

MATERIAL LIST- V-167, V-168 & V-169

<u>ITEM</u>	<u>QUANTITY</u>	<u>STOCK NO.</u>	<u>DESCRIPTION</u>
1.	30'	NONE	8"x0.322"w.t., Bare steel pipe, Grade X65, API 5L, PO# _____ (Special order)
2.	6	NONE	8" 90° Weld elbow, Std. wght., Grade Y65 (Special order)
3.	2	NONE	8" 45° Weld elbow, Std. wght., Grade Y65 (Special order)
4.	3	PL-025	1/4" Pipe plug, Square head, Solid, 3,000#
5.	3	SA-210	1"x8" Weld saddle
6.	2	NONE	8"x8"x8" Weld tee, Std. wght., Grade Y65 (Special order)
7.	3	VA-210	1" WKM Ball Valve #1F-B138-CS2-43-S2-WR, Threaded, 3,000#
8.	1	NONE	8" Nordstrom plug valve, WxW, #2249 1/2, ANSI-600 (Special order)
9.	2	NONE	8" Nordstrom plug valve, WxF, #2249 1/4, ANSI-600 (Special order)
10.	3	H-34	1"x1/4" Steel hexagon bushing, 3,000#
11.	3	H-114	1"x3" Mueller Save-A-Valve body only #063492, Body only, 1440#
12.	96	H-297	1-1/8"-7 Heavy hex nut
13.	48	NONE	1-1/8"-7x8 1/4" Stud bolt, ASTM-A193, Grade B7 (Special order)
14.	1	NONE	Locking device, Chain & padlock for 8" Nordstrom valve #2249 1/2, (District purchase)
15.	4	FL-703	8" W.N., R.F. Flange, ANSI-600
16.	4	FL-823	8" Type "E" gasket, ANSI-600
17.	1	NONE	J.W. Williams heater assy. PO# 51255

MATERIAL LIST- V-167, V-168 & V-169 Corrosion Protection

<u>ITEM</u>	<u>QUANTITY</u>	<u>STOCK NO.</u>	<u>DESCRIPTION</u>
20.	24	FL-906	1-1/8"x2-13/16" G-10 Insulated washer & sleeve assy

Fab Shop Test Heater Valve Assy. STEP 1	
PRESSURE TEST	
TEST PRESSURE	100 P.S.I.G.
TEST MEDIUM	NITROGEN
TEST DURATION	1 HR HOURS
LEAK SURVEY BY	
DATE	TIME
STEP 2	
PRESSURE TEST	
CERTIFICATION PRESSURE	815 P.S.I.G.
TEST PRESSURE	1225 P.S.I.G.
TEST MEDIUM	NITROGEN
TEST DURATION	4 HOURS
DATE COMPLETED	
BY	CONTRACTOR
ATTESTED	CASCADE NATURAL GAS CORP.

Southridge Gate:
 Coordinate with R117Ken installation
 Coordinate with V154Ken installation
 Coordinate with V155Ken installation
 Coordinate with O11Ken installation
 Coordinate with Telemetry bldg installation
 Coordinate with 8" HP main installation following V-155
 Coordinate with R120Ken installation
 Coordinate with V172Ken installation
 Coordinate with V173Ken installation


*Site drawing to be provided with R117Ken installation drawing
 Contact District & Fab shop for parts already received*

*Rev A: Relocate pipe elevation change to Inlet Heater pipe run
 Rev B: Revised material list*

