

**Vendor Name:** Penticton Foundry Ltd.

**MR #:** ALB-000-MR-PI-000003

**PO#:** 1399742

**CNRL PROJECT NUMBER:** KI191025-JPM INPIT CELL 1

**MOC #:** 2019-JPP-001

**Document Title:** Detailed Fabrication Drawings

**CNRL VP Number:** JPP-300-H03-PI-000095

**Vendor Document Number:** H03

**Vendor Document REV:** Revision F

**SDRL Code:** H03

**EQUIPMENT NUMBER:** n/a

**Total Number of Pages:** 4



**Canadian Natural Resources Limited**

**Albian - Oilsands Projects**

**VENDOR PRINT REVIEW STAMP**

**003**

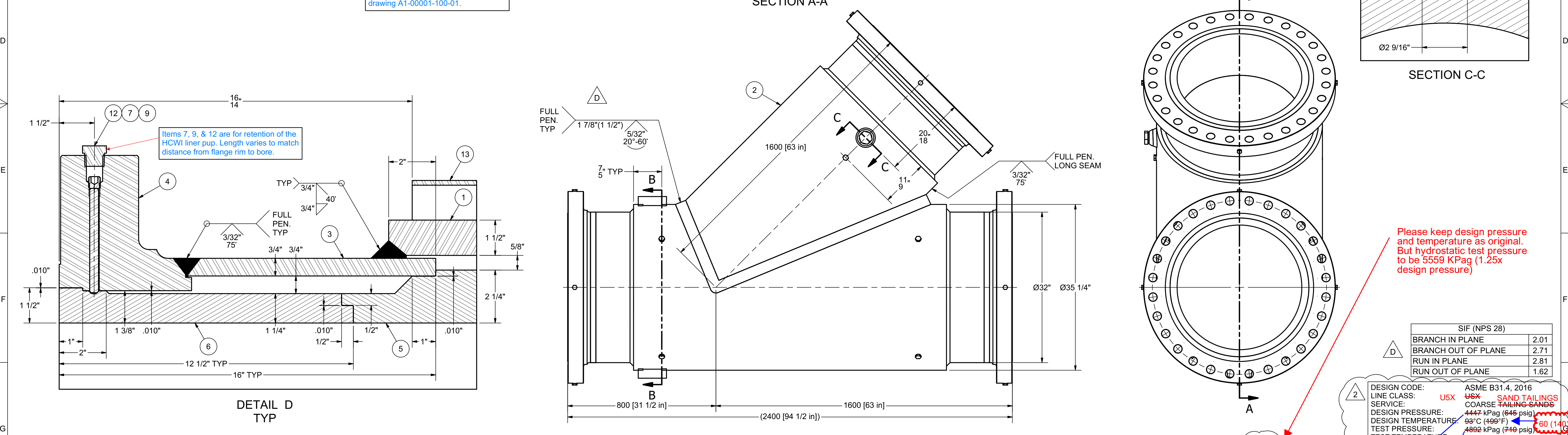
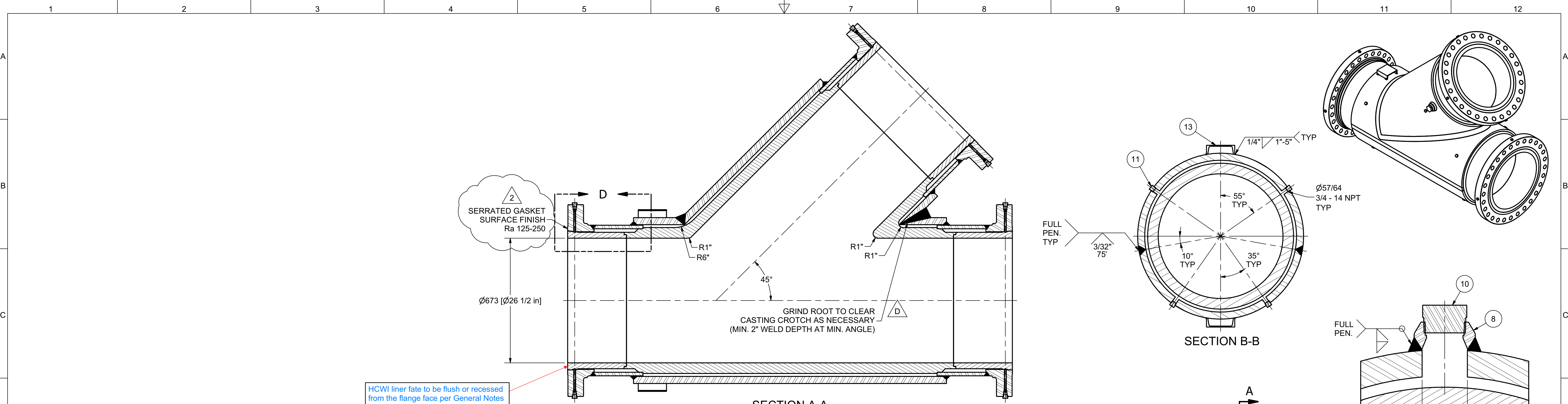
Submittal No.

Permission to proceed does not constitute acceptance of design, details, calculations or analysis, test methods or materials developed or selected by Supplier and does not relieve Supplier from full compliance with contractual or other obligations

- ☐ 1. Accepted, proceed.
- ☒ 2. Proceed, incorporate comments and resubmit as final.
- ☐ 3. Do **NOT** proceed, revise and resubmit.
- ☐ 4. Proceed, review not required/completed.

