

NEW WATER AND SEWER SYSTEM
RESOLUTE BAY, NUNAVUT
OPERATIONS AND MAINTENANCE MANUAL

PREPARED FOR:
GOVERNMENT OF NUNAVUT
DEPARTMENT OF COMMUNITY & GOVERNMENT SERVICES
P.O. BOX 1000 STATION 700
IQALUIT, NU
X0A 0H0

PREPARED BY:
EXP SERVICES INC.
100-2650 QUEENSVIEW DRIVE
OTTAWA, ON
K2B 8H6

DEPARTMENT OF COMMUNITY & GOVERNMENT SERVICES PROJECT NO. 12012
EXP PROJECT NO. OTT-000206333-A0

SEPTEMBER 2016

Resolute Water Sewer System Rehabilitation

The scope of work included the rehabilitation of the water distribution system and sanitary sewers for the hamlet of Resolute Bay. The work included but was not limited to, removal of existing water mains, sanitary sewers and concrete manholes, installation of new HDPE water mains and sanitary sewers, installation of prefabricated access vaults, replacement of building service connections and provision of temporary water and sewage systems.

ELECTRICAL



SHOP DRAWING REVIEW

Project: Resolute Utilidor Upgrade

Location: Resolute, NU

General Contractor: Tower Arctic.

Engineer: EXP Services Inc.

Signage

Reviewed by: Jesse Mailloux

REVIEWED

By Jesse Mailloux at 2:48 pm, May 20, 2014



SHOP DRAWING REVIEW

Project: Resolute Utilidor Upgrade

Location: Resolute, NU

General Contractor: Tower Arctic.

Engineer: EXP Services Inc.

Electrical equipment for control panels

Reviewed by: Darren Fraser

REVIEWED

By Darren Fraser at 3:14 pm, Apr 10, 2014

Ryfan Kitikmeot Ltd.
Box 297, Kugluktuk, NU X0E 0E0
Email: dfraser@ryfan.ca

- DETAILS ON CONTROL FUSE INFORMATION AND ASSOCIATE FUSE HOLDER
- PROVIDE CONTROL SCHEMATIC W/ CONTROL PANEL
- PROVIDE DETAILS ON KEY SWITCH ISOLATION WITH PILOT LIGHT FOR CIRCULATING PUMPS AS PER C-331 DETAIL 3

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CHRIS MARCON, CET.

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
|--|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| | ✓ | ✓ |
| MAY 4, 2014 | | |
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Alarm Silence Push Button

REVIEWED

By Darren Fraser at 3:18 pm, Apr 10, 2014

Product: 800T-A2D1

Description: 800T Momentary Contact, Non-Illuminated

ASSEMBLY

Factory or User Assembled?

Factory Assembled

PUSH BUTTON DATA

Hazardous Location

No

Finger Safe Guards

No Guards

Operator Type

Flush Head

Cap/Button Color

Black

Special Mushroom Head

No Special Head

Block Type

Standard

Contact Blocks

1 N.O.

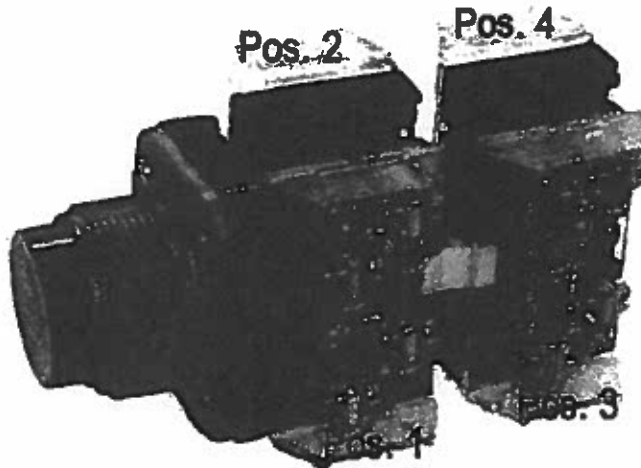
CERTIFICATIONS AND APPROVALS

UL

Listed E14840, E10314; Guide #NCR, NOIV

CSA

LR1234, LR11924, 22.2 #14



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PUSH BUTTON DEVICES

MOMENTARY CONTACT PUSH BUTTONS, NON-ILLUMINATED

| CONTACT CONFIGURATION | COLOR | TYPE 1 (METAL) (800T) | TYPE 2 (METAL) (800T) | TYPE 3 (PLASTIC) (800H) | TYPE 4 (PLASTIC) (800H) |
|-----------------------|-------|-----------------------|-----------------------|-------------------------|-------------------------|
| | | FLUSH HEAD | EXTENDED HEAD | BOOTLESS FLUSH HEAD | BOOTED |
| 1 N.O. | ● | 800T-A1D1 | 800T-B1D1 | 800H-AR1D1 | 800H-R1D1 |
| | ● | 800T-A2D1 | 800T-B2D1 | 800H-AR2D1 | 800H-R2D1 |
| | ● | 800T-A6D1 | 800T-B6D1 | 800H-AR6D1 | 800H-R6D1 |
| 1 N.C. | ● | 800T-A1D2 | 800T-B1D2 | 800H-AR1D2 | 800H-R1D2 |
| | ● | 800T-A2D2 | 800T-B2D2 | 800H-AR2D2 | 800H-R2D2 |
| | ● | 800T-A6D2 | 800T-B6D2 | 800H-AR6D2 | 800H-R6D2 |
| 1 N.O. - 1 N.C. | ● | 800T-A1A | 800T-B1A | 800H-AR1A | 800H-R1A |
| | ● | 800T-A2A | 800T-B2A | 800H-AR2A | 800H-R2A |
| | ● | 800T-A6A | 800T-B6A | 800H-AR6A | 800H-R6A |

MOMENTARY CONTACT PUSH BUTTONS, NON-ILLUMINATED WITH 2 COLOR MOLDED LEGEND CAP

| CONTACT CONFIGURATION | BUTTON COLOR | LEGEND COLOR | LEGEND | HEAD TYPE | TYPE 1 (METAL) (800T) | TYPE 2 (METAL) (800T) |
|-----------------------|--------------|--------------|---------|-----------|-----------------------|-----------------------|
| | | | | | FLUSH | EXTENDED |
| 1 N.O. - 1 N.C. | ● | ○ | START | FLUSH | 800T-A103WA | 800H-AR103WA |
| | ● | ○ | STOP | EXTENDED | 800T-B604WA | 800H-BR604WA |
| 1 N.O. - 1 N.C. | ● | ○ | I | FLUSH | 800T-A101WA | 800H-AR101WA |
| | ● | ○ | O | EXTENDED | 800T-B602WA | 800H-BR602WA |
| 1 N.O. - 1 N.C. | ● | ○ | FORWARD | FLUSH | 800T-A210WA | 800H-AR210WA |
| | ● | ○ | REVERSE | FLUSH | 800T-A210WA | 800H-AR210WA |
| | ● | ○ | JOG | FLUSH | 800T-A212WA | 800H-AR212WA |
| | ● | ○ | UP | FLUSH | 800T-A213WA | 800H-AR213WA |
| | ● | ○ | DOWN | FLUSH | 800T-A214WA | 800H-AR214WA |
| | ● | ○ | R | FLUSH | 800T-A711WA | 800H-AR711WA |

MOMENTARY CONTACT PUSH BUTTONS, ILLUMINATED

| TYPE | COLOR | TYPE 1 (METAL) (800T) | TYPE 2 (METAL) (800T) | TYPE 3 (PLASTIC) (800H) | TYPE 4 (PLASTIC) (800H) |
|---------------------|-------|-----------------------------|--------------------------|-----------------------------|--------------------------|
| | | EXTENDED HEAD WITHOUT GUARD | EXTENDED HEAD WITH GUARD | EXTENDED HEAD WITHOUT GUARD | EXTENDED HEAD WITH GUARD |
| • UNIVERSAL LED | ● | 800T-QBH2R | 800T-QAH2R | 800H-QRBH2R | 800H-QRAH2R |
| | ● | 800T-QBH2G | 800T-QAH2G | 800H-QRBH2G | 800H-QRAH2G |
| | ● | 800T-QBH2A | 800T-QAH2A | 800H-QRBH2A | 800H-QRAH2A |
| • TRANSFORMER | ● | 800T-PBH16R | 800T-PAH16R | 800H-PRBH16R | 800H-PRAH16R |
| | ● | 800T-PBH16G | 800T-PAH16G | 800H-PRBH16G | 800H-PRAH16G |
| | ● | 800T-PBH16A | 800T-PAH16A | 800H-PRBH16A | 800H-PRAH16A |
| • LED | ● | 800T-PBH16R | 800T-PAH16R | 800H-PRBH16R | 800H-PRAH16R |
| | ● | 800T-PBH16G | 800T-PAH16G | 800H-PRBH16G | 800H-PRAH16G |
| • 120V AC, 50/60 HZ | ● | 800T-PBH16A | 800T-PAH16A | 800H-PRBH16A | 800H-PRAH16A |
| | ● | 800T-PBH16G | 800T-PAH16G | 800H-PRBH16G | 800H-PRAH16G |
| • 1 N.O. - 1 N.C. | ● | 800T-PBH16R | 800T-PAH16R | 800H-PRBH16R | 800H-PRAH16R |
| | ● | 800T-PBH16G | 800T-PAH16G | 800H-PRBH16G | 800H-PRAH16G |

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CHRIS MARCON, CET.

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
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| Reviewed ✓ | Reviewed with Comments | Resubmit See Comments |
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Panel Reset Push Button

REVIEWED

By Darren Fraser at 3:18 pm, Apr 10, 2014

Product: 800T-A2D2

Description: 800T Momentary Contact, Non-Illuminated

ASSEMBLY

Factory or User Assembled?

Factory Assembled

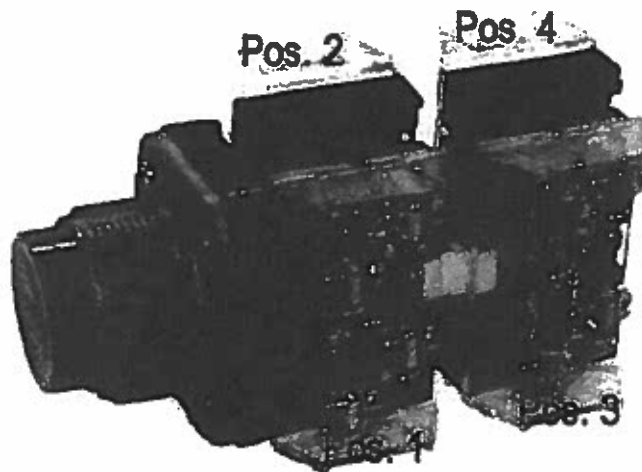
PUSH BUTTON DATA

| | |
|-----------------------|-----------------|
| Hazardous Location | No |
| Finger Safe Guards | No Guards |
| Operator Type | Flush Head |
| Cap/Button Color | Black |
| Special Mushroom Head | No Special Head |
| Block Type | Standard |
| Contact Blocks | 1 N.C. |


CERTIFICATIONS AND APPROVALS

UL
CSA

Listed E14840, E10314; Guide #NRCR, NOIV
LR1234, LR11924, 22.2 #14



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



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PUSH BUTTON DEVICES

MOMENTARY CONTACT PUSH BUTTONS, NON-ILLUMINATED

| CONTACT CONFIGURATION | COLOR | TYPE 411X METAL (800T) | | TYPE 400/13 PLASTIC (800H) | |
|-----------------------|-------|------------------------|---------------|----------------------------|-----------|
| | | FLUSH HEAD | EXTENDED HEAD | BOOTLESS FLUSH HEAD | BOOTED |
| 1 N.O. | ● | 800T-A1D1 | 800T-B1D1 | 800H-AR1D1 | 800H-R1D1 |
| | ● | 800T-A2D1 | 800T-B2D1 | 800H-AR2D1 | 800H-R2D1 |
| | ● | 800T-A6D1 | 800T-B6D1 | 800H-AR6D1 | 800H-R6D1 |
| 1 N.C. | ● | 800T-A1D2 | 800T-B1D2 | 800H-AR1D2 | 800H-R1D2 |
| | ● | 800T-A2D2 | 800T-B2D2 | 800H-AR2D2 | 800H-R2D2 |
| | ● | 800T-A6D2 | 800T-B6D2 | 800H-AR6D2 | 800H-R6D2 |
| 1 N.O. - 1 N.C. | ● | 800T-A1A | 800T-B1A | 800H-AR1A | 800H-R1A |
| | ● | 800T-A2A | 800T-B2A | 800H-AR2A | 800H-R2A |
| | ● | 800T-A6A | 800T-B6A | 800H-AR6A | 800H-R6A |


MOMENTARY CONTACT PUSH BUTTONS, NON-ILLUMINATED WITH 2-COLOR MOLDED LEGEND CAP

| CONTACT CONFIGURATION | BUTTON COLOR | LEGEND COLOR | LEGEND | HEAD TYPE | TYPE 411X METAL (800T) | | TYPE 400/13 PLASTIC (800H) | |
|-----------------------|--------------|--------------|---------|-----------|--|--|---|--|
| | | | | | | | | |
| 1 N.O. - 1 N.C. | ● | ○ | START | FLUSH |  | |  | |
| | ● | ○ | STOP | EXTENDED | | | | |
| 1 N.O. - 1 N.C. | ● | ○ | I | FLUSH |  | |  | |
| | ● | ○ | O | EXTENDED | | | | |
| 1 N.O. - 1 N.C. | ● | ○ | FORWARD | FLUSH |  | |  | |
| | ● | ○ | REVERSE | FLUSH | | | | |
| | ● | ○ | JOG | FLUSH | | | | |
| | ● | ○ | UP | FLUSH | | | | |
| | ● | ○ | DOWN | FLUSH | | | | |
| | ● | ○ | R | FLUSH | | | | |

MOMENTARY CONTACT PUSH BUTTONS, ILLUMINATED

| TYPE | COLOR | TYPE 411X METAL (800T) | | TYPE 400/13 PLASTIC (800H) | |
|--|-------|-----------------------------|--------------------------|-----------------------------|--------------------------|
| | | EXTENDED HEAD WITHOUT GUARD | EXTENDED HEAD WITH GUARD | EXTENDED HEAD WITHOUT GUARD | EXTENDED HEAD WITH GUARD |
| • UNIVERSAL LED • 12-130V AC/DC • 1 N.O. - 1 N.C. | ● | 800T-QBH2R | 800T-QAH2R | 800H-QRBH2R | 800H-QRAH2R |
| | ● | 800T-QBH2G | 800T-QAH2G | 800H-QRBH2G | 800H-QRAH2G |
| | ■ | 800T-QBH2A | 800T-QAH2A | 800H-QRBH2A | 800H-QRAH2A |
| • TRANSFORMER • LED • 120V AC, 50/60 HZ • 1 N.O. - 1 N.C. | ● | 800T-PBH16R | 800T-PAH16R | 800H-PRBH16R | 800H-PRAH16R |
| | ● | 800T-PBH16G | 800T-PAH16G | 800H-PRBH16G | 800H-PRAH16G |
| | ● | 800T-PBH16A | 800T-PAH16A | 800H-PRBH16A | 800H-PRAH16A |

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CHRIS MARCON, CET.

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
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| Reviewed ✓ | Reviewed with Comments | Resubmit See Comments |
|  MAY 4, 2014 | | |
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Flow "Push to Test" Green Pilot Light

REVIEWED

By Darren Fraser at 3:18 pm, Apr 10, 2014

Product: 800T-QT10G

Description: 800T Standard, Push-To-Test, Dual Input

ASSEMBLY

Factory or User Assembled?

Factory Assembled

PUSH BUTTON DATA

Hazardous Location

No

Finger Safe Guards

No Guards

Power Module Type

Full Voltage

Lamp Test Options

Push-to-Test

Illumination Options

Incandescent

Voltage

120V AC

Lens Color

Green

Block Type

Standard

Contact Blocks

1 N.O. - 1 N.C. (Standard with Push-to-Test)

— Provide LED Lamp

CERTIFICATIONS AND APPROVALS

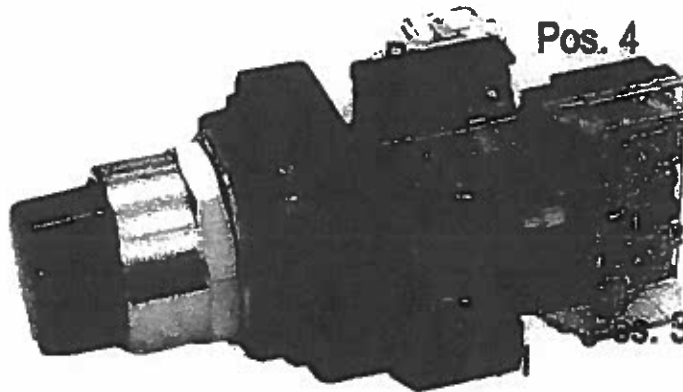
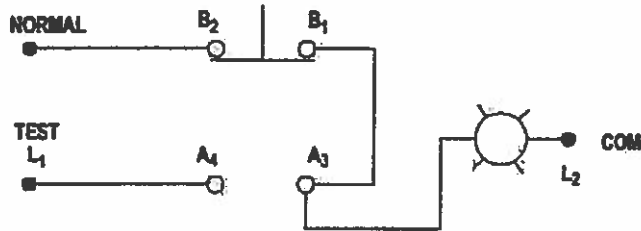
UL

Listed E14840, E10314; Guide #NKCRC, NOIV


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LR1234, LR11924, 22.2 #14


Push-to-Test Pilot Light Device Schematic




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Technical drawing of a mechanical part, showing a top view and a side view. The top view is a circle with a central hole, surrounded by a rectangular frame. The side view shows a cylindrical shape with a central hole and a rectangular frame. Dimensions are provided for both views.

| | | |
|---|---------------------------|--------------------------|
| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
| Reviewed  | Reviewed with Comments | Resubmit See Comments |

 MAY 4, 2014

This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents.

No Flow "Push to Test" Red Pilot Light

REVIEWED

By Darren Fraser at 3:19 pm, Apr 10, 2014

Product: 800T-QT10R

Description: 800T Standard, Push-To-Test, Dual Input

ASSEMBLY

Factory or User Assembled?

Factory Assembled

PUSH BUTTON DATA

| | |
|----------------------|--|
| Hazardous Location | No |
| Finger Safe Guards | No Guards |
| Power Module Type | Full Voltage |
| Lamp Test Options | Push-to-Test |
| Illumination Options | Incandescent |
| Voltage | 120V AC |
| Lens Color | Red |
| Block Type | Standard |
| Contact Blocks | 1 N.O. - 1 N.C. (Standard with Push-to-Test) |

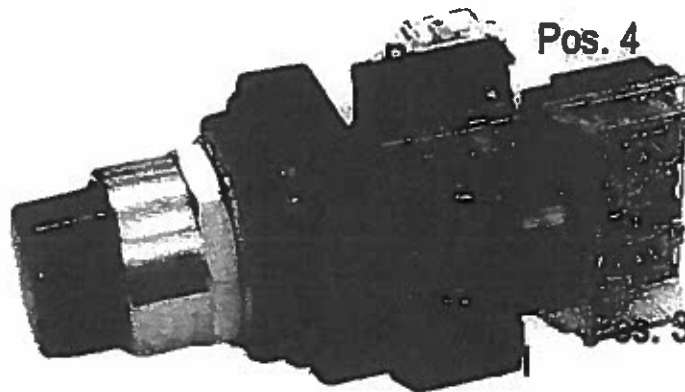
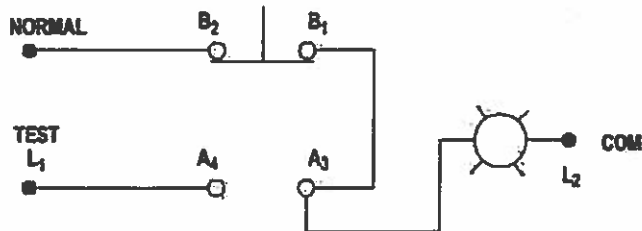
Provide LED
TYPE LAMP

CERTIFICATIONS AND APPROVALS


UL
CSA

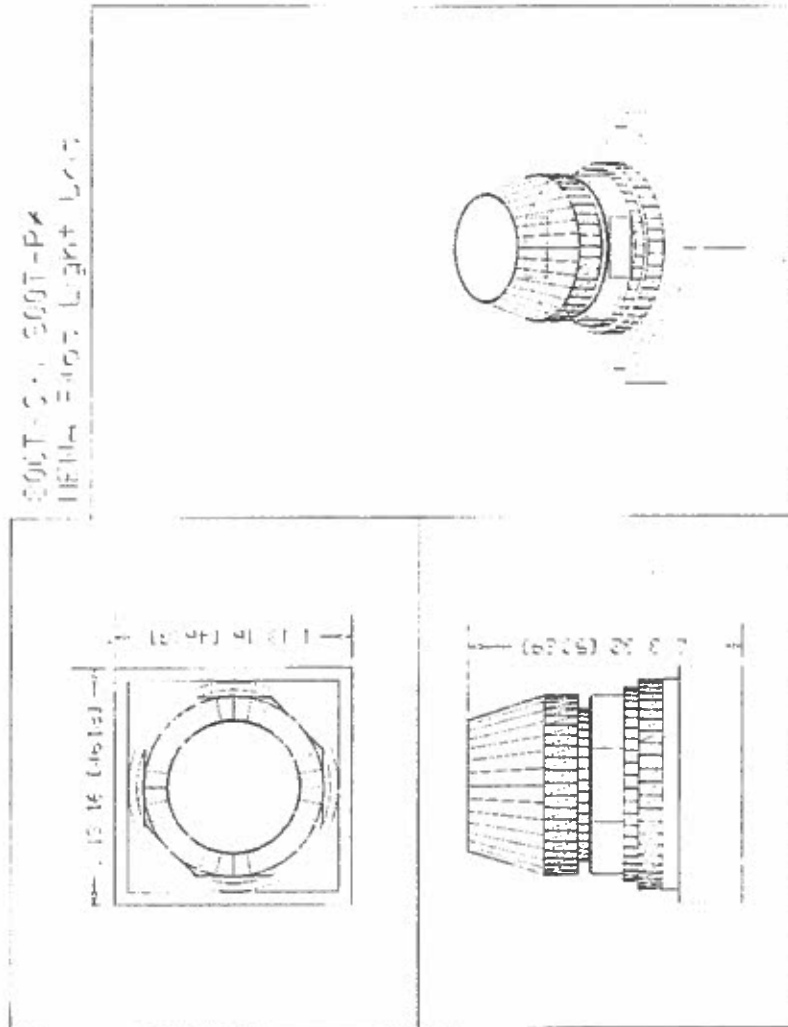
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LR1234, LR11924, 22.2 #14


Push-to-Test Pilot Light Device Schematic



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Relay R1

REVIEWED

By Darren Fraser at 3:19 pm, Apr 10, 2014


LY2 AC110/120

Standard Model , Plug-In Type , DPDT

Ratings

| | |
|-----------------------------------|--|
| Product classification | Monostable relays Standard type |
| Coil ratings | 110 VAC 9.9 mA (50 Hz), 110 VAC 8.4 mA (60 Hz), 120 VAC 10.9 mA (50 Hz), 120 VAC 9.2 mA (60 Hz) |
| Coil resistance | 4430 Ohm |
| Operate voltage (Set voltage) | 80% Max. |
| Release voltage (Reset voltage) | 30% Min. (50 Hz), 30% Min. (60 Hz) |
| Max. voltage | 110% (of rated voltage) |
| Power consumption (Single stable) | Approx. 0.9 to 1.1 VA (60 Hz) |
| Operating indicator | Not equipped |
| Coil surge killer | Not equipped |
| Contact Type | DPDT |
| Contact method | Single |
| Contact material | Contact body material: Ag alloy Contact finish: Nothing |
| Contact rated load | 110 VAC 10 A (Resistive load ($\cos \phi = 1$)) 110 VAC 7.5 A (Inductive load ($\cos \phi = 0.4$)) 24 VDC 10 A (Resistive load) 24 VDC 5 A (Inductive load ($L/R = 7$ ms)) |
| Maximum switching voltage | 250 VAC (Resistive load ($\cos \phi = 1$)) 250 VAC (Inductive load ($\cos \phi = 0.4$)) 125 VDC (Resistive load) 125 VDC (Inductive load ($L/R = 7$ ms)) |
| Maximum switching current | AC: 10 A (Resistive load ($\cos \phi = 1$)) AC: 10 A (Inductive load ($\cos \phi = 0.4$)) DC: 10 A (Resistive load) DC: 10 A (Inductive load ($L/R = 7$ ms)) |
| Maximum switching power | AC: 1100 VA (Resistive load ($\cos \phi = 1$)) AC: 825 VA (Inductive load ($\cos \phi = 0.4$)) DC: 240 W (Resistive load) DC: 120 W (Inductive load ($L/R = 7$ ms)) |
| Failure rate | 100 mA at 5 VDC (failure level: P Reference value) |
| Ambient temperature | Operating: -25 to 55 CEL (with no icing or condensation) |
| Ambient humidity | Operating: 5 to 85% RH (with no icing or condensation) |

Provide 110/120 VOLT
AC RATED RELAY.
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| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
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Characteristics

| | |
|---------------------------------------|---|
| Contact resistance | Max 50 mOhm, Measuring the voltage drop across the contacts by applying test voltage/current as 5 VDC 1 A |
| Operating time (set time) | 25 ms Max. |
| Release time (Reset time) | 25 ms Max. |
| Max. operating frequency (Mechanical) | 18000 opn /h |
| Max. operating frequency (Electrical) | 1800 opn /h |
| Insulation resistance | Between coil and contacts: 10C MOhm Min. (at 500 VDC) Between contacts of different polarity: 100 MOhm Min. (at 500 VDC) Between contacts of same polarity: 100 MOhm Min. (at 500 VDC) |
| Dielectric strength | Between coil and contacts: 2000 VAC 50/60 Hz for 1 min (Leakage current 3 mA 50/60 Hz 1 min) Between contacts of different polarity: 2000 VAC 50/60 Hz for 1 min (Leakage current 3 mA 50/60 Hz 1 min) Between contacts of same polarity: 1000 VAC 50/60 Hz for 1 min (Leakage current 3 mA 50/60 Hz 1 min) |
| Vibration resistance (Destruction) | 10 to 55 to 10 Hz 0.5-mm single amplitude (1.0-mm double amplitude) for 2 hours each in X, Y, and Z directions (No defect in appearance and construction after applying variable vibration in each directions for 2 hours) |
| Vibration resistance (Malfunction) | 10 to 55 to 10 Hz 0.5-mm single amplitude (1.0-mm double amplitude) in each direction |
| Shock resistance (Destruction) | 1000 m/s**2 each direction 3 times (No defect in appearance and construction after applying shock in each directions 3 times.) |
| Shock resistance (Malfunction) | 200 m/s**2 (Contacts must not open for 1 ms or longer after the relay is subjected to a shock in each direction 3 times.) |
| Endurance (Mechanical) | 5000000 operations Min. |
| Endurance (Electrical) | 500000 operations Min. |
| Protective structure | Closed type (cover) |
| Applicable standard (UL) | Standard No.: UL508 File No.: E41643 |
| Applicable standard (CSA) | Standard No.: C22.2 No 0, No 14 File No.: LR31928 |
| Applicable standard (TUV) | R50030064 |
| Applicable standard (SEV) | 98 5 50071.02 |
| Applicable standard (LR) | 00/10047 |
| Applicable standard (Other) | Conformed standard 2: Electrical Appliance and Matenal Safety Law |
| Terminal structure | Plug-in |
| Weight | Approx 40 g |

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
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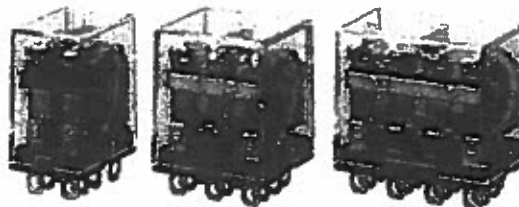
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Bi-power Relays

LY

Power-switching Compact General-purpose Relays

- The standard models include models that are compliant with the UL, CSA, and SEV safety standards and with the Electrical Appliances and Material Safety Act.
- Equipped with an arc barrier for arc interruption.
- Withstand voltages up to 2,000 V.
- New built-in diode and built-in CR circuit models have joined the series.
- The lineup also includes models that are compliant with the LR and VDE safety standards.
- Single-pole and double-pole models have AC4 ratings and DC2 ratings (operating coil ratings: 100/110 VAC, 110/120 VAC, 200/220 VAC, 220/240 VAC, and 100/110 VDC).
- Three-pole and four-pole models have AC4 ratings and DC2 ratings (operating coil ratings: 100/110 VAC, 200/220 VAC and 100/110 VDC).



Refer to the standards certifications and compliance section of your OMRON website for the latest information on certified models.

Refer to the Common Relay Precautions.

Model Number Structure

| Classification | Structure Number of poles | Relays with Plug-in Terminals | | Relays with PCB Terminals | Case-surface mounting |
|--|------------------------------|-------------------------------|---------------------------|---------------------------|-----------------------|
| | | | With operation indicators | | |
| Standard models Compliance with Electrical Appliances and Material Safety Act | 1 | *LY1 | *LY1N | *LY1-0 | *LY1F |
| | 2 | *LY2 | *LY2N | *LY2-0 | *LY2F |
| | 2 <small>Star-coded</small> | *LY2Z | *LY2ZN | *LY2Z-0 | *LY2ZF |
| | 4 | *LY4 | *LY4N | *LY4-0 | *LY4F |
| Models with diode for coil surge absorption (DC coil specification only) | 1 | *LY1-D | *LY1N-D2 | — | — |
| | 2 | *LY2-D | *LY2N-D2 | — | — |
| | 2 <small>Star-coded</small> | *LY2Z-D | *LY2ZN-D2 | — | — |
| | 4 | *LY4-D | *LY4N-D2 | — | — |
| Models with CR circuits for coil surge absorption (AC coil specification only) | 1 | — | — | / | / |
| | 2 | *LY2-CR | *LY2N-CR | | |
| | 2 <small>Star-coded</small> | *LY2Z-CR | *LY2ZN-CR | | |

- Note: 1. Cells with a diagonal line cannot be manufactured. Ask your OMRON representative for details on manufacturing products for cells containing "—" in the above table.
 2. If #187 tab terminals are required, use the LY1F-T2 or LY2F-T2 (single-pole or double-pole models only).
 3. Refer to page 12 for information on plug-in terminal and socket combinations.
 4. Items with an asterisk (*) in the table are certified for UL, CSA, and SEV. This is indicated with a certification mark on the products.
 5. Items with two asterisks (**) in the table are certified for UL and CSA. This is indicated with a certification mark on the products.
 6. All models in the table are certified for IEC (TUV).
 7. The models with plug-in terminals (single-pole, double-pole, and 4-pole) were combined with the PTF-E for the EC Declaration of Conformity. These products display the CE Marking.

ORIGINAL SIGNED BY
CHRIS MARCON, CET.

PROVIDE 110/120VOLT
AC RATED RELAY.

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
|--|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| | ✓ | |
| MAY 4, 2014 | | |
| This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents. | | |

Ordering Information

Models with Plug-in Terminals

| Number of poles | | 1 pole | | 2 poles | | 3 poles | | 4 poles | |
|---|--|--|---|---|---|---|-------|-------------------|--|
| Classification | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) | |
| Models with single contacts | Standard models | LY1 12, 24, 100/110, 110/120, or 200/220 VAC 12, 24, 48, or 100/110 VDC | LY2 12, 24, 100/110, 110/120, 200/220, or 220/240 VAC 12, 24, 48, or 100/110 VDC | LY3 12, 24, 100/110, 110/120, 200/220, or 220/240 VAC 12, 24, 48, or 100/110 VDC | LY8 12, 24, 100/110, 110/120, 200/220 VAC 12, 24, 48, or 100/110 VDC | LY9 12, 24, 100/110, 110/120, 200/220 VAC 12, 24, 48, or 100/110 VDC | | | |
| | | | | | | | | | |
| | Models with built-in operation indicators | LY1H 12, 24, 100/110, 110/120, or 200/220 VAC 12, 24, 48, or 100/110 VDC | LY2H 12, 24, 100/110, 110/120, 200/220, or 220/240 VAC 12, 24, 48, or 100/110 VDC | LY3H 12, 24, 100/110, 110/120, 200/220, or 220/240 VAC 12, 24, 48, or 100/110 VDC | LY8H 12, 24, 100/110, 110/120, 200/220 VAC 12, 24, 48, or 100/110 VDC | LY9H 12, 24, 100/110, 110/120, 200/220 VAC 12, 24, 48, or 100/110 VDC | | | |
| | Models with built-in diodes | LY1-D 12, 24, 48, or 100/110 VDC | LY2-D 12, 24, 48, or 100/110 VDC | LY3-D 12, 24, 48, or 100/110 VDC | LY8-D 12, 24, 48, or 100/110 VDC | LY9-D 12, 24, 48, or 100/110 VDC | | | |
| | Models with built-in diodes and operation indicators | LY1H-D 12, 24, 48, or 100/110 VDC | LY2H-D 12, 24, 48, or 100/110 VDC | LY3H-D 12, 24, 48, or 100/110 VDC | LY8H-D 12, 24, 48, or 100/110 VDC | LY9H-D 12, 24, 48, or 100/110 VDC | | | |
| | Models with built-in CR circuits | — | — | LY3-CR 100/110, 110/120, 200/220, or 220/240 VAC | — | — | | | |
| Models with built-in CR circuits and operation indicators | — | — | LY3H-CR 100/110, 110/120, 200/220, or 220/240 VAC | — | — | | | | |
| Bifurcated contacts | Standard models | — | LY2Z 100/110, 110/120, 200/220, or 220/240 VAC 12, 24, 48, or 100/110 VDC | — | — | — | | | |
| | | — | | — | — | | | | |
| | Models with built-in operation indicators | — | LY2ZH 100/110, 110/120, 200/220, or 220/240 VAC 12, 24, 48, or 100/110 VDC | — | — | — | | | |
| | Models with built-in diodes | — | LY2Z-D 12, 24, 48, or 100/110 VDC | — | — | — | | | |
| | Models with built-in diodes and operation indicators | — | LY2ZH-D 12, 24, 48, or 100/110 VDC | — | — | — | | | |
| | Models with built-in CR circuits | — | LY2Z-CR 100/110 VAC | — | — | — | | | |
| Models with built-in CR circuits and operation indicators | — | LY2ZH-CR 100, 110, 110/120, or 200/220 VAC | — | — | — | | | | |

Relays with PCB Terminals

| Number of poles | | 1 pole | | 2 poles | | 3 poles | | 4 poles | |
|-----------------------------|-------|--------------------------------------|--------|---|-------|-----------------------------|-------|-----------------------------|--|
| Classification | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) | |
| Models with single contacts | LY1-0 | 24, 100/110, 110/120, or 200/220 VAC | LY2-0 | 12, 24, 100/110, 110/120, 200/220, or 220/240 VAC | LY3-0 | 24, 100/110, or 200/220 VAC | LY4-0 | 24, 100/110, or 200/220 VAC | |
| | | 12 or 24 VDC | | 12, 24, 48, or 100/110 VDC | | 12, 24, 48, or 100/110 VDC | | | |
| Bifurcated contacts | — | — | LY2Z-0 | 100/110 VAC 24, 48, or 100/110 VDC | — | — | — | — | |

Case-surface Mounting

| Number of poles | | 1 pole | | 2 poles | | 3 poles | | 4 poles | |
|------------------------------|-------|---|-------|---|-------|-----------------------------|-------|---------------------------------|--|
| Classification | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) | |
| Modules with single contacts | LY1F | 24, 100/110, 110/120, 200/220, or 220/240 VAC | LY2F | 12, 24, 100/110, 110/120, 200/220, or 220/240 VAC | LY3F | 24, 100/110, or 200/220 VAC | LY4F | 12, 24, 100/110, or 200/220 VAC | |
| | | 8, 12, 24, or 100/110 VDC | | 12, 24, 48, or 100/110 VDC | | 12, 24, or 100/110 VDC | | 12, 24, or 100/110 VDC | |
| Bifurcated contacts | --- | --- | LY2ZF | 24, 100/110, or 200/220 VAC 12 or 24 VDC | --- | --- | --- | --- | |

Minimum Order

When ordering the following models, please order the minimum amount that is specified in the following table.

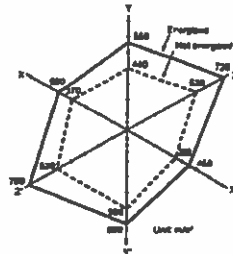
| Number of poles | | 2 poles | | 4 poles | | Minimum order (No. of Relays) |
|--|---------|------------------------------------|---------|---------------------------------|----|----------------------------------|
| Classification | Model | Rated voltage (V) | Model | Rated voltage (V) | | |
| Standard models | LY2 | 100/110, 200/220 VAC, 12 or 24 VDC | LY4 | 100/110, 200/220 VAC, or 24 VDC | 10 | |
| Models with built-in operation indicators | LY2H | 100/110, 200/220 VAC, or 24 VDC | LY4H | 100/110, 200/220 VAC, or 24 VDC | | |
| Models with built-in diodes | LY2-D | 24 VDC | — | — | | |
| Models with built-in diodes and operation indicators | LY2H-D2 | 24 VDC | LY4H-D2 | 24 VDC | | |

Provide 110/120 VOLT
AC RELAY

ORIGINAL SIGNED BY
CHRIS MARCON, CE

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
|--|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| | ✓ | |
| MAY 4, 2014 | | |
| This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents. | | |

Malfunctioning Shock LY2 100/110 VAC



N = 20
Measurement: Shock was applied 2 times each in 6 directions along 3 axes with the Relay energized and not energized to check the shock values that cause the Relay to malfunction.
Criteria: Non-energized: 200 m/s², Energized: 200 m/s²

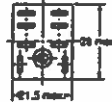
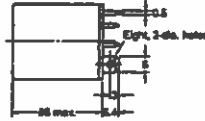


Dimensions

(Unit: mm)

Solder terminals

LY1
LY1N
LY1-D
LY1N-D2



Terminal Arrangement/Internal Connections (Bottom View)

LY1



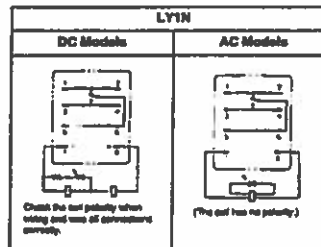
(The coil has no polarity.)

LY1N-D



(Check the coil polarity when wiring and wire all connections correctly.)

- Note: 1. For the DC models, check the coil polarity when wiring and wire all connections correctly.
2. The indicator is red for AC and green for DC.
3. The operation indicator indicates the energization of the coil and does not represent contact operation.



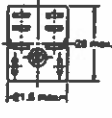
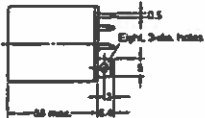
LY1N-D2



(Check the coil polarity when wiring and wire all connections correctly.)

LY2
LY2Z
LY2N
LY2ZN

LY2-D
LY2Z-D
LY2N-D2
LY2ZN-D2



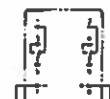
Terminal Arrangement/Internal Connections (Bottom View)

LY2(Z)



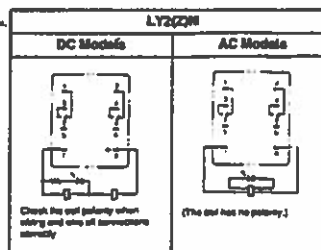
(The coil has no polarity.)

LY2(Z)-D



(Check the coil polarity when wiring and wire all connections correctly.)

- Note: 1. For the DC models, check the coil polarity when wiring and wire all connections correctly.
2. The indicator is red for AC and green for DC.
3. The operation indicator indicates the energization of the coil and does not represent contact operation.



LY2(Z)-D2



(Check the coil polarity when wiring and wire all connections correctly.)

ORIGINAL SIGNED BY
CHRIS MARCON, CET

VERIFY COIL VOLTAGE
PROVIDE 110/120VAC
TYPE UNIT

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
|--|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| | ✓ | ✓ |
| MAY 4, 2014 | | |
| This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents. | | |

Connection Sockets (Refer to *Common Socket* and *DIN Track Products* for external dimensions.)

| Item | Front-mounting Sockets | Back-mounting Sockets | | |
|--------|-------------------------|-----------------------|--------------------|---------------------------|
| | Track or screw mounting | Solder terminals | Wrapping terminals | Relays with PCB Terminals |
| 1 or 2 | PTF08A(-E) | PT08 | PT08CN | PT08-0 |
| 3 | PTF11A | PT11 | PT11CN | PT11-0 |
| 4 | PTF14A(-E) | PT14 | PT14CN | PT14-0 |

The following front connector sockets are all individually certified for UL/CSA: PTF08A, PTF11A, and PTF14A.

| Model | Standards | No. |
|--------|-----------|------------------|
| PTF08A | UL | File No. E37929 |
| PTF11A | CSA | File No. LR31828 |
| PTF14A | | |

Note: The PTF14A-E Relays have finger protection. Round terminals cannot be used. Use forked terminals.

Relay Hold-down Clips (Refer to *Common Socket* and *DIN Track Products* for external dimensions.)

| Used with Socket | | Used with Socket mounting plate | For models with built-in CR circuits | |
|------------------|-------|---------------------------------|--------------------------------------|-------|
| LYC-A1 | LYC-P | LYC-S | Y92H-3 | LYC-1 |

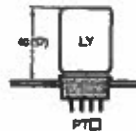
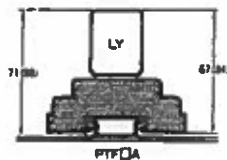
Connection Socket and Hold-down Clip Application Table

| Applicable Relay | Item | Front-mounting Sockets | | | | Back-mounting Sockets | | | |
|---|--------|-------------------------|--------|--------|----------------------------|--|--------------------|--------------------|----------------------------|
| | | Track or screw mounting | | | | Solder terminals, wrapping terminals, or PCB terminals | | | |
| | | PTF08A | PTF11A | PTF14A | Applicable Hold-down Clips | PT08(CN) PT08-0 | PT11(CN) PT11-0 | PT14(CN) PT14-0 | Applicable Hold-down Clips |
| • Standard models: LYC | 1 or 2 | ● | | | PYC-A1 | ● | | | PYC-P |
| • Bifurcated contact models: LYCB | 3 | | ● | | | | ● | | |
| • Models with built-in operation indicators: LYCN | 4 | | | ● | | | | ● | |
| • Models with built-in diodes: LYC-D(2) | | | | | | | | | |
| • Models with built-in CR circuits: LYC-CR | 2 | ● | | | Y92H-3 | ● | | | PYC-1 |

Mounting Height with Sockets

Front-mounting Sockets

Back-mounting Sockets



Note: 1. The PTF08A can be mounted on a track or with screws.
2. The measurements in parentheses are for the LYC-CR (built-in CR circuit).

ORIGINAL SIGNED BY
CHRIS MARCON, CET.

BASE TO MATCH
120 VOLT AC TYPE
RELAY

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
|--|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| | ✓ | ✓ |
| MAY 4, 2014 | | |
| This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents. | | |

Relay R2

REVIEWED

By Darren Fraser at 3:19 pm, Apr 10, 2014

LY3 AC120

Standard Model , Plug-In Type , 3PDT

Ratings

| | |
|-----------------------------------|---|
| Product classification | Monostable relays Standard type |
| Coil resistance | 4430 Ohm |
| Operate voltage (Set voltage) | 80% Max. |
| Release voltage (Reset voltage) | 30% Min. (50 Hz), 30% Min. (60 Hz) |
| Max. voltage | 110% (of rated voltage) |
| Power consumption (Single stable) | Approx. 1.6 to 2.0 VA (60 Hz) |
| Operating indicator | Not equipped |
| Coil surge killer | Not equipped |
| Contact Type | 3PDT |
| Contact method | Single |
| Contact material | Contact body material: Ag alloy Contact finish: Nothing |
| Contact rated load | 11C VAC 10 A (Resistive load (cos phi = 1)) 110 VAC 7.5 A (Inductive load (cos phi = 0.4)) 24 VDC 10 A (Resistive load) 24 VDC 5 A (Inductive load (L/R = 7 ms)) |
| Maximum switching voltage | 250 VAC (Resistive load (cos phi = 1)) 250 VAC (Inductive load (cos phi = 0.4)) 125 VDC (Resistive load) 125 VDC (Inductive load (L/R = 7 ms)) |
| Maximum switching current | AC: 10 A (Resistive load (cos phi = 1)) AC: 10 A (Inductive load (cos phi = 0.4)) DC: 10 A (Resistive load) DC: 10 A (Inductive load (L/R = 7 ms)) |
| Maximum switching power | AC: 1100 VA (Resistive load (cos phi = 1)) AC: 825 VA (Inductive load (cos phi = 0.4)) DC: 240 W (Resistive load) DC: 120 W (Inductive load (L/R = 7 ms)) |
| Failure rate | 100 mA at 5 VDC (failure level: P Reference value) |
| Ambient temperature | Operating: -25 to 40 CEL (with no icing or condensation) |
| Ambient humidity | Operating: 5 to 85% RH (with no icing or condensation) |

Characteristics

VERIFY COIL VOLTAGE
120 VAC SPECIFIED

ORIGINAL SIGNED BY
CHRIS MARCON, CET

Provide 110/120VAC
TYPE UNIT

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
|--|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| | ✓ | ✓ |
| MAY 4, 2014 | | |
| This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents. | | |

| | |
|---------------------------------------|---|
| Contact resistance | Max. 50 mOhm, Measuring the voltage drop across the contacts by applying test voltage/current as 5 VDC 1 A |
| Operating time (set time) | 25 ms Max |
| Release time (Reset time) | 25 ms Max |
| Max. operating frequency (Mechanical) | 18000 opn./h |
| Max. operating frequency (Electrical) | 1800 opn./h |
| Insulation resistance | Between coil and contacts: 10C MOhm Min. (at 500 VDC) Between contacts of different polarity: 100 MOhm Min. (at 500 VDC) Between contacts of same polarity: 100 MOhm Min. (at 500 VDC) |
| Dielectric strength | Between coil and contacts: 2000 VAC 50/60 Hz for 1 min (Leakage current 3 mA 50/60 Hz 1 min) Between contacts of different polarity: 2000 VAC 50/60 Hz for 1 min (Leakage current 3 mA 50/60 Hz 1 min) Between contacts of same polarity: 1000 VAC 50/60 Hz for 1 min (Leakage current 3 mA 50/60 Hz 1 min) |
| Vibration resistance (Destruction) | 10 to 55 to 10 Hz 0.5-mm single amplitude (1 0-mm double amplitude) for 2 hours each in X, Y, and Z directions (No defect in appearance and construction after applying variable vibration in each directions for 2 hours) |
| Vibration resistance (Malfunction) | 10 to 55 to 10 Hz 0.5-mm single amplitude (1 0-mm double amplitude) in each direction |
| Shock resistance (Destruction) | 1000 m/s ² each direction 3 times (No defect in appearance and construction after applying shock in each directions 3 times) |
| Shock resistance (Malfunction) | 200 m/s ² (Contacts must not open for 1 ms or longer after the relay is subjected to a shock in each direction 3 times) |
| Endurance (Mechanical) | 50000000 operations Min. |
| Endurance (Electrical) | 200000 operations Min. |
| Protective structure | Closed type (cover) |
| Applicable standard (UL) | Standard No. UL508 File No. E41643 |
| Applicable standard (CSA) | Standard No. C22.2 No.0, No.14 File No. LR31928 |
| Applicable standard (TUV) | R50030064 |
| Applicable standard (SEV) | 98 5 50071.02 |
| Applicable standard (Other) | Conformed standard 2: Electrical Appliance and Material Safety Law |
| Terminal structure | Plug-in |
| Weight | Approx. 50 g |

ORIGINAL SIGNED BY
CHRIS MARCON, CET.

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
|--|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| | ✓ | ✓ |
| MAY 4, 2014 | | |
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Bi-power Relays

LY

Power-switching Compact General-purpose Relays

- The standard models include models that are compliant with the UL, CSA, and SEV safety standards and with the Electrical Appliances and Material Safety Act.
- Equipped with an arc barrier for arc interruption.
- Withstand voltages up to 2,000 V.
- New built-in diode and built-in CR circuit models have joined the series.
- The lineup also includes models that are compliant with the LR and VDE safety standards.
- Single-pole and double-pole models have AC4 ratings and DC2 ratings (operating coil ratings: 100/110 VAC, 110/120 VAC, 200/220 VAC, 220/240 VAC, and 100/110 VDC).
- Three-pole and four-pole models have AC4 ratings and DC2 ratings (operating coil ratings: 100/110 VAC, 200/220 VAC and 100/110 VDC).



Refer to the standards certifications and compliance section of your OMRON website for the latest information on certified models.

Refer to the Common Relay Precautions.

Model Number Structure

| Classification | Structure | Relays with Plug-In Terminals | | Relays with PCB Terminals | Case-surface mounting |
|--|--------------|-------------------------------|---------------------------|---------------------------|-----------------------|
| | | Number of poles | With operation indicators | | |
| Standard models Compliance with Electrical Appliances and Material Safety Act | 1 | *LY1 | **LY1N | *LY1-0 | *LY1F |
| | 2 | *LY2 | **LY2N | *LY2-0 | *LY2F |
| | 2 Bifurcated | **LYZZ | **LYZZN | *LYZZ-0 | *LYZZF |
| | 3 | *LY3 | **LY3N | *LY3-0 | *LY3F |
| Models with diode for coil surge absorption (DC coil specification only) | 4 | *LY4 | **LY4N | *LY4-0 | *LY4F |
| | 1 | *LY1-D | **LY1N-D2 | — | — |
| | 2 | *LY2-D | **LY2N-D2 | — | — |
| | 2 Bifurcated | *LYZZ-D | **LYZZN-D2 | — | — |
| Models with CR circuits for coil surge absorption (AC coil specification only) | 3 | *LY3-D | **LY3N-D2 | — | — |
| | 4 | *LY4-D | **LY4N-D2 | — | — |
| | 1 | — | — | / | / |
| | 2 | *LY2-CR | **LY2N-CR | | |
| | 2 Bifurcated | *LYZZ-CR | **LYZZN-CR | | |

- Note: 1. Cells with a diagonal line cannot be manufactured. Ask your OMRON representative for details on manufacturing products for cells containing "—" in the above table.
2. If #187 tab terminals are required, use the LY1F-T2 or LY2F-T2 (single-pole or double-pole models only).
3. Refer to page 12 for information on plug-in terminal and socket combinations.
4. Items with an asterisk (*) in the table are certified for UL, CSA, and SEV. This is indicated with a certification mark on the products.
5. Items with two asterisks (**) in the table are certified for UL and CSA. This is indicated with a certification mark on the products.
6. All models in the table are certified for IEC (TUV).
7. The models with plug-in terminals (single-pole, double-pole, and 4-pole) were combined with the PTF-E for the EC Declaration of Conformity. These products display the CE Marking.

VERIFY COIL VOLTAGE 120VAC
SPECIFIED
PROVIDE 110/120VAC TYPE
UNIT

ORIGINAL SIGNED BY
CHRIS MARCON, CET.

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
|--|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| | ✓ | ✓ |
| MAY 4, 2014 | | |
| This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents. | | |

Ordering Information

Models with Plug-In Terminals

| Number of poles | | 1 pole | | 2 poles | | 3 poles | | 4 poles | | |
|---|--|---|--|-----------------------------------|---|---|---------------------------------|---------|---------------------------------|---|
| Classification | | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) | |
| Models with single contacts | Standard models | LY1 | 12, 24, 100/110, 110/120, or 200/220 VAC | LY2 | 12, 24, 100/110, 110/120, 200/220, or 220/240 VAC | LY3 | 12, 24, 100/110 or 200/220 VAC | LY4 | 12, 24, 100/110, or 200/220 VAC | |
| | | | 12, 24, 48, or 100/110 VDC | | 12, 24, 48, or 100/110 VDC | | 12, 24, 48, or 100/110 VDC | | 12, 24, 48, or 100/110 VDC | |
| | Models with built-in operation indicators | LY1N | 12, 24, 100/110, 110/120, or 200/220 VAC | LY2N | 12, 24, 100/110, 110/120, 200/220, or 220/240 VAC | LY3N | 12, 24, 100/110, or 200/220 VAC | LY4N | 12, 24, 100/110, or 200/220 VAC | |
| | | | 12, 24, or 100/110 VDC | | 12, 24, 48, or 100/110 VDC | | 12, 24, 48, or 100/110 VDC | | 12, 24, 48, or 100/110 VDC | |
| | Models with built-in diodes | LY1-D | 12, 24, 48, or 100/110 VDC | LY2-D | 12, 24, 48, or 100/110 VDC | LY3-D | 12, 24, 48, or 100/110 VDC | LY4-D | 12, 24, 48, or 100/110 VDC | |
| | Models with built-in diodes and operation indicators | LY1N-D2 | 12, 24, or 48 VDC | LY2N-D2 | 12, 24, 48, or 100/110 VDC | LY3N-D2 | 12, 24, or 100/110 VDC | LY4N-D2 | 12, 24, 48, or 100/110 VDC | |
| Bifurcated contacts | Models with built-in CR circuits | — | — | LY2-CR | 100/110, 110/120, 200/220, or 220/240 VAC | — | — | — | — | |
| | | — | — | LY2N-CR | 100/110, 110/120, 200/220, or 220/240 VAC | — | — | — | — | |
| | Standard models | — | — | LY2Z | 100/110 or 200/220 VAC | — | — | — | — | |
| | | — | — | LY2Z | 12, 24, 48, or 100/110 VDC | — | — | — | — | |
| | | Models with built-in operation indicators | — | — | LY2ZN | 100/110, 110/120, 200/220, or 220/240 VAC | — | — | — | — |
| | | — | — | LY2ZN | 12 or 24 VDC | — | — | — | — | |
| Models with built-in diodes | — | — | LY2Z-D | 12, 24, or 48 VDC | — | — | — | — | | |
| Models with built-in diodes and operation indicators | — | — | LY2ZN-D2 | 12, 24, or 100/110 VDC | — | — | — | — | | |
| Models with built-in CR circuits | — | — | LY2Z-CR | 100/110 VAC | — | — | — | — | | |
| Models with built-in CR circuits and operation indicators | — | — | LY2ZN-CR | 100, 110, 110/120, or 200/220 VAC | — | — | — | — | | |

Relays with PCB Terminals

| Number of poles | 1 pole | | 2 poles | | 3 poles | | 4 poles | |
|-----------------------------|--------|--------------------------------------|---------|---|---------|-----------------------------|---------|-----------------------------|
| Classification | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) |
| Models with single contacts | LY1-D | 24, 100/110, 110/120, or 200/220 VAC | LY2-D | 12, 24, 100/110, 110/120, 200/220, or 220/240 VAC | LY3-D | 24, 100/110, or 200/220 VAC | LY4-D | 24, 100/110, or 200/220 VAC |
| | | 12 or 24 VDC | | 12, 24, 48, or 100/110 VDC | | 12, 24, 48, or 100/110 VDC | | |
| Bifurcated contacts | — | — | LY2Z-D | 24, 48, or 100/110 VDC | — | — | — | — |

Case-surface Mounting

| Number of poles | 1 pole | | 2 poles | | 3 poles | | 4 poles | |
|-----------------------------|--------|---|---------|--|---------|------------------------------------|---------|------------------------------------|
| Classification | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) | Model | Rated voltage (V) |
| Models with single contacts | LY1F | 24, 100/110, 110/120, 200/220, or 220/240 VAC | LY2F | 12, 24, 100/110, 110/ 120, 200/220, or 220/240 VAC | LY3F | 12, 24, 100/110, or 200/220 VAC | LY4F | 12, 24, 100/110, or 200/220 VAC |
| | | 6, 12, 24, or 100/110 VDC | | 12, 24, 48, or 100/110 VDC | | 12, 24, or 100/110 VDC | | 12, 24, or 100/110 VDC |
| Bifurcated contacts | — | — | LY2ZF | 24, 100/110, or 200/220 VAC 12 or 24 VDC | — | — | — | — |

Minimum Order

When ordering the following models, please order the minimum amount that is specified in the following table.

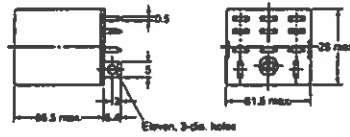
| Number of poles | | 2 poles | | 4 poles | | Minimum order (No. of Relays) |
|--|---------|------------------------------------|---------|---------------------------------|--|----------------------------------|
| Classification | Model | Rated voltage (V) | Model | Rated voltage (V) | | |
| Standard models | LY2 | 100/110, 200/220 VAC, 12 or 24 VDC | LY4 | 100/110, 200/220 VAC, or 24 VDC | | |
| Models with built-in operation indicators | LY2N | 100/110, 200/220 VAC, or 24 VDC | LY4N | 100/110, 200/220 VAC, or 24 VDC | | |
| Models with built-in diodes | LY2-D | 24 VDC | — | — | | |
| Models with built-in diodes and operation indicators | LY2N-D2 | 24 VDC | LY4N-D2 | 24 VDC | | 10 |

VERIFY COIL VOLTAGE
120 VOLT AC SOURCE
SPECIFIED.
110/120 VAC AVAILABLE
IN 2POLE RELAY BUT NOT
3POLE.
110/120 VAC TO BE
SUPPLIED.

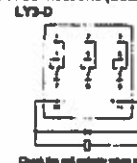
ORIGINAL SIGNED BY
CHRIS MARCON, CET.

| BOUTHILLETTE PARIZEAU INC. (SPA) | | |
|--|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| | ✓ | ✓ |
| MAY 4, 2014 | | |
| This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents. | | |

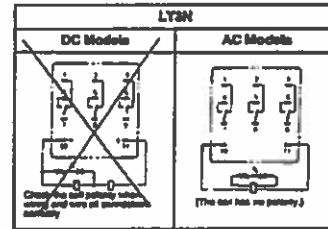
LY3
LY3N
LY3-D



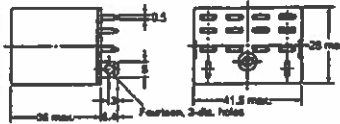
Terminal Arrangement/Internal Connections (Bottom View)



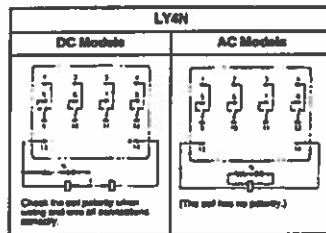
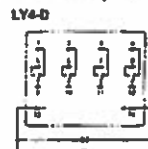
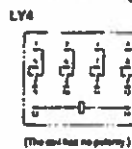
- Note: 1. For the DC models, check the coil polarity when wiring and wire all connections correctly.
2. The indicator is red for AC and green for DC.
3. The operation indicator indicates the energization of the coil and does not represent contact operation.