1/2 SIZE DRAWING- Scaled to 1/2 indicated

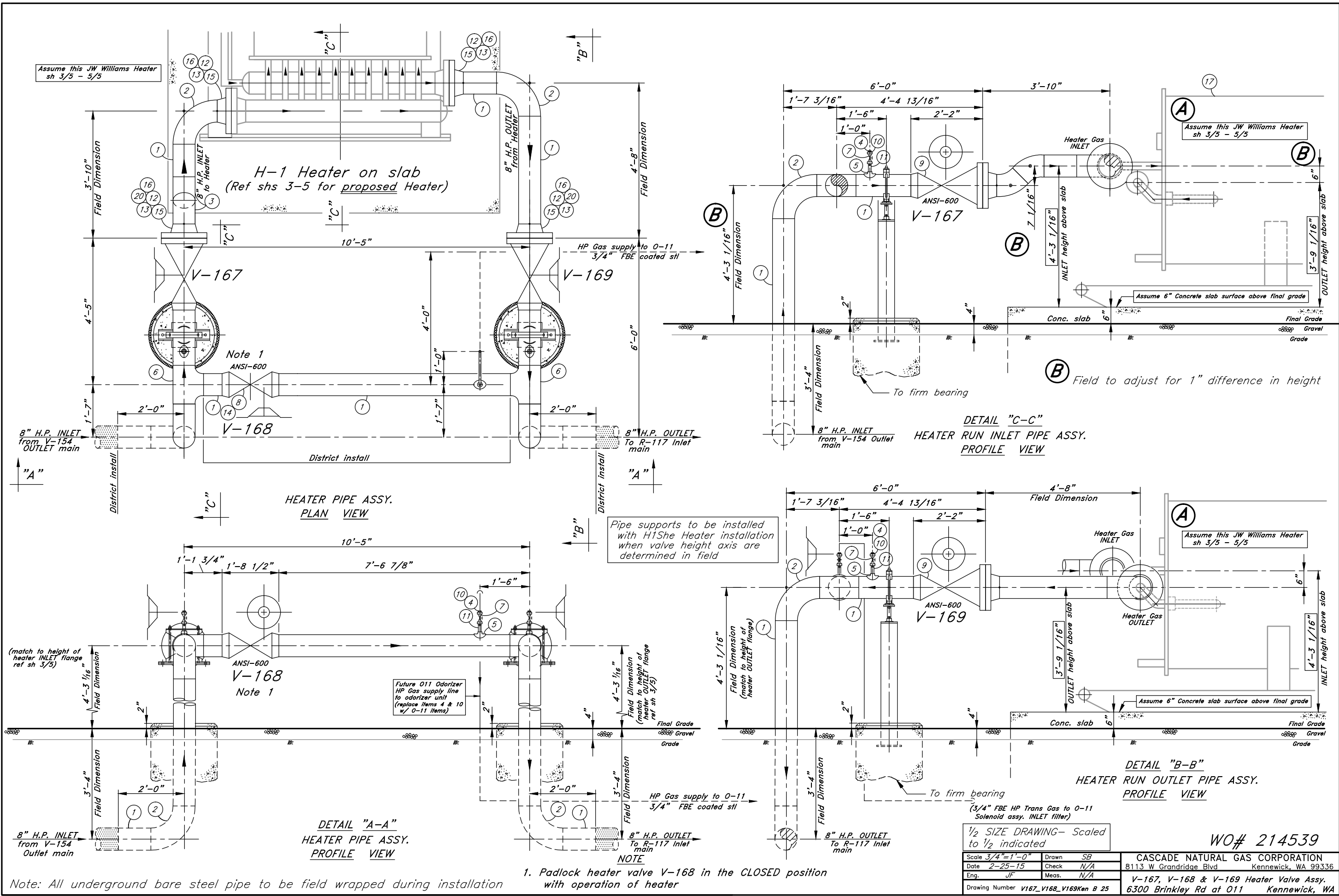
Scale	NONE	Drawn	SB
Date	2-25-15	Check	N/A
Eng.	JF	Meas.	N/A
Drawing Number	V167,V168,V169Ken B 15		

WO# 214539



CASCADE NATURAL GAS CORPORATION
 8113 W Grandridge Blvd Kennewick, WA 99336
 V-167, V-168 & V-169 Heater Valve Assy.
 6300 Brinkley Rd at O11 Kennewick, WA

Note: All underground bare steel pipe to be field wrapped during installation.



Assume this JW Williams Heater sh 3/5 - 5/5

H-1 Heater on slab
(Ref shs 3-5 for proposed Heater)

Note 1
ANSI-600

HEATER PIPE ASSY.
PLAN VIEW

DETAIL "A-A"
HEATER PIPE ASSY.
PROFILE VIEW

Pipe supports to be installed
with H1She Heater installation
when valve height axis
are determined in field

Future O11 Odorizer
HP Gas supply line
to odorizer unit
(replace items 4 & 10
w/ O-11 items)

