


EI# 151222

S/N-98

| | | | |
|---|------------|----------------|---------------|
| Certified by | | GRANDE PRAIRIE | |
|  | | ALBERTA | |
| GROUP LTD. | | CANADA | |
| W | MAWP | 56 | PSI at 100 °F |
| R/S | MAWP (EXT) | | PSI at °F |
| Q/S | MDMT | -40 | °F at 50 PSI |
| S/N | PP 98 | | |
| YEAR BUILT | 2012 | | |
| C.R.N. | V8492.2 | C.A. | 0.125" |
| SHELL MAT | SA-213-70N | SHELL THK | 0.75" |
| HEAD MAT | SA-213-70N | HEAD THK | 0.75" |
| © 620500 | | | |

encana™

natural gas

V-618
200 bbl WASTE LIQUID STORAGE VESSEL
Location: c-12-B / 93-P-9
P&ID Drawing Package
Rev.13

Received
MAR 30 2012
SMCI-DC



PREPARED BY:

Propipe Group Ltd.
15201 - 91 St.
Grande Prairie, Alberta T8X 0B3
Tel: (780) 830 0955 Fax: (780) 830 0950
www.propipegroup.com

PROPIPE PROJECT #: ENC-113-PI-00

| SOLARIS MANAGEMENT CONSULTANTS INC. | | |
|--|-------------------------------------|---|
| Project # | VDD # | PO # |
| EN10-01046 | | 14 |
| 1 | <input checked="" type="checkbox"/> | PROCEED & RESUBMIT CERTIFIED |
| 2 | <input type="checkbox"/> | PROCEED, CHANGE AS NOTED & RESUBMIT CERTIFIED |
| 3 | <input type="checkbox"/> | DO NOT PROCEED, CHANGE AS NOTED & RESUBMIT |
| VO | <input type="checkbox"/> | DATA REQUIRED FOR INFORMATION ONLY |
| By: | Date: APRIL 2, 12 | |
| ACCEPTANCE OF THIS DOCUMENT BY SOLARIS DOES NOT RELIEVE THE VENDOR OF ANY RESPONSIBILITY UNDER THE TERMS AND CONDITIONS OF THE APPLICABLE CONTRACT OR PURCHASE ORDER | | |

TH-618
ENCLOSURE HEATER

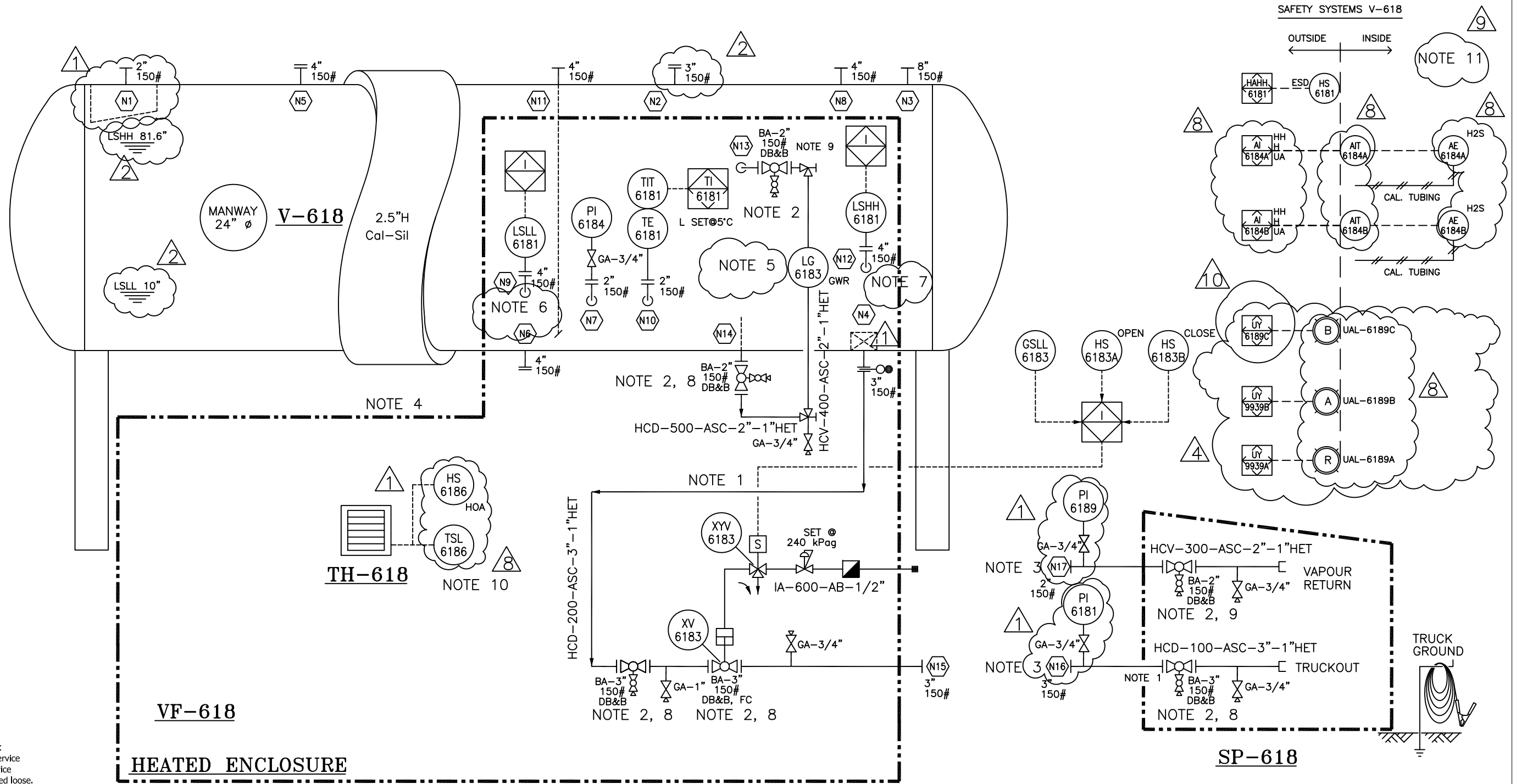
RUFFNECK ELECTRIC HEATER
FX5-600-360-100-W
(10KW, 600V, 3 phase, 60 HZ.)
Produces 34,500 btu/hr

V-618
200 bbl WASTE LIQUID STORAGE VESSEL

SIZE: 102"ID X 20' S/S
DESIGN: 50 PSIG @ -49°F/100°F/ 1/8" CA
SOUR SERVICE
CRN: -
INTERNALLY COATED WITH DEVOE 253

SP-618
LOAD LINE SPILLBOX

(2" & 3") DUAL OUTLET
SIZE: 26" WIDE X 13.5" DEEP X 23.5" LONG
12 GAUGE HEAVY STEEL, 96 LBS
15 GALLON, BOTTOM RELEASE VALVE



- GENERAL NOTES (continued):
- 8. DBB Valve to be FP and Liquid Service
 - 9. DBB Valve to be FP and Gas Service
 - 10. HS 6186 & TSL 6186 to be shipped loose.
 - 11. HS 6181, AIT 6184A, AE 6184A, AIT 6184B, AE 6184B, UAL-6189A, UAL-6189B & UAL-6189C to be shipped loose.

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD | REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|----------------------|------|----------|-----|------|-----|-------------------------|----|----------|-----|------|
| 0 | ISSUED FOR REVIEW | AABJ | 14/09/11 | - | - | 7 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |
| 1 | ISSUED FOR REVIEW | AABJ | 22/09/11 | - | - | 8 | ISSUED FOR CONSTRUCTION | MB | 15/02/12 | - | - |
| 2 | ISSUED FOR REVIEW | AABJ | 21/10/11 | - | - | 9 | ISSUED FOR CONSTRUCTION | MB | 06/03/12 | - | - |
| 3 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - | 10 | ISSUED FOR CONSTRUCTION | MB | 29/03/12 | - | - |
| 4 | ISSUED FOR REVIEW | MB | 03/01/12 | - | - | | | | | | |
| 5 | ISSUED FOR REVIEW | AABJ | 10/01/12 | - | - | | | | | | |
| 6 | ISSUED FOR REVIEW | MB | 21/01/12 | - | - | | | | | | |

- GENERAL NOTES:
1. The mandate is to coat all truck-out and drain piping with Devoe 253
 2. Isolation valve shall be coated with IPC 3000 corrosion protective coating
 3. Both vapour return and truck-out connections shall be terminated outside of the spill box with 2" & 3" flange connections
 4. Cladding to be 0.024 smooth aluminum
 5. Ensure LG-6183 covers LSHH-6181
 6. Ensure LSHH-6181 is located at least 10" from vessel bottom. Ensure LSL-6183 is located in latter 25% of vessel (lengthwise).
 7. Ensure LSHH-6181 is located at 81.6"



encana
natural gas
SWAN COMPRESSOR STATION
LSD: c-12-B/93-P-9
200bbl WASTE LIQUID STORAGE VESSEL V-618

| | | | | |
|-----------------|-------------|------------------|------------------------------|------------|
| JOB# ENC-113 | DRAWN MB | DATE 29/03/12 | DRAWING NO. ENC-113-PI-02 | REV. 10 |
|-----------------|-------------|------------------|------------------------------|------------|

| # | LINE DESIGNATION | | | | DESCRIPTION | | | OPERATION | | DESIGN CONDITIONS | | | | TEST CONDITIONS | | | INSULATION | | TRACING | | ENC-113 LINE LIST | | |
|---|------------------|----------|--------------|------------|---------------------|---------------------------|---------|--------------|-----------|-------------------|-----------|-------------------|---------------------|-----------------|-----------|--------|------------|------|---------|-----|-------------------|----------|----------------|
| | ITEM | LINE NO. | PIPING Class | SIZE (NPS) | FROM | TO | SERVICE | PRESS. (Kpa) | TEMP. (C) | PRESS. (Kpa) | TEMP. (C) | CORR. ALLOW. (mm) | ACTUAL THK/SCH (mm) | PRESS. (Kpa) | TEMP. (C) | MEDIUM | THK. (mm) | TYPE | TYPE | NO. | X-RAY % | P.W.H.T. | REFERENCE P&ID |
| 1 | HCD | 100 | ASC | 3" | SPILL BOX SKID EDGE | SPILL BOX TRUCKOUT | SOUR | - | - | 1965 | -45/260 | 3.2 | SCH 40 | 2947.5 | AMB | H2O | N/A | N/A | N/A | N/A | 100% | YES | ENC-113-PI-02 |
| 2 | HCD | 200 | ASC | 3" | VESSEL (N4) | VESSEL SKID EDGE | SOUR | - | - | 1965 | -45/260 | 3.2 | SCH 40 | 2947.5 | AMB | H2O | N/A | N/A | N/A | N/A | 100% | YES | ENC-113-PI-02 |
| 3 | HCV | 300 | ASC | 2" | SPILL BOX SKID EDGE | SPILL BOX VAPOUR RETURN | SOUR | - | - | 1965 | -45/260 | 3.2 | SCH 80 | 2947.5 | AMB | H2O | N/A | N/A | N/A | N/A | 100% | YES | ENC-113-PI-02 |
| 4 | HCV | 400 | ASC | 2" | VESSEL (N13) | THRU LEVEL GAUGE TO DRAIN | SOUR | - | - | 1965 | -45/260 | 3.2 | SCH 80 | 2947.5 | AMB | H2O | N/A | N/A | N/A | N/A | 100% | YES | ENC-113-PI-02 |
| 5 | HCD | 500 | ASC | 2" | VESSEL (N14) | HCV-400-ASC-2"-1"HET | SOUR | - | - | 1965 | -45/260 | 3.2 | SCH 80 | 2947.5 | AMB | H2O | N/A | N/A | N/A | N/A | 100% | YES | ENC-113-PI-02 |
| 6 | IA | 600 | AB | 1/2" | IA-600-AB-2" | CONTROL VALVE | SWEET | - | - | 1965 | -45/149 | 3.2 | SCH 80 | 2947.5 | AMB | H2O | N/A | N/A | N/A | N/A | N/A | N/A | ENC-113-PI-02 |

| ENC-113 WASTE STORAGE VESSEL BOM | | | |
|----------------------------------|-------------------|-----|---|
| ITEM # | TAG # | QTY | DESCRIPTION |
| 1 | LG-6183 | 1 | Penberthy 3TM8 Level Gauge w/ 330J Site Glass Valves |
| 2 | XV-6183 | 1 | 1pc GROVE# 9K-4C03F01F00A 3" 150# RF FP Sour Low Temp. Trunnion Ball Valve c/w Bettis # CBB725SR80-11 Pneumatic Spring Return Actuator - Mounted/ Tested - 80P.S.I. Supply - Fail Closed, c/w Pressure Regulator Fisher 67CFR with Integral Pressure Gauge. |
| 3 | LSHH-6181 | 1 | SOR Electric Level Switch Model 1510C-G4C-C-L1-ES-CSNC, 4" RF, 150# connection, CSA, 316 SS body, 316 SS float |
| 4 | LSLL-6181 | 1 | SOR Electric Level Switch Model 1510C-G4C-C-L1-ES-CSNC, 4" RF, 150# connection, CSA, 316 SS body, 316 SS float |
| 5 | XV-6183 | 1 | ASCO 3-way solenoid valve Model EF83146301-24 SST, Explosion proof Normally closed 24 VDC, 100 psig max supply pressure |
| 6 | PI-6181/6184/6189 | 3 | Dual scale, silicone filled Case Bourdon Tube Pressure Gauges, c/w min 4" diameter face & SS case, WIKA Type 233.53 |
| 7 | GA-3/4" | 7 | 3/4"-800 Class, SW X THD, A350 LF2, TR12, OS&Y, BB, NACE, Gate Valve |
| 8 | GA-1" | 1 | 1"-800 Class, SW X THD, A350 LF2, TR12, OS&Y, BB, NACE, Gate Valve |
| 9 | TH-618 | 1 | Roughneck Electric heaters quoted FX5-600-360-100-W (10KW, 600V, 3 phase, 60 HZ), Produces 34,500 btu/hr |
| 10 | BA-2" | 3 | 2" Grove gas service double-block and bleed isolation valve, 3/4" drain valve, FULLPORT, (including SPILLBOX [Camlock connection on the Truck-out line]) |
| 11 | BA-3" | 3 | 3" Grove liquid service double-block and bleed isolation valve, 3/4" drain valve, FULLPORT, (including SPILLBOX [Camlock connection on the Vapour Return line]) |
| 12 | TE-6181 | 1 | Rosemount 68 series (Model Number 0068R21C30Z0F62E6), c/w explosion proof connection head, 2" RF150# tapered, NACE thermowell |
| 13 | TIT-6181 | 1 | Rosemount 644 for control and monitoring applications. All should include local displays. (Model Number 644HAK6J6F6M5) |
| 14 | HS-6186 | 1 | Cooper Crouse Hinds, class 1 div 2, Group B, C, D / Local H-O-A Selector switch, DSD925 w/ gang (ESD271) (for TH-618) |
| 15 | HS-6181 | 1 | ESD push button, Crouse Hinds model DSD 9185769 C/W NC-CH1-QA cover |
| 16 | AE/AIT-6184A/B | 2 | H2S Gas Detectors, Electromechanical H2S sensor Assy 100ppm - Aluminum c/w sensor electronics & housing for use with NET SAFETY Millennium II Controller, M21-A-JB-MPD-A-CCS-1 c/w ST322A-100-ASSY |
| 17 | UAL-6189C | 1 | Blue Strobe, Federal Signal strobes, 24VDC, Div 2, Type 4X, IP66 enclosure, UL & cUL listed: Class 1, Div 2, 1/2 inch pipe mount |
| 18 | TSL-6186 | 1 | Remote Thermostat, XTB Explosion-Proof Thermostat, Remote sensing bulb with 57" capillary length, XTB04881 (Single Pole, Single Throw) (for TH-618) |
| 19 | SR-618 | 1 | Dura Life Load Line Spillbox, (2" and 3" Dual Outlet, 26" Wide x 13.5" Deep x 23.5" Long, 12 Gauge Heavy Steel, 96lbs, 15 Gallon, Bottom Release Valve |
| 20 | UAL-6189A/B | 2 | 1 Red & 1 Amber Federal Signal strobes, 24VDC, Div 2, Type 4X, IP66 enclosure, UL & cUL listed: Class 1, Div 2, 1/2 inch pipe mount |


