERS CAPABLE OF PIPE SUPPORT, PROVIDE NEW STRUCTURAL MEMBER FOR ATTACHMENT OF HANGER FOR LOCATION REQUIRED.
4. SUBMIT LAYOUT DRAWINGS SHOWING GENERAL LOCATIONS AND SUPPORT TYPES AND SIZES.
5. LOCATE SUPPORTS TO PERMIT REMOVAL OF VALVES, STRAINERS, FLOW METERS AND OTHER SIMILAR EQUIPMENT REQUIRING MAINTENANCE WITHOUT DISTURBING PIPE OR EQUIPMENT SUPPORTS.
6. PIPE SUPPORTS, HANGERS, ANCHORS, CLAMPS SHALL NOT BE ANCHORED TO EQUIPMENT UNLESS SHOWN OR APPROVED BY THE COR.
7. ALL PIPE AND EQUIPMENT SUPPORTS SHALL BE SUPPORTED FROM STRUCTURAL MEMBERS. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS AND SUBSTRATES ACCEPTABLE FOR ANCHORING TO STRUCTURE.



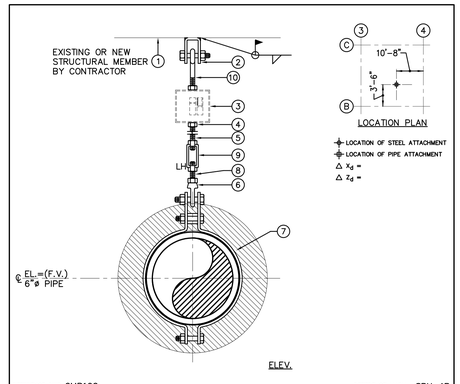
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-1A

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	12	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING	
HOT LOAD, LBS		XXX	4.	3	HEX NUT	
COLD LOAD, LBS		XXX	5.	1	5/8"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		X.XXX	6.	1	FIG. 299, FORGED STEEL CLEVIS	
			7.	1	STRUCTURAL WELDING LUG	
ANALYSIS ID CODE: 202013 (XX)			8.	1	5/8"ø, FIG. 253, ROD	
			9.	1	FIG. 230, TURNBUCKLE	
NOTES :			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Omaha | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com



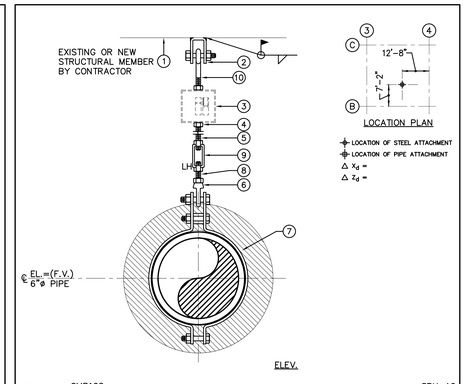
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-1B

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	9	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING (NOT REQUIRED)	
HOT LOAD, LBS		XXX	4.	3	HEX NUT	
COLD LOAD, LBS		XXX	5.	1	3/4"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		X.XXX	6.	1	FIG. 290, EYE NUT	
			7.	1	FIG. 295, PIPE CLAMP	
ANALYSIS ID CODE: 202013 (XX)			8.	1	3/4"ø, FIG. 253, ROD	
			9.	1	FIG. 230, TURNBUCKLE	
NOTES :			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Omaha | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com



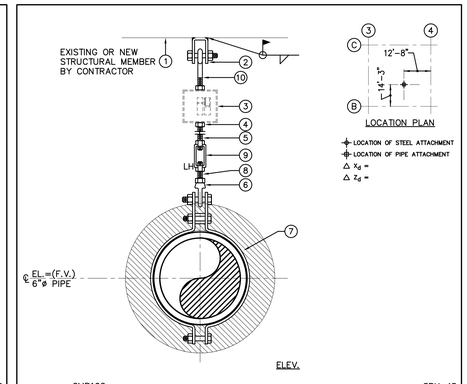
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-1C

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	9	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING (NOT REQUIRED)	
HOT LOAD, LBS		123	4.	3	HEX NUT	
COLD LOAD, LBS		129	5.	1	3/4"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		0.221	6.	1	FIG. 290, EYE NUT	
VERT. TRAVEL C. TO H., INCHES		0.235	7.	1	FIG. 295, PIPE CLAMP	
ANALYSIS ID CODE: 202013 (XX)			8.	1	3/4"ø, FIG. 253, ROD	
			9.	1	FIG. 230, TURNBUCKLE	
NOTES :			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Omaha | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com



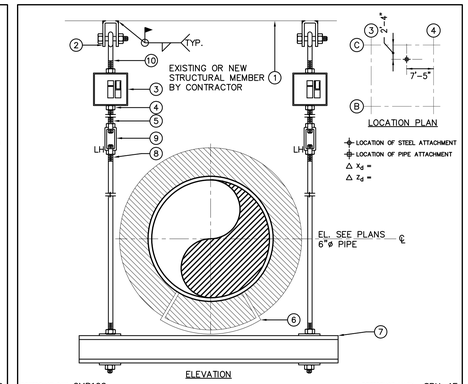
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-1D

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	9	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING (NOT REQUIRED)	
HOT LOAD, LBS		XXX	4.	3	HEX NUT	
COLD LOAD, LBS		XXX	5.	1	3/4"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		X.XXX	6.	1	FIG. 290, EYE NUT	
			7.	1	FIG. 295, PIPE CLAMP	
ANALYSIS ID CODE: 202013 (XX)			8.	1	3/4"ø, FIG. 253, ROD	
			9.	1	FIG. 230, TURNBUCKLE	
NOTES :			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Omaha | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com



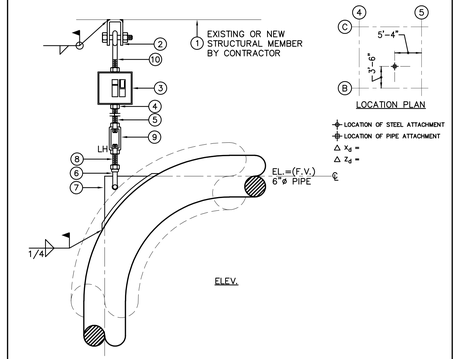
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-1E

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	–		
B-268	A	4	2.	2	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	2	VAR. SPRING	
HOT LOAD, LBS		196	4.	8	HEX NUT	
COLD LOAD, LBS		212	5.	2	1/2"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		0.335	6.	1	FIG. 164, PIPE COVERING PROTECTION SADDLE	
HORZ. TRAVEL C. TO H., INCHES		0.254	7.	1	4 x 5.4 DOUBLE CHANNEL	
ANALYSIS ID CODE: 202013 (XX)			8.	2	1/2"ø, FIG. 253, ROD	
			9.	2	TURN BUCKLE	
NOTES :			10.	2	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Omaha | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com



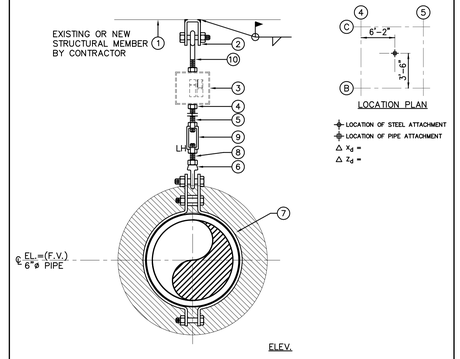
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-2A

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	12	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING	
HOT LOAD, LBS		XXX	4.	3	HEX NUT	
COLD LOAD, LBS		XXX	5.	1	5/8"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		X.XXX	6.	1	FIG. 299, FORGED STEEL CLEVIS	
			7.	1	STRUCTURAL WELDING LUG	
ANALYSIS ID CODE: 202013 (XX)			8.	1	5/8"ø, FIG. 253, ROD	
			9.	1	FIG. 230, TURNBUCKLE	
NOTES :			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Omaha | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com



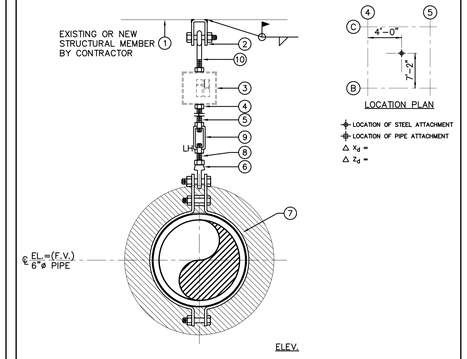
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-2B

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	9	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING (NOT REQUIRED)	
HOT LOAD, LBS		XXX	4.	3	HEX NUT	
COLD LOAD, LBS		XXX	5.	1	3/4"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		X.XXX	6.	1	FIG. 290, EYE NUT	
			7.	1	FIG. 295, PIPE CLAMP	
ANALYSIS ID CODE: 202013 (XX)			8.	1	3/4"ø, FIG. 253, ROD	
			9.	1	FIG. 230, TURNBUCKLE	
NOTES :			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Omaha | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com



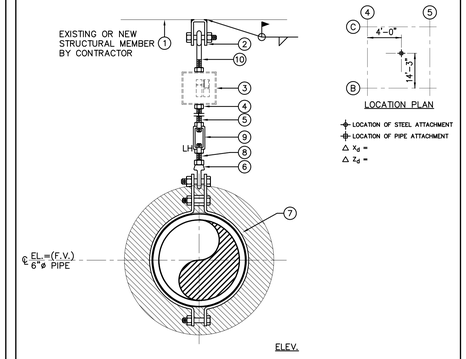
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-2C

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	9	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING (NOT REQUIRED)	
HOT LOAD, LBS		XXX	4.	3	HEX NUT	
COLD LOAD, LBS		X.XXX	5.	1	3/4"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES			6.	1	FIG. 290, EYE NUT	
			7.	1	FIG. 295, PIPE CLAMP	
ANALYSIS ID CODE: 202013 (XX)			8.	1	3/4"ø, FIG. 253, ROD	
			9.	1	FIG. 230, TURNBUCKLE	
NOTES :			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Omaha | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com



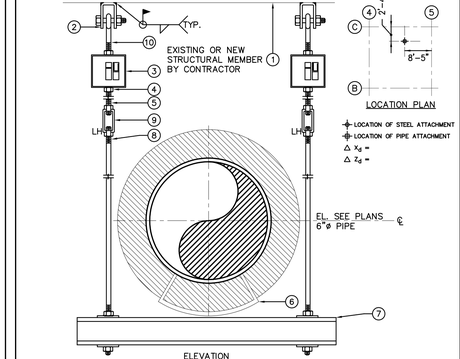
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-2D

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	9	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING (NOT REQUIRED)	
HOT LOAD, LBS		XXX	4.	3	HEX NUT	
COLD LOAD, LBS		XXX	5.	1	3/4"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		X.XXX	6.	1	FIG. 290, EYE NUT	
			7.	1	FIG. 295, PIPE CLAMP	
ANALYSIS ID CODE: 202013 (XX)			8.	1	3/4"ø, FIG. 253, ROD	
			9.	1	FIG. 230, TURNBUCKLE	
NOTES :			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Omaha | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com



REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-2E

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	–		
B-268	A	3	2.	2	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	2	VAR. SPRING	
HOT LOAD, LBS		193	4.	8	HEX NUT	
COLD LOAD, LBS		202	5.	2	1/2"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		0.249	6.	1	FIG. 164, PIPE COVERING PROTECTION SADDLE	
HORZ. TRAVEL C. TO H., INCHES		0.243	7.	1	4 x 5.4 DOUBLE CHANNEL	
ANALYSIS ID CODE: 202013 (XX)			8.	2	1/2"ø, FIG. 253, ROD	
			9.	2	TURN BUCKLE	
NOTES :			10.	2	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Omaha | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com

100% CD SUBMITTAL

Revisions	Date

CONSULTANTS:

PROFESSIONAL MECHANICAL ENGINEER
GREGORY T. KRONAIZL
E-5523
STATE OF NEBRASKA
May 17, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, PC
SDVOSB
CLH PROJECT NO: 18-013
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941

Drawing Title: MECHANICAL - DETAILS

Approved: Project Director

Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES

Location: OMAHA, NE

Date: 05-14-2021 | Checked: GTK | Drawn: CWK

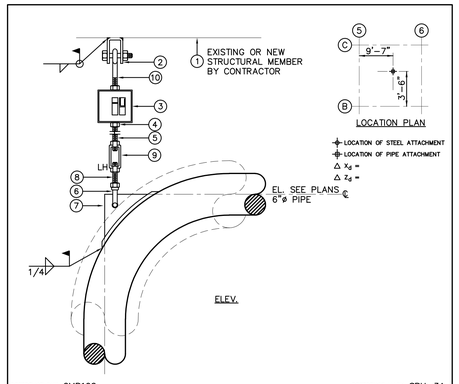
Project Number: 636-19-301
Building Number: 2
Drawing Number: 2M506
Dwg. of X

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

GENERAL BOILER PIPING HANGER NOTES:

1. REFER TO SPECIFICATION SECTION 23 21 11, BOILER PLANT PIPING. COORDINATE SUPPORT LOCATIONS WITH BUILDING STRUCTURE PRIOR TO ERECTION OF PIPING AND APPROVED SHOP DRAWINGS.
2. PROJECT DRAWINGS SHOW LOCATIONS FOR STEAM LEAD PIPE SUPPORT IS BASED ON BASIS OF DESIGN OF PARTICULAR BOILER EQUIPMENT LAYOUT AND CONTRACTOR SHALL PROVIDE ENGINEERED HANGER SYSTEM FOR THE BOILER EQUIPMENT FURNISHED INDICATING COMPLIANCE WITH THE MAXIMUM NOZZLE LOADINGS REQUIRED FOR THE BOILER PROVIDED ALL PIPE HANGERS SHALL COMPLY WITH MSS-58 AND MSS SP-127.
3. WHERE LOCATIONS FOR HANGERS DO NOT ALIGN WITH EXISTING STRUCTURAL STEEL MEMBERS CAPABLE OF PIPE SUPPORT, PROVIDE NEW STRUCTURAL MEMBER FOR ATTACHMENT OF HANGER FOR LOCATION REQUIRED.
4. SUBMIT LAYOUT DRAWINGS SHOWING GENERAL LOCATIONS AND SUPPORT TYPES AND SIZES.
5. LOCATE SUPPORTS TO PERMIT REMOVAL OF VALVES, STRAINERS, FLOW METERS AND OTHER SIMILAR EQUIPMENT REQUIRING MAINTENANCE WITHOUT DISTURBING PIPE OR EQUIPMENT SUPPORTS.
6. PIPE SUPPORTS, HANGERS, ANCHORS, CLAMPS SHALL NOT BE ANCHORED TO EQUIPMENT UNLESS SHOWN OR APPROVED BY THE COR.
7. ALL PIPE AND EQUIPMENT SUPPORTS SHALL BE SUPPORTED FROM STRUCTURAL MEMBERS. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS AND SUBSTRATES ACCEPTABLE FOR ANCHORING TO STRUCTURE.