NOTE

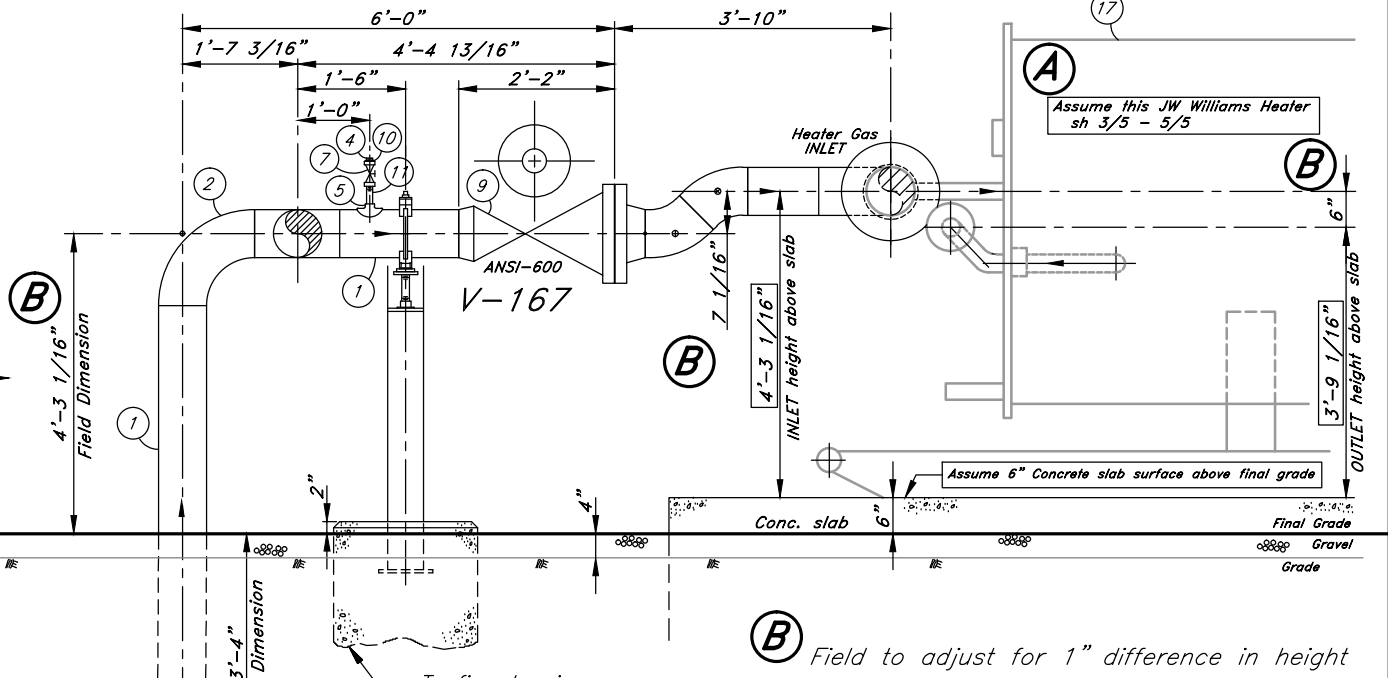
1. Padlock heater valve V-168 in the CLOSED position
with operation of heater

(match to height of
heater INLET flange
ref sh 3/5)