Signature: **GP**

Date: **2020-03-12**



BILL OF MATERIAL			
ITEM	ITEM QTY	PART NUMBER	DESCRIPTION
1	1	A1-19037-100-01 Trunk shell	106 1/32" x 66 1/2" x 1 1/2" PLATE, A516 Gr.70N, ROLLED TO 35 1/4" OD
2	1	A1-19037-100-02 Branch shell	106 1/32" x 48 15/16" x 1 1/2" PLATE, A516 Gr.70N, ROLLED TO 35 1/4" OD
3	3	A1-19037-100-03 32in pipe	32" x 3/4" WALL x 11 17/32" PIPE, API 5L X52 PSL-2
4	3	A1-19037-100-04 28in CL300 RF flange - custom	28" CLASS 300 B16.47 Ser.A RF SO FLANGE, A105N, Ø28 7/8" BORE
5	1	A1-19037-100-05 HCWI lateral	26 1/2" ID x 2 1/4" WALL x 45° HCWI LATERAL, 19 1/2" x 51" x 51", ASTM A532 CLASS III TYPE A, LEVEL 2, PF# 503364
6	3	A1-19037-100-06 HCWI liner - pup	26 1/2" ID x 1 1/4" WALL x 12 1/2" HCWI LINER, ASTM A532 CLASS III TYPE A, LEVEL 2, PF# 503363
7	12	A1-19037-100-07 Trap rod	Ø3/8" x 4 7/16" ROUND BAR, A36
8	1	A1-19037-100-08 2in x 36in threadolet	2" x 36" CLASS 3000 THREADOLET, A105N
9	12	ANSI B18.3 - 1/2-13 UNC x 0.5	1/2"-NC x 1/2" FLAT POINT SOCKET HEAD SET SCREW, PLATED
10	1	ASME B16.11 Hex Head Plug 2	2"-NPT HEX HEAD PLUG, A105N
11	9	ASME B16.11 Hex Head Plug 3/4	3/4"-NPT HEX HEAD PLUG, A105N
12	12	ASME B16.11 Hex Head Plug 1/2	1/2"-NPT HEX HEAD PLUG, A105N
13	2	Tag mount - 6in	C6x8.2 x 6" [152mm], 44W

REV	DATE	DESCRIPTION	INITIALS
2	2/24/20	ADDED LINE CLASS, ADDED NOTES	GVD
1	2/10/20	32IN PIPE LENGTH WAS 10 17/32". MATERIAL ADDED FOR MACHINING	KLS
0	1/16/20	ISSUED FOR CONSTRUCTION, ADD PF NUMBERS TO DESCRIPTIONS	JDS
D	1/10/20	UPDATED WELD SYMBOL, UPDATED NOTE, ADDED SIF TABLE	GVD
C	12/18/19	CHANGED HYDRO TO 4 HOURS	BEM
B	11/25/19	32" PIPE WAS PSL-1, ADDED "LEVEL 2" TO HCWI DESCRIPTIONS, UPDATED DESIGN DATA, ADDED TAG MOUNTS	GVD
A	11/14/19	ISSUED FOR REVIEW	GVD

EST. WT. 13,020 lbs.

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. BREAK ALL SHARP EDGES 01" OR GR.45° RADI

PER ANSI Y14.5 STANDARD.

TOLERANCES:

X.XX ±.116

X.XX ±.050

X.XXX ±.015

X.XXX ±.005

ANGLES ±.12

FINISH ON ALL MACHINED SURFACES

DO NOT SCALE	
DRAWN BY: GVD	DATE: 11/14/19
CHECKED BY:	DATE:
APPROVED:	DATE:
MATERIAL & HEAT TREAT	

PROJECT No: A1-19037	REFERENCE: 3-2-0218 Sht.4 OF 7	REV. 2
FILE NAME: A1-19037-100-00 28in lateral.idw	SHEET 1 OF 1	

REFER TO DRAWING A1-00001-100-01 FOR ALL GENERAL NOTES AND SPECIFICATIONS

28" x 28" x 45° HCWI LATERAL

CNUL ALBIAN

ALCO Industrial

2103 - 8 Street,  
Nisku, Alberta, Canada T9E 7Y9  
Phone: (780) 451-8222 • Fax: (780) 452-4355

Please keep design pressure and temperature as original. But hydrostatic test pressure to be 5559 KPag (1.25x design pressure)