LY4
LY4N
LY4-D
LY4N-D2

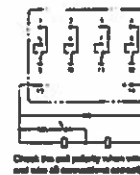


Terminal Arrangement/Internal Connections (Bottom View)

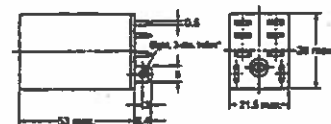


- Note: 1. For the DC models, check the coil polarity when wiring and wire all connections correctly.
2. The indicator is red for AC and green for DC.
3. The operation indicator indicates the energization of the coil and does not represent contact operation.

LY4N-D2

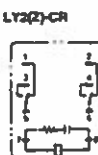


LY2-CR
LY2Z-CR
LY2N-CR
LY2ZN-CR



*These dimensions are for the LY2N-CR.


Terminal Arrangement/Internal Connections (Bottom View)



(The coil has no polarity.)

VERIFY COIL VOLTAGE
FOR RELAYS. 120 VOLT
CIRCUIT OF SUPPLY
SPECIFIED

ORIGINAL SIGNED BY
CHRIS MARCON, CET.

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
|--|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| | ✓ | ✓ |
|  MAY 6, 2014 | | |
| This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents. | | |

Connection Sockets (Refer to Common Socket and DIN Track Products for external dimensions.)

| Item | Front-mounting Sockets | Back-mounting Sockets | | |
|--------|-------------------------|-----------------------|--------------------|---------------------------|
| | Track or screw mounting | Solder terminals | Wrapping terminals | Relays with PCB Terminals |
| 1 or 2 | PTF08A-E | PT08 | PT08QN | PT08-0 |
| 3 | PTF11A | PT11 | PT11QN | PT11-0 |
| 4 | PTF14A-E | PT14 | PT14QN | PT14-0 |

The following front connector sockets are all individually certified for UL/CSA: PTF08A, PTF11A, and PTF14A.

| Model | Standard | No. |
|--------|----------|------------------|
| PTF08A | UL | File No. E87029 |
| PTF11A | CSA | File No. LR31929 |
| PTF14A | | |

Note: The PTF08A-E Relays have finger protection. Round terminals cannot be used. Use forked terminals.

Relay Hold-down Clips (Refer to Common Socket and DIN Track Products for external dimensions.)

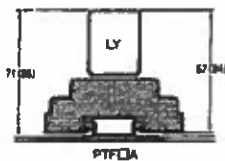
| Used with Sockets | | Used with Socket mounting plate | For models with built-in CR circuits | |
|-------------------|-------|---------------------------------|--------------------------------------|-------|
| LYC-A1 | LYC-P | LYC-S | Y82H-3 | LYC-1 |

Connection Socket and Hold-down Clip Application Table

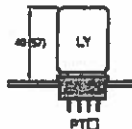
| Applicable Relay | Number of poles | Front-mounting Sockets | | | Back-mounting Sockets | | | Applicable Hold-down Clips |
|---|-----------------|------------------------|--------|--------|-----------------------|--------------------|--------------------|----------------------------|
| | | PTF08A | PTF11A | PTF14A | PT08(QN) PT08-0 | PT11(QN) PT11-0 | PT14(QN) PT14-0 | |
| Standard models: LYD | 1 or 2 | • | | | • | | | LYC-A1 |
| Bifurcated contact models: LYDZ | 3 | | • | | | • | | |
| Models with built-in operation indicators: LYDN | 4 | | | • | | | • | |
| Models with built-in diodes: LYD-DQ2 | | | | | | | | LYC-P |
| Models with built-in CR circuits: LYD-CR | 2 | • | | | • | | | LYC-1 |

Mounting Height with Sockets

Front-mounting Sockets



Back-mounting Sockets



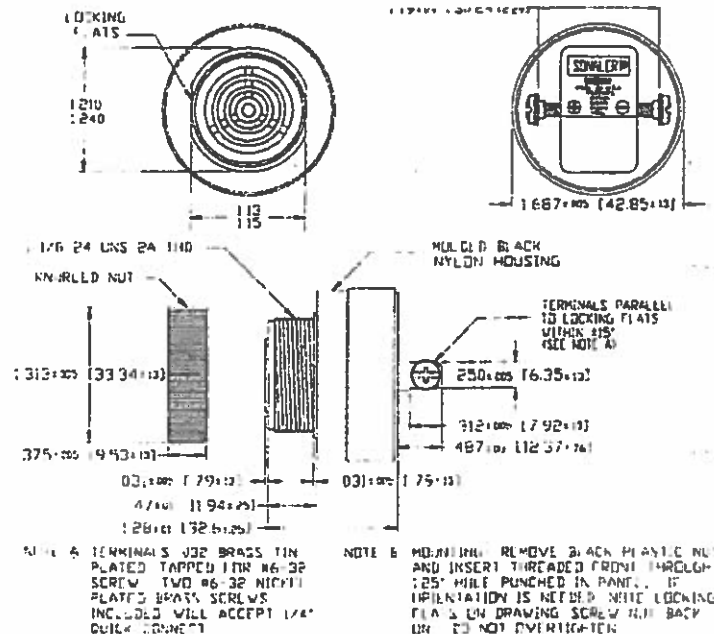
Note: 1. The PTF08A can be mounted on a track or with screws.
2. The mounting heights in parentheses are for the LYD-CR (built-in CR circuit).

VERIFY COIL VOLTAGE
FOR RELAYS
120 VOLT CIRCUIT
OF SUPPLY SPECIFIED. RELAY
BASE TO MATCH 120VOLT
RELAY.

ORIGINAL SIGNED BY
CHRIS MARCON, CET.

| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
|--|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| | ✓ | |
| MAY 4, 2014 | | |
| This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents. | | |

| | | | |
|------------------------------|--|-----------|---------------|
| Mallory | Mallory Sonalert Products, Inc. | Part #: | SC110N |
| Sales Outline Drawing | | Revision: | H |
| Specifications: | | | |
| Sound Level Category | Loud | | |
| Mode of Operation | Continuous | | |
| Voltage Rating | 30 to 120 VAC/DC | | |
| Frequency | 2800 \pm 500 Hz | | |
| Loudness @ 2 FT | 90 to 102 dB(A) Typ. | | |
| Loudness @ Min Vdc | 80 dB(A) @ 2 Feet and 30 Vdc | | |
| Loudness @ Max Vdc | 95 dB(A) @ 2 Feet and 120 Vdc | | |
| Current Draw | 6-24 mA | | |
| Housing Material | 6/8 Nylon, Color: Black | | |
| Storage Temperature | -40° to +85° C | | |
| Operating Temperature | -30° to +85° C | | |
| Panel Mounting | Recommended hole size is 1.25" (31.75mm). Thread front will fit standard 30mm (1.181") hole. | | |
| Knurled Nut | Used to attach part to panel. The max recommended torque is 10 in-lbs. | | |
| Weight (Typical) | 1.6 oz (45g) | | |
| NEMA 3R, 4X, & 12 | Approved with use of ACC03. | | |
| Options | Please contact factory. | | |

**REVIEWED**

By Darren Fraser at 3:19 pm, Apr 10, 2014

ORIGINAL SIGNED BY
CHRIS MARCON, CET.

| | | |
|--|---------------------------|--------------------------|
| BOUTHILLETTE PARIZEAU INC. (BPA) | | |
| Reviewed ✓ | Reviewed with Comments | Resubmit See Comments |
| MAY 4, 2014 This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents. | | |



Part # VWHC 12126

MANUFACTURING Ltd.
Advanced technology... Simple solutions.

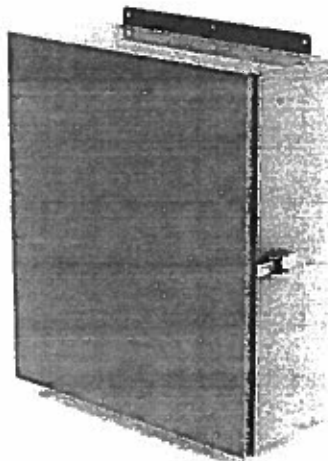
REVIEWED

By Darren Fraser at 3:19 pm, Apr 10, 2014

WEATHERPROOF HINGED JUNCTION BOX

VWHC

The VWHC junction box comes with padlockable hinged lid to be used in outdoor applications for protection from rain, sleet and snow. These enclosures are rated Type 3R and manufactured with galvanized steel for additional corrosion protection. Backpans are standard for ease of mounting equipment. Junction boxes are finished with PC101 (ANSI 61) grey powder coat paint.



Features/Specifications

- Galvanized steel construction
- Pour in place gasket
- CSA Type 3R rated
- Wall mount ears top and bottom
- Hinged door with gasket
- Padlockable hasp
- Galvanized backpan standard
- Optional no backpanel & backpanel mounting studs: Add '-NB' to P/N
 - Example: VWHC10106-NB
- Custom sizes, material and colour available
- PC101 (ANSI 61) Grey powder coat finish

| PART NUMBER | HEIGHT (INCHES) | WIDTH (INCHES) | DEPTH (INCHES) |
|-------------|-----------------|----------------|----------------|
| VWHC664 | 6 | 6 | 4 |
| VWHC864 | 8 | 6 | 4 |
| VWHC1084 | 10 | 8 | 4 |
| VWHC1086 | 10 | 8 | 6 |
| VWHC10106 | 10 | 10 | 6 |
| VWHC12104 | 12 | 10 | 4 |
| VWHC12106 | 12 | 10 | 6 |
| VWHC12108 | 12 | 10 | 8 |
| VWHC12126 | 12 | 12 | 6 |
| VWHC12128 | 12 | 12 | 8 |
| VWHC14126 | 14 | 12 | 6 |
| VWHC16146 | 16 | 14 | 6 |
| VWHC16168 | 16 | 16 | 8 |
| VWHC18166 | 18 | 16 | 6 |
| VWHC18168 | 18 | 16 | 8 |
| VWHC18186 | 18 | 18 | 6 |
| VWHC20168 | 20 | 18 | 8 |
| VWHC20188 | 20 | 18 | 8 |
| VWHC24106 | 24 | 10 | 6 |
| VWHC24168 | 24 | 16 | 8 |
| VWHC24186 | 24 | 18 | 6 |
| VWHC24246 | 24 | 24 | 6 |
| VWHC24248 | 24 | 24 | 8 |
| VWHC242410 | 24 | 24 | 10 |
| VWHC30248 | 30 | 24 | 8 |
| VWHC302410 | 30 | 24 | 10 |
| VWHC30306 | 30 | 30 | 6 |
| VWHC30308 | 30 | 30 | 8 |
| VWHC303010 | 30 | 30 | 10 |
| VWHC362410 | 36 | 24 | 10 |
| VWHC363010 | 36 | 30 | 10 |
| VWHC363612 | 36 | 36 | 12 |
| VWHC483612 | 48 | 36 | 12 |

19003-14891

Toll Free Phone: 888-632-6477

Phone: 250-832-6477

Fax: 250-832-7746

E-mail: sales@validmanufacturing.com

www.validmanufacturing.com

| SOUTHILLETTE PARIZEAU INC. (SPA) | | |
|----------------------------------|------------------------|-----------------------|
| Reviewed | Reviewed with Comments | Resubmit See Comments |
| ✓ | | |

ORIGINAL SIGNED BY
CHRIS MARCONI

CEX. MAY 4 2014

This review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents.

114 

① 25mm
REQUIRED.

TYPE 1: COPPER PIPE LENGTH AS

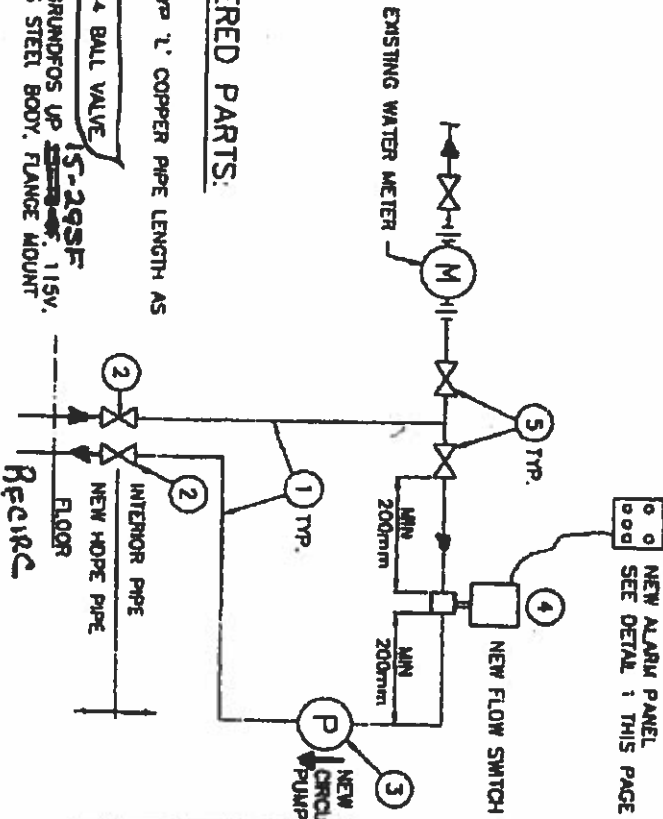
② 25mm FORD B44-444 BALL VALVE

③ CIRCULATION PUMP, GRUNDFOS UP ~~15-295F~~ 115V.
2050 RPM, STAINLESS STEEL BODY, FLANGE MOUNT

FLOW SWITCH, IIT McDONNELL & MILLER FS5 - 1

③ 25mm KITE BAL- VALUE
FIG NO 58

Note: 15-182F IS NO longer MAOE.



1 TYPICAL WATER SERVICE
RECIRCULATION SCHEMATIC

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document.

| | | | |
|--|---------------------------------|---|-------|
| X | NO EXCEPTIONS TAKEN | Submission No. <u>1</u> | FIG 2 |
| | EXCEPTIONS NOTED - RESUBMIT. | Project No. <u>CASG HQ-12012</u> By <u>ADAM ZARAD</u> Date <u>19 MAR 2011</u> | |
| BAY NEW exp. 2030 Queensway Drive, Suite 100 Ottawa, Ontario K2B 6K6 Tel: (613) 688-1000 Fax: (613) 215-4351 | | 206333 | FIG2 |

! Location: 9 Upper Mersey Valley, Warrington - 2002113. PLANTING: 16.12.2011 09:15
Last Sowed: 17/11/2012 2 22.18 PM
Last Collected: 12/11/2012 5 10.18 AM Planted by: secunda
New Tagline: error from seedling July 20 13

REVIEWED BY TOWER ARCTIC LTD.
DATED 3/12/14 *ET*

GRUNDFOS 

Submittal Data

| | | |
|-----------------------|------------------------|-----------------|
| PROJECT: _____ | UNIT TAG: _____ | QUANTITY: _____ |
| REPRESENTATIVE: _____ | TYPE OF SERVICE: _____ | DATE: _____ |
| ENGINEER: _____ | SUBMITTED BY: _____ | DATE: _____ |
| CONTRACTOR: _____ | APPROVED BY: _____ | DATE: _____ |
| | ORDER NO.: _____ | DATE: _____ |

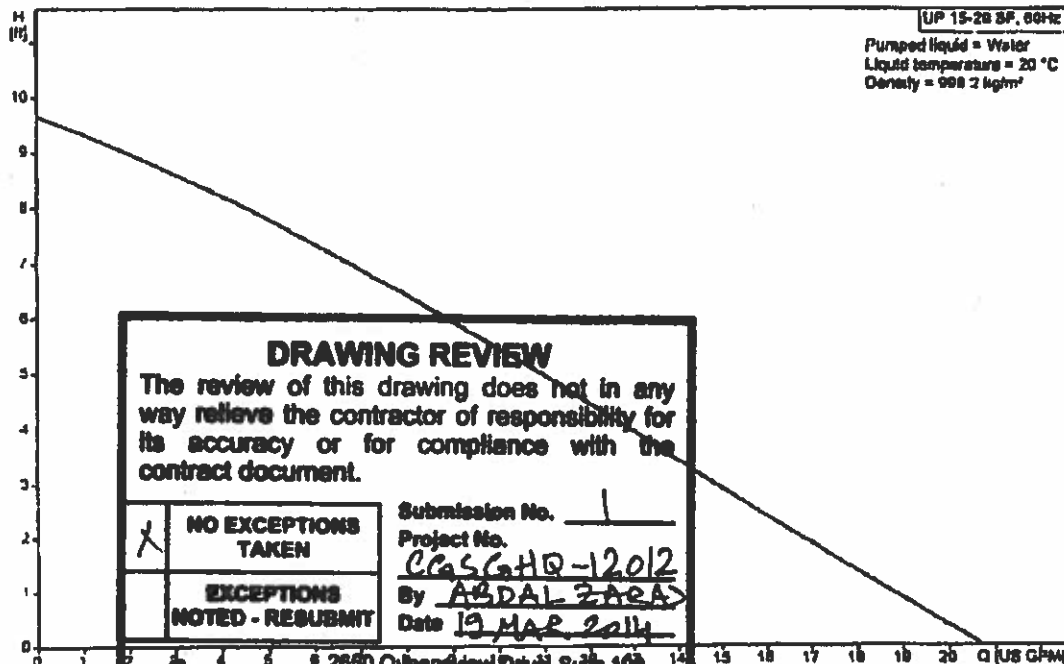


UP 15-29 SF

Circulator pumps

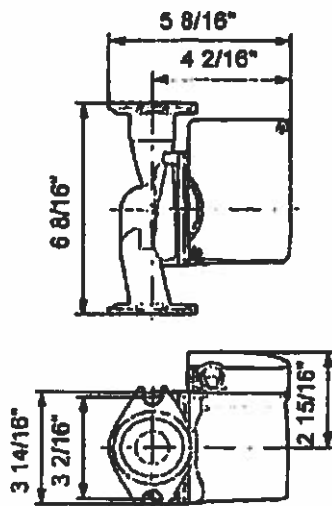
Please refer to the product literature for the latest product information.

| Conditions of Service | Pump Data | Motor Data |
|---------------------------------|---------------------------------------|------------------------------|
| Flow: _____ | Maximum operating pressure: 145 psi | Max. power input: 87 W |
| Head: _____ | Liquid temperature range: 2 .. 110 °C | Rated power - P2: 0.121 HP |
| Efficiency: _____ | Maximum ambient temperature: 40 °C | Rated voltage: 115 V |
| Liquid: Water | Approvals: UL, CSA | Mains frequency: 60 Hz |
| Temperature: 20 °C | Type of connection: S.B. Flange | Insulation class: F |
| NPSH required: _____ | Flange standard: USA Oval | Motor protection: CONTACT |
| Viscosity: 1 mm ² /s | Pipe connection: 2 - Bolt Flange | Thermal protection: internal |
| Specific Gravity: 1.000 | Product number: 59896771 | |





Submittal Data



Materials:

Pump housing: Stainless steel
DIN W.-Nr. 1.4301
AISI 304
Impeller: Composite, PES

REVIEWED BY TOWER ARCTIC LTD.
DATED 3/12/14

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document.

☒ NO EXCEPTIONS
TAKEN

☐ EXCEPTIONS
NOTED - RESUBMIT

Submission No. 1

Project No.

CALC HQ

By ABDAL ABDU

Date 13 MAR 2014

exp.

2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 6H8
Tel: (613) 688-1899
Fax: (613) 225-7337



Flow Switches - Liquid

Series FS5 (for specified models) General Purpose Liquid Flow Switches

- For general purpose applications requiring low flow rate sensitivity
- In-line configuration eliminates need for a pipe tee
- Sizes available
 - 3/4" NPT
 - 1" NPT
- Materials of construction
 - Brass, carbon & EPDM elastomer (for water); Models FS5 & FS5-D
 - Stainless steel, carbon & Buna N (for water or water and petroleum base compounds) Models FS5-S & FS5-DS
- Single pole, double throw snap switch
- Sensitivity adjusting screw makes flow adjustment easy
- Optional feature
 - BSPT threads
- Minimum temperature (fluid or ambient) 32°F (0°C)
- Maximum temperature
 - 225°F (107°C) - Stainless Steel models
 - 250°F (121°C) - Brass
- Maximum operating pressure 150 psi (10.5 kg/cm²)

Electrical Ratings

| Voltage | Motor Switch Rating (Amps) | | Pilot Duty |
|---------|----------------------------|--------------|--|
| | Full Load | Locked Rotor | |
| 120 VAC | 7.4 | 44.4 | 125 VA at 120 or 240 VAC 50 or 60 cycles |
| 240 VAC | 3.7 | 22.2 | |

Ordering Information

| Model Number | Part Number | Description | Weight lbs. (kg) |
|--------------|-------------|--------------------------------------|------------------|
| FS5-3/4 | 114780 | General purpose flow switch 3/4" NPT | 2.5 (1.1) |
| FS5-D-3/4 | 114783 | FS5-3/4 w/2 SPDT switches | 2.5 (1.1) |
| FS5-J-3/4 | 114785 | FS5-3/4 w/BSPT connections | 2.5 (1.1) |
| FS5-1 | 114780 | General purpose flow switch 1" NPT | 2.5 (1.1) |
| FS5-D-1 | 114783 | FS5-1 w/2 SPDT switches | 2.5 (1.1) |
| FS5-J-1 | 114785 | FS5-1 w/BSPT connections | 2.5 (1.1) |
| FS5-S-1 | 114795 | FS5-1 w/SS body | 2.3 (1.0) |
| FS5-DS-1 | 114793 | FS5-1 w/SS body, 2 SPDT switches | 2.5 (1.1) |
| FS5-J-3/4-E | 114786 | FS5-J-3/4 - CE conformance rated | 2.5 (1.1) |
| FS5-J-1-E | 114787 | FS5-J-1 - CE conformance rated | 2.5 (1.1) |

See page 132 for CE Conformance information

REVIEWED BY TOWER ARCTIC LTD.
DATED 3/12/14

DRAWING REVIEW

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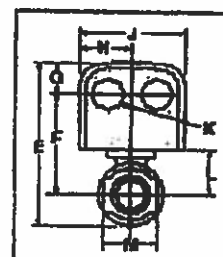
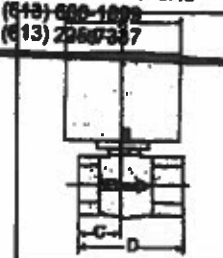
EXCEPTIONS
NOTED - RESUBMIT

By
Date

2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6
Tel: (613) 688-1899
Fax: (613) 225-7337



Series FS5



Dimensions, in. (mm)

| A | B | C | D |
|-------------|------------|------------|--------------|
| 3/4 (87) | 1 1/8 (40) | 1 1/8 (33) | 3 1/8 (56) |
| E | F | G | H |
| 5 1/8 (129) | 3 1/4 (83) | 1/4 (22) | 1 1/2 (40.5) |
| J | K | L | M |
| 3 1/4 (81) | 1/4 (22) | 1 1/4 (35) | 1 1/8 (43) |

Flow Rates

| Pipe Size NPT | Mode of Operation | | | Max. Flow Rate gpm (lpm) m³/h |
|---------------|-------------------|---------|---------|-------------------------------|
| | Flow | No Flow | Reverse | |

| | | | | |
|-----|--------|--------|--------|--------|
| 3/4 | Factor | Factor | Factor | Factor |
|-----|--------|--------|--------|--------|

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document.

NOTE: DO NOT USE LIQUID FLOW SWITCHES ON SYSTEMS WITH FLUORINATED REFRIGERANT

EXCEPTIONS NOTED - RESUBMIT

By: [Signature]
Date: 14 MAR 2014

2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6
Tel: (613) 688-1899
Fax: (613) 225-7337

②
RE-SUBMIT

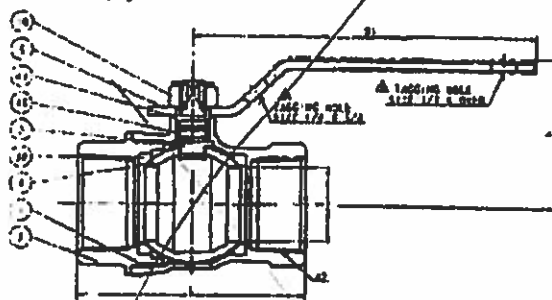
Abdul Javed
13 MAR 2014

FORGED BRASS BALL VALVE

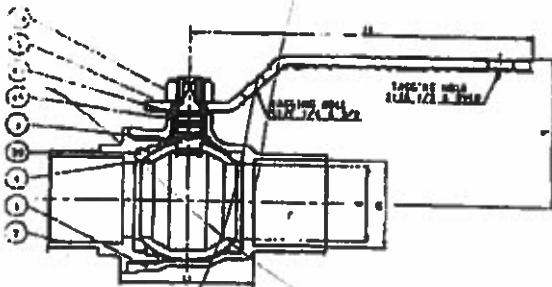
MAINTENANCE FREE DOUBLE O-RING STEM SEALS

Two Piece Body • Full Port
Blowout Proof Stem (Ni Plated)
CSA (US/C) • UL

CODE # 58
THREADED



CODE # 59
SOLDER*



*REFERENCE VALVE INSTALLATION TIPS FOR
GROUND SOLID MOUNTS PAGE 10 OF 11
INSTALLATION SHEET PACKAGED WITH VALVE

REVIEWED BY TOWER ARCTIC LTD.
DATED 3/10/14

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (Ni Plated), PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and certified to CSA, UL & FM.

KITZ Code No. 58 Threaded Ends
59 Solder Ends

BV-8 2009-10-15

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document.

NO EXCEPTIONS

TAKEN STANDARDS

END EXCEPTIONS

NOTED - FREQUENT

SOLDER JOINT ENDS

WALL THICKNESS

CONFORM TO MSS-SP 110

SPEC. WWW.P-358.T

Submission No.

Project No.

Project No.

Project No.

Project No.

Project No.

Project No.

Project No.

Project No.

Project No.

PRESSURE/TEMPERATURE

150 PSI SATURATED STEAM TO 366°F

600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

| NO. | NAME OF PART | SPECIFICATION |
|-----|---------------|---------------------------------|
| 1 | BODY | FORGED BRASS (B283, C37700) |
| 2 | BODY CAP | FORGED BRASS (B283, C37700) |
| 3 | STEM | (1) BRASS ROD (B16) |
| 4 | BALL | (2) FORGED BRASS (B283, C37700) |
| | | STRAIGHT OR HOLLOW BALL |
| 9 | HANDLE | (3) CARBON STEEL |
| 10 | HANDLE NUT | CARBON STEEL |
| 30 | BALL SEATS | PTFE |
| 45 | O-RINGS | FPM |
| 47 | THRUST WASHER | PBT |

NOTES: (1) NI PLATING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

| d2 SIZE | d | H | D1 | L | L1 | d1 Max. Min. | APPROX. CARTON NET WT. QTY |
|------------|------|------|------|------|------|-----------------|-------------------------------|
| 1/4 | .39 | 1.46 | 2.76 | 1.65 | 1.11 | .381 .377 | 29 120 |
| 3/8 | .39 | 1.46 | 2.76 | 1.65 | 1.05 | .306 .302 | 29 120 |
| 1/2 | .59 | 1.57 | 3.15 | 2.08 | 1.13 | .631 .627 | 29 96 |
| 3/4 | .79 | 1.69 | 3.15 | 2.36 | 1.37 | .881 .877 | 45 60 |
| 1 | 1.18 | 1.87 | 4.33 | 2.83 | 1.64 | 1.132 1.128 | 60 36 |
| 1 1/4 | 1.66 | 2.16 | 4.33 | 3.31 | 2.00 | 1.132 1.128 | 60 24 |
| 1 1/2 | 1.91 | 2.52 | 5.90 | 3.82 | 2.11 | 1.635 1.631 | 50 16 |
| 2 | 2.31 | 2.85 | 5.90 | 4.33 | 2.11 | 2.135 2.131 | 50 16 |

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document.

NO EXCEPTIONS

TAKEN

END EXCEPTIONS

NOTED - FREQUENT

SOLDER JOINT ENDS

WALL THICKNESS

CONFORM TO MSS-SP 110

SPEC. WWW.P-358.T

Submission No.

Project No.

Project No.

Project No.

Project No.

Project No.

Project No.

Project No.

Project No.

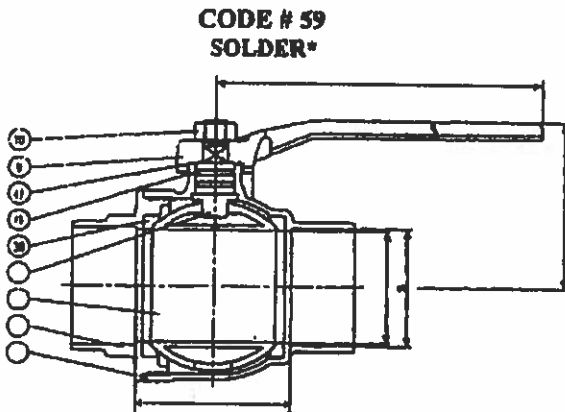
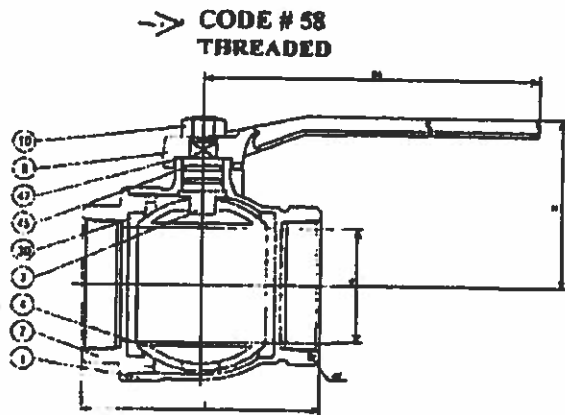
exp.

2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6
Tel: (613) 688-1899
Fax: (613) 225-7337

CAST BRONZE BALL VALVE

MAINTENANCE FREE DOUBLE O-RING STEM SEALS

Two Piece Body • Full Port • Chrome Plated Ball
Blowout Proof Stem (Ni Plated) • PTFE Seats



*REFERENCE VALVE INSTALLATION TIPS FOR
SOLDER JOINTS (PAGE BV-66) OR SEE
INSTALLATION SHEET PACKAGED WITH VALVE.

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (Ni Plated), PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110.

KITZ Code No. 58 Threaded Ends
59 Solder Ends

KITZ®

STANDARDS

END TO END KITZ
THREADED ENDS ANSI B1.20.1
SOLDER JOINT ENDS ANSI B16.18
WALL THICKNESS KITZ
CONFORMS TO MSS-SP 110 - REPLACES U.S. FED.
SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3

PRESSURE/TEMPERATURE

150 PSI SATURATED STEAM TO 366°F
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

| NO. | NAME OF PART | SPECIFICATION |
|-----|------------------------------|---|
| 1 | BODY | CAST BRONZE (B62) |
| 2 | BODY CAP | CAST BRONZE (B62) |
| 3 | STEM | (1) BRASS ROD (B16) |
| 4 | BALL (2 1/2") (3" & 4") | (3) FORGED BRASS (2) CAST BRASS STRAIGHT OR HOLLOW BALL |
| 9 | HANDLE (2 1/2") (3" & 4") | (3) CARBON STEEL DUCTILE IRON |
| 10 | HANDLE NUT | CARBON STEEL |
| 16 | WASHER (2 1/2") | CARBON STEEL |
| 30 | BALL SEATS | PTFE |
| 45 | O-RINGS | FPM |
| 47 | THRUST WASHER | PTFE |

NOTES: (1) NI PLATING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

| d2 SIZE | d | H | D1 | L | L1 | d1 Max. Min. | APPROX. CARTON NET WT. | QTY |
|------------|------|------|-------|------|------|-----------------|---------------------------|-----|
| 2 1/2 | 2.56 | 3.98 | 7.87 | 5.35 | 3.51 | 2.633 2.628 | 18 | 57 |
| 3 | 2.99 | 4.42 | 11.81 | 6.14 | 4.06 | 3.133 3.128 | 31 | 64 |
| 4 | 3.94 | 5.15 | 11.81 | 7.80 | | | 27 | 54 |

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents.

REVIEWED BY: POWER ARCTIC LTD.
DATE: 3/12/14

NO EXCEPTIONS
TAKEN

EXCEPTIONS
NOTED - RESUBMIT

Submission No. 1

Project No.

CG-SC-HQ-12012

By: ASDAL 9-11-14

Date: 15 MAR 2014



2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6
Tel: (613) 688-1888
Fax: (613) 225-7337

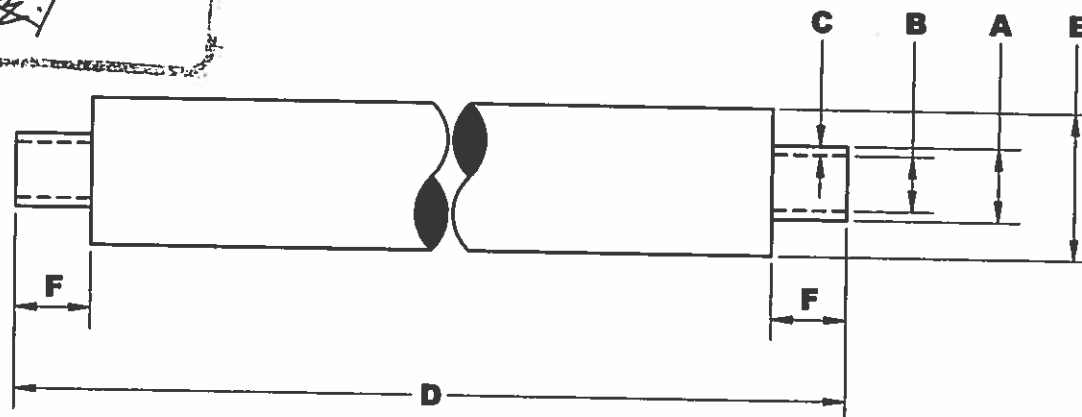
PIPE

URECON PRE-INSULATED HIGH DENSITY POLYETHYLENE PIPE WITH POLYETHYLENE JACKET SHOP DRAWING

REVIEWED BY TOWER ARCTIC LTD.
DATED

4/25/14

[Signature]



PIPE

| | |
|------------------------|------------|
| Nominal Diameter : | 2" |
| Series/Class : | DR-13.5 |
| Pipe service : | ----- |
| Joint type : | Butt Fused |
| Outside diameter "A" : | 2.375" |
| Inside diameter "B" : | 1.920" |
| Wall thickness "C" : | 0.216" |
| Overall length "D" : | 40' |

INSULATION

| | |
|------------------------|-------|
| Thickness : | 3" |
| Outside diameter "E" : | 8.63" |
| Cutback "F" : | 9" |
| Mastic on ends : | No |

TRACING

| | |
|---------------------------|------|
| Number of trace conduit : | ---- |
| Size of trace conduit : | ---- |
| Location : | ---- |
| Cable type : | ---- |

JACKET

| | |
|----------------|--------|
| Thickness : | 1.27mm |
| Color : | Black |
| UV inhibited : | No |

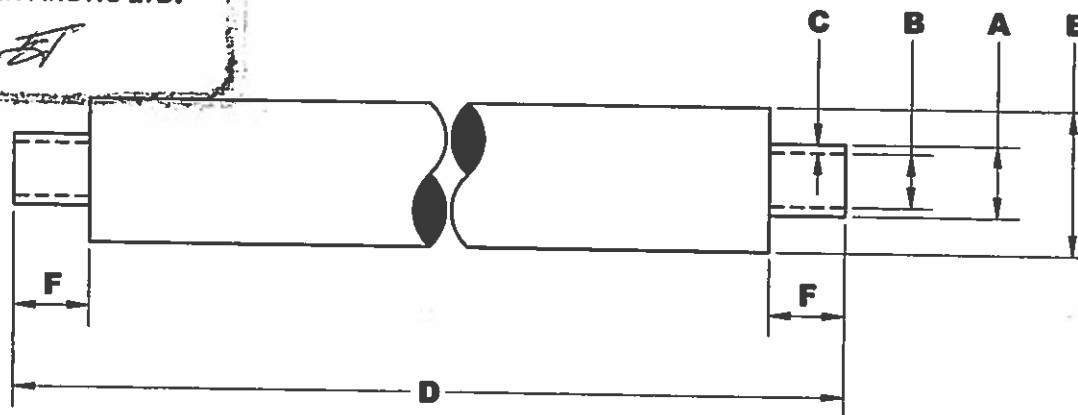
URECON U.I.P. PRE-INSULATED PIPE

| | |
|-----------------|----------------------------------|
| PROJECT | Resolute Bay New Utilidor Design |
| OWNER | Government of Nunavut |
| ENGINEER | EXP Services |
| DATE | April 1, 2014 |
| CONTRACT NUMBER | CGSHQ-12012 |

URECON PRE-INSULATED HIGH DENSITY POLYETHYLENE PIPE WITH POLYETHYLENE JACKET SHOP DRAWING

REVIEWED BY TOWER ARCTIC LTD.
DATED

4/25/14 *ET*



PIPE

| | |
|------------------------|------------|
| Nominal Diameter : | 4" |
| Series/Class : | DR-13.5 |
| Pipe service : | ----- |
| Joint type : | Butt Fused |
| Outside diameter "A" : | 4.50" |
| Inside diameter "B" : | 3.79" |
| Wall thickness "C" : | 0.33" |
| Overall length "D" : | 50' |

INSULATION

| | |
|------------------------|--------|
| Thickness : | 3" |
| Outside diameter "E" : | 10.75" |
| Cutback "F" : | 9" |
| Mastic on ends : | No |

TRACING

| | |
|---------------------------|------|
| Number of trace conduit : | ---- |
| Size of trace conduit : | ---- |
| Location : | ---- |
| Cable type : | ---- |

JACKET

| | |
|----------------|--------|
| Thickness : | 1.27mm |
| Color : | Black |
| UV inhibited : | No |

URECON U.I.P.® PRE-INSULATED PIPE

| | |
|-----------------|----------------------------------|
| PROJECT | Resolute Bay New Utilidor Design |
| OWNER | Government of Nunavut |
| ENGINEER | EXP Services |
| DATE | April 1, 2014 |
| CONTRACT NUMBER | CGSHQ-12012 |

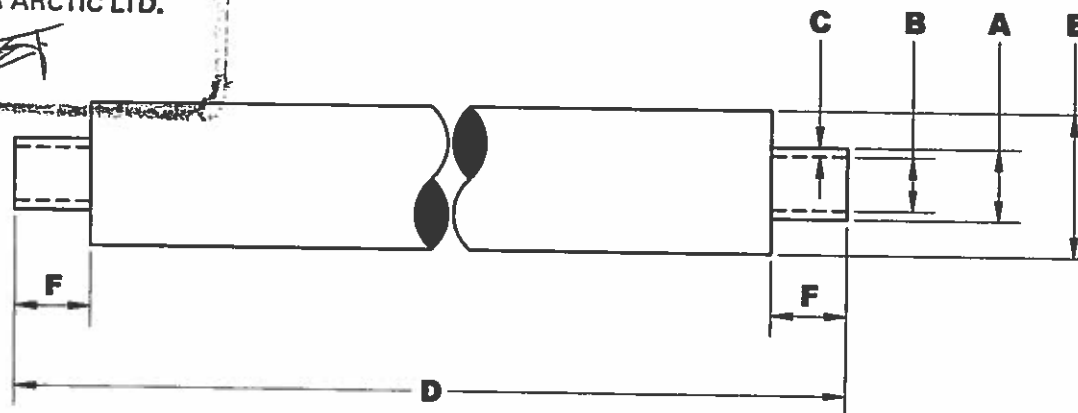
URECON PRE-INSULATED HIGH DENSITY POLYETHYLENE PIPE WITH POLYETHYLENE JACKET SHOP DRAWING

REVIEWED BY TOWER ARCTIC LTD.

DATED

4/25/14

[Signature]



PIPE

| | |
|------------------------|------------|
| Nominal Diameter : | 6" |
| Series/Class : | DR-13.5 |
| Pipe service : | ----- |
| Joint type : | Butt Fused |
| Outside diameter "A" : | 6.625" |
| Inside diameter "B" : | 5.58" |
| Wall thickness "C" : | 0.49" |
| Overall length "D" : | 50' |

INSULATION

| | |
|------------------------|--------|
| Thickness : | 3" |
| Outside diameter "E" : | 12.88" |
| Cutback "F" : | 9" 22 |
| Mastic on ends : | No |

TRACING

| | |
|---------------------------|------|
| Number of trace conduit : | ---- |
| Size of trace conduit : | ---- |
| Location : | ---- |
| Cable type : | ---- |

JACKET

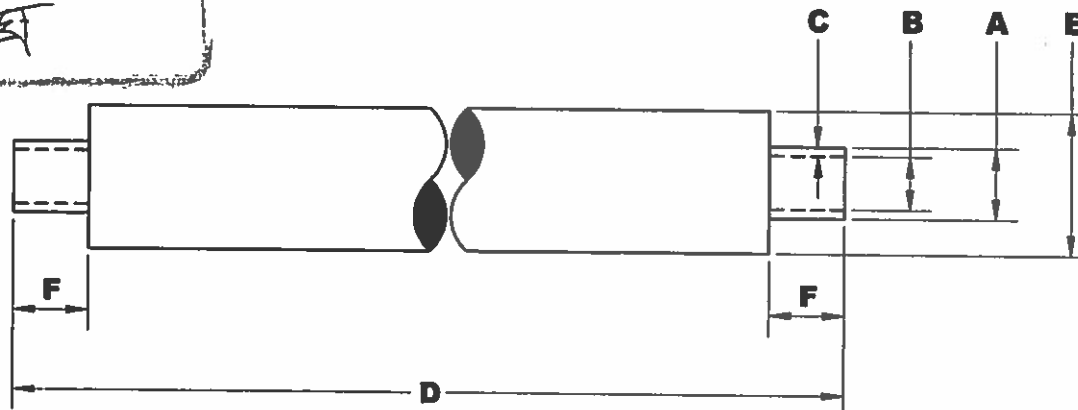
| | |
|----------------|--------|
| Thickness : | 1.27mm |
| Color : | Black |
| UV inhibited : | No |

URECON U.I.P. PRE-INSULATED PIPE

| | |
|-----------------|----------------------------------|
| PROJECT | Resolute Bay New Utilidor Design |
| OWNER | Government of Nunavut |
| ENGINEER | EXP Services |
| DATE | April 1, 2014 |
| CONTRACT NUMBER | CGSHQ-12012 |

URECON PRE-INSULATED HIGH DENSITY POLYETHYLENE PIPE WITH POLYETHYLENE JACKET SHOP DRAWING

REVIEWED BY TOWER ARCTIC LTD.
DATED 4/25/14 *BT*



PIPE

| | |
|------------------------|------------|
| Nominal Diameter : | 8" |
| Series/Class : | DR-13.5 |
| Pipe service : | ----- |
| Joint type : | Butt Fused |
| Outside diameter "A" : | 8.625" |
| Inside diameter "B" : | 7.27" |
| Wall thickness "C" : | 0.64" |
| Overall length "D" : | 50' |

INSULATION

| | |
|------------------------|-------|
| Thickness : | 3" |
| Outside diameter "E" : | 15" |
| Cutback "F" : | 9' 2" |
| Mastic on ends : | No |

TRACING

| | |
|---------------------------|------|
| Number of trace conduit : | ---- |
| Size of trace conduit : | ---- |
| Location : | ---- |
| Cable type : | ---- |

JACKET

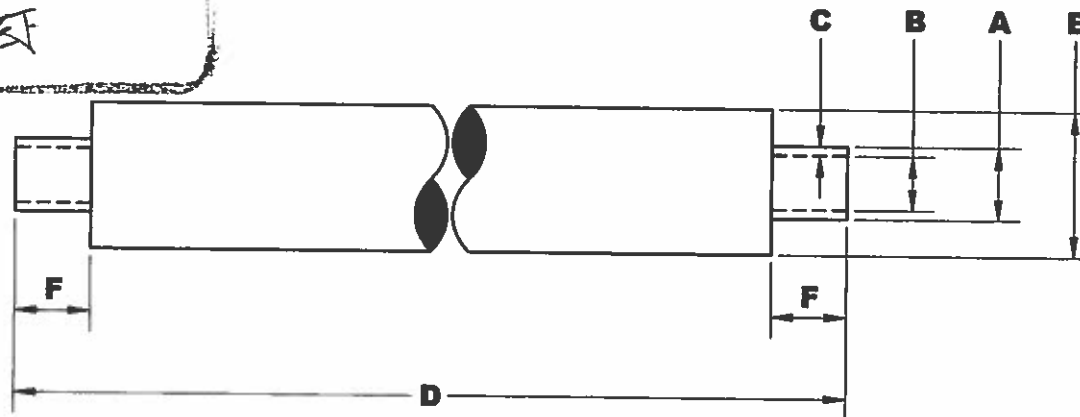
| | |
|----------------|--------|
| Thickness : | 1.27mm |
| Color : | Black |
| UV inhibited : | No |

URECON U.I.P. - PRE-INSULATED PIPE

| | |
|-----------------|----------------------------------|
| PROJECT | Resolute Bay New Utilidor Design |
| OWNER | Government of Nunavut |
| ENGINEER | EXP Services |
| DATE | April 1, 2014 |
| CONTRACT NUMBER | CGSHQ-12012 |

URECON PRE-INSULATED HIGH DENSITY POLYETHYLENE PIPE WITH POLYETHYLENE JACKET SHOP DRAWING

REVIEWED BY TOWER ARCTIC LTD.
DATED 4/25/14 *EF*



PIPE

| | |
|------------------------|------------|
| Nominal Diameter : | 10" |
| Series/Class : | DR-13.5 |
| Pipe service : | ----- |
| Joint type : | Butt Fused |
| Outside diameter "A" : | 10.75" |
| Inside diameter "B" : | 9.06" |
| Wall thickness "C" : | 0.80" |
| Overall length "D" : | 50' |

INSULATION

| | |
|------------------------|--------|
| Thickness : | 3" |
| Outside diameter "E" : | 17.13" |
| Cutback "F" : | 8" 22 |
| Mastic on ends : | No |

TRACING

| | |
|---------------------------|------|
| Number of trace conduit : | ---- |
| Size of trace conduit : | ---- |
| Location : | ---- |
| Cable type : | ---- |

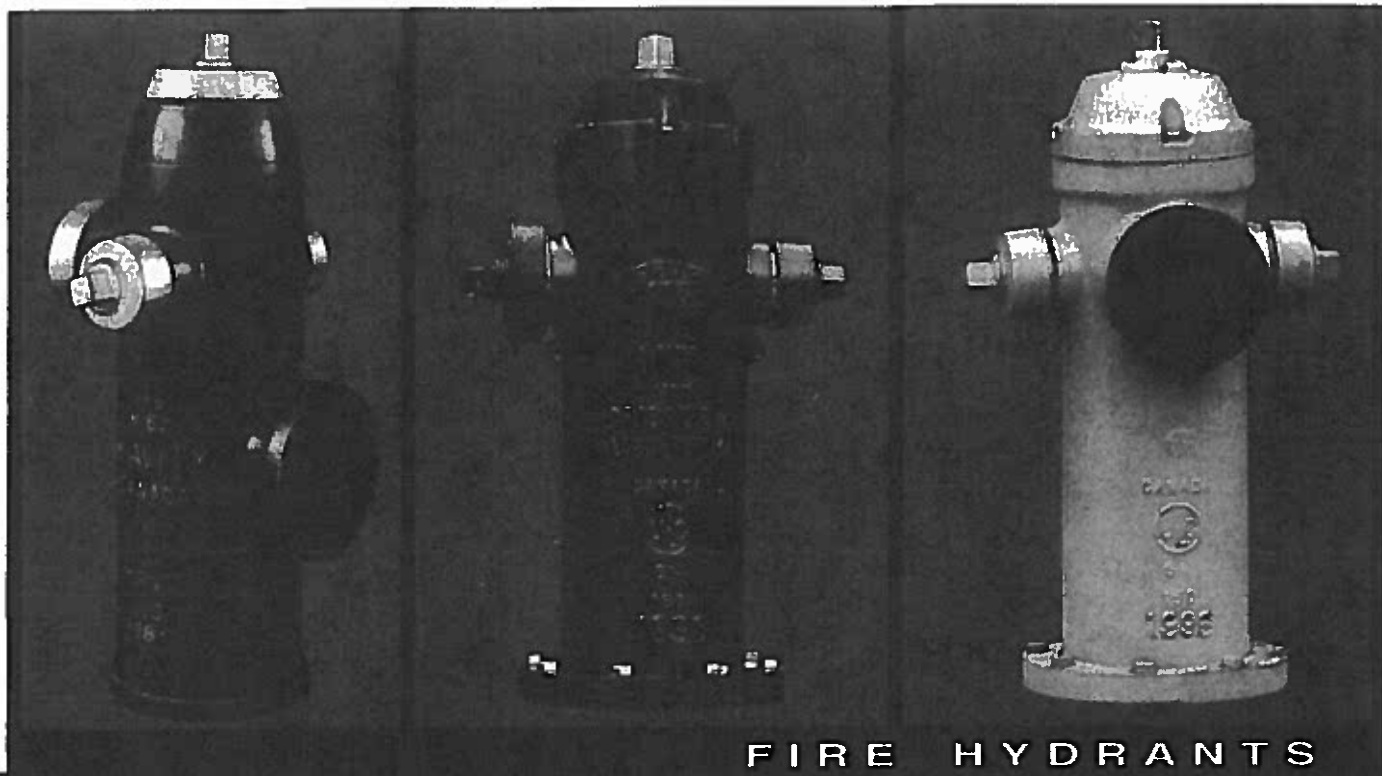
JACKET

| | |
|----------------|--------|
| Thickness : | 1.27mm |
| Color : | Black |
| UV inhibited : | No |

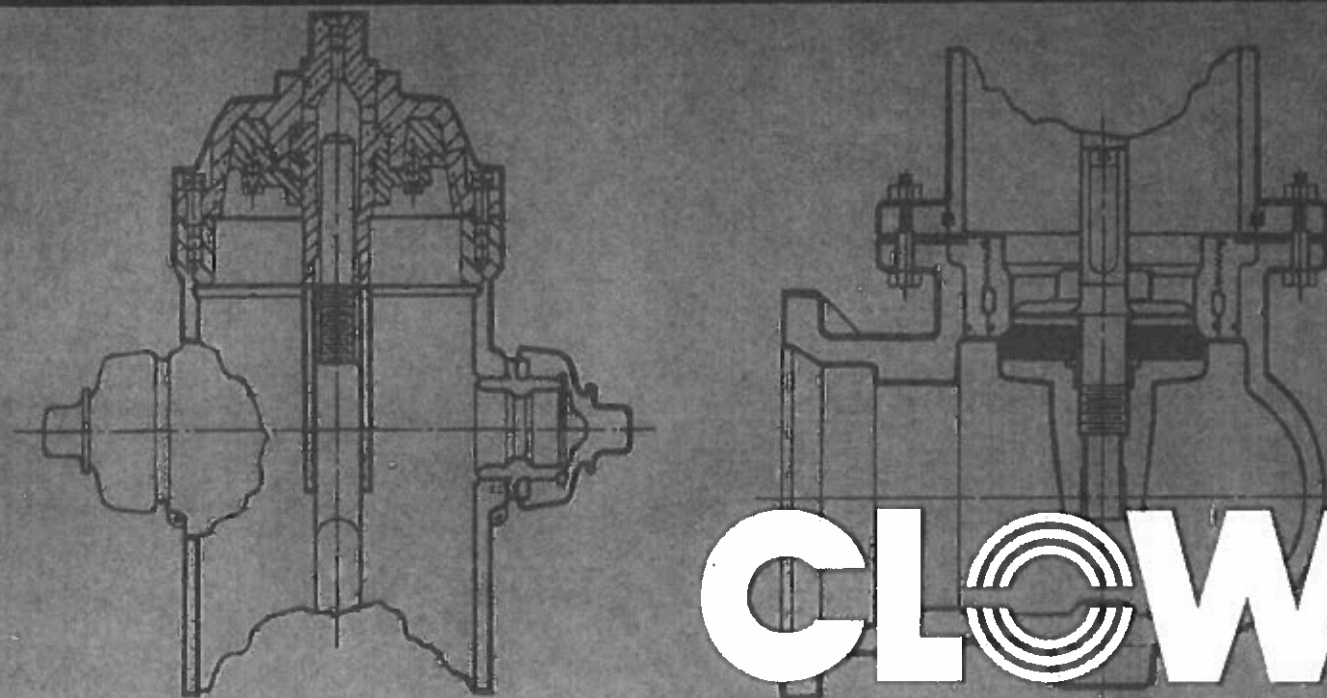
URECON U.I.P. - PRE-INSULATED PIPE

| | |
|-----------------|----------------------------------|
| PROJECT | Resolute Bay New Utilidor Design |
| OWNER | Government of Nunavut |
| ENGINEER | EXP Services |
| DATE | April 1, 2014 |
| CONTRACT NUMBER | CGSHQ-12012 |

FIRE HYDRANTS



FIRE HYDRANTS

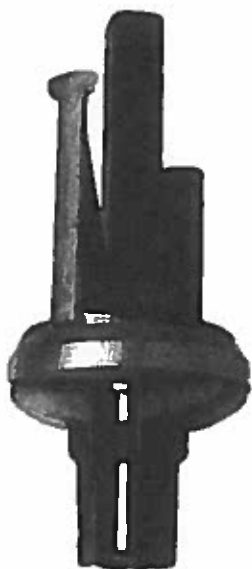


CLOW

CLOW CANADA

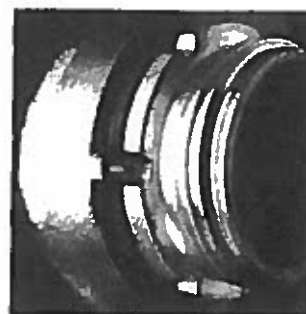
www.clowcanada.com

BRIGADIER
SERIES M



Lower valve assembly

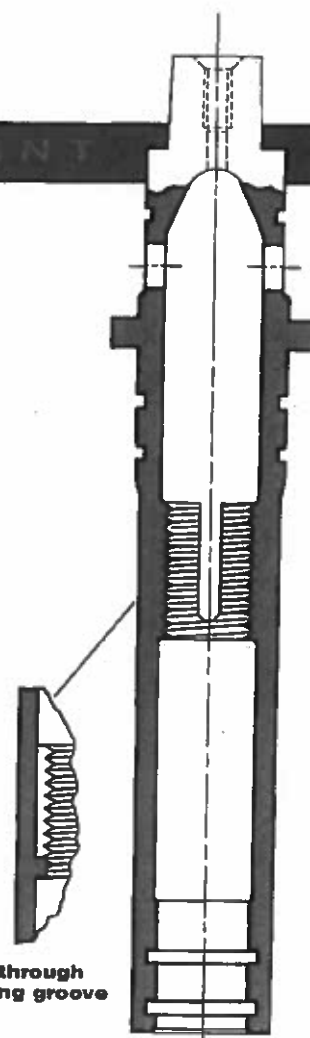
Clow Canada is committed to the manufacture and delivery of superior products, supported by superior services. Strict quality control measures govern every step of the manufacturing process, to ensure precision and consistency. We provide the knowledge, the technology and the products to serve industry's changing needs, efficiently and effectively. For more information about our products or services, please contact the Clow Canada sales office nearest you.



External allen screw locks nozzle into place

Clow Canada's Brigadier SERIES M incorporates several new design features and improved components for increased performance in firefighting, along with greater durability, economy and convenience. These hydrants are manufactured in Canada to the highest standards of quality — every unit is thoroughly tested before leaving the Clow factory. Lubrication is assured through the Brigadier's unique Hydra-lube™ mechanism. The Brigadier can be rotated to any position — during or after installation — without disturbing the working mechanism. The rugged Brigadier SERIES M stands up easily to traffic damage. It is designed for easy upkeep, repair and replacement of parts; its internal assembly can be removed and replaced in 20 minutes, without excavation. Alternative design options and accessories serve a wide range of municipal and industrial needs. The Brigadier's advantages include:

- **efficient compression-type hydrant**
- **factory-lubricated operating mechanism effectively O-ring sealed for long and efficient operation**
- **very low opening and closing torques**
- **automatic drainage**
- **positive sealing with O-rings at operating nut, operating housing, seat, bronze casing and seat**
- **durable and positive seating**
- **easy multiple positioning**
- **safety stem coupling and four safety segments**
- **internal parts easily removed — bury easily increased**
- **threaded hose and pumper nozzles — simple replacement if needed**
- **complete interchangeability with previous M-67 and M-59-M model hydrants**
- **conforms to AWWA specifications**



Section through lubricating groove

Hydra-lube™ operating nut



Hydra-lube™

The Brigadier's innovative Hydra-lube™ system incorporates an internal grease channel for self-lubrication during operation.

Stainless steel rod

Stainless steel upper stem provides corrosion-free seating for O-rings.

Nozzles

An external allen screw mechanically locks nozzles into place; this offers greater assurance that nozzles will not turn or back out.

Safety flanges

The safety flange consists of four identical segments grooved on the underside. The strength of these sections is less than the strength of the intermediate section flange; if severe impact occurs, breakage will be at the safety segment. The hydrant body, working mechanism, intermediate section and connecting flange remain undamaged.

Automatic drain

To prevent corrosion and freeze-up, the hydrant body is automatically drained quickly through the drip valve after each use.

Lower valve assembly

The lower valve plate assembly is extended to fully encapsulate the lower rod threads. This allows for increased corrosion resistance and ease of disassembly.

Epoxy coating

A durable epoxy coating on the interior and exterior of the elbow guards against corrosion.