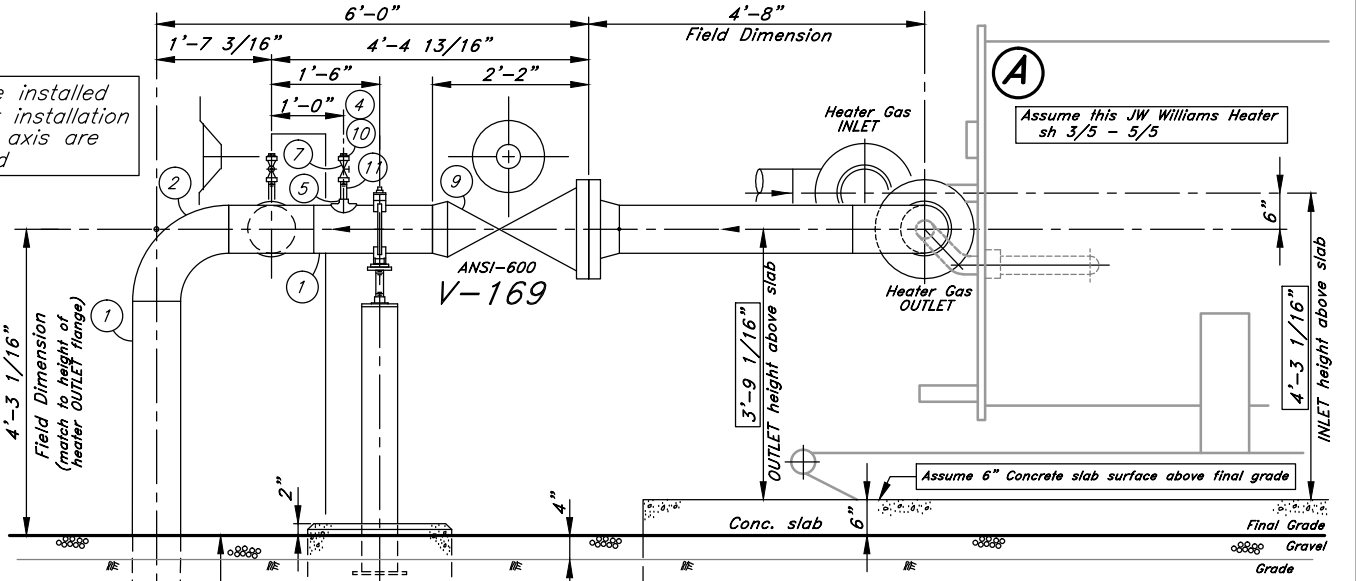
8" H.P. INLET
from V-154
Outlet main

8" H.P. OUTLET
To R-117 Inlet
main

8" H.P. OUTLET
To R-117 Inlet
main



DETAIL "C-C"