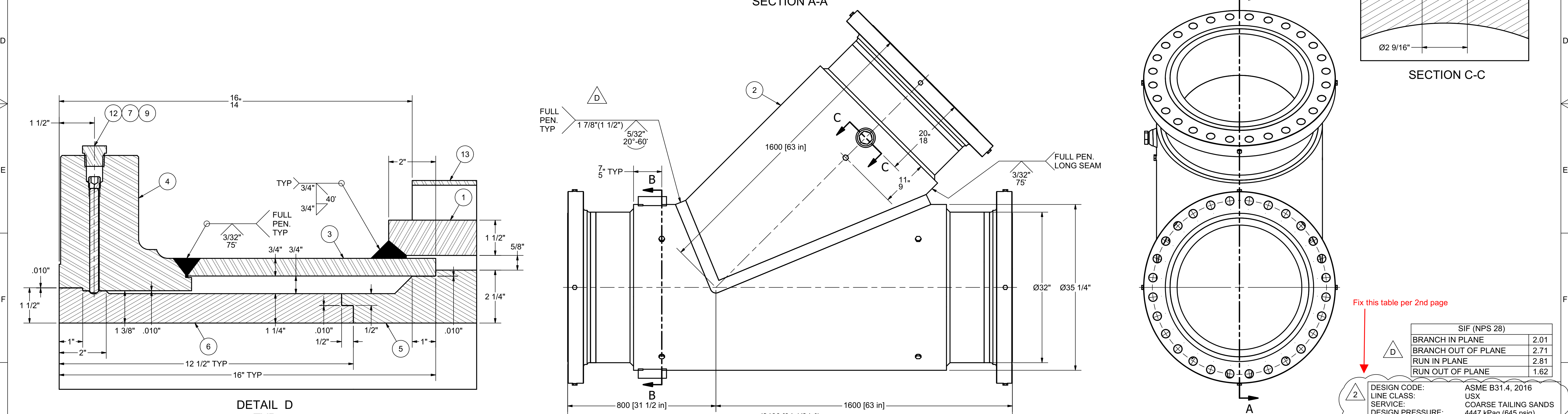
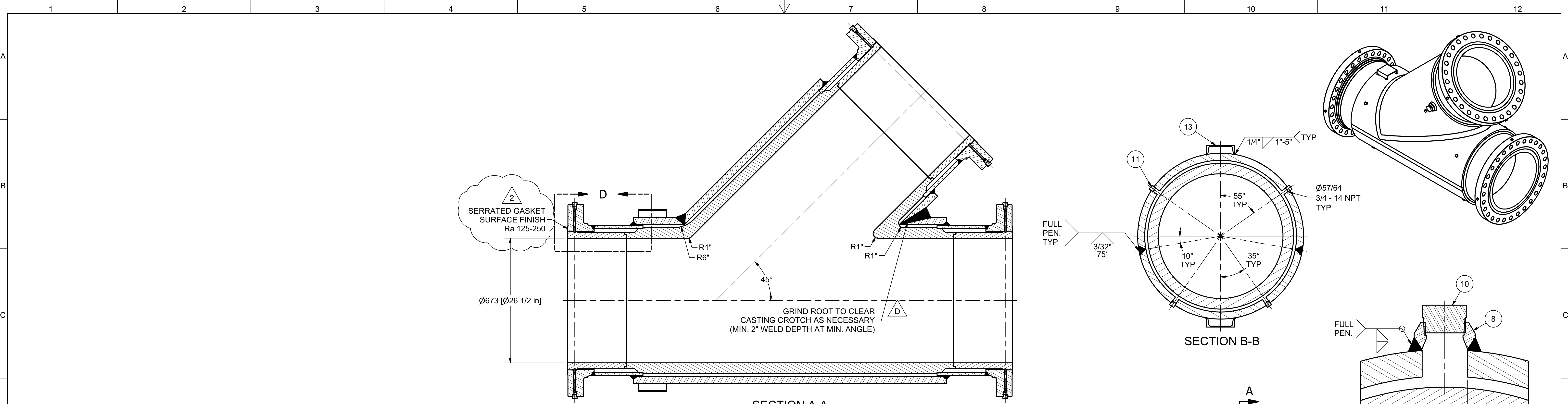
I believe 4447 and 93 deg C are correct values, matching the pressure temperature rating of the pipe class. ALL EXTERIOR SURFACES TO BE PAINTED WITH KRYLON RUST INHIBITING ENAMEL.

SIF (NPS 28)	
BRANCH IN PLANE	2.01
BRANCH OUT OF PLANE	2.71
RUN IN PLANE	2.81
RUN OUT OF PLANE	1.62

DESIGN CODE: ASME B31.4, 2016  
LINE CLASS: ~~USX~~ **U5X** **SAND TAILINGS**  
SERVICE: COARSE TAILING SANDS  
DESIGN PRESSURE: 4447 kPag (645 psig)  
DESIGN TEMPERATURE: 93°C (199°F) 60 (140)  
TEST PRESSURE: 4892 kPag (710 psig)  
TEST TEMPERATURE: 15°C (59°F)  
TEST DURATION: 4 HOURS

4309 (625)