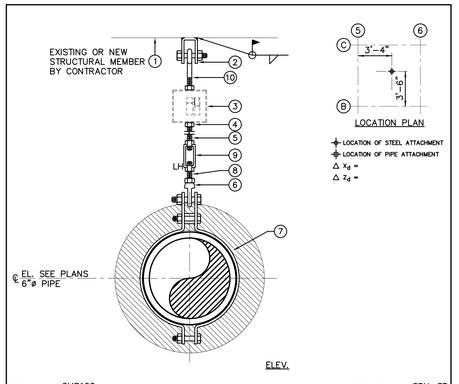
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-3A

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	12	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING	
HOT LOAD, LBS		XXX	4.	3	HEX NUT	
COLD LOAD, LBS		XXX	5.	1	5/8"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		X.XXX	6.	1	FIG. 299, FORGED STEEL CLEVIS	
			7.	1	STRUCTURAL WELDING LUG	
ANALYSIS ID CODE: 202013 (XX)			8.	1	5/8"ø, FIG. 253, ROD	
NOTES :			9.	1	FIG. 230, TURNBUCKLE	
			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Dwight | BROWN | BENT | COLORADO SPRINGS
farris-usa.com



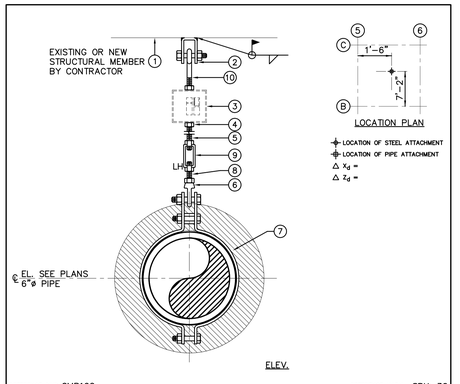
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-3B

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	9	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING (NOT REQUIRED)	
HOT LOAD, LBS		XXX	4.	3	HEX NUT	
COLD LOAD, LBS		XXX	5.	1	3/4"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		X.XXX	6.	1	FIG. 290, EYE NUT	
			7.	1	FIG. 295, PIPE CLAMP	
ANALYSIS ID CODE: 202013 (XX)			8.	1	3/4"ø, FIG. 253, ROD	
NOTES :			9.	1	FIG. 230, TURNBUCKLE	
			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Dwight | BROWN | BENT | COLORADO SPRINGS
farris-usa.com



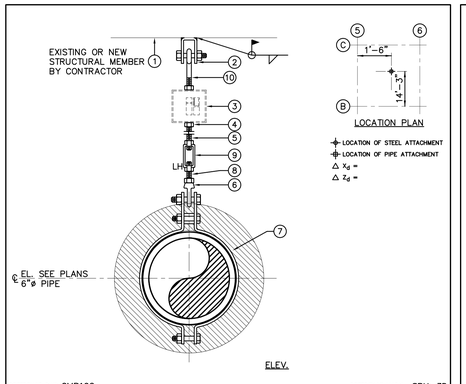
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-3C

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	9	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING (NOT REQUIRED)	
HOT LOAD, LBS		XXX	4.	3	HEX NUT	
COLD LOAD, LBS		XXX	5.	1	3/4"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		X.XXX	6.	1	FIG. 290, EYE NUT	
			7.	1	FIG. 295, PIPE CLAMP	
ANALYSIS ID CODE: 202013 (XX)			8.	1	3/4"ø, FIG. 253, ROD	
NOTES :			9.	1	FIG. 230, TURNBUCKLE	
			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Dwight | BROWN | BENT | COLORADO SPRINGS
farris-usa.com



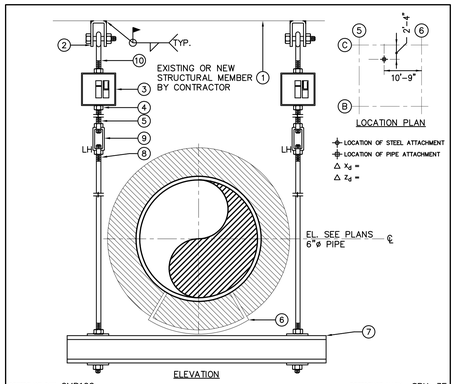
REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-3D

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	1		
B-268	A	9	2.	1	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	1	VAR. SPRING (NOT REQUIRED)	
HOT LOAD, LBS		XXX	4.	3	HEX NUT	
COLD LOAD, LBS		XXX	5.	1	3/4"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		X.XXX	6.	1	FIG. 290, EYE NUT	
			7.	1	FIG. 295, PIPE CLAMP	
ANALYSIS ID CODE: 202013 (XX)			8.	1	3/4"ø, FIG. 253, ROD	
NOTES :			9.	1	FIG. 230, TURNBUCKLE	
			10.	1	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Dwight | BROWN | BENT | COLORADO SPRINGS
farris-usa.com



REFERENCE DWG: 2MP102 REFERENCE MARK: SPH-3E

SPRING DATA			ITEM	REQ'D	COMPONENT DESCRIPTION	REMARKS
FIG. NO.	TYPE	SIZE	1.	–		
B-268	A	4	2.	2	FIG. 66, BEAM ATTACHMENT	
		EACH ROD	3.	2	VAR. SPRING	
HOT LOAD, LBS		219	4.	8	HEX NUT	
COLD LOAD, LBS		230	5.	2	1/2"ø, FIG. 140, ROD	
VERT. TRAVEL C. TO H., INCHES		0.249	6.	1	FIG. 164, PIPE COVERING PROTECTION SADDLE	
HORZ. TRAVEL C. TO H., INCHES		0.483	7.	1	4 x 5.4 DOUBLE CHANNEL	
ANALYSIS ID CODE: 202013 (XX)			8.	2	1/2"ø, FIG. 253, ROD	
NOTES :			9.	2	TURN BUCKLE	
			10.	2	WELDED EYE ROD	

PIPE TEMPERATURE (°F): 366
STRUCTURAL DESIGN LOAD (KIPS):
PIPE SIZE (O.D.): 6 5/8"
PIPE INSULATION THICKNESS (INCHES): 3 1/2"
PIPE MATERIAL: C.S.

PIPE DESIGNATION: 6" HPS
PROJECT NO: 202013

FARRIS ENGINEERING
Dwight | BROWN | BENT | COLORADO SPRINGS
farris-usa.com

100% CD SUBMITTAL

Revisions	Date

CONSULTANTS:

PROFESSIONAL MECHANICAL ENGINEER
GREGORY T. KRONAIZL
E-5523
STATE OF NEBRASKA
May 17, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, PC
SDVOSB
CLH PROJECT NO: 18-013
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941

Drawing Title: MECHANICAL - DETAILS
Approved: Project Director:

Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location: OMAHA, NE
Date: 05-14-2021 | Checked: GTK | Drawn: CWK

Project Number: 636-19-301
Building Number: 2
Drawing Number: 2M507
Dwg. of X

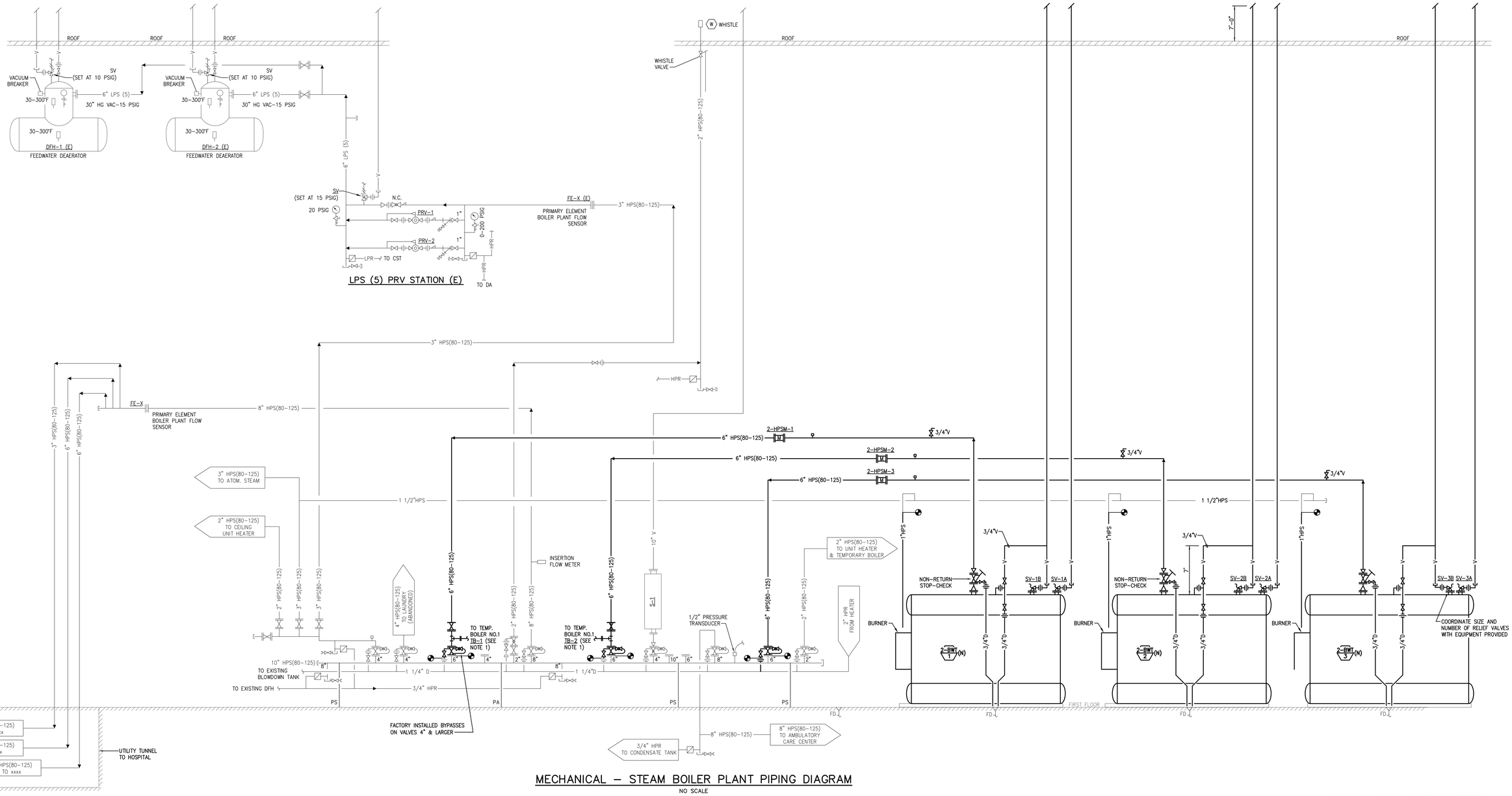
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

O:\2020\202013\CAD\Mechanical\202013_2M507.dwg 2M507 5/14/21 9:22am CWK

GENERAL NOTES:

1. REFER TO PHASING PLAN SHEET 2MZ101 AND 2MZ202 FOR TEMPORARY BOILER TIE-IN REQUIREMENTS AND PHASING OF THE WORK.
2. REFER TO SPECIFICATION SECTION 23 09 11, INSTRUMENTATION AND CONTROL FOR BOILER PLANT AND EQUIPMENT PLAN SCHEDULES FOR METERING REQUIREMENTS.



MECHANICAL – STEAM BOILER PLANT PIPING DIAGRAM

NO SCALE

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

GREGORY T. KRONAIZL E-5523 PROFESSIONAL MECHANICAL ENGINEER STATE OF NEBRASKA
MAY 14, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, INC. SDVOSB
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941
CLH PROJECT NO: 18-013

Drawing Title	MECHANICAL - STEAM BOILER PLANT PIPING DIAGRAM
Approved Project Director	
Project Title	OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location	OMAHA, NE
Date	05-14-2021
Checked	GTK
Drawn	CWK
Project Number	636-19-301
Building Number	2
Drawing Number	2M601
Dwg. of	X

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

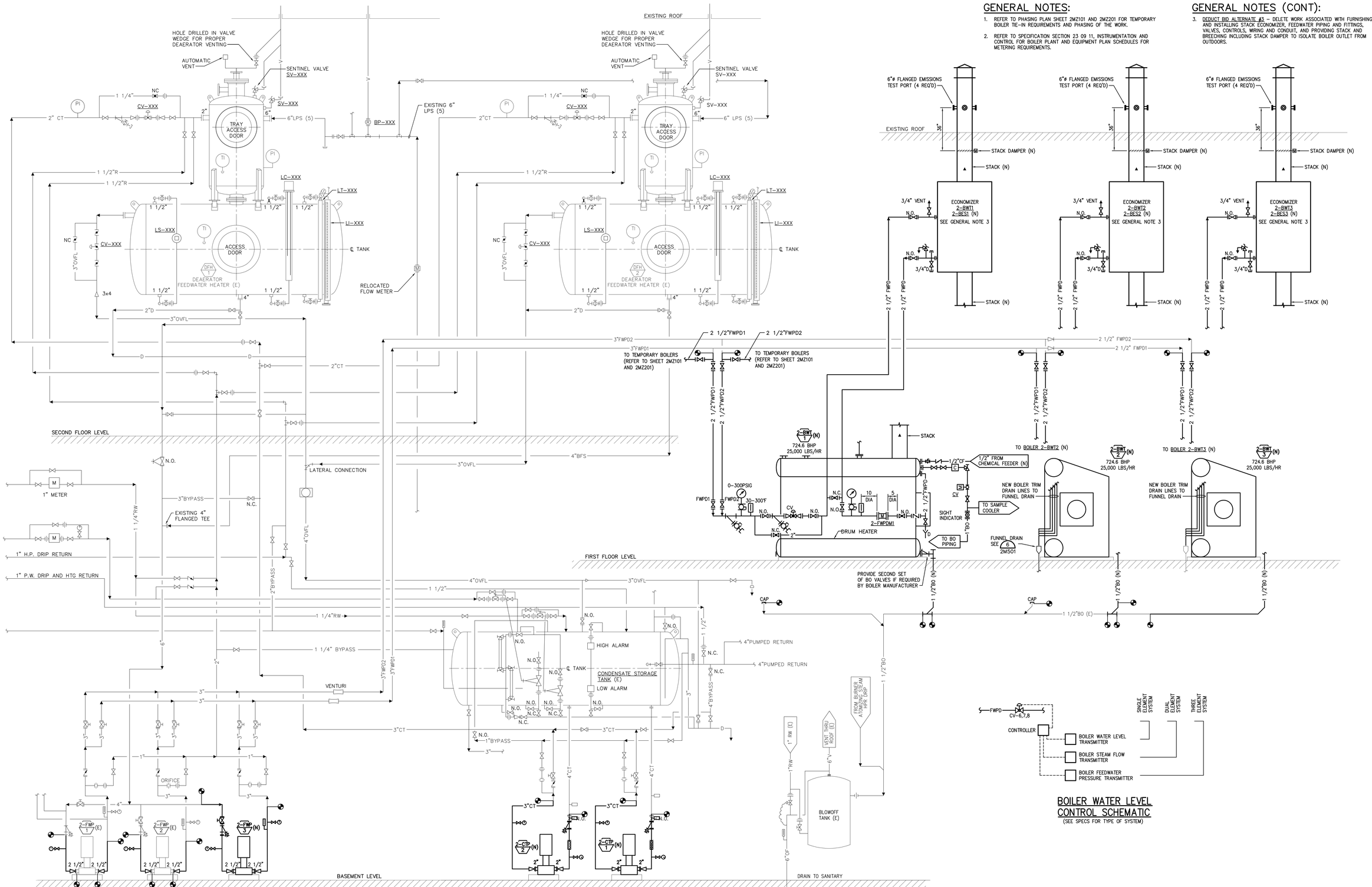
G:\2020\202013\CAD\Mechanical\202013_2M601.dwg 2M601 5/14/21 9:23am CWK

GENERAL NOTES:

1. REFER TO PHASING PLAN SHEET 2MZ101 AND 2MZ201 FOR TEMPORARY BOILER TIE-IN REQUIREMENTS AND PHASING OF THE WORK.
2. REFER TO SPECIFICATION SECTION 23 09 11, INSTRUMENTATION AND CONTROL FOR BOILER PLANT AND EQUIPMENT PLAN SCHEDULES FOR METERING REQUIREMENTS.

GENERAL NOTES (CONT):

3. DEDUCT BID ALTERNATE #3 – DELETE WORK ASSOCIATED WITH FURNISHING AND INSTALLING STACK ECONOMIZER, FEEDWATER PIPING AND FITTINGS, VALVES, CONTROLS, WIRING AND CONDUIT, AND PROVIDING STACK AND BREECHING INCLUDING STACK DAMPER TO ISOLATE BOILER OUTLET FROM OUTDOORS.