HEATER RUN INLET PIPE ASSY.
PROFILE VIEW



DETAIL "B-B"
HEATER RUN OUTLET PIPE ASSY.
PROFILE VIEW

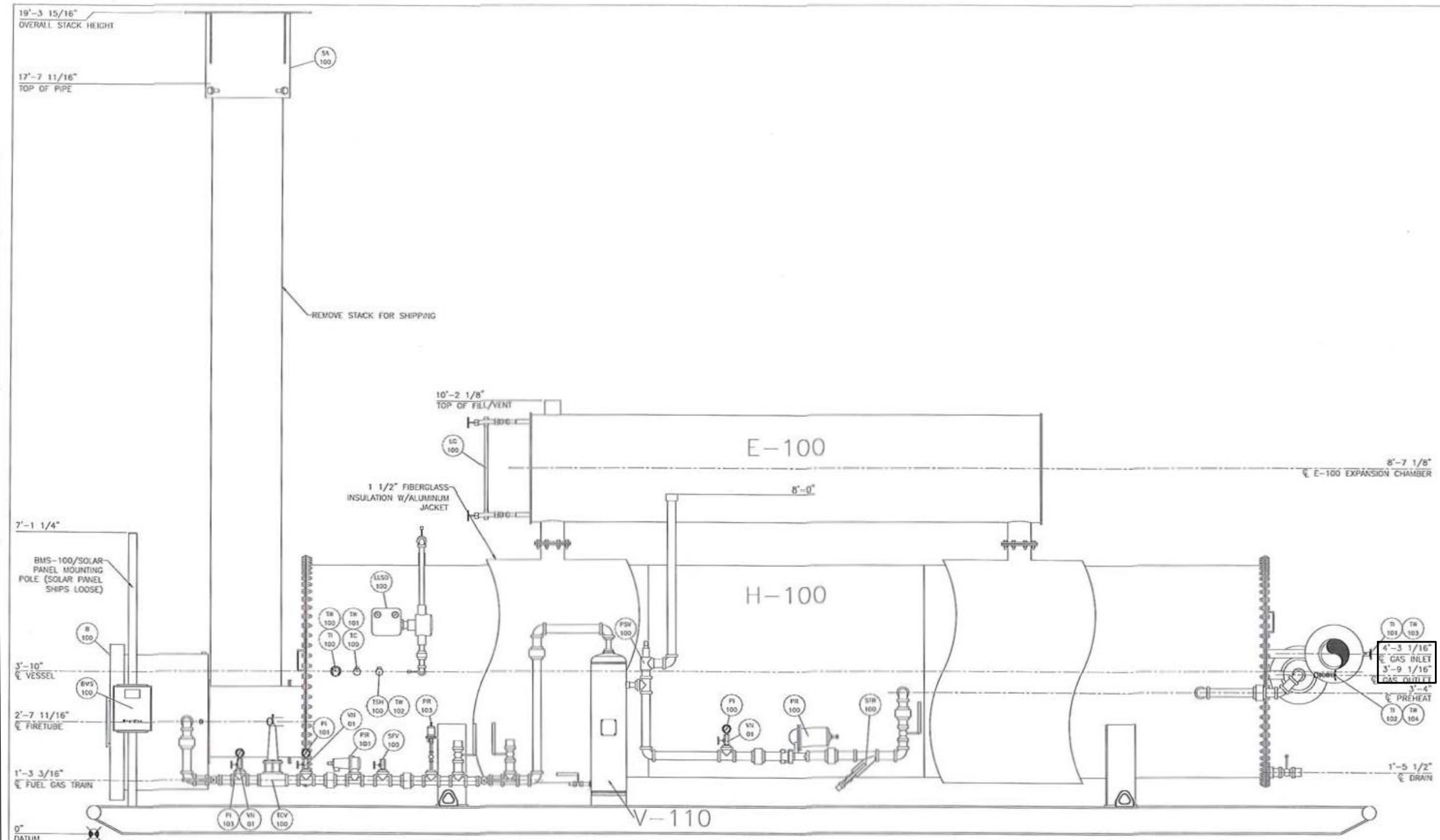
1/2 SIZE DRAWING - Scaled to 1/2 indicated