BILL OF MATERIAL			
ITEM	ITEM QTY	PART NUMBER	DESCRIPTION
1	1	A1-19037-100-01 Trunk shell	106 1/32" x 66 1/2" x 1 1/2" PLATE, A516 Gr.70N, ROLLED TO 35 1/4" OD
2	1	A1-19037-100-02 Branch shell	106 1/32" x 48 15/16" x 1 1/2" PLATE, A516 Gr.70N, ROLLED TO 35 1/4" OD
3	3	A1-19037-100-03 32in pipe	32" x 3/4" WALL x 11 17/32" PIPE, API 5L X52 PSL-2
4	3	A1-19037-100-04 28in CL300 RF flange - custom	28" CLASS 300 B16.47 Ser.A RF SO FLANGE, A105N, Ø28 7/8" BORE
5	1	A1-19037-100-05 HCWI lateral	26 1/2" ID x 2 1/4" WALL x 45° HCWI LATERAL, 19 1/2" x 51" x 51", ASTM A532 CLASS III TYPE A, LEVEL 2, PF# 503364
6	3	A1-19037-100-06 HCWI liner - pup	26 1/2" ID x 1 1/4" WALL x 12 1/2" HCWI LINER, ASTM A532 CLASS III TYPE A, LEVEL 2, PF# 503363
7	12	A1-19037-100-07 Trap rod	Ø3/8" x 4 7/16" ROUND BAR, A36
8	1	A1-19037-100-08 2in x 36in threadolet	2" x 36" CLASS 3000 THREADOLET, A105N
9	12	ANSI B18.3 - 1/2-13 UNC x 0.5	1/2"-NC x 1/2" FLAT POINT SOCKET HEAD SET SCREW, PLATED
10	1	ASME B16.11 Hex Head Plug 2	2"-NPT HEX HEAD PLUG, A105N
11	9	ASME B16.11 Hex Head Plug 3/4	3/4"-NPT HEX HEAD PLUG, A105N
12	12	ASME B16.11 Hex Head Plug 1/2	1/2"-NPT HEX HEAD PLUG, A105N
13	2	Tag mount - 6in	C6x8.2 x 6" [152mm], 44W

REVISION HISTORY			
REV	DATE	DESCRIPTION	INITIALS
2	2/24/20	ADDED LINE CLASS, ADDED NOTES	GVD
1	2/10/20	32IN PIPE LENGTH WAS 10 17/32". MATERIAL ADDED FOR MACHINING	KLS
0	1/16/20	ISSUED FOR CONSTRUCTION, ADD PF NUMBERS TO DESCRIPTIONS	JDS
D	1/10/20	UPDATED WELD SYMBOL, UPDATED NOTE, ADDED SIF TABLE	GVD
C	12/18/19	CHANGED HYDRO TO 4 HOURS	BEM
B	11/25/19	32" PIPE WAS PSL-1, ADDED "LEVEL 2" TO HCWI DESCRIPTIONS, UPDATED DESIGN DATA, ADDED TAG MOUNTS	GVD
A	11/14/19	ISSUED FOR REVIEW	GVD

2

ALL EXTERIOR SURFACES TO BE PAINTED WITH KRYLON RUST INHIBITING ENAMEL.

REFER TO DRAWING A1-00001-100-01 FOR ALL GENERAL NOTES AND SPECIFICATIONS

EST. WT. 13,020 lbs.	DO NOT SCALE
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. BREAK ALL SHARP EDGES 01" OR GR. 45° RADI	DRAWN BY: GVD DATE: 11/14/19
TOLERANCES: X.XX = ±.030 X.XXX = ±.015 X.XXXX = ±.005 ANGLES = ±12°	CHECKED BY: DATE
125	APPROVED: DATE
FINISH ON ALL MACHINED SURFACES	MATERIAL & HEAT TREAT

DESIGN CODE: ASME B31.4, 2016

LINE CLASS: USX

SERVICE: COARSE TAILING SANDS

DESIGN PRESSURE: 4447 kPag (645 psig)

DESIGN TEMPERATURE: 93°C (199°F)

TEST PRESSURE: 4892 kPag (710 psig)

TEST TEMPERATURE: 15°C (59°F)

TEST DURATION: 4 HOURS

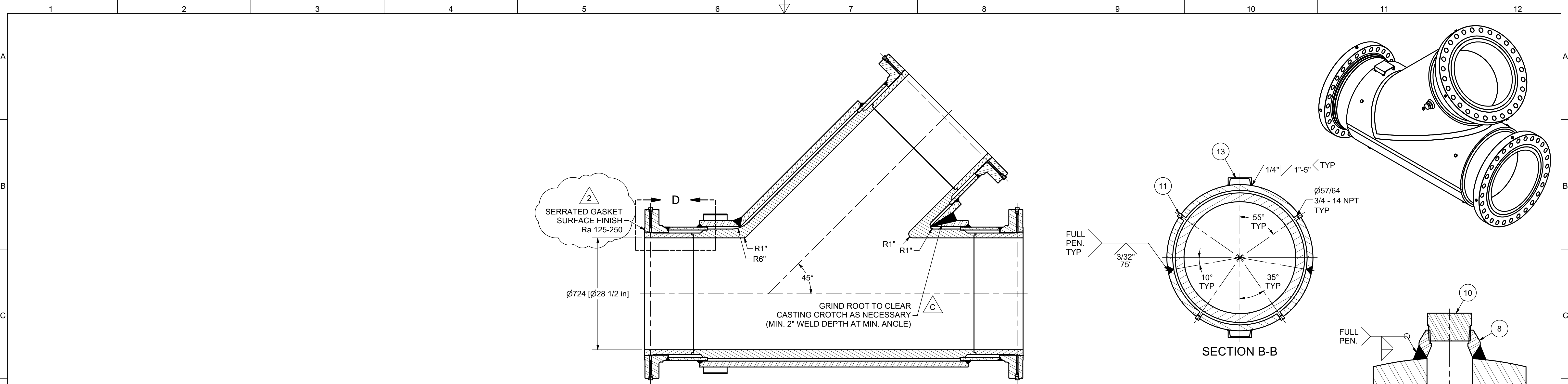
SIF (NPS 28)	
BRANCH IN PLANE	2.01
BRANCH OUT OF PLANE	2.71
RUN IN PLANE	2.81
RUN OUT OF PLANE	1.62