GENERAL PIPING NOTES:

- All piping shall be constructed in accordance with the latest edition of B31.3 pressure piping code.
- a) All sour piping shall include 3.2mm CA and be constuded as follows
 - ASC spec 1/2" shall be sch 160
 - ASC spec 3/4" thru 2" shall be sch 80
 - ASC spec 3" thru 10" shall be sch 40
 All sour service piping shall be subject to 100% radiography & PWHT. All fillet welds to be 100% MPI'd.
- b) Sour service material;
 - Pipe 1/2" thru 12" shall be SA-333-6
 - Flanges 1/2" thru 12" shall be SA-350-LF2
 - Saddle & other attachment material SA516-70N
 - Studs shall be SA-193-B7M
 - Nuts shall be SA-194-2HM
 - Gaskets shall be 316SS Flexatatic
 - Socket weld fittings 1/2" shall be Class 6000 SA-350 LF2 CL-1
 - Socket weld fittings 3/4" to 1-1/2" shall be Class 3000 SA-350 LF2 CL-1
 - Tubing shall be 0.035" wall smls ASTM A 269 TP 316 SS (1/2" OD maximum)

Data Sheets for instrumentation are provided by vendors once items have been ordered.

All materials shall be rated for -40°C
 All wetted materials must be NACE compliant MR01.75/ ISO 15156 latest certified
 All instrumentation shall be identified with a stainless steel tag

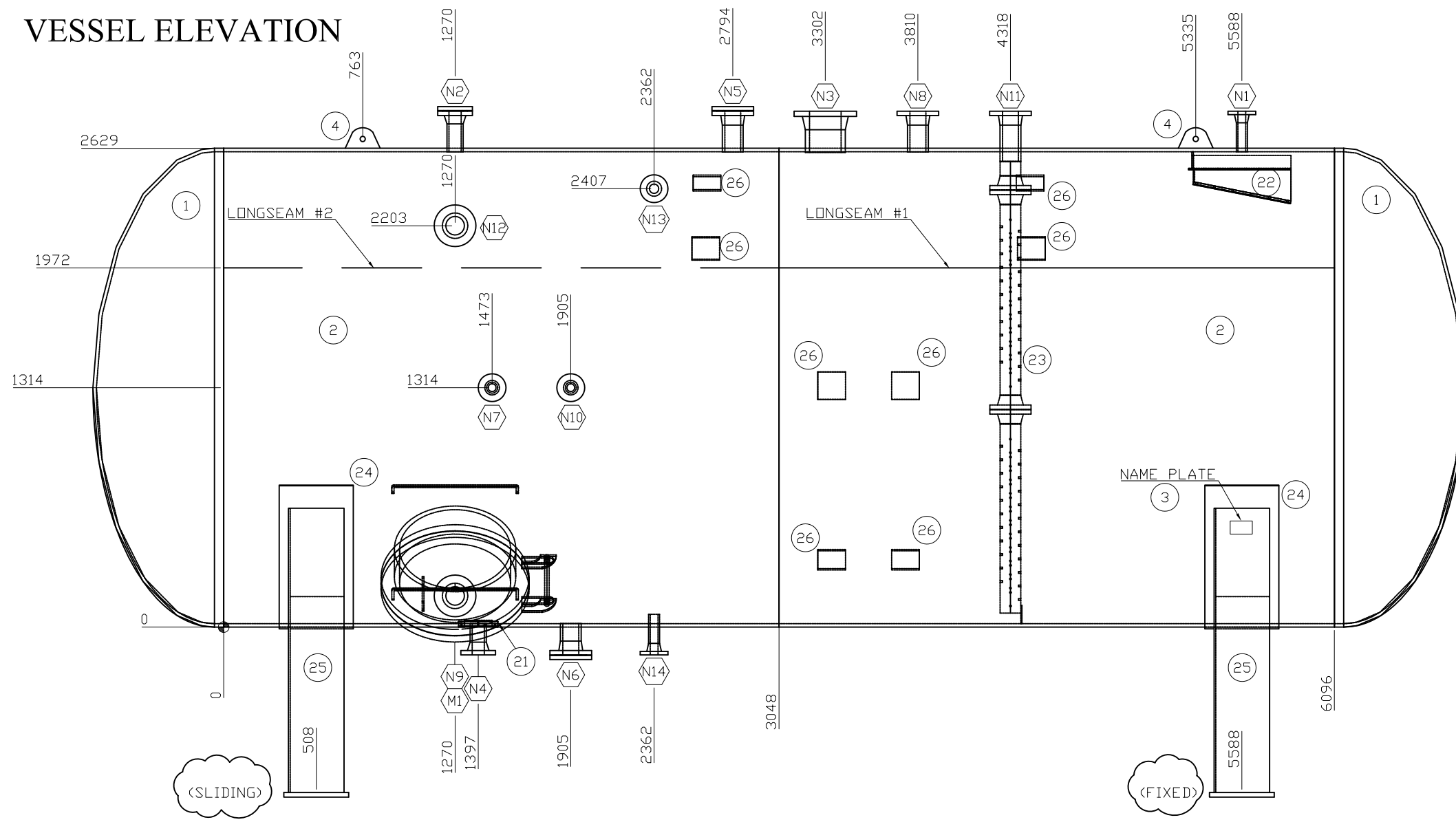
| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD | REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD | GENERAL NOTES |
|-----|----------------------|------|----------|-----|------|-----|-------------------------|----|----------|-----|------|---------------|
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| 3 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - | | | | | | | |
| 4 | ISSUED FOR REVIEW | MB | 03/01/12 | - | - | | | | | | | |
| 5 | ISSUED FOR REVIEW | AABJ | 10/01/12 | - | - | | | | | | | |
| 6 | ISSUED FOR REVIEW | MB | 21/01/12 | - | - | | | | | | | |




 SWAN COMPRESSOR STATION
 LSD: c-12-B/93-P-9
 200bbi WASTE LIQUID STORAGE VESSEL V-618

| | | | | |
|---------|-------|----------|---------------|------|
| JOB# | DRAWN | DATE | DRAWING NO. | REV. |
| ENC-113 | MB | 20/03/12 | ENC-113-PI-03 | 9 |

VESSEL ELEVATION



| PP-98 VESSEL Bill of Material | | | | | |
|-------------------------------|--------------|--|---|----------|----|
| TITLE | ITEM | DESCRIPTION | MATERIAL | QTY | |
| VESSEL | 1 | VESSEL HEAD: 2:1 SE HEAD: 102" (2591mm) ID X .75" (19mm) NOM THK, 0.6875" (17.5mm) MTAF, 50mm SF | SA-516-70N | 2 | |
| | 2 | VESSEL PLATE (SHELL) : 102" (2591mm) ID X 0.75" (19mm) NOM THK. X 120" (3048mm) LONG | SA-516-70N | 2 | |
| | 3 | NAMEPLATE BRACKET: NAMEPLATE | SA-36/SS | 1 | |
| | 4 | LIFTING LUG: 7.5" (191mm) WD X 6" (152mm) HG X 1" (25mm) THK | SA-516-70N | 2 | |
| FLANGES | 5 | FLANGE: 2" CL150 RFWN C/W SCH 160 BORE (N7,N10,N13,N14) | SA-350-LF2 | 4 | |
| | 6 | FLANGE: 2" CL150 RF LWN (N13) | SA-350-LF2 | 1 | |
| | 7 | FLANGE: 3" CL150 ANSI RFWN SCH 160 BORE (N2,N4) | SA-350-LF2 | 2 | |
| | 8 | FLANGE: 4" CL150 ANSI RFWN SCH 160 BORE (N5,N6,N8,N9,N11,N12) | SA-350-LF2 | 6 | |
| | 9 | FLANGE: 4" CL150 ANSI RF LWN (N9, N12) | SA-350-LF2 | 2 | |
| | 10 | FLANGE: 6" CL150 ANSI RFWN SCH 160 BORE(N1) | SA-350-LF2 | 1 | |
| | 11 | FLANGE: 8" CL150 ANSI RFWN SCH 160 BORE(N3) | SA-350-LF2 | 1 | |
| | 12 | FLANGE: 24" CL150 ANSI RF LWN (M1) | SA-350-LF2 | 1 | |
| | PIPE & ELBOW | 13 | PIPE: 2" SCH. 160 SMLS BOE/POE (N7,N10,N14) | SA-333-6 | 13 |
| | | 14 | PIPE: 3" SCH. 160 SMLS BOE/POE (N2,N4) | SA-333-6 | 9 |
| 15 | | PIPE: 4" SCH. 160 SMLS BOE/POE (N5,N6,N8,N11) | SA-333-6 | 5 | |
| 16 | | PIPE: 6" SCH. 160 SMLS BOE/POE(N1) | SA-333-6 | 1 | |
| 17 | | PIPE: 8" SCH. 160 SMLS BOE/POE(N3) | SA-333-6 | 1 | |
| 18 | | BLIND FLANGE: 24" CL150 ANSI RF (M1) | SA-350-LF2 | 1 | |
| MANWAY EQUIPMENT | 19 | STUDS, NUTS: 1-1/4" DIAMETER X 6-3/4"LONG (M1) | SA-193-B7M | 1 | |
| | 20 | GASKET: 24" CL150 ANSI SPIRAL WOUND X 1/8" THK (M1) (DWG: PP-98-V-MWY) | 316-SS | 1 | |
| INSIDE EQUIPMENT | 21 | REMOVABLE VORTEX BREAKER (DWG: PP-98-V-RV&SC) | SA-516-70N | 1 | |
| | 22 | INLET DIVERTOR (DWG: PP-98-V-ID) | SA-516-70N | 2 | |
| | 23 | STILL COLUMN (DWG: PP-98-V-RV&SC) | - | 1 | |
| SADDLE | 24 | SADDLE WEAR PLATE: 14" (366mm) W X 150" (3810mm) L X 0.375" (10mm) THK. | SA-516-70N | 2 | |
| | 25 | SADDLES:PLATE CUT TO FIT AS SADDLE DETAILS (DWG: PP-98-V-SDL) | SA-36 | 2 | |
| ATTACHMENT PAD | 26 | ATTACHMENT PADS FOR LADDER, PLATFORM & BUILDING | SA-516-70N | 8 | |

GENERAL NOTES:

- ALL INTERNAL SHARP EDGES TO BE ROUNDED OFF
- ALL VESSEL INTERNALS TO BE REMOVABLE THROUGH MANWAY.
- ALL BOLTS TO STRADDLE NATURAL VESSEL CENTERLINES.