Scale 3/4" = 1'-0"	Drawn SB
Date 2-25-15	Check N/A
Eng. JF	Meas. N/A
Drawing Number V167_V168_V169Ken B 25	

CASCADE NATURAL GAS CORPORATION
8113 W Grandridge Blvd Kennewick, WA 99336
V-167, V-168 & V-169 Heater Valve Assy.
6300 Brinkley Rd at O11 Kennewick, WA

WO# 214539

Note: All underground bare steel pipe to be field wrapped during installation



ELEVATION VIEW

J.W. WILLIAMS INC.
 ENGINEERING AND FABRICATION
 CASCADE NATURAL GAS
 INDIRECT FIRED UTILITY HEATER PACKAGE 30M BTU/HR
 GENERAL ARRANGEMENT
 ELEVATION VIEW

PROPERTY AND CONFIDENTIAL INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF J.W. WILLIAMS INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF J.W. WILLIAMS INC. IS PROHIBITED.

DATE	2-25-15	ENG. NO.	3.0-IH-60-22-CNG-ASSY
ENG.	JF	CHECK	N/A
DRAWN	SB	MEAS.	N/A

SHEET 3 OF 4

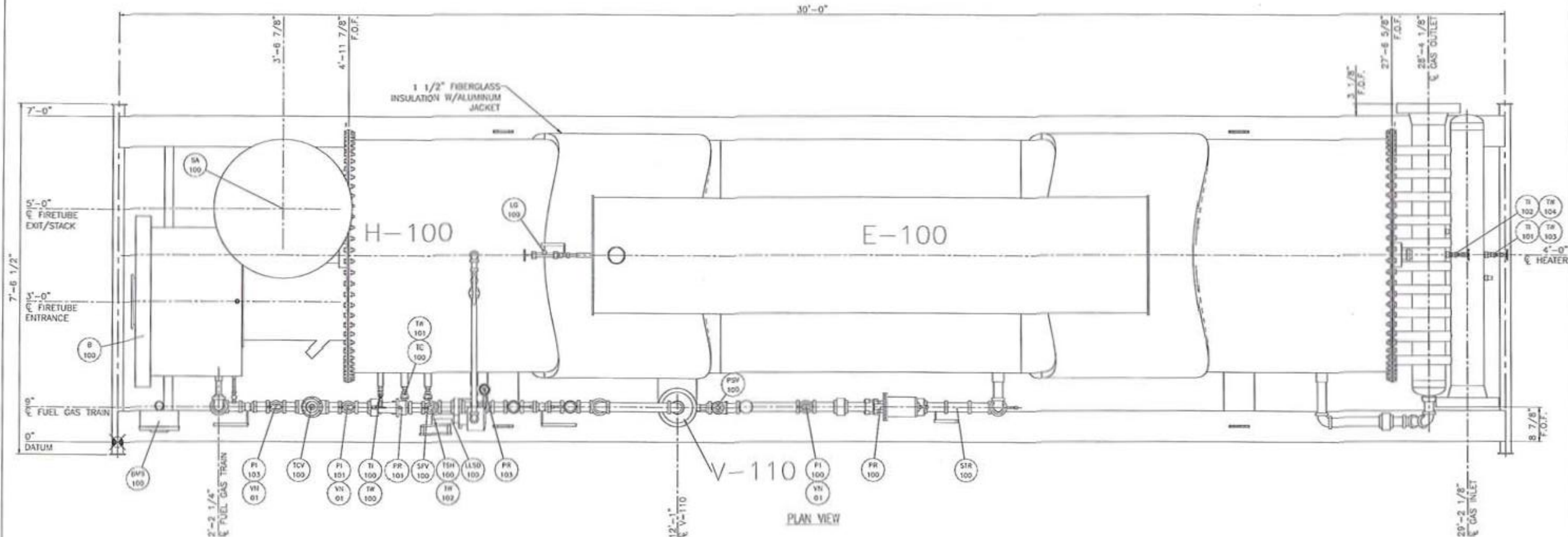
A

WO# 214539

1/2 SIZE DRAWING— Scaled to 1/2 indicated

Scale	NONE	Drawn	SB	CASCADE NATURAL GAS CORPORATION 8113 W Grandridge Blvd Kennewick, WA 99336 V-167, V-168 & V-169 Heater Valve Assy. 6300 Brinkley Rd at 011 Kennewick, WA
Date	2-25-15	Check	N/A	
Eng.	JF	Meas.	N/A	
Drawing Number		V167_V168_V169Ken B 35		

QTY	ENG #	DESCRIPTION	ITEM NUMBER	WT.
1	H-100	INDIRECT HEATER	3.0-IH-60-22-CNG	11,460
1	E-100	EXPANSION TANK	INCLUDED WITH H-100	
1		FLOW COIL	3.0-FC-60-22-CNG	3,040
1	V-110	FUEL GAS SCRUBBER	0202823	65
1		SKID	3.0-IH-60-22-CNG-SKD	2,520
1		PIPING AND FITTINGS	3.0-IH-60-22-CNG-PPNG	650
1		CONTROLS AND ACCESSORIES		250
TOTAL EST. GRY WEIGHT:				18,000