ALCO Industrial

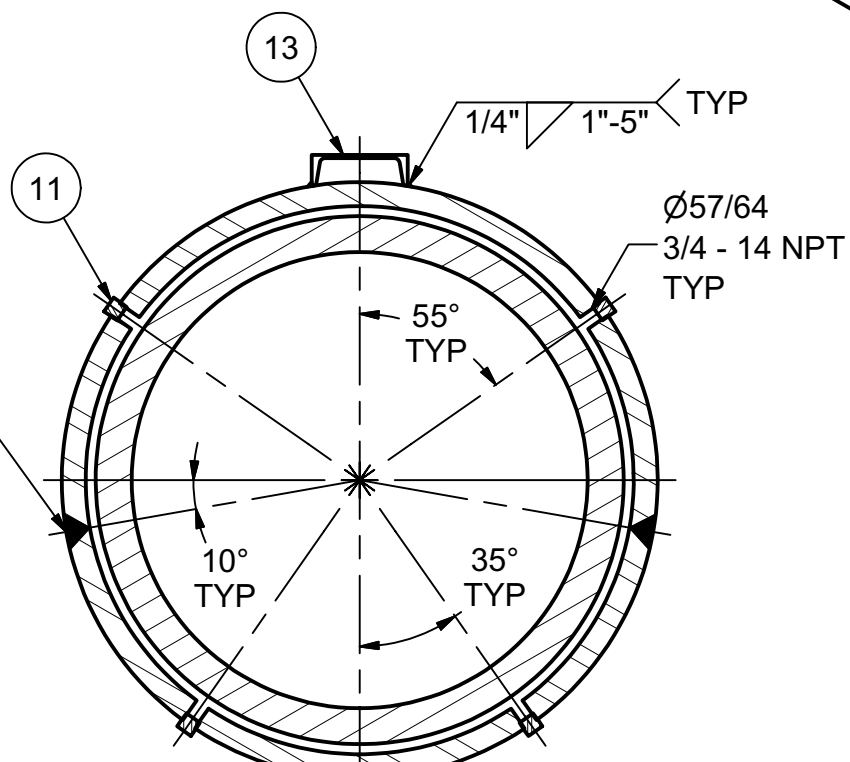
2103 - 8 Street,  
Nisku, Alberta, Canada T9E 7Y9  
Phone: (780) 451-8222 • Fax: (780) 452-4355

TITLE	28" x 28" x 45° HCWI LATERAL	
PROJECT No.	REFERENCE	REV.
A1-19037	3-2-0218 Sht.4 OF 7	2
FILE NAME	SHEET	
A1-19037-100-00 28in lateral.idw	1 OF 1	