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|--|---|-------------------------------------|---------------------------------------|
| | | | |
| FLANGE DETAIL V WPS: PP-03 | NOZZLE DETAIL VI WPS: | NOZZLE DETAIL VIII WPS: PP-03 | MISCELLANEOUS DETAIL WPS: PP-03 |
| | | | |
| CIRC SEAM DETAIL I WPS: PP-03,04 | LONG SEAM DETAIL II WPS: PP-03,04 | NOZZLE DETAIL III WPS: PP-03 | NOZZLE DETAIL IV WPS: PP-03 |

| TITLE | SIZE | TYPE | NOZZLE | | | PROJECTION | | WELD DETAIL | FILLET WELD SIZE | | REQUIRED | |
|-------|------|--------|----------|--------|-----------|-------------|-----------|-------------|------------------|---|-------------|------------|
| | | | SCH | RATING | SERVICE | OUTSIDE | INSIDE | | A | B | IMPACT TEST | NORMALIZED |
| N1 | 2" | RFWN | 160 | CL150 | INLET | 8" (203mm) | 0" | III-V | 0.225" (5.7mm) | - | YES | YES |
| N2 | 3" | RFWN | 160 | CL150 | SPARE | 8" (203mm) | 0" | III-V | 0.4" (10.2mm) | - | YES | YES |
| N3 | 8" | RFWN | 160 | CL150 | PSV | 8" (203mm) | 0" | III-V | 0.375" (9.5mm) | - | YES | YES |
| N4 | 3" | RFWN | 160 | CL150 | DRAIN | 6" (152mm) | 0" | III-V | 0.4" (10.2mm) | - | YES | YES |
| N5 | 4" | RFWN | 160 | CL150 | SPARE | 8" (203mm) | 0" | III-V | 0.375" (9.5mm) | - | YES | YES |
| N6 | 4" | RFWN | 160 | CL150 | DRAIN | 6" (152mm) | 0" | III-V | 0.375" (9.5mm) | - | YES | YES |
| N7 | 2" | RFWN | 160 | CL150 | PI | 6" (152mm) | 0" | III-V | 0.225" (5.7mm) | - | YES | YES |
| N8 | 4" | RFWN | 160 | CL150 | LPF | 8" (203mm) | 0" | III-V | 0.375" (9.5mm) | - | YES | YES |
| N9 | 4" | RF LWN | 0.75 WT | CL150 | LSLL | 20" (508mm) | 0" | III | 0.375" (9.5mm) | - | YES | YES |
| N10 | 2" | RFWN | 160 | CL150 | TE | 6" (152mm) | 0" | III-V | 0.225" (5.7mm) | - | YES | YES |
| N11 | 4" | RFWN | 160 | CL150 | LIT | 8" (203mm) | 2" (51mm) | V-VIII | 0.375" (9.5mm) | - | YES | YES |
| N12 | 4" | RF LWN | 0.75 WT | CL150 | LSHH | 8" (203mm) | 0" | III | 0.375" (9.5mm) | - | YES | YES |
| N13 | 2" | RF LWN | 0.625 WT | CL150 | LG TOP | 15" (381mm) | 0" | III | 0.375" (9.5mm) | - | YES | YES |
| N14 | 2" | RFWN | 160 | CL150 | LG BOTTOM | 6" (152mm) | 2" (51mm) | III-V | 0.225" (5.7mm) | - | YES | YES |
| M1 | 24" | RF LWN | 1.125 WT | CL150 | MANWAY | 8" (203mm) | 0" | III | 0.375" (9.5mm) | - | YES | YES |

| VESSEL DESIGN DATA | | |
|--------------------|---------------------------------|---|
| No# | ITEM | SPEC |
| 1 | DESIGN CODE: | ASME CODE SEC. VIII DIV I, 2010 |
| 2 | DESIGN PRESSURE: | 50 PSIG @ 100°F (345 kPa @ 38°C) |
| 3 | MIN. DESIGN METAL TEMP. (MDMT): | -49°F @ 50 PSIG (-45°C @ 345 kPa) |
| 4 | MAX. ALLOWABLE WORK PRESSURE | 50 PSIG @ -49/100°F (345 kPa @ -45/38°C) |
| 5 | VESSEL HYDROTEST: | 448 kPa (65 PSIG) |
| 6 | VESSEL VOLUME: | 1315 #3 (37 m3) |
| 7 | VESSEL WEIGHT: | 26103 lb (11840 kg) |
| 8 | CORROSION ALLOWANCE: | 1/8" (3.2mm) |
| 9 | HEAD THICKNESS: | 0.75" (19mm) NOM, 0.650" (16.5mm) MIN |
| 10 | SHELL THICKNESS: | 0.75" (19mm) NOM |
| 11 | SHELL JOINT EFFICIENCY: | ONE (1) |
| 12 | NDT: | FULL UW-11a(RT-1) |
| 13 | PWHT: | YES, 45 MINUTES @ 1150°F +/- 25°F (621°C +/- 14°C) |
| 14 | CHARPY IMPACT REQUIRED: | REQUIRED |
| 15 | SURFACE PREP (EXT): | ALL EQUIPMENT SHALL BE SUBJECT TO SSPC-SP#6 COMMERCIAL BLAST, FOLLOWED BY ONE (1) SHOP COAT PRIMER. |
| 16 | SURFACE PREP (INT): | INTERNAL COATING WITH DEVOE 253 AS PER MANUFACTURERS SPECS |
| 17 | INSULATION: | VESSEL TO BE INSULATED WITH 2-1/2" CAL-SIL ACCORDANCE WITH ENCANA ECA-X-1 FOR HOT SERVICE. |
| 18 | UNITS REQUIRED: | ONE (1) |
| 19 | CRN #: | |

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|-----|--|------|----------|-----|------|
| 0 | ISSUED FOR REVIEW | AABJ | 21/10/11 | - | - |
| 1 | ISSUED FOR REVIEW (HEIGHT OF SADDLES INCREASED BY 12" TO ACCOMMODATE PIPING ARRANGEMENT) | AABJ | 27/10/11 | - | - |
| 2 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - |
| 3 | ISSUED FOR APPROVAL | MB | 12/12/11 | - | - |
| 4 | ISSUED FOR APPROVAL | AABJ | 21/12/11 | - | - |
| 5 | ISSUED FOR APPROVAL | MB | 04/01/12 | - | - |

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|-----|-------------------------|----|----------|-----|------|
| 6 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |

PROPPIPE VESSEL #: PP-98

ENCANA CORPORATION

SWAN COMPRESSOR STATION

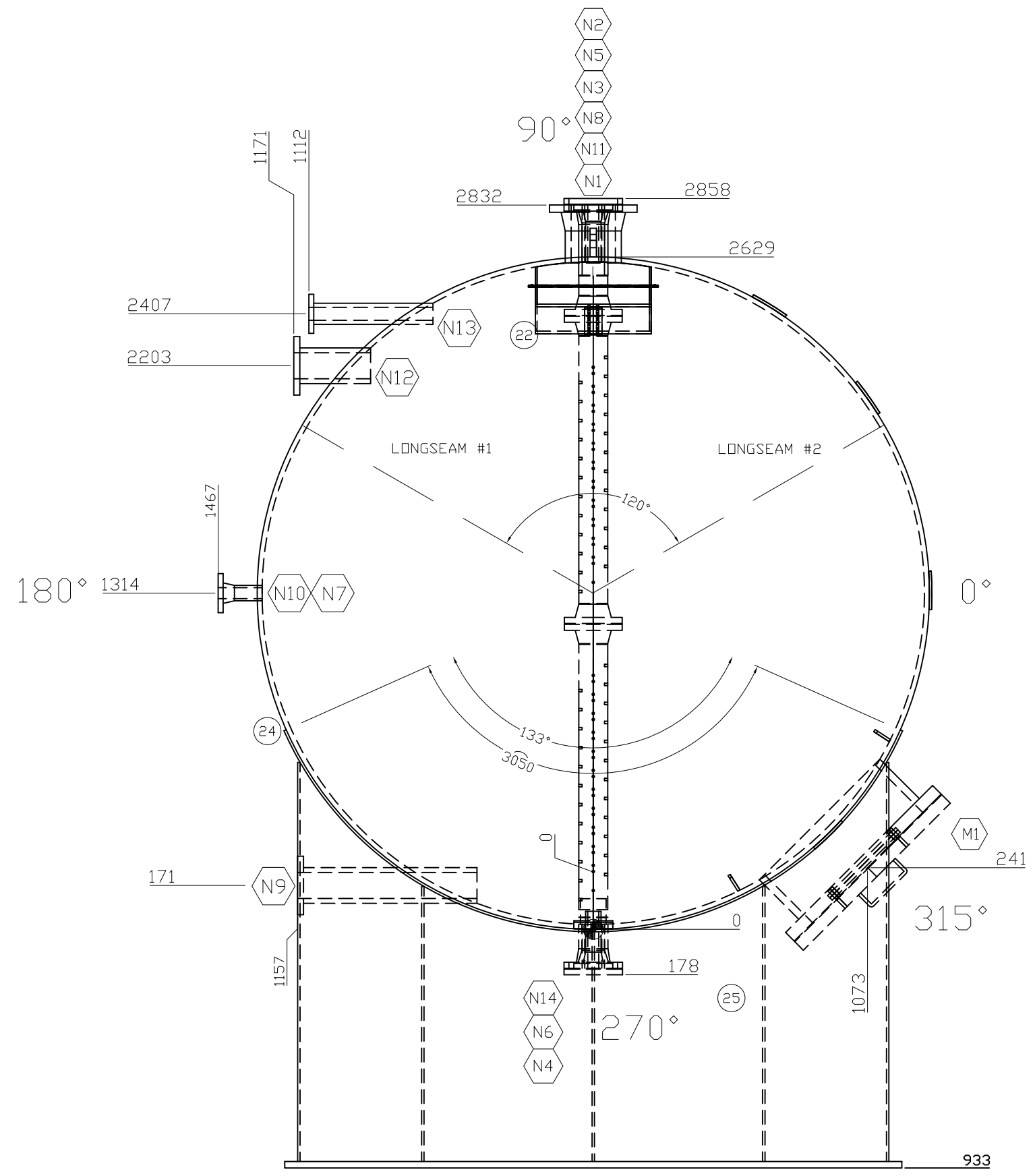
LSD: c-12-B/93-P-9

200661 WASTE LIQUID STORAGE VESSEL V-618

JOB#: ENC-113
DRAWN: AABJ
DATE: 25/01/12

DRAWING NO. PP-98-V-1
REV. 6

VESSEL END VIEW



| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
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| 0 | ISSUED FOR REVIEW | AABJ | 21/10/11 | - | - |
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| 4 | ISSUED FOR APPROVAL | AABJ | 21/12/11 | - | - |
| 5 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |

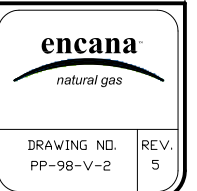
| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
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GENERAL NOTES:

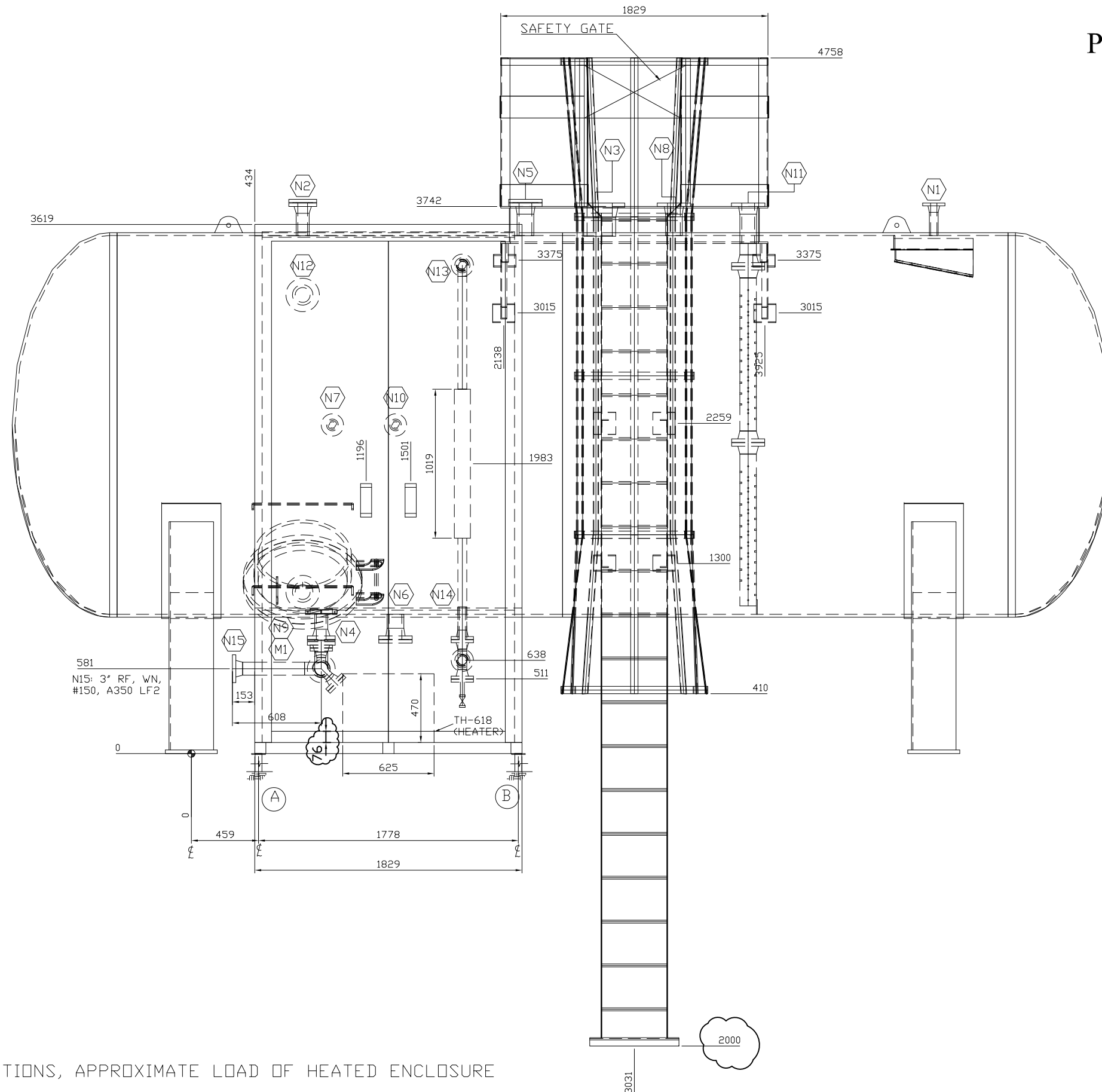


ENCANA CORPORATION
 SWAN COMPRESSOR STATION
 LSD: c-12-B/93-P-9
 200661 WASTE LIQUID STORAGE VESSEL
 V-618

| | | | |
|-------------------|---------|-------|----------|
| PROPIPE VESSEL #: | JOB# | DRAWN | DATE |
| PP-98 | ENC-113 | AABJ | 25/01/12 |



PIPING ELEVATION



(A) (B) HEATED ENCLOSURE SUPPORTS' LOCATIONS, APPROXIMATE LOAD OF HEATED ENCLOSURE
800 lb+ HEATER 152lb

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|-------------------------|------|----------|-----|------|
| 0 | ISSUED FOR REVIEW | AABJ | 27/10/11 | - | - |
| 1 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - |
| 2 | ISSUED FOR APPROVAL | MB | 12/12/11 | - | - |
| 3 | ISSUED FOR APPROVAL | AABJ | 21/12/11 | - | - |
| 4 | ISSUED FOR APPROVAL | AABJ | 10/01/12 | - | - |
| 5 | ISSUED FOR APPROVAL | MB | 21/01/12 | - | - |
| 6 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|-------------------------|----|----------|-----|------|
| 7 | ISSUED FOR CONSTRUCTION | MB | 15/02/12 | - | - |
| 8 | ISSUED FOR CONSTRUCTION | MB | 06/03/12 | - | - |