BOILER WATER LEVEL CONTROL SCHEMATIC

(SEE SPECS FOR TYPE OF SYSTEM)

MECHANICAL – CONDENSATE AND BOILER FEEDWATER PLANT PIPING DIAGRAM

NO SCALE

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

GREGORY T. KRONAIZL E-5523 MECHANICAL ENGINEER PROFESSIONAL STATE OF NEBRASKA May 14, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS PC
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941
SDVOSB
CLH PROJECT NO: 18-013

Drawing Title	MECHANICAL - CONDENSATE AND BOILER FEEDWATER PLANT PIPING DIAGRAM
Approved Project Director	
Project Title	OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location	OMAHA, NE
Date	05-14-2021
Checked	GTK
Drawn	CWK
Project Number	636-19-301
Building Number	2
Drawing Number	2M602
Dwg. of	X

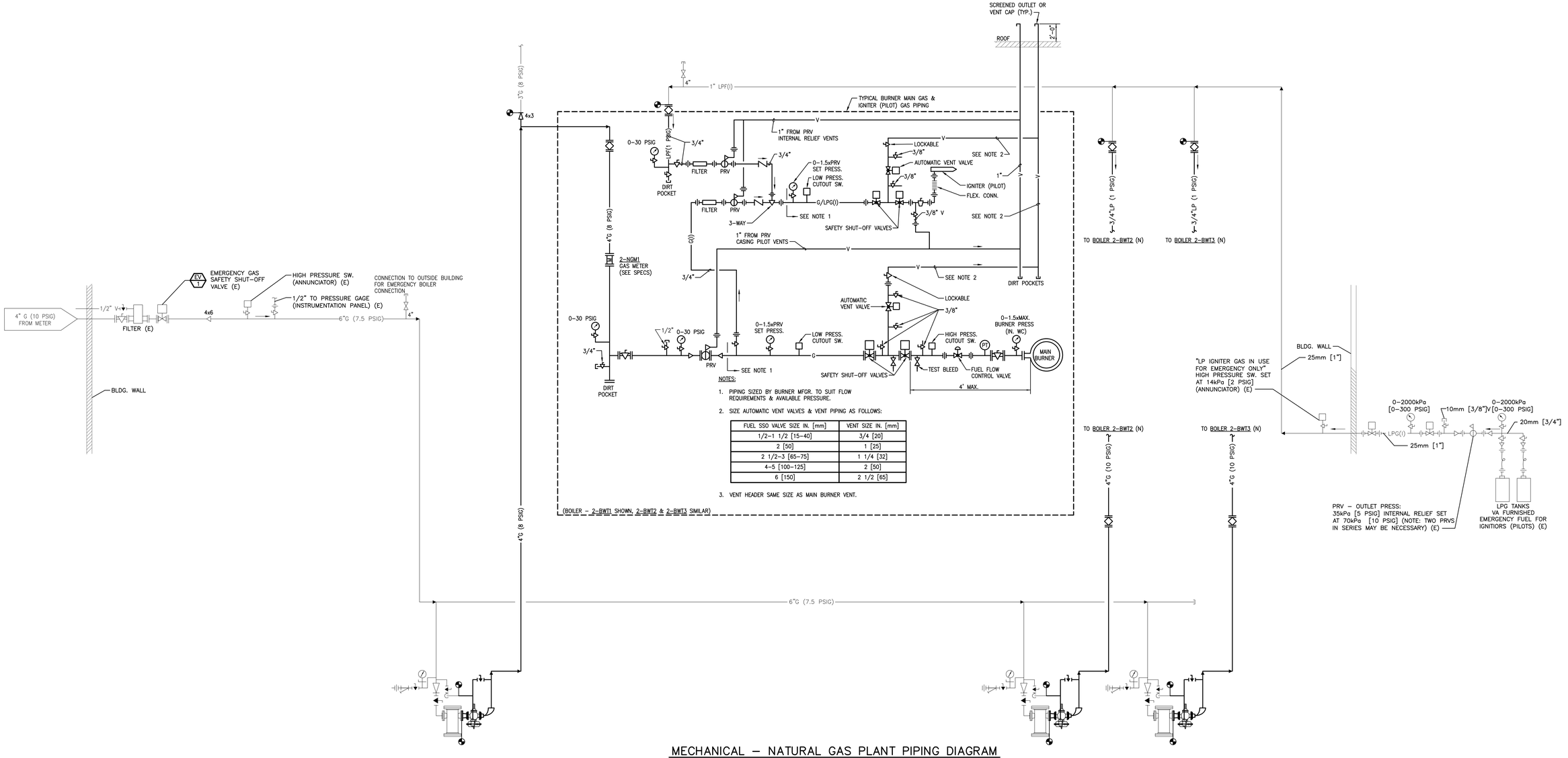
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

G:\2020\202013\CAD\Mechanical\202013_2M601.dwg 2M602 5/14/21 9:24am CWK

GENERAL NOTES:

1. REFER TO PHASING PLAN SHEET 2MZ101 AND 2MZ201 FOR TEMPORARY BOILER TIE-IN REQUIREMENTS AND PHASING OF THE WORK.
2. REFER TO SPECIFICATION SECTION 23 09 11, INSTRUMENTATION AND CONTROL FOR BOILER PLANT AND EQUIPMENT PLAN SCHEDULES FOR METERING REQUIREMENTS.



MECHANICAL – NATURAL GAS PLANT PIPING DIAGRAM

NO SCALE

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

GREGORY T. KRONAIZL, E-5523, PROFESSIONAL MECHANICAL ENGINEER, STATE OF NEBRASKA, MAY 14, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, INC. SDVOSB
CLH PROJECT NO: 18-013
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941

Drawing Title	MECHANICAL - NATURAL GAS PLANT PIPING DIAGRAM
Approved: Project Director	
Project Title	OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location	OMAHA, NE
Date	05-14-2021
Checked	GTK
Drawn	CWK
Project Number	636-19-301
Building Number	2
Drawing Number	2M603
Dwg. X of X	

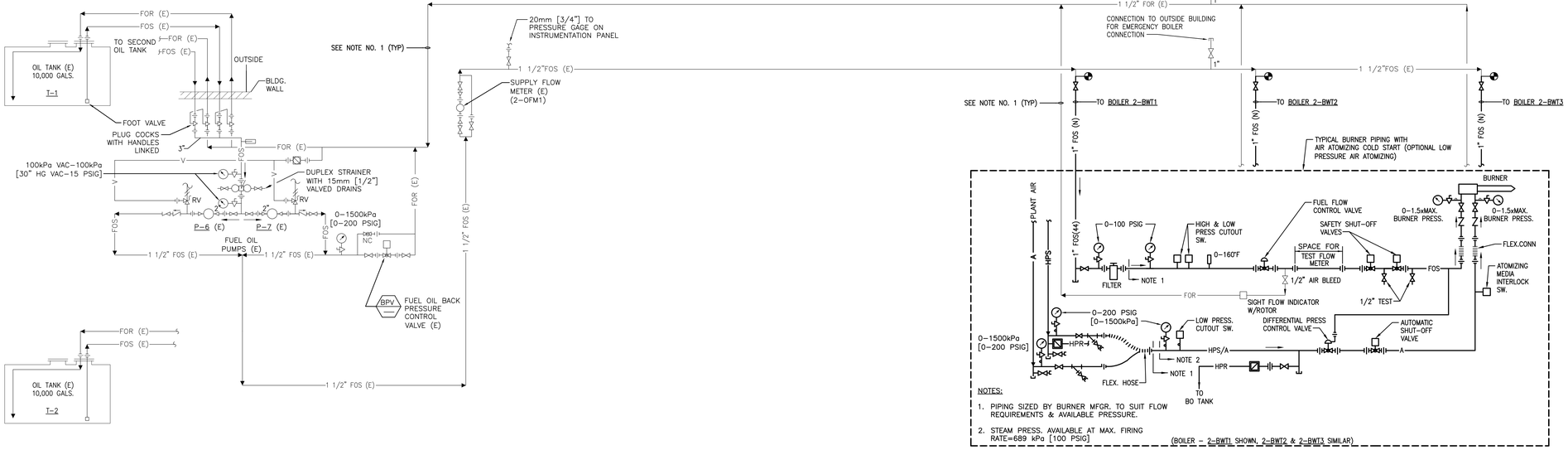
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

G:\2020\202013\CAD\Mechanical\202013_2M601.dwg 2M603 5/14/21 9:27am CWK

GENERAL NOTES:

1. IF REQUIRED BY BOILER BURNER MANUFACTURER.



NO. 2 BURNER FUEL OIL SYSTEMS – STANDARD PIPING DIAGRAM

NO SCALE

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

GREGORY T. KRONAIZL E-5523 PROFESSIONAL MECHANICAL ENGINEER STATE OF NEBRASKA — May 14, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz — SDVOSB
CLH PROJECT NO: 18-013
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941

Drawing Title: MECHANICAL - NO. 2 OIL PLANT PIPING DIAGRAM

Approved Project Director:

Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES

Location: OMAHA, NE

Date: 05-14-2021 | Checked: GTK | Drawn: CWK

Project Number: 636-19-301

Building Number: 2

Drawing Number: 2M604

Dwg. of X

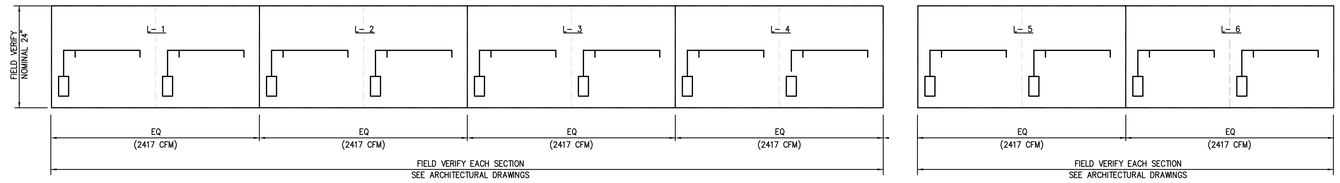
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

O:\2020\202013\CAD\Mechanical\202013_2M601.dwg 2M604 5/14/21 9:28am CWK

GENERAL NOTES:

1. REFER TO SHEET 2MH301 AND 2A201 FOR ADDITIONAL REQUIREMENTS.



ELEVATION

VERTICAL LOUVER INTAKE DAMPER DIAGRAM

NO SCALE

three inches = one foot 6"
one and one half inches = one foot 1 6" 0
one inch = one foot 2 6" 0
three quarters inch = one foot 2 6" 0
one half inch = one foot 4 0
three eighths inch = one foot 4 0
one quarter inch = one foot 8 4 0
one eighth inch = one foot 16 8 4 0

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

PROFESSIONAL MECHANICAL ENGINEER
GREGORY T. KRONAIZL
E-5523
STATE OF NEBRASKA
May 19, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

Calvin L. Hinz Architects, Inc.
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941
SDVOSB
CLH PROJECT NO: 18-013

Drawing Title	MECHANICAL - VERTICAL LOUVER INTAKE DAMPER DIAGRAM
Approved: Project Director	
Project Title	OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location	OMAHA, NE
Date	05-14-2021
Checked	GTK
Drawn	CWK
Project Number	636-19-301
Building Number	2
Drawing Number	2M605
Dwg. of	X

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

G:\2020\202013\CAD\Mechanical\202013_2M601.dwg 2M605 5/14/21 9:28am CWK

BOILER PLANT • WATER TUBE STEAM BOILER SCHEDULE, PACKAGED TYPE, SHOP ASSEMBLED

MARK	LOCATION	AREA AND/OR BLDG SERVED	TYPE	MAX CAPACITY		BOILER		OPERATING PRESS		RELIEF VALVE SETTING		HEATING SURFACE		SURFACE VOL		MIN CONT FIRING RATE		NATURAL GAS				# 2 OIL				FIRST CUTOUT SETTINGS		SECOND CUTOUT SETTINGS		OIL ATOM COMPRESS MOTOR					FORCED DRAFT FAN MOTOR					REMARKS
																		INPUT		OUTPUT		INPUT		OUTPUT						POWER					POWER					
				LBS/HR	[kg/HR]	HP	[kW]	PSIG	[kPa]	PSIG	[kPa]	SQ FT	[SQ M]	CFT	[CM]	LBS/HR	[kg/HR]	MBH	[kW]	MBH	[kW]	MBH	[kW]	MBH	[kW]	PSIG	[kPa]	PSIG	[kPa]	HP	[W]	PHASE	VOLT	RPM	HP	[W]	PHASE	VOLT	RPM	
2-BWT1	BOILER PLANT	2	D	25,000	[11000]	724.6	[540]	120	[830]	150	[1000]	1732	[520]	423		2,500	[1100]	29,989	[100000]	24,925	[7300]	28,833	[8500]	24,925	[7300]	125	[860]	135	[930]	—	#####	—	—	—	25	[19000]	3	460	1800	—
2-BWT2	BOILER PLANT	2	D	25,000	[11000]	724.6	[540]	120	[830]	150	[1000]	1732	[520]	423		2,500	[1100]	29,989	[100000]	24,925	[7300]	28,833	[8500]	24,925	[7300]	125	[860]	135	[930]	—	#####	—	—	—	25	[19000]	3	460	1800	—
2-BWT3	BOILER PLANT	2	D	25,000	[11000]	724.6	[540]	120	[830]	150	[1000]	1732	[520]	423		2,500	[1100]	29,989	[100000]	24,925	[7300]	28,833	[8500]	24,925	[7300]	125	[860]	135	[930]	—	#####	—	—	—	25	[19000]	3	460	1800	—

NOTES

1. STEAM QUALITY IS 99% MINIMUM.
2. DESIGN PRESSURE IS 200 PSIG [1378 kPa] MINIMUM.
3. FEEDWATER TEMPERATURE IS 212 ˚F [100 ˚C] MINIMUM, AND 228 ˚F [109 ˚C] NORMAL.
4. FOR STEAM NOZZLE FORCES AND MOMENTS, SEE DRAWING # 2M501.
5. ALTITUDE IS 1196.0 FT [M] ABOVE SEA LEVEL.
6. THERE SHALL BE 5 PSIG [35 kPa] BETWEEN VALVES.