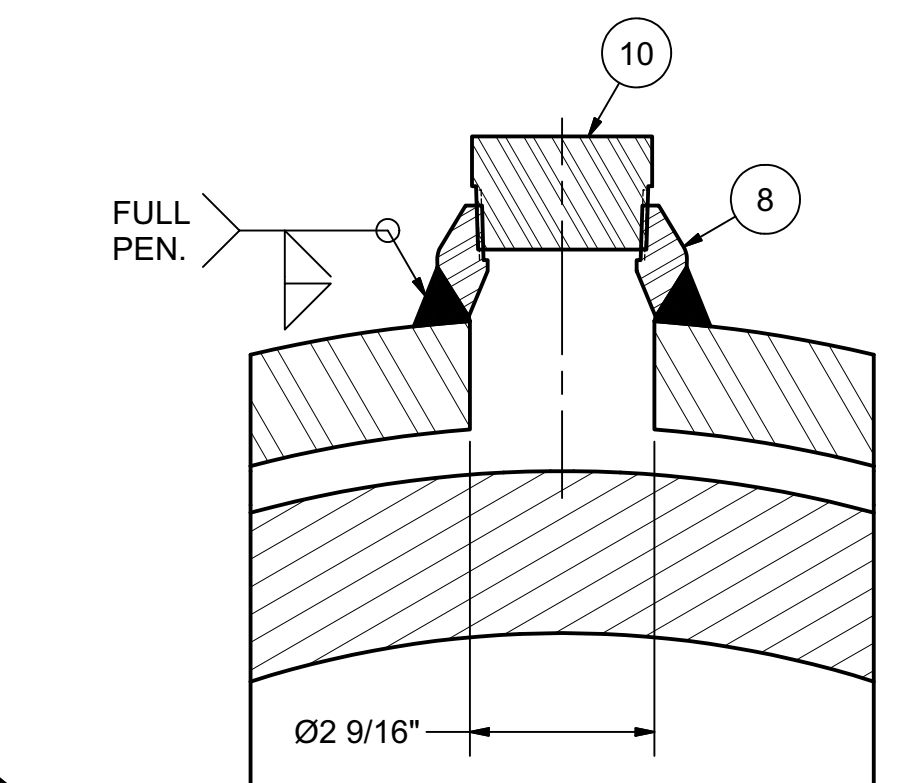




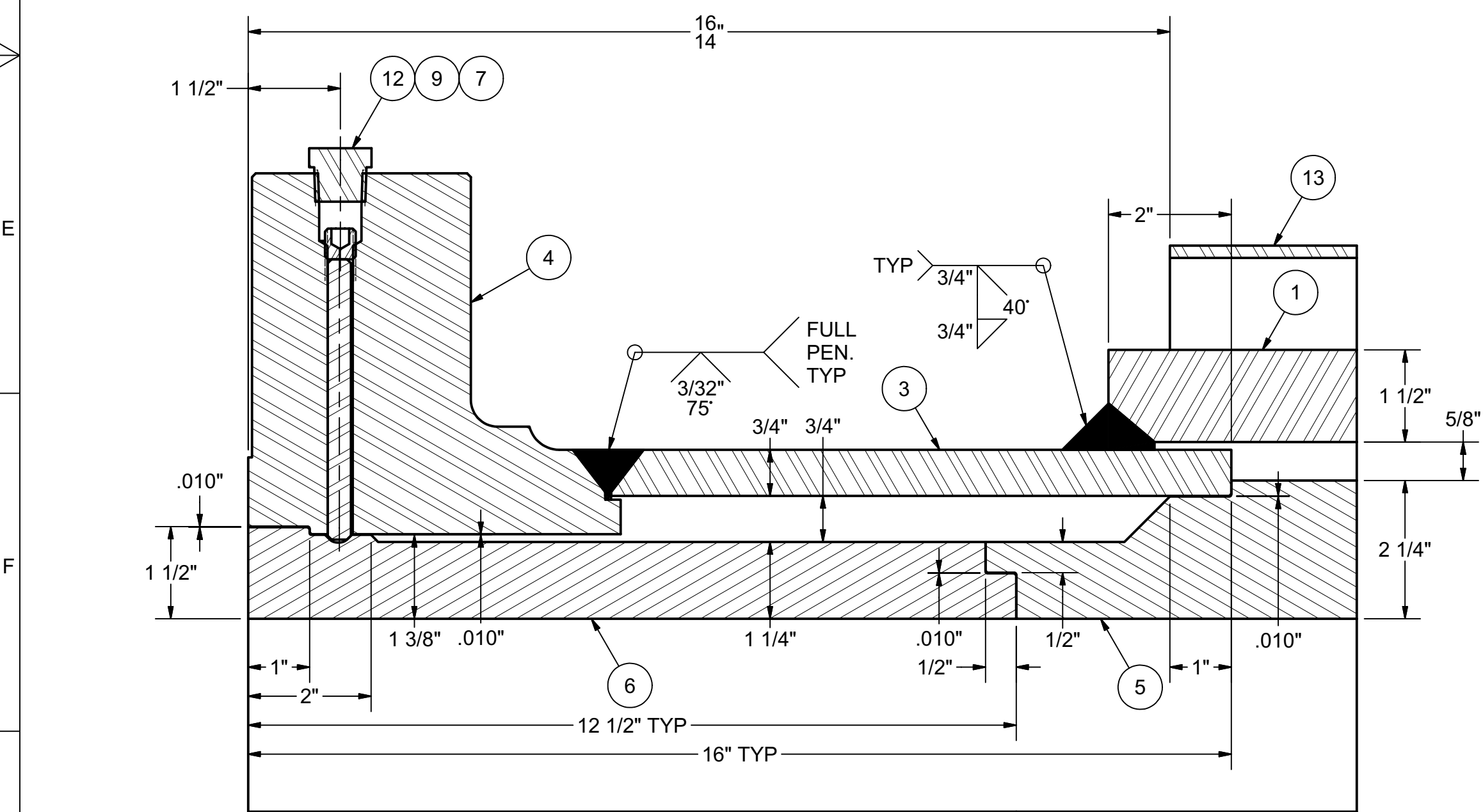
SECTION A-A



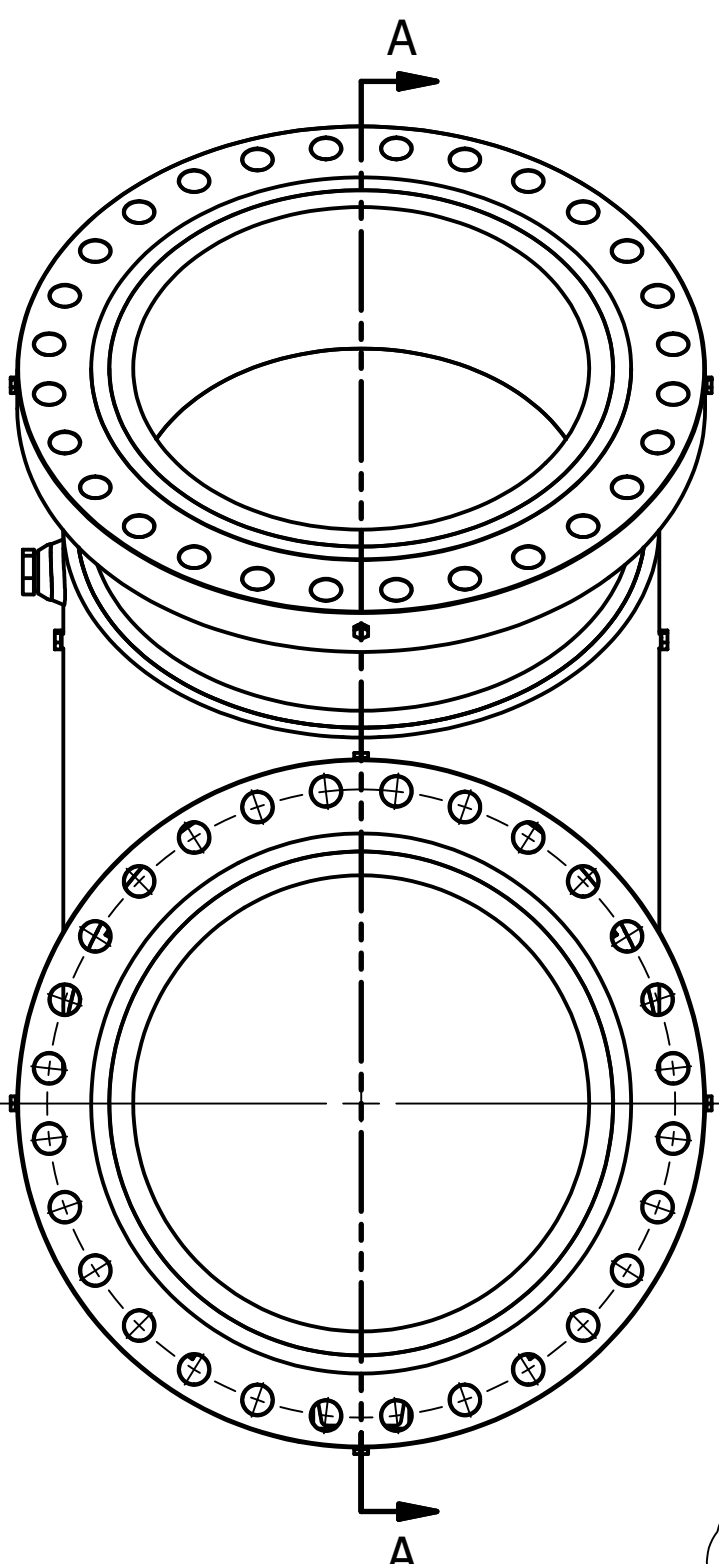