GENERAL NOTES:



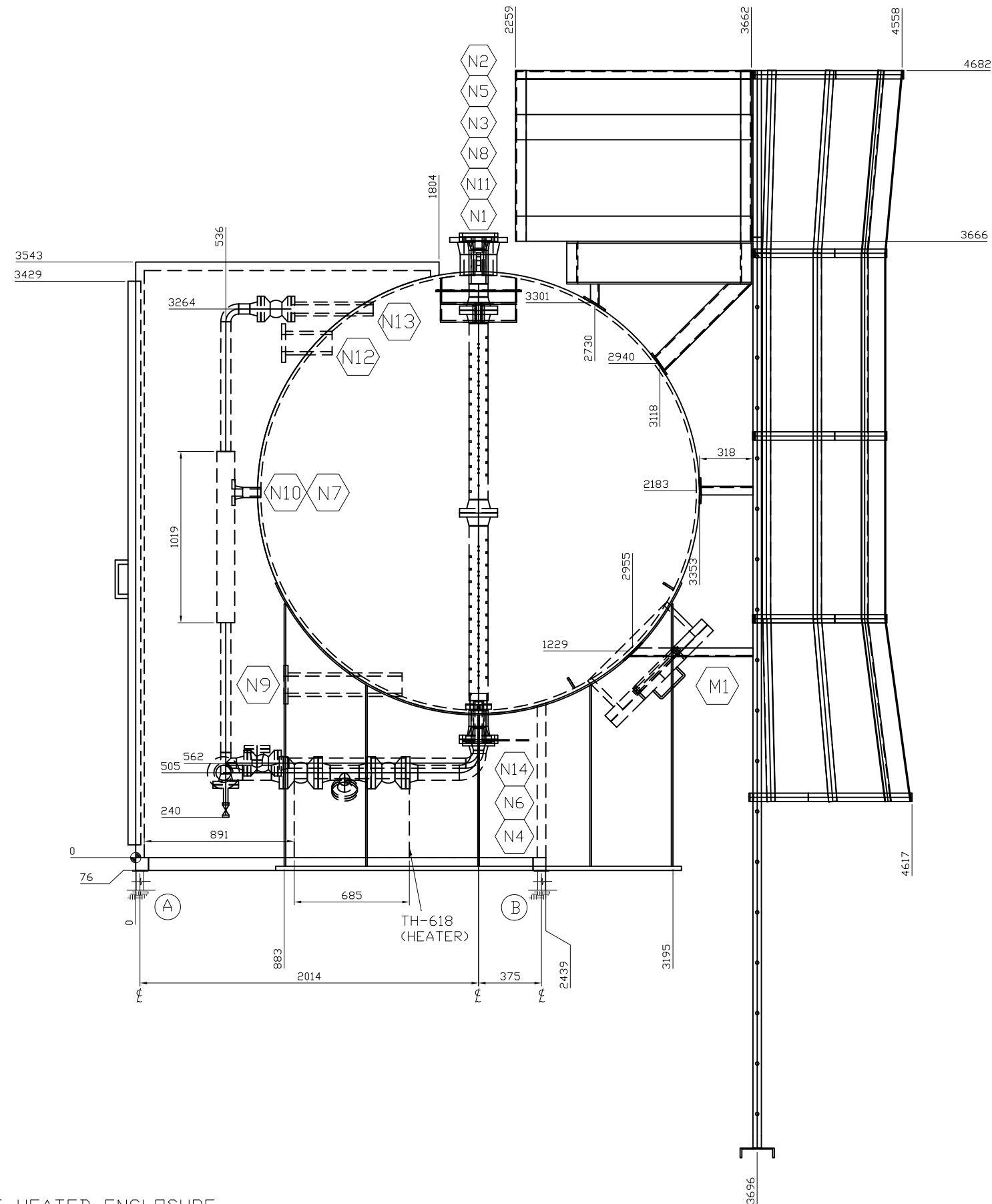
ENCANA CORPORATION
SWAN COMPRESSOR STATION
LSD: c-12-B/93-P-9
200000l WASTE LIQUID STORAGE VESSEL
V-618

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|-------------------|---------|-------|----------|
| PROPIPE VESSEL #: | JOB# | DRAWN | DATE |
| PP-98 | ENC-113 | MB | 06/03/12 |

encana
natural gas

| | |
|-------------|------|
| DRAWING NO. | REV. |
| PP-98-V-3 | 8 |

PIPING END VIEW



THIS DRAWING IS ONLY TO SHOW THE PIPES INSIDE THE HEATED ENCLOSURE.

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|-------------------------|------|----------|-----|------|
| 0 | ISSUED FOR REVIEW | AABJ | 27/10/11 | - | - |
| 1 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - |
| 2 | ISSUED FOR APPROVAL | MB | 12/12/11 | - | - |
| 3 | ISSUED FOR APPROVAL | AABJ | 21/12/11 | - | - |
| 4 | ISSUED FOR APPROVAL | MB | 21/01/12 | - | - |
| 5 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |

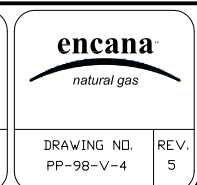
| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
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GENERAL NOTES:

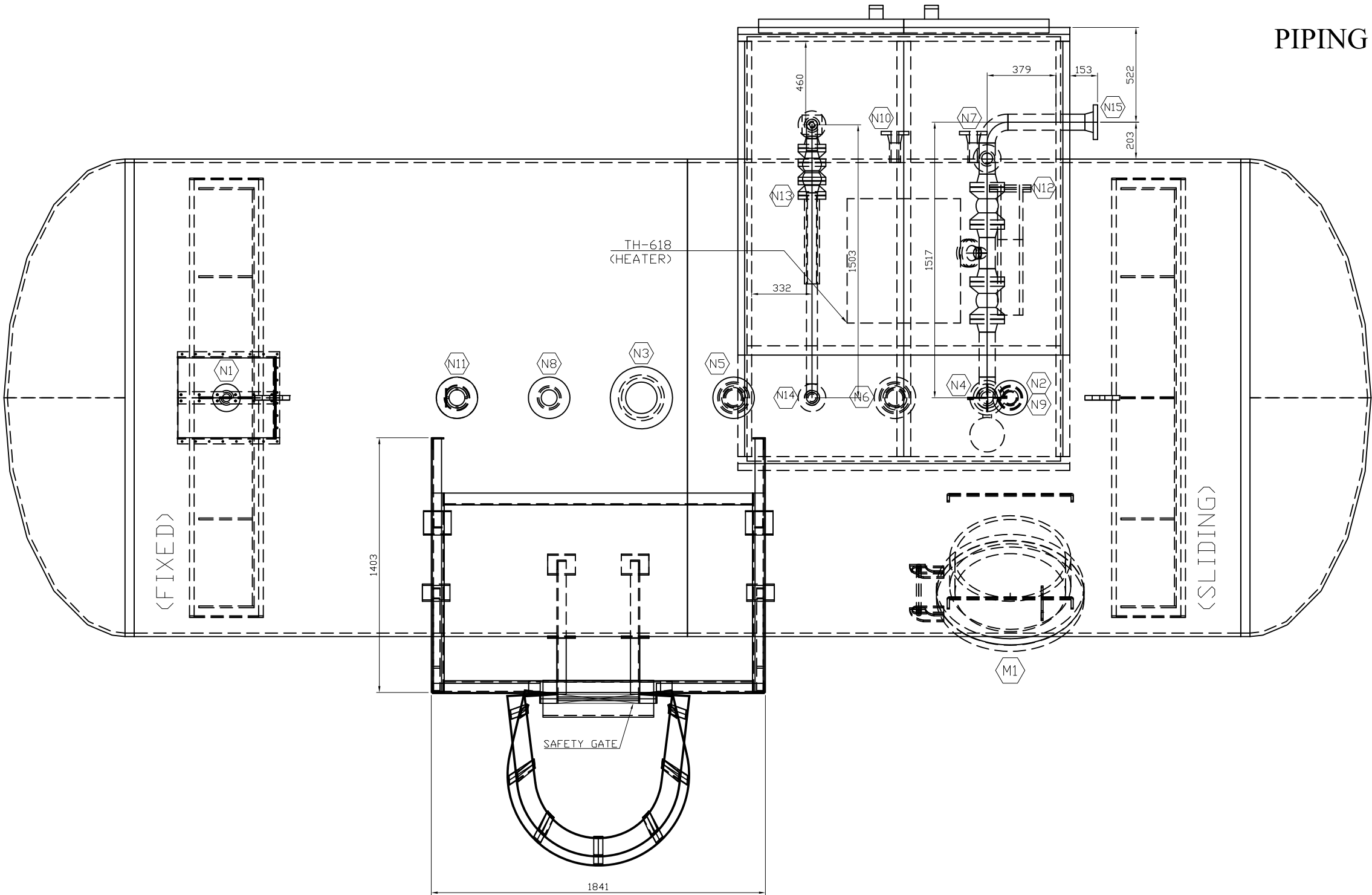


ENCANA CORPORATION
 SWAN COMPRESSOR STATION
 LSD: c-12-B/93-P-9
 200,000-barrel WASTE LIQUID STORAGE VESSEL
 V-618

| | | | |
|-------------------|---------|-------|----------|
| PROPIPE VESSEL #: | JOB# | DRAWN | DATE |
| PP-98 | ENC-113 | MB | 25/01/12 |



PIPING TOP VIEW



THIS DRAWING IS ONLY TO SHOW THE TOP VIEW OF PIPING INSIDE OF THE HEATED ENCLOSURE.

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|-------------------------|------|----------|-----|------|
| 0 | ISSUED FOR REVIEW | AABJ | 27/10/11 | - | - |
| 1 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - |
| 2 | ISSUED FOR APPROVAL | MB | 12/12/11 | - | - |
| 3 | ISSUED FOR APPROVAL | AABJ | 21/12/11 | - | - |
| 4 | ISSUED FOR APPROVAL | MB | 04/01/12 | - | - |
| 5 | ISSUED FOR APPROVAL | MB | 21/01/12 | - | - |
| 6 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
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GENERAL NOTES:



ENCANA CORPORATION
 SWAN COMPRESSOR STATION
 LSD: c-12-B/93-P-9
 200bbbl WASTE LIQUID STORAGE VESSEL
 V-618

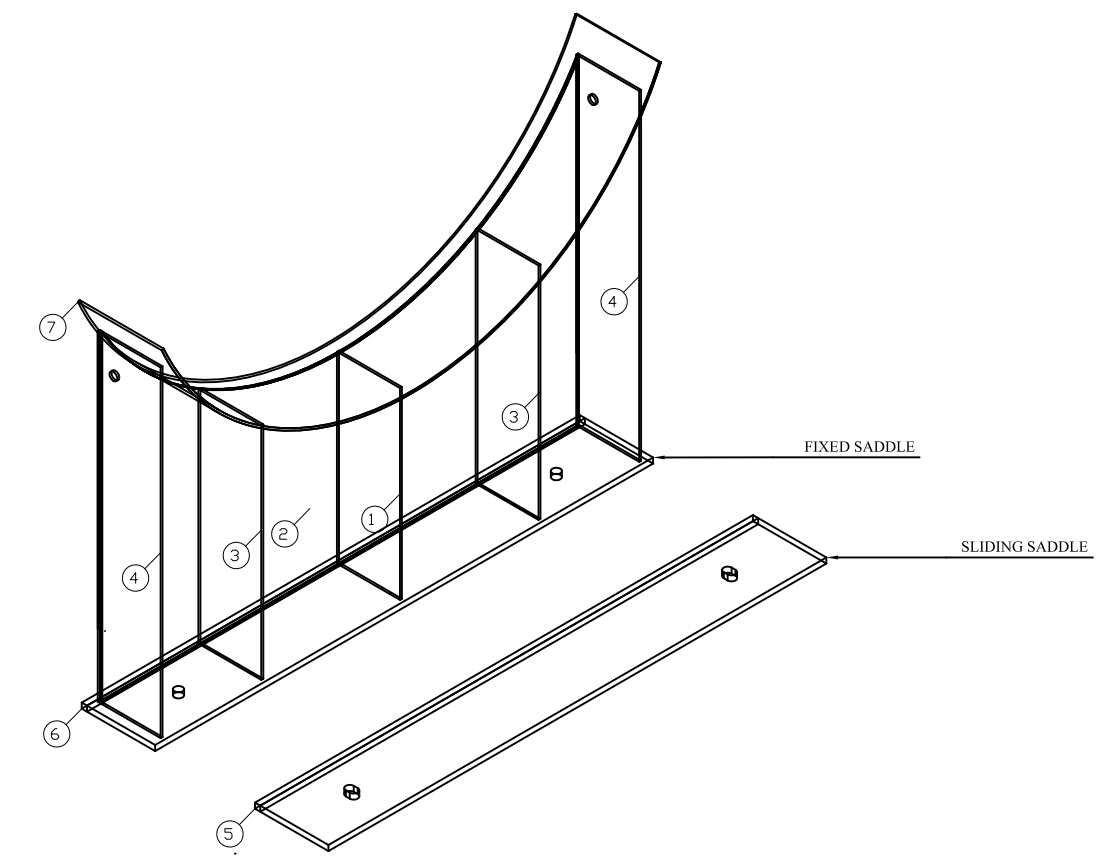
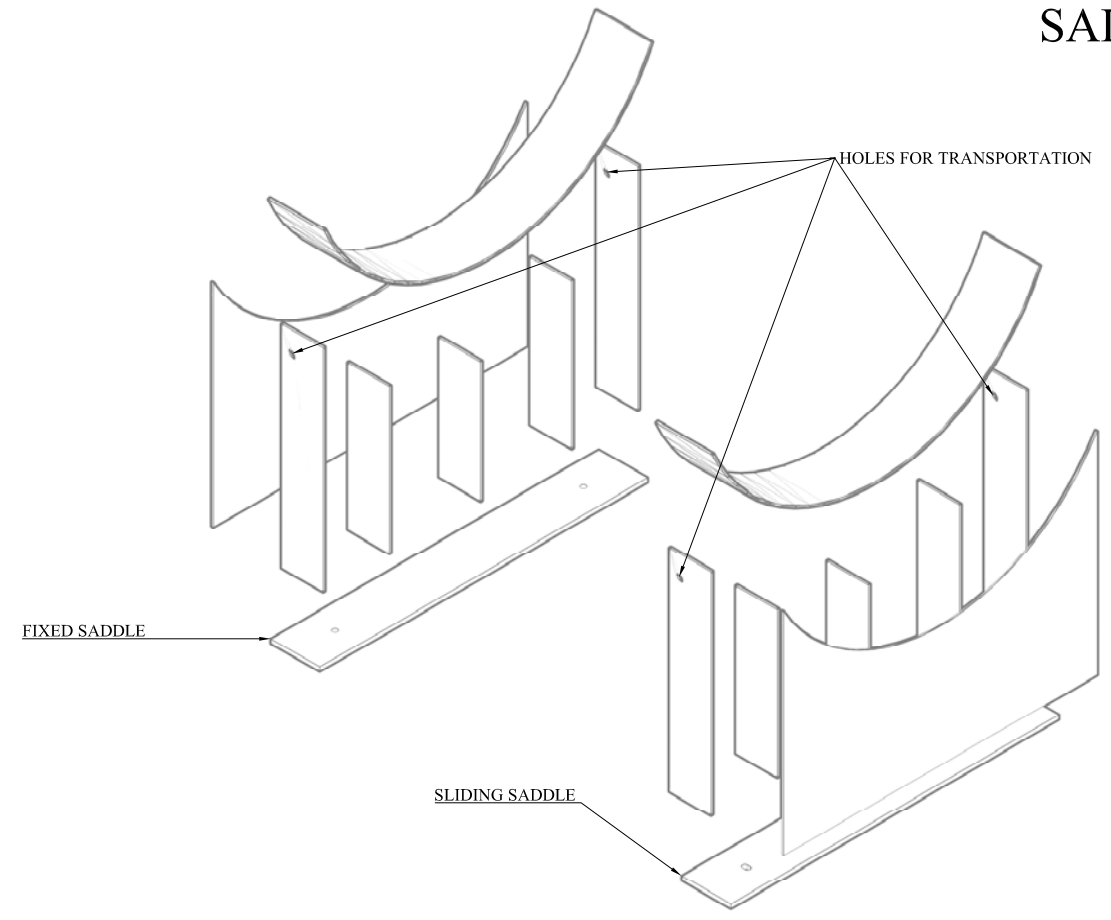
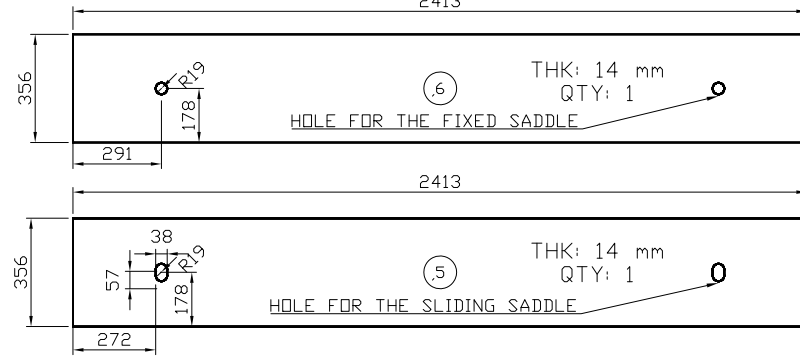
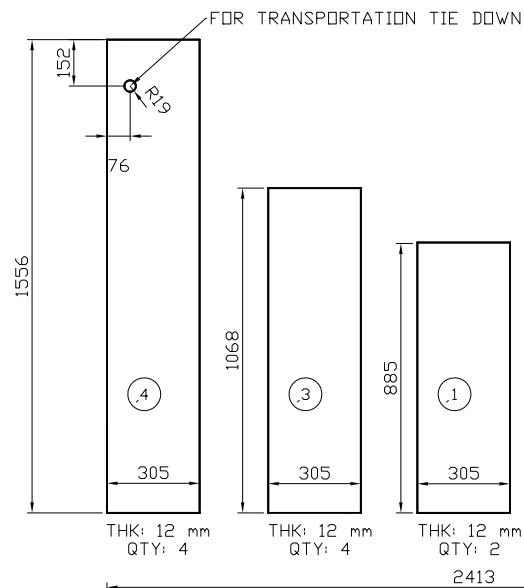
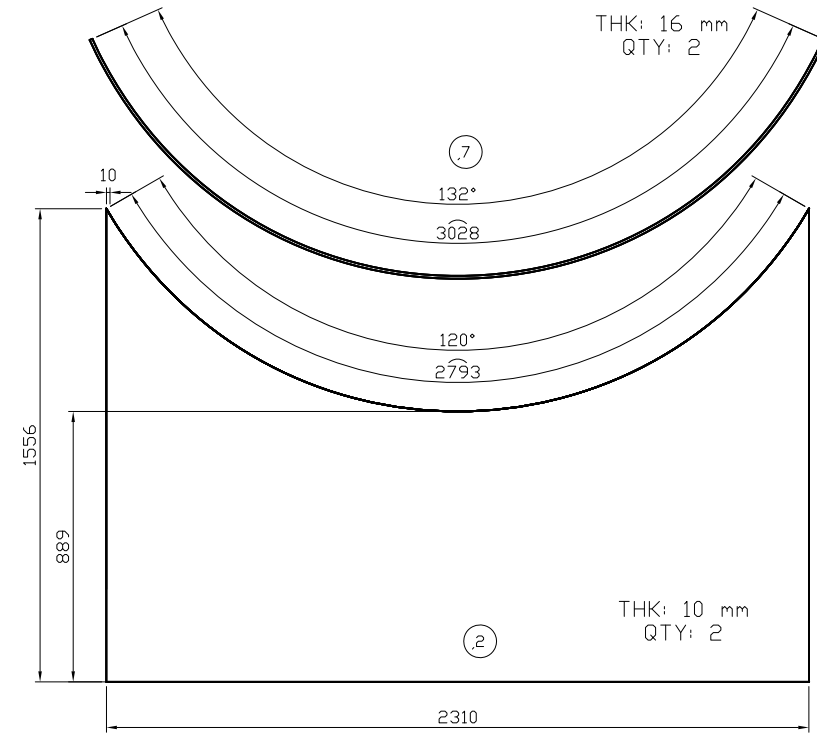


| PROPIPE VESSEL #: | JOB# | DRAWN | DATE |
|-------------------|---------|-------|----------|
| PP-98 | ENC-113 | MB | 25/01/12 |

| DRAWING NO. | REV. |
|-------------|------|
| PP-98-V-5 | 6 |

SADDLE DETAILS

| BILL OF MATERIAL | | |
|------------------|-----|---------------------|
| MARK | QTY | LONG ANNOTATION |
| 1 | 2 | PL-12 X 885 X 305 |
| 2 | 2 | PL-10 X 2310 X 1556 |
| 3 | 4 | PL-12 X 1068 X 305 |
| 4 | 4 | PL-12 X 1556 X 305 |
| 5 | 1 | PL-14 X 2413 X 356 |
| 6 | 1 | PL-14 X 2413 X 356 |
| 7 | 2 | PL-16 X 3028 X 406 |



| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|--|------|----------|-----|------|
| 0 | ISSUED FOR REVIEW | AABJ | 21/10/11 | - | - |
| 1 | ISSUED FOR REVIEW (HEIGHT OF SADDLES INCREASED BY 12" TO ACCOMMODATE PIPING ARRANGEMENT) | AABJ | 27/10/11 | - | - |
| 2 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - |
| 3 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |

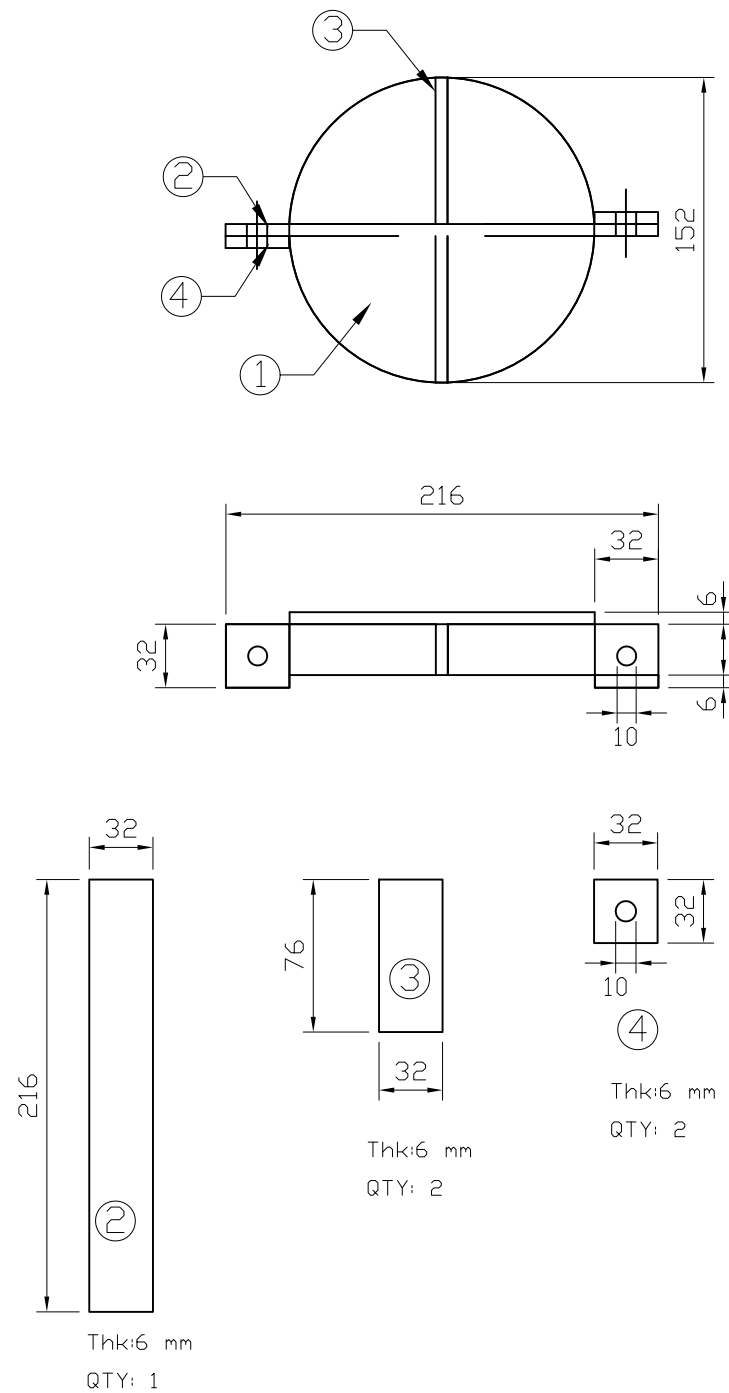
| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|----------------------|----|------|-----|------|
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GENERAL NOTES:

ENCANA CORPORATION
SWAN COMPRESSOR STATION
LSD: c-12-B/93-P-9
200661 WASTE LIQUID STORAGE VESSEL
SADDLE DETAILS (V-618)

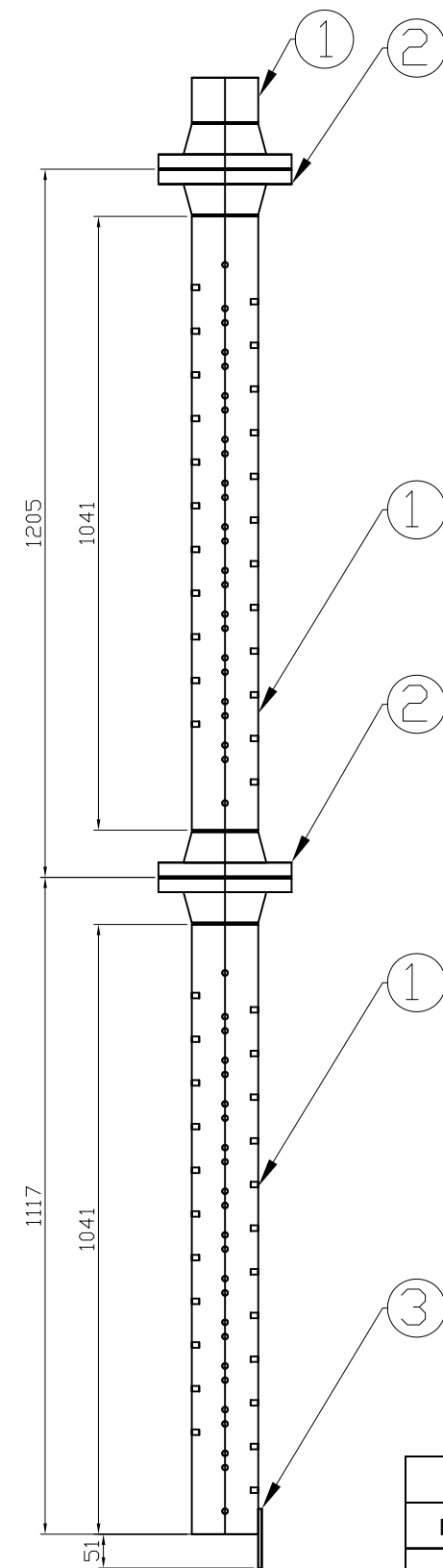
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| PROPIPE VESSEL #: PP-98 | JOB#: ENC-113 | DRAWN: AABJ | DATE: 25/01/12 | DRAWING NO. PP-98-V-SDL | REV. 3 |
|----------------------------|------------------|----------------|-------------------|----------------------------|-----------|

VORTEX BREAKER DETAILS



| VORTEX BREAKER PART LIST | | | |
|--------------------------|--|------------|-----|
| ITEM NO | DESCRIPTION | MATERIAL | QTY |
| 1 | PLATE Dia:6" (152 mm)X 0.25" (6 mm) | SA-516-70N | 1 |
| 2 | PLATE: 8.5" (216 mm)X 1.25" (32 mm) x 0.25" (6 mm) | SA-516-70N | 1 |
| 3 | PLATE: 3" (76 mm)X 1.25" (32 mm) x 0.25" (6 mm) | SA-516-70N | 2 |
| 4 | PLATE: 1.25" (32 mm)X 1.25" (32 mm) x 0.25" (6 mm) | SA-516-70N | 2 |