REV	DATE	BY/CHKD	DESCRIPTION
1	05/23/14	JW	REVISED FOR APPROVAL

J.W. WILLIAMS INC.
PLANT COMPANY
ENGINEERING AND FABRICATION

CASCADE NATURAL GAS
INDIRECT FIRED UTILITY HEATER PACKAGE 30M BTU/HR
GENERAL ARRANGEMENT
PLAN VIEW

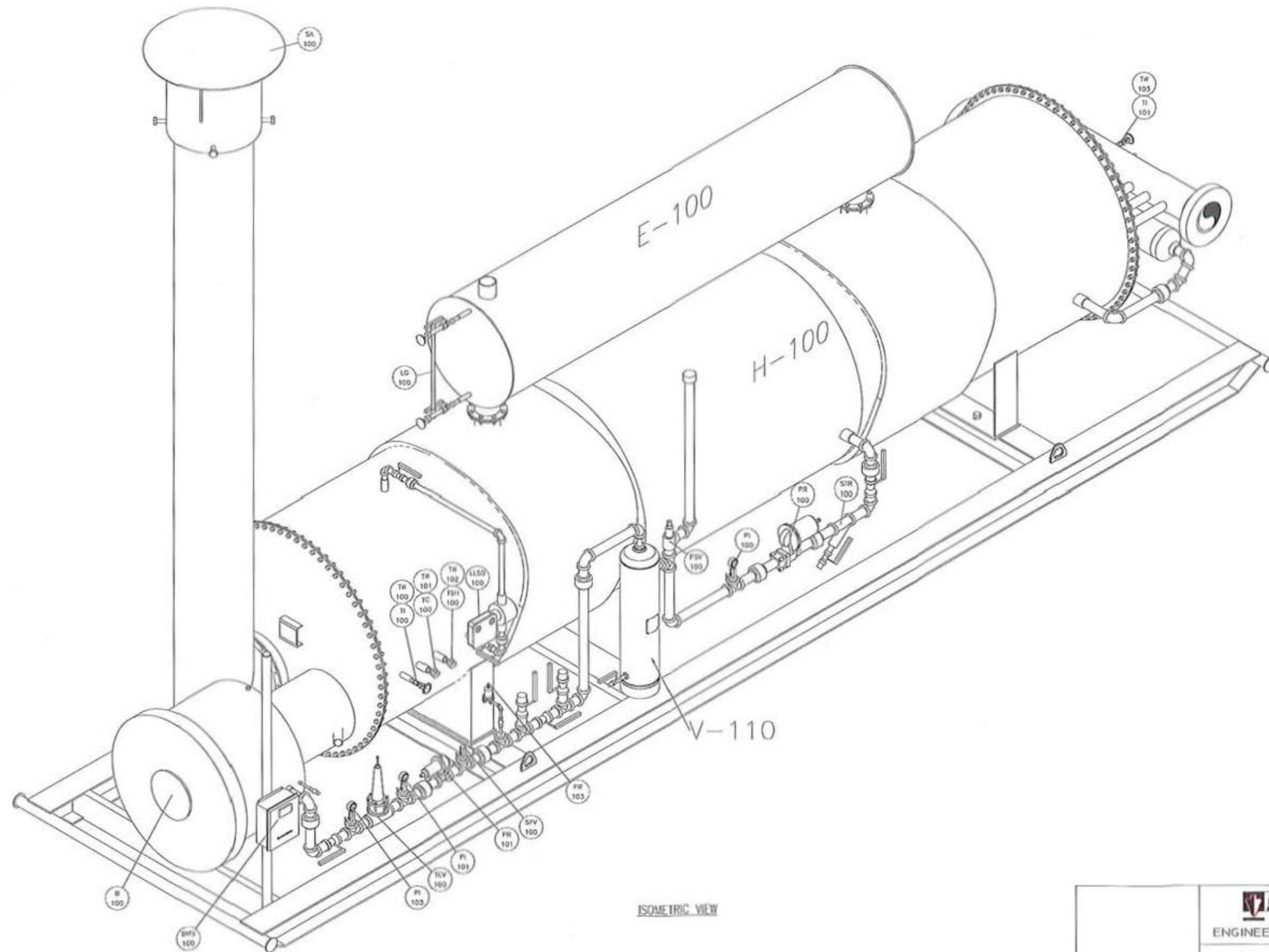
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DATE	APP	ENG NO.	REV
END	-	3.0-IH-60-22-CNG-ASSY	A
SHEET 3 OF 4			

WO# 214539

1/2 SIZE DRAWING- Scaled to 1/2 indicated

Scale	NONE	Drawn	SB	CASCADE NATURAL GAS CORPORATION 8113 W Grandridge Blvd Kennewick, WA 99336 V-167, V-168 & V-169 Heater Valve Assy. 6300 Brinkley Rd at 011 Kennewick, WA
Date	2-25-15	Check	N/A	
Eng.	JF	Meas.	N/A	
Drawing Number	V167_V168_V169Ken B 45			



ISOMETRIC VIEW

J.W. WILLIAMS INC.
— PLUMB COMPANY
 ENGINEERING AND FABRICATION

CASCADE NATURAL GAS
 INDIRECT FIRED UTILITY HEATER PACKAGE 3MM Btu/HR
 GENERAL ARRANGEMENT
 ISOMETRIC VIEW

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DATE	REV	ENG NO.	REV
END		3.0-IH-60-22-CNG-ASSY	
SHEET 4 OF 4			

WO# 214539

1/2 SIZE DRAWING— Scaled to 1/2 indicated

Scale	NONE	Drawn	SB	CASCADE NATURAL GAS CORPORATION 8113 W Grandridge Blvd Kennewick, WA 99336 V-167, V-168 & V-169 Heater Valve Assy. 6300 Brinkley Rd at 011 Kennewick, WA
Date	2-25-15	Check	N/A	
Eng.	JF	Meas.	N/A	
Drawing Number		V167_V168_V169Ken B 55		