Ground line

CLOSED

OPEN



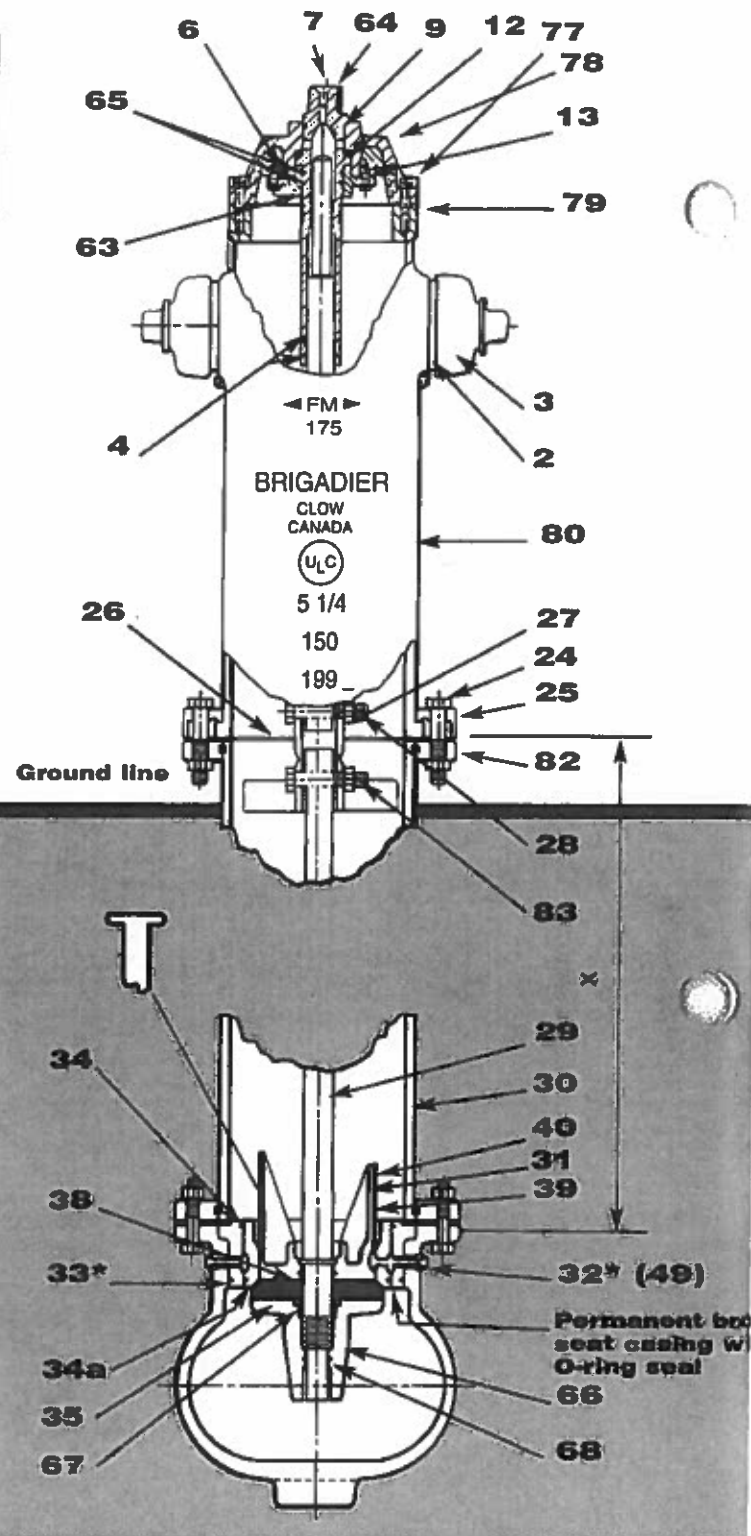
Listed by Underwriters'
Laboratories of Canada.



Factory Mutual Approved

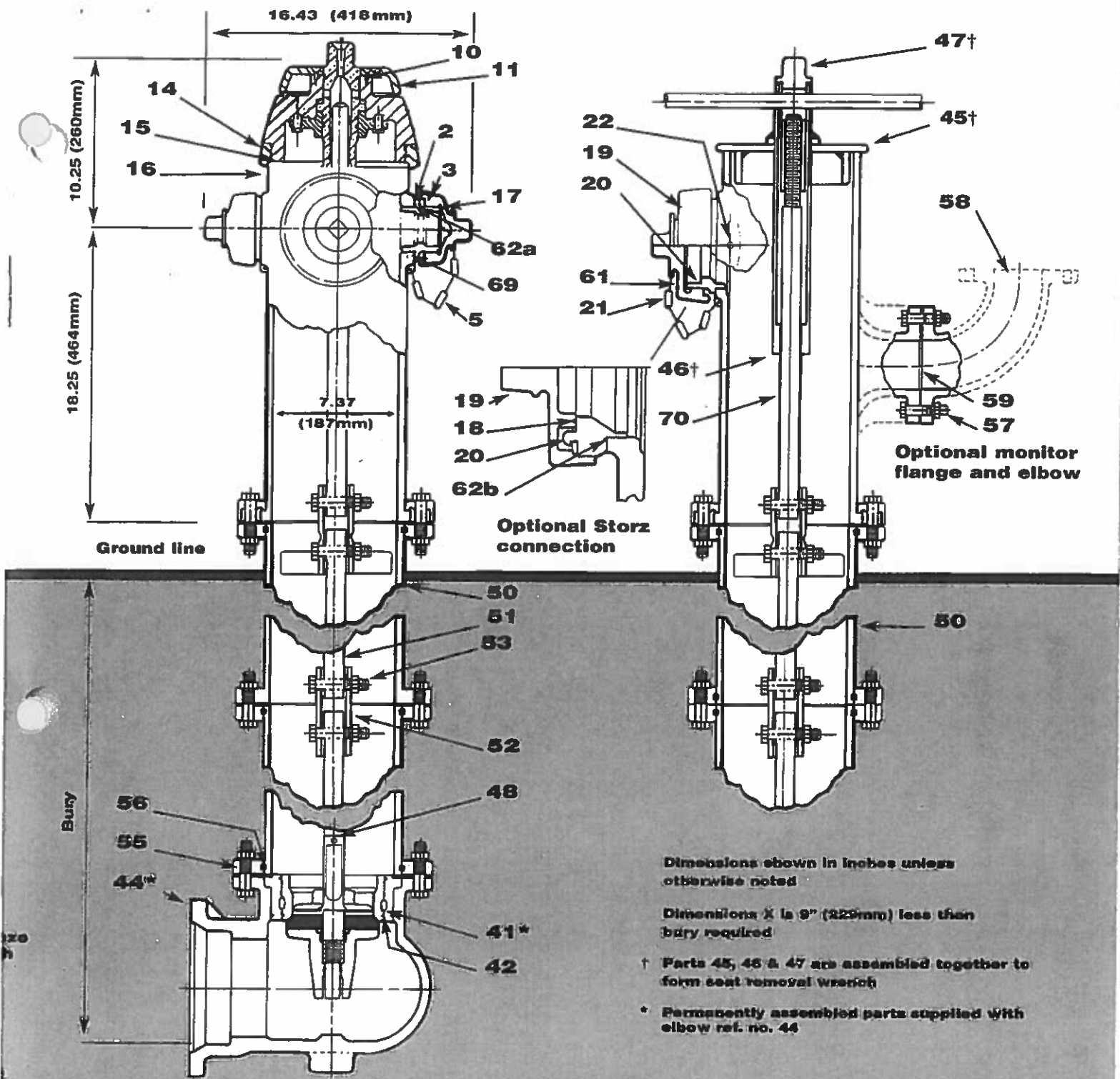
CLOW
CLOW CANADA

| NO. | DESCRIPTION | MATERIAL |
|-------|-----------------------------------|-------------------------|
| 2 | HOSE NOZZLE | COPPER ALLOY |
| 3 | HOSE NOZZLE CAP | CAST IRON |
| 4 | HOUSING STEM "O" RING | BUNA N |
| 5 | HOSE CAP CHAIN & "S" HOOK | STEEL ZINC PLATED |
| 6 | HOUSING JOINT GASKET | COMPRESSED NON ASBESTOS |
| 7 | OIL HOLE SCREW | BRASS |
| 9 | OPERATING NUT "O" RING | BUNA N |
| 12 | OPERATING NUT BEARING | DELRIN |
| 13 | CAP SCREW (RETAINING GLAND) | STEEL Z.P. |
| 17 | HOSE CAP GASKET | RED RUBBER |
| 18 | PUMPER CAP "O" RING STORZ 100 | BUNA N |
| 19 | PUMPER NOZZLE CAP | CAST IRON |
| 20 | PUMPER NOZZLE | COPPER ALLOY |
| 21 | PUMPER CAP CHAIN & "S" HOOK | STEEL Z.P. |
| 24 | INTERSECTION BOLTS & NUTS | STEEL Z.P. |
| 25 | SAFETY FLANGE (SEGMENTS) | CAST IRON |
| 26 | INTERSECTION GASKET | RED RUBBER |
| 27 | SAFETY COUPLING | CAST IRON |
| 28 | SAFETY COUPLING BOLT & NUT | STEEL Z.P. |
| 29 | OPERATING STEM LOWER | STEEL |
| 30 | INTERMEDIATE SECTION | DUCTILE |
| 31 | DRIP VALVE | COPPER ALLOY |
| *32 | DRAIN HOLE LINING | BRASS |
| 34 | SEAT "O" RING TOP | BUNA N |
| 34 A | SEAT "O" RING BOTTOM | BUNA N |
| 35 | MAIN VALVE DISC | RUBBER |
| 38 | MAIN VALVE "O" RING | BUNA N |
| 39 | DRIP VALVE FACING | RUBBER |
| 40 | HOLDING CLAMP | PLASTIC |
| 42 | MAIN VALVE SEAT | COPPER ALLOY |
| *44 | ELBOW (STATE INLET REQUIRED) | CAST IRON |
| **45† | GUIDE PLATE ASSEMBLY | STEEL |
| **46† | INTERIOR WRENCH | STEEL |
| 47† | HOLDING NUT | COPPER ALLOY |
| 48 | HOLDING CLAMP SCREW | BRASS |
| 49 | DRAIN HOLE PLUG | BRASS |
| 50 | INTERSECTION EXTENSION | DUCTILE IRON |
| 51 | INTER-EXTENSION STEM | STEEL |
| 52 | ALIGNMENT COUPLING | CAST IRON |
| 53 | EXTENSION STEM BOLT & NUT | STEEL Z.P. |
| 55 | PIPE FLANGE (BOTTOM) | CAST IRON |
| 56 | RETAINING RING (SQUARE) | STEEL Z.P. |
| 57 | MONITOR BOLT & NUT | STEEL Z.P. |
| 58 | MONITOR ELBOW | CAST IRON |
| 59 | MONITOR GASKET | RED RUBBER |
| 61 | PUMPER CAP GASKET | RED RUBBER |
| 62 A | HOSE NOZZLE "O" RING | BUNA N |
| 62 B | PUMPER NOZZLE "O" RING | BUNA N |
| 63 | OPERATING NUT RETAINING GLAND | CAST IRON |
| 64 | OPERATING NUT | COPPER ALLOY |
| 65 | OPERATING NUT "O" RING | BUNA N |
| 66 | LOWER VALVE PLATE | CAST IRON |
| 67 | LOCKWASHER | STAINLESS STEEL |
| 68 | LOWER VALVE PLATE "O" RING | BUNA N |
| 69 | H. NOZ. SET SCREW, PUMP. NOZ. PIN | ST. STL., BRASS |
| 70 | OPERATING STEM UPPER | STAINLESS STEEL |
| 71 | STORZ 100 PUMPER NOZZLE | STAINLESS STEEL |
| 72 | STORZ 65 HOSE NOZZLE | COPPER ALLOY |
| 73 | STORZ 65 HOSE CAP "O" RING | BUNA N |
| 74 | STORZ 65 HOSE CAP | CAST IRON |
| 75 | STORZ 100 PUMPER NOZZLE | COPPER ALLOY |
| 76 | STORZ 100 PUMPER CAP | CAST IRON |



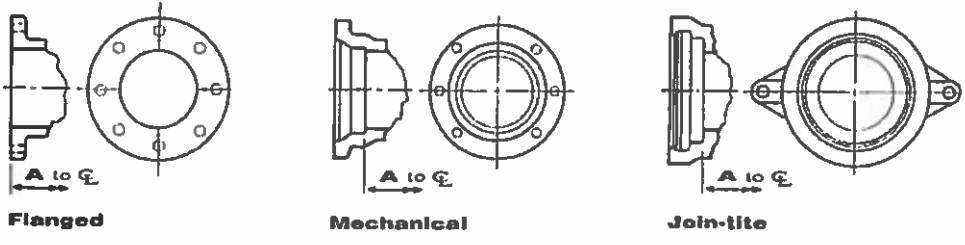
| NO. | DESCRIPTION | MATERIAL |
|-----|-----------------------------------|-----------------|
| 77 | BODY CAP BOLTS | STAINLESS STEEL |
| 78 | BODY CAP | CAST IRON |
| 79 | BODY CAP GASKET | RED RUBBER |
| 80 | BODY | CAST IRON |
| *81 | SEAT RING | COPPER ALLOY |
| 82 | PIPE FLANGE (TOP) | CAST IRON |
| 83 | SAFETY COUPLING CLEVIS BOLT & PIN | STEEL Z.P. |

* BOLT DOWN: 77/78/79/80
† SCREW DOWN: 10/14/15/16



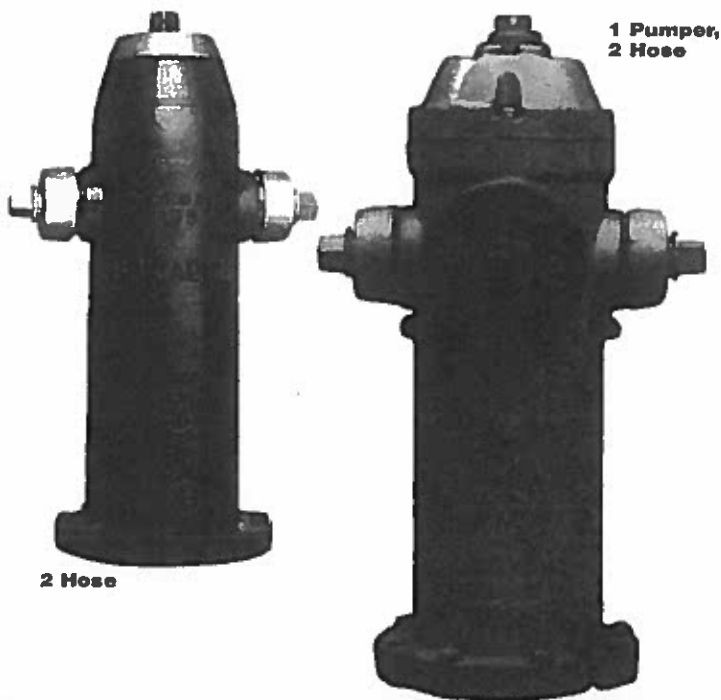
BRIGADIER M

Hydrant end joints



| | 4" | 6" | 8" |
|------------|-------|-------|-------|
| Flanged | 8.25" | 8.75" | |
| Mechanical | 5.50" | 6.00" | 7.50" |
| Join-tite | | 4.62" | |

DIMENSION A



BRIGADIER M

- Hydrant shall be manufactured in accordance with AWWA Standard C502, and shall be listed with ULC and FM.
- Hydrant shall be designed for 175 p.s.i. working pressure and tested to 350 p.s.i. hydrostatic pressure.
- Hydrant shall be backed by manufacturer's 5 year limited warranty.
- Hydrant shall be a compression type, dry barrel design with centre operating stem construction.
- The O-ring seating surface on the upper operating stem shall be constructed of stainless steel.
- Hydrant lower operating rod shall be 1-1/4 inches in diameter.
- Hydrant shall have an internally lubricated bronze operating nut with O-ring seals. Operating nut shall be of the Hydra-lube™ design to ensure self-lubrication during operation.
- Hydrant hose nozzles shall be mechanically locked into place by an external allen screw, and have O-ring seals.
- Epoxy coating to be applied to interior and exterior of hydrant shoe for corrosion protection.
- Hydrant shall be manufactured with operating nut and integral thrust collar made of bronze. Delrin washer bearing shall be located above thrust collar for ease of hydrant operation.
- Hydrant shall have a lower valve assembly that fully encapsulates the lower operating rod threads. This allows for increased corrosion resistance and ease of disassembly.
- Hydrant shall be manufactured with a lower valve plate that bottoms out in the shoe for maximum opening.
- Hydrant shall have a main valve opening of 5-1/4 inches.
- Hydrant shall be a traffic model, complete with safety flanges and stem coupling. Nozzle section must rotate 360 degrees.
- Intermediate section shall be ductile iron.
- Hydrant shall be the Clow Canada Brigadier as manufactured by Clow Canada.

Accessories/Alternatives/Options

Monitor flange

The Brigadier is available with monitor flange for use in industrial fire protection in pulp and paper mills, lumber yards or storage areas for inflammable materials. The hydrant's 3" (76mm) flanged outlet is faced and drilled to ANSI 125, suitable for connecting a long radius flanged elbow and standpipe for mounting a monitor nozzle.

Conversion kit

Previous M-67 models may be converted to incorporate important features of the Brigadier — easily and without excavation.

Kit consists of:

Operating nut conversion:

- two-piece stainless upper stem
- Hydra-lube™ operating nut
- nut retainer gland, gasket and fasteners
- Delrin thrust bearing

Lower valve plate conversion:

- Brigadier extended lower valve plate complete with O-ring and locking device
- valve disc (urethane or SBR)

All Brigadier components are fully interchangeable with previous M-67 and M-59 models

On-line hydrant

Clow's on-line fire hydrant is suitable for service in cold climates where buries are lengthy, and it is feasible and economical to bolt the hydrant directly on a tee installed on a main. An 8" (203mm) flanged spool piece replaces the conventional hydrant elbow; the spool piece flange has 8 holes of 7/8" (22mm) diameter, on a 9 1/2" (242mm) bolt circle diameter.

Flush hydrant

Clow provides a flush-type hydrant especially designed for areas which must be kept clear of all obstructions, such as airports. Nozzles and operating nut are located in a cast iron box, the top of which is level with the groundline. "Clow" and year of manufacture are cast on the cover, with special lettering supplied to order. Other industrial applications include places where the surface is kept clear of snow or ice by underground heating. This hydrant is available with two hose connections or one hose and one pumper connection. Surface box may have piped drain (which could be connected to elbow drain) or with drain plugged requiring pumping out after each use.

Wall hydrant

Clow's wall-type hydrant is of special interest where space is at a premium. The interior parts of the hydrant are located inside the building, and the hydrant protrudes from the face of the wall approximately 8" (203mm).

Note: When ordering, please specify wall thickness (X) and distance from outside of wall to centre of hydrant inlet (Y), as well as other required specifications.

Further details on Clow Canada's Brigadier options and/or accessories are available upon request.

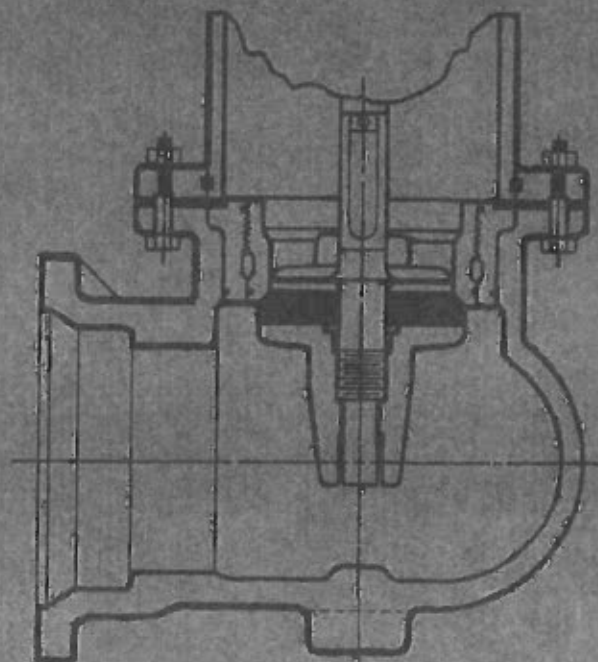
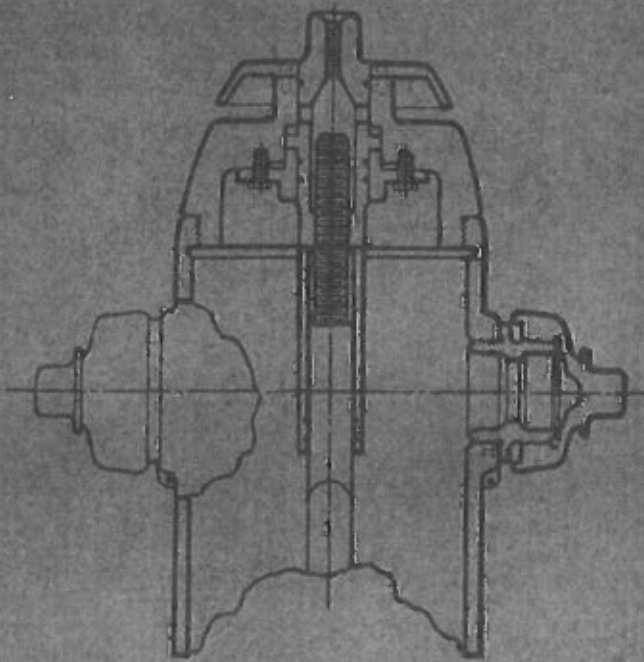
CLOW
CLOW CANADA

HAMILTON, ONTARIO
TOLL FREE NUMBER

1-800-561-9931

Tel. (905) 548-9604 Fax (905) 547-0113

www.clowcanada.com



EASTERN CANADA

P.O. Box 700
Saint John, N.B. E2L 4B3
Tel. (506) 633-2541
Fax (506) 634-8936

WESTERN CANADA

801 Smelter Ave. S.E.
P.O. Box 1000
Medicine Hat, AB T1A 7H1
Tel. (403) 527-3553
Fax (403) 527-7454

CLOW
CLOW CANADA

HEAD OFFICE

1757 Burlington Street East
P.O. Box 2849
Hamilton, ON L8H 3L5
Tel. (905) 548-9604
Fax (905) 548-6885

CLOW

CLOW CANADA

BRIGADIER

6" ON-LINE HYDRANT

250 PSI FM APPROVED

DRAWING

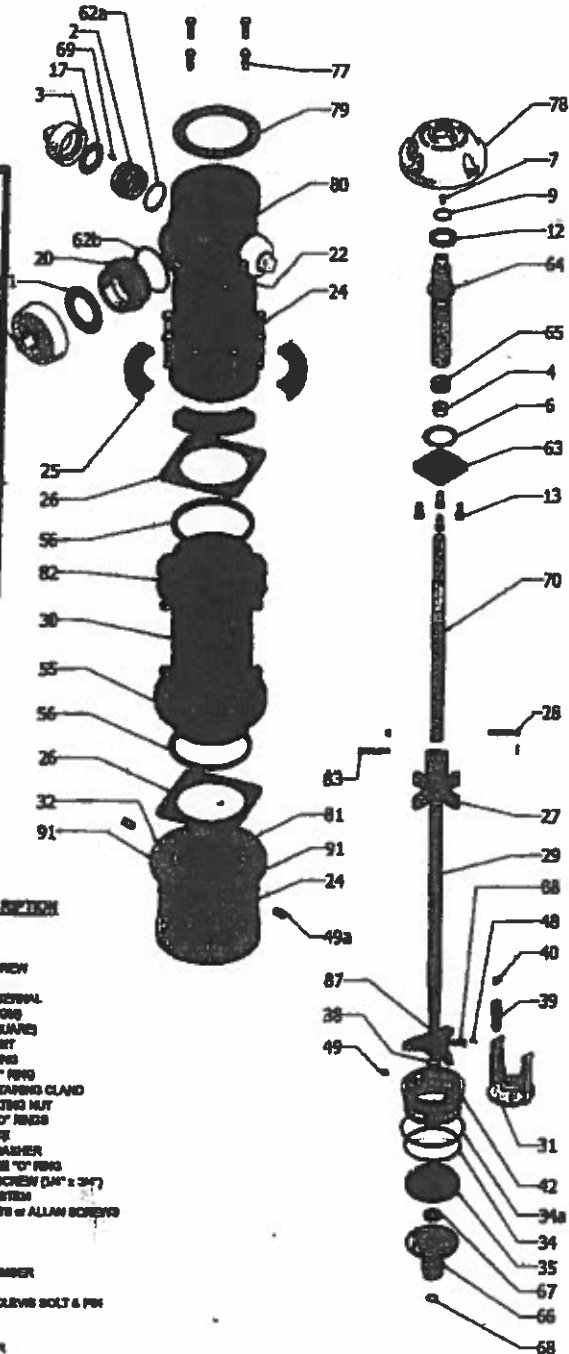
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| | |
|-----------------------------|-------------|
| NO EXCEPTIONS TAKEN | 12012 |
| EXCEPTIONS NOTED & RESUBMIT | 16 APR 2012 |

exp. 2850 Queen Street, Suite 100
Ottawa, Ontario K1H 8H5
Tel: (613) 736-1111
Fax: (613) 736-1112

LIST OF 6" ON-LINE HYDRANT STANDARD PARTS

| Ref No | DESCRIPTION | Ref No | DESCRIPTION |
|--------|--|--------|-------------------------------------|
| 2 | HOSE NOZZLE | 40 | HOLDING CLAMP |
| 3 | HOSE NOZZLE CAP | 42 | MAIN VALVE SEAT |
| 4 | HOLDING STEM "O" RING | 44 | HOLDING CLAMP SCREW |
| 5 | HOSE CAP CHAIN & "O" HOOK | 46 | CHAIN HOLE PLUG |
| 6 | HOLDING JOINT GASKET | 48a | 3/4" PIPE PLUGS EXTERNAL |
| 7 | OIL HOLE SCREW | 50 | PIPE FLANGE BOTTOM |
| 9 | OPERATING NUT "O" RING | 52 | RETURNING RING (GLAND) |
| 12 | OPERATING NUT BEARING | 54 | PUMPER CAP GASKET |
| 13 | CAP SCREW (1/2" x 1 1/4") | 56a | HOSE NOZZLE "O" RING |
| 17 | HOSE CAP GASKET | 56b | PUMPER NOZZLE "O" RING |
| 19 | PUMPER NOZZLE CAP | 62 | OPERATING NUT RETURNING CLAND |
| 20 | PUMPER NOZZLE | 64 | HYDRAULIC OPERATING NUT |
| 21 | PUMPER CAP CHAIN & "O" HOOK | 66 | RETURNING GLAND "O" RING |
| 22 | PUMPER NOZZLE PIN | 68 | LOWER VALVE PLATE |
| 24 | INTERMEDIATE BOLTS & NUTS | 67 | MAIN VALVE LOCKWASHER |
| 25 | SAFETY PLATE (SEGMENTS) | 69 | LOWER VALVE PLATE "O" RING |
| 26 | INTERMEDIATE GASKET | 70 | HOSE NOZZLE SET SCREW (3/4" x 3/4") |
| 27 | SAFETY COUPLING | 72 | UPPER OPERATING STEM |
| 28 | SAFETY COUPLING BOLT & NUT (3/4" x 3/4") | 77 | BODY CAP HEX BOLTS w/ ALLAN SCREWS |
| 29 | OPERATING STEM LOWER | 78 | BODY CAP |
| 30 | INTERMEDIATE SECTION | 79 | BODY CAP GASKET |
| 31 | DRIP WARE | 80 | BODY |
| 32 | CHAIN HOLE LUBING OIL CHAMBER | 81 | SEAT RING OIL CHAMBER |
| 34a | SEAT "O" RING (TOP) | 82 | PIPE FLANGE TOP |
| 34b | SEAT "O" RING (BOTTOM) | 83 | SAFETY COUPLING CLEVIS BOLT & PIN |
| 35 | MAIN VALVE O-RING | 87 | CHAINS SPOKE |
| 36 | MAIN VALVE "O" RING | 89 | 3/4" x 1 1/4" BOLT |
| 38 | DRIP VALVE FACING | 91 | 6" ON-LINE CHAMBER |



MADE IN CANADA



www.clowcanada.com

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for contract documents.

Link-Seal® Modular Seal Model Properties



EPDM (Black)
EPDM (Blue) Low Ductility

Substitution of L-Link-Seal Modular Seal
Standard for use in water, direct ground burial and atmospheric conditions. Provide electrical isolation system cathodic protection is required.
Design: Standard
Seal Element: EPDM (Black) or EPDM (Blue)
Pressure Plates: Reinforced Nylon Polymer
Bolts & Nuts: Steel with 2-part Zinc Dichromate & proprietary corrosion inhibiting coating.
Temp. Range: -40 to +250°F (-40 to +121°C)*

* = Sustained operation near temperature limits may affect life expectancy.

with Nitrile Seal Elements



Nitrile (Green)

Model "O" Link-Seal Modular Seal
Nitrile rubber is resistant to oils, fuel and many solvents (gasoline, motor oil, kerosene, methane, jet fuel, hydraulic fluid, water, etc.).
Type: Oil Resistant
Seal Element: Nitrile (Green) Note: Not UV resistant.
Pressure Plates: Reinforced Nylon Polymer
Bolts & Nuts: Steel with 2-part Zinc Dichromate & proprietary corrosion inhibiting coating.
Temp. Range: -40 to +210°F (-40 to +99°C)*

with Silicone Seal Elements



Silicone (Grey)

Model "T" Link-Seal Modular Seal
Silicone rubber is ideal for temperature extremes. The "T" model is one-hour Factory Mutual approved.
Type: High/Low Temperature
Seal Element: Silicone (Grey)
Pressure Plates: Steel Zinc Dichromate
Bolts: Steel with 2-part Zinc Dichromate & proprietary corrosion inhibiting coating.
Temp. Range: -67 to +400°F (-55 to +204°C)*

ex

NO EXCEPT TAKE

EXCEPT TAKE

NOTED - REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for contract documents.

Model "FD/F8" Link-Seal Modular Seal
Double seal for added protection.
Type: Fire Seals
Seal Element: Silicone (Grey)
Pressure Plates: Steel zinc dichromate
Bolts: Steel with 2-part Zinc Dichromate & proprietary corrosion inhibiting coating.
Temp. Range: -67 to +400°F (-55 to +204°C)*
NOTE: Sustain a constant temp. of 325°F. (163°C.)
* = Sustained operation near temperature limits may affect life expectancy.

Material Properties of Link-Seal Modular Seal Elements

| PROPERTY | ASTM METHOD | EPDM (EPDM L) | NITRILE | SILICONE |
|--------------------|-------------|-------------------------------|--------------------------------|--------------------------------|
| Hardness (shore A) | D-2240 | 50 ±5 (40 ±5) | 50 ±5 | 50 ±5 |
| Tensile | D-412 | 1450 psi | 1300 psi | 860 psi |
| Elongation | D-412 | 400% | 300% | 250% |
| Compression Set | S-395 | 15% 22 hrs. @ 158°F (70°C) | 45% 22 hrs. @ 212°F (100°C) | 40% 22 hrs. @ 360°F (177°C) |
| Specific Gravity | D-297 | 1.10 | 1.15 | 1.40 |

Material Properties of Composite Pressure Plates

| PROPERTY | ASTM METHOD | VALUE |
|---------------------------|-------------|---------------|
| Izod Impact - Notched | D-256 | 2.05 ft-lb/in |
| Tensile Strength @ Yield | D-638 | 20,000 psi |
| Tensile Strength - Break | D-638 | 20,250 psi |
| Flexural Strength @ Yield | D-790 | 30,750 psi |
| Flexural Modulus | D-790 | 1,124,000 psi |
| Elongation, Break | D-638 | 11.07% |
| Specific Gravity | D-792 | 1.38 |
| Moisture Content | - | 0.18% |

Bolt & Nut Specifications

Standard: Carbon Steel
Carbon steel, zinc dichromated per ASTM B833, with an additional corrosion inhibiting proprietary organic coating. (passes 1470 hour salt spray test)
Tensile Strength = 80,000 psi, minimum.

Option: Stainless Steel
ANSI Type = 316, Per ASTM F693-95
Tensile Strength = 85,000 psi, average.



PSI-Thunderline/Link-Seal®
6525 Goforth Street, Houston TX 77021 U.S.A.
Tel: 713-747-6948, Fax: 713-747-6028, Toll Free: 800-423-2410
www.linkseal.com, e-mail: info@psipal.com

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NO EXCEPTIONS
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EXCEPTIONS
NOTED - RESUBMIT

Project: 2850 Queensway
City: Ottawa, ON
Prov: ON
Date: 12/15/10

By: [Signature]
Date: 12/15/10

2850 Queensway
Ottawa, ON
K1M 1G1
Tel: (613) 238-1111
Fax: (613) 238-1112

Section: [Blank]
Drawing No: [Blank]
Revision: [Blank]

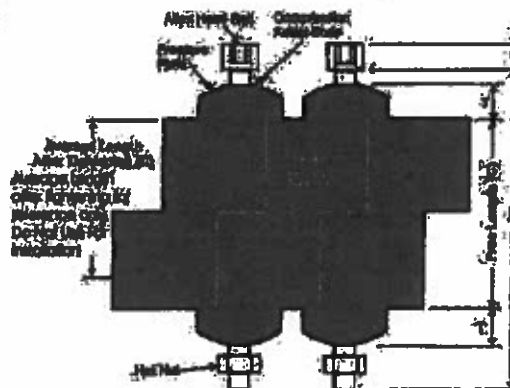
Pressure Plate Length (A)

Sealant, Casing or
Wall Hole I.D.

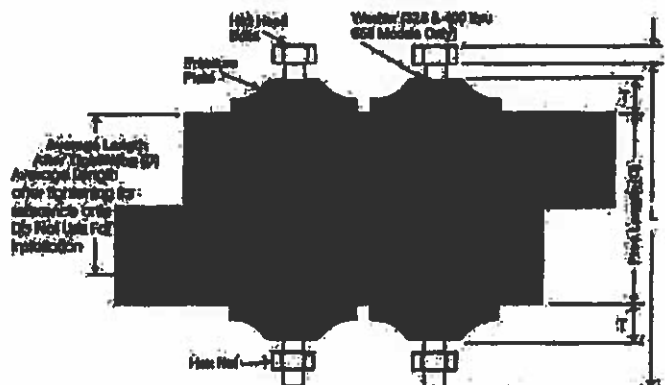
Drawings for Reference Only



For LS-200 through LS-315



For LS-325 through LS-650



Technical Data Submittal Sheet Supplement 12/15/10

*Dimensional Data for Models C, L, O, S-316, LS-316 and OS-316

| LINK SEAL MODEL NO. | RUBBER SEALING ELEMENT | | | PRESSURE PLATE | | BOLT | | | | WEIGHT FOR 10 LINK SECTION (LBS) | MIN. REQUIRED SEATING WIDTH |
|------------------------|----------------------------|-----------------------|---|----------------|-------|--------------------------------|------------------|----------------|----------------|--|--------------------------------------|
| | ACTUAL THICKNESS (B) | FREE LENGTH (C) | Avg. LENGTH AFTER TIGHTENING (D) | (A) | (T) | ALLEN HEAD HEX ACROSS FLATS | Ø | THREAD SIZE | (F) | | |
| LS-200-A | 0.48" | 1.75" | 1.38" | 1.08" | 0.31" | 4mm Allen (0.157") | 4.95mm (0.195") | M5-0.8 | 70mm (2.755") | 0.70 | 2.25" |
| LS-275-A | 0.81" | 1.75" | 1.38" | 0.97" | 0.31" | 4mm Allen (0.157") | 4.95mm (0.195") | M5-0.8 | 70mm (2.755") | 0.75 | 2.25" |
| LS-300-A | 0.65" | 2.31" | 1.87" | 1.58" | 0.44" | 6mm Allen (0.236") | 7.87mm (0.310") | M6-1.25 | 90mm (3.543") | 2.15 | 3.00" |
| LS-316-A | 0.81" | 2.31" | 1.87" | 1.44" | 0.44" | 6mm Allen (0.236") | 7.87mm (0.310") | M6-1.25 | 90mm (3.543") | 2.20 | 3.00" |
| LS-325-A | 0.65" | 2.83" | 2.00" | 3.13" | 1.00" | 13mm (0.511") | 8.30mm (0.315") | M8-1.25 | 90mm (3.543") | 5.50 | 4.00" |
| LS-340-A | 1.00" | 2.70" | 2.25" | 1.48" | 0.68" | 13mm (0.511") | 8.30mm (0.315") | M8-1.25 | 120mm (4.720") | 3.30 | 4.00" |
| LS-380-A | 1.24" | 2.70" | 2.25" | 2.05" | 0.77" | 13mm (0.511") | 8.30mm (0.315") | M8-1.25 | 120mm (4.720") | 5.10 | 4.00" |
| LS-400-A | 1.36" | 3.60" | 2.75" | 3.50" | 1.06" | 17mm (0.669") | 8.40mm (0.330") | M10-1.5 | 130mm (5.118") | 12.00 | 5.00" |
| LS-410-A | 1.43" | 3.37" | 2.67" | 2.52" | 0.88" | 17mm (0.669") | 8.40mm (0.330") | M10-1.5 | 130mm (5.118") | 8.20 | 5.00" |
| LS-425-A | 1.06" | 3.00" | 2.25" | 3.50" | 1.19" | 17mm (0.669") | 8.40mm (0.330") | M10-1.5 | 130mm (5.118") | 10.00 | 5.00" |
| LS-475-A | 1.56" | 3.38" | 2.63" | 2.63" | 0.88" | 17mm (0.669") | 8.40mm (0.330") | M10-1.5 | 130mm (5.118") | 10.00 | 5.00" |
| LS-500-A | 2.25" | 3.75" | 2.75" | 3.63" | 1.06" | 19mm (0.748") | 7.50mm (0.300") | M12-1.75 | 140mm (5.511") | 22.50 | 6.00" |
| LS-625-A | 2.06" | 3.75" | 2.67" | 3.63" | 1.06" | 19mm (0.748") | 7.50mm (0.300") | M12-1.75 | 140mm (5.511") | 21.00 | 6.00" |
| LS-675-A | 1.81" | 3.75" | 3.00" | 3.00" | 1.00" | 19mm (0.748") | 7.50mm (0.300") | M12-1.75 | 140mm (5.511") | 16.50 | 6.00" |
| LS-800-A | 3.09" | 4.00" | 3.00" | 6.00" | 1.90" | 30mm (0.748") | 12.50mm (0.490") | M20-2.5 | 180mm (7.086") | 60.60 | 6.00" |
| LS-650-A | 2.71" | 3.86" | 3.00" | 3.96" | 1.19" | 19mm (0.748") | 7.50mm (0.300") | M12-1.75 | 140mm (5.511") | 26.10 | 6.00" |



VISIT WWW.LINKSEAL.COM FOR LITERATURE AND INSTALLATION INSTRUCTIONS

Standard Flexible Coupling

STYLE 77

INSTALLATION


Reference should always be made to the I-100 Victaulic Field Installation Handbook for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

| DRAWING REVIEW | |
|---|---|
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| <input checked="checked" type="checkbox"/> NO EXCEPTIONS TAKEN | Submission No. <u>1</u> Project No. <u>2650HQ-12012</u> By <u>Abdel Zaid</u> Date <u>16 APR 2014</u> |
| <input type="checkbox"/> EXCEPTIONS NOTED - RESUBMIT | |
|  2650 Queensview Drive, Suite 100 Ottawa, Ontario K2B 8H6 Tel: (613) 686-1899 Fax: (613) 225-7337 | |

For complete contact information, visit www.victaulic.com

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Standard Flexible Coupling

STYLE 77

DRAWING REVIEW

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✓ NO EXCEPTIONS
TAKEN

Submission No. 1

Project No.

CASHQ-12012

By: [Signature]

DIMENSIONS

| Size (mm) | Weight (kg/m) | End Load (kN) | Working Pressure (MPa) | Deflection (mm) | Separation (mm) | Number of Bolts | Number of Housing Segments | Number of Grooves | Number of Ribs | Number of Ribs per Groove | Number of Ribs per Groove |
|-----------|---------------|---------------|------------------------|-----------------|-----------------|-----------------|----------------------------|-------------------|----------------|---------------------------|---------------------------|
| 14 | 8.625 | 800 | 46740 | 0-0.13 | 0'-30" | 14 | 2-1x3 | 13.63 | 14.75 | 2.50 | 20.9 |
| 20 | 219.1 | 5500 | 25795 | 0-0.13 | 0'-30" | 14 | 2-1x3 | 27.9 | 37.5 | 6.3 | 9.4 |
| 25 | 10.750 | 800 | 73280 | 0-0.13 | 0'-40" | 0.14 | 2-1x6 | 13.63 | 17.13 | 2.63 | 31.1 |
| 30 | 273.0 | 5500 | 326100 | 0-0.13 | 0'-40" | 12 | 2-1x6 | 24.6 | 43.9 | 6.7 | 14.1 |
| 34 | 12.750 | 800 | 102000 | 0-0.13 | 0'-34" | 0.12 | 2-1x6 1/2 | 15.63 | 19.25 | 2.63 | 27.8 |
| 38 | 323.9 | 5500 | 459000 | 0-0.13 | 0'-34" | 9 | 2-1x6 1/2 | 39.7 | 48.0 | 6.7 | 12.6 |
| 42 | 14.800 | 300 | 46180 | 0-0.13 | 0'-37" | 0.11 | 2-1x3 1/2 | 16.75 | 20.25 | 3.00 | 30.2 |
| 46 | 355.6 | 2065 | 206500 | 0-0.13 | 0'-37" | 9 | 2-1x3 1/2 | 42.5 | 51.4 | 7.6 | 17.8 |
| 50 | 14.842 | 300 | 51875 | 0-0.13 | 0'-37" | 0.11 | 2-1x3 1/2 | 17.39 | 20.96 | 2.8 | 48.8 |
| 54 | 377.0 | 2065 | 236845 | 0-0.13 | 0'-37" | 9 | 2-1x3 1/2 | 44.2 | 53.1 | 7.1 | 22.1 |
| 58 | 16.000 | 300 | 60320 | 0-0.13 | 0'-27" | 0.10 | 2-1x3 1/2 | 18.75 | 22.25 | 3.00 | 45.0 |
| 62 | 406.4 | 2065 | 268425 | 0-0.13 | 0'-27" | 9 | 2-1x3 1/2 | 47.6 | 56.5 | 7.6 | 20.4 |
| 66 | 16.772 | 300 | 66345 | 0-0.13 | 0'-27" | 0.10 | 2-1x3 1/2 | 19.09 | 22.92 | 2.82 | 56.7 |
| 70 | 426 | 2065 | 294795 | 0-0.13 | 0'-27" | 9 | 2-1x3 1/2 | 50.0 | 58.1 | 7.4 | 25.7 |
| 74 | 18.000 | 300 | 76340 | 0-0.13 | 0'-24" | 0.08 | 2-1 1/2 x 4 | 21.56 | 25.00 | 3.13 | 64.1 |
| 78 | 457.2 | 2065 | 339710 | 0-0.13 | 0'-24" | 7 | 2-1 1/2 x 4 | 54.8 | 63.5 | 8.0 | 29.1 |
| 82 | 18.898 | 300 | 84105 | 0-0.13 | 0'-24" | 0.08 | 2-1 1/2 x 4 | 22.38 | 25.86 | 3.04 | 77.2 |
| 86 | 48 | 2065 | 374265 | 0-0.13 | 0'-24" | 7 | 2-1 1/2 x 4 | 56.9 | 65.5 | 7.7 | 35 |
| 90 | 20.000 | 300 | 94000 | 0-0.13 | 0'-22" | 0.08 | 2-1 1/2 x 4 | 23.63 | 27.00 | 3.13 | 74.8 |
| 94 | 508.0 | 2065 | 418900 | 0-0.13 | 0'-22" | 7 | 2-1 1/2 x 4 | 60.0 | 68.6 | 8.0 | 34.0 |
| 98 | 22.00 | 300 | 114000 | 0-0.13 | 0'-19" | 0.07 | 2-1 1/2 x 4 | 25.63 | 29.13 | 3.13 | 82.6 |
| 102 | 559.0 | 2065 | 507900 | 0-0.13 | 0'-19" | 6 | 2-1 1/2 x 4 | 65.1 | 74.0 | 8.0 | 37.5 |
| 106 | 20.866 | 300 | 102535 | 0-0.13 | 0'-22" | 0.08 | 2-1 1/2 x 4 | 24.29 | 27.8 | 3.07 | 91.7 |
| 110 | 530 | 2065 | 456280 | 0-0.13 | 0'-22" | 7 | 2-1 1/2 x 4 | 61.7 | 70.4 | 7.7 | 41.6 |
| 114 | 22.895 | 300 | 108380 | 0-0.13 | 0'-19" | 0.07 | 2-1 1/2 x 4 | 26.76 | 30.01 | 3.12 | 92.8 |
| 118 | 580 | 2065 | 485591 | 0-0.13 | 0'-19" | 6 | 2-1 1/2 x 4 | 68.0 | 76.3 | 7.9 | 42.2 |
| 122 | 24.000 | 250 | 113000 | 0-0.13 | 0'-18" | 0.07 | 2-1 1/2 x 4 | 27.75 | 31.00 | 3.19 | 89.6 |
| 126 | 606.6 | 1725 | 508950 | 0-0.13 | 0'-18" | 6 | 2-1 1/2 x 4 | 70.5 | 78.7 | 8.1 | 40.7 |
| 130 | 24.803 | 250 | 108790 | 0-0.13 | 0'-18" | 0.07 | 2-1 1/2 x 4 | 28.42 | 32.16 | 3.12 | 96.8 |
| 134 | 630 | 1725 | 457416 | 0-0.13 | 0'-18" | 6 | 2-1 1/2 x 4 | 72.2 | 81.7 | 7.9 | 44 |

5 Couplings 8, 10, 12/200, 250, 300 mm sizes available to JIS standards. Refer to Section 06.17 for details.

* Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cast grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1 1/2 times the figures shown.

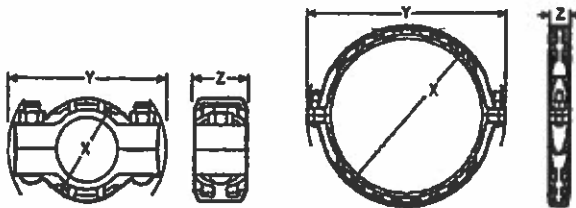
† Allowable Pipe End Separation and Deflection figures show the maximum nominal range of movement available at each joint for standard roll grooved pipe. Figures for standard cast grooved pipe may be doubled. These figures are maximums; for design and installation purposes these figures should be reduced by: 50% for 1/4 - 3 1/2 x 20 - 90 mm; 25% for 4 1/2 x 100 mm and larger.

@ Number of bolts required equals number of housing segments.

Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

‡ For 14 - 24/350 - 600 mm Roll Groove systems Victaulic offers the Advanced Groove System (AGS) line of products. Request publication 20.03 for information on the Style W77 flexible AGS coupling.

‡ CS size product is designed with two housings and requires two bolts.



1/4 - 12/200 - 300 MM SIZES

14 - 24/350 - 600 MM SIZES

Standard Flexible Coupling

STYLE 77

MATERIAL SPECIFICATIONS

Housing: Ductile iron conforming to ASTM A-536, grade 65-45-12. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

Housing Coating: Orange enamel.

- Optional: Hot dipped galvanized and others.

Coupling Gaskets (specify choice*)†

- Grade "E" EPDM (All other sizes)
EPDM (Green color code). Temperature range -30°F to +230°F/-34°C to +110°C.
Recommended for hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL classified in accordance with ANSI/NSF 61 for cold +86°F/+30°C and hot +180°F/+82°C potable water service. NOT RECOMMENDED FOR PETROLEUM SERVICES.
- Grade "T" nitrile
Nitrile (Orange color code). Temperature range -20°F to +180°F/-29°C to +82°C.
Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Not recommended for hot water services over +150°F/+66°C or for hot dry air over +140°F/+60°C.
- Services listed are General Service Recommendations only. It should be noted that there are services for which these gaskets are not recommended. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service recommendations and for a listing of services which are not recommended.

NOTE: Additional gasket styles are available. Contact Victaulic for details.


Bolts/Nuts: Heat-treated plated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A-449 and physical requirements of ASTM A-183.

- Optional Bolts: ASTM F-593, Group 2, Type 316 stainless steel oval neck track bolts.
- Optional Nuts: ASTM F-594, Group 2, Type 316 stainless steel heavy hex nuts with galling resistant coating.

† Supplemental lubricant is recommended for services installed at or continuously operating below 0°F/-18°C.

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document.

| | | |
|---|--------------------------------|--------------------------------|
| <input checked="" type="checkbox"/> | NO EXCEPTIONS TAKEN | Submission No. <u>1</u> |
| <input type="checkbox"/> | EXCEPTIONS NOTED - RESUBMIT | Project No. <u>CGSHQ-12012</u> |
| | | By <u>Abdul Zaman</u> |
| | | Date <u>16 APR 2018</u> |
|  2650 Queensview Drive, Suite 100 Ottawa, Ontario K2B 8H6 Tel: (613) 688-1899 Fax: (613) 225-7337 | | |

Standard Flexible Coupling

STYLE 77



Style 77 couplings are designed with cross-ribbed construction to provide a strong component for pressure piping systems. The coupling is offered in a two piece housing design from 1/4 - 24" / 20 - 600mm sizes for pressures up to 1000 psi/6900 kPa.

All sizes are provided with plated bolts and nuts. Galvanized and stainless steel housings are also available.

Independent testing has shown the Style 77 coupling to be an effective stress relief and vibration attenuation device providing performance superior to braided steel and elastomeric arch-type connectors when used in close proximity to the source of vibration. Refer to 26.04 for vibration information.

Independent testing has shown that Victaulic Style 77 flexible couplings provide exceptional functionality during and after earthquakes conditions. Refer to 26.12 for further information.

Performance data presented in this document is based on use with standard wall, carbon steel pipe. For use with stainless steel pipe, please reference document 17.09 for pressure ratings and end loads. When used on light wall stainless steel pipe, the Victaulic RX roll set must be used to roll groove the pipe. For further information regarding roll grooving stainless steel, refer to document 17.01.

For 14 - 24" / 350 - 600mm flexible roll groove systems, Victaulic recommends Style W77 AGS couplings. For more information, request submittal publication 20.03.



1/4 - 12" / 20 - 300MM SIZES



14 - 24" / 350 - 600MM SIZES

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document.

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| <input checked="" type="checkbox"/> | NO EXCEPTIONS TAKEN | Submission No. <u>1</u> |
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| | | |
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***exp.**

2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H8
Tel: (613) 688-1899
Fax: (613) 225-7337

| | | |
|------------------|--------------------|----------------------------|
| JOB/OWNER | CONTRACTOR | ENGINEER |
| System No. _____ | Submitted By _____ | Spec Sect _____ Para _____ |
| Location _____ | Date _____ | Approved _____ |
| | | Date _____ |

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents.

DATE: OCT. 6/1995

BY: [Signature]

PROJECT NO. 2650

DATE: OCT. 6/1995

2 of 3

REV.

EXP 1316 OCT. 2000 L.M.

CONTRACT DOCUMENT NO. 7 BRIGADIER HYD. WITH BOLTED BODY CAP MATERIAL LIST

DATE: OCT. 6/1995

BY: [Signature]

PROJECT NO. 2650

DATE: OCT. 6/1995

EXP 1316 OCT. 2000 L.M.

| ITEM NO. | DESCRIPTION | QUANTITY | UNIT | MATERIAL |
|----------|-------------|----------|------|-----------|
| 1 | HOSE NOZZLE | 1 | EA | CAST IRON |
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| 100 | HOSE NOZZLE | 1 | EA | CAST IRON |

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract documents.

NO EXCEPTIONS TAKEN

EXCEPTIONS NOTED - REVISION

exp

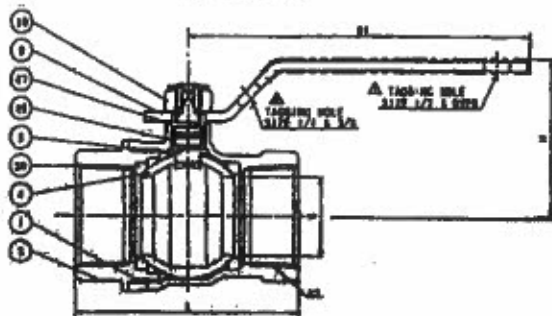
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 5H5
Tel: (613) 688-1800
Fax: (613) 225-7337

FORGED BRASS BALL VALVE

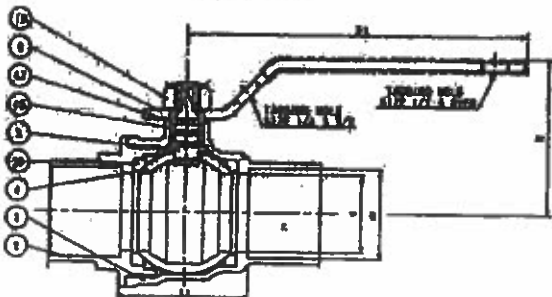
MAINTENANCE FREE DOUBLE O-RING STEM SEALS

Two Piece Body • Full Port • Chrome Plated Ball
Blowout Proof Stem (NI Plated) • PTFE Seats
CSA (USC) TYPE 1

**CODE # 58
THREADED**



**CODE # 59
SOLDER***



*REFERENCE VALVE INSTALLATION TIPS FOR
SOUND SOLDER JOINTS (PAGE BV-66) OR SEE
INSTALLATION SHEET PACKAGED WITH VALVE.

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (NI Plated), PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design. Valves shall be pressure rated to 150 WSP/150 WOG and conform to MSS-SP 110 and certified to CSA, UL & FM.

KITZ Code No. 58 Threaded Ends
59 Solder Ends

STANDARDS

END TO END KITZ
THREADED ENDS ANSI B1.20.1
SOLDER JOINT ENDS ANSI B16.12
WALL THICKNESS KITZ
CONFORMS TO MSS-SP 110 - REPLACES US FED.
SPEC. RHW-V-35B, TYPE II, CLASS A, STYLE 3

PRESSURE/TEMPERATURE

150 PSI SATURATED STEAM TO 350°F
650 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-39.

RECEIPT LIST

| NO. | NAME OF PART | SPECIFICATION |
|-----|---------------|---|
| 1 | BODY | FORGED BRASS (B22, C17700) |
| 2 | BODY CAP | FORGED BRASS (B22, C17700) |
| 3 | STEM | (1) BRASS ROD (B16) |
| 4 | BALL | (2) FORGED BRASS (B22, C17700) STRAIGHT OR HOLLOW BALL |
| 9 | HANDLE | (3) CARBON STEEL |
| 10 | HANDLE NUT | CARBON STEEL |
| 30 | BALL SEATS | PTFE |
| 45 | O-RINGS | FFKM |
| 47 | THRUST WASHER | PHI |

NOTES: (1) NI PLATING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WHEEL - CODE # 58

| d2 SIZE | d | H | D1 | L | L1 | d1 Max. Min. | APPROX. CARTON NET WT. QTY |
|------------|------|------|------|------|------|-----------------|-------------------------------|
| 1/4 | .39 | 1.46 | 2.76 | 1.65 | 1.11 | .381 .377 | 29 120 |
| 3/8 | .39 | 1.46 | 2.76 | 1.65 | 1.05 | .308 .302 | 29 120 |
| 1/2 | .69 | 1.69 | 3.16 | 2.00 | 1.10 | .551 .547 | 29 60 |
| 3/4 | .79 | 1.69 | 3.16 | 2.00 | 1.10 | .551 .547 | 29 60 |
| 1 | 1.19 | 1.69 | 3.16 | 2.00 | 1.10 | .551 .547 | 29 60 |
| 1 1/4 | 1.19 | 1.69 | 3.16 | 2.00 | 1.10 | .551 .547 | 29 60 |
| 1 1/2 | 1.19 | 1.69 | 3.16 | 2.00 | 1.10 | .551 .547 | 29 60 |
| 2 | 1.99 | 1.69 | 3.16 | 2.00 | 1.10 | .551 .547 | 29 60 |

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document.

NO EXCEPTIONS
TAKEN

EXCEPTIONS
NOTED: RESUBMIT

**CSA (USC)

ASME B1.20.1 - 1990

AGA 3-4 - 2000

CGA 9.2 - 1997

CGA 8.1 - 1997

CGA 9.1 - 1997

CGA 9.2 - 1997

UL-258 - 75 WSP (Fire Protection)

FM-1140 - 100 WSP (Fire Protection)

Submission No.

Project No.

CGS HQ - 12012

By Abdul Jaleel

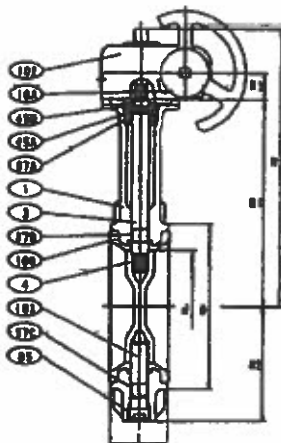
Date 16 Apr 2014

2650 Queensview Drive, Suite 100

Ottawa, Ontario K2B 8H6

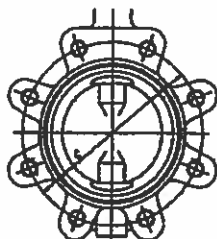
Tel: (613) 688-1899

Fax: (613) 688-2255



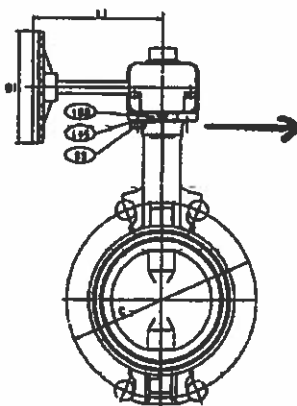
| NO. | NAME OF PART | SPECIFICATION |
|-------|-----------------|---|
| 1 | BODY | DUCTILE IRON (A536 Gc. 65-45-12) |
| 3 | STEM* | STAINLESS STEEL (A276, Type 410 or 316) |
| 4 | DISC | DUCTILE IRON, AL. BRONZE, AND 316 SS |
| 16A/B | NAME PLATE | ALUMINUM |
| 43A/B | O-RING | NBR/EPDM |
| 67A | BEARING | POLYACETAL |
| 67B/C | STEM BEARING | OPP FTPE |
| 85 | FLUG | ZINC DIE-CAST (2) |
| 99 | SET BOLTS | CARBON STEEL |
| 102 | GEAR LINK | ALUMINUM DIE-CAST |
| 103 | BOTTOM STEM* | STAINLESS STEEL (A276, TYPE 410 or 316) |
| 106 | SEAT RUBBER (3) | NBR/EPDM |
| 145 | SPRING WASHER | CARBON STEEL |

(1) Line scribed on top of the stem indicates the disc direction.
 (2) Chromium Coating
 (3) Vulcanized to the Body



| SIZE | A | D | C | B | H1 | H2 | L | D1 | L1 | Water Lug |
|-----------|------|-------|-------|-------|------|------|------|------|------|-----------|
| in. 2 | 1.97 | 3.54 | 4.75 | 7.64 | 5.79 | 2.64 | 1.69 | 3.15 | 4.78 | 4.9 7.1 |
| in. 2 1/2 | 2.56 | 4.09 | 5.50 | 7.93 | 6.18 | 2.95 | 1.81 | 3.15 | 4.78 | 5.7 8.4 |
| in. 3 | 3.15 | 4.88 | 6.00 | 8.29 | 6.81 | 3.50 | 1.81 | 4.33 | 5.31 | 8.6 13.0 |
| in. 4 | 3.94 | 5.75 | 7.50 | 9.69 | 7.28 | 3.96 | 2.06 | 4.33 | 5.31 | 9.2 19.0 |
| in. 5 | 4.92 | 6.93 | 8.50 | 10.79 | 8.31 | 5.00 | 2.19 | 4.33 | 5.31 | 14.0 26.0 |
| in. 6 | 5.91 | 8.11 | 9.50 | 11.26 | 8.78 | 5.47 | 2.19 | 4.33 | 5.31 | 19.0 32.0 |
| in. 8 | 7.76 | 10.12 | 11.25 | 12.80 | 9.76 | 6.45 | 2.38 | 6.69 | 7.89 | 30.0 49.0 |

For gear operator details, refer to page 20.