STILL COLUMN DETAILS



| STILL COLUMN PART LIST | | | |
|------------------------|--|------------|-----------|
| ITEM | DESCRIPTION | MATERIAL | QTY |
| 1 | PIPE 4" SCH 40 | SA106-Gr.B | L=2158 mm |
| 2 | FLANGE:4" WN/RF CL150 SCH40 | SA105 | 4 |
| 3 | PLATE:4" (100 mm)X2"(50 mm)X0.25" (6 mm) | SA516-Gr70 | 1 |

GENERAL NOTES:



ENCANA CORPORATION
SWAN COMPRESSOR STATION
LSD: c-12-B/93-P-9
200bbl WASTE LIQUID STORAGE VESSEL
VORTEX BREAKER & STILL COLUMN DETAILS (V-61B)

| | | | |
|-------------------|---------|-------|----------|
| PROPIPE VESSEL #: | JOB# | DRAWN | DATE |
| PP-98 | ENC-113 | AABJ | 25/01/12 |



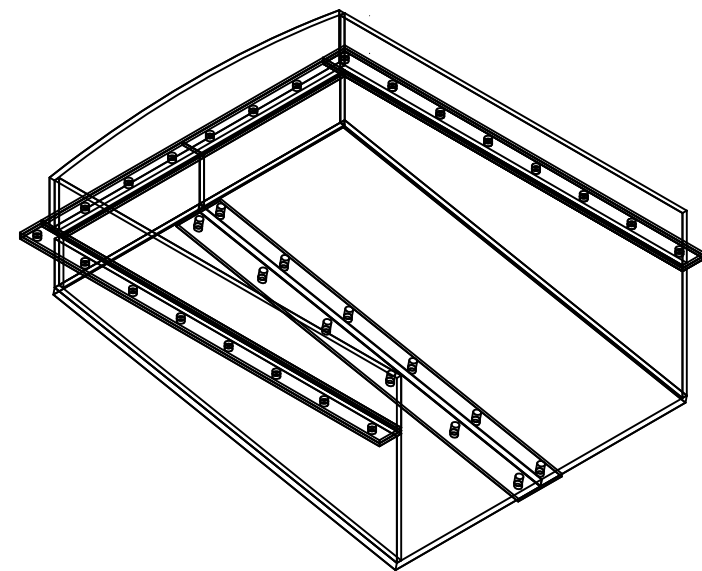
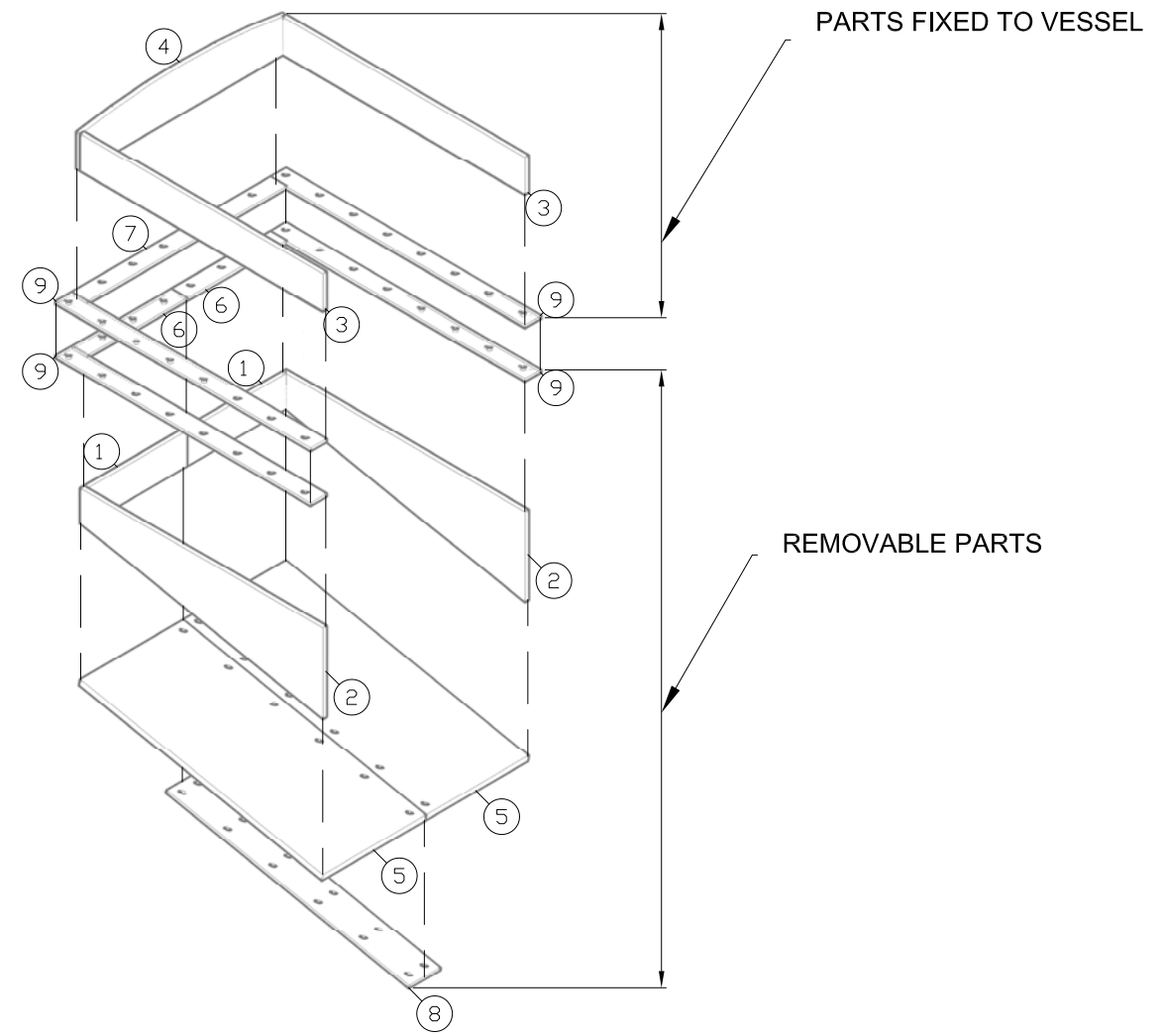
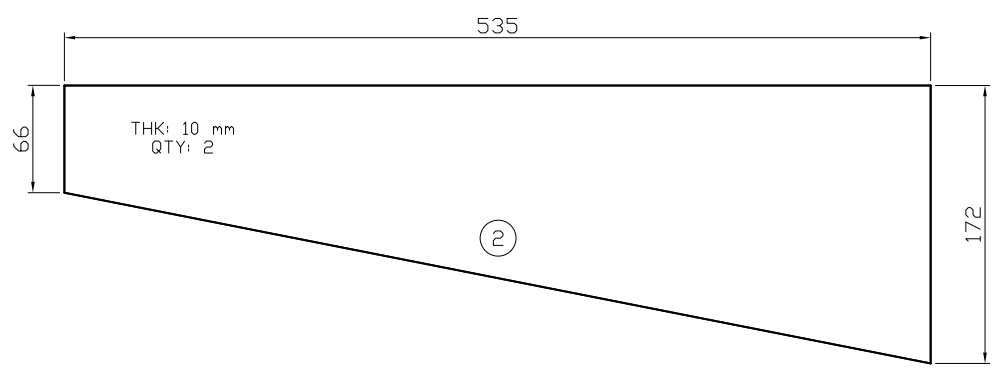
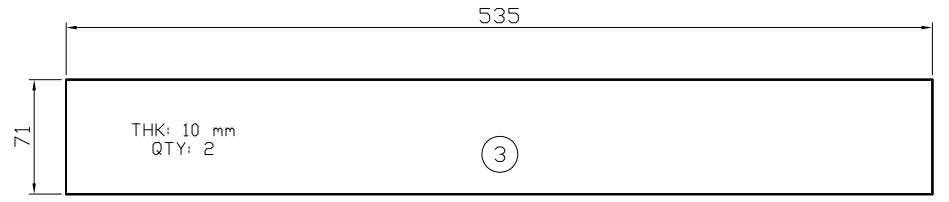
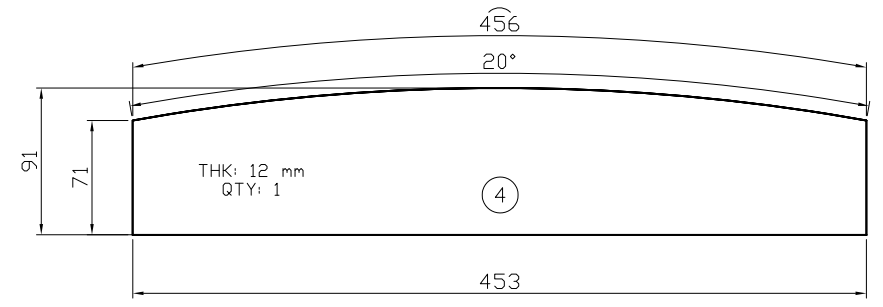
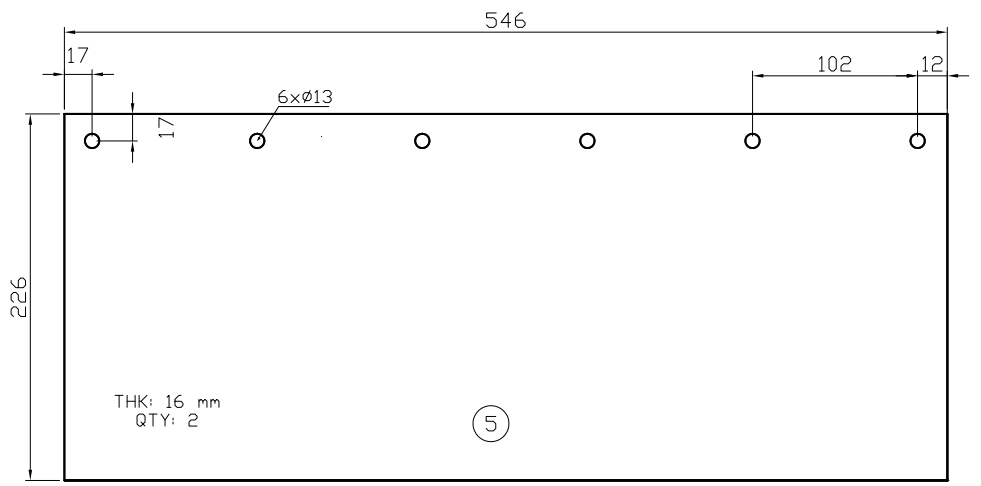
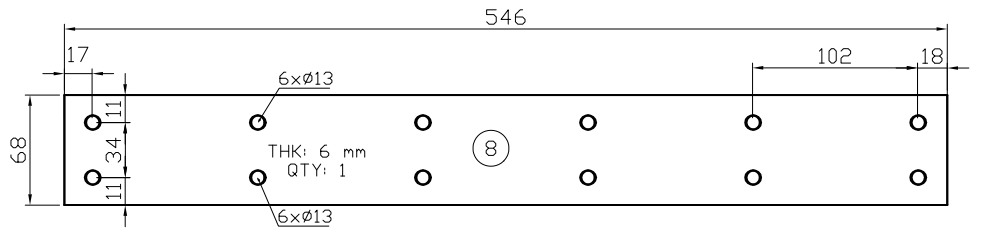
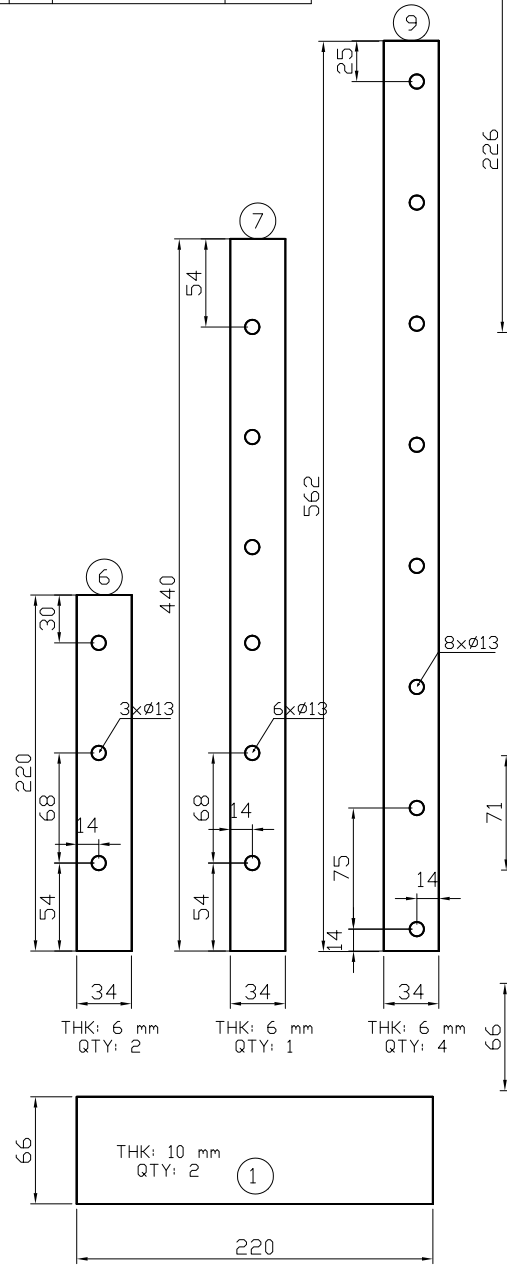
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| DRAWING NO. | REV. |
| PP-98-V-RV&SC | 2 |