BOILER PLANT • PUMP SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	TYPE	CIRCULATING FLUID								MIN % EFF	ELECTRICAL MOTOR						REMARKS
					FLUID	FLOW		HEAD		NPSH AVAILABLE		TEMPERATURE		SP GR		NOMINAL POWER		PHASE	VOLT	MAX RPM	SPEED CONTROL	
						GPM	[L/s]	FT	[kPa]	FT	[kPa]	°F	[°C]			HP	[kW]					
2-CTP1	BOILER PLANT	2	CONDENSATE TRANFER	CENTRIFUGAL	CONDENSATE	120	[8]	80	[1300]	14.05	[220]	190	[88]	0.96	60	5	[4]	3	460	3500	CONTINOUS	CONNECT TO EXISTING CONDENSATE STORAGE TANK
2-CTP2	BOILER PLANT	2	CONDENSATE TRANFER	CENTRIFUGAL	CONDENSATE	120	[8]	80	[1300]	14.05	N/A	190	[88]	0.96	60	5	[4]	3	460	3500	CONTINOUS	CONNECT TO EXISTING CONDENSATE STORAGE TANK
2-FWP3	BOILER PLANT	2	FEEDWATER	CENTRIFUGAL	FEEDWATER	160	[10]	429	[6800]	12.69	N/A	230	[110]	0.95	70	25	[19]	3	460	3521	VARIABLE SPEED	CONNECT TO EXISTING FDW HEADERS
							[ ]		[ ]		N/A						[ ]					
							[ ]		[ ]		N/A						[ ]					

three inches = one foot 6"
one and one half inches = one foot 1 0 6"
one inch = one foot 2 0 6"
three quarters inch = one foot 2 0 6"
one half inch = one foot 4 0
three eighths inch = one foot 4 0
one quarter inch = one foot 8 4 0
one eighth inch = one foot 16 8 4 0

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

PROFESSIONAL MECHANICAL ENGINEER
GREGORY T. KRONAIZL
E-5523
STATE OF NEBRASKA
May 19, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz Architects, Inc.
SDVOSB
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941
CLH PROJECT NO: 18-013

Drawing Title: MECHANICAL - SCHEDULES

Approved: Project Director

Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES

Location: OMAHA, NE

Date: 05-14-2021 | Checked: GTK | Drawn: CWK

Project Number: 636-19-301

Building Number: 2

Drawing Number: 2M701

Dwg. of X

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

G:\2020\202013\CAD\Mechanical\202013_2M701.dwg 2M701 5/14/21 9:30am CWK

STEAM, GAS & FEEDWATER FLOW TRANSMITTER, ELEMENT SCHEDULE

DESIGNATION	FLOW TRANSMITTER	FT-101	FT-102	FT-103	FT-401	FT-402	FT-403	FT-601	FT-701	FT-702	FT-703	---
MARK		2-HPSM1	2-HPSM2	2-HPSM3	2-FWPD1	2-FWPD2	2-FWPD3	2-MUM1	2-NGM1	2-NGM2	2-NGM3	2-OFM1
LOCATION		BOILER ROOM	BOILER ROOM	BOILER ROOM	BOILER ROOM	BOILER ROOM	BOILER ROOM	BASEMENT LEVEL	BOILER ROOM	BOILER ROOM	BOILER ROOM	BASEMENT
SERVICE		STEAM	STEAM	STEAM	BOILER FEEDWATER	BOILER FEEDWATER	BOILER FEEDWATER	MAKEUP WATER	NATURAL GAS	NATURAL GAS	NATURAL GAS	NO, 2 OIL
SERVES		2-BWT1	2-BWT2	2-BWT3	2-BWT1	2-BWT2	2-BWT3	EXISTING CST	2-BWT1	2-BWT2	2-BWT3	BOILER PLANT
SYSTEM MAX. PRESSURE, PSIG		150	150	150	300	300	300	---	30	30	30	---
SYSTEM MAX. TEMPERATURE, °F		366	366	366	274	274	274	---	75	75	75	---
SYSTEM NORM. OPERATING PRESSURE, PSIG		125 (SAT.)	125 (SAT.)	125 (SAT.)	185	185	185	---	7,5	7,5	7,5	---
FLOW RANGE		3,000-30,000 LB/HR	3,000-30,000 LB/HR	3,000-30,000 LB/HR	8 - 160 GPM	8 - 160 GPM	8 - 160 GPM	---	375 - 37,500 SCFH	375 - 37,500 SCFH	375 - 37,500 SCFH	---
INPUT		PULSE	PULSE	PULSE	PULSE	PULSE	PULSE	---	PULSE	PULSE	PULSE	---
OUTPUT		HART 4-20 mA	HART 4-20 mA	HART 4-20 mA	HART 4-20 mA	HART 4-20 mA	HART 4-20 mA	---	HART 4-20 mA	HART 4-20 mA	HART 4-20 mA	---
TYPE		INTEGRAL WITH FE-101	INTEGRAL WITH FE-102	INTEGRAL WITH FE-103	INTEGRAL WITH FE-401	INTEGRAL WITH FE-402	INTEGRAL WITH FE-403	---	INTEGRAL WITH FE-701	INTEGRAL WITH FE-702	INTEGRAL WITH FE-703	---
SIZE OF PIPE, IN.	FLOW ELEMENT	6	6	6	4	4	4	---	4	4	4	---
DESIGNATION		FE-101	FE-102	FE-103	FE-401	FE-402	FE-402	---	FE-401	FE-402	FE-402	---
TYPE		VORTEX SHEDDING	VORTEX SHEDDING	VORTEX SHEDDING	VORTEX SHEDDING	VORTEX SHEDDING	VORTEX SHEDDING	---	THERMAL MASS	THERMAL MASS	THERMAL MASS	---
RANGE, FT/SEC		---	---	---	---	---	---	---	---	---	---	---
PREFERRED SIZE, INS.		6	6	6	2 (1.5 Reduction)	2 (1.5 Reduction)	2 (1.5 Reduction)	---	2	2	2	---
DESIGNATION	FLOW INDICATOR	FI-101	FI-102	FI-103	FI-401	FI-402	FI-403	---	FI-701	FI-702	FI-703	---
TYPE (LOCAL OR REMOTE)		REMOTE	REMOTE	REMOTE	REMOTE	REMOTE	REMOTE	REMOTE	REMOTE	REMOTE	REMOTE	REMOTE
RANGE, FT/SEC		---	---	---	---	---	---	---	---	---	---	---
INPUT		FT-101	FT-102	FT-103	FT-401	FT-402	FT-403	---	FT-701	FT-702	FT-703	---
OUTPUT		–	---	---	---	---	---	---	---	---	---	---
REMARKS		1, 3, 4, 5	1, 3, 4, 5	1, 3, 4, 5	2, 4, 5	2, 4, 5	2, 4, 5	6	2, 4, 5	2, 4, 5	2, 4, 5	6

REMARKS:
1. VORTEX METER, BUILT-IN TEMPERATURE RTD, PULSE SENSOR, W/150 LB FLANGES, PFA LINER, FLOW CONDITIONER PLATE, 316L SS ELECTRODES.
2. THERMAL MASS METER, PULSE SENSOR, AND FLOW CONDITIONER.
3. INPUT TO BOILER CONTROL PANELS.
4. REFER TO SPECIFICATION SECTION - 23 09 11 INSTRUMENTATION AND CONTROL FOR BOILER PLANT FOR ADDITIONAL REQUIREMENTS.
5. CONNECT FLOW METER TO PLANT CONTROL SYSTEM WORK STATION.
6. EXISTING FLOW METER.

BOILER PLANT • GAS PRESSURE REDUCING VALVE SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	VALVE SIZE [MM] INCHES	REQUIRED CAPACITY		MAX FLOW WIDE OPEN VALVE		PRESSURE IN		PRESSURE OUT		REMARKS
				CFH		CFH		PSIG	[kPa]	PSIG	[kPa]	
2-PRV1	BOILER PLANT	2-WB1	2	37,000	---	44,000	---	7,5	---	3	---	
2-PRV2	BOILER PLANT	2-WB2	2	37,000	---	44,000	---	7,5	---	3	---	
2-PRV3	BOILER PLANT	2-WB3	2	37,000	---	44,000	---	7.5	---	3	---	

100% CD SUBMITTAL

Revisions	Date

CONSULTANTS:

GREGORY T. KRONAIZL E-5523 PROFESSIONAL MECHANICAL ENGINEER STATE OF NEBRASKA — May 14, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-una.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, INC. — SDVOSB
CLH PROJECT NO: 18-013
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941

Drawing Title: MECHANICAL - SCHEDULES

Approved: Project Director

Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES

Location: OMAHA, NE

Date: 05-14-2021 | Checked: GTK | Drawn: CWK

Project Number: 636-19-301

Building Number: 2

Drawing Number: 2M702

Dwg. of X

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

G:\2020\202013\CAD\Mechanical\202013_2M702 5/14/21 9:30am CWK

CONTROL DAMPER SCHEDULE

DESIGNATION	CD-1	CD-2	CD-3	CD-4	CD-5	CD -6	
LOUVER	L-1	L-2	L-3	L-4	L-5	L-6	
LOCATION	EAST WALL	EAST WALL	EAST WALL	EAST WALL	EAST WALL	EAST WALL	
SERVES	2-WBT1, 2, 3	2-WBT1, 2, 3	2-WBT1, 2, 3	2-WBT1, 2, 3	2-WBT1, 2, 3	2-WBT1, 2, 3	
SERVICE	COMBUSTION AIR	COMBUSTION AIR	COMBUSTION AIR	COMBUSTION AIR	COMBUSTION AIR	COMBUSTION AIR	
TYPE	OPPOSED BLADE	OPPOSED BLADE	OPPOSED BLADE	OPPOSED BLADE	OPPOSED BLADE	OPPOSED BLADE	
AIR FLOW RATE, CFM	2,417	2,417	2,417	2,417	2,417	2,417	
AIR PRESSURE DROP, IN. W.C.	0.01	0.01	0.01	0.01	0.01	0.01	
PANEL WIDTH, INS.	36	36	36	36	36	36	
PANEL HEIGHT, INS.	24	24	24	24	24	24	
SECTION WIDTH, INS.	---	---	---	---	---	---	
SECTION HEIGHT, INS.	---	---	---	---	---	---	
NUMBER OF SECTIONS	2	2	2	2	2	2	
SECTION DEPTH, INS.	4	4	4	4	4	4	
MANUFACTURER	RUSKIN	RUSKIN	RUSKIN	RUSKIN	RUSKIN	RUSKIN	
MODEL	CD60	CD-60	CD-60	CD-60	CD-60	CD-60	
ACTUATOR	24VDC	24VDC	24VDC	24VDC	24VDC	24VDC	
ACTUATOR MANUFACTURER	RUSKIN	RUSKIN	RUSKIN	RUSKIN	RUSKIN	RUSKIN	
ACTUATOR MODEL	GCA SERIES	GCA SERIES	GCA SERIES	GCA SERIES	GCA SERIES	GCA SERIES	
SPRING ACTION	NO	NO	NO	NO	NO	NO	
SIGNAL ACTION	CLOSE	CLOSE	CLOSE	CLOSE	CLOSE	CLOSE	
REMARKS:	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	

REMARKS:
1. BASIS OF DESIGN, ANY CONTROL DAMPER MANUFACTURER MEETING THE SPECIFICATIONS AND SCHEDULED REQUIREMENTS IS ACCEPTABLE.
2. DAMPER ACTUATOR INTERFACED TO THE OPERATION OF ANY BOILER OPERATION. PROVIDE END SWITCH FOR PROVE OF OPEN CONDITION TO BOILER CONTROL SYSTEM.
3. COORDINATE DAMPER SIZE WITH LOUVER SECTIONS PROVIDED.

LOUVER SCHEDULE

DESIGNATION	L-1	L-2	L-3	L-4	L-5	L-6	
CONTROL DAMPER	CD-1	CD-2	CD-3	CD-4	CD-5	CD-6	
LOCATION	EAST WALL	EAST WALL	EAST WALL	EAST WALL	EAST WALL	EAST WALL	
EQUIPMENT SERVED	2-WTB1, 2, 3	2-WTB1, 2, 3	2-WTB1, 2, 3	2-WTB1, 2, 3	2-WTB1, 2, 3	2-WTB1, 2, 3	
SERVICE	COMBUSTION AIR	COMBUSTION AIR	COMBUSTION AIR	COMBUSTION AIR	COMBUSTION AIR	COMBUSTION AIR	
TYPE	DRAINABLE	DRAINABLE	DRAINABLE	DRAINABLE	DRAINABLE	DRAINABLE	
AIR FLOW RATE, CFM	2 @ 1208	2 @ 1208	2 @ 1208	2 @ 1208	2 @ 1208	2 @ 1208	
FREE AREA, SQ. FT.	3.0	3.0	3.0	3.0	3.0	3.0	
MIN. FREE AREA, %	51	51	51	51	51	51	
AIR PRESSURE DROP, IN. W.C.	0.033	0.033	0.033	0.033	0.033	0.033	
VELOCITY, FPM	402	402	402	402	402	402	
PANEL WIDTH, INS.	36	36	36	36	36	36	
PANEL HEIGHT, INS.	24	24	24	24	24	24	
DEPTH, INS.	4	4	4	4	4	4	
ROUGH OPENING PANEL WIDTH, INS.	---	---	---	---	---	---	
ROUGH OPENING PANEL HEIGHT, INS.	---	---	---	---	---	---	
NUMBER OF SECTIONS	2	2	2	2	2	2	
MATERIAL	ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM	
FINISH	CLEAR ANODIZED	CLEAR ANODIZED	CLEAR ANODIZED	CLEAR ANODIZED	CLEAR ANODIZED	CLEAR ANODIZED	
SCREEN TYPE	5/8-INCH EXPANDED ALUMINUM MESH	5/8-INCH EXPANDED ALUMINUM MESH	5/8-INCH EXPANDED ALUMINUM MESH	5/8-INCH EXPANDED ALUMINUM MESH	5/8-INCH EXPANDED ALUMINUM MESH	5/8-INCH EXPANDED ALUMINUM MESH	
MANUFACTURER	RUSKIN	RUSKIN	RUSKIN	RUSKIN	RUSKIN	RUSKIN	
MODEL	ELF375DX	ELF375DX	ELF375DX	ELF375DX	ELF375DX	ELF375DX	
REMARKS	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	

REMARKS:
1. REFERENCE ARCHITECTURAL DRAWINGS FOR ROUGH-IN OPENING SIZE AND INSTALLATION COORDINATION REQUIREMENTS.
2. AMCA STANDARD 511 APPROVED.
3. COORDINATE LOUVER ROUGH OPENING DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
4. BASIS OF DESIGN, ANY LOUVER MANUFACTURER MEETING THE SPECIFICATIONS AND SCHEDULED REQUIREMENTS IS ACCEPTABLE.
5. EACH LOUVER CONSISTING OF TWO SECTIONS AT AIR FLOW RATE SHOWN (2 X 1208 CFM = 2417 CFM).

three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot

100% CD SUBMITTAL

Revisions	Date

CONSULTANTS:

GREGORY T. KRONAIZL E-5523 PROFESSIONAL MECHANICAL ENGINEER STATE OF NEBRASKA
May 14, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-una.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, INC.
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941
CLH PROJECT NO: 18-013

Drawing Title: MECHANICAL - SCHEDULES
Approved: Project Director

Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location: OMAHA, NE
Date: 05-14-2021 | Checked: GTK | Drawn: CWK

Project Number: 636-19-301
Building Number: 2
Drawing Number: 2M703
Dwg. of X

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

G:\2020\202013\CAD\Mechanical\202013_2M703.dwg 2M703 5/14/21 9:31am CWK

DEVICE TYPE ABBREVIATIONS:

AARPB	ALARM ACKNOWLEDGE RESET PUSHBUTTON
AD	AUTOMATIC CONTROL DAMPER
AEOAS	ANALYSIS SENSOR AIR SUPPLY
AEOX	ANALYSIS SENSOR OXYGEN
AF	AIR FLOW SWITCH
AFS	AIR FLOW SENSOR
AI	ANALOG INPUT
ALHN	ALARM HORN
ALHNR	ALARM HORN RELAY
ALM	ALARM
AO	ANALOG OUTPUT
AOR	AUTO ON RELAY
ALR	ALARM RELAY
ASPB	ALARM SILENCE PUSHBUTTON
BGFCV	BURNER GAS FLOW CONTROL VALVE
BFFR	BURNER FLAME FAILURE RELAY
BFPH	BURNER FUEL PRESSURE HIGH
BFPL	BURNER FUEL PRESSURE LOW
BFPR	BURNER FUEL PRESSURE RELAY
BFS	BURNER FLAME SCANNER
BPSH	BURNER PRESSURE SWITCH-HIGH (NO/CLOSE AT HIGH PRESSURE)
BPSL	BURNER PRESSURE SWITCH-LOW (NC/OPEN AT NORMAL PRESSURE)
BRO	BURNER REGISTER OPEN (LIMIT SWITCH)
BSR	BURNER STOP RELAY
BSS	BURNER SELECTION SWITCH
BSSV	BURNER SAFETY SHUTOFF VALVE
BSSVV	BURNER SAFETY SHUTOFF VENT VALVE
CAFL	COMBUSTION AIR FLOW LOW (NC CONTACT/OPEN AT NORMAL AIR FLOW)
CE	CONDUCTIVITY ELEMENT
CO2E	CO2 ELEMENT (SENSOR)
CR	CONTROL RELAY
CV	CONTROL VALVE
CW	CONTROL WIRE
CHW	CHILLED WATER
DA	DAMPER ACTUATOR
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DPAH	DIFFERENTIAL PRESSURE ALARM HIGH
DPAL	DIFFERENTIAL PRESSURE ALARM LOW
DPC	DIFFERENTIAL PRESSURE CONTROLLER
DPE	DIFFERENTIAL PRESSURE SENSOR
DPI	DIFFERENTIAL PRESSURE INDICATOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DPSH	DIFFERENTIAL PRESSURE SWITCH HIGH
DPSL	DIFFERENTIAL PRESSURE SWITCH LOW
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
DPY	DIFFERENTIAL PRESSURE CONVERTER
DTC	DATA TERMINAL CABINET
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
ESDR	EMERGENCY SHUTDOWN RELAY
ESPB	EMERGENCY STOP PUSHBUTTON
ESR	EMERGENCY STOP RELAY
ESRPB	EMERGENCY STOP RESET PUSHBUTTON
ETWLH	EXPANSION TANK WATER LEVEL HIGH
ETWLL	EXPANSION TANK WATER LEVEL LOW
FD	FORCED DRAFT
FDFDC	FORCED DRAFT FAN DAMPER CLOSED
FDFSS	FORCED DRAFT FAN SELECTION SWITCH
FDMSR	FORCED DRAFT FAN MOTOR STARTER RELAY
FDFVO	FORCED DRAFT FAN VANES OPEN (LIMIT SWITCH)
FE	FLOW ELEMENT (SENSOR)
FGR	FLUE GAS RECIRCULATION
FGRD	FLUE GAS RECIRCULATION DAMPER
FI	FLOW INDICATOR
FIC	FLOW INDICATOR CONTROLLER
FIT	FLOW INDICATOR TRANSMITTER
FLD	FLUE DAMPER
FLS	FLAME SCANNER
FM	FLOW METER
FPH	FURNACE PRESSURE HIGH
FPHLR	FURNACE PRESSURE HIGH/LOW RELAY
FPL	FURNACE PRESSURE LOW
FQIT	FLOW QUANTITY INDICATING TRANSMITTER
FS	FLOW SWITCH
FSH	FLOW SWITCH-HIGH (NC CONTACT/OPEN ON HIGH FLOW)
FSL	FLOW SWITCH-LOW (NO CONTACT/CLOSE ON RISE TO NORMAL FLOW)
FT	FLOW TRANSMITTER
FY	FLOW TRANSDUCER
GPH	GENERATOR PRESSURE HIGH
GRD	GROUND
GSPL	GAS SUPPLY PRESSURE LOW
GSPH	GAS SUPPLY PRESSURE HIGH
GSV	GAS SHUTOFF VALVE
GWFL	GENERATOR WATER FLOW LOW
GWTH	GENERATOR WATER TEMPERATURE HIGH
H	HUMIDISTAT/HUMIDITY SENSOR
HC	HAND CONTROL
HOA	HAND-OFF-AUTO
HSP	HIGH SET-POINT
HHSP	HIGH HIGH SET-POINT
IA	INSTRUMENT AIR
IFD	IGNITER FLAME DETECTION
IFFR	IGNITER FLAME FAILURE RELAY
IFPH	IGNITER FUEL PRESSURE HIGH
IFPL	IGNITER FUEL PRESSURE LOW
IPSH	IGNITER PRESSURE SWITCH-HIGH (NO/CLOSE AT HIGH PRESSURE)
IPSL	IGNITER PRESSURE SWITCH-LOW (NC/OPEN AT NORMAL PRESSURE)
ISSV	IGNITER SAFETY SHUTOFF VALVE
ISSVV	IGNITER SAFETY SHUTOFF VENT VALVE
IFS	IGNITER FLAME SCANNER
IW	INSTRUMENT WIRE
LAH	LEVEL ALARM HIGH
LAHL	LEVEL ALARM HIGH LOW
LAL	LEVEL ALARM LOW
LC	LEVEL CONTROLLER
LG	LEVEL GAUGE
LH	LEVEL-HIGH
LI	LEVEL INDICATOR
LL	LEVEL-LOW
LMP	LAMP
LMPA	LAMP-AMBER
LMPG	LAMP-GREEN
LMPR	LAMP-RED
LMPW	LAMP-WHITE
LP	LOCAL PANEL
LS	LEVEL SWITCH
LSH	LEVEL SWITCH-HIGH (NC CONTACT/OPEN ON HIGH LEVEL)
LSL	LEVEL SWITCH-LOW (NO CONTACT/CLOSE ON RISE TO NORMAL LEVEL)
LT	LEVEL TRANSMITTER
LTPB	LAMP TEST PUSHBUTTON
LTR	LAMP TEST RELAY
LV	LEVEL CONTROL VALVE
MFT	MASTER FUEL TRIP
MFTR	MASTER FUEL TRIP RELAY
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
PA	PRESSURE ALARM
PAFL	PURGE AIR FLOW LOW (NC CONTACT/OPEN AT NORMAL AIR FLOW)
PAI	PULSE ACCUMULATOR INPUT
PAL	PRESSURE ALARM LOW
PB	PUSHBUTTON
PC	PRESSURE CONTROLLER
PCV	PRESSURE CONTROL VALVE
PE	PRESSURE ELEMENT (SENSOR)
PI	PRESSURE INDICATOR (PRESSURE GAUGE)
PPSPB	POST PURGE START PUSHBUTTON
PPSR	POST PURGE START RELAY
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSPB	PURGE START PUSHBUTTON
PSH	PRESSURE SWITCH-HIGH (NC CONTACT/OPEN ON HIGH PRESSURE)
PSL	PRESSURE SWITCH-LOW (NO CONTACT/ CLOSE ON RISE TO NORMAL PRESSURE)
PSR	PURGE START RELAY
PT	PRESSURE SENSOR/TRANSMITTER
PUS	PURGE SWITCH
RSV	RELIEF SAFETY VALVE
RTD	RESISTANCE TEMPERATURE DETECTOR
RV	PRESSURE RELIEF VALVE (LIQUID)
ROA	REMOTE-OFF-AUTO
S	SENSOR (TEMPERATURE)
SMK	SMOKE DETECTOR
SSO	SAFETY SHUT-OFF
SV	PRESSURE SAFETY VALVE (VAPOR)
TAH	TEMPERATURE ALARM HIGH
T&P RV	TEMPERATURE & PRESSURE RELIEF VALVE (LIQUID)
TC	TEMPERATURE CONTROLLER
TH	THERMOSTAT
TI	TEMPERATURE INDICATOR (THERMOMETER)
TIC	TEMPERATURE INDICATING CONTROLLER
TOT	TOTALIZER
TS	TEMPERATURE SENSOR
TSL	LOW LIMIT TEMPERATURE SENSOR
TT	TEMPERATURE SENSOR/TRANSMITTER
TW	THERMOMETER WELL
VFD	VARIABLE FREQUENCY DRIVE
VLV	VALVE
ZS	LIMIT SWITCH
XFMR	TRANSFORMER

ABBREVIATIONS

CALC = CALCULATION	RM = ROOM	TRAN = TRANSMITTER
TRND = TREND	EXH = EXHAUST	CH = CHILLER
COND = CONDENSER	DIFF = DIFFERENTIAL	BLR = BOILER
EFFIC = EFFICIENCY	PRESS = PRESSURE	STM = STEAM
TOTAL = TOTALIZATION	SW = SWITCH	STM COND = STEAM CONDENSATE
CD = CONTROL DAMPER	AHU = AIR HANDLING UNIT	ERU = ENERGY RECOVERY UNIT

SUPPLEMENTAL ABBREVIAITONS

CP = COIL PUMP	GCHW = GLYCOL CHILLED WATER
HW = HEATING WATER	RCP = HEAT RECOVERY PUMP
CHW = CHILLED WATER	CRU = CONDENSATE RETURN UNIT
GHW = GLYCOL HEATING WATER	

CONTROLS/INSTRUMENTATION SUPPLEMENTAL LEGEND

MISC. CONTROLS/INSTRUMENTATION SYMBOLS:

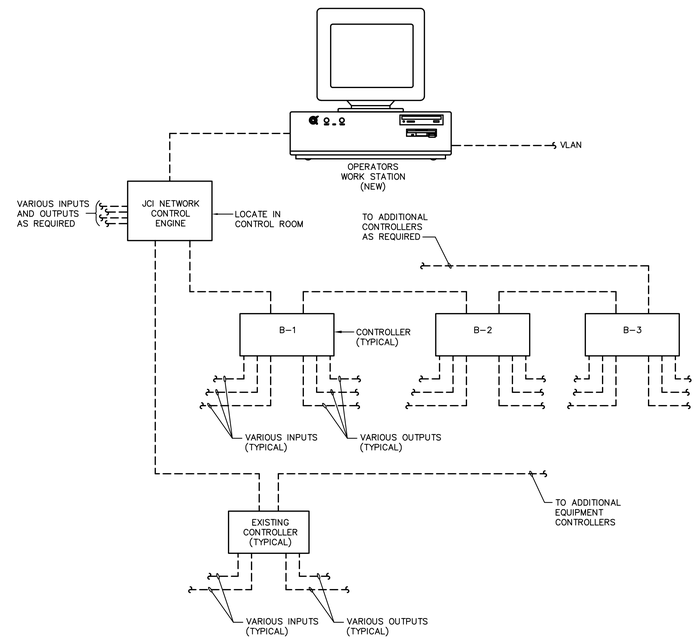
RC — RECEIVER CONTROLLER
MS — MOTOR STARTER
VFD — VARIABLE FREQUENCY DRIVE
M — MOTOR
CS — CONTROL STATION
FCP — FIRE CONTROL PANEL
SWITCH
I — INTERLOCK
R — RESET
E/P — CURRENT (ELECTRICAL)/PNEUMATIC PRESSURE CONVERTER
A — INDICATING LIGHT: A—AMBER B—BLUE G—GREEN R—RED W—WHITE
TERMINAL POINT
IA 50 — INSTRUMENT AIR PRESSURE IN PSIG

INSTRUMENT/ MEASURING DEVICE:

PI / DO — DENOTES LOCAL MOUNTED INSTRUMENT
DENOTES LOCAL PANEL MOUNTED INSTRUMENT
DENOTES REMOTE PANEL MOUNTED INSTRUMENT
DENOTES INSTRUMENT MOUNTED BEHIND LOCAL PANEL
DENOTES INSTRUMENT MOUNTED BEHIND REMOTE PANEL
DENOTES INSTRUMENT FOR TWO MEASURED VARIABLES OR MORE THAN ONE FUNCTION

SIGNAL LINES:

INSTRUMENT AIR SIGNAL LINE
ELECTRICAL SIGNAL OR CONTROL POWER
AO — ANALOG OUTPUT FROM CONTROLLER
AI — ANALOG INPUT TO CONTROLLER
DO — DIGITAL OUTPUT FROM CONTROLLER
DI — DIGITAL INPUT TO CONTROLLER



PLANT CONTROL SYSTEM ARCHITECTURE
NO SCALE

INSTALLATION NOTES

1. THE CONTROL SYSTEM MAIN CONTROL PANEL LOCATED BY JCI WITH OWNER'S REPRESENTATIVE.
2. CONTROL POINTS IN AND AROUND THE MAIN BUILDING MECHANICAL ROOM SHALL BE TIED TO THE CONTROL SYSTEM DIRECTLY THROUGH THE MAIN CONTROL PANEL OR THROUGH THE USE OF APPLICATION SPECIFIC CONTROLLERS OR UNITARY CONTROLLERS. CONTROLLERS SHALL BE ACCESSIBLE TO OPERATOR AND MOUNTED WITHIN 60-INCHES FROM OPERATING FLOOR, PLATFORM OR MEZZANINE.
3. CONTROL OF THE HEATING WATER PUMPS, EXHAUST FANS, SUPPLY FANS, CONTROL DAMPERS TERMINAL UNITS, MAKEUP AIR UNITS, ETC., SHALL BE BY PROGRAMMABLE CONTROLLERS LOCATED IN THE VICINITY OF THE EQUIPMENT AND NETWORKED TO THE MAIN CONTROLLER.
4. EACH AHU SYSTEM WITH A UNIT CONTROLLER AND THE REQUIRED ACCESSORIES (DAMPER ACTUATORS, ROOM TEMPERATURE SENSOR, AIR FLOW SENSOR, DISCHARGE AND TEMPERATURE SENSOR, CONTROL TRANSFORMER, WIRING, ETC.). EACH AHU UNIT CONTROLLER SHALL COMMUNICATE WITH THE CONTROL SYSTEM THROUGH A UNIT CONTROLLER NETWORK.
5. THE NUMBER OF TERMINAL UNIT CONTROLLER NETWORKS PROVIDED SHALL BE BASED ON THE CAPABILITIES AND REQUIREMENTS OF THE CONTROL SYSTEM EQUIPMENT SELECTED.
6. EACH TERMINAL UNIT SHALL BE PROVIDED WITH A TERMINAL UNIT CONTROLLER AND THE REQUIRED ACCESSORIES (DAMPER ACTUATORS, ROOM TEMPERATURE SENSOR, AIR FLOW SENSOR, CONTROL TRANSFORMER, WIRING, ETC.). EACH TERMINAL UNIT CONTROLLER SHALL COMMUNICATE WITH THE CONTROL SYSTEM THROUGH A TERMINAL UNIT CONTROLLER NETWORK.
7. GENERAL CONTRACTOR SHALL CONDUCT A PROJECT CONTROL SYSTEM COORDINATION MEETING ONSITE WITH OWNER'S REPRESENTATIVE(S), ENGINEER, CONTROL SYSTEM INTEGRATOR REPRESENTATIVE(S) AND COMMISSIONING AGENT TO COORDINATE SCOPE OF BAS CONTROL SYSTEM PRIOR TO PUBLISHING CONTROL SYSTEM SHOP DRAWING SUBMITTAL DOCUMENTATION TO DETERMINE CONTROL AND ALARM LIMITS OF BUILDING HVAC CONTROLLED SYSTEMS.

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

PROFESSIONAL MECHANICAL ENGINEER — GREGORY T. KRONAZL — E-5523 — STATE OF NEBRASKA — 11 MAY 11 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, PC — SDVOSB
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941
CLH PROJECT NO: 18-013

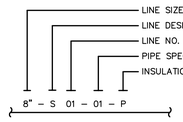
Drawing Title	MECHANICAL - PLANT CONTROL SYSTEM ARCHITECTURE AND GENERAL NOTES
Approved: Project Director	
Project Title	OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location	OMAHA, NE
Date	05-14-2021
Checked	
Drawn	
Project Number	636-19-301
Building Number	2
Drawing Number	2M801
Dwg. of	X

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

G:\2020\202017\CAD\Mechanical\202013_2M801.dwg 2M801 5/14/21 9:32am CBK

PIPING IDENTIFICATION



LINE DESIGNATION

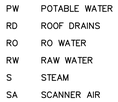
A	ACID
BD	BLOWDOWN
C	CONDENSATE
CA	COMPRESSED AIR
CBA	COMBUSTION AIR
CBD	CONTINUOUS BLOWDOWN
CAU	CAUSTIC
CD	CARBON DIOXIDE
CF	CHEMICAL FEED
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CT	COOLING TOWER
CW	COOLING WATER
DN	DRAIN
DW	DEMINERALIZED WATER
FG	FUEL GAS (HIGH PRESSURE)
FO	FUEL OIL
FP	FIRE PROTECTION
FGS	FLUE GAS STACK
FW	FEEDWATER
GYS	GLYCOL SUPPLY
GYR	GLYCOL RETURN
HR	HEAT RECOVERY
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
IA	INSTRUMENT AIR
LO	LUBE OIL
N	NITROGEN
NG	NATURAL GAS (LOW PRESSURE)
PA	PLANT AIR
PD	PLANT DRAINS
PW	POTABLE WATER
RD	ROOF DRAINS
RO	RO WATER
RW	RAW WATER
S	STEAM
SA	SCANNER AIR
SD	SANITARY DRAINS
SW	SERVICE WATER
SS	SAMPLE SYSTEM
TR	TRAP RETURNS
TW	TREATED WATER
V	VENTS