NOTE:

KITZ lug style butterfly valves are ~~not~~ for bi-directional dead end service to full working pressure of the valve with the downstream flange removed. In dead end service ~~exceeding 98~~ hours, a downstream flange is recommended.

EXCEPTIONS
NOTED - RESUBMIT



Code # 5112 (B/E)G
Disc: Ductile Iron
(A536 + ENF)

Code # 5122 (B/E)G
Disc: Aluminum Bronze
(C95400)

*Code # 5141 (B/E)G
Disc: 316 SS
(A351 Gc. CF8M)

*316 stem rated for
150 PSI max.



Code # 6112 (B/E)G
Disc: Ductile Iron
(A536 + ENF)

Code # 6122 (B/E)G
Disc: Aluminum Bronze
(C95400)

*Code # 6141 (B/E)G
Disc: 316 SS

(A351 Gc. CF8M)

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document.

NO EXCEPTIONS
NOTED - RESUBMIT

Submission No. 1
Project No. CG540-12012
By Andal J. J. J.
Date 16 APR 2014

#exp.

2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 6H6
Tel: (613) 688-1899
Fax: (613) 225-7337

KITZ

REVIEWED BY TOWER ARCTIC LTD.
DATED 4/15/14



Link-Seal® Modular Seal Model Properties

with EPDM Seal Elements



EPDM (Black)
EPDM (Blue) Low Durometer

Model "C" or "L" Link-Seal Modular Seal
Suitable for use in water, direct ground burial and atmospheric conditions. Provides electrical isolation where cathodic protection is required.

Type: Standard
Seal Element: EPDM (Black) or EPDM (Blue)
Pressure Plates: Reinforced Nylon Polymer
Bolts & Nuts: Steel with 2-part Zinc Dichromate & proprietary corrosion inhibiting coating.
Temp. Range: -40 to +250°F (-40 to +121°C)*

Model "S-316" or "LS-316" Link-Seal Modular Seal
For chemical processing & waste water treatment. EPDM rubber is resistant to most inorganic acids and alkalis, some organic chemicals (acetone, alcohol, ketones).

Type: Stainless
Seal Element: EPDM (Black) or EPDM (Blue)
Pressure Plates: Reinforced Nylon Polymer
Bolts & Nuts: 316 Stainless Steel
Temp. Range: -40 to +250°F (-40 to +121°C)*

* = Sustained operation near temperature limits may affect life expectancy.

with Nitrile Seal Elements



Nitrile (Green)

Model "O" Link-Seal Modular Seal
Nitrile rubber is resistant to oils, fuel and many solvents (gasoline, motor oil, kerosene, methane, jet fuel, hydraulic fluid, water, etc.).

Type: Oil Resistant
Seal Element: Nitrile (Green) Note: Not U.V. resistant.
Pressure Plates: Reinforced Nylon Polymer
Bolts & Nuts: Steel with 2-part Zinc Dichromate & proprietary corrosion inhibiting coating.
Temp. Range: -40 to +210°F (-40 to +99°C)*

Model "OS-316" Link-Seal Modular Seal
Combination of oil resistant rubber and stainless steel hardware.

Type: Oil Resistant
Seal Element: Nitrile (Green) Note: Not U.V. resistant.
Pressure Plates: Reinforced Nylon Polymer
Bolts & Nuts: 316 Stainless Steel
Temp. Range: -40 to +210°F (-40 to +99°C)*

* = Sustained operation near temperature limits may affect life expectancy.

with Silicone Seal Elements



Silicone (Grey)

Model "T" Link-Seal Modular Seal
Silicone rubber is ideal for temperature extremes. The "T" model is one-hour Factory Mutual approved.

Type: High/Low Temperature
Seal Element: Silicone (Grey)
Pressure Plates: Steel Zinc Dichromate
Bolts: Steel with 2-part Zinc Dichromate & proprietary corrosion inhibiting coating.
Temp. Range: -57 to +400°F (-55 to +204°C)*

Model "FD/FS" Link-Seal Modular Seal
Double seal for added protection.

Type: Fire Seals
Seal Element: Silicone (Grey)
Pressure Plates: Steel zinc dichromate
Bolts: Steel with 2-part Zinc Dichromate proprietary corrosion inhibiting coating.
Temp. Range: -67 to +400°F (-55 to +204°C)*

NOTE: Sustains a constant temp. of 325°F. (163° C.)
* = Sustained operation near temperature limits may affect life expectancy.

Material Properties of Link-Seal Modular Seal Elements

| PROPERTY | ASTM METHOD | EPDM (EPDM L) | NITRILE | SILICONE |
|--------------------|-------------|------------------------|-------------------------|-------------------------|
| Hardness (shore A) | D-2240 | 50 ±5 (40 ±5) | 50 ±5 | 50 ±5 |
| Tensile | D-412 | 1450 psi | 1300 psi | 880 psi |
| Elongation | D-412 | 400% | 300% | 250% |
| Compression Set | S-395 | 15% | 45% | 40% |
| | | 22 hrs. @ 158°F (70°C) | 22 hrs. @ 212°F (100°C) | 22 hrs. @ 350°F (177°C) |
| Specific Gravity | D-297 | 1.10 | 1.15 | 1.40 |

Material Properties of Composite Pressure Plates

| PROPERTY | ASTM METHOD | VALUE |
|---------------------------|-------------|---------------|
| Izod Impact - Notched | D-256 | 2.05 ft-lb/in |
| Tensile Strength @ Yield | D-638 | 20,000 psi |
| Tensile Strength - Break | D-638 | 20,250 psi |
| Flexural Strength @ Yield | D-790 | 30,750 psi |
| Flexural Modulus | D-790 | 1,124,000 psi |
| Elongation, Break | D-638 | 11.07% |
| Specific Gravity | D-792 | 1.38 |
| Moisture Content | - | 0.18% |

Bolt & Nut Specifications

Standard: Carbon Steel
Carbon steel, zinc dichromated per ASTM B633, with an additional corrosion inhibiting proprietary organic coating. (passes 1470 hour salt spray test)
Tensile Strength = 60,000 psi, minimum.

Option: Stainless Steel
ANSI Type = 316, Per ASTM F593-95
Tensile Strength = 85,000 psi, average.



PSI-Thunderline/Link-Seal®
6525 Goforth Street, Houston TX 77021 U.S.A.
Tel: 713-747-8948, Fax: 713-747-6029, Toll Free: 800-423-2410
www.linkseal.com, e-mail: info@psipsi.com

LSTECH-8/27/10
©2010, Pipeline Seal & Insulator, Inc

INSULATION

1 PRODUCT NAME STYROFOAM™ Highload 40, 60 and 100 Extruded Polystyrene Insulation

2 Manufacturer

The Dow Chemical Company
Building Solutions
200 Larkin
Midland, MI 48674
1-866-583-BLUE (2583)
Fax 1-989-832-1465
www.dowstyrofoam.com/architect

Dow Chemical Canada Inc.
Building Solutions
250 - 6th Ave. SW, Suite 2200
Calgary, AB T2P 3H7
1-866-583-BLUE (2583) (English)
1-800-363-6210 (French)
www.dowstyrofoam.ca/4architects

3 Product Description

STYROFOAM™ Highload extruded polystyrene insulation is a closed-cell foam insulation. Available in compressive strengths of 40, 60 and 100 psi (275, 415 and 690 kPa),

STYROFOAM Highload insulation features superior moisture resistance and R-value* retention. All three STYROFOAM Highload insulation products resist compressive creep and fatigue, delivering long-term compressive strength. Like all STYROFOAM insulation products, STYROFOAM Highload 40, 60 and 100 are durable, versatile and reusable – making them the preferred choices for a variety of high-load applications.

BASIC USE

STYROFOAM™ Highload insulation is ideal for use in low-temperature (freezer floor) applications, highways, airport runways, bridge abutments, parking decks, utility lines, ice rinks and plaza decks. It is the responsibility of the designer to select the proper STYROFOAM Highload insulation product based on the dead and live loads expected in the application.

SIZES

IN THE U.S.:

Butt Edge
Thickness:

2" or 3" STYROFOAM™

Highload 40 and 60

2" STYROFOAM™ Highload 100

Width and length:

2' x 8' STYROFOAM

Highload 40, 60 and 100

4' x 8' STYROFOAM

Highload 40

IN CANADA:

Butt Edge

Thickness:

1", 1.5", 2" or 3" (25 mm,

38 mm, 50 mm or 75 mm)

STYROFOAM Highload

40 and 60

2" or 3" (50 mm or 75 mm)

STYROFOAM Highload 100

Width and length:

2' x 8' (600 mm x 2,400 mm)

STYROFOAM Highload

40, 60 and 100

U.S. PROPERTY CHART

TABLE 1

| Physical Properties of STYROFOAM™ 40, 60 and 100 Insulation | | | |
|--|------------------------|------------------------|------------------------|
| Property and Test Method | Value | | |
| | Highload 40 | Highload 60 | Highload 100 |
| Thermal Resistance ⁽¹⁾ , per inch, ASTM C518, C177, @ 75°F mean temp., ft ² •h•°F/Btu, R-value, min. | 5.0 | 5.0 | 5.0 |
| Compressive Strength ⁽²⁾ , ASTM D1621, psi, min. | 40 | 60 | 100 |
| Water Absorption, ASTM D2842, % by volume, max. | 0.1 | 0.1 | 0.1 |
| Water Vapor Permeance ⁽³⁾ , ASTM E96, perms | 0.8 | 0.8 | 0.8 |
| Maximum Use Temperature, °F | 165 | 165 | 165 |
| Coefficient of Linear Thermal Expansion, ASTM D696, in/in•°F | 3.5 x 10 ⁻⁴ | 3.5 x 10 ⁻⁴ | 3.5 x 10 ⁻⁴ |
| Flexural Strength, ASTM C203, psi, min. | 60 | 75 | 100 |
| Complies with ASTM C578-01, Type | VI | VII | V |

(1) For 1" material

(2) Vertical compressive strength is measured at 5 percent deformation or at yield, whichever occurs first. Since STYROFOAM insulations are visco-elastic materials, adequate design safety factors should be used to prevent long-term creep. For static loads, 3:1 is suggested. For dynamic loads, call 1-866-583-BLUE (2583) for safety factor recommendation.

(3) Water vapor permeance varies with product type and thickness. Values are based on the desiccant method and they apply to insulation 1" or greater in thickness.

REVIEWED BY TOWER ARCTIC LTD.

DATED 4/23/14 *BJ*

CANADA PROPERTY CHART

TABLE 2

| Physical Properties of STYROFOAM™ Highload 40, 60 and 100 Insulation | | | |
|--|---|---|---|
| Property and Test Method | Value | | |
| | Highload 40 | Highload 60 | Highload 100 |
| Thermal Resistance ⁽¹⁾ , per inch (25 mm), ASTM C518, C177, @ 75°F (24°C) mean temp., ft ² ·h·°F/Btu (m ² ·°C/W), R-value (RSI), min. | 5.0 (.88) | 5.0 (.88) | 5.0 (.88) |
| Compressive Strength ⁽²⁾ , ASTM D1621, psi (kPa), min. | 40 (275) | 60 (415) | 100 (690) |
| Water Absorption, ASTM D2842, % by volume, max. | 0.7 | 0.7 | 0.7 |
| Water Vapour Permeance ⁽³⁾ , ASTM E96, perms (ng/Pa·s·m ²) | 0.6 (35) | 0.6 (35) | 0.6 (35) |
| Maximum Use Temperature, °F (°C) | 165 (74) | 165 (74) | 165 (74) |
| Coefficient of Linear Thermal Expansion, ASTM D696, in/in·°F (mm/m·°C) | 3.5 × 10 ⁻⁴ (6.3 × 10 ⁻⁵) | 3.5 × 10 ⁻⁴ (6.3 × 10 ⁻⁵) | 3.5 × 10 ⁻⁴ (6.3 × 10 ⁻⁵) |
| Flexural Strength, ASTM C203, psi (kPa), min. | 70 (480) | 85 (585) | 85 (585) |
| Compressive Modulus (typical), ASTM D1621, psi (kPa) | 1,400 (9,650) | 2,200 (15,170) | 3,700 (25,510) |
| Complies with CAN/ULC 5701, Type | 4 | 4 | 4 |

(1) For 1" (25 mm) material

(2) Vertical compressive strength is measured at 5 percent deformation or at yield, whichever occurs first. Since STYROFOAM insulations are visco-elastic materials, adequate design safety factors should be used to prevent long-term creep. For static loads, 3:1 is suggested. For dynamic loads, call 1-866-583-BLUE (2583) for safety factor recommendation.

(3) Water vapour permeance varies with product type and thickness. Values are based on the desiccant method and they apply to insulation 1" (25 mm) or greater in thickness.

4 Technical Data

APPLICABLE STANDARDS
STYROFOAM™ Highload 40, 60 and 100 insulation meets ASTM C578 – Standard Specification for Rigid Cellular Polystyrene Thermal Insulation. Applicable standards include:

- C518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- C177 – Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus
- D1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics
- D2842 – Standard Test Method for Water Absorption of Rigid Cellular Plastics
- E96 – Standard Test Methods for Water Vapor Transmission of Materials
- D696 – Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C With a Vitreous Silica Dilatometer
- C203 – Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation

TABLE 3

| Chemical Resistance of STYROFOAM™ Highload 40, 60 and 100 Insulation | |
|--|-----------------|
| Acid, inorganic, weak | Excellent |
| Acid, inorganic, strong | Excellent |
| Acid, organic, weak | Excellent |
| Acid, organic, strong | Good |
| Bases | Excellent |
| Alcohols, including isopropyl alcohol | Excellent |
| Methyl ethyl ketone | Not recommended |
| Polyglycols, including propylene glycol | Excellent |
| Hydrocarbons | Not recommended |
| Salts | Excellent |
| Insecticides | Not recommended |
| Kerosene | Poor |
| Mineral oil USP | Excellent |
| Naphtha (VMP) | Not recommended |
| Turpentine | Not recommended |
| Beer | Good |
| Gasoline | Not recommended |
| Fruit juices | Good |

(1) Explanation of ratings:

Excellent = The plastic was unaffected for the duration of the test.
Good = A very slight clouding or discoloration of the plastic.
Poor = Considerable change in plastic during exposure.
Not recommended = Severe attack of the plastic. Became soft and unusable after a few hours of exposure.

NOTE: This table should be used as a guide only. For design purposes, specific test data on the intended application may be needed.

CODE COMPLIANCE

STYROFOAM™ Highload 40, 60 and 100 insulation complies with the following codes:

- International Residential Code (IRC) and International Building Code (IBC); see ICC-ES NER-699, BOCA-ES RR 21-02
- ICBO-ES ER-2275

- Calif. Std. Reg. #CA T064
- Underwriters Laboratories, Inc. (UL) Classified, see Classification Certificate D369

Contact your Dow sales representative or local authorities for state/provincial and local building code requirements and related acceptances.

REVIEWED BY TOWER ARCTIC LTD.

DATED 4/23/14

PHYSICAL/CHEMICAL PROPERTIES

STYROFOAM™ Highload 40, 60 and 100 insulation products exhibit the physical properties indicated in Tables 1 and 2 when tested as represented.

For chemical resistance properties of STYROFOAM Highload 40, 60 and 100 insulation products, see Table 3.

ENVIRONMENTAL DATA

STYROFOAM™ Highload 40, 60 and 100 insulation is manufactured with HCFC blowing agents which have 94 percent less ozone depletion potential than standard CFC blowing agents.

STYROFOAM extruded polystyrene insulation products are reusable in many applications.

FIRE PROTECTION

STYROFOAM™ Highload 40, 60 and 100 insulation is combustible; protect from high heat sources. Local building codes may require a protective or thermal barrier. For more information, consult MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector.

5 Installation

STYROFOAM™ Highload 40, 60 and 100 insulation boards are easy to handle and install. They can be cut with a utility knife or any sharp blade. Contact a local Dow representative or access the literature library at www.dowstyrofoam.com/architect or www.dowstyrofoam.ca/4architects for more specific instructions.

6 Availability

STYROFOAM™ Highload 40, 60 and 100 insulation products are distributed through an extensive network. For more information, call:
1-800-232-2436 (English)
1-800-565-1255 (French)

7 Warranty

In the United States, a 15-year limited thermal warranty is available.

8 Maintenance

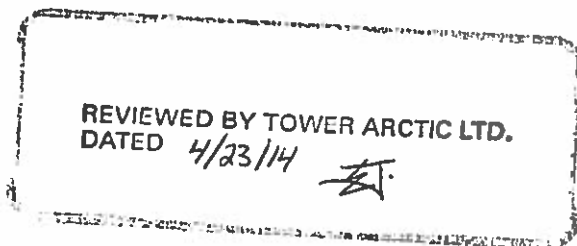
Not applicable.

9 Technical Services

Dow can provide technical information to help address questions when using STYROFOAM™ 40, 60 and 100 insulation products. Technical personnel are available to assist with any insulation project. For technical assistance call:
1-866-583-BLUE (2583) (English)
1-800-363-6210 (French)

10 Filing Systems

- www.dowstyrofoam.com/architect
- www.dowstyrofoam.ca/4architects
- www.sweets.com



REVIEWED BY TOWER ARCTIC LTD.

DATED 4/23/14 *ET*

IN THE U.S.:

- For Technical Information: 1-866-583-BLUE (2583)
- For Sales Information: 1-800-232-2436

THE DOW CHEMICAL COMPANY

- Building Solutions • 200 Larkin • Midland, MI 48674
- www.dowstyrofoam.com/architect

IN CANADA:

- For Technical Information: 1-866-583-BLUE (2583) (English); 1-800-363-6210 (French)
- For Sales Information: 1-800-232-2436 (English); 1-800-565-1255 (French)

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- Building Solutions • Suite 2200 • 250 – 6th Ave. SW • Calgary, AB T2P 3H7
- www.dowstyrofoam.ca/4architects

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COMBUSTIBLE: Protect from high heat sources. Local building codes may require a protective or thermal barrier. For more information, consult MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector. In an emergency, call 1-989-636-4400 in the U.S. or 1-519-339-3711 in Canada.

Building and/or construction practices unrelated to building materials could greatly affect moisture and the potential for mold formation. No material supplier including Dow can give assurance that mold will not develop in any specific system.

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Form No. 179-02548X-0107P&M
178-00202X-0107P&M

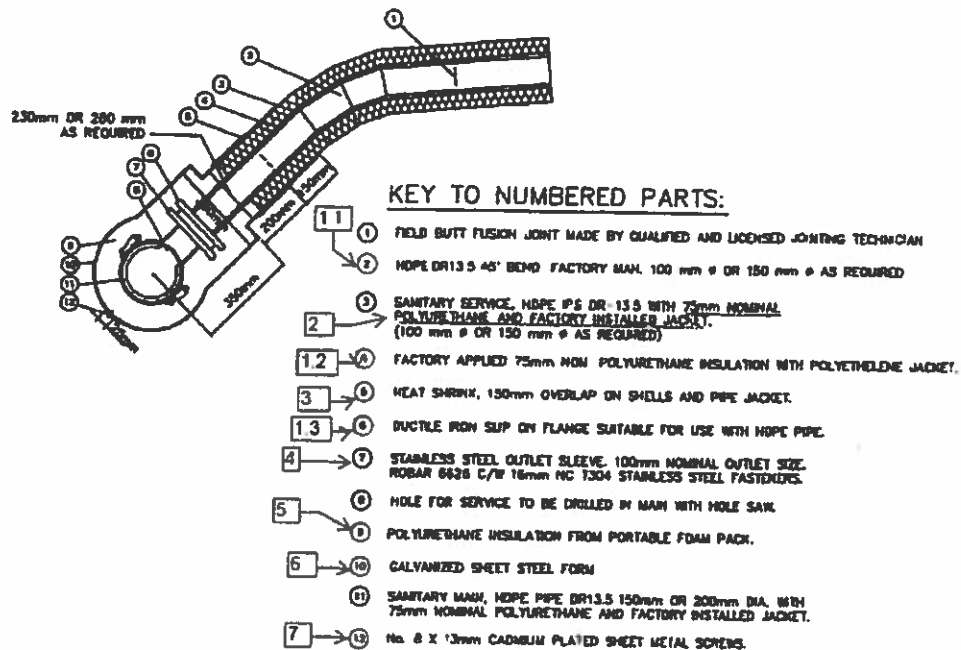
SEWER SERVICE



***Sewer service connection kit for main and house for 8 x 4 in
IPS (200 x 100 mm) and 8 x 6 in IPS (200 x 150 mm)***

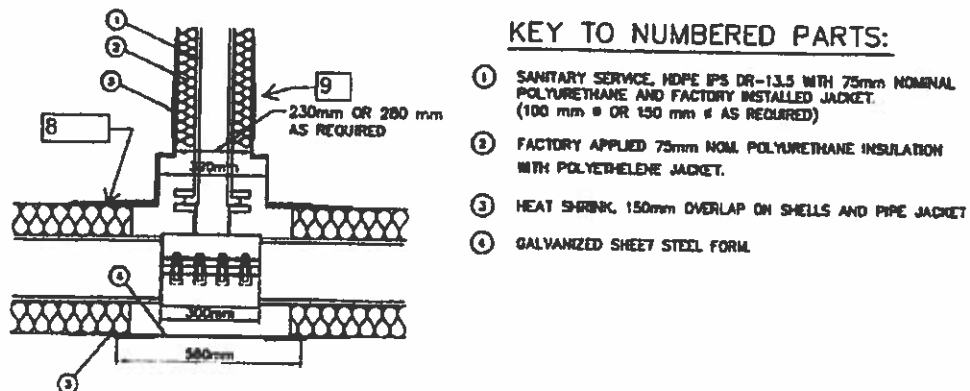
(Style Resolute)

Re-Submittal 3 - June 5th, 2014



2 TYPICAL SEWER SERVICE CONNECTION AT MAIN

Figure 1 : Detail 2 - from Drawing C-332 - Sewer service connection Kit at main



3 TYPICAL SEWER SERVICE STUB FRONT VIEW

Figure 2: Detail 3 - from drawing C-332 - Sewer service connection kit at main - Front view

Figure 2 – removed as per Engineer's note on June 3rd, 2014

Table 1: Fittings and accessories supplied by Urecon for 8in x 4 in (200 mm x 100mm) Sewer Service connection kit at main: (Reference Figure 1 & 2)

| No. | Qty | Part | Description |
|-----|-----|---------------------|---|
| 1 | 1 | Elbow | Combining items 1.1;1.2,1.3 - Nominal 3.0 in (75 mm) thick pre-insulated fitting with polymer coating 4 in ϕ (100 mm) HDPE fabricated DR-11** x 45° elbow with one plain end and one flanged end with ductile Iron ring. |
| 2 | 1 | Insulation shells | 5 in ID x 11 in OD x 18 in long – without polymer coating. |
| 3 | 1 | Heat shrink sleeve | 24 in (600 mm) wide x 39 in (991 mm) long heat shrink wrap (K60-B) with closure seal for an insulated pipe of 11 in (275 mm) OD. |
| 4 | 1 | Outlet Sleeve | Stainless steel outlet sleeve Robar no. 6626 - 8 x 4 - 8.625 OD; 8 in IPS (8.625 in OD) main x 4 in flanged outlet with nuts, fasteners, ring seal and liner. |
| 5 | 1 | Portable insulation | Portable insulation #200 – shipped at a later date for expiry date reasons. |
| 6 | 1 | Mold form Tee | 22 Ga. Metal form for insulation for Resolute Bay Style Sewer Service kit 8 in x 4 in with 3 sets of Stainless steel strapping 60 in long x 1/2 in x 0.15 in with gear clamp |
| 7 | 1 | Accessories | 1 x 4in x 1/8 in thick Full Face Red Rubber for Flanged connection 8 x 5/8in - 11 UNC Grade 2 Hex Reg. 8 x 5/8in - 11 UNC x 5 in long Grade 2 Hex head zinc coated. 16 x Washer USS plate 5/8 in (11/16 hole) Zinc coated. Motor Oil 10W30 1L |
| 8 | 2 | Heat shrink sleeve | 18 in (450 mm) wide x 54 in (1372 mm) long heat shrink wrap (K60-B) with closure seal for an insulated pipe of 16 in (400 mm) OD. |
| 9 | 1 | Heat shrink sleeve | 6 in (150 mm) wide x 39 in (991 mm) long heat shrink wrap (K60-B) with closure seal for an insulated pipe of 11 in (275 mm) OD. |

** DR-11 is accepted by engineer as per Kirk Stokes (Emco) email on June 5th, 2014

Table 2: Fittings and accessories supplied by Urecon for the Sewer Service connection kit for 4 in (100 mm) riser at Building: (Reference Figure 3)

| No. | Qty | Part | Description |
|-----|-----|-------------------------|---|
| 1 | 1 | Reducer | Not Supplied |
| 2 | 1 | Wood sheet | Not supplied as requested |
| 3 | 1 | Silicone tube | Not supplied as requested |
| 4 | 1 | Portable insulation | Portable insulation #200 – shipped at a later date for expiry date reasons. |
| 5 | 1 | Insulation shells | Not supplied as requested |
| 6 | 1 | Pre-insulated 90° elbow | Not supplied as requested |
| 7 | 3 | Heat shrink sleeve | Not supplied as requested |
| 7 | 1 | Insulation shells | 5 in ID x 11 in OD x 18 in long – without polymer coating. |


| | |
|--|---|
| DRAWING REVIEW | |
| The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document. | |
| <input checked="" type="checkbox"/> NO EXCEPTIONS <input type="checkbox"/> EXCEPTIONS NOTED - RESUBMIT | Submission No. <u>2</u> Project No. <u>C45 HQ 12 b1</u> By <u>Abdel Jassal</u> Date <u>6 June 2014</u> |
|  2850 Queensview Drive, Suite 100 Ottawa, Ontario K2B 8H6 Tel: (613) 688-1899 Fax: (613) 225-7337 | |


Table 3: Fittings and accessories supplied by Urecon for an 8 x 6 in (200 x 150 mm) Sewer Service connection kit at main: (Reference Figure 1 & 2)

| No. | Qty | Part | Description |
|-----|-----|---------------------|---|
| 1 | 1 | Elbow | Combining Items 1.1;1.2,1.3 - Nominal 3.0 in (75 mm) thick pre-insulated fitting with polymer coating 6 in ø (150 mm) HDPE fabricated DR-11** x 45° elbow with one plain end and one flanged end with ductile Iron ring. |
| 2 | 1 | Insulation shells | 7 in ID x 13 in OD x 18 in long – without polymer coating. |
| 3 | 1 | Heat shrink sleeve | 24 in (600 mm) wide x 45 in (1143 mm) long heat shrink wrap (K60-B) with closure seal for an insulated pipe of 13 in (325 mm) OD. |
| 4 | 1 | Outlet Sleeve | Stainless steel outlet sleeve Robar no. 6626 -8 x 6 - 8.625 OD; 8in IPS (8.625 in OD) main x 6 in Flanged outlet with nuts, fasteners, ring seal and liner. |
| 5 | 1 | Portable insulation | Portable insulation #200 – shipped at a later date for expiry date reasons. |
| 6 | 1 | Mold form Tee | 22 Ga. Metal form for insulation for Resolute Bay Style Sewer Service kit 8 in x 6 in with 3 sets of Stainless steel strapping 60 in long x 1/2 in x 0.15 in with gear clamp |
| 7 | 1 | Accessories | 1 x 6in x 1/8 in thick Full Face Red Rubber for Flanged connection 8 x 5/8in - 11 UNC Grade 2 Hex Reg. 8 x 5/8in - 11 UNC x 5 in long Grade 2 Hex head zinc coated. 16 x Washer USS plate 5/8 in (11/16 hole) Zinc coated. Motor Oil 10W30 1L |
| 8 | 2 | Heat shrink sleeve | 18 in (450 mm) wide x 54 in (1372 mm) long heat shrink wrap (K60-B) with closure seal for an insulated pipe of 16 in (400 mm) OD. |
| 9 | 1 | Heat shrink sleeve | 6 in (150 mm) wide x 45 in (1143 mm) long heat shrink wrap (K60-B) with closure seal an insulated pipe of 13 in (325 mm) OD. |

** DR-11 is accepted by engineer as per Kirk Stokes (Emco) email on June 5th, 2014

Table 4: Fittings and accessories supplied by Urecon for the 6 in Sewer Service connection kit for rise at Building: (Reference Figure 3)

| Item No. | Qty | Part | Description |
|----------|-----|-------------------------|---|
| 1 | 1 | Reducer | Not supplied as requested |
| 2 | 1 | Wood sheet | Not supplied as requested |
| 3 | 1 | Silicone tube | Not supplied as requested |
| 4 | 1 | Portable insulation | Portable insulation #200 – shipped at a later date for expiry date reasons. |
| 5 | 1 | Insulation shells | Not supplied as requested |
| 6 | 1 | Pre-insulated 90° elbow | Not supplied as requested |
| 7 | 3 | Heat shrink sleeve | Not supplied as requested |
| 7 | 1 | Insulation shells | 7 in ID x 13 in OD x 18 in long |

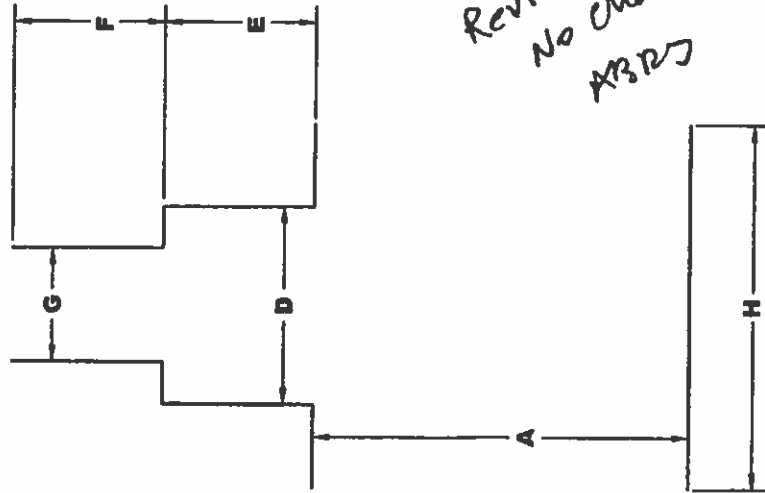
| DRAWING REVIEW | |
|--|---|
| The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document. | |
| <input checked="" type="checkbox"/> NO EXCEPTIONS <input type="checkbox"/> EXCEPTIONS NOTED - RESUBMIT | Submission No. <u>2</u> Project No. <u>265-HR-12012</u> By <u>Abdul Jani</u> Date <u>6 June 2014</u> |
|  2650 Queensview Drive, Suite 100 Ottawa, Ontario K2B 8H6 Tel: (613) 688-1899 Fax: (613) 225-7337 | |

DURECON

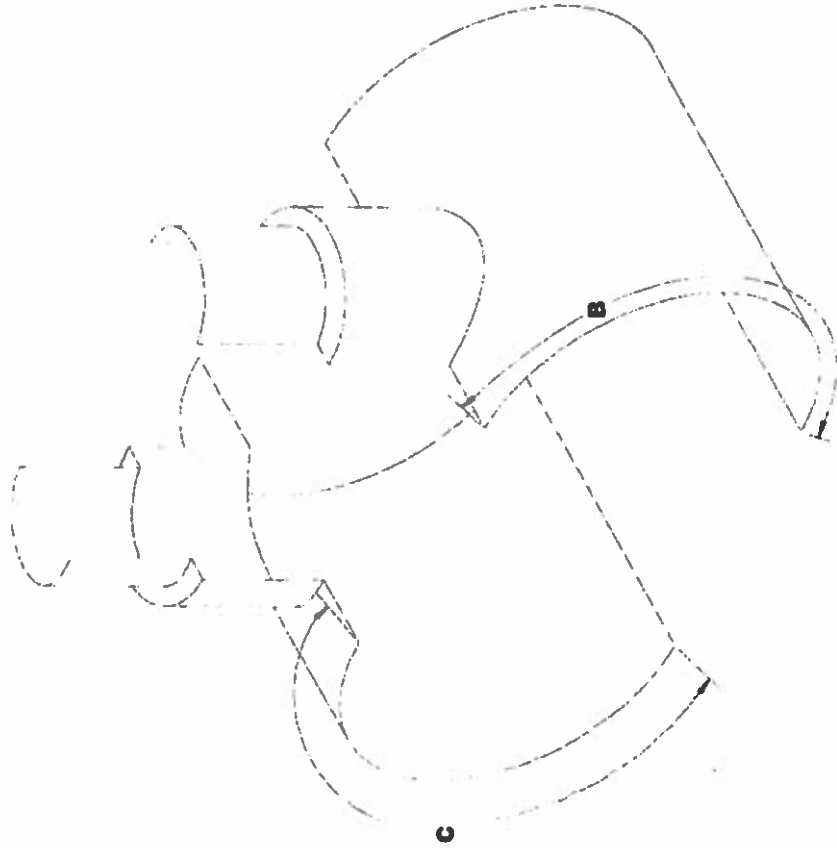
TUYAUTERIE PRÉISOLÉE

Piece/Part No: P-MFORM-SSK-RESOLUTE-GALV-22G-0600-0400-R
 8" x 4" - 22 ga. Galvanized metal mold Resolute bay Style for sewer connection

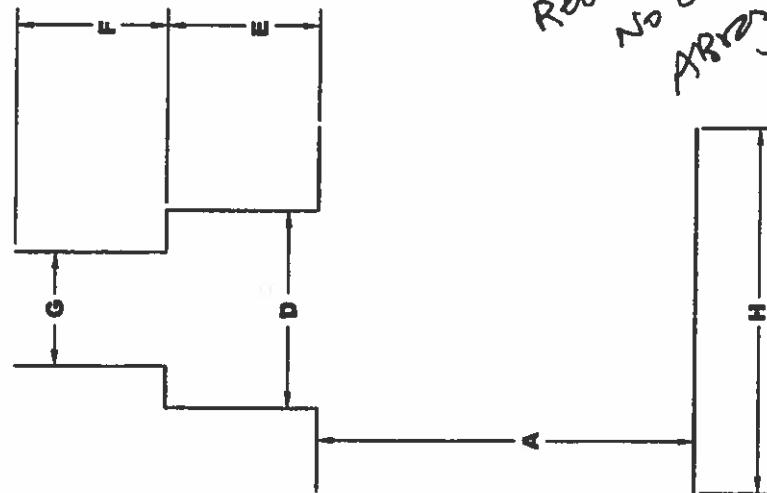
| | A | B | C | D | E | F | G | H |
|------------|---------|-----|-----|---------|----|----|---------|-----|
| DIMENSIONS | 15 1/2" | 30" | 25" | 13 1/2" | 6" | 4" | 11 1/4" | 28" |



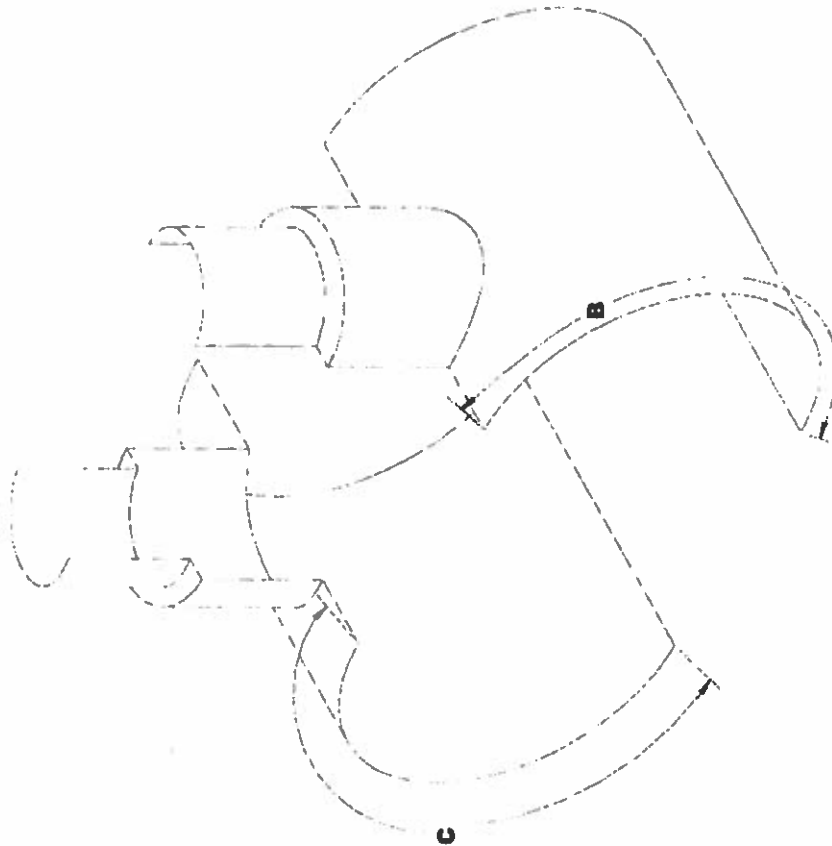
Reviewed 3 June 2014
 No changes.
 ABP



| | A | B | C | D | E | F | G | H |
|------------|---------|-----|-----|---------|----|----|---------|-----|
| DIMENSIONS | 15 1/2" | 30" | 25" | 15 1/2" | 6" | 4" | 13 1/4" | 28" |



Reviewed 3 June 2014
 No changes.
 ARB



Removed as per note on June 3rd, 2014

Removed as per note on June 3rd, 2014



6626

STAINLESS STEEL OUTLET SLEEVE

APPLICATIONS

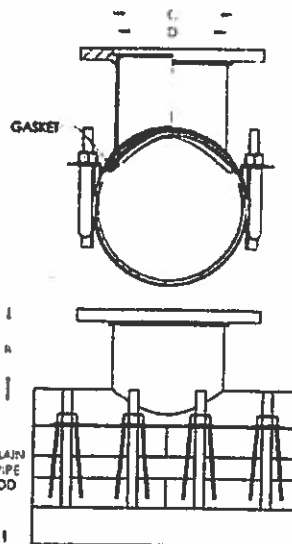
ROBAR 6626 Outlet Sleeves are used for "DRY TAP" applications. Outlet options are 3" through 12" including size on size for 4" and above. Particularly suited for use on High Density Polyethylene (HDPE).

MATERIAL SPECIFICATIONS:

Shell: T-304 Stainless Steel, fully passivated.**
 Fasteners: 5/8" NC T304 Stainless Steel,
 Rolled threads. Nuts coated with anti-galling compound.
 Torque is 70-80 ft. lbs.
 Gaskets: Ringseal: NBR (Buna N) Rubber.
 Liner: SBR (Buna S) Rubber.
 Flange: T-304 Stainless Steel* as per AWWA C-207 Class D.
 Outlet: T-304 Stainless Steel*.

| OUTLET SLEEVE DATA | | | | | |
|------------------------|----|------|-------------|-------------|--------------|
| NOMINAL OUTLET SIZE | A | B | C (DIA.) | D (DIA.) | BOLT SIZE |
| 3 | 12 | 4 | 3.25 | 3 | 5/8 |
| 4 | 12 | 4 | 4.25 | 4 | 5/8 |
| 6 | 16 | 4.5 | 6.25 | 6 | 5/8 |
| 8 | 20 | 5 | 8.25 | 8 | 5/8 |
| 10 | 20 | 5.5 | 10.25 | 10 | 5/8 |
| 12 | 24 | 5.75 | 12.25 | 12 | 5/8 |

*Reviewed
3 June 2014
ABR/23*



All dimensions are in inches.

| NOMINAL PIPE SIZE | BY X | OUTLET SIZE | FITTING LENGTH | NUMBER OF BOLTS | APPROXIMATE SHIPPING WEIGHT | | WORKING RANGE | |
|-------------------------|---------|----------------|-------------------|--------------------|-----------------------------|------|---------------|------|
| | | | | | LBS. | KG. | LOW | HIGH |
| 4 | X | 3 | 12 | 8 | 33 | 15.0 | 4.70 | 4.85 |
| | | 4" | | | 36 | 16.4 | 4.95 | 5.20 |
| 6 | X | 3 | 12 | 8 | 38 | 18.4 | 6.40 | 6.60 |
| | | 4 | | | 39 | 17.7 | 6.60 | 7.20 |
| | | 6" | 16 | 10 | 43 | 19.6 | 7.20 | 7.60 |
| | | | | | | | 7.75 | 7.00 |
| 8 | X | 3 | 12 | 8 | 40 | 18.2 | 6.85 | 7.10 |
| | | 4 | | | 43 | 19.6 | 7.00 | 7.25 |
| | | 6" | 16 | 10 | 47 | 21.4 | 7.25 | 7.50 |
| | | | | | | | 8.40 | 8.60 |
| 10 | X | 3 | 12 | 8 | 40 | 18.2 | 8.40 | 8.60 |
| | | 4 | | | 43 | 19.6 | 8.60 | 9.20 |
| 12 | X | 3 | 12 | 8 | 47 | 21.4 | 9.20 | 9.60 |
| | | 4 | | | 54 | 29.1 | 9.85 | 9.20 |
| 14 | X | 3 | 12 | 8 | 54 | 29.1 | 9.25 | 9.50 |
| | | 4 | | | 64 | 33.1 | 9.50 | 9.80 |

6626 rated for 150 PSI working pressure (contact Robar for higher pressure ratings).

- Note:
- Contact ROBAR for tapping into HDPE DR21 and higher.
 - **Refers to chemically treating Stainless Steel after welding ("Pickled/Passivated") to return it to its original appearance.
 - * Size on size for IPSOD is not available.
 - For size on size tapping an undersize cutter is used.



This product is tested and certified by WQA to NSF/ANSI standard 61

ROBAR INDUSTRIES LTD.

Surrey, British Columbia
 Phone: 1-800-863-8553

Boucherville, Quebec
 Phone: 1-800-315-9525

Calhoun, Georgia
 Phone: 1-706-624-4404

Website: www.robarindustries.com / E-mail: waterworks@robarindustries.com

Submittal 3 June 5th 2014

10



6626

STAINLESS STEEL OUTLET SLEEVE

| NOMINAL PIPE SIZE | BY X | OUTLET SIZE | FITTING LENGTH | NUMBER OF BOLTS | APPROXIMATE SHIPPING WEIGHT | | WORKING RANGE | |
|-------------------------|---------|----------------|-------------------|--------------------|-----------------------------|------|---------------|-------|
| | | | | | LBS. | KG. | LOW | HIGH |
| 10 | X | 3 | 12 | 8 | 43 | 19.6 | 10.55 | 10.95 |
| | | 4 | | | 46 | 20.9 | | |
| | | 6 | 16 | 10 | 50 | 22.7 | | |
| | | 8 | | | 66 | 30.9 | | |
| | | 10" | 20 | 14 | 73 | 33.2 | | |
| 12 | X | 3 | 12 | 8 | 46 | 20.9 | 12.15 | 12.55 |
| | | 4 | | | 49 | 22.3 | | |
| | | 6 | 16 | 10 | 53 | 24.1 | | |
| | | 8 | | | 72 | 32.7 | | |
| | | 10 | 20 | 14 | 77 | 35.0 | | |
| | | 12" | | | 111 | 50.5 | | |
| 14 | X | 3 | 12 | 8 | 67 | 30.5 | 15.10 | 15.50 |
| | | 4 | | | 70 | 31.8 | | |
| | | 6 | 16 | 10 | 74 | 33.6 | | |
| | | 8 | | | 83 | 42.3 | | |
| | | 10 | 20 | 14 | 98 | 44.6 | | |
| | | 12 | | | 132 | 60.0 | | |
| 16 | X | 3 | 12 | 8 | 71 | 32.3 | 17.20 | 17.60 |
| | | 4 | | | 75 | 34.1 | | |
| | | 6 | 16 | 10 | 79 | 35.8 | | |
| | | 8 | | | 100 | 45.5 | | |
| | | 10 | 20 | 14 | 105 | 47.7 | | |
| | | 12 | | | 141 | 64.1 | | |
| 18 | X | 3 | 12 | 12 | 74 | 33.6 | 19.30 | 19.70 |
| | | 4 | | | 77 | 35 | | |
| | | 6 | 16 | 15 | 81 | 36.8 | | |
| | | 8 | | | 103 | 46.6 | | |
| | | 10 | 20 | 21 | 108 | 49.1 | | |
| | | 12 | | | 144 | 65.5 | | |
| 20 | X | 3 | 12 | 12 | 84 | 38.2 | 21.40 | 21.80 |
| | | 4 | | | 87 | 39.6 | | |
| | | 6 | 16 | 15 | 91 | 41.4 | | |
| | | 8 | | | 115 | 52.3 | | |
| | | 10 | 20 | 21 | 120 | 54.6 | | |
| | | 12 | | | 158 | 71.8 | | |
| 24 | X | 3 | 12 | 12 | 90 | 40.9 | 23.20 | 23.60 |
| | | 4 | | | 93 | 42.3 | | |
| | | 6 | 16 | 15 | 97 | 44.1 | | |
| | | 8 | | | 121 | 55.0 | | |
| | | 10 | 20 | 21 | 127 | 57.7 | | |
| | | 12 | | | 167 | 75.9 | | |

HOW TO ORDER:

All dimensions are in inches.

Determine the product number (6626), nominal main size, nominal outlet size and the high limit number (see table above) and then order by using the appropriate ordering code as shown in the following example. If a Stainless Steel Outlet Sleeve, with a 6" nominal outlet is required for a 12" nominal diameter HDPE pipe (12.75" OD), the ordering code is:

6626 - 12" x 6" - 12.95" i.e. 6626 - 12 x 6 - 12.95
product nom. main nom. outlet high end of
number size size range

6626 Tapping Sleeves come in 3 sections for nominal pipe sizes of 18" - 24".

Note: * - Size on size for IPS OD is not available.
- For sizes not listed above, call ROBAR for availability.
- The working range displayed is only a guideline, other ranges are available.

ROBAR INDUSTRIES LTD.

Surrey, British Columbia
Phone: 1-800-663-6553

Boucherville, Quebec
Phone: 1-800-315-9525

Calhoun, Georgia
Phone: 1-706-624-4404

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Submittal 3 June 5th 2014

11

Effective: January 1, 2013

6.3.2

Reviewed
3 June 2014
ABR

WATER SERVICE



Water service connection kit for main and house for :
8 x 4 in IPS (200 x 100 mm) carrier branch with 2 x 1 in (25 mm) CTS Service and recirculation line
&
8 x 6 in IPS (200 x 150 mm) carrier branch with 1 in (25 mm) CTS Service and 2 in (50 mm) IPS recirculation line
(Style Resolute)

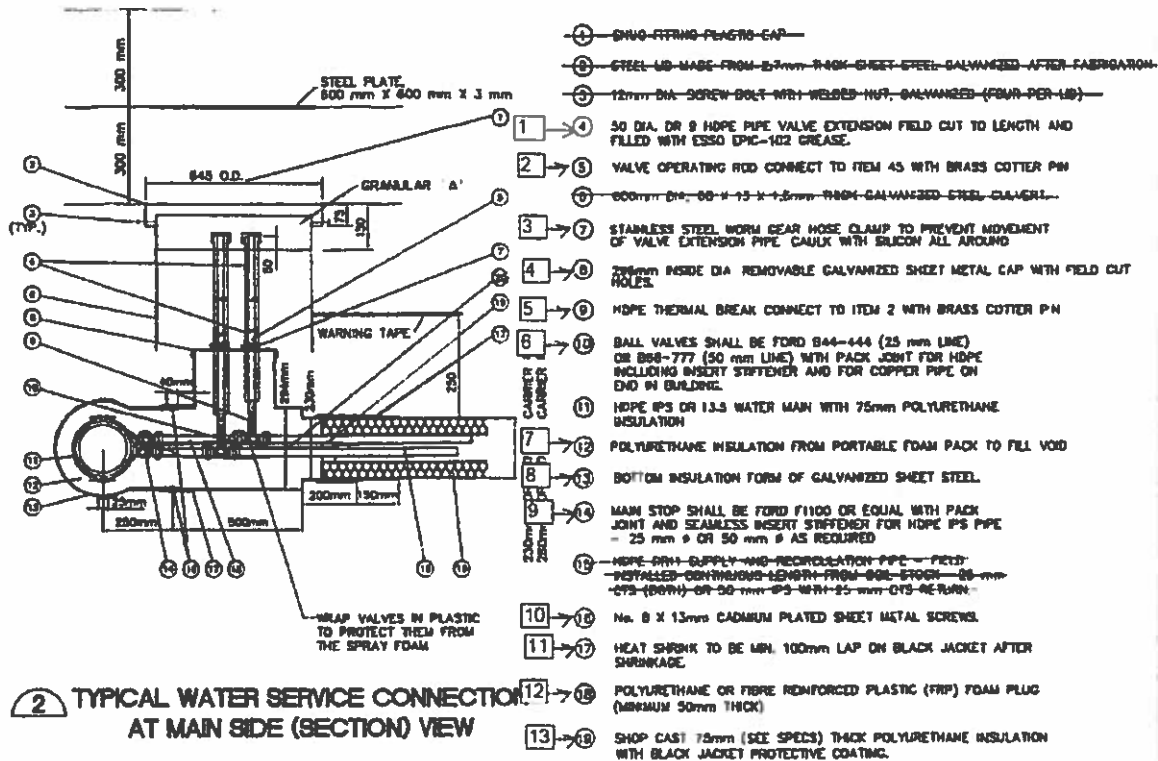


Figure 4 : Detail 2 - from Drawing C-330 - Water service connection Kit at main

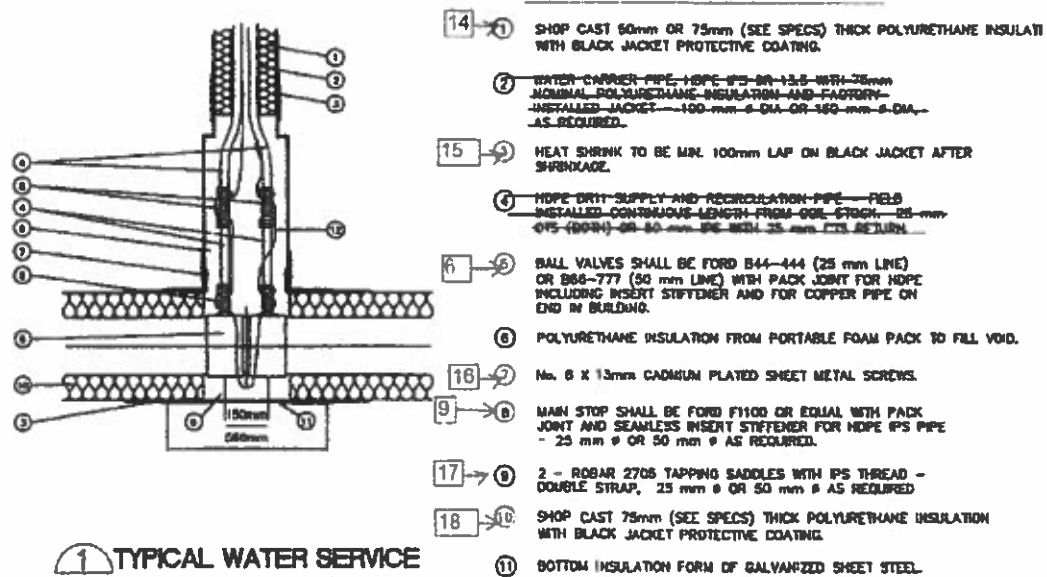


Figure 5 : Detail 1 - from drawing C-330 - Water service connection kit at main - Plan view

Table 5: Fittings and accessories supplied by Urecon for the 8 x 4 in IPS (200 x 100 mm) for 2 x 1 in CTS lines
Water Service connection kit at main: (Reference Figure 4 & 5)

| No. | Qty | Part | Description |
|------|-----|---|--|
| 1 | 2 | Pipe | 2 in (50 mm) IPS DR-9 HDPE pipe x 6 ft |
| 1.1 | 10 | Grease | Grease Esso Epic #102 |
| 1.2 | 2 | End cap | 2 in (50 mm) Slip-on closed end pipe caps. |
| 2 | 2 | Rods | Valve operating Rods with Cotter pin |
| 3 | | | |
| 4 | 1 | Mold form Tee | 22 Ga. Metal form for insulation for Resolute Bay Style Water Service kit 8 in x 4 in with 4 sets of Stainless steel strapping 60 in long x 1/2 in x 0.15 in with gear clamp |
| 5 | 2 | Frost stop | Provided outside the kit assembly |
| 6 | 2 | Curb Stops | 1 in (25 mm) ball valve B44-444 Pack Joint for Copper or Plastic Tubing (CTS) Both Ends. |
| 6.1 | 4 | Curb stop Accessories | 1 in CTS (25 mm) Ford Insert Stiffeners - Model INSERT-52 - solid 304 tubular stainless steel, dimpled and flanged to retain placement within the service line |
| 7 | 2 | Portable insulation | Portable insulation #200 – shipped at a later date for expiry date reasons. |
| 8 | 1 | Mold form Tee | Part of item 4. |
| 9 | 2 | Main stops | 1 in (25 mm) M.I.P. x C.T.S. comp Main stop Ford F1100-4 |
| 9.1 | 2 | Main stops Accessories | 1in CTS (25 mm) Ford Insert Stiffeners - Model INSERT-52 - solid 304 tubular stainless steel, dimpled and flanged to retain placement within the service line |
| 10 | 6 | Metal mold accessories | Sheet Metal screws #8 x 13 mm (1/2 in), 100/bx Zinc plated (hex head) |
| 10.1 | 1 | Accessories | Motor Oil 10W30 1L |
| 11 | 3 | Heat shrink Sleeve metal mold | 18 in (450 mm) wide x 52 in (1321 mm) long heat shrink wrap (K60-B) with closure seal for an insulated pipe of 15.5 in (388 mm) OD. |
| 11.1 | 1 | Heat shrink Sleeve metal mold at 4 in end | 18 in (450 mm) wide x 39 in (991 mm) long heat shrink wrap (K60-B) with closure seal for an insulated pipe of 11 in (275 mm) OD. |
| 12 | 1 | Foam plug | 2 x 1 in Flexible insulation plug |
| 13 | 1 | Insulation shells | 5 in ID x 11 in OD x 36 in long – with factory applied polymer coating. (cut to length on site) |
| 14 | 1 | Insulation shells | See item 13 |
| 15 | 1 | Heat shrink sleeve | See item 11.1 |
| 16 | | Accessories | See item 10 |
| 17 | 2 | Saddles | Cast Bronze Service Saddle Robar no. 2706 - 8.625 x1-CC - DS ; 8in main x 1 in outlet size , CC outlet thread, double strap and provided with flat washers. |
| 18 | 1 | | 9 in ID x 15 in OD x 36 in long – with factory applied polymer coating. (cut to length on site) |

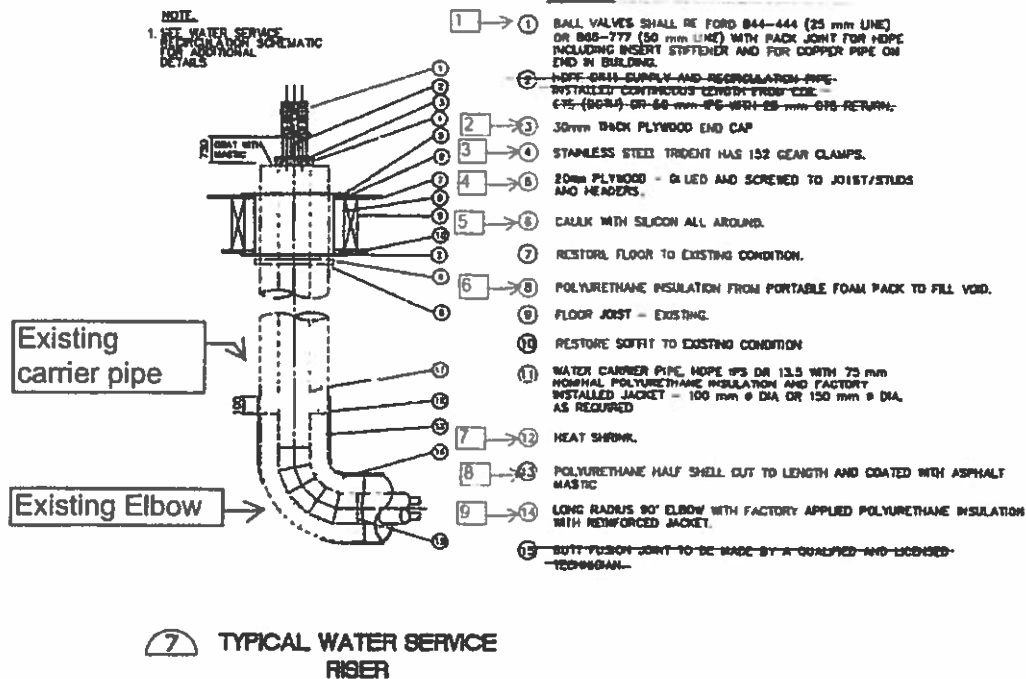


Figure 6 : Detail 7 - from drawing C-330 - Water service connection kit for riser at building

Table 6: Fittings and accessories supplied by Urecon for the Water Service connection kit for 4 in riser at Building: (Reference Figure 6)

| Item No. | Qty | Part | Description |
|----------|-----|-------------------------|---|
| 1 | 2 | Valve | 1 in (25 mm) Ball valve B44-444 Pack Joint for Copper or Plastic Tubing (CTS) Both Ends. |
| 1.1 | 4 | Accessories | 1 in CTS (25 mm) Ford Insert Stiffeners - Model INSERT-52 - solid 304 tubular stainless steel, dimpled and flanged to retain placement within the service line. |
| 2 | 1 | Security cap | Wood security cap |
| 3 | 1 | 1 | Stainless steel strapping 16 in long x 1/2 in x 0.15 in with gear clamp |
| 4 | 1 | Wood sheet | Not supplied as requested |
| 5 | 1 | Silicone tube | Not supplied as requested |
| 6 | 1 | Portable insulation | Portable insulation #200 - shipped at a reasons. |
| 7 | 2 | Heat shrink sleeve | Not supplied as requested |
| 8 | 1 | Insulation shells | Not supplied as requested |
| 9 | 1 | Pre-insulated 90° elbow | Not supplied as requested |

DRAWING REVIEW

The review of this drawing does not in any way relieve the contractor of responsibility for its accuracy or for compliance with the contract document.