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|-------------------------|------|----------|-----|------|
| 0 | ISSUED FOR REVIEW | AABJ | 27/10/11 | - | - |
| 1 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - |
| 2 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|----------------------|----|------|-----|------|
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BILL OF MATERIAL

| MARK | QTY | LONG ANNOTATION | LENGTH |
|------|-----|-------------------|--------|
| 1 | 2 | PL-10 X 220 X 66 | 220 |
| 2 | 2 | PL-10 X 535 X 172 | 535 |
| 3 | 2 | PL-10 X 535 X 71 | 535 |
| 4 | 1 | PL-12 X 453 X 91 | 453 |
| 5 | 2 | PL-16 X 546 X 226 | 546 |
| 6 | 2 | PL-6 X 220 X 34 | 220 |
| 7 | 1 | PL-6 X 440 X 34 | 440 |
| 8 | 1 | PL-6 X 546 X 68 | 546 |
| 9 | 4 | PL-6 X 562 X 34 | 562 |

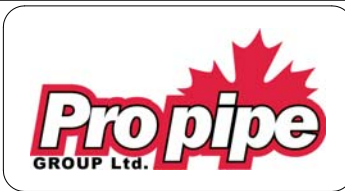


INLET DIVERTER DETAILS

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|-------------------------|------|----------|-----|------|
| 0 | ISSUED FOR REVIEW | AABJ | 27/10/11 | - | - |
| 1 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - |
| 2 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |

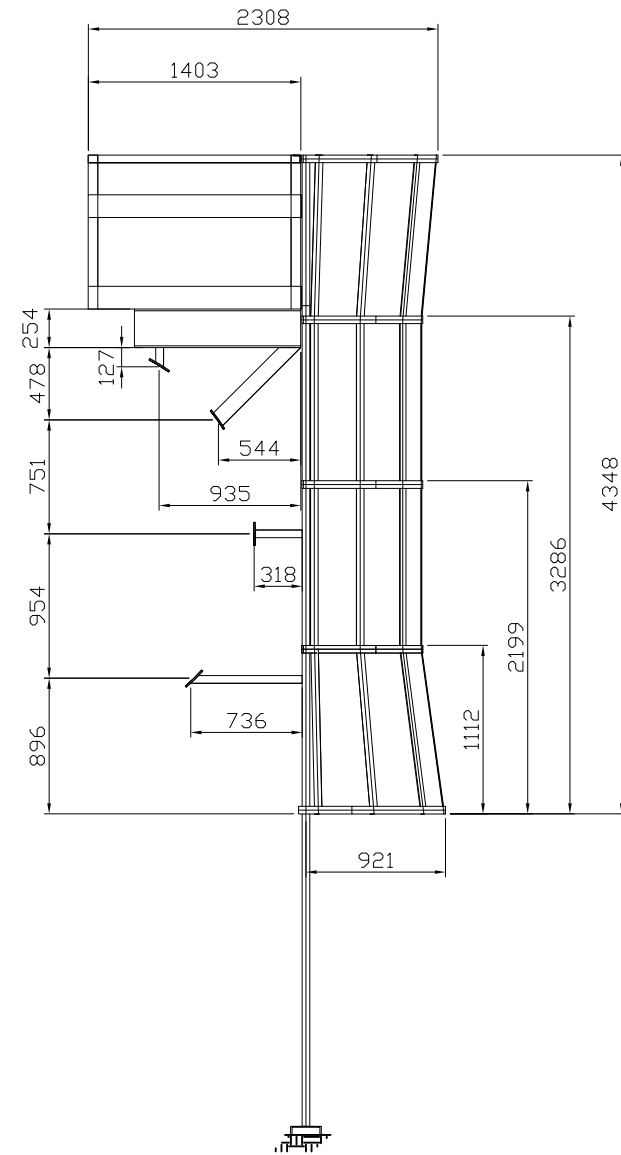
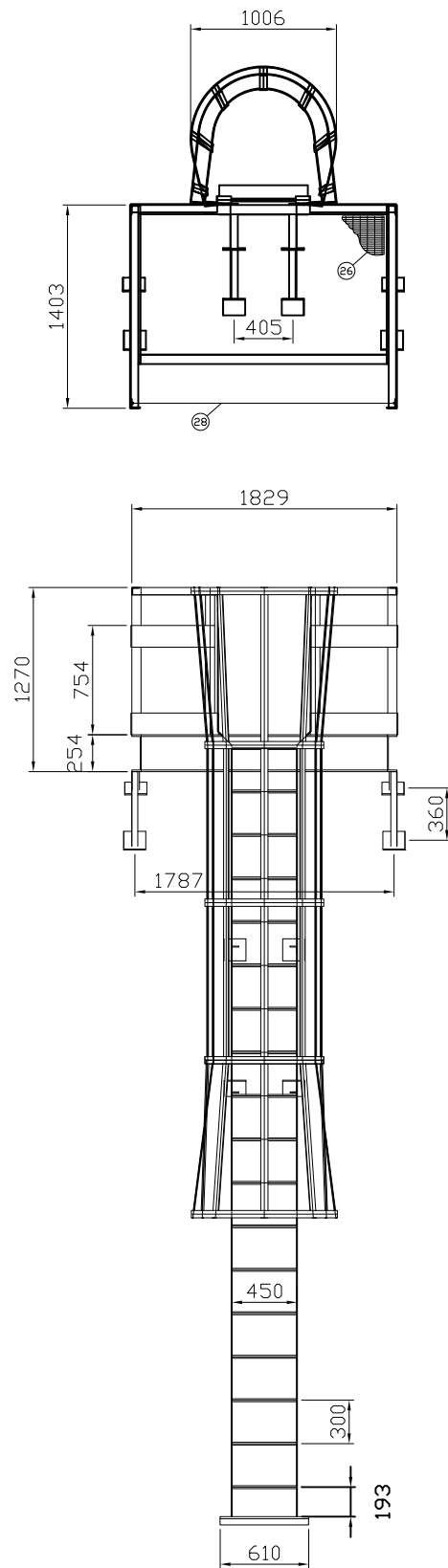
| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
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GENERAL NOTES:

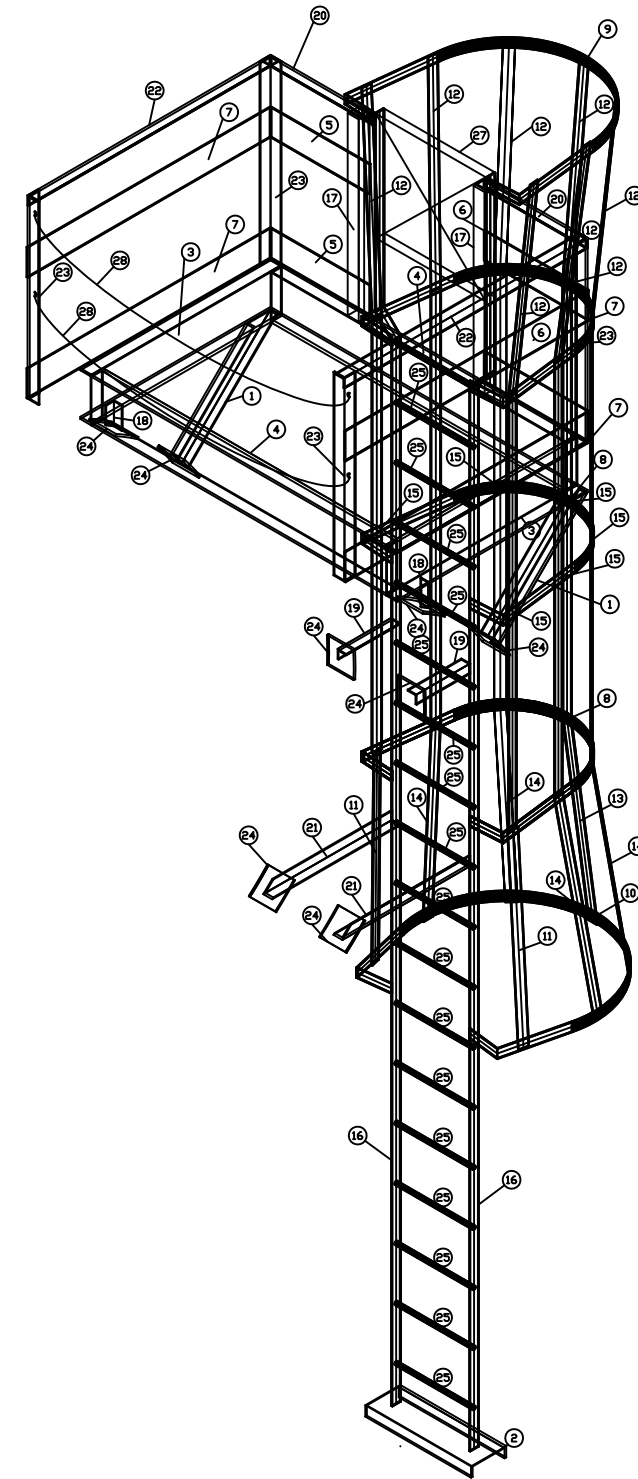


ENCANA CORPORATION
 SWAN COMPRESSOR STATION
 LSD: c-12-B/93-P-9
 200bbl WASTE LIQUID STORAGE VESSEL
 INLET DIVERTER DETAILS (V-618)

| | |
|-------------------|------------|
| | |
| PROPIPE VESSEL #: | PP-98 |
| JOB# | ENC-113 |
| DRAWN | AABJ |
| DATE | 25/01/12 |
| DRAWING NO. | PP-98-V-ID |
| REV. | 2 |



| BILL OF MATERIAL | | | | |
|------------------|-----|--------------------------------|----------------|--------|
| MARK | QTY | LONG ANNOTATION | LENGTH | WEIGHT |
| 1 | 2 | C100X9 | 729 | 12.46 |
| 2 | 1 | C200X17 | 610 | 10.44 |
| 3 | 2 | C250X23 | 1097 | 50.00 |
| 4 | 2 | C250X23 | 1699 | 77.36 |
| 5 | 2 | FB150X6 | 572 | 8.08 |
| 6 | 2 | FB150X6 | 598 | 8.46 |
| 7 | 4 | FB150X6 | 1403 | 39.64 |
| 8 | 3 | FB50x6 | 2329 | 17.70 |
| 9 | 1 | FB50x6 | 2645 | 6.70 |
| 10 | 1 | FB50x6 | 2879 | 7.29 |
| 11 | 2 | FB50x6 | 1088 | 5.51 |
| 12 | 7 | FB50x6 | 1093 | 19.37 |
| 13 | 1 | FB50x6 | 1097 | 2.78 |
| 14 | 4 | FB50x6 | 1100 | 11.12 |
| 15 | 7 | FB50x6 | 2174 | 38.51 |
| 16 | 2 | FB50x6 | 6560 | 33.20 |
| 17 | 2 | HS64X64X6.4 | 1063 | 22.50 |
| 18 | 2 | L51x51x6.4 | 129 | 1.14 |
| 19 | 2 | L51x51x6.4 | 310 | 2.94 |
| 20 | 2 | L51x51x6.4 | 594 | 5.64 |
| 21 | 2 | L51x51x6.4 | 738 | 6.86 |
| 22 | 2 | L51x51x6.4 | 1403 | 13.32 |
| 23 | 4 | L64X64X6.4 | 1016 | 24.44 |
| 24 | 8 | PL-10 X 152 X 152 | 152 | 18.10 |
| 25 | 19 | RB20 | 450 | 19.15 |
| 26 | 1 | SER. BAR GRATING 1 1/4" THK | 1829 X 1403 | 121.98 |
| 27 | 1 | SAFETY GATE | | |
| 28 | 2 | SAFETY CHAIN | | |
| | | | TOTAL WEIGHT: | 584.69 |



PLATFORM & LADDER DETAILS

BASED ON THE GRADE ELEVATION, THE LENGTH OF THE LADDER AND CAGE WILL BE SET UP.

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|-------------------------|------|----------|-----|------|
| 0 | ISSUED FOR REVIEW | AABJ | 27/10/11 | - | - |
| 1 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - |
| 2 | ISSUED FOR APPROVAL | MB | 12/12/11 | - | - |
| 3 | ISSUED FOR APPROVAL | AABJ | 21/12/11 | - | - |
| 4 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |

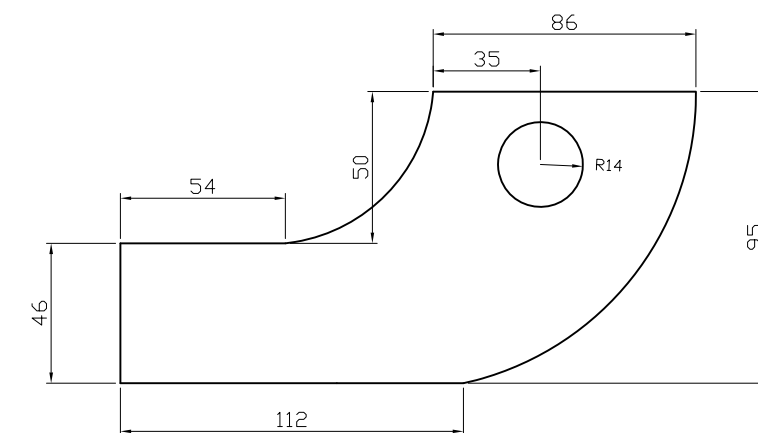
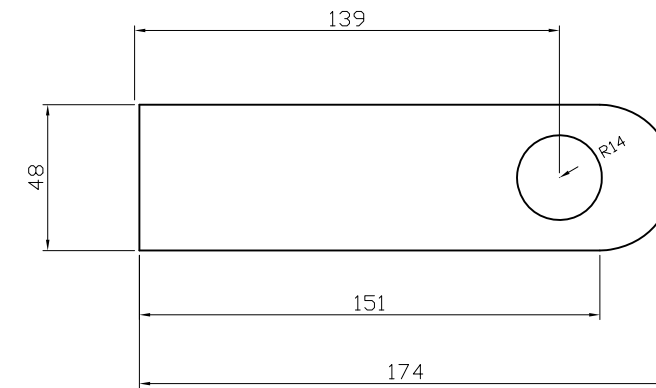
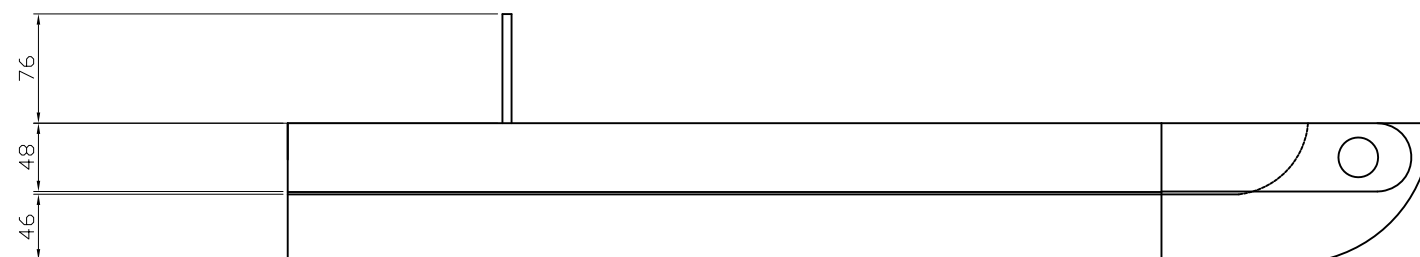
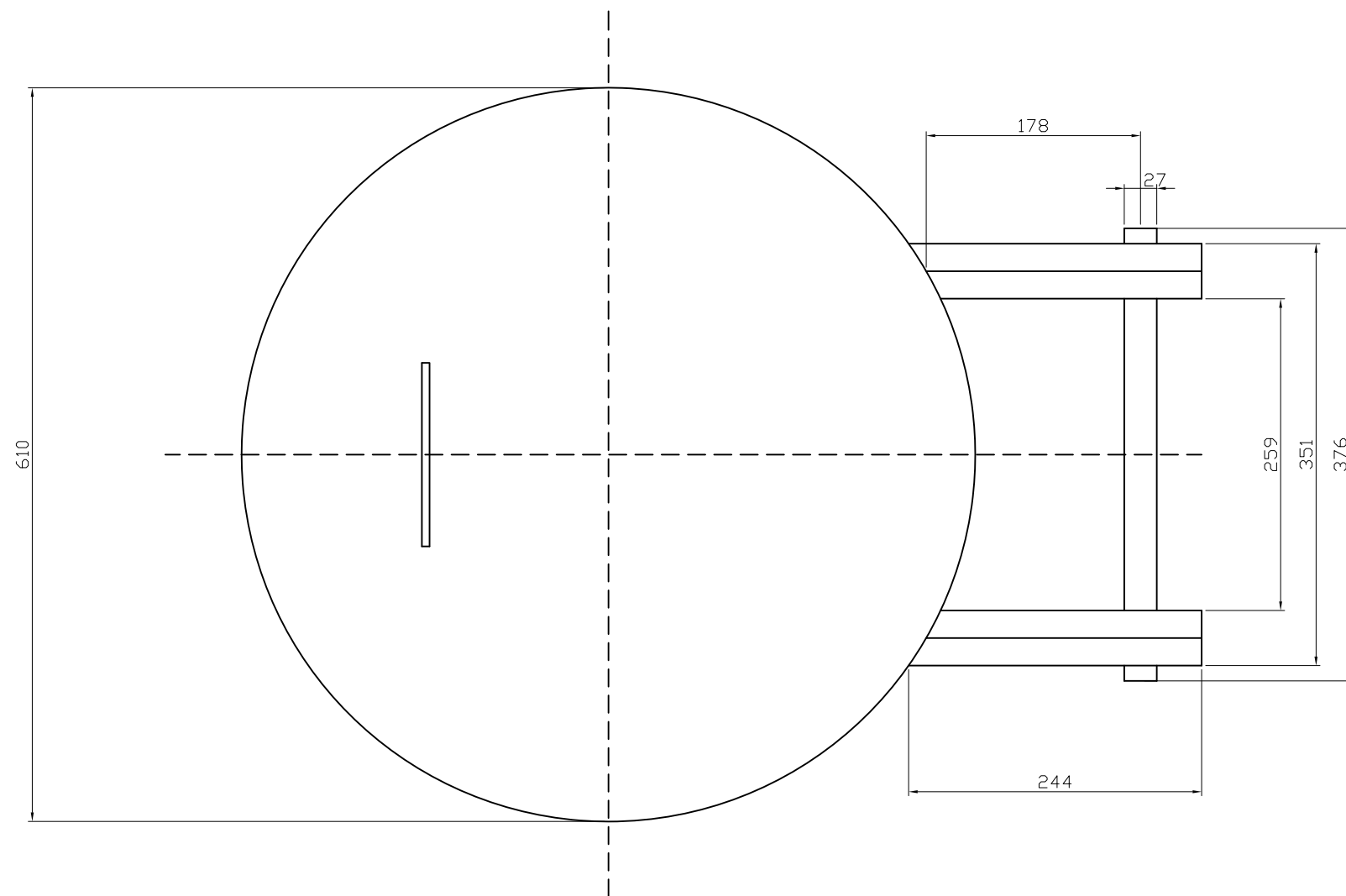
| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
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GENERAL NOTES:



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| ENCANA CORPORATION SWAN COMPRESSOR STATION LSD: c-12-B/93-P-9 | | | |
| 200bb1 WASTE LIQUID STORAGE VESSEL PLATFORM & LADDER DETAILS (V-618) | | | |
| PROPIPE VESSEL # PP-98 | JOB# ENC-113 | DRAWN AABJ | DATE 25/01/12 |

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|----------------------------|-----------|
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| DRAWING NO. PP-98-V-P&L | REV. 4 |



MANWAY HINGE DETAILS

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|-------------------------|------|----------|-----|------|
| 0 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - |
| 1 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |

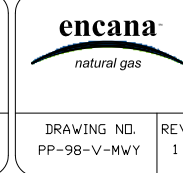
| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
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GENERAL NOTES:

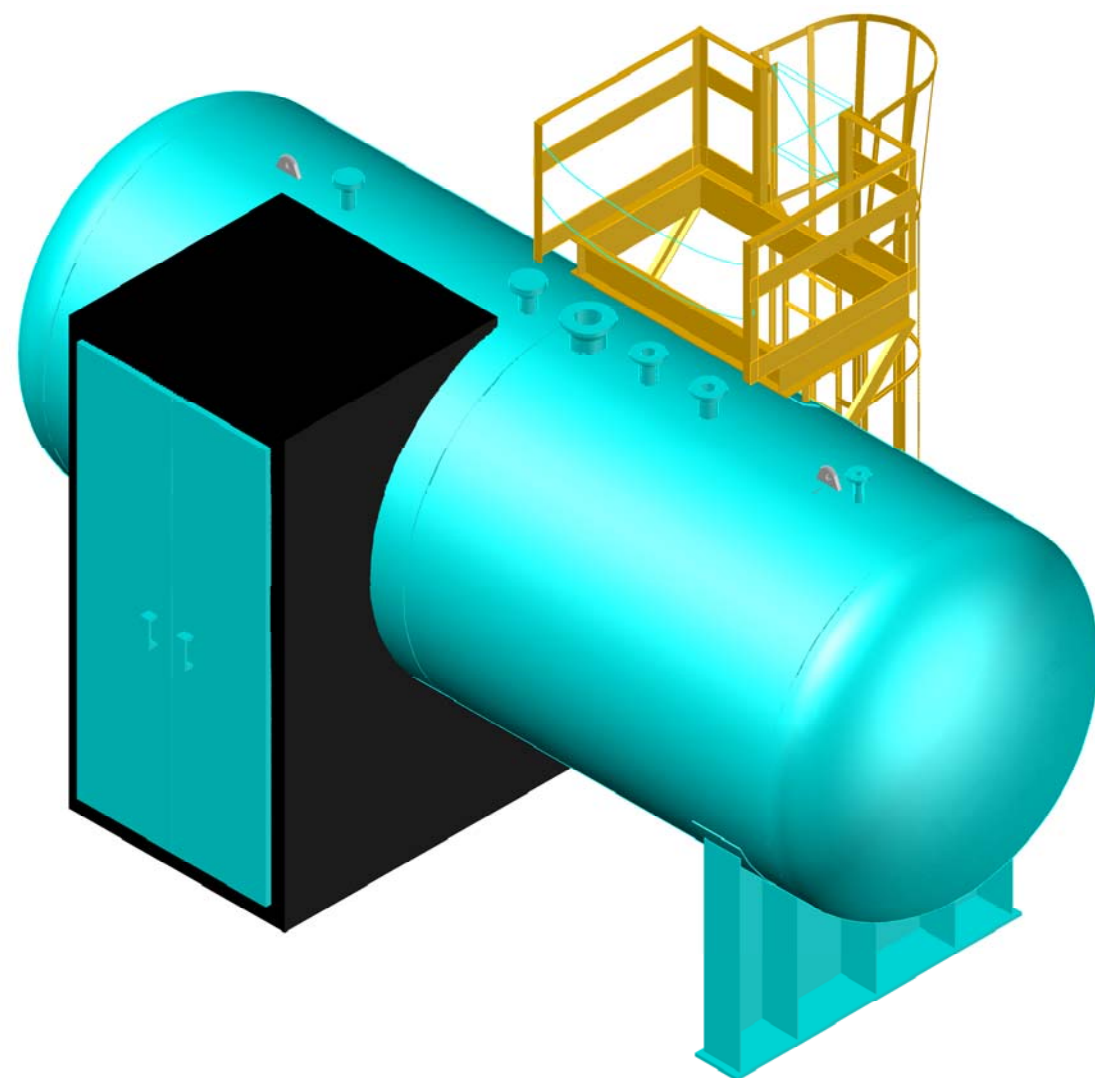
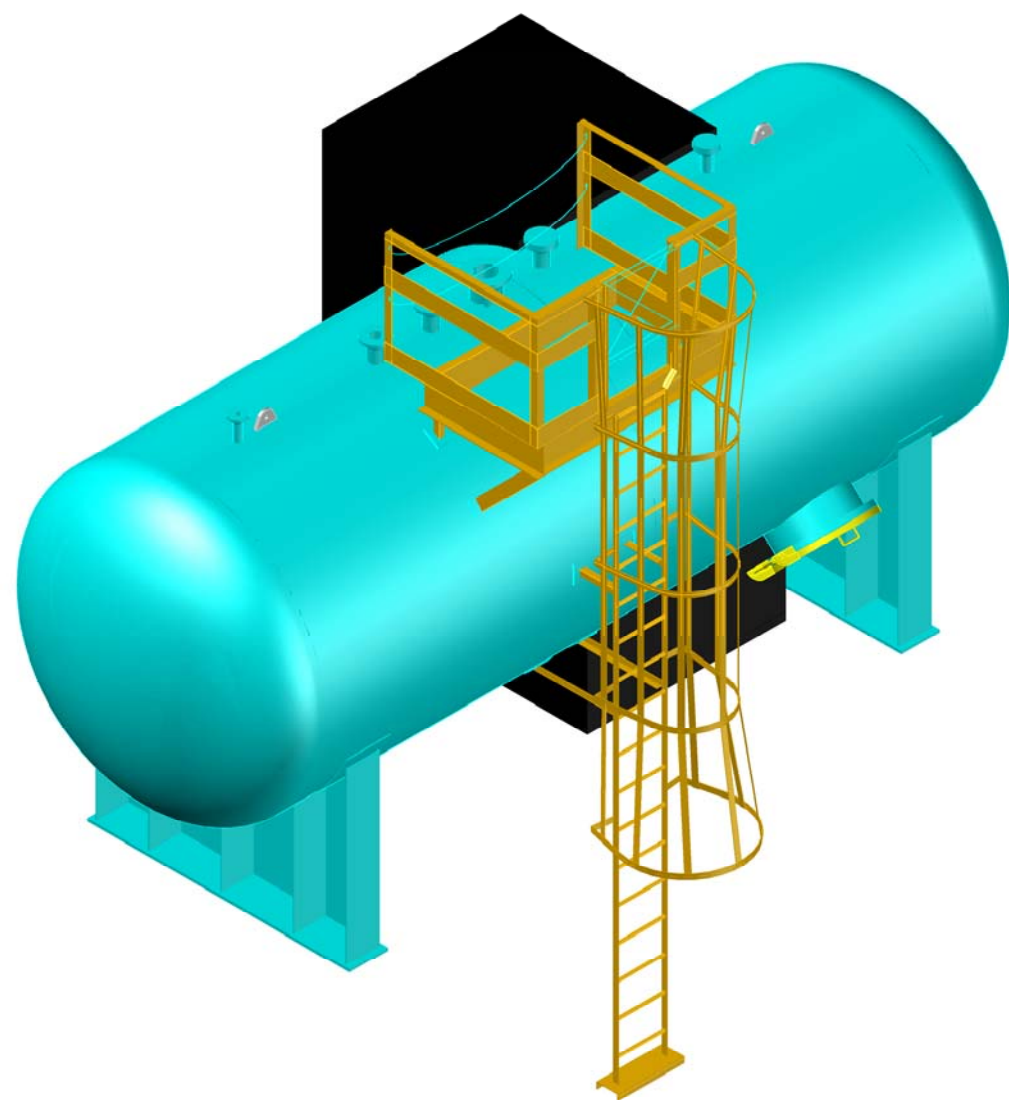


ENCANA CORPORATION
SWAN COMPRESSOR STATION
LSD: c-12-B/93-P-9
200bbl WASTE LIQUID STORAGE VESSEL
MANWAY HINGE DETAIL (V-618)

| | | | |
|-------------------|---------|-------|----------|
| PROPIPE VESSEL #: | JOB# | DRAWN | DATE |
| PP-98 | ENC-113 | AABJ | 25/01/12 |



PERSPECTIVE VIEWS



| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
|-----|-------------------------|------|----------|-----|------|
| 0 | ISSUED FOR REVIEW | AABJ | 27/10/11 | - | - |
| 1 | ISSUED FOR REVIEW | AABJ | 10/11/11 | - | - |
| 2 | ISSUED FOR REVIEW | AABJ | 21/12/11 | - | - |
| 3 | ISSUED FOR CONSTRUCTION | MB | 25/01/12 | - | - |

| REV | REVISION DESCRIPTION | BY | DATE | CHD | APPD |
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GENERAL NOTES:



ENCANA CORPORATION
 SWAN COMPRESSOR STATION
 LSD: c-12-B/93-P-9
 200bbl WASTE LIQUID STORAGE VESSEL
 V-618

| | | | |
|-------------------|---------|-------|----------|
| PROPIPE VESSEL #: | JOB# | DRAWN | DATE |
| PP-98 | ENC-113 | AABJ | 25/01/12 |