PIPE CONNECTION IDENTIFICATION

NEW EQUIPMENT OR PIPING CONNECTION
REFER TO EQUIPMENT SUPPLIER
REFERENCE DRAWINGS

EXISTING PIPING CONNECTION
REFER TO TIE IN LIST

DIAGRAM INTERFACE IDENTIFICATION



PIPING SYMBOLS

PIPING BY THIS CONTRACT
EXISTING PIPING
PIPING TO BE REMOVED
HEAT TRACED PIPING
FLANGES (PAIR)
I.F. INSULATED FLANGE
BLIND FLANGE
SPECTACLE BLIND (NORMALLY OPEN)
SPECTACLE BLIND (NORMALLY CLOSED)
PIPE CAP
REMOVABLE CAP
REMOVABLE PLUG
HOSE CONNECTION
DC DRESSER COUPLING
HDC HARNESSED DRESSER COUPLING
IDC INSULATED DRESSER COUPLING
UNION
REDUCER
EXPANSION JOINT
FLEXIBLE HOSE
FLEXIBLE BALL JOINT
FLOW STRAIGHTENING VANES
BP BACKFLOW PREVENTER
F CARTRIDGE FILTER
CF COALESCENT FILTER
BASKET TYPE STRAINER
CS COALESCING SEPARATOR
DUPLEX STRAINER
T–TYPE STRAINER
Y–TYPE STRAINER
S CONICAL STRAINER
DRIP POCKET ASSEMBLY
T STEAM TRAP ASSEMBLY
TV VENT–THERMOSTATIC VALVE
AV AUTOMATIC AIR VENT ASSEMBLY
D DRAINER ASSEMBLY
MS MOISTURE SEPARATOR
VENT TO ATMOS. (INDOORS)
VENT TO ATMOS. (OUTDOORS)
SILENCER

PIPING SYMBOLS

DRIP PAN ELBOW
RD ROOF DRAIN
FD FLOOR DRAIN
ED EQUIPMENT DRAIN
HD HUB DRAIN
TD TRENCH DRAIN
CO CLEANOUT
MH YARD MANHOLE
C.O. YARD CLEANOUT
S SAMPLE POINT
SAMPLE COOLER
STEAM BLOW TEST COUPON
EJECTOR OR EDUCTOR
DESUPERHEATER
PS PULSATION DAMPENER
HEAT TRACED EQUIPMENT
CHEMICAL POT FEEDER
01 02 PIPE SPECIFICATION CHANGE
SP SPECIALITY ITEM
A/S AIR SUPPLY
SAFETY SHOWER
SOOTBLOWER

ADDITIONAL ABBREVIATIONS

BPP	BOILER PROPER PIPING
BEP	BOILER EXTERNAL PIPING
NBEP	NON BOILER EXTERNAL PIPING
RFF	RAISED FACE FLANGE
FFF	FLAT FACE FLANGE
PE	PLAIN END
SW	SOCKET WELD
NPT	NATIONAL PIPE TAP
BW	BUTT WELD
DA	DEAERATING FEEDWATER HEATER
AS	AIR SUPPLY
AFF	ABOVE FINISHED FLOOR
HPS	HIGH PRESSURE STEAM (ABOVE 60 PSIG)
MPS	MEDIUM PRESSURE STEAM (BELOW 60 PSIG)
LPS	LOW PRESSURE STEAM (BELOW 15 PSIG)

EQUIPMENT IDENTIFICATION

AHU – AIR HANDLING UNIT	GM – GENERAL EQUIPMENT
BL – BLOWER, VACUUM PUMP	PU – PUMP
BLR – BOILER	TK – TANK
CH – CHILLER	DI – DEMINERALIZER
CMP – COMPRESSOR	DA – DEAERATOR
CONV – CONVEYOR	CP – COMPRESSOR
DR – DRUM	SUB – STARTUP BURNER
EX – HEAT EXCHANGER	UH – UNIT HEATER
FI – FILTER	

VALVE SYMBOLS

GATE VALVE
GLOBE VALVE
ANGLE VALVE
3–WAY VALVE
4–WAY VALVE
CHECK VALVE
STOP CHECK VALVE
AUTOMATIC RECIRC VALVE
BUTTERFLY VALVE
BALL VALVE
PLUG VALVE
PLUG VALVE (3–WAY)
PLUG VALVE (4–WAY)
NEEDLE VALVE
DIAPHRAGM VALVE
PINCH VALVE
RAM VALVE
KNIFE GATE VALVE
SLIDE VALVE
HOSE GATE DRAIN VALVE
CONTROL VALVE
ANGLE CONTROL VALVE
THREE WAY CONTROL VALVE
CONTROL VALVE (W/SIDE MOUNTED HANDWHEEL)
S 2–WAY SOLENOID VALVE
S 3–WAY SOLENOID VALVE
S 4–WAY SOLENOID VALVE
NO NORMALLY OPEN VALVE (NORMAL OPERATING CONDITIONS)
NC NORMALLY CLOSED VALVE (NORMAL OPERATING CONDITIONS)
LOCKED OPEN VALVE
LOCKED CLOSED VALVE
AC AIR COCK
HB HOSE BIBB
WH WALL HYDRANT

INSTRUMENT IDENTIFICATION

FIRST LETTER			SUCCEEDING–LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	
D	USER'S CHOICE	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS, VEWING DEVICE		
H	HAND				
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME–SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE	SAFETY		TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

PLANT CONTROL SYSTEM TAG IDENTIFICATION

INSTRUMENT TAG

WHERE:
TTTT INSTRUMENTATION IDENTIFICATION LETTERS
A SYSTEM IDENTIFICATION
BB CONTROL LOOP NUMBER
C UNIQUE IDENTIFIER
X LOCAL PANEL IDENTIFICATION (WHEN REQUIRED)
Y EQUIPMENT PROVIDED BY OTHERS

INPUT/OUTPUT TAG IDENTIFICATION

WHERE:
TTTT INSTRUMENTATION IDENTIFICATION LETTERS
A SYSTEM IDENTIFICATION
BBB CONTROL LOOP NUMBER
C UNIQUE IDENTIFIER
II I/O TYPE
L LOOP CONTROLLER I/O (WHEN PRESENT)

LOCAL PANEL IDENTIFICATION (X)

MCC MOTOR CONTROL CENTER
VFD VARIABLE FREQUENCY DRIVE

I/O TYPE (II)

AI ANALOG INPUT
AO ANALOG OUTPUT
DI DISCRETE INPUT
DO DISCRETE OUTPUT

SYSTEM IDENTIFICATION (A)

A CHILLED WATER
B CONDENSER WATER
C STEAM
D CONDENSATE
E POTABLE WATER
F SERVICE WATER
G PLANT AIR
H FUEL OIL
I HVAC
J ELECTRICAL
K MISCELLANEOUS

GENERAL INSTRUMENT OR FUNCTION SYMBOLS

	PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR	FIELD MOUNTED	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS	XX / XXXX		
SHARED DISPLAY, SHARED CONTROL			
COMPUTER FUNCTION			
PROGRAMMABLE LOGIC CONTROL			

MISCELLANEOUS

PILOT LIGHT
6TE 2584–23 INSTRUMENT WITH LONG TAG NUMBER
INSTRUMENT SHARING COMMON HOUSING
PILOT LIGHT (LOCAL PANEL)
A=AMBER B=BLUE G=GREEN R=RED W=WHITE
C 12 PANEL MOUNTED PATCHBOARD POINT 12
P PURGE OR FLUSHING DEVICE
PILOT LIGHT (MOTOR CONTROL CENTER)
R REST FOR LATCH–TYPE ACTUATOR
I UNDEFINED INTERLOCK LOGIC

CONTROLS/INSTRUMENTATION SUPPLEMENTAL LEGEND

MISC. CONTROLS/INSTRUMENTATION SYMBOLS:

RC RECEIVER CONTROLLER
MS MOTOR STARTER
VSD VARIABLE SPEED DRIVE
M MOTOR
CS CONTROL STATION
FCP FIRE CONTROL PANEL
SWITCH
I INTERLOCK
R RESET
A INDICATING LIGHT: A–AMBER B–BLUE G–GREEN R–RED W–WHITE
TERMINAL POINT
IA 50 INSTRUMENT AIR PRESSURE IN PSIG
DIAPHRAGM SEAL
I/E P/E CURRENT (ELECTRICAL)/PNEUMATIC PRESSURE CONVERTER
P S IA SOLENOID OPERATED DOUBLE–ACTING PNEUMATIC ACTUATOR WITH POSITION OUT
P/I PNEUMATIC/CURRENT TRANSDUCER
I/P CURRENT/PNEUMATIC TRANSDUCER

INSTRUMENT/ MEASURING DEVICE:

PI 000 DENOTES LOCAL MOUNTED INSTRUMENT
A DENOTES LOCAL PANEL MOUNTED INSTRUMENT
DENOTES REMOTE PANEL MOUNTED INSTRUMENT
A DENOTES INSTRUMENT MOUNTED BEHIND LOCAL PANEL
DENOTES INSTRUMENT MOUNTED BEHIND REMOTE PANEL
DENOTES INSTRUMENT FOR TWO MEASURED VARIABLES OR MORE THAN ONE FUNCTION

WHERE:
A=LOCAL PANEL IDENTIFICATION

SIGNAL LINES:

INSTRUMENT AIR SIGNAL LINE
ELECTRICAL SIGNAL OR CONTROL POWER
PROCESS SUPPLY LINE

INSULATION CODE

A	ANTI SWEAT/CONDENSATION
H	HEAT CONSERVATION
N	NONE
P	PERSONNEL PROTECTION

ABBREVIATIONS

CALC = CALCULATION
TRND = TREND
COND = CONDENSER
EFFIC = EFFICIENCY
TOTAL = TOTALIZATION
RM = ROOM
EXH = EXHAUST
DIFF = DIFFERENTIAL
PRESS = PRESSURE
SW = SWITCH
TRAN = TRANSMITTER
CH = CHILLER
BLR = BOILER
STM = STEAM
STM COND = STEAM CONDENSATE
VAH = VIBRATION ALARM HIGH
VFD = VARIABLE FREQUENCY DRIVE
VSH = VIBRATION SWITCH HIGH
ZS = POSITION SWITCH
ZLC = POSITION LIGHT CLOSED
ZLO = POSITION LIGHT OPEN
ZSC = POSITION SWITCH CLOSED
ZSO = POSITION SWITCH OPEN
ZT = POSITION FEEDBACK
ZY = POSITION SIGNAL

RESPONSIBILITY LEGEND

OI	OWNER INSTALLED
OF	OWNER FURNISHED
CI	CONTRACTOR INSTALLED
CF	CONTRACTOR FURNISHED

DEVICE TYPE ABBREVIATIONS:

AARPB	ALARM ACKNOWLEDGE RESET PUSHBUTTON
AEOAS	ANALYSIS SENSOR AIR SUPPLY
AEOX	ANALYSIS SENSOR OXYGEN
AI	ANALOG INPUT
ALHN	ALARM HORN
ALHNR	ALARM HORN RELAY
ALM	ALARM
AO	ANALOG OUTPUT
AOR	AUTO ON RELAY
ALR	ALARM RELAY
ASPB	ALARM SILENCE PUSHBUTTON
BGFCV	BURNER GAS FLOW CONTROL VALVE
BFFR	BURNER FLAME FAILURE RELAY
BFPH	BURNER FUEL PRESSURE HIGH
BFPL	BURNER FUEL PRESSURE LOW
BFPR	BURNER FUEL PRESSURE RELAY
BFS	BURNER FLAME SCANNER
BPSH	BURNER PRESSURE SWITCH–HIGH (NO,CLOSE AT HIGH PRESSURE)
BL	BUILDING
BPSL	BURNER PRESSURE SWITCH–LOW (NC,/OPEN AT NORMAL PRESSURE)
BRO	BURNER REGISTER OPEN (LIMIT SWTCH)
BSR	BURNER STOP RELAY
BSS	BURNER SELECTION SWITCH
BSSV	BURNER SAFETY SHUTOFF VALVE
BSSVV	BURNER SAFETY SHUTOFF VENT VALVE
CAFL	COMBUSTION AIR FLOW LOW (NC CONTACT/OPEN AT NORMAL AIR FLOW)
CE	CONDUCTIVITY ELEMENT
CR	CONTROL RELAY
CW	CONTROL WIRE
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DPAH	DIFFERENTIAL PRESSURE ALARM HIGH
DPAL	DIFFERENTIAL PRESSURE ALARM LOW
DPC	DIFFERENTIAL PRESSURE CONTROLLER
DPE	DIFFERENTIAL PRESSURE SENSOR
DPI	DIFFERENTIAL PRESSURE INDICATOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DPSH	DIFFERENTIAL PRESSURE SWITCH HIGH
DPSL	DIFFERENTIAL PRESSURE SWITCH LOW
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
DPY	DIFFERENTIAL PRESSURE CONVERTER
DTC	DATA TERMINAL CABINET
ESDR	EMERGENCY SHUTDOWN RELAY
ESPB	EMERGENCY STOP PUSHBUTTON
ESR	EMERGENCY STOP RELAY
ESRPB	EMERGENCY STOP RESET PUSHBUTTON
ETWLH	EXPANSION TANK WATER LEVEL HIGH
ETWLL	EXPANSION TANK WATER LEVEL LOW
FCV	FLOW CONTROL VALVE
FD	FORCED DRAFT
FDFDC	FORCED DRAFT FAN DAMPER CLOSED
FDFSS	FORCED DRAFT FAN SELECTION SWITCH
FDMSR	FORCED DRAFT FAN MOTOR STARTER RELAY
FDFVO	FORCED DRAFT FAN VANES OPEN (LIMIT SWITCH)
FE	FLOW ELEMENT (SENSOR)
FGR	FLUE GAS RECIRCULATION
FGRD	FLUE GAS RECIRCULATION DAMPER
FI	FLOW INDICATOR
FIC	FLOW INDICATOR CONTROLLER
FIT	FLOW INDICATOR TRANSMITTER
FLD	FLUE DAMPER
FLS	FLAME SCANNER
FM	FLOW METER
FPH	FURNACE PRESSURE HIGH
FPHLR	FURNACE PRESSURE HIGH/LOW RELAY
FPL	FURNACE PRESSURE LOW
FQIT	FLOW QUANTITY INDICATING TRANSMITTER
FS	FLOW SWITCH
FSH	FLOW SWITCH–HIGH (NC CONTACT/OPEN ON HIGH FLOW)
FSL	FLOW SWITCH–LOW (NO CONTACT/CLOSE ON RISE TO NORMAL FLOW)
FT	FLOW TRANSMITTER
FY	FLOW TRANSDUCER
GPH	GENERATOR PRESSURE HIGH
GRD	GROUND
GSPL	GAS SUPPLY PRESSURE LOW
GSPH	GAS SUPPLY PRESSURE HIGH
GSV	GAS SHUTOFF VALVE
GWFL	GENERATOR WATER FLOW LOW
GWTH	GENERATOR WATER TEMPERATURE HIGH
HC	HAND CONTROL
HE	HUMIDITY ELEMENT
HOA	HAND–OFF–AUTO
HS	HAND SWITCH
HSS	
HSD	LOCAL PANEL
HSP	HIGH SET–POINT
HT	HUMIDITY TRANSMITTER
HHSP	HIGH HIGH SET–POINT
HZ	HAND POSITIONER (MANUAL POTENTIOMETER)
IA	INSTRUMENT AIR
IFD	IGNITER FLAME DETECTION
IFFR	IGNITER FLAME FAILURE RELAY
IFPH	IGNITER FUEL PRESSURE HIGH
IFPL	IGNITER FUEL PRESSURE LOW
IFS	IGNITER FLAME SCANNER
II	CURRENT INDICATOR
IPSH	IGNITER PRESSURE SWITCH–HIGH (NO/CLOSE AT HIGH PRESSURE)
IPSL	IGNITER PRESSURE SWITCH–LOW (NC/OPEN AT NORMAL PRESSURE)
ISSV	IGNITER SAFETY SHUTOFF VALVE
ISSVV	IGNITER SAFETY SHUTOFF VENT VALVE
IT	CURRENT TRANSMITTER
IW	INSTRUMENT WIRE
LAH	LEVEL ALARM HIGH
LAHL	LEVEL ALARM HIGH LOW
LAL	LEVEL ALARM LOW
LC	LEVEL CONTROLLER
LE	LEVEL ELEMENT
LG	LEVEL GAUGE
LH	LEVEL–HIGH
LI	LEVEL INDICATOR
LL	LEVEL–LOW
LMP	LAMP
LMPA	LAMP–AMBER
LMPG	LAMP–GREEN
LMPR	LAMP–RED
LMPW	LAMP–WHITE
LP	LOCAL PANEL
LS	LEVEL SWITCH
LSH	LEVEL SWITCH–HIGH (NC CONTACT/OPEN ON HIGH LEVEL)
LSL	LEVEL SWITCH–LOW (NO CONTACT/CLOSE ON RISE TO NORMAL LEVEL)
LT	LEVEL TRANSMITTER
LTPB	LAMP TEST PUSHBUTTON
LTR	LAMP TEST RELAY
LV	LEVEL CONTROL VALVE
MFT	MASTER FUEL TRIP
MFTR	MASTER FUEL TRIP RELAY
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NFI	PLANT CONTROL SYSTEM INPUT – FLOW; INDICATION
NFT	PLANT CONTROL SYSTEM INPUT – FLOW; TRANSMITTER
NHI	PLANT CONTROL SYSTEM INPUT – HUMIDITY; INDICATION
NLI	PLANT CONTROL SYSTEM INPUT – LEVEL; INDICATION
NZI	PLANT CONTROL SYSTEM INPUT – POSITION; INDICATION
NPDI	PLANT CONTROL SYSTEM INPUT – PRESSURE DIFFERENTIAL; INDICATION
NSI	PLANT CONTROL SYSTEM INPUT – SPEED; INDICATION
NYI	PLANT CONTROL SYSTEM INPUT – STATUS; INDICATION
NTI	PLANT CONTROL SYSTEM INPUT – TEMPERATURE; INDICATION
OCD	PLANT CONTROL SYSTEM OUTPUT – CONTROL; STOP
OCX	PLANT CONTROL SYSTEM OUTPUT – CONTROL; START
OCX/D	PLANT CONTROL SYSTEM OUTPUT – CONTROL; START/STOP
OCF	PLANT CONTROL SYSTEM OUTPUT – CONTROL; FORWARD
OCR	PLANT CONTROL SYSTEM OUTPUT – CONTROL; REVERSE
OCS	PLANT CONTROL SYSTEM OUTPUT – CONTROL; SPEED
OCPC	PLANT CONTROL SYSTEM OUTPUT – CONTROL; POSITION – CLOSE
OCPO	PLANT CONTROL SYSTEM OUTPUT – CONTROL; POSITION – OPEN
OCPO/C	PLANT CONTROL SYSTEM OUTPUT – CONTROL; POSITION – OPEN/CLOSE
PA	PRESSURE ALARM
PAFL	PURGE AIR FLOW LOW (NC CONTACT/OPEN AT NORMAL AIR FLOW)
PAI	PULSE ACCUMULATOR INPUT
PAL	PRESSURE ALARM LOW
PB	PUSHBUTTON
PC	PRESSURE CONTROLLER
PCV	PRESSURE CONTROL VALVE
PE	PRESSURE ELEMENT (SENSOR)
PI	PRESSURE INDICATOR (PRESSURE GAUGE)
POS	POSITION
POSI	POSITION INDICATOR
PPSPB	POST PURGE START PUSHBUTTON
PPSR	POST PURGE START RELAY
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSPB	PURGE START PUSHBUTTON
PSH	PRESSURE SWITCH–HIGH (NC CONTACT/OPEN ON HIGH PRESSURE)
PSL	PRESSURE SWITCH–LOW (NO CONTACT/ CLOSE ON RISE TO NORMAL PRESSURE)
PSR	PURGE START RELAY
PT	PRESSURE TRANSMITTER
PUS	PURGE SWITCH
REL	RELAY
RSV	RELIEF SAFETY VALVE
RTD	RESISTANCE TEMPERATURE DETECTOR
RV	PRESSURE RELIEF VALVE (LIQUID)
SC	SPEED (FREQUENCY) CONTROLLER
SI	SPEED (FREQUENCY) INDICATION
SQI	SPEED (FREQUENCY) CONTROLLER INPUT
SSO	SAFETY SHUT–OFF
SV	PRESSURE SAFETY VALVE (VAPOR)
TAH	TEMPERATURE ALARM HIGH
T&P RV	TEMPERATURE & PRESSURE RELIEF VALVE (LIQUID)
TC	TEMPERATURE CONTROLLER
TE	TEMPERATURE ELEMENT
TH	THERMOSTAT
TI	TEMPERATURE INDICATOR (THERMOMETER)
TIC	TEMPERATURE INDICATING CONTROLLER
TOT	TOTALIZER
TS	TEMPERATURE SWITCH
TT	TEMPERATURE TRANSMITTER
TW	THERMOMETER WELL