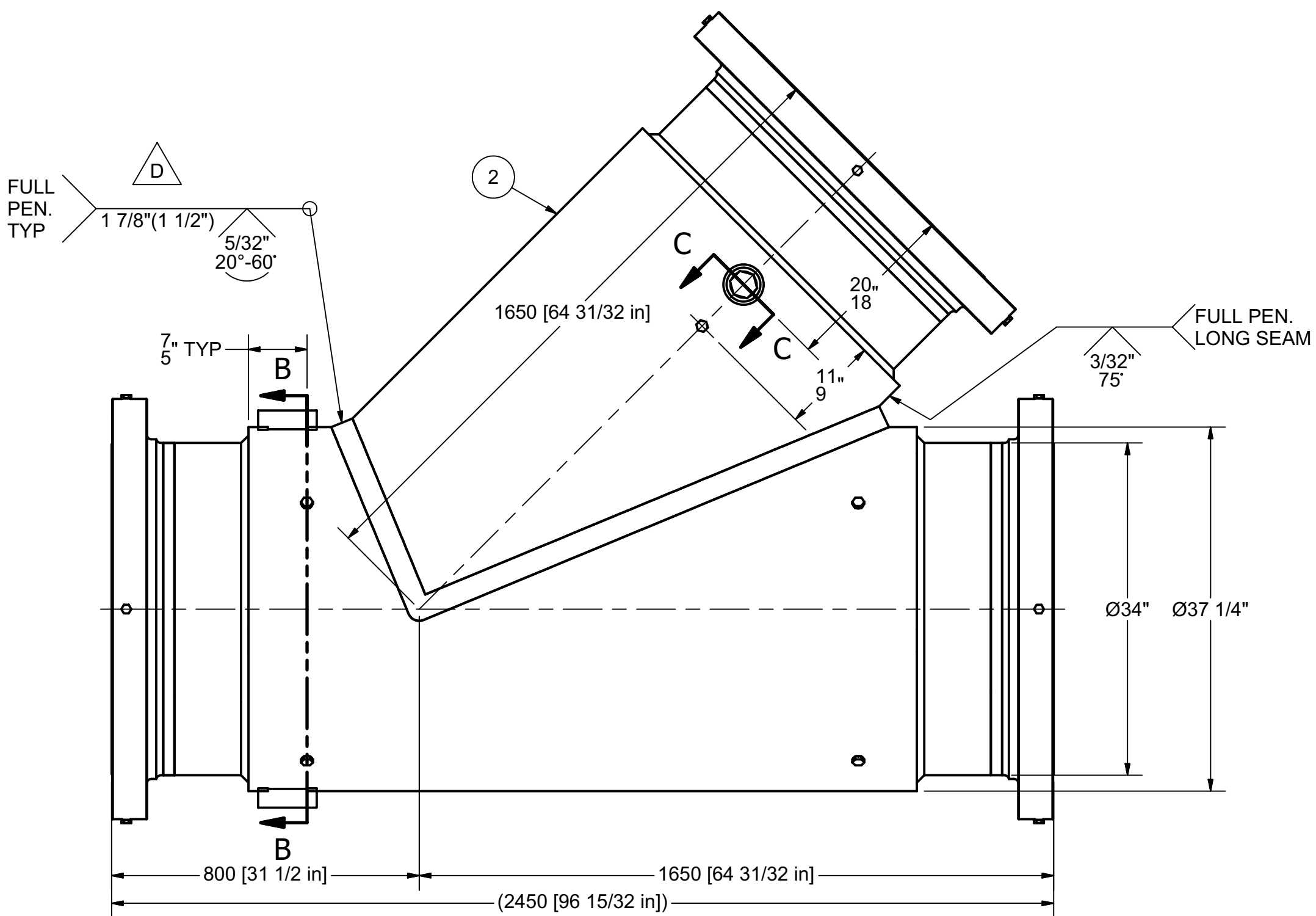
SECTION B-B



SECTION C-C



DETAIL D  
TYP



Fix this table per seconf page.