☒ NO EXCEPTIONS TAKEN

☐ EXCEPTIONS NOTED - RESUBMIT

Submission No. 2

Project No. CG5 H2-12012

By Abdel Fattah

Date June 2014

***exp.**

2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6
Tel: (613) 688-1899
Fax: (613) 225-7337

Table 7: Fittings and accessories supplied by Urecon for the 8 x 6 in IPS (200 x 100 mm) for 1 in CTS and 2 in (50 mm) IPS lines Water Service connection kit at main: (Reference Figure 4 & 5)

| No. | Qty | Part | Description |
|------|-----|---|--|
| 1 | 2 | Pipe | 2 in (50 mm) IPS DR-9 HDPE pipe x 6 ft |
| 1.1 | 10 | Grease | Grease Esso Epic #102 |
| 1.2 | 2 | End cap | 2 in (50 mm) Slip-on closed end pipe caps. |
| 2 | 2 | Rods | Valve operating Rods with Cotter pin |
| 3 | | | Part not supplied |
| 4 | 1 | Mold form Tee | 22 Ga. Metal form for insulation for Resolute Bay Style Water Service kit 8 in x 6 in with 4 sets of Stainless steel strapping 60 in long x 1/2 in x 0.15 in with gear clamp |
| 5 | 2 | Frost stop | Provided outside the kit assembly |
| 6 | 1 | Curb Stop 1 in | 1 in (25 mm) ball valve B44-444 Pack Joint for Copper or Plastic Tubing (CTS) Both Ends. |
| 6.1 | 2 | Curb stop 1 in accessories | 1 in CTS (25 mm) Ford Insert Stiffeners - Model INSERT-52 - solid 304 tubular stainless steel, dimpled and flanged to retain placement within the service line |
| 6.2 | 1 | Curb Stop 2 in | 2 in (50 mm) ball valve B77-777 Pack Joint for IPS HDPE pipe Both Ends. |
| 6.3 | 2 | Curb stop 2 in accessories | 2 in IPS (50 mm) Ford Insert Stiffeners - Model INSERT-75-DR11 - solid 304 tubular stainless steel, dimpled and flanged to retain placement within the service |
| 7 | 2 | Portable insulation | Portable insulation #200 – shipped at a later date for expiry date reasons. |
| 8 | 1 | Mold form Tee | Part of item 4. |
| 9 | 1 | Main stop 1 in | 1 in (25 mm) M.I.P. x C.T.S. comp Main stop Ford F1100-4 |
| 9.1 | 1 | Main stop 1 in accessories | 1 in CTS (25 mm) Ford Insert Stiffeners - Model INSERT-52 - solid 304 tubular stainless steel, dimpled and flanged to retain placement within the service line |
| 9.2 | 1 | Main stop 2 in | 2 in (50 mm) M.I.P. x I.P.S. comp Main stop Ford FB1102-7 |
| 9.3 | 1 | Main stop 2 in accessories | 2 in IPS (50 mm) Ford Insert Stiffeners - Model INSERT-75-DR11 - solid 304 tubular stainless steel, dimpled and flanged to retain placement within the service |
| 10 | 6 | Metal mold accessories | Sheet Metal screws #8 x 13 mm (1/2 in), 100/bx Zinc plated (hex head) |
| 10.1 | 1 | Accessories | Motor Oil 10W30 1L |
| 11 | 3 | Heat shrink Sleeve metal mold | 18 in (450 mm) wide x 52 in (1321 mm) long heat shrink wrap (K60-B) with closure seal for an insulated pipe of 15.5 in (388 mm) OD. |
| 11.1 | 1 | Heat shrink Sleeve metal mold at 4 in end | 18 in (450 mm) wide x 45 in (1143 mm) long heat shrink wrap (K60-B) with closure seal for an insulated pipe of 13 in (325 mm) OD. |
| 12 | 1 | Foam plug | 2 x 1 in Flexible insulation plug |
| 13 | 1 | Insulation shells | 7 in ID x 13 in OD x 36 in long – with factory applied polymer coating. (cut to length on site) |
| 14 | 1 | Insulation shells | See item 13 |

Reviewed
3 June 2014
ABR3

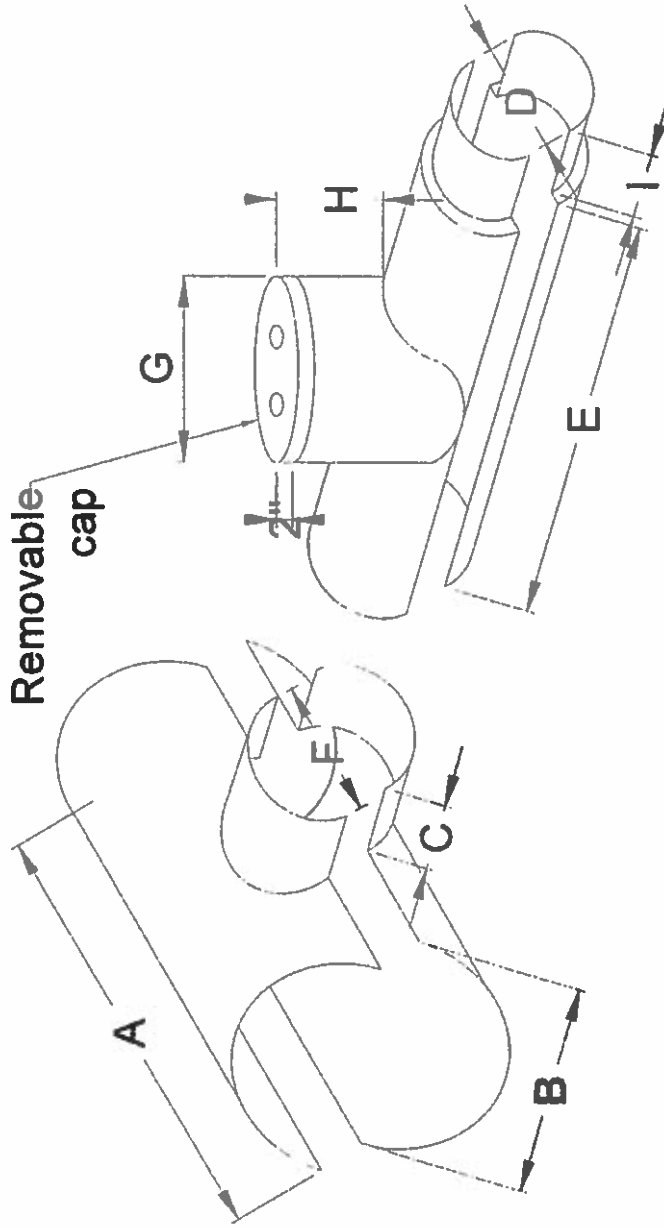
| | | | |
|------|---|--------------------|---|
| 15 | 1 | Heat shrink sleeve | See item 11.1 |
| 16 | | Accessories | See item 10 |
| 17 | 1 | Saddle | Cast Bronze Service Saddle Robar no. 2706 - 8.625 x1-CC - DS ; 8in main x 1 in outlet size , CC outlet thread, double strap and provided with flat washers. |
| 17.1 | 1 | Saddle | Cast Bronze Service Saddle Robar no. 2706 - 8.625 x 2- IP - DS ; 8in main x 2 in outlet size , IP outlet thread, double strap and provided with flat washers. |
| 18 | 1 | | 9 in ID x 15 in OD x 36 in long – with factory applied polymer coating. (cut to length on site) |

Table 6: Fittings and accessories supplied by Urecon for the Water Service connection kit for 4 in riser at Building: (Reference Figure 6)

| Item No. | Qty | Part | Description |
|----------|-----|-------------------------|---|
| 1 | 1 | Valve | 1 in (25 mm) Ball valve B44-444 Pack Joint for Copper or Plastic Tubing (CTS) Both Ends. |
| 1.1 | 2 | Accessories | 1 in CTS (25 mm) Ford Insert Stiffeners - Model INSERT-52 - solid 304 tubular stainless steel, dimpled and flanged to retain placement within the service line. |
| 1.2 | 1 | Valve | 2 in (50 mm) M.I.P. x I.P.S. comp Main stop Ford FB1102-7 |
| 1.3 | 2 | Accessories | 2 in IPS (50 mm) Ford Insert Stiffeners - Model INSERT-75-DR11 - solid 304 tubular stainless steel, dimpled and flanged to retain placement within the service |
| 2 | 1 | Security cap | Wood security cap |
| 3 | 1 | 1 | Stainless steel strapping 16 in long x 1/2 in x 0.15 in with gear clamp |
| 4 | 1 | Wood sheet | Not supplied as requested |
| 5 | 1 | Silicone tube | Not supplied as requested |
| 6 | 1 | Portable insulation | Portable insulation #200 – shipped at a later date for expiry date reasons. |
| 7 | 2 | Heat shrink sleeve | Not supplied as requested |
| 8 | 1 | Insulation shells | Not supplied as requested |
| 9 | 1 | Pre-insulated 90° elbow | Not supplied as requested |

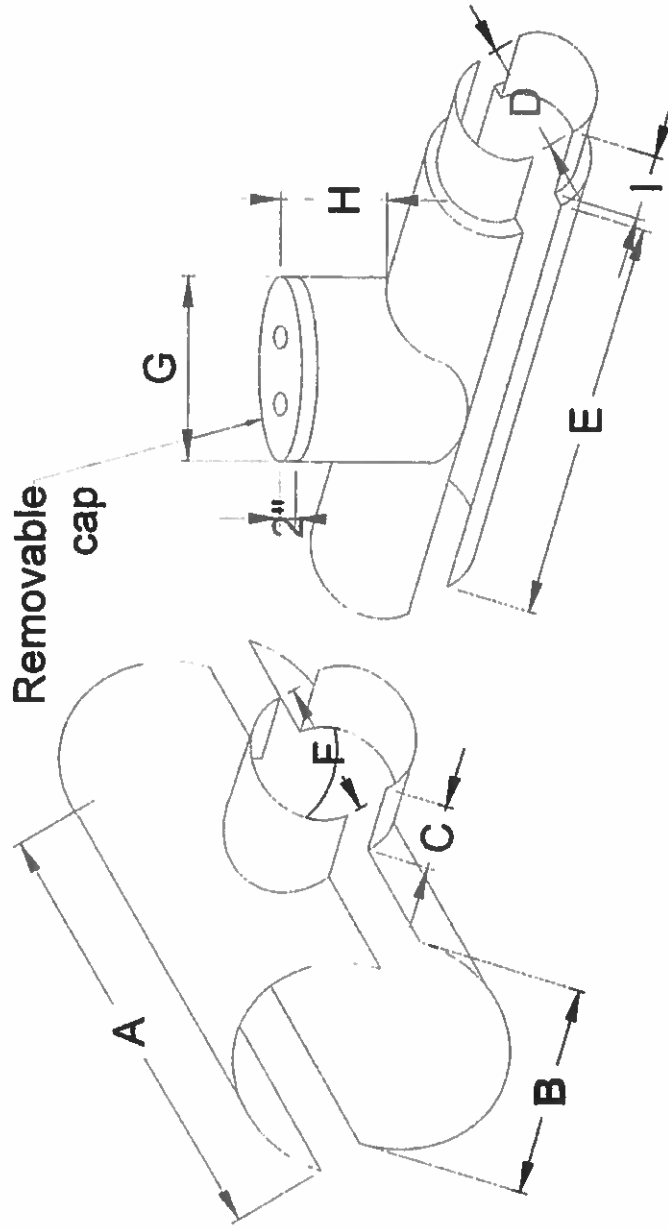
Reviewed
3 June 2014
ABR3

| | A | B | C | D | E | F | G | H | I |
|------------|-----|---------|----|---------|-----|---------|-----|-----|----|
| DIMENSIONS | 22" | 15 1/4" | 3" | 13 1/4" | 20" | 15 1/2" | 11" | 10" | 8" |



Reviewed
3 June 2014
ABP3

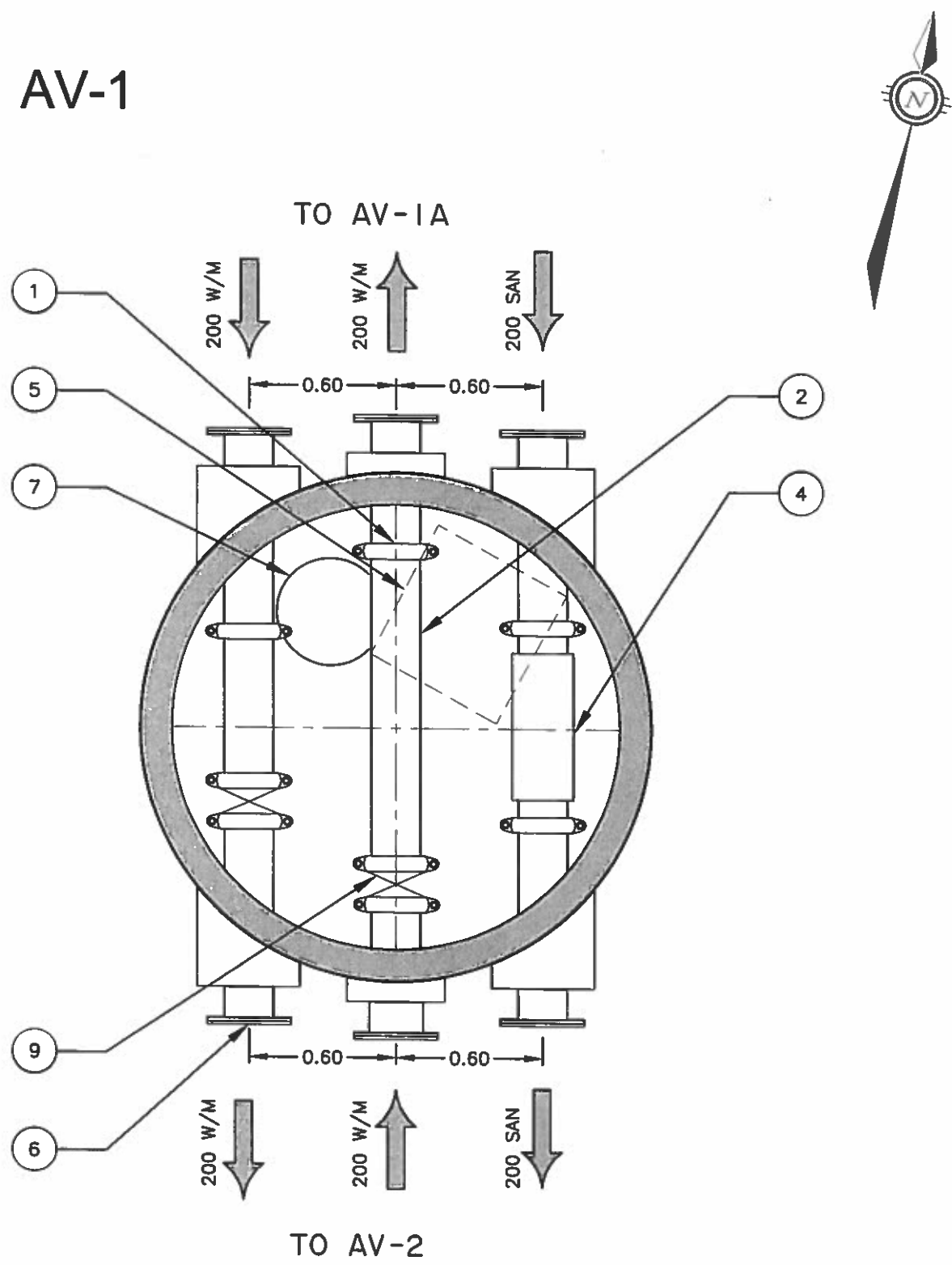
| | A | B | C | D | E | F | G | H | I |
|------------|-----|---------|----|---------|-----|---------|-----|-----|----|
| DIMENSIONS | 22" | 15 1/4" | 3" | 11 1/4" | 20" | 15 1/4" | 11" | 10" | 8" |



Reviewed
3 June 2014
BPP3

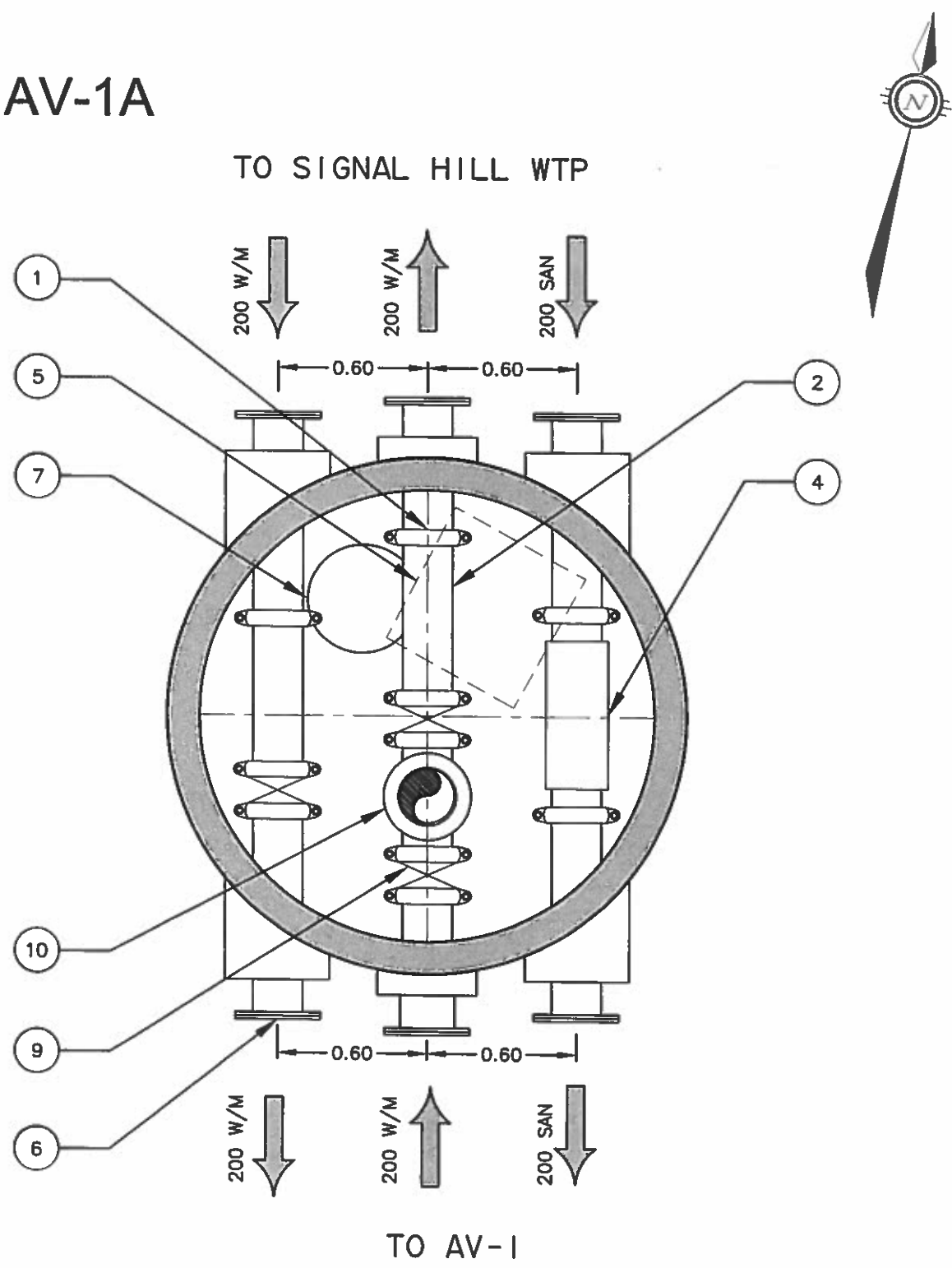
ACCESS VAULTS

AV-1



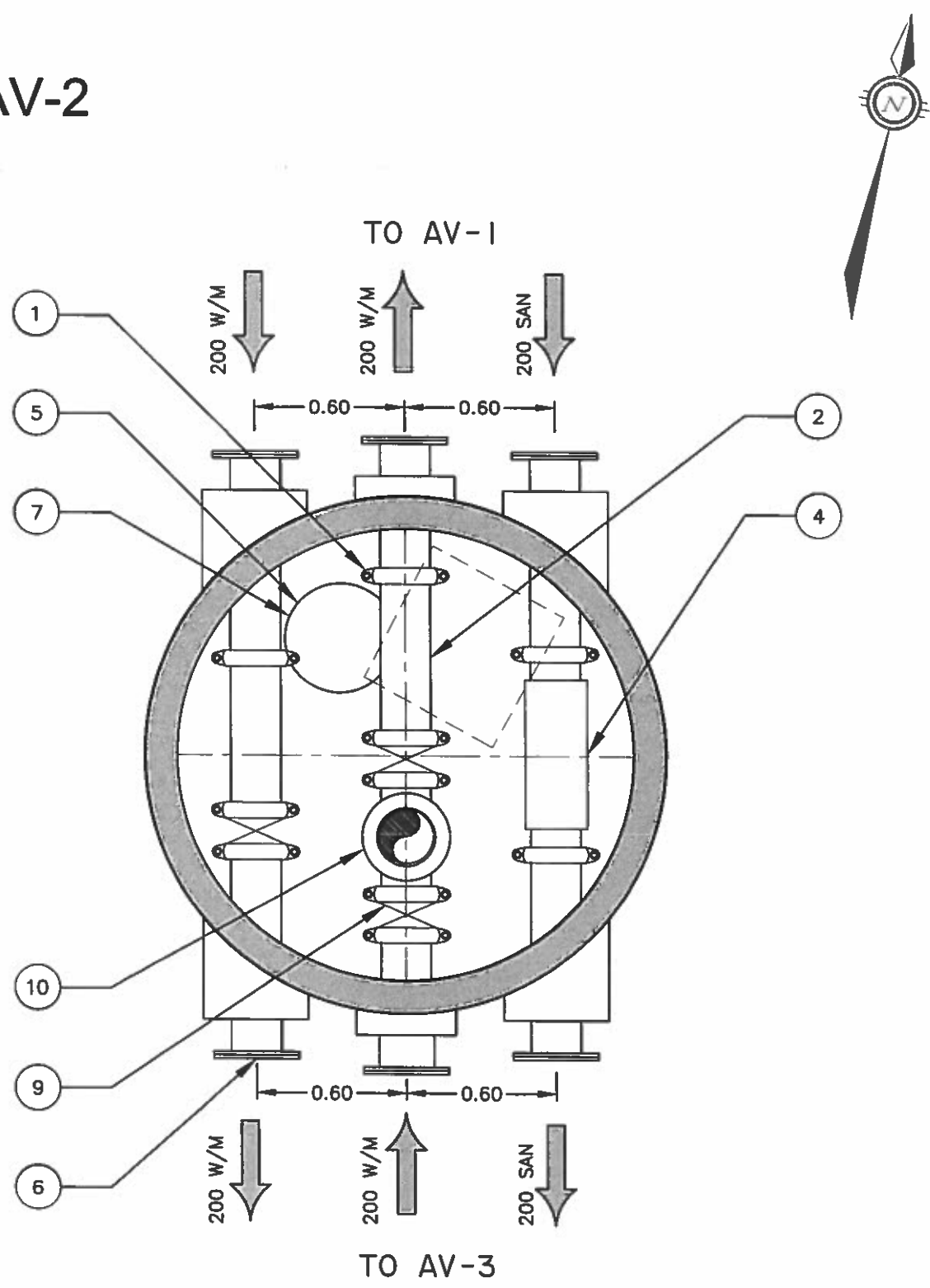
| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|-------|---|---|---------------|
| | | | | N | S | E | W | |
| AV-1 | 183m | 53.79m | 4.29m | 50.00 | 50.00 | | | 50.75 |

AV-1A

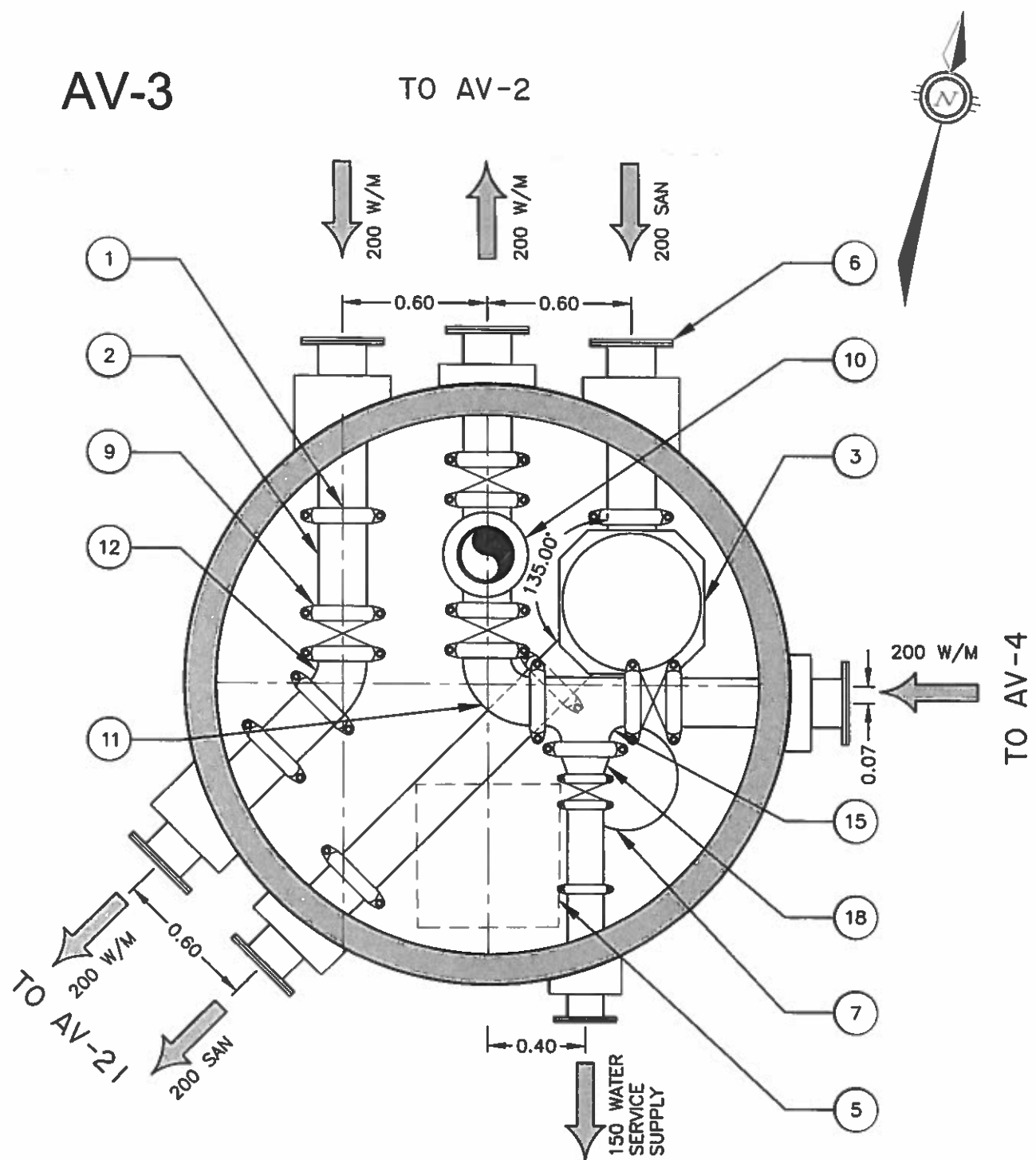


| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|-------|---|---|---------------|
| | | | | N | S | E | W | |
| AV-1A | 183m | 73.09m | 4.09m | 69.50 | 69.50 | | | 70.25 |

AV-2

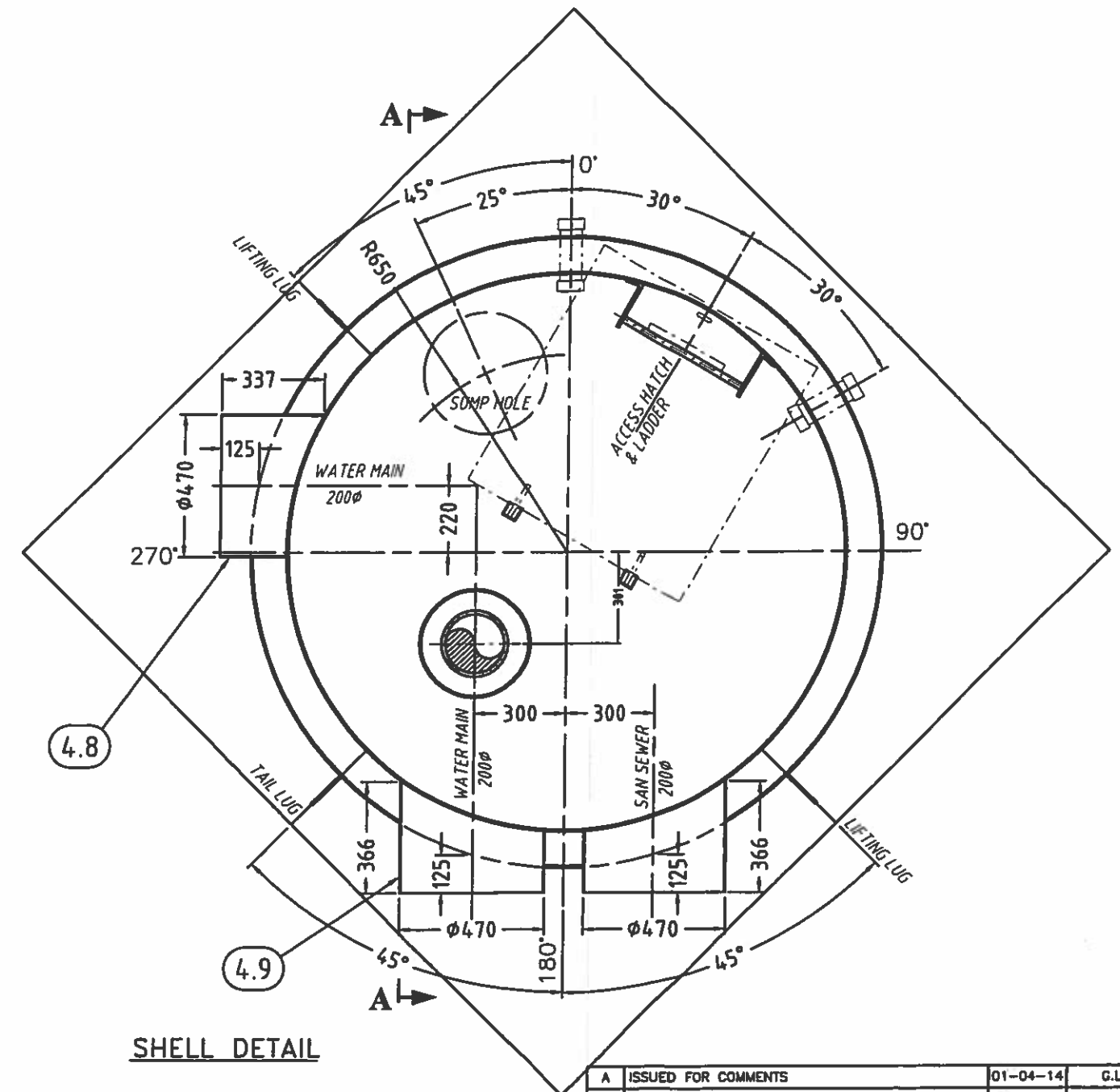
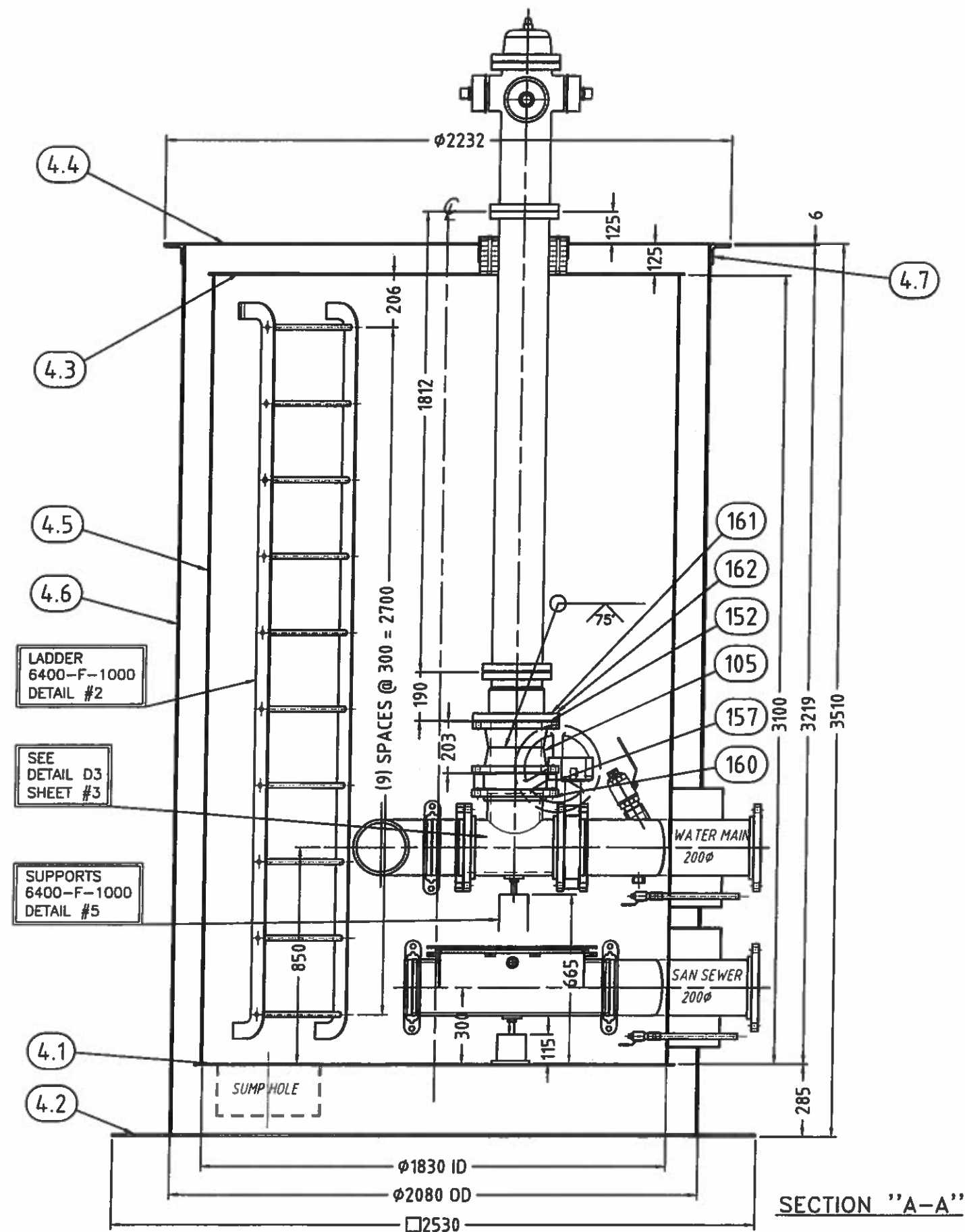


| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|-------|---|---|---------------|
| | | | | N | S | E | W | |
| AV-2 | 183m | 38.87m | 3.97m | 35.40 | 35.40 | | | 36.15 |



NOTE:
 AV-3 TO BE FITTED WITH 1" WATER BLEED FROM THE WATER RETURN LINE TO THE SEWER MAIN. COMPLETE WITH BACKFLOW PREVENTER. (SEE DETAIL NO. 4 ON DWG. C-328)

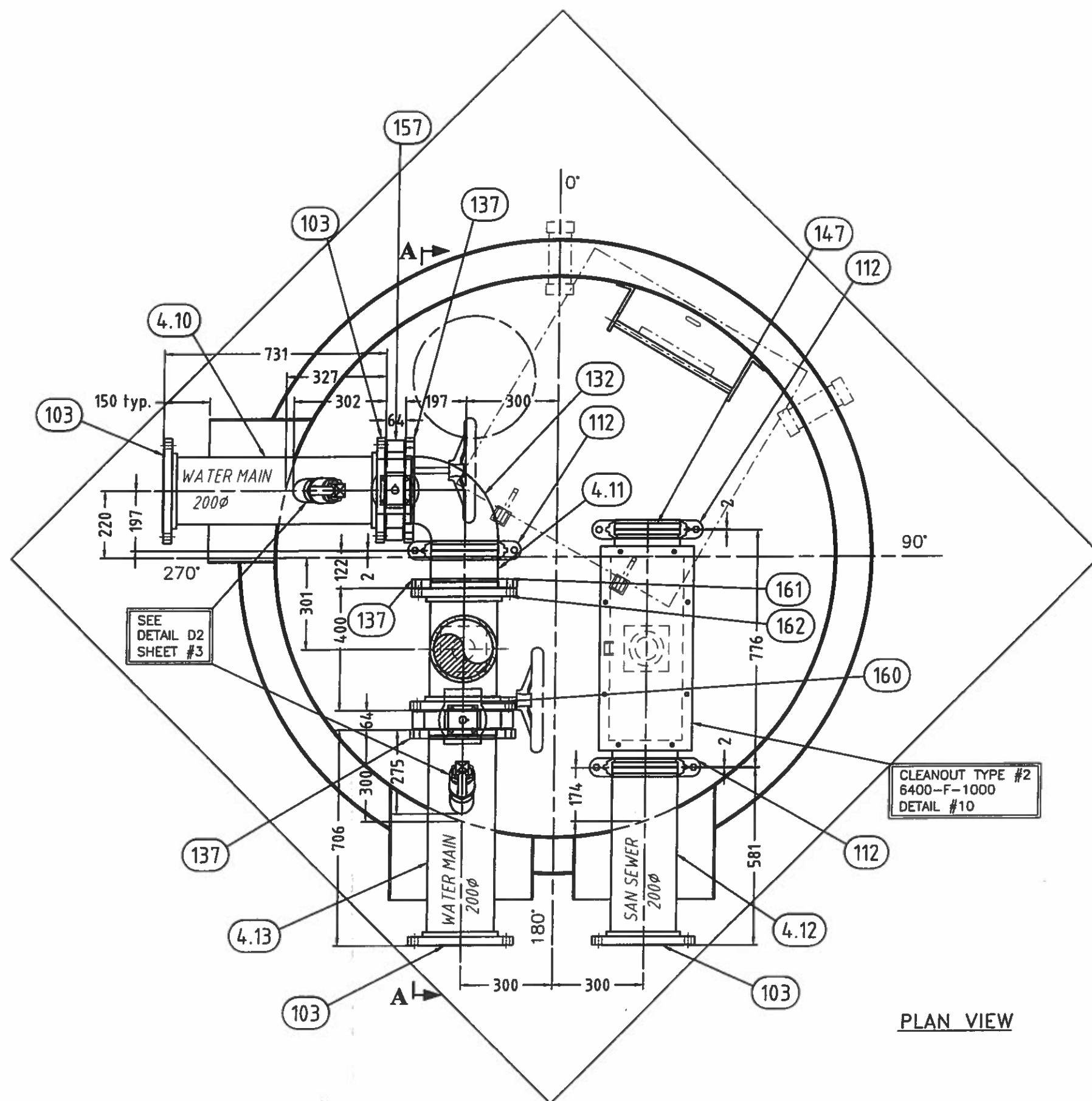
| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|-------|---|---|---------------|
| | | | | N | S | E | W | |
| AV-3 | 225m | 27.95m | 4.45m | 24.00 | 24.00 | | | 24.75 |




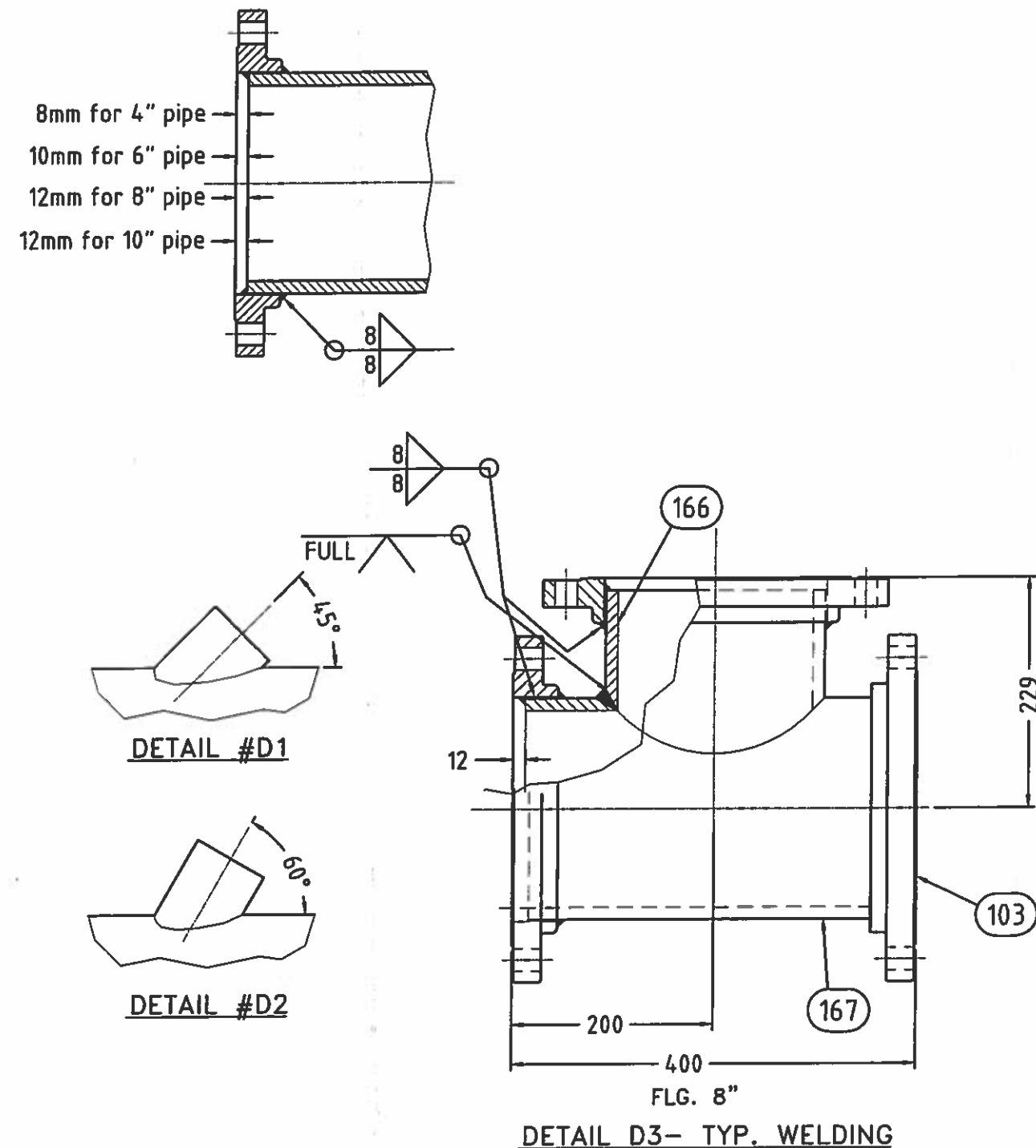
GENERAL NOTES:

- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS


| REV | DESCRIPTION | DATE | DESS/DRAWN |
|---|---------------------|----------|------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| <p>1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com</p> <p>CE DOCUMENT EST LA PROPRIÉTÉ DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNÉ SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ÊTRE UTILISÉ, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PRÉJUDICABLE AUX INTÉRÊTS DE FALCO TECHNOLOGIES INC.</p> <p>THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC.</p> <p>CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT</p> <p>TITRE: TITLE: ACCESS VAULT AV4 NEW UTILIDOR DESIGN RESOLUTE BAY, NU</p> <p>DESSIN No.: DRAWING No: 6400-F-AV4</p> <p>DESS. PAR: DRAW BY: G.L.</p> <p>SCALE: X/X" = X"</p> <p>QTE: 1</p> <p>DATE: 01-04-14</p> <p>FEUILLE: 1 / 3</p> <p>REV: A</p> | | | |



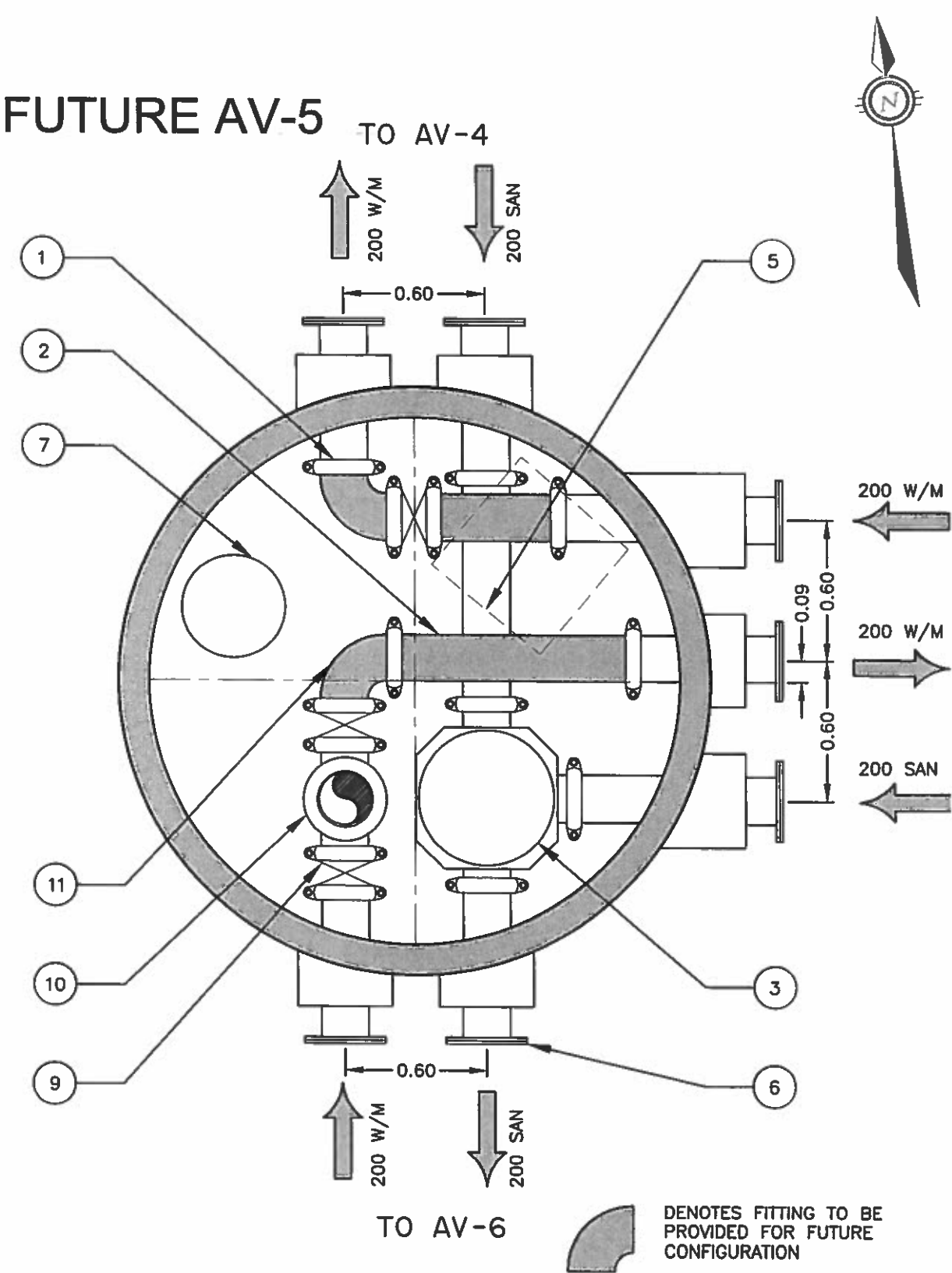
| | | | |
|--|---------------------|---|--------------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
|  Falco Technologies Inc., a company of BERLIE-FALCO | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | |
| CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICIABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC. | | | |
| CLIENT: | | GOVERNEMENT OF NUNAVUT | |
| CUSTOMER: | | | |
| TITRE: TITLE: ACCESS VAULT AV4 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | | |
| DESSIN No.: DRAWING No: | | DESS. PAR: DRAWBY: | |
| 6400-F-AV4 | | G.L. | |
| SCALE: | QTE: QTY: | DATE: | FEUILLE: SHEET: |
| X/X" = X" | 1 | 01-04-14 | 2 / 3 |
| | | | A |



| Item | Qty | Description | Material |
|------|-----|---|-------------|
| 4.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø1892mm | A36 |
| 4.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2530mm x 2530mm | A36 |
| 4.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø1878mm | A36 |
| 4.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2232mm | A36 |
| 4.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 5767mm x 3219mm LG. | A36 |
| 4.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 6515mm x 3488mm LG. | A36 |
| 4.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 4.8 | 1 | PL. 1/4" THK. x 337 x 1456mm LG. | A36 |
| 4.9 | 2 | PL. 1/4" THK. x 366 x 1456mm LG. | A36 |
| 4.10 | 1 | PIPE 8" SCH.80 x 707mm LG. | A-53-B |
| 4.11 | 1 | PIPE 8" SCH.80 x 122mm LG. vic groove 2 end | A-53-B |
| 4.12 | 1 | PIPE 8" SCH.80 x 569mm LG. vic groove 1 end | A-53-B |
| 4.13 | 1 | PIPE 8" SCH.80 x 706mm LG. | A-53-B |
| 103 | 7 | FLANGE SORF 8" - 150# | SA 105 |
| 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 |
| 112 | 3 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 132 | 1 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| 137 | 3 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 147 | 1 | 8" VICTAULIC CAP, #60 | GALV C.S. |
| 152 | 1 | 1/8" THK. GASKET FOR 8"FLG. #150 | SOFT RUBBER |
| 157 | 3 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 48 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |
| 161 | 16 | 3/4-10 HEX.-BOLT, 3 1/2"LG | PLATED C.S. |
| 162 | 16 | 3/4-10 HEX. NUT | PLATED C.S. |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B |
| 167 | 1 | PIPE 8" SCH.80 x 376mm LG. | A-53-B |

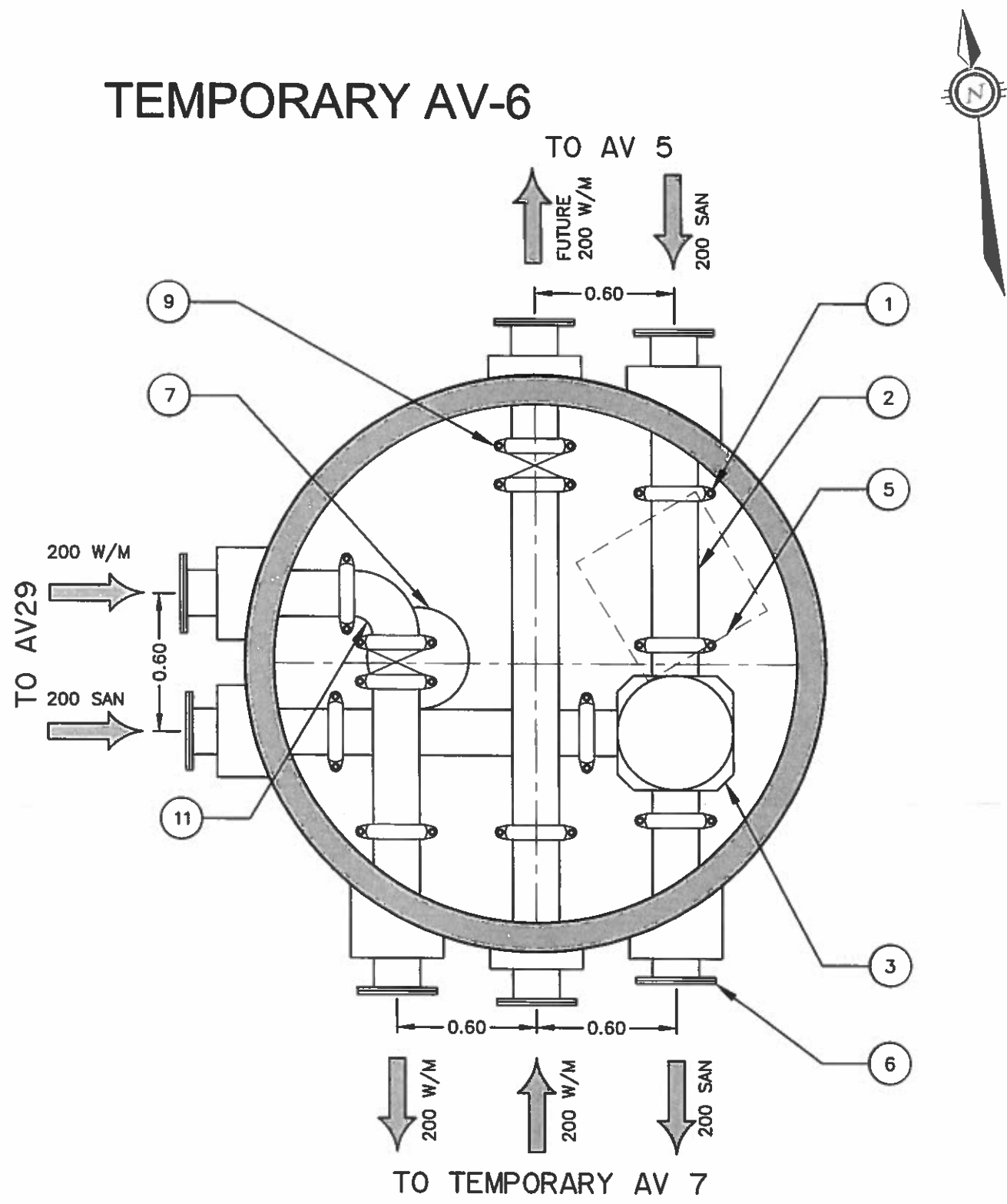
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|---|---------------------|--|---------------------------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
|  Falco Technologies Inc., a company of BERLIE-FALCO | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | |
| CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICIABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC. | | | |
| CLIENT: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AV4 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No. DRAWING No. 6400-F-AV4 | | DESS. PAR: G.L. DRAW BY: | |
| SCALE: X/X" = X" | OTE: QTY: 1 | DATE: 01-04-14 | FEUILLE: SHEET: 3 / 3 REV: A |

FUTURE AV-5



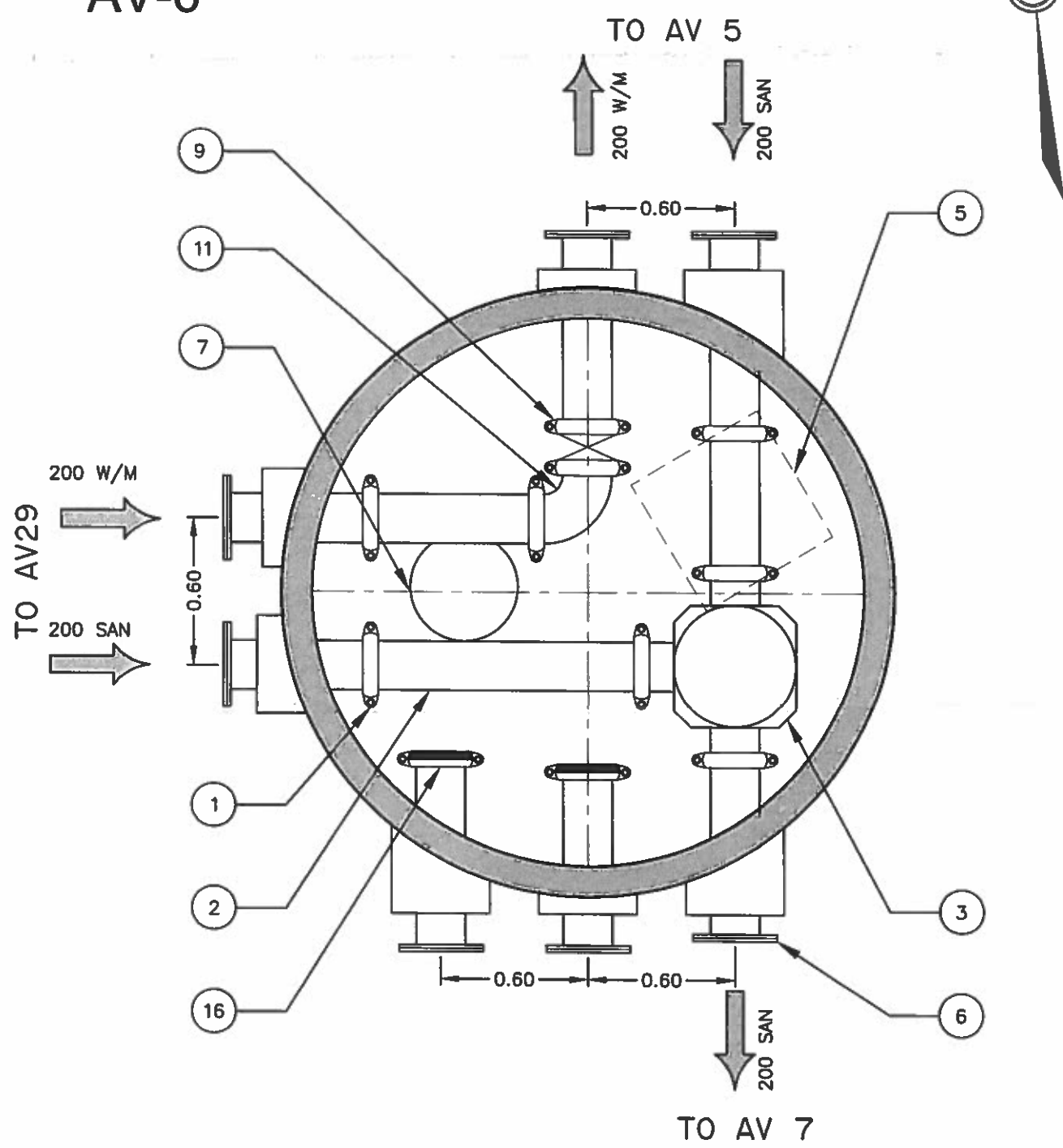
| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|-------|-------|---|---------------|
| | | | | N | S | E | W | |
| AV-05 | 2.25m | 21.64m | 4.13m | 18.01 | 18.01 | 18.01 | | 18.76 |