100% CD SUBMITTAL

Revisions	Date

CONSULTANTS:

GREGORY T. KRONAIZL E–5523 PROFESSIONAL MECHANICAL ENGINEER STATE OF NEBRASKA
May 17, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, INC.
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941
CLH PROJECT NO: 18-013

Drawing Title	MECHANICAL - PLANT CONTROL LEGEND
Approved: Project Director	
Project Title	OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location	OMAHA, NE
Date	05-14-2021
Checked	GTK
Drawn	CWK
Project Number	636-19-301
Building Number	2
Drawing Number	2M802
Dwg.	X of X

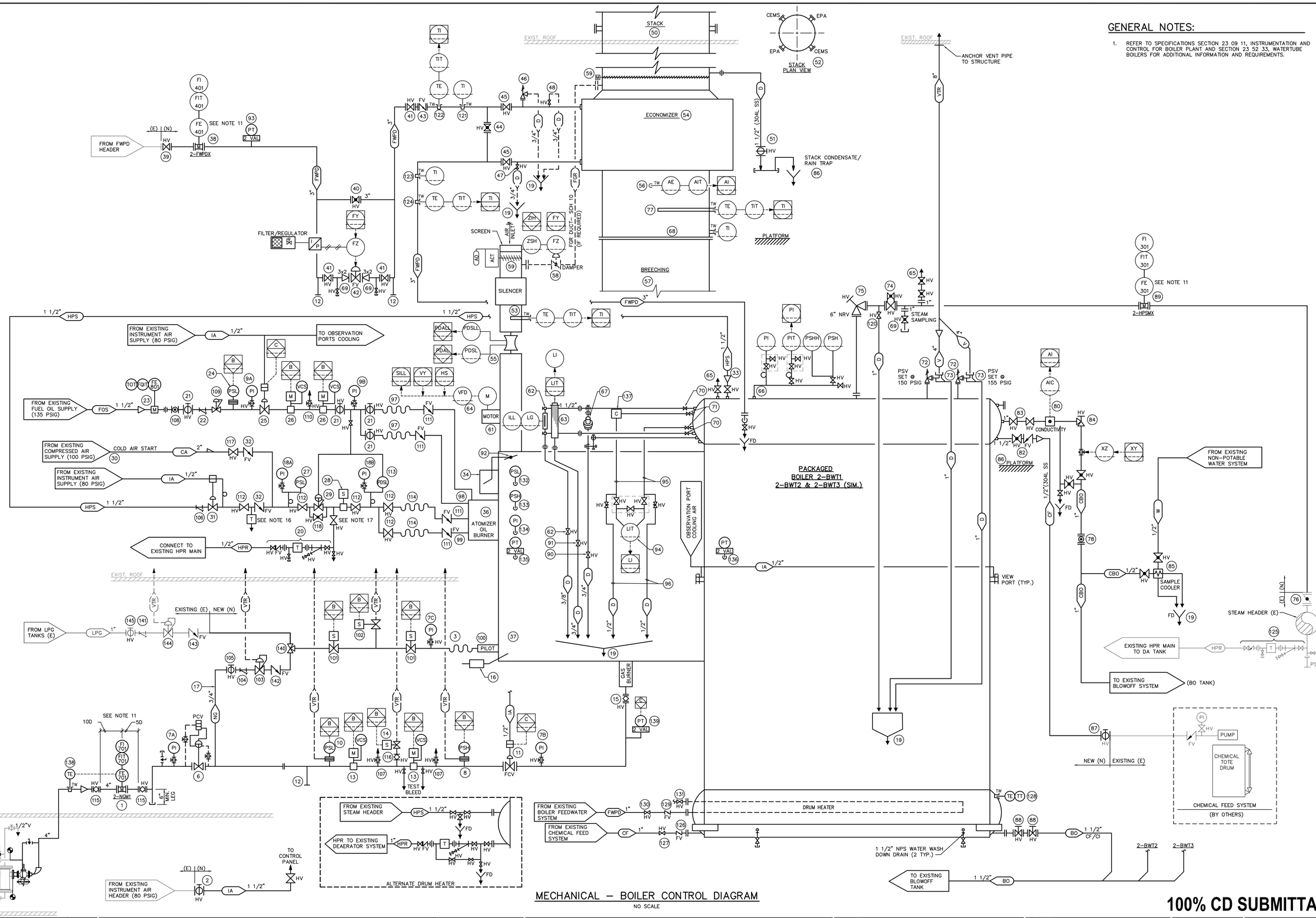
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08–6231

G:\2020\202013\CAD\Mechanical\202013_2M802.dwg 2M802 5/14/21 9:33am CWK

GENERAL NOTES:

1. REFER TO SPECIFICATIONS SECTION 23 09 11, INSTRUMENTATION AND CONTROL FOR BOILER PLANT AND SECTION 23 52 33, WATERTUBE BOILERS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



MECHANICAL – BOILER CONTROL DIAGRAM

NO SCALE

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

GREGORY T. KRONAZL E-5523 PROFESSIONAL MECHANICAL ENGINEER STATE OF NEBRASKA
May 17, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ENGINEERING INC. SDVOSB
CLH PROJECT NO: 18-013
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941

Drawing Title: MECHANICAL - BOILER CONTROL DIAGRAM

Approved: Project Director

Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES

Location: OMAHA, NE

Date: 05-14-2021 | **Checked:** GTK | **Drawn:** CWK

Project Number: 636-19-301

Building Number: 2

Drawing Number: 2M803

Dwg. X **of** X

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

G:\2020\202013\CAD\Mechanical\202013_2M803.dwg 2M803 5/14/21 9:34am CWK

GENERAL NOTES:

1. REFER TO OTHER MECHANICAL DRAWINGS FOR CONTINUATION OF PIPING TO CONNECTION POINTS.
2. REFER TO APPROVED FOR CONSTRUCTION EQUIPMENT SHOP DRAWINGS FOR SPECIFIC BOILER TRIM AND ACCESSORIES.
3. PIPING INDICATED ON FLOW SCHEMATIC AND NOT DIMENSIONED ARE TO BE FIELD ROUTED SIMILAR TO ROUTING SHOWN.
4. PIPING INDICATED ON FLOW SCHEMATIC BUT NOT ON THE DETAILED DRAWINGS (PLAN OR SECTION) ARE FIELD ROUTED.
5. INSTALLING CONTRACTOR TO CONTINUOUSLY SEAL WELD DUCT; 3/16 INCH A-36 STEEL PLATE OR EQUIVALENT. STITCH WELD ALL STIFFENERS.
6. WELDOLETS, SOCKOLETS AND ELBOWLETS SHALL BE SIZED AS FOLLOWS; UNLESS OTHERWISE NOTED:
   A. PRESSURE GAUGES, ALARMS, SWITCH CONNECTIONS SHALL BE 1/2" SOCKET WELD.
   B. THERMOCOUPLE CONNECTIONS SHALL BE 3/4" THREADED.
   C. THERMOMETER CONNECTIONS SHALL BE 3/4" THREADED.
7. ALL FLANGE MATING WITH 125LB FLANGES SHALL BE 150LB FLAT FACE TYPE; ALL OTHER FLANGES SHALL BE OF THE SAME SIZE AND PRESSURE AS THE FLANGE TO WHICH THEY ARE MATED.
8. PROVIDE MINIMUM CLEARANCE OF 6'-6" HEAD ROOM FOR ALL FIELD ROUTED PIPING.
9. NOTE THAT NOT ALL CONNECTIONS TO DETAILED PIPING ARE SHOWN. REFER TO FLOW SCHEMATIC, EQUIPMENT SHOP DRAWINGS AND SPECIFICATIONS.
10. STACK DRAIN PIPING SHALL BE FIELD ROUTED TO DRAIN. PROVIDE SCH 40 304L STAINLESS STEEL PIPING AND FITTINGS.
11. PROVIDE MINIMUM 10 DIAMETERS UPSTREAM AND 5 DIAMETERS DOWNSTREAM FROM ALL PIPE FITTINGS FOR LOCATION OF ORIFICE FLANGES. REFER TO ORIFICE FLANGE DETAIL FOR INSTALLATION ORIENTATION REQUIREMENTS; UNLESS OTHERWISE RECOMMENDED BY ORIFICE ASSEMBLY MANUFACTURER.
12. ALL FLANGES ON FEEDWATER PIPING SHALL BE 300 LB CLASS RAISED FACE, PIPE AND FITTINGS SHALL BE SA-106, GRADE B, SCH 80.
13. ALL FLANGE BOLTS SHALL BE SA-193, GRADE B-7 STUDS, SA-194 GRADE 2H NUTS WITH 1/8 INCH GASKETS. CONTRACTOR SHALL PROVIDE PROPER CLEARANCE FOR GASKETS.
14. ALL PIPING SHALL BE FABRICATED AND STAMPED IN ACCORDANCE WITH SECTION I, ASME BOILER AND PRESSURE VESSEL CODE.
15. INSULATE FLUE DUCT, FGR DUCT AND EXPOSED HOT DUCT AREAS WITH 3 INCH MINERAL WOOL INSULATION WITH 0.016 THICK ALUMINUM JACKET.
16. CONDENSATE OUTLET DISCHARGED TO WASTE AT ATMOSPHERIC PRESSURE.
17. VALVE CLOSED FOR AIR ATOMIZING; OPEN FOR STEAM ATOMIZING.