SIF (NPS 30)	
BRANCH IN PLANE	2.34
BRANCH OUT OF PLANE	2.86
RUN IN PLANE	2.37
RUN OUT OF PLANE	1.10

DESIGN CODE:	ASME B31.4, 2016
LINE CLASS:	U5X
SERVICE:	COARSE TAILING SANDS
DESIGN PRESSURE:	4447 kPag (645 psig)
TEST PRESSURE:	93°C (199°F)
TEST TEMPERATURE:	4892 kPag (710 psig)
TEST DURATION:	15°C (59°F)
	4 HOURS

ITEM		ITEM QTY	PART NUMBER	BILL OF MATERIAL	
				DESCRIPTION	
1	1	A1-19037-200-01	Trunk shell	112 5/16" x 68 15/32" x 1 1/2" PLATE, A516 Gr.70N, ROLLED TO 37 1/4" OD	
2	1	A1-19037-200-02	Branch shell	112 5/16" x 50 29/32" x 1 1/2" PLATE, A516 Gr.70N, ROLLED TO 37 1/4" OD	
3	3	A1-19037-200-03	34in pipe	34" x 3/4" WALL x 11 3/32" PIPE, API 5L X52 PSL-2	
4	3	A1-19037-200-04	30in CL300 RF flange - custom	30" CLASS 300 B16.47 Ser.A RF SO FLANGE, A105N, Ø31 1/4" BORE	
5	1	A1-19037-200-05	HCWI lateral	28 1/2" ID x 2 1/4" WALL x 45° HCWI LATERAL, 19 1/2" x 52 31/32" x 52 31/32", ASTM A532 CLASS III TYPE A, LEVEL 2, PF# 503369	
6	3	A1-19037-200-06	HCWI liner - pup	28 1/2" ID x 1 1/4" WALL x 12 1/2" HCWI LINER, ASTM A532 CLASS III TYPE A, LEVEL 2, PF# 503368	
7	12	A1-19037-200-07	Trap rod	Ø3/8" x 4 9/16" ROUND BAR, A36	
8	1	A1-19037-200-08	2in x 38in threadolet	2" x 36" CLASS 3000 THREADOLET, A105N	
9	12	ANSI B18.3 - 1/2-13	UNC x 0.5	1/2"-NC x 1/2" FLAT POINT SOCKET HEAD SET SCREW, PLATED	
10	1	ASME B16.11	Hex Head Plug 2	2"-NPT HEX HEAD PLUG, A105N	
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12	12	ASME B16.11	Hex Head Plug 1/2	1/2"-NPT HEX HEAD PLUG, A105N	
13	2		Tag mount - 6in	C6x8.2 x 6" [152mm], 44W	

REVISION HISTORY			
REV	DATE	DESCRIPTION	INITIALS
2	2/24/20	ADDED LINE CLASS, ADDED NOTES	GVD
1	2/10/20	34in PIPE LENGTH WAS 10 3/32in, MATERIAL ADDED FOR MACHINING	KLS
0	1/16/20	ISSUED FOR CONSTRUCTION, ADD PF NUMBERS TO PART DESCRIPTIONS, ITEM 1 WAS 69 15/32" LG DESCRIPTION	JDS
D	1/10/20	UPDATED WELD SYMBOL, UPDATED NOTE, ADDED SIF TABLE	GVD
C	12/18/19	CHANGED HYDRO TO 4 HOURS	BEM
B	11/25/19	34" PIPE WAS PSL-1, ADDED "LEVEL 2" TO HCWI DESCRIPTIONS, UPDATED DESIGN DATA, ADDED TAG MOUNTS	GVD
A	11/14/19	ISSUED FOR REVIEW	GVD

ALL EXTERIOR SURFACES TO BE PAINTED WITH KRYLON RUST INHIBITING ENAMEL. REFER TO DRAWING A1-00001-100-01 FOR ALL GENERAL NOTES AND SPECIFICATIONS

EST. WT. 14,270 lbs.		DO NOT SCALE	
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES. BREAK ALL SHARP EDGES TO .010. INTERPRET DWG PER ANSI Y14.5 STANDARD.		DRAWN BY: GVD DATE: 11/14/19	
TOLERANCES: X.XX = ±.030 X.XXX = ±.015 X.XXX = ±.005		CHECKED BY: DATE:	
125 FINISH ON ALL MACHINED SURFACES		APPROVED: DATE:	
		MATERIAL & HEAT TREAT	

ALCO Industrial		2103 - 8 Street, Nisku, Alberta, Canada T9E 7Y9 Phone: (780) 451-8222 • Fax: (780) 452-4355	
TITLE		30" x 30" x 45° HCWI LATERAL CNUL ALBIAN	
PROJECT No: A1-19037	REFERENCE: 3-2-0218 Sht 5 OF 7	REV. 2	SHEET 1 OF 1
FILE NAME: A1-19037-200-00 30in lateral.idw			

# Changemark History

There are no outstanding changemarks on this document.