TEMPORARY AV-6

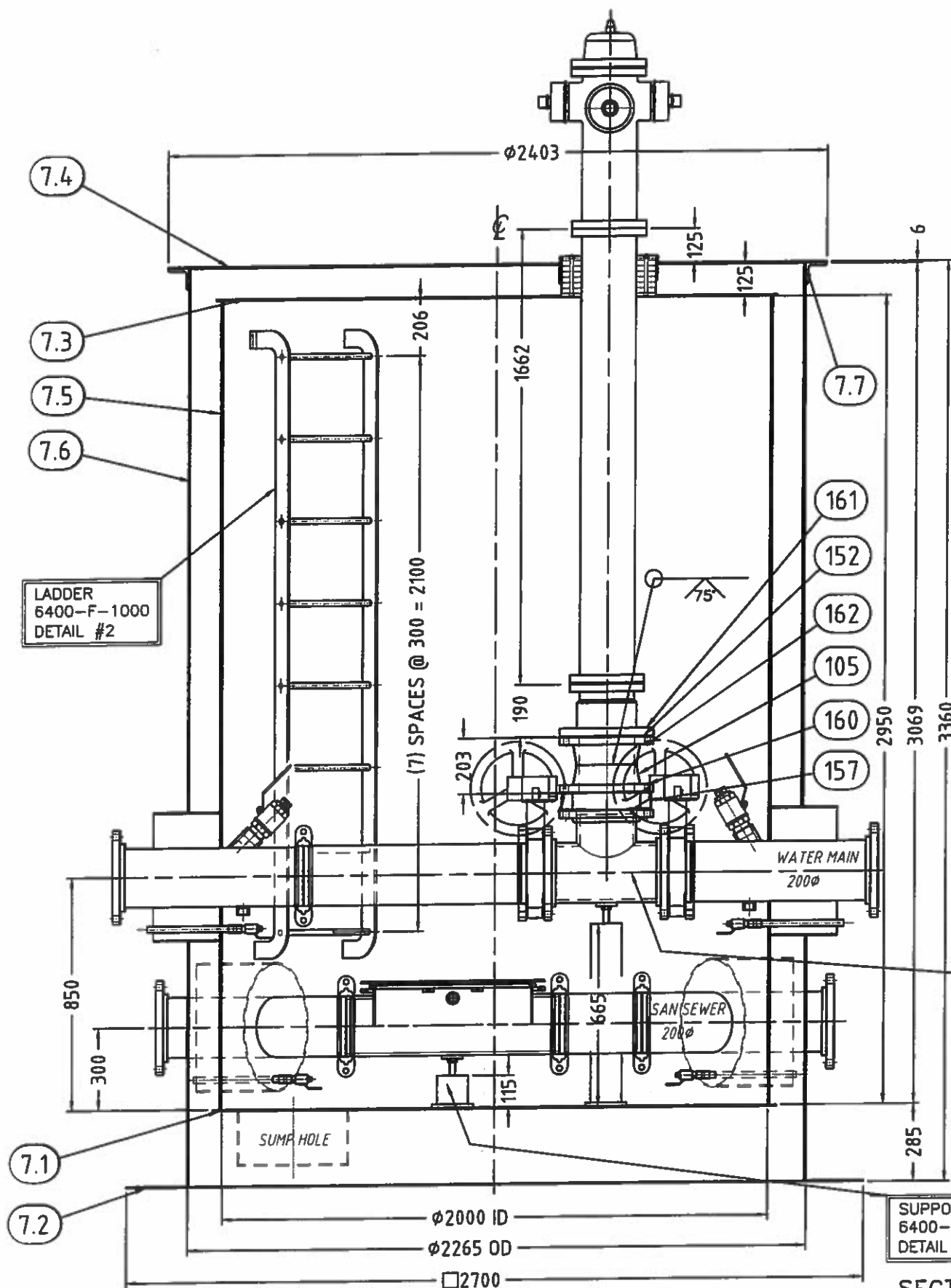


| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|-------|---|-------|---------------|
| | | | | N | S | E | W | |
| AV-6 | 225m | 18.64m | 3.42m | 15.72 | 15.72 | | 15.72 | 16.47 |

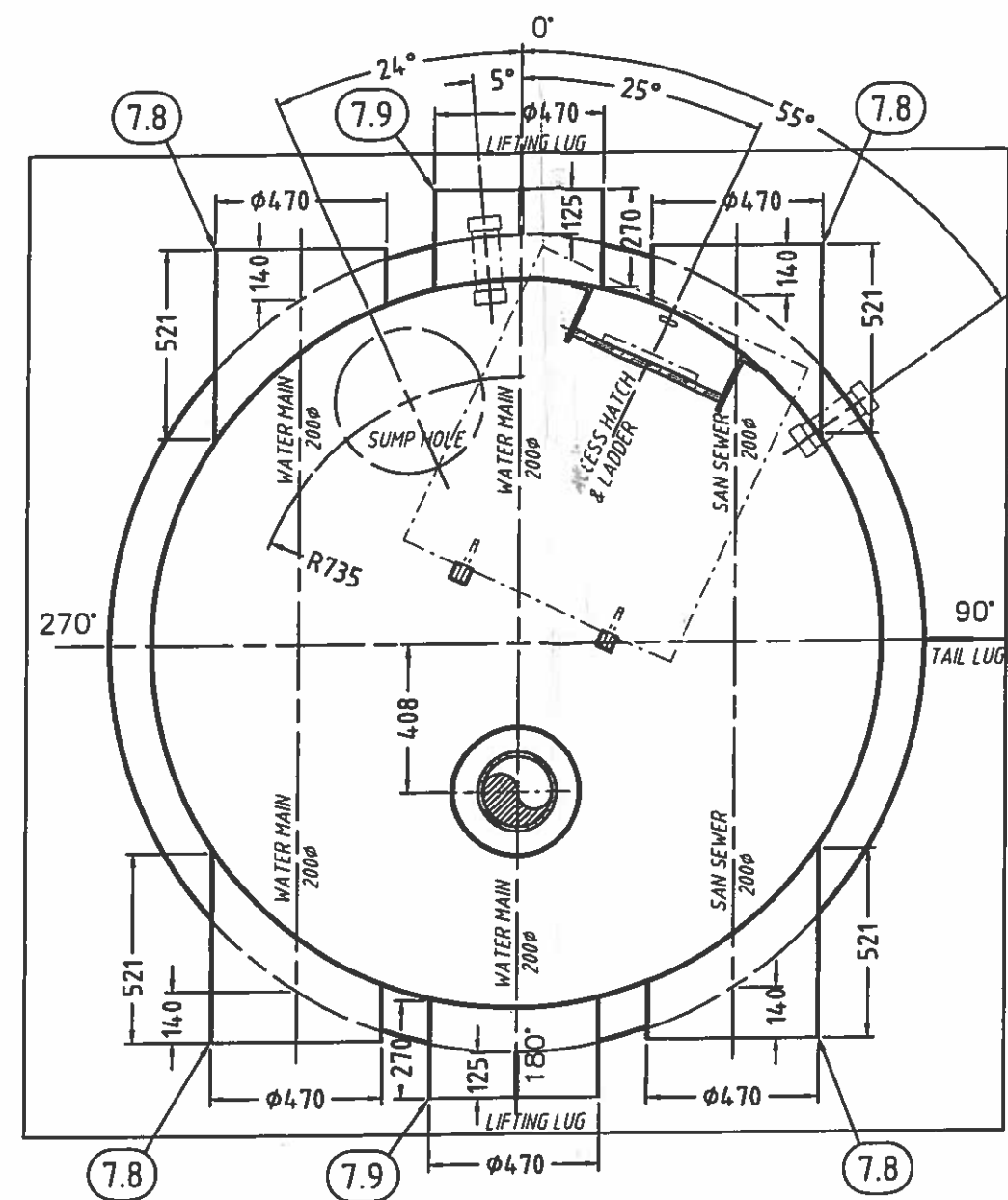
AV-6



| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|--------------------|--------|--------|-----------------|-------|---|-------|------------------|
| | | | | N | S | E | W | |
| AV-6 | 225m | 18.64m | 3.42m | 15.72 | 15.72 | | 15.72 | 16.47 |




SECTION "A-A"

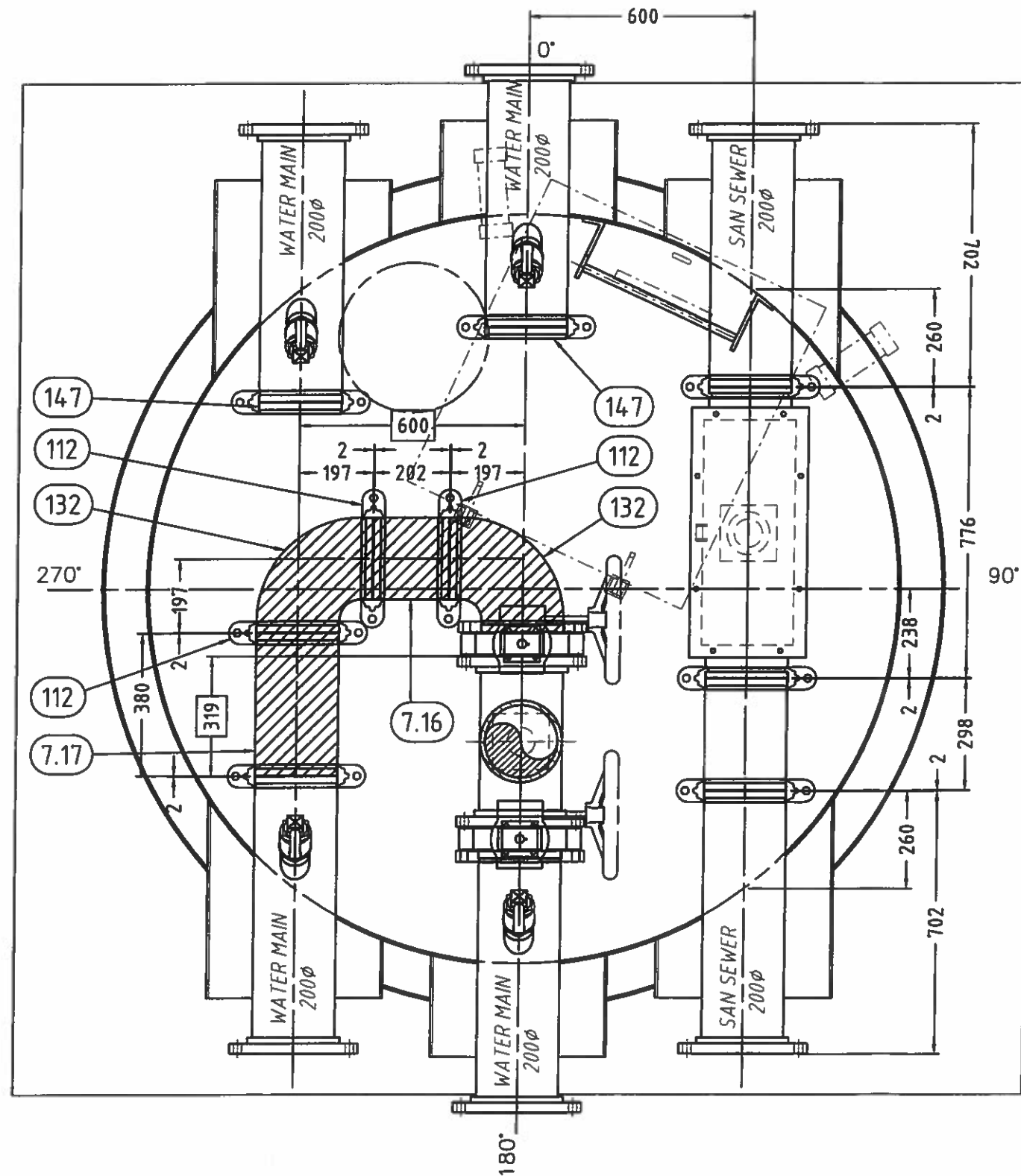


SHELL DETAIL


GENERAL NOTES:

- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL ,CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS

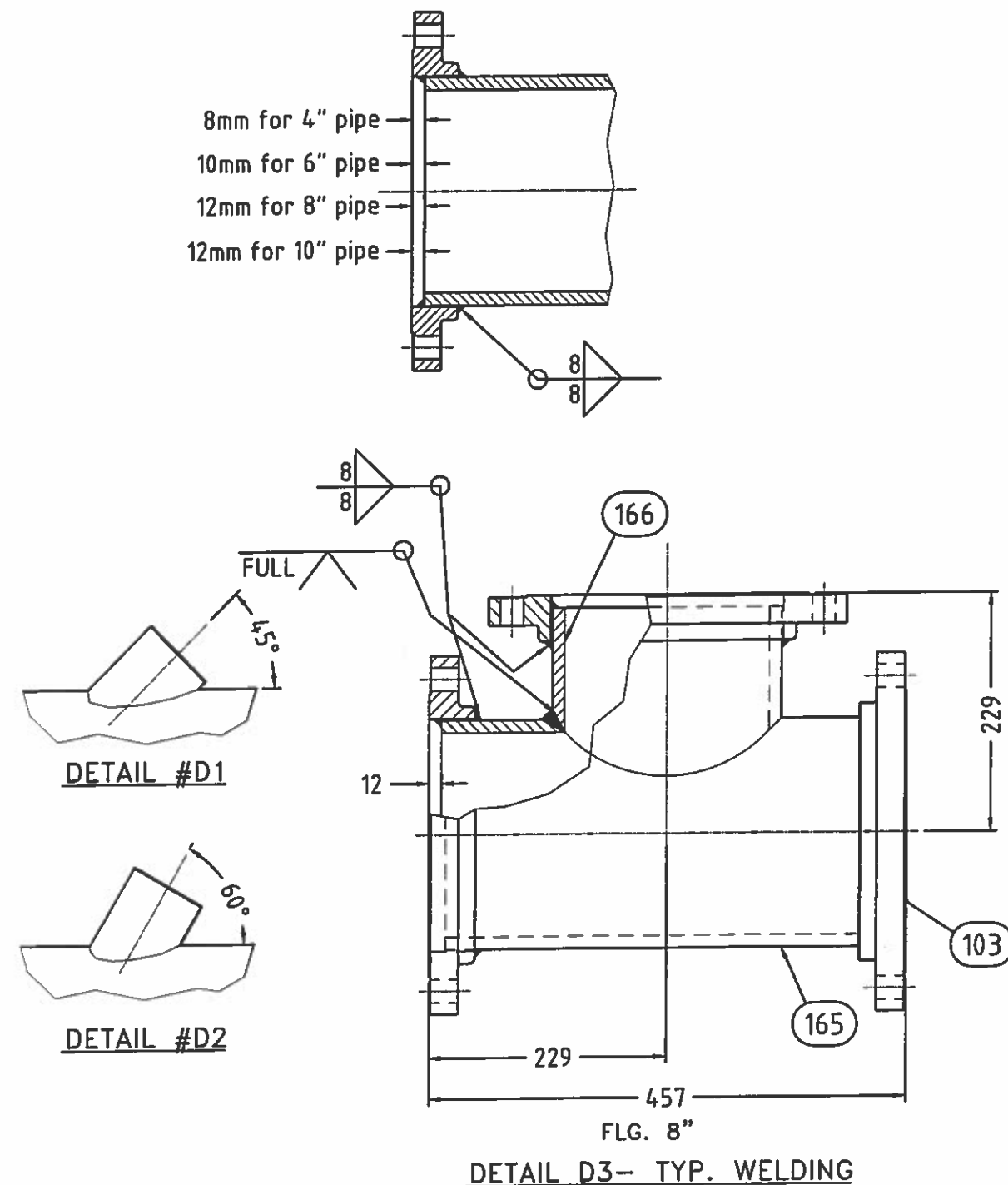
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|---|---|---------------------------------------|---|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
|  | Falco Technologies Inc., a company of | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 |
| | BERLIE-FALCO | | Tel (450) 444-0566 Fax (450) 444-2227 www.berliefalco.com |
| | CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC. | | |
| CLIENT: CUSTOMER: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV7 | |
| TITLE: | | NEW UTILIDOR DESIGN RESOLUTE BAY , NU | |
| DESSIN No.: | | DESS. PAR: | |
| DRAWING No.: | | DRAWBY: | |
| 6400-F-AV7 | | G.L. | |
| | QTE: | DATE | FEUILLE: |
| SCALE: | QTY: | | SHEET: |
| X/X" = X" | 1 | 01-04-14 | 1 / 4 |
| | | | REV: |
| | | | A |




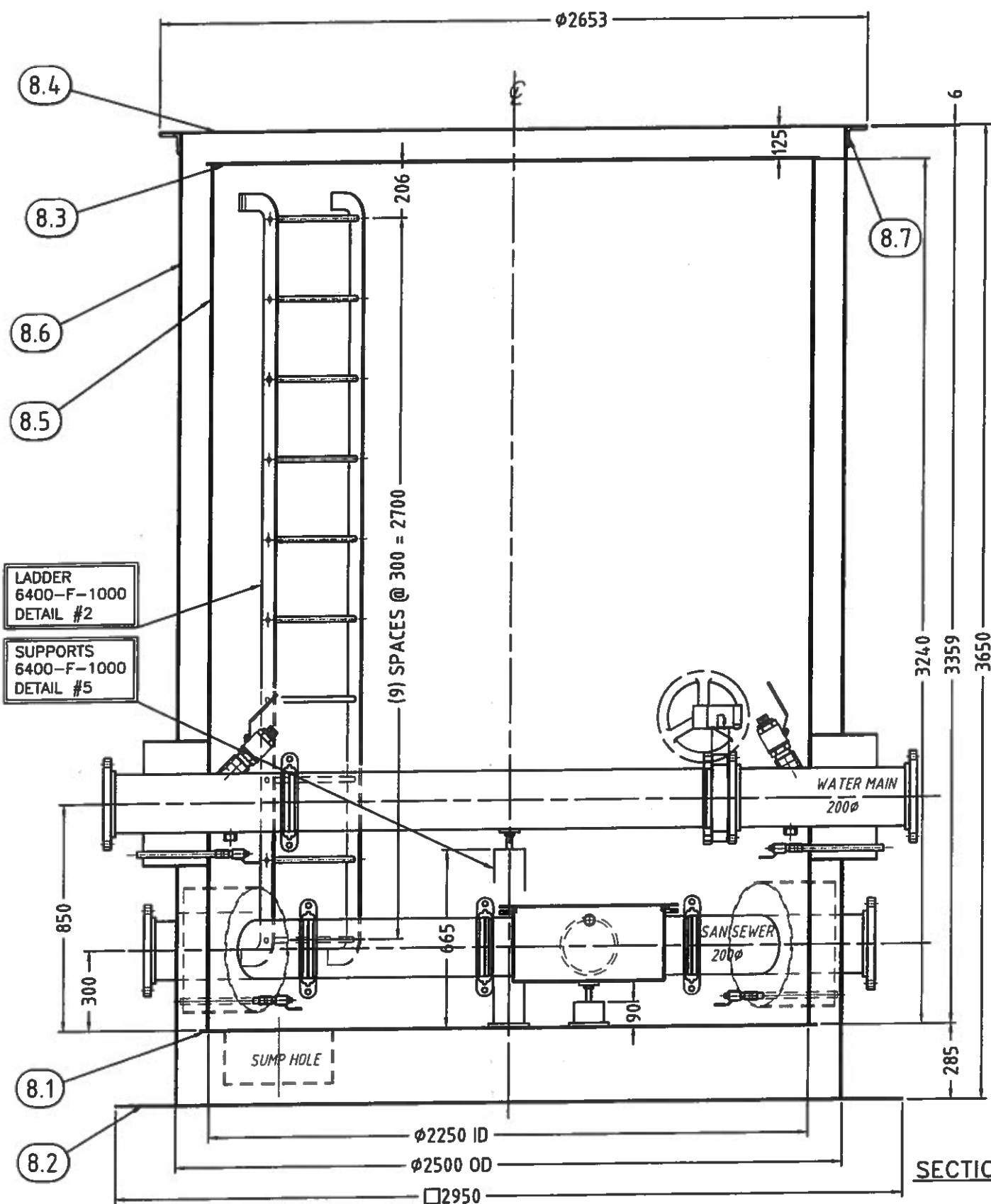
PLAN VIEW
(FUTURE)

| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
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| <p>CLIENT: GOVERNEMENT OF NUNAVUT</p> | | | |
| <p>TITRE: ACCESS VAULT AV7 TITLE: NEW UTILIDOR DESIGN RESOLUTE BAY, NU</p> | | | |
| <p>DESSIN No.: 6400-F-AV7 DRAWING No.:</p> | | <p>DESS. PAR: G.L. DRAW BY:</p> | |
| <p>SCALE: X/X" = X"</p> | <p>QTE: 1</p> | <p>DATE: 01-04-14</p> | <p>FEUILLE: 3 / 4 SHEET: A</p> |

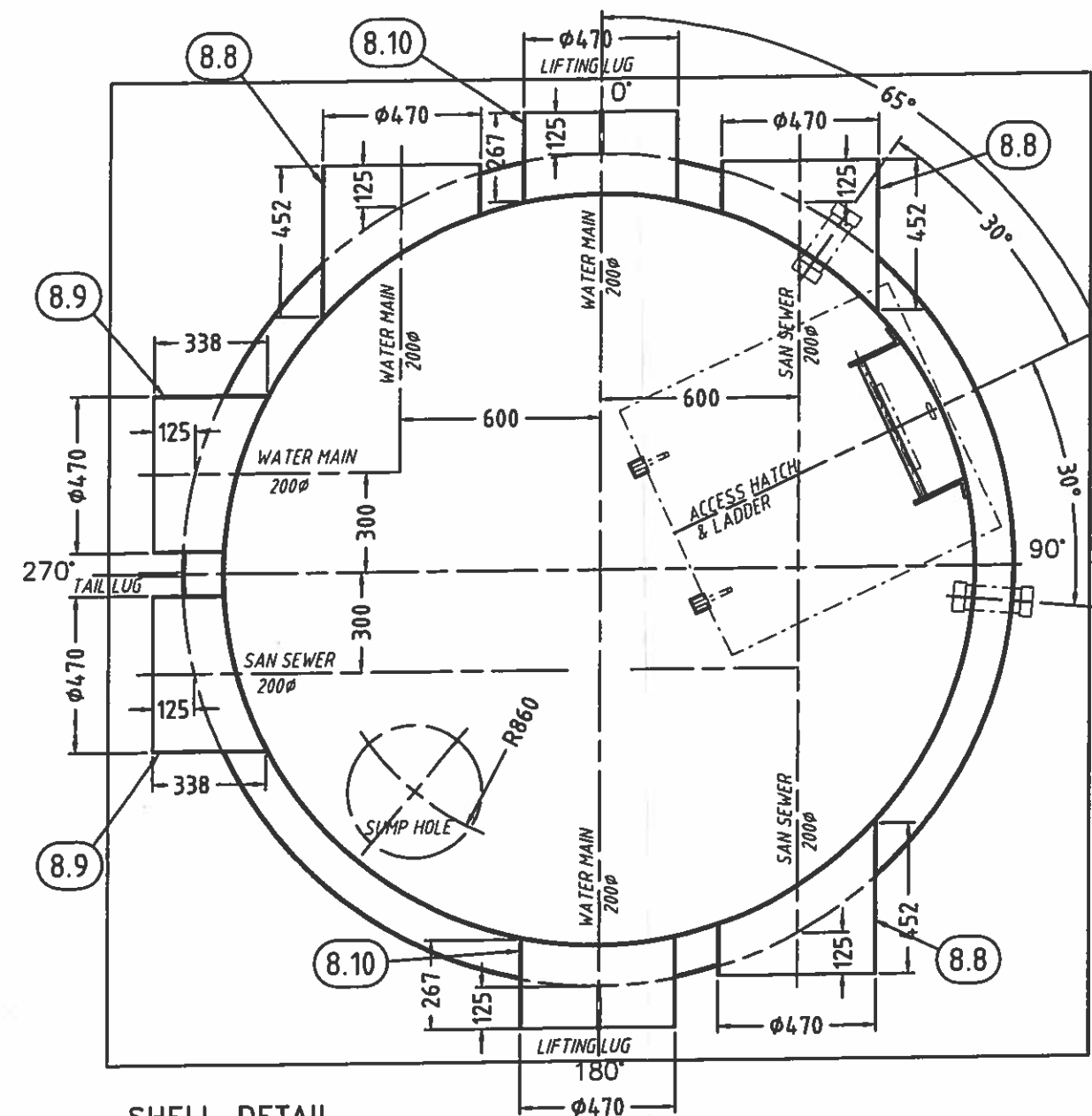
| Item | Qty | Description | Material | Item | Qty | Description | Material |
|------|-----|----------------------------|-------------|------|-----|---|-------------|
| 162 | 8 | 3/4-10 HEX. NUT | PLATED C.S. | 7.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2062mm | A36 |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B | 7.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2700mm x 2700mm | A36 |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B | 7.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2048mm | A36 |
| | | | | 7.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2403mm | A36 |
| | | | | 7.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 6303mm x 2950mm LG. | A36 |
| | | | | 7.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 7048mm x 3338mm LG. | A36 |
| | | | | 7.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| | | | | 7.8 | 4 | PL. 1/4" THK. x 521 x 1456mm LG. | A36 |
| | | | | 7.9 | 2 | PL. 1/4" THK. x 270 x 1456mm LG. | A36 |
| | | | | 7.10 | 2 | PIPE 8" SCH.80 x 730mm LG. vic groove 1 end | A-53-B |
| | | | | 7.11 | 1 | PIPE 8" SCH.80 x 814mm LG. vic groove 2 end | A-53-B |
| | | | | 7.12 | 1 | PIPE 8" SCH.80 x 996mm LG. vic groove 2 end | A-53-B |
| | | | | 7.13 | 2 | PIPE 8" SCH.80 x 688mm LG. vic groove 1 end | A-53-B |
| | | | | 7.14 | 2 | PIPE 8" SCH.80 x 690mm LG. vic groove 1 end | A-53-B |
| | | | | 7.15 | 1 | PIPE 8" SCH.80 x 298mm LG. vic groove 2 end | A-53-B |
| | | | | 7.16 | 1 | PIPE 8" SCH.80 x 202mm LG. vic groove 2 end | A-53-B |
| | | | | 7.17 | 1 | PIPE 8" SCH.80 x 380mm LG. vic groove 2 end | A-53-B |
| | | | | 103 | 9 | FLANGE SORF 8" - 150# | SA 105 |
| | | | | 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 |
| | | | | 112 | 9 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| | | | | 132 | 2 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| | | | | 137 | 2 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| | | | | 147 | 2 | 8" VICTAULIC CAP, #60 | GALV C.S. |
| | | | | 152 | 1 | 1/8" THK. GASKET FOR 8"FLG. #150 | SOFT RUBBER |
| | | | | 157 | 3 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| | | | | 160 | 48 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |
| | | | | 161 | 8 | 3/4-10 HEX.-BOLT, 3 1/2"LG | PLATED C.S. |



| | | | |
|--|---------------------|--|--------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
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| CLIENT: | | | |
| CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: | | | |
| TITLE: ACCESS VAULT AV7 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No: | | DESS. PAR: | |
| DRAWING No: 6400-F-AV7 | | DRAW BY: G.L. | |
| | QTE: | DATE: | FEUILLE: |
| SCALE: X/X" = X" | QTY: 1 | 01-04-14 | SHEET: 4 / 4 |
| | | | REV: A |




SECTION "A-A"

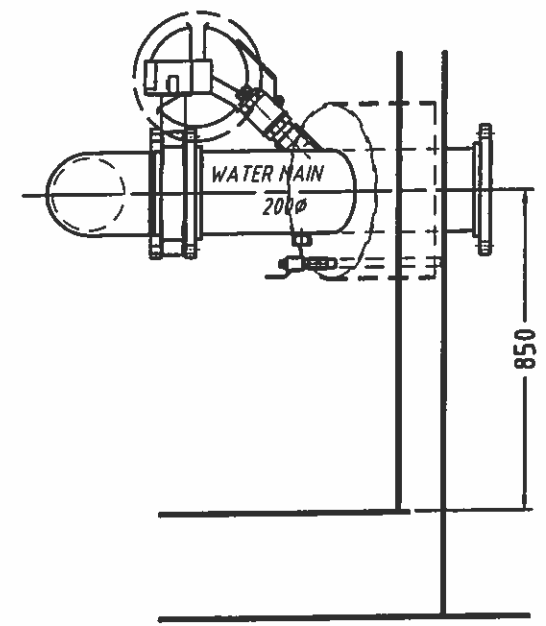
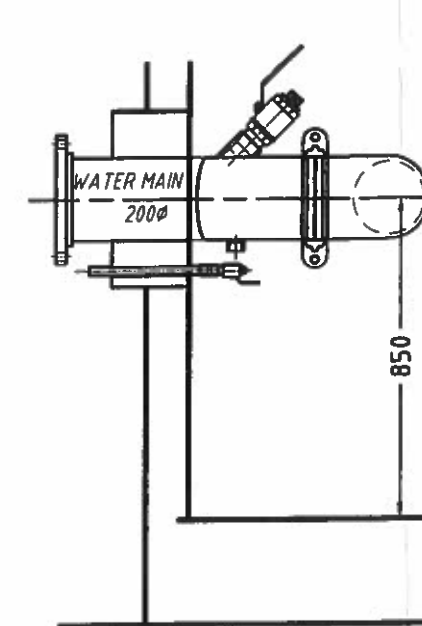
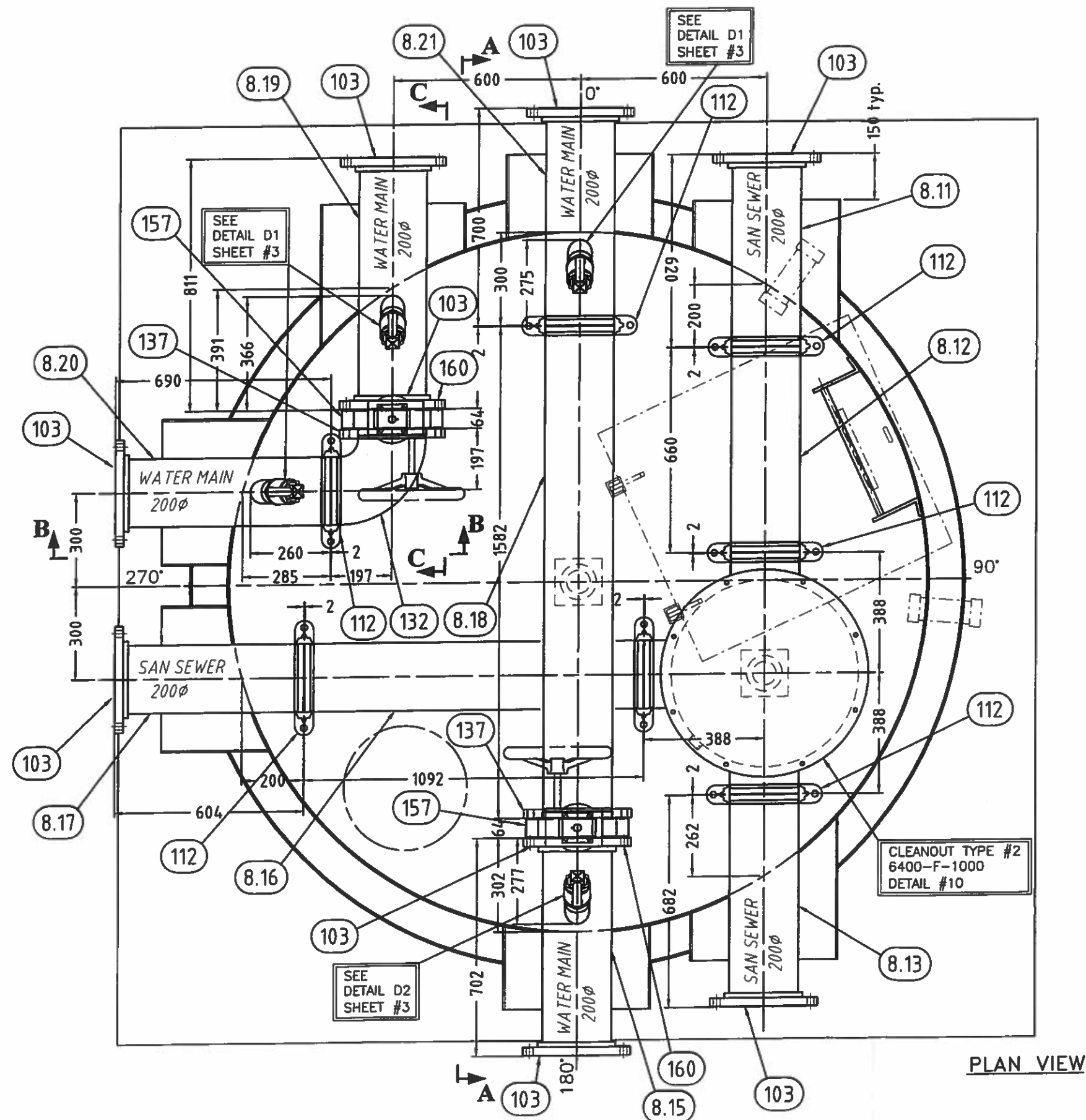


SHELL DETAIL

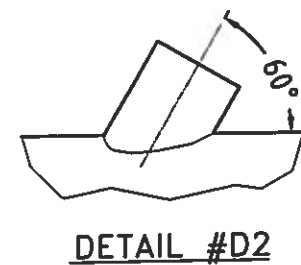
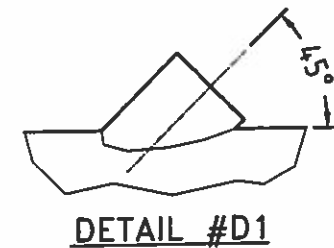
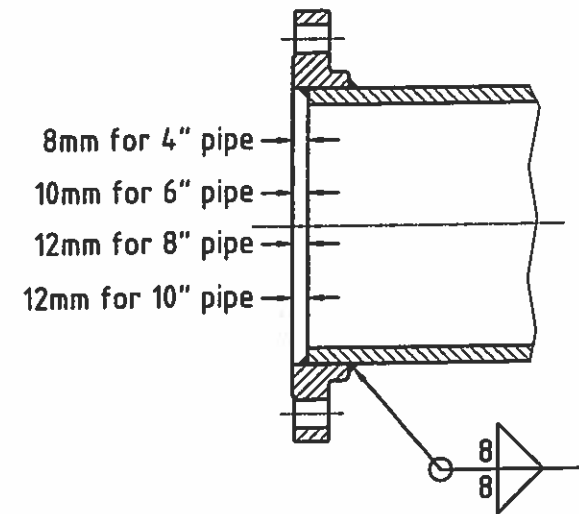
GENERAL NOTES:

- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL ,CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS


| | | | |
|--|---------------------|---|------------|
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| CLIENT: CUSTOMER: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV8 | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY , NU | |
| DESSIN No.: DRAWING No: | | DESS. PAR: DRAW BY: | |
| 6400-F-AV8 | | G.L. | |
| SCALE: X/X" = X" | | QTE: QTY: | DATE: |
| 1 | | 01-04-14 | |
| | | FEUILLE: SHEET: | REV: |
| | | 1 / 3 | A |

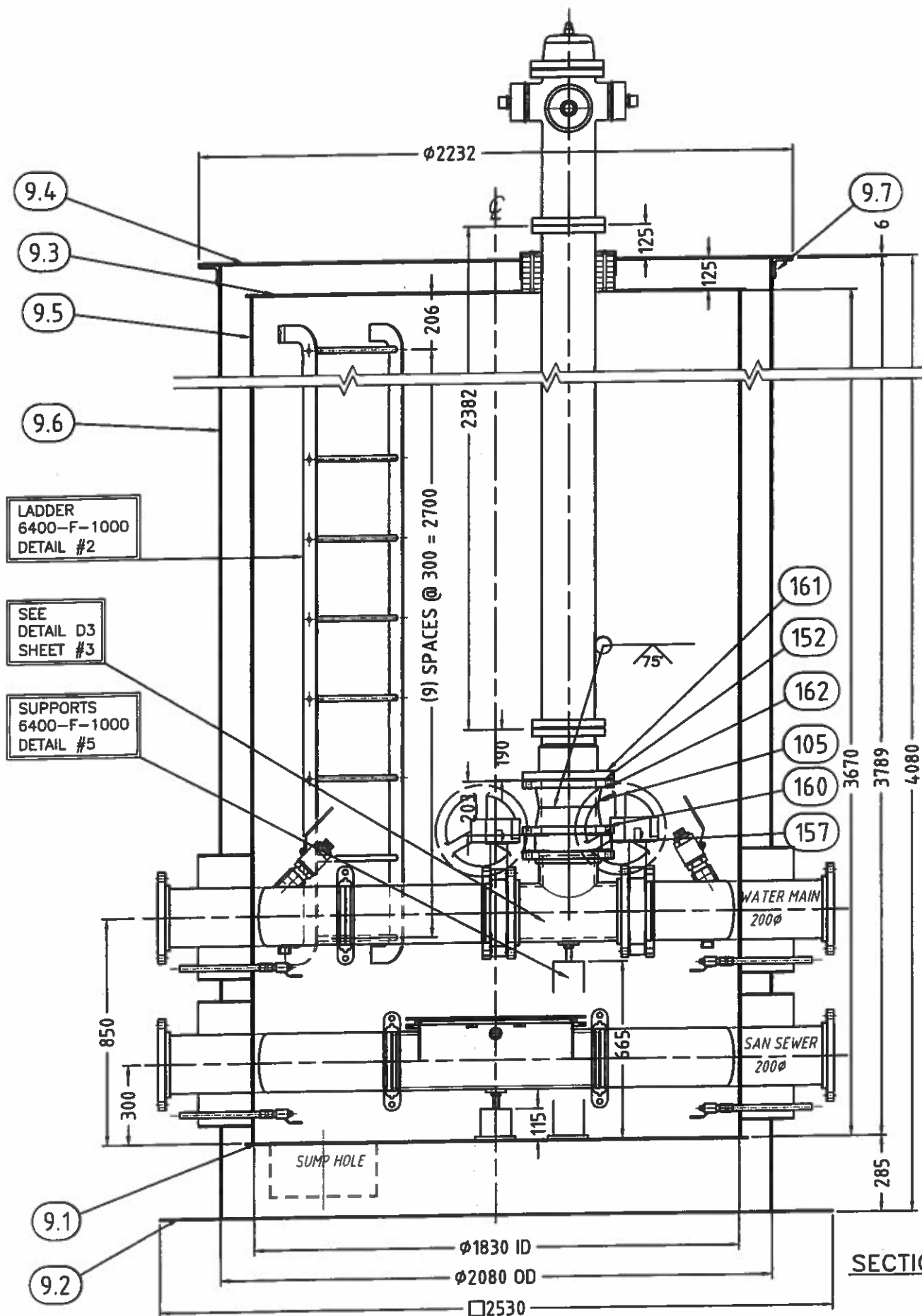


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| CLIENT: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AV8 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No.: 6400-F-AV8 | | DESS PAR: G.L. | |
| DRAWING No.: 6400-F-AV8 | | DRAW BY: G.L. | |
| SCALE: X/X" = X" | QTE: QTY: 1 | DATE: 01-04-14 | FEUILLE: SHEET: 2 / 3 |
| | | | REV: A |

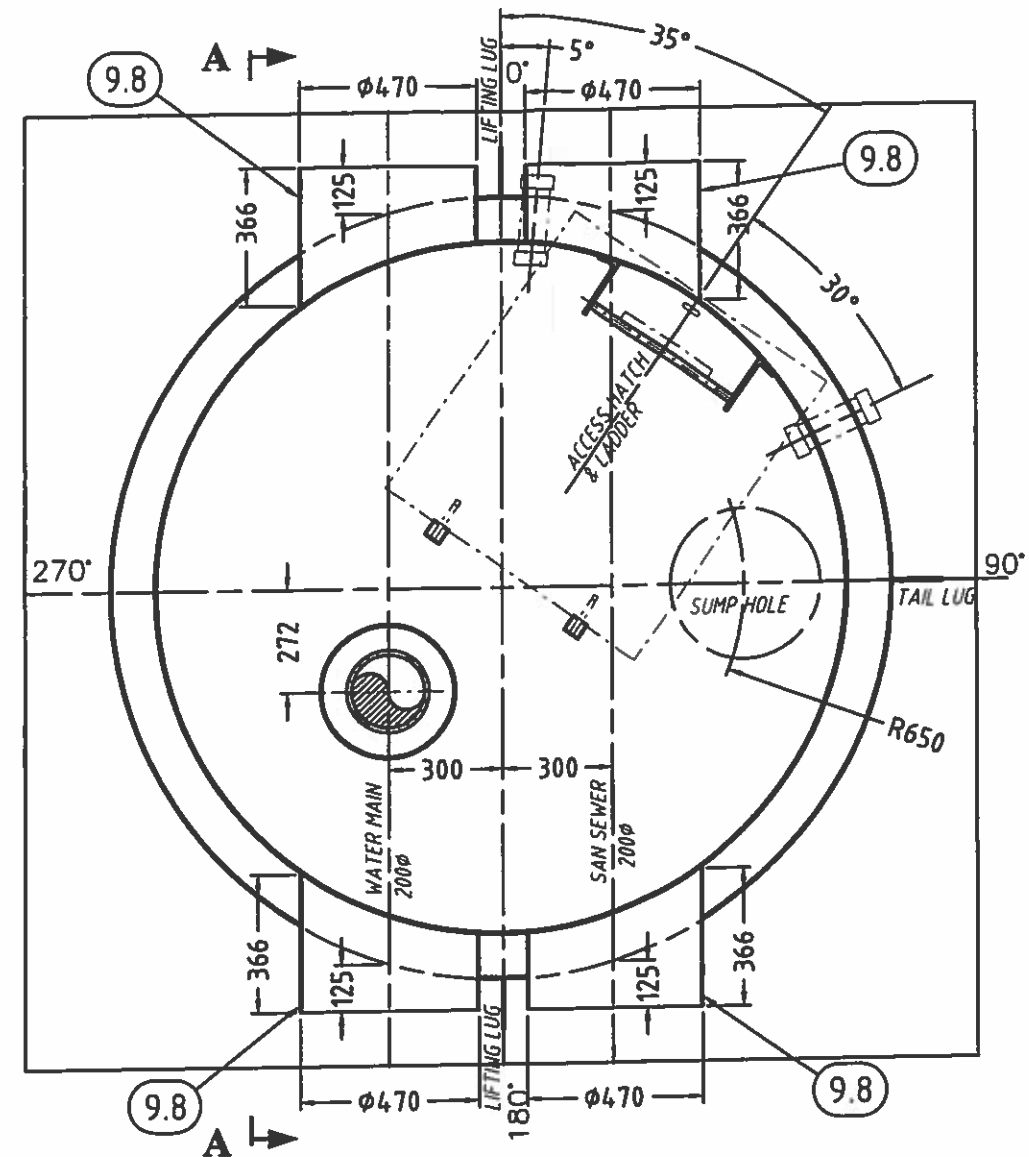


| Item | Qty | Description | Material |
|------|-----|---|-------------|
| 8.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2312mm | A36 |
| 8.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2950mm x 2950mm | A36 |
| 8.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2298mm | A36 |
| 8.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2653mm | A36 |
| 8.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 7088mm x 3240mm LG. | A36 |
| 8.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 7834mm x 3628mm LG. | A36 |
| 8.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 8.8 | 3 | PL. 1/4" THK. x 452 x 1456mm LG. | A36 |
| 8.9 | 2 | PL. 1/4" THK. x 338 x 1456mm LG. | A36 |
| 8.10 | 2 | PL. 1/4" THK. x 267 x 1456mm LG. | A36 |
| 8.11 | 1 | PIPE 8" SCH.80 x 608mm LG. vic groove 1 end | A-53-B |
| 8.12 | 1 | PIPE 8" SCH.80 x 660mm LG. vic groove 2 end | A-53-B |
| 8.13 | 1 | PIPE 8" SCH.80 x 670mm LG. vic groove 1 end | A-53-B |
| 8.15 | 1 | PIPE 8" SCH.80 x 680mm LG. | A-53-B |
| 8.16 | 1 | PIPE 8" SCH.80 x 1092mm LG. vic groove 2 end | A-53-B |
| 8.17 | 1 | PIPE 8" SCH.80 x 592mm LG. vic groove 1 end | A-53-B |
| 8.18 | 1 | PIPE 8" SCH.80 x 1582mm LG. vic groove 2 end | A-53-B |
| 8.19 | 1 | PIPE 8" SCH.80 x 787mm LG. | A-53-B |
| 8.20 | 1 | PIPE 8" SCH.80 x 678mm LG. vic groove 1 end | A-53-B |
| 8.21 | 1 | PIPE 8" SCH.80 x 688mm LG. vic groove 1 end | A-53-B |
| 103 | 9 | FLANGE SORF 8" - 150# | SA 105 |
| 112 | 7 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 132 | 1 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| 137 | 2 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 157 | 2 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 32 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |

| | | | |
|---|---------------------|---|----------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
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| CLIENT: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AVB TITLE: NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No.: 6400-F-AVB | | DESS. PAR: G.L. | |
| DRAWING No: | | DRAW BY: | |
| | QTE: 1 | DATE: 01-04-14 | FEUILLE: 3 / 3 |
| SCALE: X/X" = X" | | | REV: A |




SECTION "A-A"

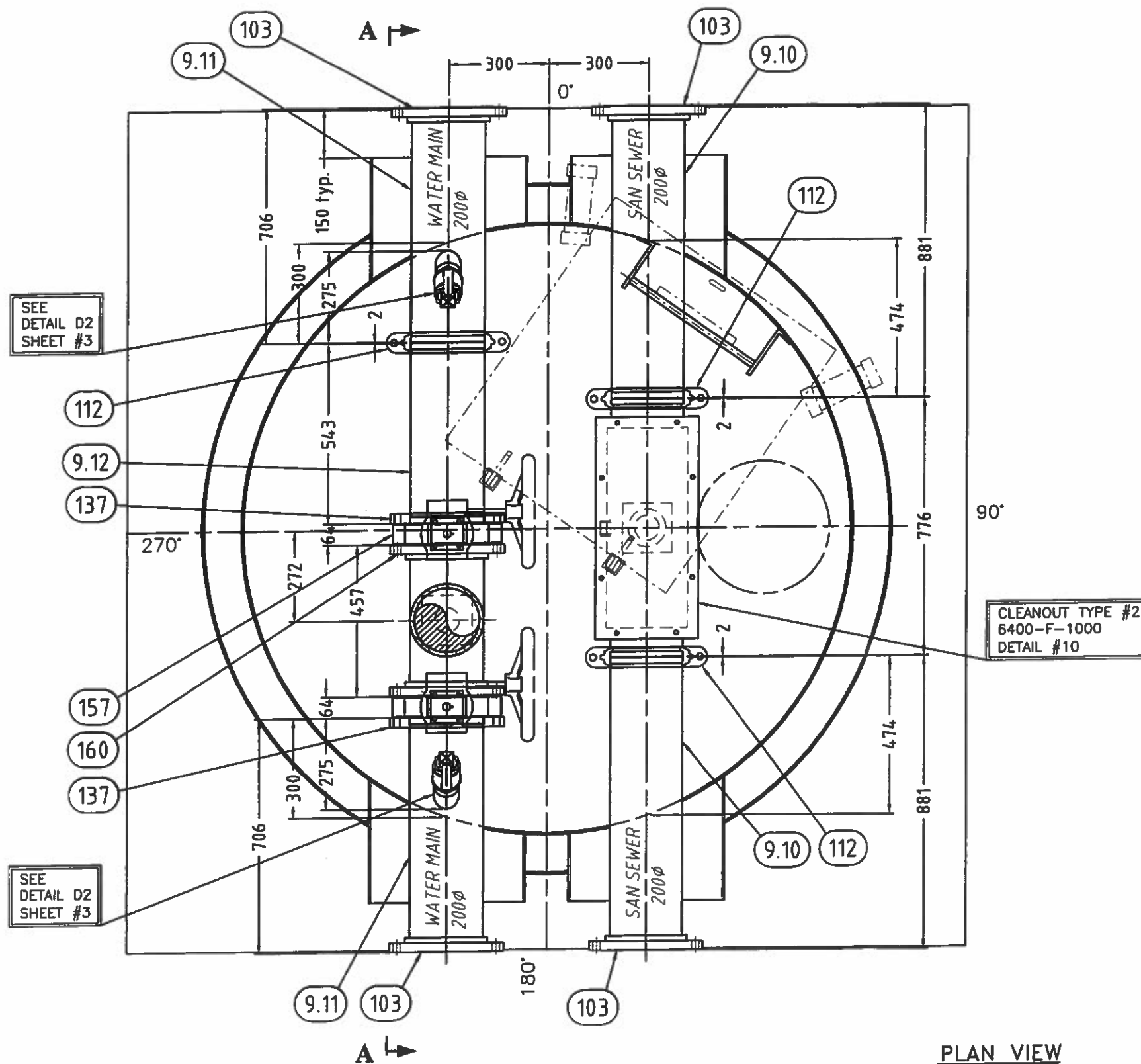


SHELL DETAIL

GENERAL NOTES:

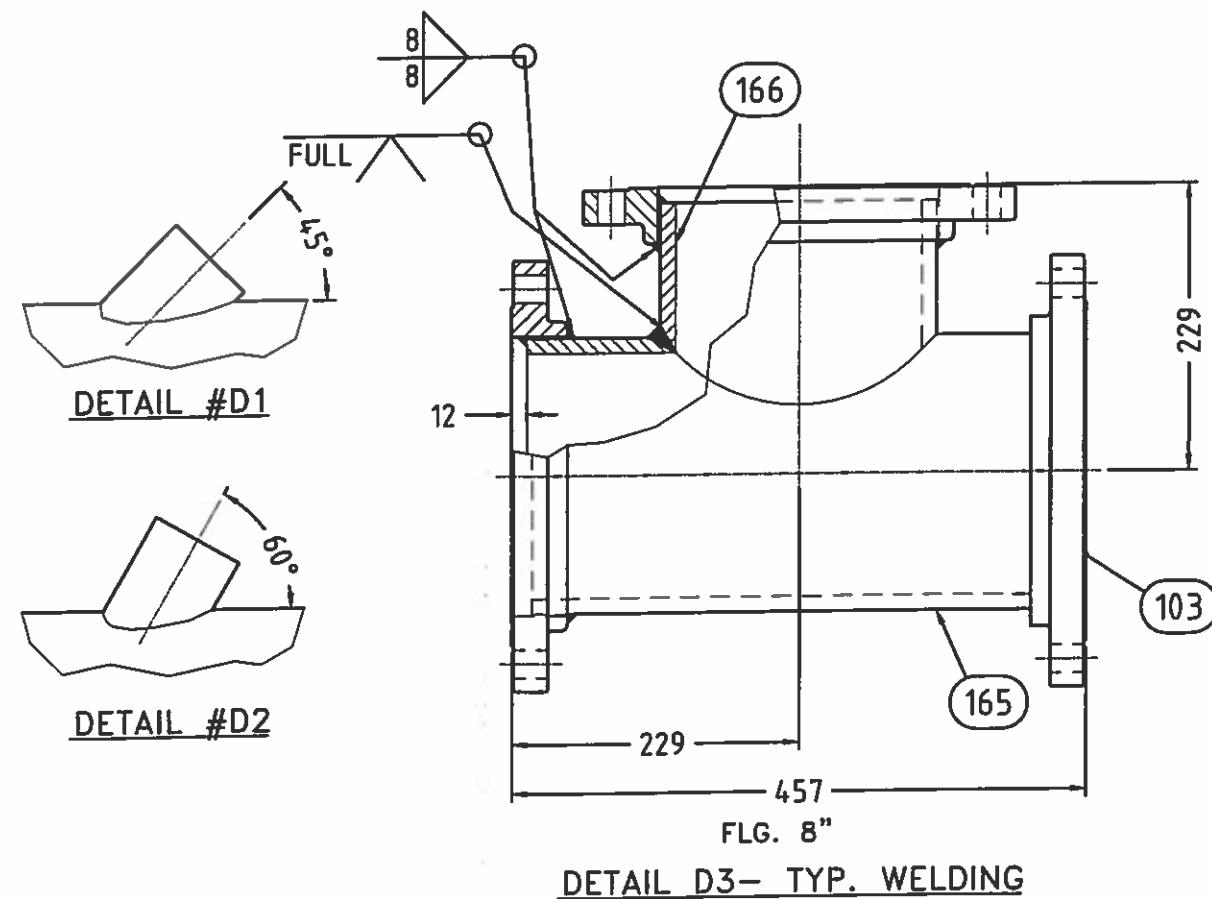
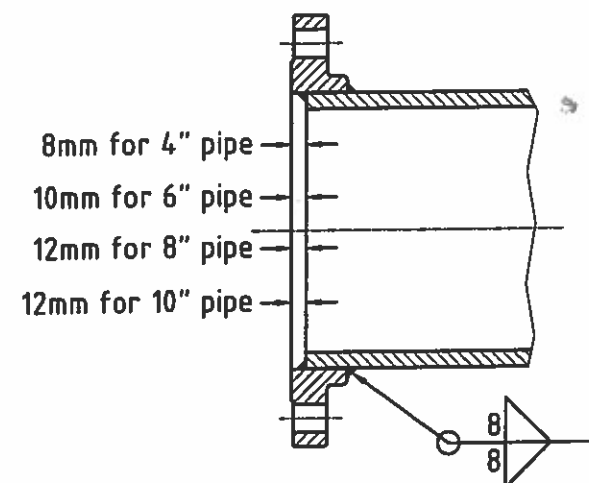
- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
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- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS

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| CLIENT: CUSTOMER: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV9 | |
| TITLE: | | NEW UTILIDOR DESIGN RESOLUTE BAY , NU | |
| DESSIN No.: DRAWING No: | | DESS. PAR: DRAW BY: | |
| 6400-F-AV9 | | G.L. | |
| SCALE: | QTE: QTY: | DATE: | FEUILLE: SHEET: |
| X/X" = X" | 1 | 01-04-14 | 1 / 3 |
| | | | REV: A |