BOILER PARTS-IDENTIFICATION LIST

ITEM NO.	SUPPLY CODE	DESCRIPTION
1	--	4" SS ORIFICE PLATE, 0-60 IN. W.C. 4" SCH 40 PIPE AND FITTINGS 3 VALVE MANIFOLD AND 4-20 MA TRANSMITTER. 4" - 150 PSI FLANGE TAP ORIFICE FLANGES. } GAS FUEL FLOW METERING (FE 701)
2	--	1 1/2" 150# BALL VALVE, BRONZE BODY WITH STAINLESS STEEL TRIM. EXTEND INSTRUMENT AIR TO PANEL, SCH 40 PIPE AND FITTINGS.
3	--	1/2" STAINLESS STEEL FLEX HOSE GAS PILOT
4	--	4" LUBRICATED PLUG VALVE
5	--	INLINE FILTER, VENT AND DRAIN, BOLTED FLANGE GASKETED TOP FOR REMOVAL OF FILTER ELEMENT RATED 180 PSIG @ 450°F, ASME CONSTRUCTION AND STAMPED SECTION VIII, DIVISION 1.
6	--	GAS PRESSURE REGULATOR (10 PSIG TO 8 PSIG @ 30,000 SCFH), WITH 1/2" BALL VALVE.
7A	--	SUPPLY GAS PRESSURE, 4 1/2", 0-30 PSI, WITH 1/2" BALL VALVE.
7B	--	BURNER GAS PRESSURE, 4 1/2", 0-15 PSI, WITH 1/2" BALL VALVE.
7C	--	PILOT GAS PRESSURE, 4 1/2", 0-15 PSI, WITH 1/2" BALL VALVE.
8	--	HIGH GAS PRESSURE LIMIT SWITCH (PSH)
9A	--	OIL SUPPLY PRESSURE, 4 1/2", 0-200 PSI, WITH 1/2" BALL VALVE.
9B	--	BURNER OIL PRESSURE, 4 1/2", 0-160 PSI, WITH 1/2" BALL VALVE.
10	--	LOW GAS PRESSURE LIMIT SWITCH, 0-30 PSIG.
11	--	GAS FLOW CONTROL VALVE, (FCV)
12	--	PROVIDE SUPPORT FOR FEED WATER PIPING, GAS TRAIN, OIL TRAIN, AS REQUIRED BY EQUIPMENT SUPPLIER
13	--	GAS SAFETY SHUTOFF VALVE WITH PROOF OF CLOSURE. (2 REQUIRED).
14	--	N.O. VENT VALVE.
15	--	LUBRICATED PLUG VALVE GAS BURNER.
16	--	IGNITION TRANSFORMER 12/6000 V.
17	--	GAS PILOT TRAIN, FACTORY ASSEMBLED.
18A	--	ATOMIZING STEAM SUPPLY PRESSURE, 4 1/2", 0-300 PSI, WITH 1/2" BALL VALVE.
18B	--	BURNER ATOMIZING STEAM PRESSURE, 4 1/2", 0-160 PSI, WITH 1/2" BALL VALVE.
19	--	FUNNEL DRAIN (BY CONTRACTOR).
20	--	1/2" STEAM TRAP, SARCO MODEL TD-52-0.5, OR EQUAL. 400#/HR CAPACITY AT 125 PSI. 1/2" GATE VALVE 1/2" STRAINER 1/2" UNION 1/2" CHECK VALVE 1/2" GATE VALVE 1/2" GATE VALVE
21	--	MANUAL SHUT OFF BALL VALVE.
22	--	Y-TYPE STRAINER, PROVIDE 40 MESH STAINLESS STEEL SCREEN.
23	--	FUEL OIL METER, 5-25 GPM WITH FLOW TRANSMITTER; 4-20ma. SCH 40 PIPING AND FITTINGS EXCEPT THREADED AT EQUIPMENT CONNECTION OIL FLOW TRANSMITTER, 4-20 MA. } FUEL OIL FLOW METERING (FE 801)
24	--	LOW OIL PRESSURE LIMIT SWITCH, 0-200 PSIG.
25	--	OIL FLOW CONTROL VALVE, WITH ACTUATOR, POSITIONER, AIRSET, ADJ. DOWNSTOP & 304 POSITION SWITCH.
26	--	SAFETY SHUTOFF VALVES WITH PROOF OF CLOSURE.
27	--	LOW STEAM PRESSURE LIMIT SWITCH, 0-200 PSIG, ASHCROFT B424SXFM 200PSI (PSL401)
28	--	SOLENOID STEAM SHUTOFF VALVE, N.C. FULL PORT.
29	--	STEAM/OIL DIFFERENTIAL PRESSURE REGULATOR, SCREWED ENDS, IRON BODY.
30	--	2" COLD START AIR ATOMIZING LINE-CONNECT TO BURNER PACKAGED AIR TRAIN (100 PSIG).
31	--	STEAM REGULATOR, FAIL CLOSED.
32	--	CHECK VALVE.
33	--	STEAM TO FUEL OIL ATOMIZING STEAM CONNECTION. 1" NOZZLE ON DRUM. PROVIDE VALVE AND PIPING (300 PSIG SATURATED).
34	--	FORCED DRAFT DAMPER CONTROL DRIVE UNIT WITH LINKAGE.
35	--	NOT USED.
36	--	PACKAGE GAS/OIL BURNER ASSEMBLY (NAT. GAS @ 8 PSIG AND #2 OIL @ 135 PSIG)
37	--	FLAME SAFETY CONTROL SYSTEM
38	--	3" SS ORIFICE PLATE. 3" SCH 80 PIPING 3 VALVE MANIFOLD AND 4-20 MA TRANSMITTER. 3" - 300 LB CLASS FLANGE TAP ORIFICE FLANGES. } FEEDWATER FLOW METERING (FE 401)
39	--	FLANGED FEEDWATER GATE VALVE, ISOLATION, 300#
40	--	FLANGED GLOBE VALVE (BY-PASS), 300#
41	--	NOT USED.
42	--	FLANGED FEED WATER FLOW CONTROL VALVE
43	--	3" FLANGED FEEDWATER CHECK VALVE, 300#
44	--	3" FLANGED ECONOMIZER FEEDWATER (BYPASS)
45	--	FLANGED FEEDWATER GATE VALVE, ISOLATION
46	--	3/4" FLANGED SAFETY VALVE - SET 800 PSIG.
47	--	ECONOMIZER HEADER DRAIN.
48	--	ECONOMIZER VENT.
49	--	NOT USED.
50	--	FLUE STACK.
51	--	1 1/2" 304L SS MANUAL BALL VALVE, STACK DRAIN
52	--	1" NIPPLES IN BREECHING FOR TEMP. & PRESS AND TEST CONNECTIONS (9 REQ'D)
53	--	1" TEMPERATURE ELEMENT/TRANSMITTER DEVICE
54	--	ECONOMIZER WITH SUPPORT STEEL
55	--	AIR FLOW STATION COMBUSTION AIR INLET.
56	--	INSTALL O_2 ANALYZER SYSTEM ON 2" - 150# FLANGE.
57	--	BREECHING WITH TRANSITION DUCT.
58	--	FLUE GAS RECIRC. DAMPER AND DUCT. (IF REQUIRED)
59	--	FORCED DRAFT AIR INLET DAMPER WITH ACTUATOR
60	--	NOT USED.
61	--	FORCED DRAFT FAN W/ ELECTRIC DRIVE MOTOR
62	--	WATER GAUGE GLASS AND 3/8" GAUGE GLASS DRAIN. MOUNT FURNISHED ILLUMINATOR WITH 600# DRAIN VALVE.
63	--	WATER COLUMN WITH HIGH, LOW AND LOW-LOW WATER CUTOFF PROBES.
64	--	VARIABLE FREQUENCY DRIVE (VFD)
65	--	1" 600# RF VENT VALVE.
66	--	1" STEAM NOZZLE FOR PRESSURE GAGE, PRESSURE TRANS., STEAM PRESS. LIMIT - PSHH & PSH. PROVIDE VALVE PLUG AT DRUM.
67	--	AUXILIARY LOW WATER CUTOFF
68	--	BOILER BREECHING OUTLET CONNECTION. SEAL WELD BREECHING ANGLES FURNISHED AS TACK WELDS.
69	--	1" 600 LB. RF STEAM SAMPLING VALVE.
70	--	1 1/2" DRUM LEVEL ISOLATION GLOBE VALVE (2 REQ'D)
71	--	1" DRUM LEVEL ISOLATION GLOBE VALVE (2 REQ'D)
72	--	FLANGED SAFETY VALVE, SAT. STEAM DRUM.
73	--	DRIP PAN
74	--	8" OS & Y MAIN STEAM STOP GATE VALVE, FLGD W/ BY-PASS AND 1/2" DRAIN VALVE. CRANE NO. 33 ASTM A216, GRADE WCB (RATED FOR 300 PSIG @ 500° OPERATING CONDITIONS) OR APPROVED EQUAL.
75	--	6" STOP-CHECK (NON-RETURN) VALVE
76	--	8" FLANGED VALVE
77	--	FLUE GAS TEMPERATURE TRANSMITTER
78	--	CBD, SIGHT FLOW INDICATOR, POSITION VERTICAL, DRIP TUBE TYPE, 1" SIZE.
79	--	NOT USED.
80	--	NOT USED.
81	--	NOT USED.
82	--	CHEMICAL FEED GLOBE & CHECK VALVES, SW
83	--	1" CONTINUOUS BLOWOFF STOP GLOBE VALVE, SW END
84	--	1" CONTINUOUS BLOWOFF CONTROL VALVE
85	--	SAMPLE COOLER ON CONT. BLOWOFF W/ SAMPLE VALVE, WATER VALVES AND PIPING. PROVIDE 'HYDAC' MODEL 034932, 316 STAINLESS STEEL COIL RATED 1200 PSI @ 750° F MANUFACTURED BY BETA TECHNOLOGY OR APPROVED EQUAL.
86	--	INSTALL ACCESS PLATFORM AND LADDERS, EACH END.
87	--	304L STAINLESS STEEL BALL VALVE.
88	--	COMBINATION BLOWOFF VALVES (TYP. OF TWO)
89	--	8" SS ORIFICE PLATE, I.D. 7.625 IN., 0-200 IN. W.C. 3 VALVE MANIFOLD AND 4-20 MA TRANSMITTER. 8" SCH 80 PIPING AND FITTINGS 8" - 600 LB CLASS FLANGE TAP ORIFICE FLANGES. } STEAM FLOW METERING (FE 301)
90	--	3/4" AUXILIARY LOW WATER CUTOFF DRAIN VALVE.
91	--	3/4" WATER COLUMN DRAIN VALVE
92	--	AIR DAMPER ASSEMBLY
93	--	BOILER FEEDWATER PRESSURE TRANSMITTER
94	--	DRUM LEVEL TRANSMITTER, 0-30 IN. W.C. WITH 3 VALVE MANIFOLD.
95	--	1" SCH 80 PIPE AND FITTINGS TO LEVEL TRANSMITTER
96	--	1/2" WATER LEVEL DRAIN VALVES, 600#
		} DRUM LEVEL METERING
97	--	STAINLESS STEEL FLEX HOSE
98	--	OIL SOCKET PIPING ASSEMBLY
99	--	STEAM SOCKET PIPING ASSEMBLY
100	--	PILOT SOCKET PIPING ASSEMBLY
101	--	1/2" PILOT SOLENOID VALVE.
102	--	1/2" N.O. PILOT VENT VALVE.
103	--	1/2" PILOT GAS PRESSURE REGULATOR.
104	--	1/2" PILOT GAS WYE STRAINER, PROVIDE 100 MESH (0.0055) 304 STAINLESS STEEL SCREEN.
105	--	PILOT GAS BALL VALVE.
106	--	1 1/2" ATOMIZING STEAM STRAINER, PROVIDE 40 MESH STAINLESS STEEL SCREEN.
107	--	1/4" GAS LEAK TEST VALVE TO ATMOSPHERE.
108	--	OIL SIGHT FLOW INDICATOR, POSITION SUCH THAT OPERATOR MAY EASILY READ, CARBON STEEL, TEFLON ROTATING WHEEL.
109	--	1" OIL REGULATOR, 70-150 PSIG SPRING, WITH NEOPRENE DIAPHRAGM, IRON BODY.
110	--	NOT USED.
111	--	CHECK VALVE.
112	--	GATE VALVE, RISING STEM.
113	--	LOW ATOMIZING TO OIL DIFFERENTIAL PRESSURE LIMIT.
114	--	STAINLESS STEEL FLEX HOSE.
115	--	4" LUBRICATED PLUG VALVE, RESUN D126-FLG-4.0W/HDL (HV201)
116	--	LUBRICATED PLUG VALVE WITH LOCKING DEVICE.
117	--	GATE VALVE.
118	--	GLOBE VALVE, DISC UNION.
119	--	1" DRAIN VALVE, PROVIDE CLASS 800 GATE VALVE.
120	--	1" DRAIN VALVE, PROVIDE CLASS 800 GATE VALVE.
121	--	TEMPERATURE INDICATOR, BOILER FEEDWATER INLET TO ECONOMIZER
122	--	TEMPERATURE TRANSMITTER, BOILER FEEDWATER INLET TO ECONOMIZER
123	--	TEMPERATURE INDICATOR, BOILER FEEDWATER OUTLET FROM ECONOMIZER
124	--	TEMPERATURE TRANSMITTER, BOILER FEEDWATER OUTLET FROM ECONOMIZER
125	--	INVERTED BUCKET, 1" FLANGED. 400#/HR CAPACITY AT 125 PSI. (E) 1" GATE VALVE 3/4" STRAINER 3/4" UNION 3/4" CHECK VALVE 3/4" GATE VALVE 1/2" GATE VALVE
126	--	1" CHECK VALVE
127	--	1" GATE VALVE
128	--	1" TEMPERATURE ELEMENT/TRANSMITTER DEVICE
129	--	1" CHECK VALVE (DRUM HEATER)
130	--	1" GATE VALVE (DRUM HEATER)
131	--	1" GATE VALVE (DRUM HEATER)
132	--	PRESSURE SWITCH LOW AIR
133	--	PRESSURE SWITCH HIGH AIR
134	--	PRESSURE INDICATOR
135	--	WIND BOX PRESSURE TRANSMITTER WITH INDICATOR AND 2 VALVE MANIFOLD
136	--	FURNACE PRESSURE TRANSMITTER WITH INDICATOR AND 2 VALVE MANIFOLD
137	--	CONDENSATE POT
138	--	RTD TEMPERATURE ELEMENT
139	--	BOILER GAS PRESSURE TRANSMITTER
140	--	3-WAY LUBRICATED PLUG VALVE, 2-PORT, 90° TURN, 2-POSTION WITH WRENCH.
141	--	WYE STRAINER, 100 MESH (0.0055) 304 STAINLESS STEEL SCREEN.
142	--	CHECK VALVE, SWING TYPE.
143	--	CHECK VALVE, SWING TYPE.
144	--	LP GAS PILOT REGULATOR.
145	--	LP GAS PILOT BALL VALVE.

SUPPLEMENTAL LEGEND

FWPD	FEEDWATER PUMP DISCHARGE	T	STEAM TRAP
BO	BLOWOFF	VTR	VENT THRU ROOF
CA	COMPRESSED AIR	W	WATER
CBO	CONTINUOUS BLOWOFF	LS	DAMPER DRIVE INTERLOCKS (LIMIT SWITCH)
FOS	FUEL OIL SUPPLY	M	VALVE ACTUATOR
FOR	FUEL OIL RETURN	S	SOLENOID
IA	INSTRUMENT AIR	V	VENT
SH	SUPERHEAT	PCV	PRESSURE CONTROL VALVE
NG	NATURAL GAS		
LPG	LIQUID PROPANE GAS		

IA X" PIPE SIZE; XX OUTSIDE SHELL; DIRECTION OF FLOW INSIDE DESIGNATION: PROCESS FLUID; SOURCE

FGR	FLUE GAS RECIRCULATING DUCT
CF	CHEMICAL FEED
D	DRAIN
HPR	HIGH PRESSURE RETURN
HPS	HIGH PRESSURE STEAM
BM	BURNER MANAGEMENT SYSTEM
CC	COMBUSTION CONTROL SYSTEM

PIPING CODE LEGEND

SERIES NO.	SYSTEM DESCRIPTION
100	CONDENSER WATER
200	CHILLED WATER
300	STEAM
400	FEEDWATER
500	DOMESTIC COLD WATER
600	NATURAL GAS
700	NATURAL GAS
800	FUEL OIL
900	STACK GAS
1000	COMBUSTION AIR

SUPPLY CODE LEGEND

- PROVIDED BY OTHERS; INSTALLER AS NOTED
- NEW PIPING; FURNISHED AND INSTALLED BY THIS CONTRACTOR
- EXISTING PIPING AND FITTINGS; CONNECTIONS BY THIS CONTRACTOR

100% CD SUBMITTAL

Revisions:	Date

CONSULTANTS:

GREGORY T. KRONAIZL E-5523 PROFESSIONAL MECHANICAL ENGINEER STATE OF NEBRASKA May 14, 2021

ARCHITECT/ENGINEERS:

FARRIS ENGINEERING
OMAHA | LINCOLN | SIDNEY | COLORADO SPRINGS
farris-usa.com
FEI #202013

CLH Calvin L. Hinz ARCHITECTS, P.C. SDVOSB
CLH PROJECT NO: 18-013
3705 North 200th Street
Elkhorn, Nebraska 68022
(402) 291-6941

Drawing Title: MECHANICAL - BOILER CONTROL DIAGRAM PART IDENTIFICATION LIST
Approved: Project Director
Project Title: OMAHA VAMC - CORRECT MECHANICAL DEFICIENCIES
Location: OMAHA, NE
Date: 05-14-2021 | Checked: GTK | Drawn: CWK
Project Number: 636-19-301
Building Number: 2
Drawing Number: 2M804
Dwg. X of X

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

G:\2020\202017\CAD\Mechanical\202013_2M803.dwg 2M804 5/14/21 9:34am CWK