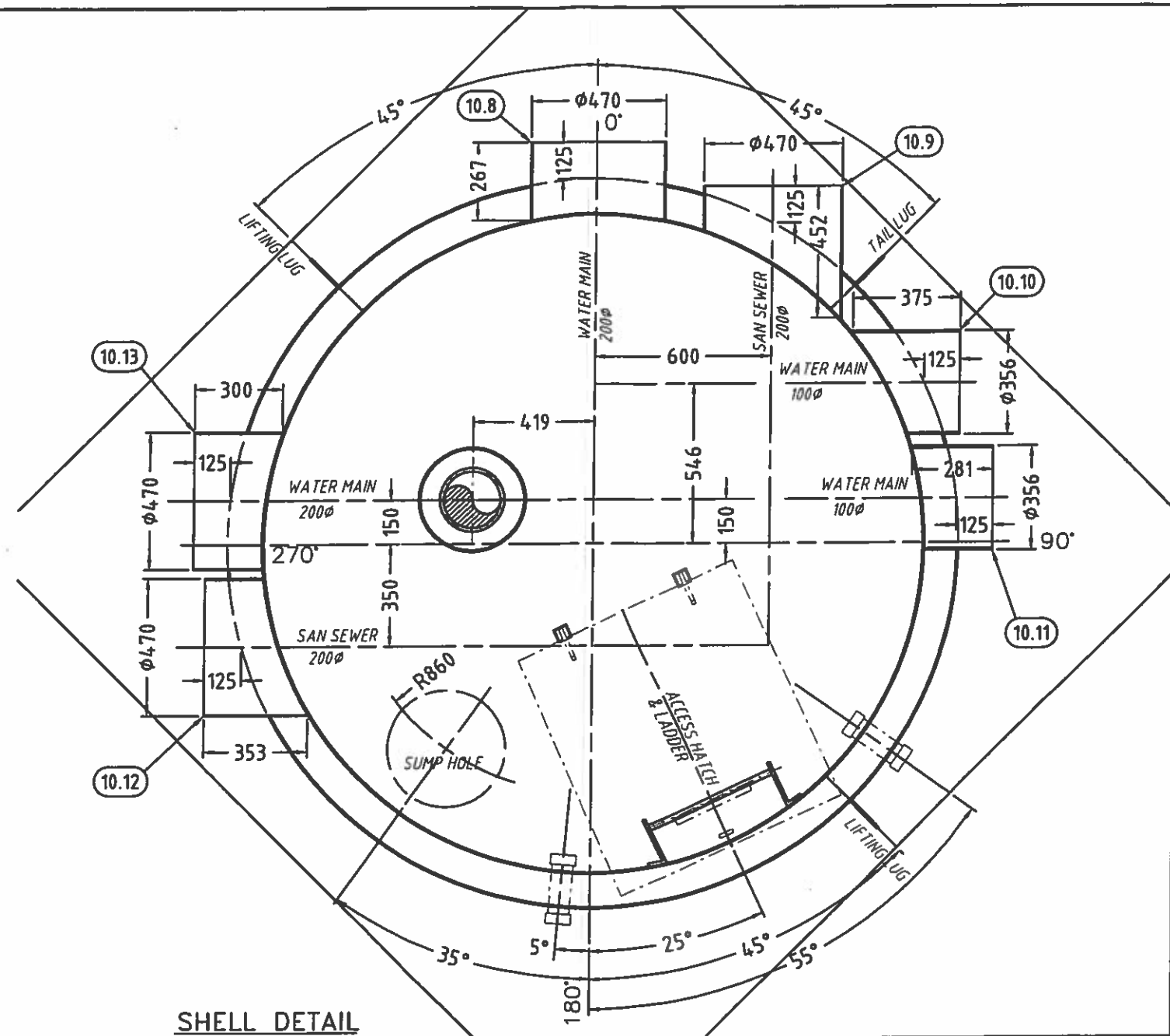
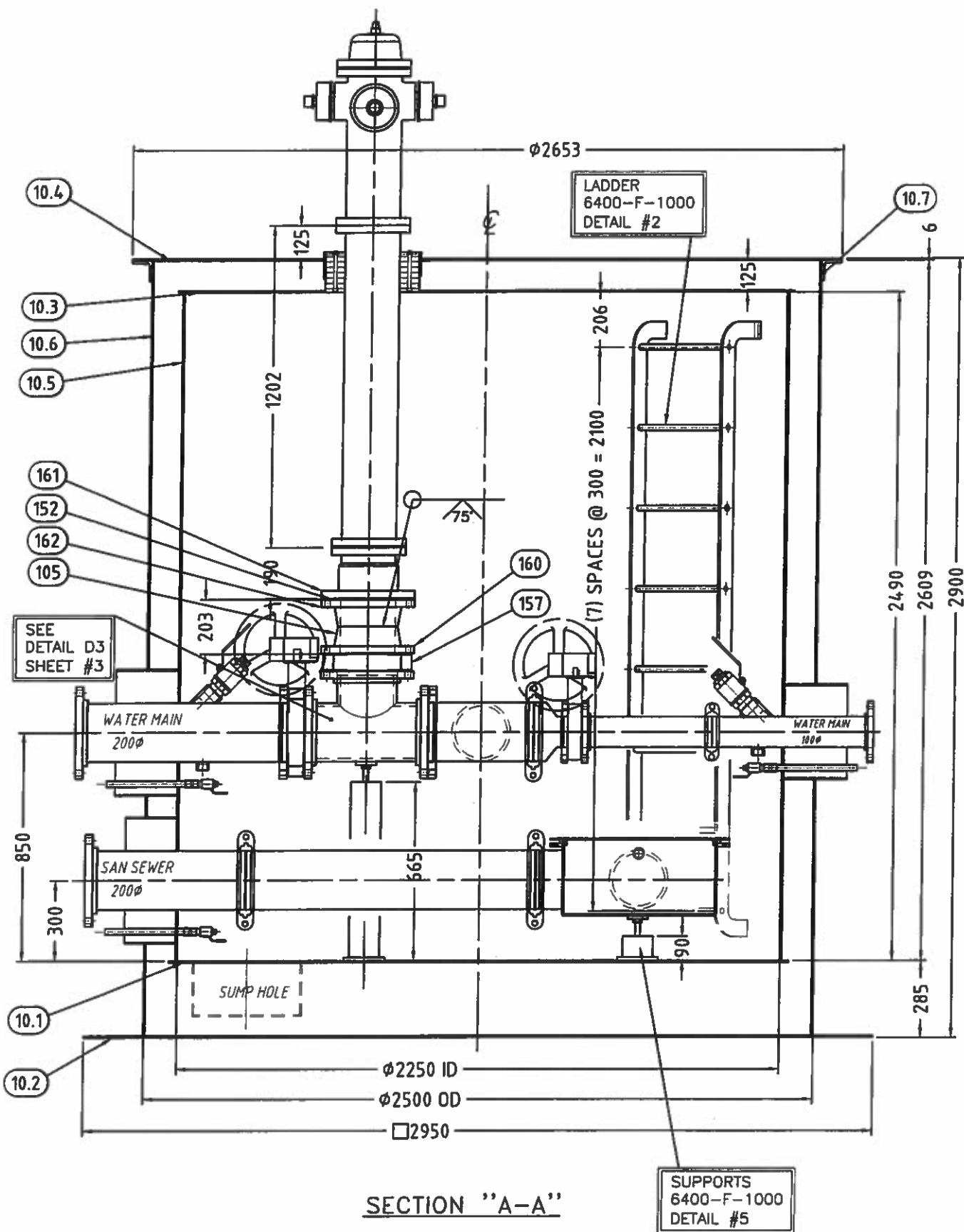
PLAN VIEW

| | | | |
|--|--|----------|---------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
| <p>Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel (450) 444-0566 Fax (450) 444-2227 www.berliefalco.com</p> <p>CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICIABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC.</p> | | | |
| CLIENT: | GOVERNEMENT OF NUNAVUT | | |
| TITRE: | ACCESS VAULT AV9 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | |
| DESSIN No.: | 6400-F-AV9 | | DESS PAR: |
| DRAWING No.: | | | DRAW BY: G.L. |
| SCALE: | QTE: | DATE: | FEUILLE: |
| X/X" = X" | QTY: 1 | 01-04-14 | SHEET: 2 / 3 |
| | | | REV: A |



| Item | Qty | Description | Material |
|------|-----|---|-------------|
| 9.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø1892mm | A36 |
| 9.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2530mm x 2530mm | A36 |
| 9.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø1878mm | A36 |
| 9.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2232mm | A36 |
| 9.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 5767mm x 3670mm LG. | A36 |
| 9.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 6515mm x 4058mm LG. | A36 |
| 9.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 9.8 | 4 | PL. 1/4" THK. x 366 x 1456mm LG. | A36 |
| 9.10 | 2 | PIPE 8" SCH.80 x 869mm LG. vic groove 1 end | A-53-B |
| 9.11 | 2 | PIPE 8" SCH.80 x 694mm LG. vic groove 1 end | A-53-B |
| 9.12 | 1 | PIPE 8" SCH.80 x 543mm LG. vic groove 2 end | A-53-B |
| 103 | 7 | FLANGE SORF 8" - 150# | SA 105 |
| 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 |
| 112 | 3 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 137 | 2 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 152 | 1 | 1/8" THK. GASKET FOR 8"FLG. #150 | SOFT RUBBER |
| 157 | 3 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 48 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |
| 161 | 8 | 3/4-10 HEX.-BOLT, 3 1/2"LG | PLATED C.S. |
| 162 | 8 | 3/4-10 HEX. NUT | PLATED C.S. |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B |

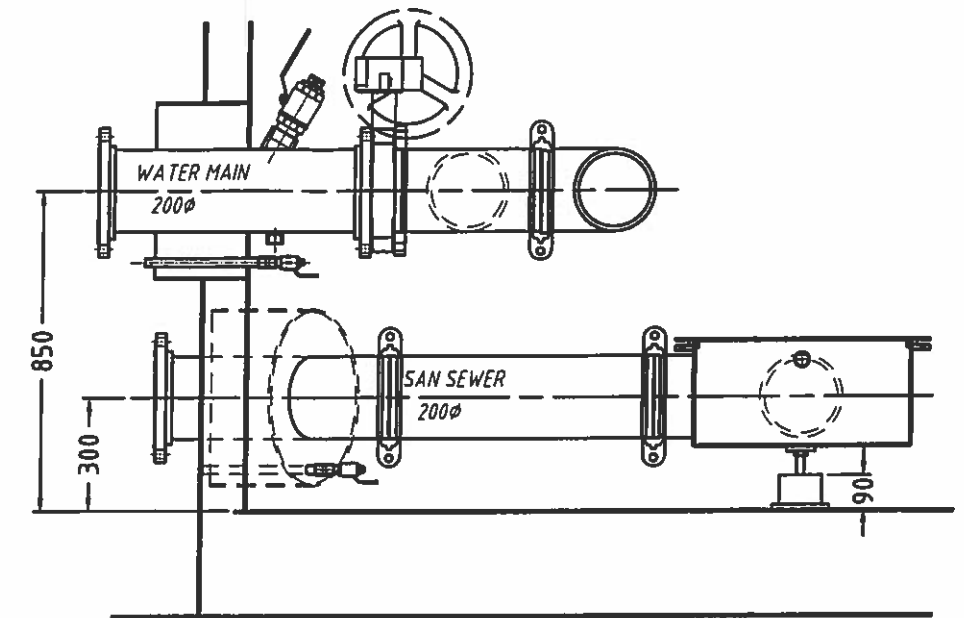
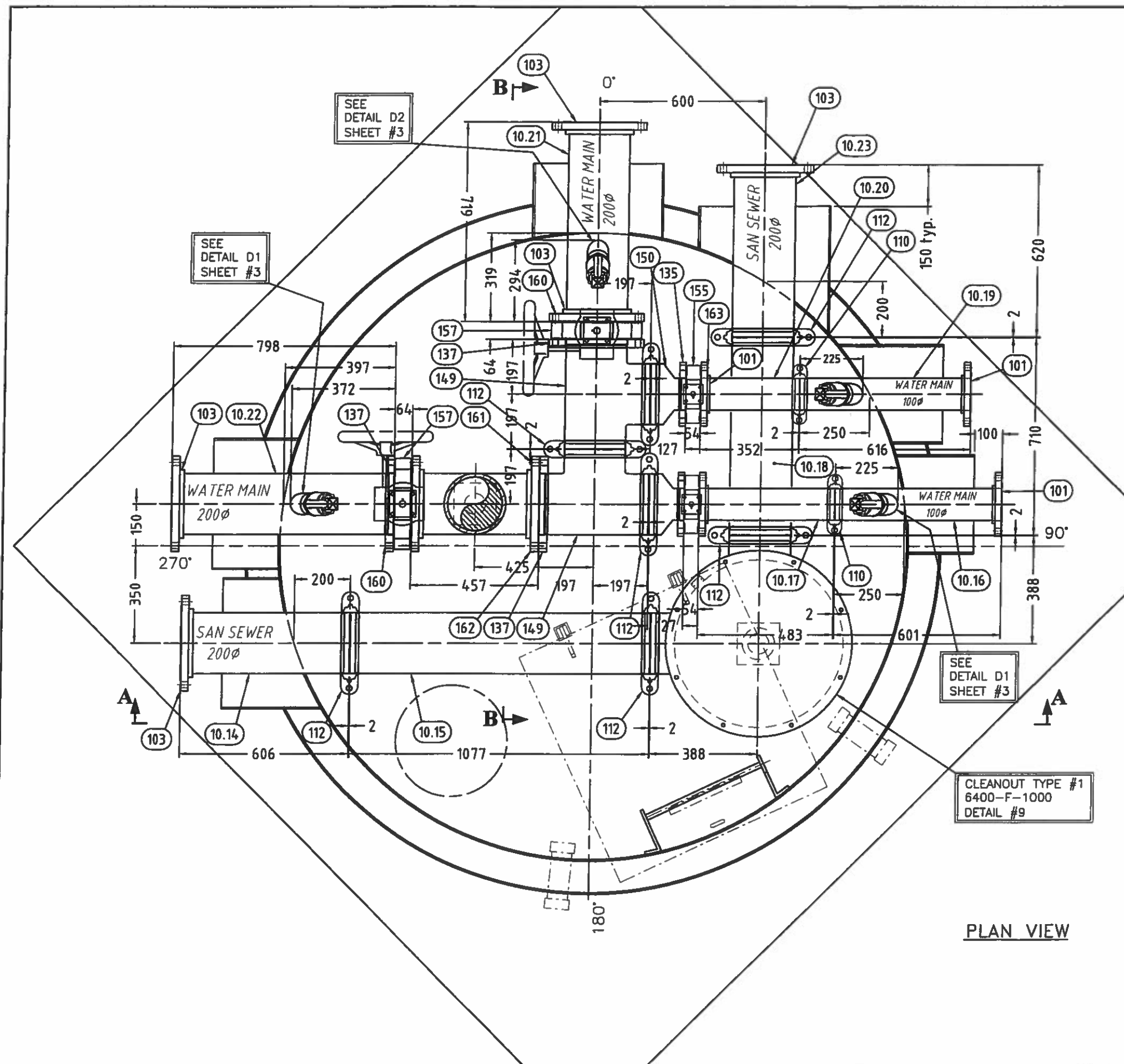
| | | | |
|--|---------------------|--|----------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
|  Falco Technologies Inc., a company of BERLIE-FALCO | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | |
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| CLIENT: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AV9 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No.: 6400-F-AV9 | | DESS. PAR: G.L. | |
| DRAUING No: | | DRAW BY: | |
| SCALE: X/X" = X" | QTE: 1 | DATE: 01-04-14 | FEUILLE: 3 / 3 |
| | | REV: A | |



GENERAL NOTES:

- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS

| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
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| REV. | DESCRIPTION | DATE | DESS/DRAWN |
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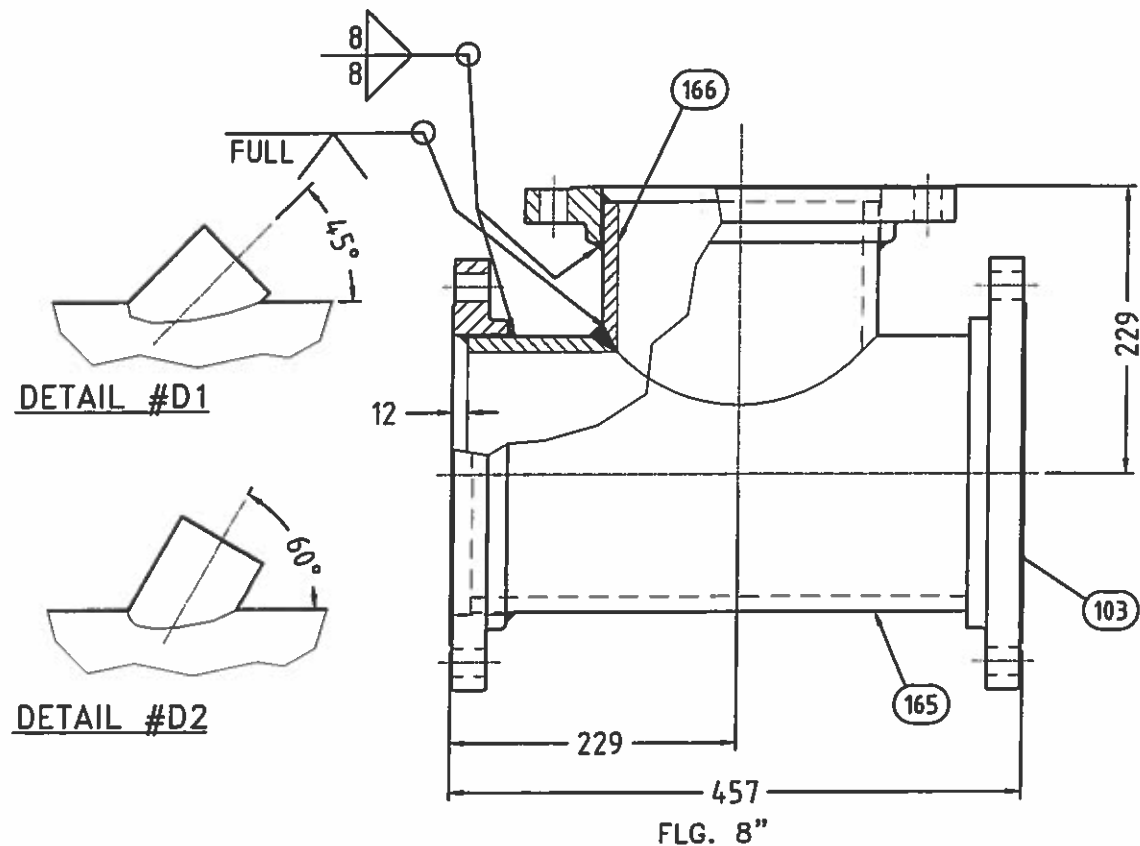
SECTION "B-B"

CLEANOUT TYPE #1
6400-F-1000
DETAIL #9

PLAN VIEW

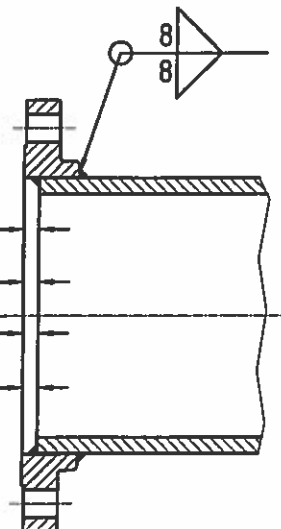
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|--|---------------------|-----------------|-----------------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
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| CLIENT: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AV10 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No.: 6400-F-AV10 | | DESS. PAR: G.L. | |
| SCALE: X/X" = X" | QTE: QTY: 1 | DATE: 01-04-14 | FEUILLE: SHEET: 2 / 3 |
| | | | REV: A |

| Item | Qty | Description | Material | Item | Qty | Description | Material |
|------|-----|---|-------------|-------|-----|--|------------|
| 112 | 7 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. | 10.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2312mm | A36 |
| 135 | 2 | 4" VICTAULIC FLANGE STYLE 741 | GALV C.S. | 10.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2950mm x 2950mm | A36 |
| 137 | 3 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. | 10.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2298mm | A36 |
| 149 | 2 | 8" VICTAULIC TEE, #20 | GALV. | 10.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2653mm | A36 |
| 150 | 2 | 8" @ 4" VICTAULIC CONCENTRIC REDUCER , #50 | GALV C.S. | 10.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 7088mm x 2490mm LG. | A36 |
| 152 | 1 | 1/8" THK. GASKET FOR 8"FLG. #150 | SOFT RUBBER | 10.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 7834mm x 2878mm LG. | A36 |
| | | | | 10.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 155 | 2 | 4" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | | 10.8 | 1 | PL. 1/4" THK. x 267 x 1456mm LG. | A36 |
| | | | | 10.9 | 1 | PL. 1/4" THK. x 452 x 1456mm LG. | A36 |
| 157 | 3 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | | 10.10 | 1 | PL. 1/4" THK. x 375 x 1098mm LG. | A36 |
| | | | | 10.11 | 1 | PL. 1/4" THK. x 281 x 1098mm LG. | A36 |
| 160 | 48 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. | 10.12 | 1 | PL. 1/4" THK. x 353 x 1456mm LG. | A36 |
| 161 | 16 | 3/4-10 HEX.-BOLT, 3 1/2"LG | PLATED C.S. | 10.13 | 1 | PL. 1/4" THK. x 300 x 1456mm LG. | A36 |
| 162 | 16 | 3/4-10 HEX. NUT | PLATED C.S. | 10.14 | 1 | PIPE 8" SCH.80 x 594mm LG. vic groove 1 end | A-53-B |
| 163 | 32 | BOLT 5/8-11UNC x 1 3/4"LG + FLAT WASHER | PLATED C.S. | 10.15 | 1 | PIPE 8" SCH.80 x 1077mm LG. vic groove 2 end | A-53-B |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B | 10.16 | 1 | PIPE 4" SCH.80 x 593mm LG. vic groove 1 end | A-53-B |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B | 10.17 | 1 | PIPE 4" SCH.80 x 475mm LG. vic groove 1 end | A-53-B |
| | | | | 10.18 | 1 | PIPE 8" SCH.80 x 710mm LG. vic groove 2 end | A-53-B |
| | | | | 10.19 | 1 | PIPE 4" SCH.80 x 608mm LG. vic groove 1 end | A-53-B |
| | | | | 10.20 | 1 | PIPE 4" SCH.80 x 344mm LG. vic groove 1 end | A-53-B |
| | | | | 10.21 | 1 | PIPE 8" SCH.80 x 695mm LG. | A-53-B |
| | | | | 10.22 | 1 | PIPE 8" SCH.80 x 786mm LG. vic groove 1 end | A-53-B |
| | | | | 10.23 | 1 | PIPE 8" SCH.80 x 608mm LG. vic groove 1 end | A-53-B |
| | | | | 101 | 4 | FLANGE SORF 4" - 150# | SA 105 |
| | | | | 103 | 8 | FLANGE SORF 8" - 150# | SA 105 |
| | | | | 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 |
| | | | | 110 | 2 | 4" VICTAULIC COUPLING STYLE 77 | GALV C.S. |

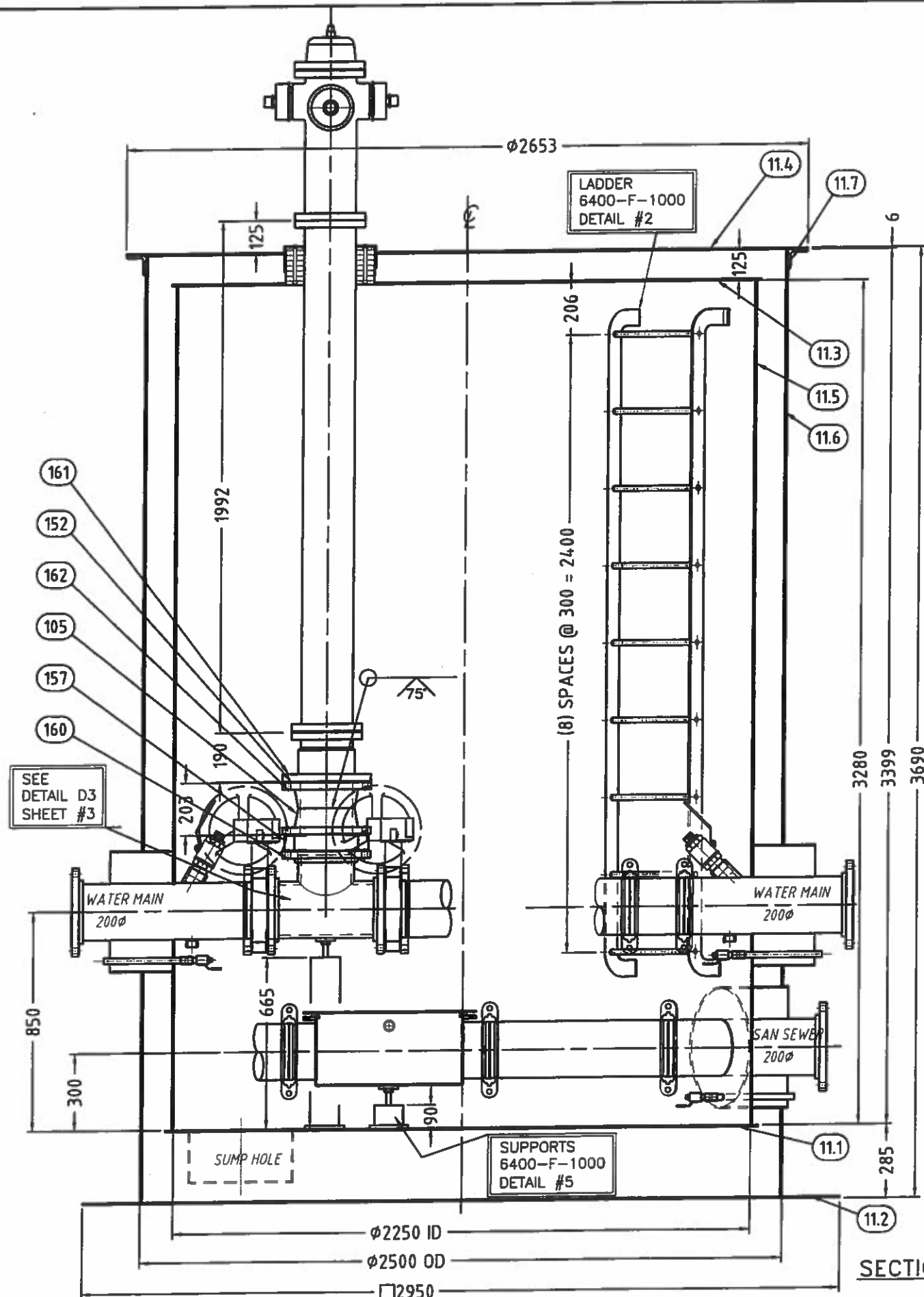


DETAIL D3- TYP. WELDING

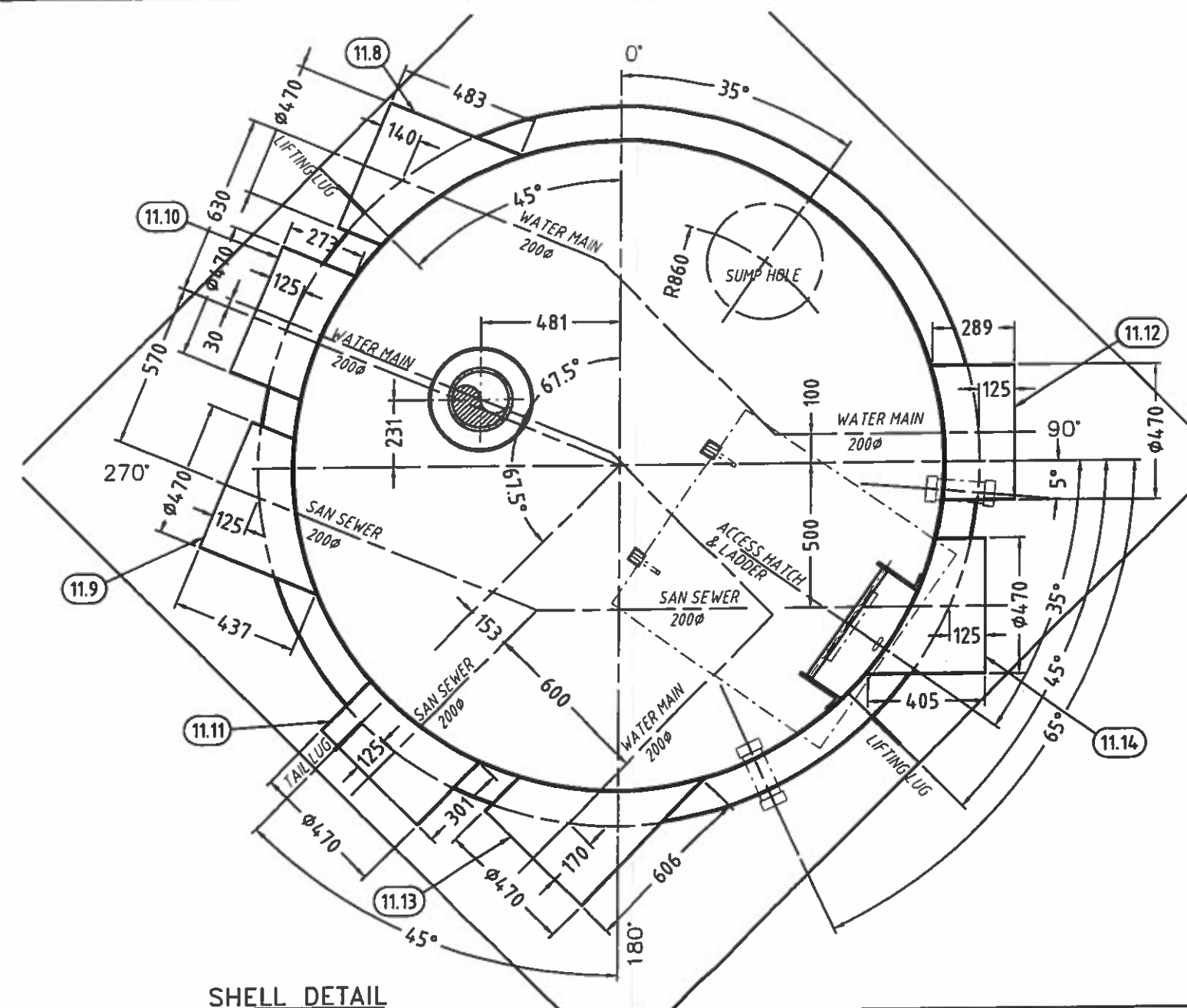
8mm for 4" pipe
10mm for 6" pipe
12mm for 8" pipe
12mm for 10" pipe



| | | | |
|---|---------------------|---|------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
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| CLIENT: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV10 | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY , NU | |
| DESSIN No: | | DESS. PAR: | |
| DRAWING No: 6400-F-AV10 | | DRAW BY: G.L. | |
| SCALE: | QTE: | DATE: | FEUILLE: |
| X/X" = X" | 1 | 01-04-14 | 3 / 3 |
| | | | REV: |
| | | | A |



SECTION "A-A"



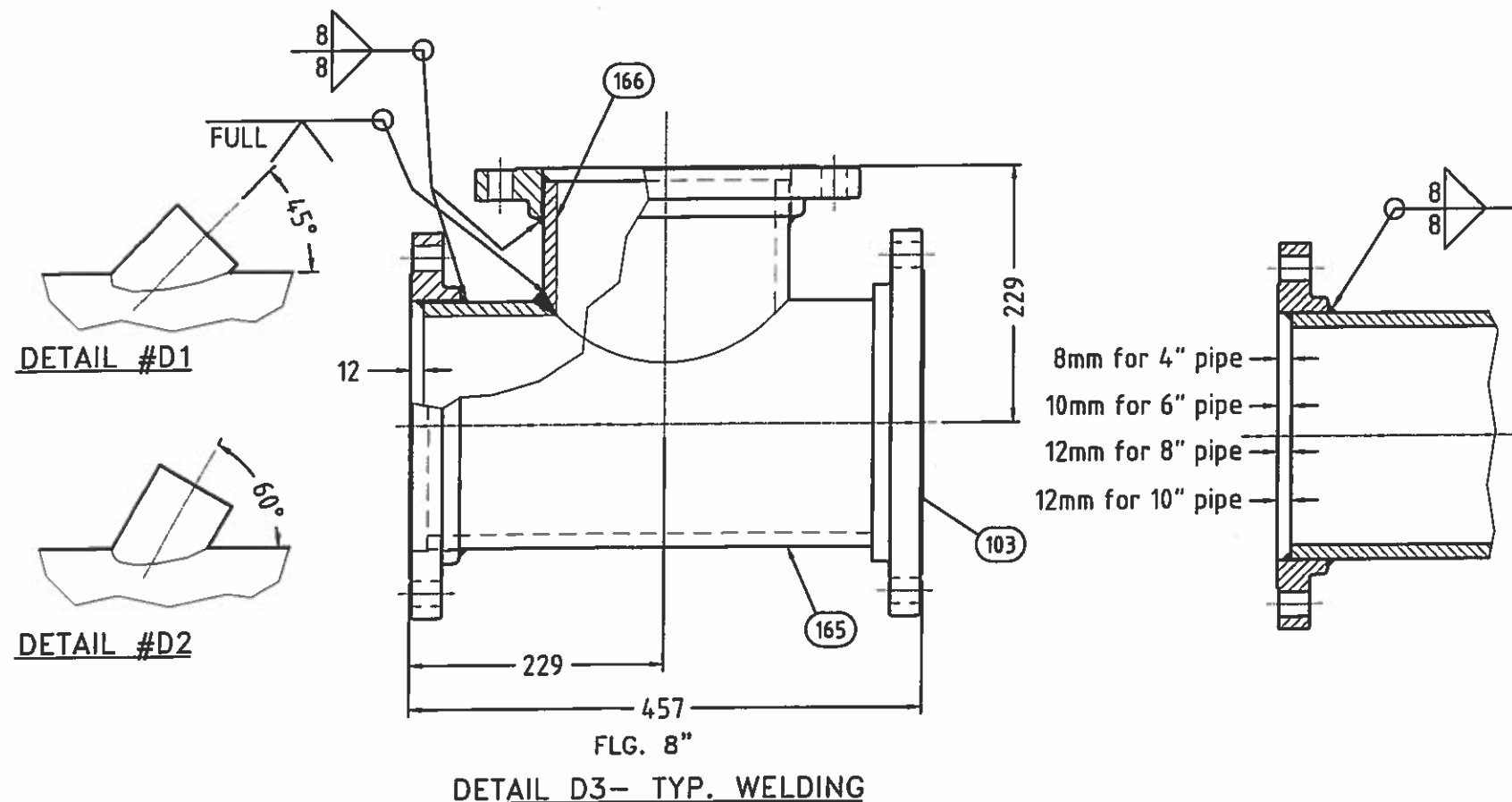
SHELL DETAIL

GENERAL NOTES:

- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE: BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS

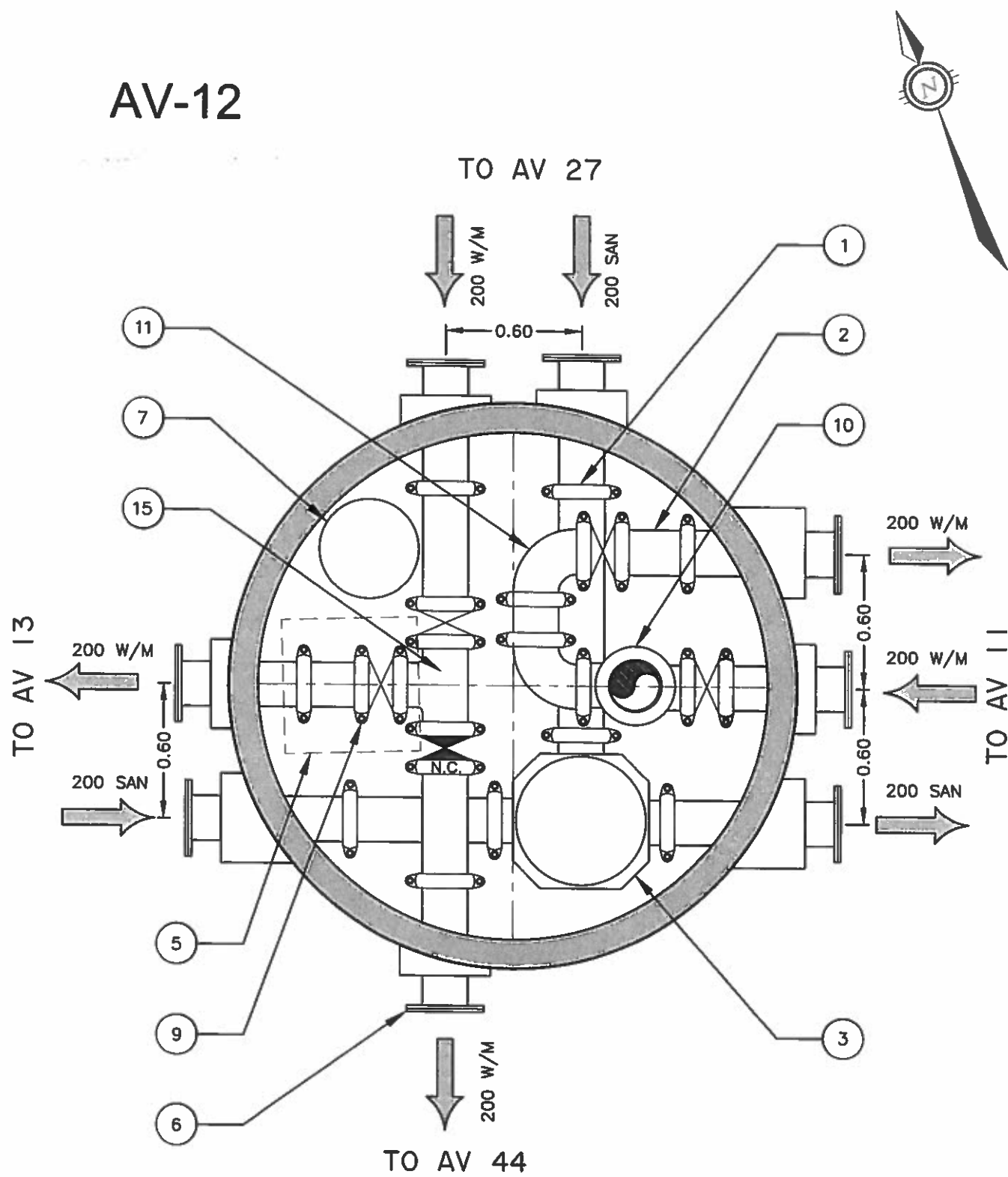
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
|------|---|----------|------------|
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
| | <p>Falco Technologies Inc., a company of</p> <p>BERLIE-FALCO</p> <p>1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com</p> <p>CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICABLE AUX INTERETS DE FALCO TECHNOLOGIES INC.</p> <p>THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC.</p> <p>CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT</p> <p>TITLE: TITLE: ACCESS VAULT AV11 NEW UTILIDOR DESIGN RESOLUTE BAY, NU</p> <p>DESSIN No.: DRAWING No: 6400-F-AV11</p> <p>DESS. PAR: DRAW BY: G.L.</p> <p>SCALE: X/X" = X"</p> <p>QTE: QTY: 1</p> <p>DATE: 01-04-14</p> <p>FEUILLE: SHEET: 1 / 3</p> <p>REV: A</p> | | |

| Item | Qty | Description | Material | Item | Qty | Description | Material |
|------|-----|---|-------------|-------|-----|--|------------|
| 103 | 11 | FLANGE SORF 8" - 150# | SA 105 | 11.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2312mm | A36 |
| 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 | 11.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2950mm x 2950mm | A36 |
| 112 | 12 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. | 11.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2298mm | A36 |
| 122 | 2 | 8" VICTAULIC ELBOW 22 1/2°, #12 | GALV C.S. | 11.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2653mm | A36 |
| 127 | 1 | 8" VICTAULIC ELBOW 45°, #11 | GALV C.S. | 11.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 7088mm x 3280mm LG. | A36 |
| 132 | 1 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. | 11.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 7048mm x 3668mm LG. | A36 |
| 137 | 3 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. | 11.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 152 | 1 | 1/8" THK. GASKET FOR 8"FLG. #150 | SOFT RUBBER | 11.8 | 1 | PL. 1/4" THK. x 483 x 1456mm LG. | A36 |
| 157 | 4 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | | 11.9 | 1 | PL. 1/4" THK. x 437 x 1456mm LG. | A36 |
| | | | | 11.10 | 1 | PL. 1/4" THK. x 273 x 1456mm LG. | A36 |
| | | | | 11.11 | 1 | PL. 1/4" THK. x 301 x 1456mm LG. | A36 |
| 160 | 64 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. | 11.12 | 1 | PL. 1/4" THK. x 289 x 1456mm LG. | A36 |
| 161 | 8 | 3/4-10 HEX.-BOLT, 3 1/2"LG | PLATED C.S. | 11.13 | 1 | PL. 1/4" THK. x 606 x 1456mm LG. | A36 |
| 162 | 8 | 3/4-10 HEX. NUT | PLATED C.S. | 11.14 | 1 | PL. 1/4" THK. x 405 x 1456mm LG. | A36 |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B | 11.15 | 1 | PIPE 8" SCH.80 x 758mm LG. | A-53-B |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B | 11.16 | 1 | PIPE 8" SCH.80 x 746mm LG. vic groove 2 end | A-53-B |
| | | | | 11.17 | 1 | PIPE 8" SCH.80 x 642mm LG. vic groove 1 end | A-53-B |
| | | | | 11.18 | 1 | PIPE 8" SCH.80 x 601mm LG. vic groove 1 end | A-53-B |
| | | | | 11.19 | 1 | PIPE 8" SCH.80 x 560mm LG. vic groove 1 end | A-53-B |
| | | | | 11.20 | 1 | PIPE 8" SCH.80 x 606mm LG. vic groove 1 end | A-53-B |
| | | | | 11.21 | 1 | PIPE 8" SCH.80 x 688mm LG. vic groove 1 end | A-53-B |
| | | | | 11.22 | 1 | PIPE 8" SCH.80 x 770mm LG. vic groove 1 end | A-53-B |
| | | | | 11.23 | 1 | PIPE 8" SCH.80 x 210mm LG. vic groove 2 end | A-53-B |
| | | | | 11.24 | 1 | PIPE 8" SCH.80 x 699mm LG. vic groove 2 end | A-53-B |
| | | | | 11.25 | 1 | PIPE 8" SCH.80 x 604mm LG. vic groove 2 end | A-53-B |
| | | | | 11.26 | 1 | PIPE 8" SCH.80 x 346mm LG. vic groove 2 end | A-53-B |
| | | | | 11.27 | 1 | PIPE 8" SCH.80 x 307mm LG. vic groove 2 end | A-53-B |

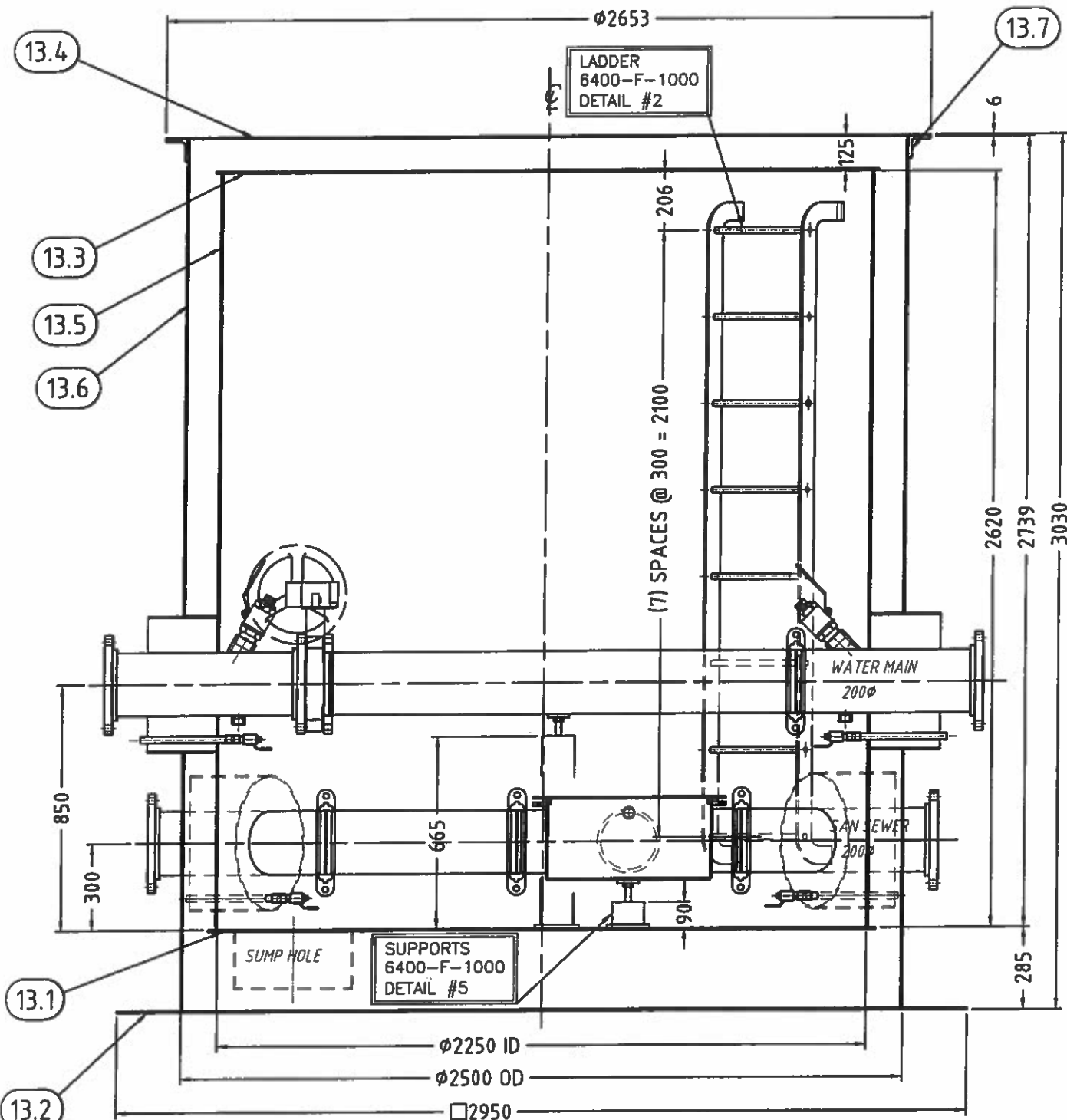


| | | | |
|---|---------------------|--|--------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
| Falco Technologies Inc., a company of BERLIE-FALCO | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | |
| CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICIABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC. | | | |
| CLIENT: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV11 | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY, NU | |
| DESSIN No.: | | DESS. PAR: | |
| DRAWING No.: | | DRAWBY: | |
| 6400-F-AV11 | | G.L. | |
| SCALE: | QTE: | DATE: | FEUILLE: |
| X/X" = X" | 1 | 01-04-14 | SHEET: 3 / 3 |
| | | | REV: A |

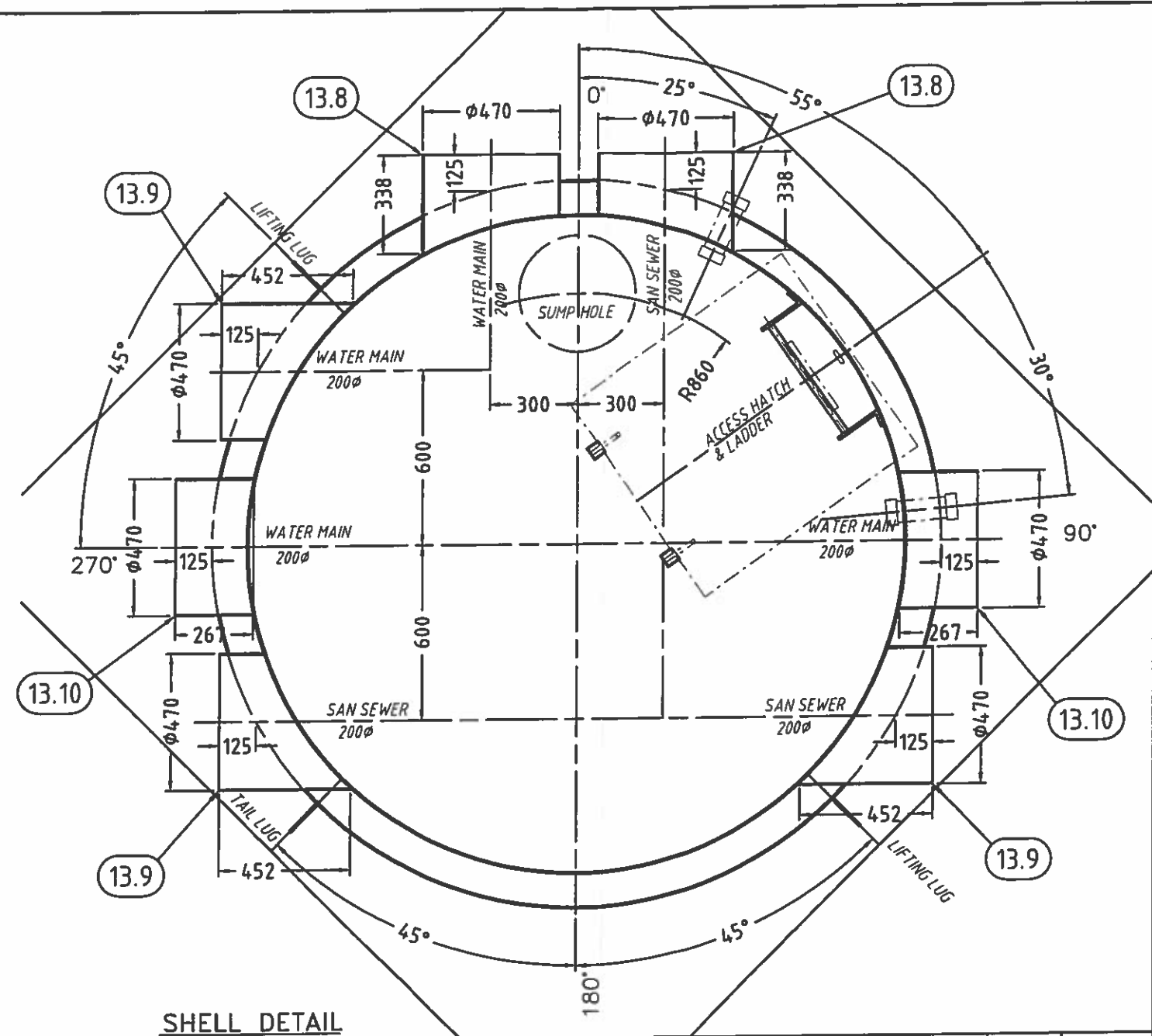
AV-12



| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|-------|---|-------|---------------|
| | | | | NE | SE | E | NW | |
| AV-12 | 2.25m | 15.01m | 3.35m | 12.16 | 12.16 | | 12.16 | 12.91 |



SECTION "A-A"

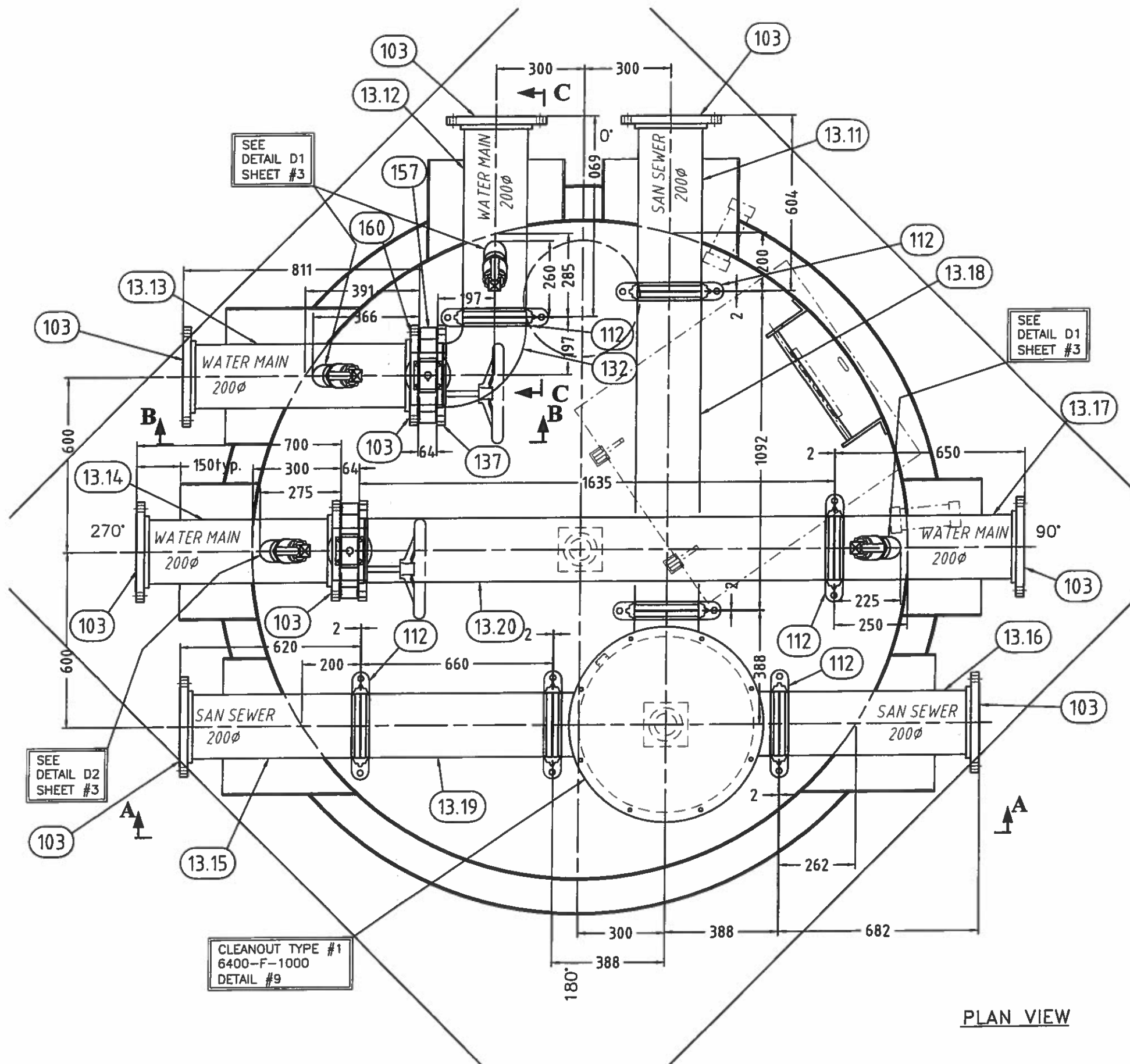


SHELL DETAIL

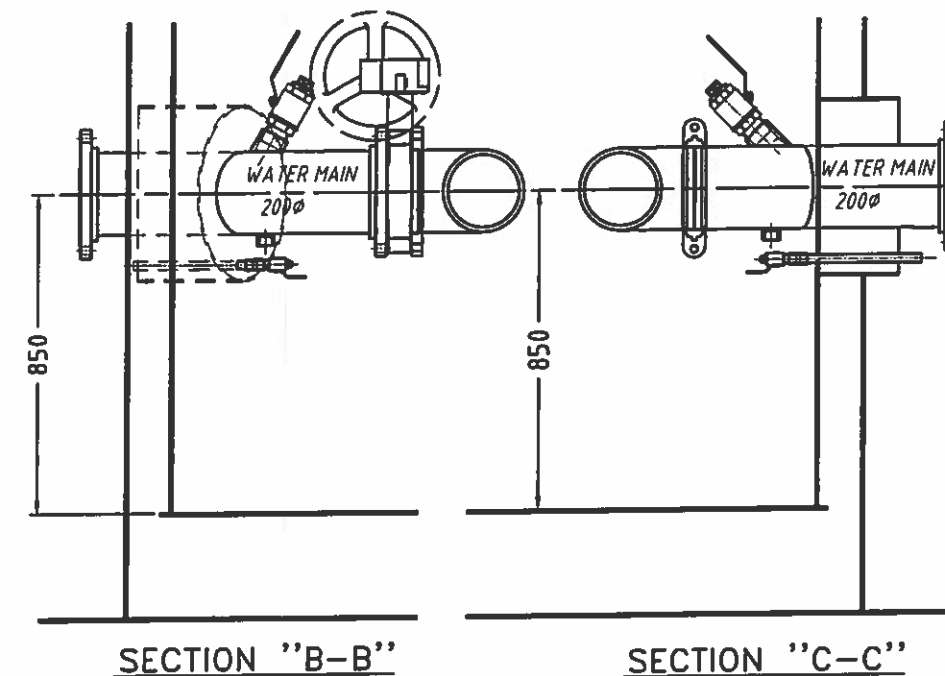
GENERAL NOTES:


- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE: BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS

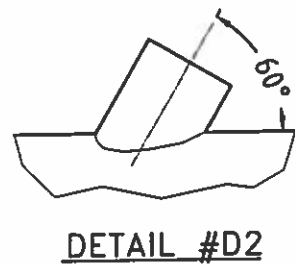
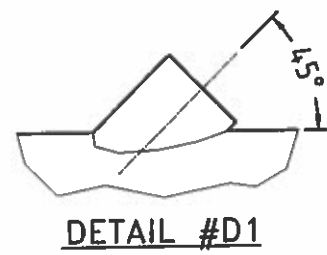
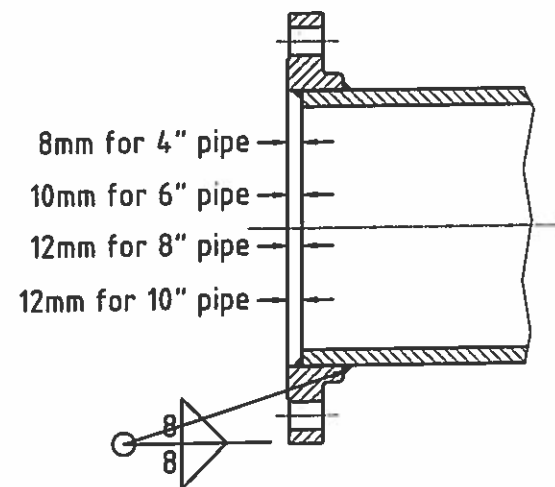
| | | | |
|---|---------------------|---|------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
| <p>Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com</p> | | | |
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| <p>CLIENT: GOVERNEMENT OF NUNAVUT</p> | | | |
| <p>TITRE: ACCESS VAULT AV13 NEW UTILIDOR DESIGN RESOLUTE BAY, NU</p> | | | |
| <p>DESSIN No.: 6400-F-AV13</p> | | <p>DESS. PAR: G.L.</p> | |
| <p>SCALE: X/X" = X"</p> | | <p>QTE: 1 DATE: 01-04-14 FEUILLE: 1 / 3 REV: A</p> | |



PLAN VIEW

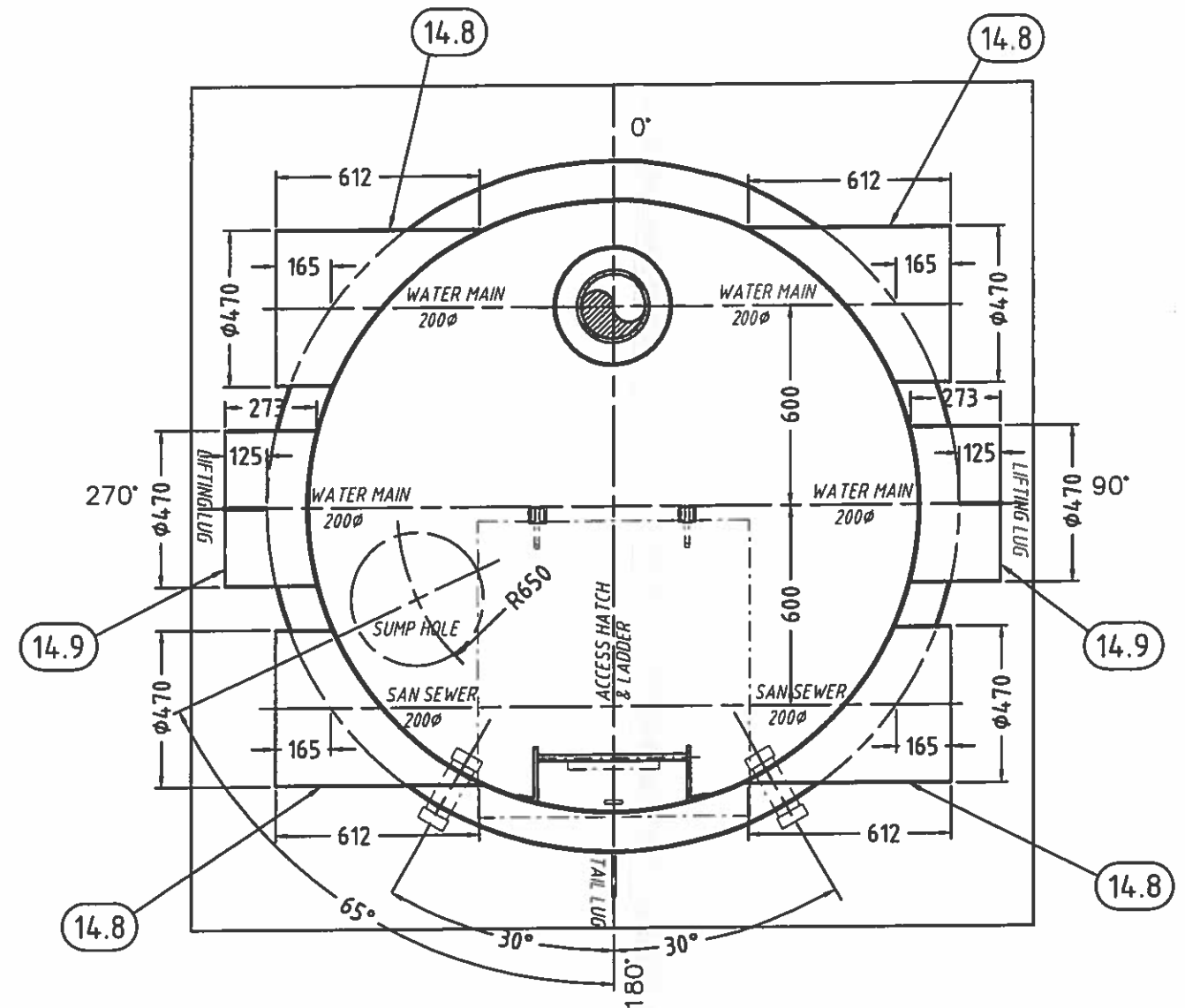
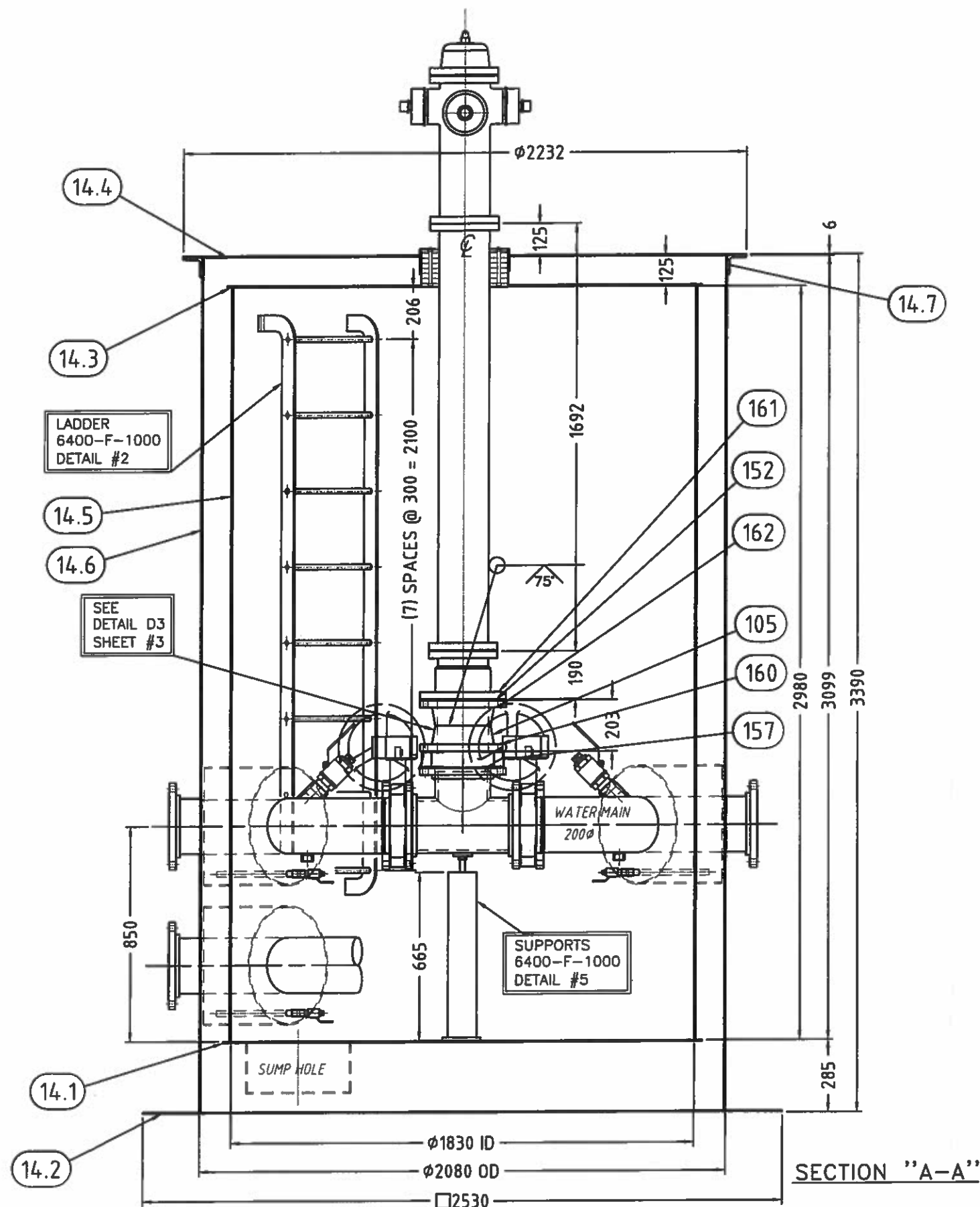


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|--|-------------|---------------------|-------------------|---|-----------|
| A | | ISSUED FOR COMMENTS | | 01-04-14 | G.L. |
| REV | DESCRIPTION | | | DATE | DESS/DRAW |
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| | | | | | |
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| CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT | | | | | |
| TITRE: TITLE: ACCESS VAULT AV13 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | | | | |
| DESSIN No.: DRAWING No: 6400-F-AV13 | | | | DESS. PAR: DRAWBY: G.L. | |
| SCALE: X/X" = X" | | QTE: QTY: 1 | DATE: 01-04-14 | FEUILLE: SHEET: 2 / 3 | REV: A |



| Item | Qty | Description | Material |
|-------|-----|---|-------------|
| 13.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2312mm | A36 |
| 13.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2950mm x 2950mm | A36 |
| 13.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2298mm | A36 |
| 13.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2653mm | A36 |
| 13.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 7088mm x 2620mm LG. | A36 |
| 13.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 7843mm x 3008mm LG. | A36 |
| 13.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 13.8 | 2 | PL. 1/4" THK. x 338 x 1456mm LG. | A36 |
| 13.9 | 3 | PL. 1/4" THK. x 452 x 1456mm LG. | A36 |
| 13.10 | 2 | PL. 1/4" THK. x 267 x 1456mm LG. | A36 |
| 13.11 | 1 | PIPE 8" SCH.80 x 592mm LG. vic groove 1 end | A-53-B |
| 13.12 | 1 | PIPE 8" SCH.80 x 678mm LG. vic groove 1 end | A-53-B |
| 13.13 | 1 | PIPE 8" SCH.80 x 787mm LG. | A-53-B |
| 13.14 | 1 | PIPE 8" SCH.80 x 676mm LG. | A-53-B |
| 13.15 | 1 | PIPE 8" SCH.80 x 608mm LG. vic groove 1 end | A-53-B |
| 13.16 | 1 | PIPE 8" SCH.80 x 670mm LG. vic groove 1 end | A-53-B |
| 13.17 | 1 | PIPE 8" SCH.80 x 638mm LG. vic groove 1 end | A-53-B |
| 13.18 | 1 | PIPE 8" SCH.80 x 1092mm LG. vic groove 2 end | A-53-B |
| 13.19 | 1 | PIPE 8" SCH.80 x 660mm LG. vic groove 2 end | A-53-B |
| 13.20 | 1 | PIPE 8" SCH.80 x 1635mm LG. vic groove 2 end | A-53-B |
| 103 | 9 | FLANGE SORF 8" - 150# | SA 105 |
| 112 | 7 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 132 | 1 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| 137 | 2 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 157 | 2 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 32 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |

| | | | |
|--|---------------------|--|--------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
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| CLIENT: | | CUSTOMER: | |
| | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV13 | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY, NU | |
| DESSIN No.: | | DESS. PAR: | |
| DRAWING No: 6400-F-AV13 | | DRAW BY: G.L. | |
| | QTE: | DATE: | FEUILLE: |
| SCALE: X/X" = X" | QTY: 1 | 01-04-14 | SHEET: 3 / 3 |
| | | | REV: A |

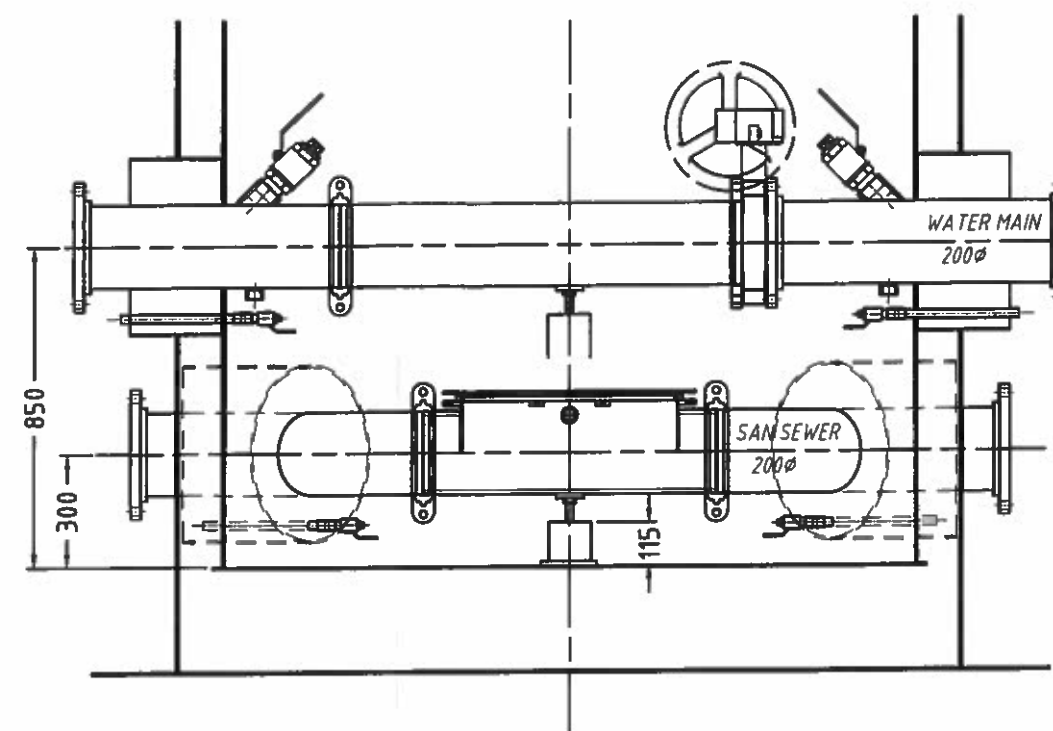
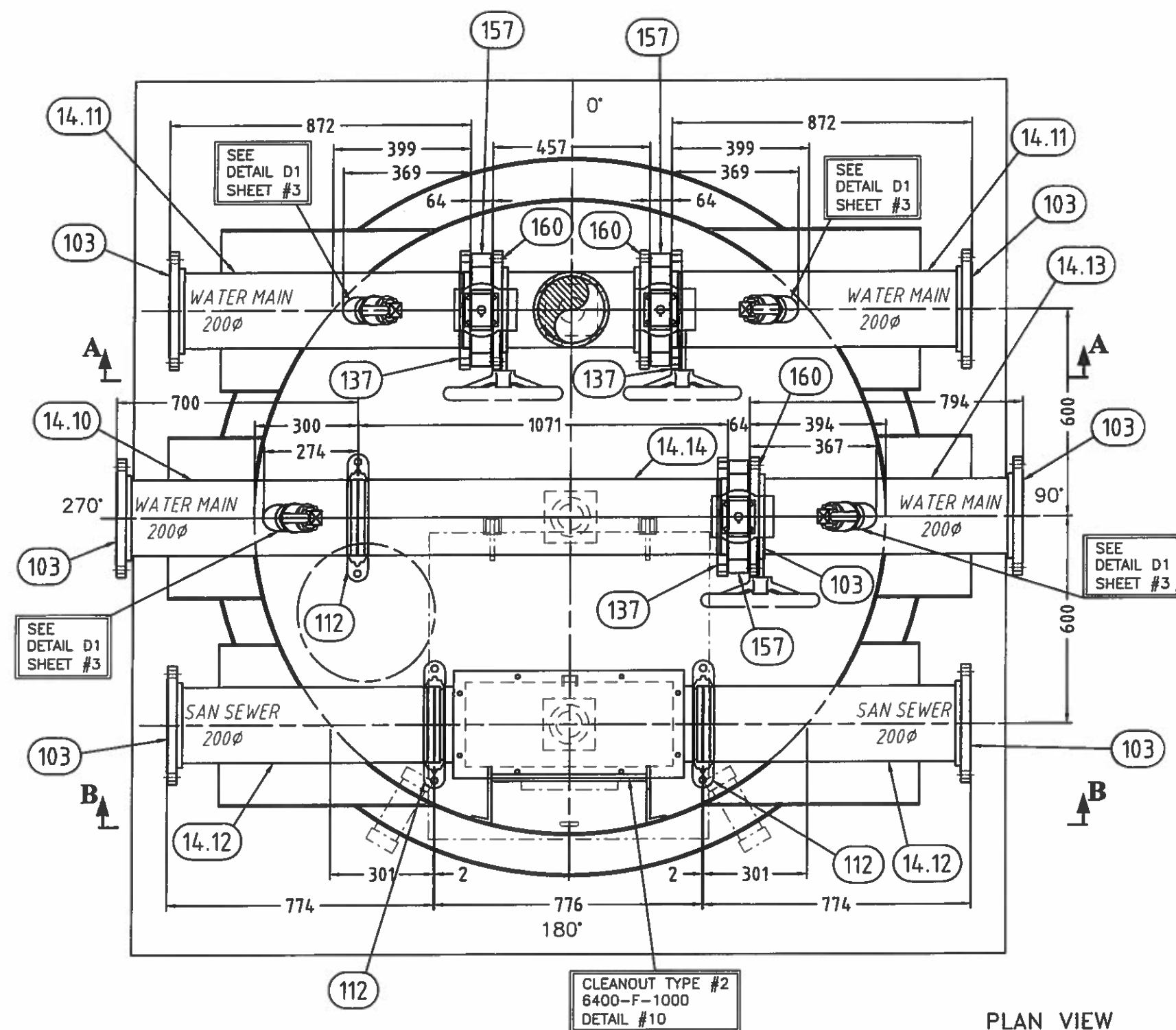



SHELL DETAIL

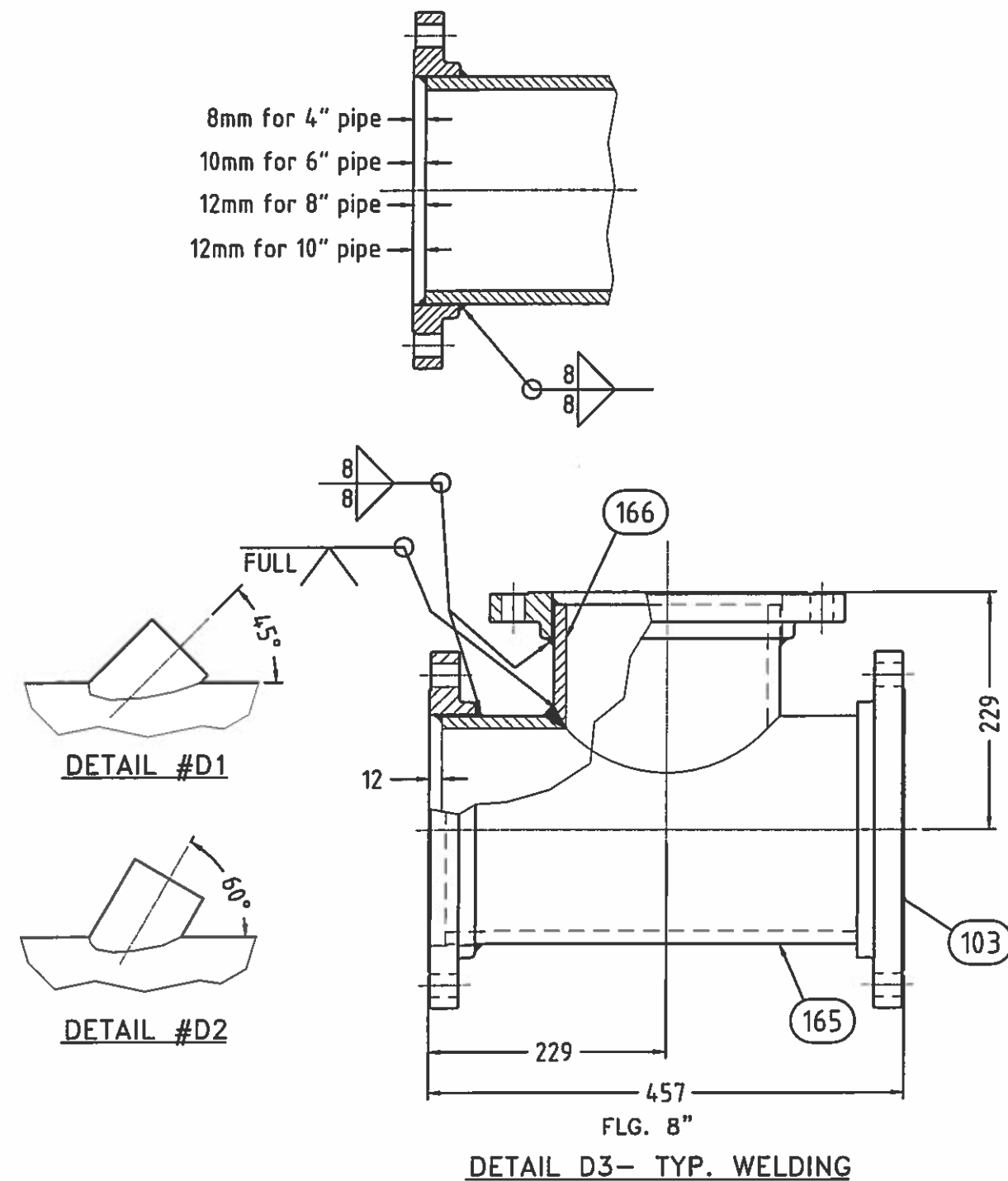
GENERAL NOTES:

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- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE: BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS


| | | | |
|---|---------------------|-----------------------|------------|
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| <p>CLIENT: GOVERNEMENT OF NUNAVUT</p> | | | |
| <p>TITRE: ACCESS VAULT AV14 NEW UTILIDOR DESIGN RESOLUTE BAY, NU</p> | | | |
| <p>DESSIN No.: 6400-F-AV14</p> | | <p>DESS PAR: G.L.</p> | |
| <p>SCALE: X/X" = X"</p> | | <p>FEUILLE: 1 / 3</p> | |
| <p>QTE: 1</p> | | <p>DATE: 01-04-14</p> | |
| <p>REV: A</p> | | <p>REV: A</p> | |

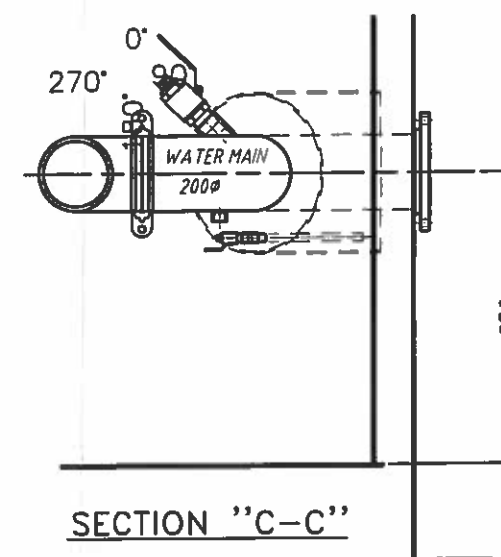
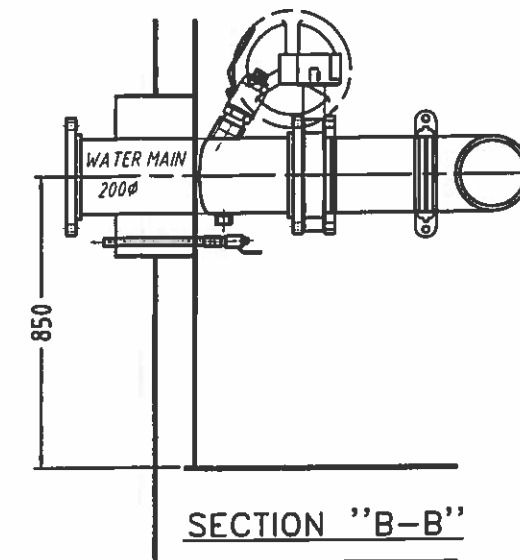
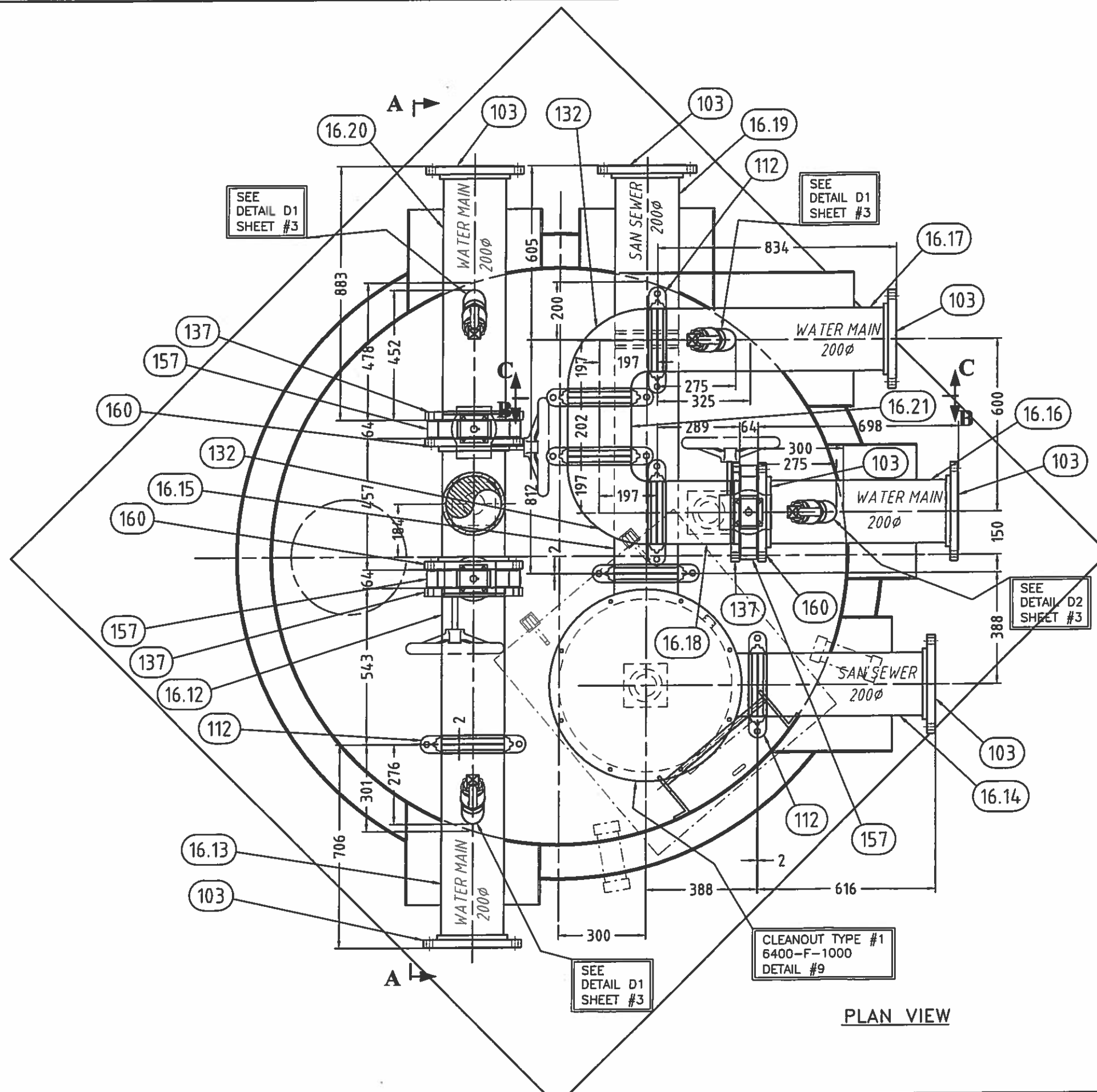


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| CLIENT: CUSTOMER: | | GOVERNEMENT OF NUNAVUT | | |
| TITRE: TITLE: | | ACCESS VAULT AV14 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | |
| DESSIN No. DRAWING No: | | DESS. PAR: DRAW BY: | | |
| 6400-F-AV14 | | G.L. | | |
| SCALE: | QTE: QTY: | DATE: | FEUILLE: SHEET: | REV: |
| X/X" = X" | 1 | 01-04-14 | 2 / 3 | A |



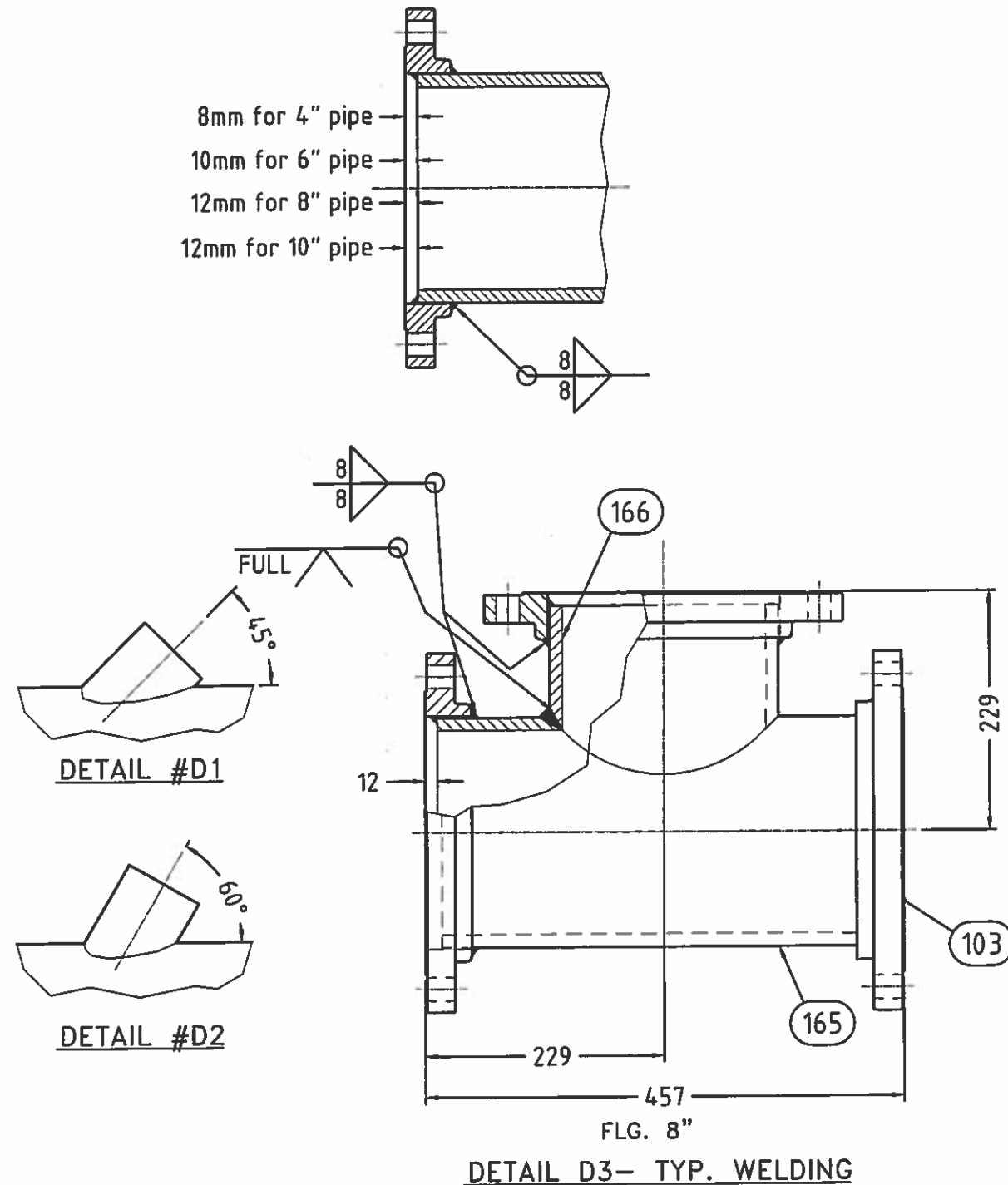
| Item | Qty | Description | Material |
|-------|-----|---|-------------|
| 14.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø1892mm | A36 |
| 14.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2530mm x 2530mm | A36 |
| 14.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø1878mm | A36 |
| 14.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2232mm | A36 |
| 14.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 5767mm x 2980mm LG. | A36 |
| 14.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 6515mm x 3368mm LG. | A36 |
| 14.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 14.8 | 4 | PL. 1/4" THK. x 612 x 1456mm LG. | A36 |
| 14.9 | 2 | PL. 1/4" THK. x 273 x 1456mm LG. | A36 |
| 14.10 | 1 | PIPE 8" SCH.80 x 688mm LG. vic groove 1 end | A-53-B |
| 14.11 | 2 | PIPE 8" SCH.80 x 860mm LG. vic groove 1 end | A-53-B |
| 14.12 | 2 | PIPE 8" SCH.80 x 762mm LG. vic groove 1 end | A-53-B |
| 14.13 | 1 | PIPE 8" SCH.80 x 770mm LG. | A-53-B |
| 14.14 | 1 | PIPE 8" SCH.80 x 1071mm LG. vic groove 2 end | A-53-B |
| 103 | 10 | FLANGE SORF 8" - 150# | SA 105 |
| 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 |
| 112 | 3 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 137 | 3 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 152 | 1 | 1/8" THK. GASKET FOR 8"FLG. #150 | SOFT RUBBER |
| 157 | 4 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 64 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |
| 161 | 8 | 3/4-10 HEX.-BOLT, 3 1/2"LG | PLATED C.S. |
| 162 | 8 | 3/4-10 HEX. NUT | PLATED C.S. |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B |


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|--|---------------------|--|--------------|
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| CLIENT: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV14 | |
| TITLE: | | NEW UTILIDOR DESIGN RESOLUTE BAY, NU | |
| DESSIN No: | | DESS. PAR: | |
| DRAWING No: 6400-F-AV14 | | DRAW BY: G.L. | |
| | QTE: | DATE: | FEUILLE: |
| SCALE: X/X" = X" | QTY: 1 | 01-04-14 | SHEET: 3 / 3 |
| | | | REV: A |

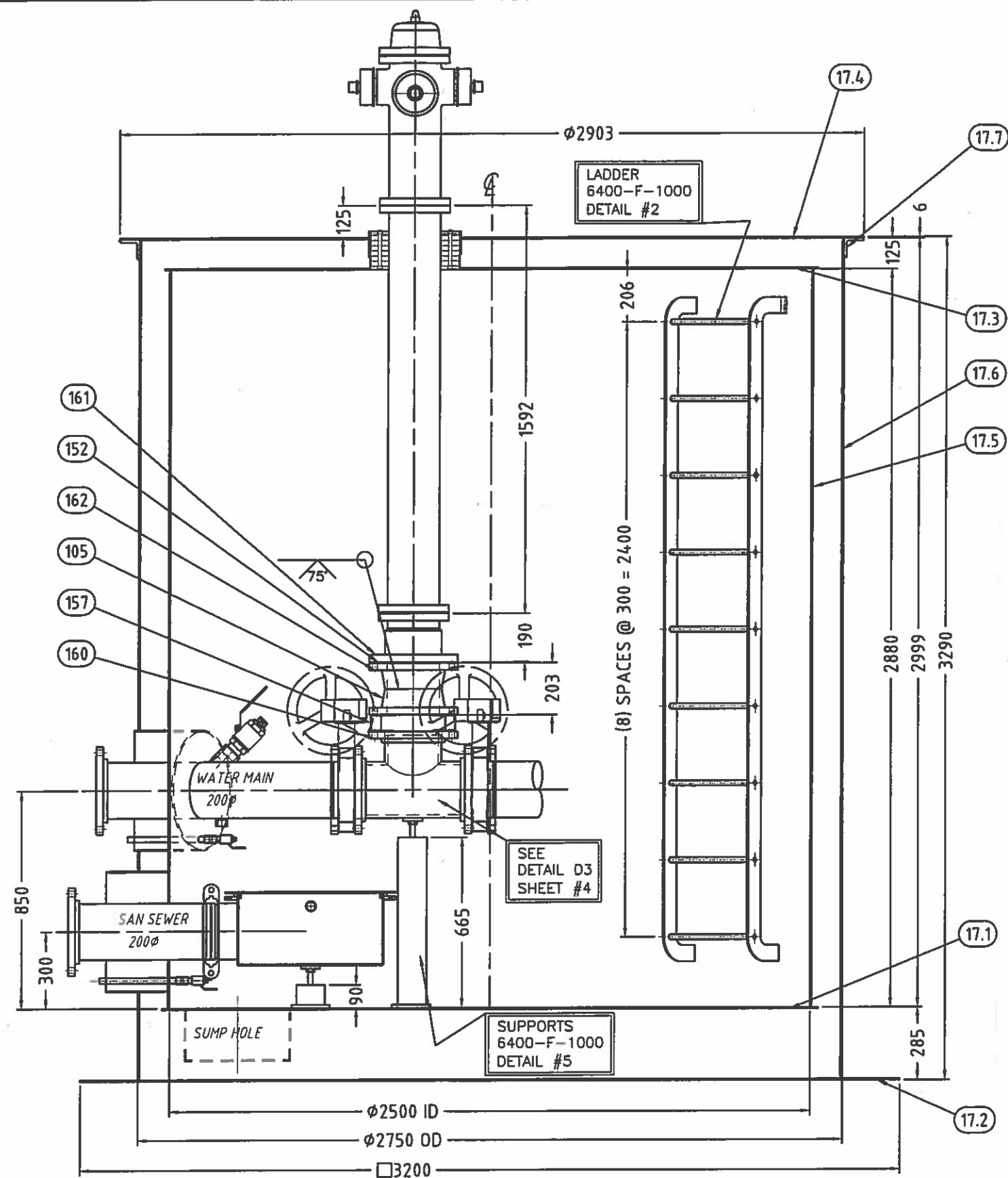


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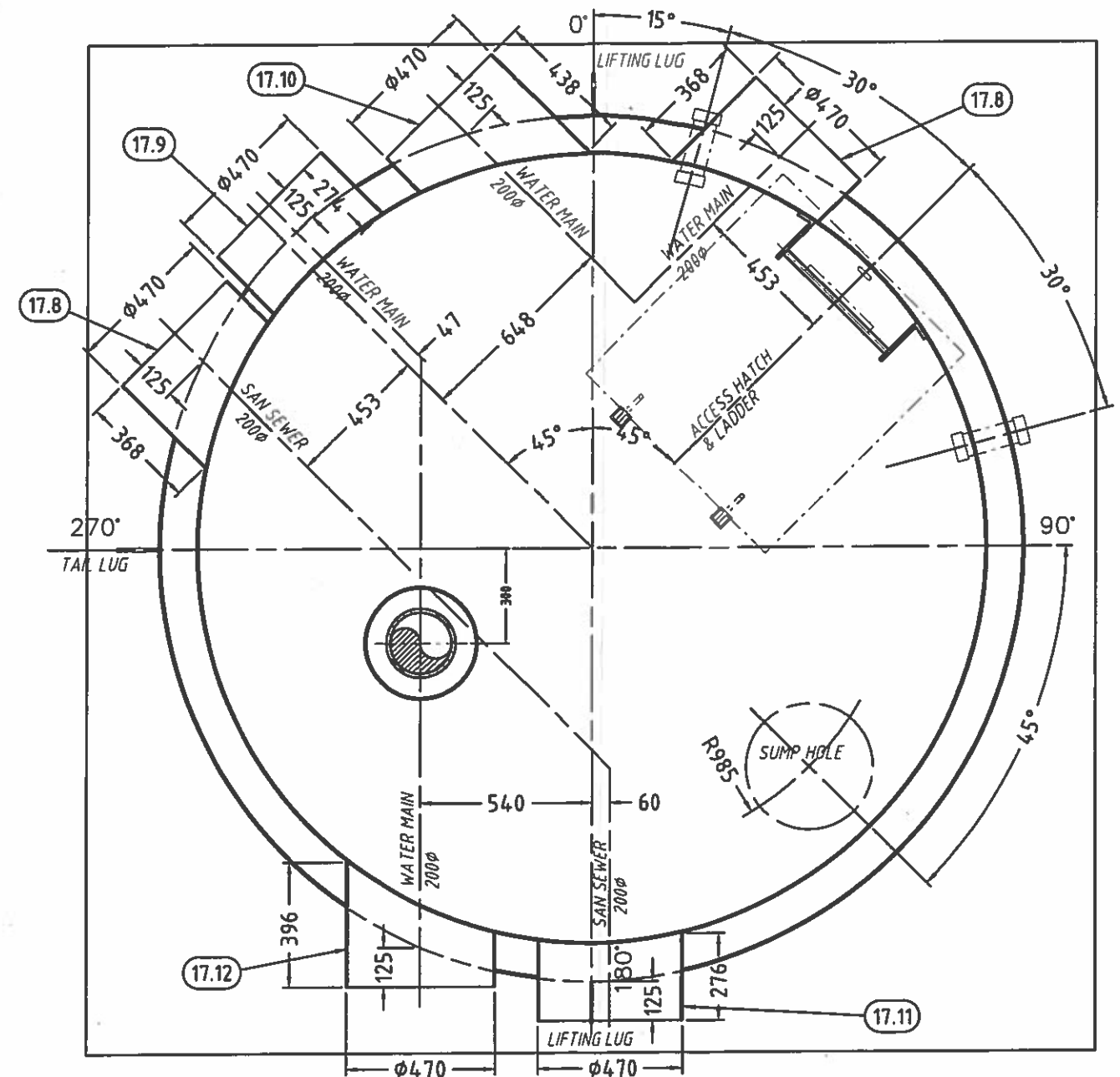
| Item | Qty | Description | Material | Item | Qty | Description | Material |
|------|-----|---|-------------|-------|-----|---|-------------|
| 160 | 64 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. | 16.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2062mm | A36 |
| 161 | 8 | 3/4-10 HEX.-BOLT, 3 1/2"LG | PLATED C.S. | 16.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2700mm x 2700mm | A36 |
| 162 | 8 | 3/4-10 HEX. NUT | PLATED C.S. | 16.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2048mm | A36 |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B | 16.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2403mm | A36 |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B | 16.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 6303mm x 2910mm LG. | A36 |
| | | | | 16.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 7048mm x 3298mm LG. | A36 |
| | | | | 16.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| | | | | 16.8 | 3 | PL. 1/4" THK. x 353 x 1456mm LG. | A36 |
| | | | | 16.9 | 1 | PL. 1/4" THK. x 791 x 1456mm LG. | A36 |
| | | | | 16.10 | 1 | PL. 1/4" THK. x 308 x 1456mm LG. | A36 |
| | | | | 16.11 | 1 | PL. 1/4" THK. x 413 x 1456mm LG. | A36 |
| | | | | 16.12 | 1 | PIPE 8" SCH.80 x 543mm LG. vic groove 2 end | A-53-B |
| | | | | 16.13 | 1 | PIPE 8" SCH.80 x 694mm LG. vic groove 1 end | A-53-B |
| | | | | 16.14 | 1 | PIPE 8" SCH.80 x 604mm LG. vic groove 1 end | A-53-B |
| | | | | 16.15 | 1 | PIPE 8" SCH.80 x 812mm LG. vic groove 2 end | A-53-B |
| | | | | 16.16 | 1 | PIPE 8" SCH.80 x 674mm LG. | A-53-B |
| | | | | 16.17 | 1 | PIPE 8" SCH.80 x 822mm LG. vic groove 1 end | A-53-B |
| | | | | 16.18 | 1 | PIPE 8" SCH.80 x 289mm LG. vic groove 2 end | A-53-B |
| | | | | 16.19 | 1 | PIPE 8" SCH.80 x 593mm LG. vic groove 1 end | A-53-B |
| | | | | 16.20 | 1 | PIPE 8" SCH.80 x 871mm LG. vic groove 1 end | A-53-B |
| | | | | 16.21 | 1 | PIPE 8" SCH.80 x 202mm LG. vic groove 2 end | A-53-B |
| | | | | 103 | 10 | FLANGE SORF 8" - 150# | SA 105 |
| | | | | 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 |
| | | | | 112 | 8 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| | | | | 132 | 2 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| | | | | 137 | 3 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| | | | | 152 | 1 | 1/8" THK. GASKET FOR 8"FLG. #150 | SOFT RUBBER |
| | | | | 157 | 4 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |



| | | | |
|--|-------------|--|------------|
| A ISSUED FOR COMMENTS | | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
|  BERLIE-FALCO Falco Technologies Inc., a company of 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel (450) 444-0566 Fax (450) 444-2227 www.berliefalco.com | | CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC. | |
| CLIENT: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV16 | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY, NU | |
| DESSIN No.: | | DESS. PAR: | |
| DRAWING No: 6400-F-AV16 | | DRAW BY: G.L. | |
| SCALE: | QTE: | DATE: | FEUILLE: |
| X/X" = X" | 1 | 01-04-14 | 3 / 3 |
| | | | REV: A |




SECTION "A-A"

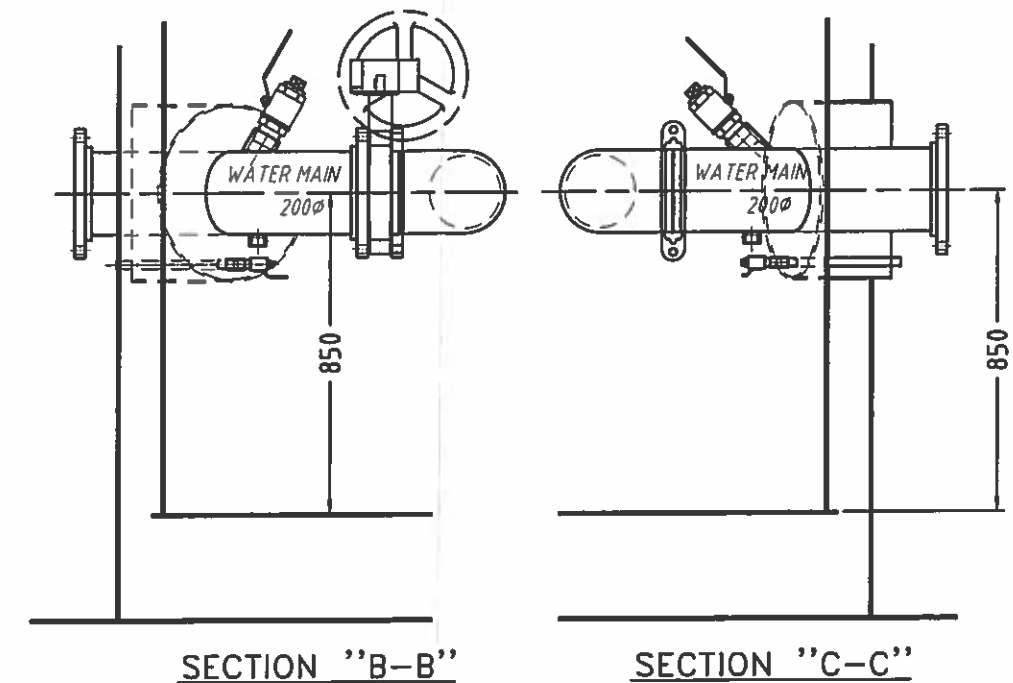
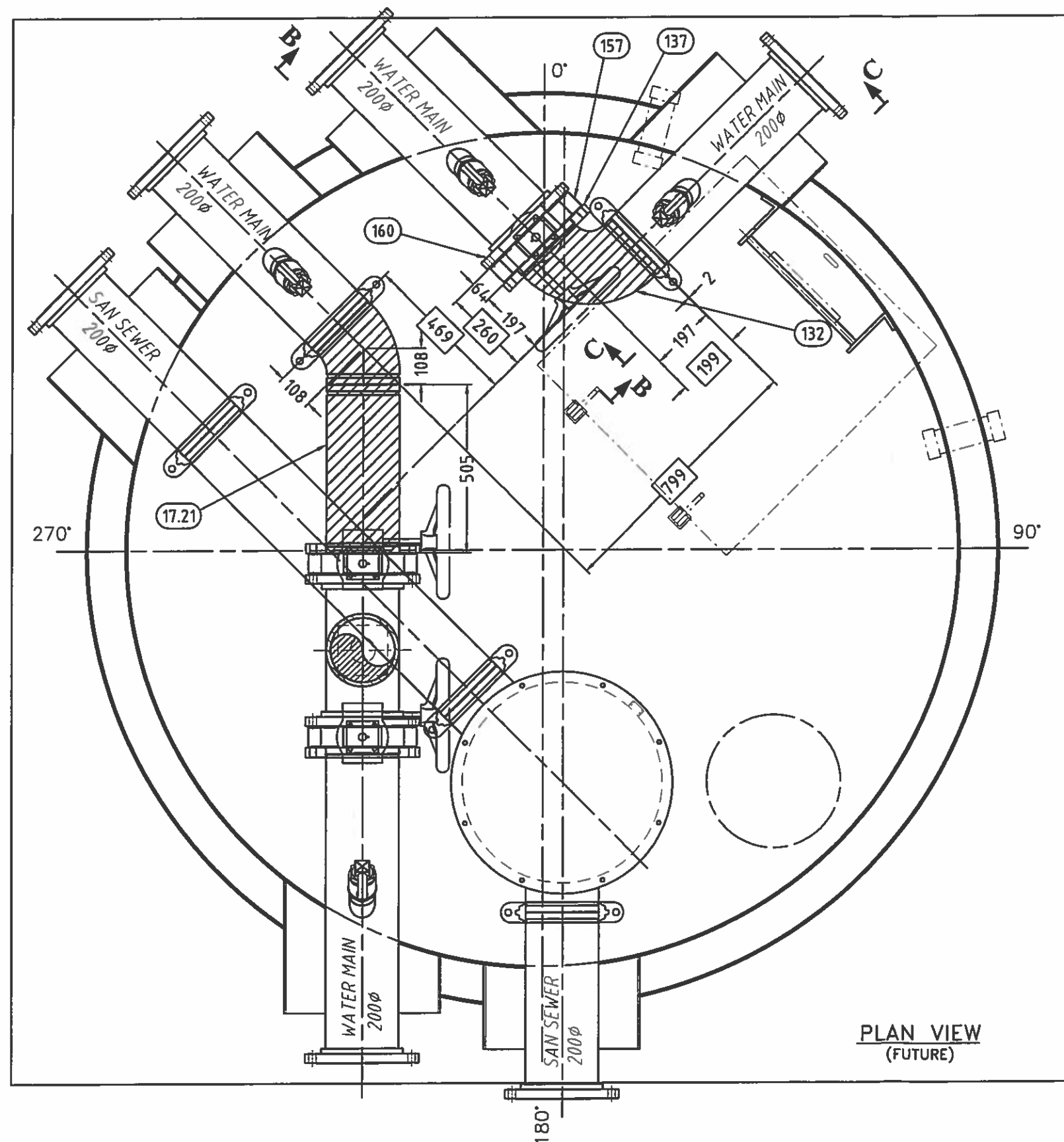



SHELL DETAIL

GENERAL NOTES:

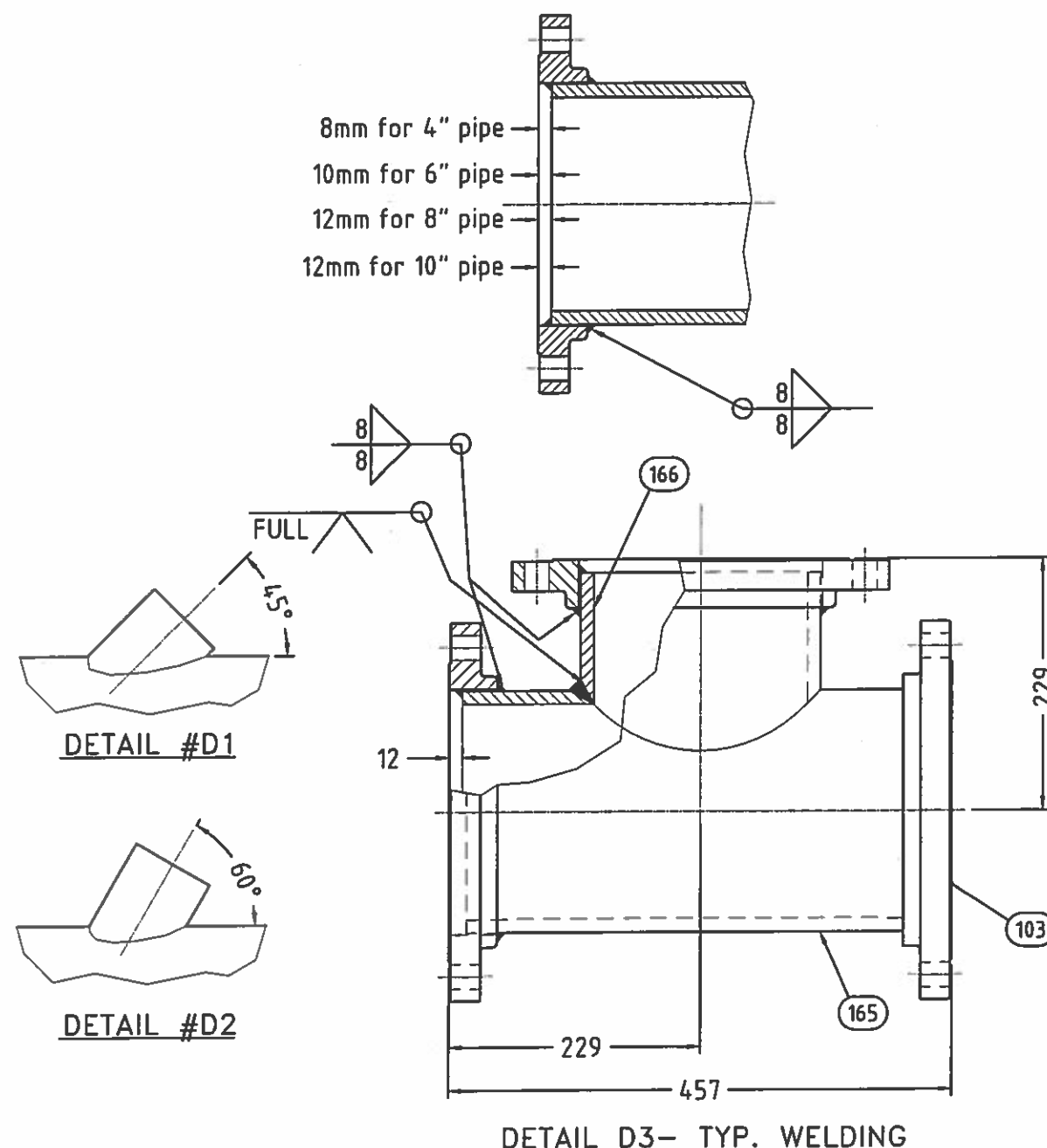
- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL ,CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS

| | | | | |
|--|---------------------|---|--------------------|------|
| A | ISSUED FOR COMMENTS | D1-04-14 | G.L. | |
| REV | DESCRIPTION | DATE | DESS/DRAWN | |
|  <p>Falco Technologies Inc., a company of</p> <p>BERLIE-FALCO</p> | | 1245 rue Industrielle La Prairie (Quebec) JSR 2E4 Tel (450) 444-0566 Fax (450) 444-2227 www.berliefalco.com | | |
| CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICIALE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF FALCO TECHNOLOGIES INC. | | | | |
| CLIENT: CUSTOMER: | | GOVERNEMENT OF NUNAVUT | | |
| TITRE: TITLE: | | ACCESS VAULT AV17 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | |
| DESSIN No.: DRAWING No: | | DESS. PAR: DRAW BY: | | |
| 6400-F-AV17 | | G.L. | | |
| SCALE | QTE: QTY: | DATE: | FEUILLE: SHEET: | REV: |
| X/X" = X" | 1 | 01-04-14 | 1 / 4 | A |



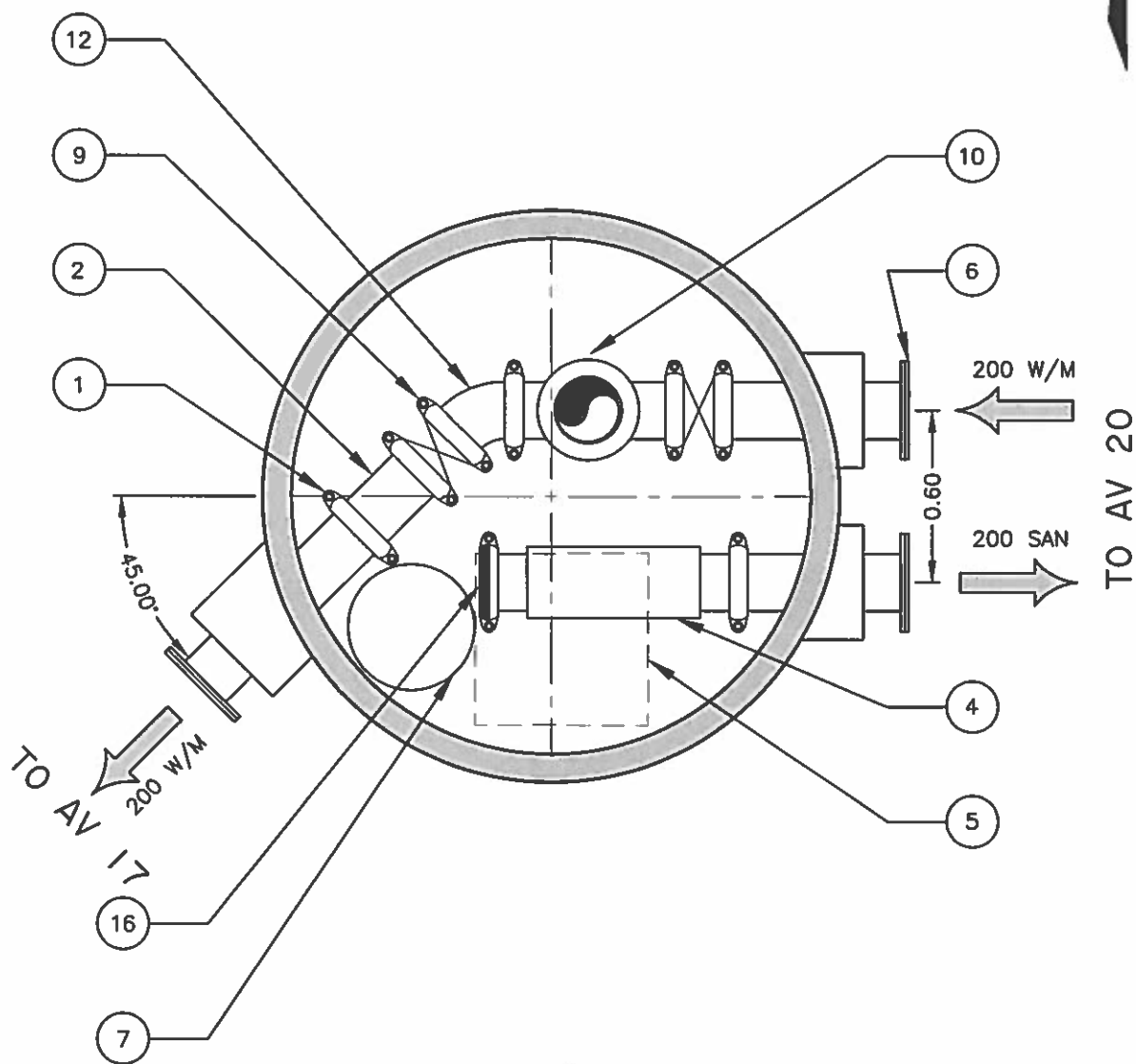
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|--|---------------------|------------------------|-----------------------------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
| <p>  Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel. (450) 444-0566 Fax (450) 444-2227 www.berliefalco.com </p> | | | |
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| <p>CLIENT: GOVERNEMENT OF NUNAVUT</p> | | | |
| <p>TITRE: ACCESS VAULT AV17 TITRE: NEW UTILIDOR DESIGN RESOLUTE BAY, NU</p> | | | |
| <p>DESSIN No.: 6400-F-AV17</p> | | <p>DESS. PAR: G.L.</p> | |
| <p>SCALE: X/X" = X"</p> | <p>QTE: 1</p> | <p>DATE: 01-04-14</p> | <p>FEUILLE: 3 / 4 REV: A</p> |

| Item | Qty | Description | Material | Item | Qty | Description | Material |
|------|-----|---|-------------|-------|-----|--|------------|
| 152 | 2 | 1/8" THK. GASKET FOR 8" FLG. #150 | SOFT RUBBER | 17.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2562mm | A36 |
| 157 | 4 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | | 17.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 3200mm x 3200mm | A36 |
| 160 | 64 | BOLT 3/4-10UNC x 2 1/4" LG + FLAT WASHER | PLATED C.S. | 17.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2548mm | A36 |
| 161 | 16 | 3/4-10 HEX.-BOLT, 3 1/2" LG | PLATED C.S. | 17.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2903mm | A36 |
| 162 | 16 | 3/4-10 HEX. NUT | PLATED C.S. | 17.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 7833mm x 2880mm LG. | A36 |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B | 17.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 8619mm x 3268mm LG. | A36 |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B | 17.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| | | | | 17.8 | 2 | PL. 1/4" THK. x 368 x 1456mm LG. | A36 |
| | | | | 17.9 | 1 | PL. 1/4" THK. x 274 x 1456mm LG. | A36 |
| | | | | 17.10 | 1 | PL. 1/4" THK. x 438 x 1456mm LG. | A36 |
| | | | | 17.11 | 1 | PL. 1/4" THK. x 276 x 1456mm LG. | A36 |
| | | | | 17.12 | 1 | PL. 1/4" THK. x 396 x 1456mm LG. | A36 |
| | | | | 17.13 | 1 | PIPE 8" SCH.80 x 715mm LG. vic groove 1 end | A-53-B |
| | | | | 17.14 | 1 | PIPE 8" SCH.80 x 547mm LG. vic groove 1 end | A-53-B |
| | | | | 17.15 | 1 | PIPE 8" SCH.80 x 935mm LG. vic groove 1 end | A-53-B |
| | | | | 17.16 | 1 | PIPE 8" SCH.80 x 1111mm LG. vic groove 2 end | A-53-B |
| | | | | 17.17 | 1 | PIPE 8" SCH.80 x 596mm LG. vic groove 1 end | A-53-B |
| | | | | 17.18 | 1 | PIPE 8" SCH.80 x 751mm LG. | A-53-B |
| | | | | 17.19 | 1 | PIPE 8" SCH.80 x 1046mm LG. vic groove 2 end | A-53-B |
| | | | | 17.20 | 1 | PIPE 8" SCH.80 x 718mm LG. vic groove 1 end | A-53-B |
| | | | | 17.21 | 1 | PIPE 8" SCH.80 x 505mm LG. vic groove 2 end | A-53-B |
| | | | | 103 | 10 | FLANGE SORF 8" - 150# | SA 105 |
| | | | | 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 |
| | | | | 112 | 6 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| | | | | 127 | 1 | 8" VICTAULIC ELBOW 45°, #11 | GALV C.S. |
| | | | | 132 | 1 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| | | | | 137 | 3 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| | | | | 142 | 1 | BLIND FLANGE 8" - 150# | SA 105 |
| | | | | 147 | 1 | 8" VICTAULIC CAP, #60 | GALV C.S. |



| | | | |
|---|---------------------|--|--------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
| Falco Technologies Inc., a company of BERLIE-FALCO | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | |
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| CLIENT: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV17 | |
| Dessin No: | | DESS. PAR: | |
| DRAWING No: 6400-F-AV17 | | DRAW BY: G.L. | |
| | OTE: | DATE: | FEUILLE: |
| SCALE | QTY: | 01-04-14 | SHEET: 4 / 4 |
| X/X" = X" | 1 | | A |

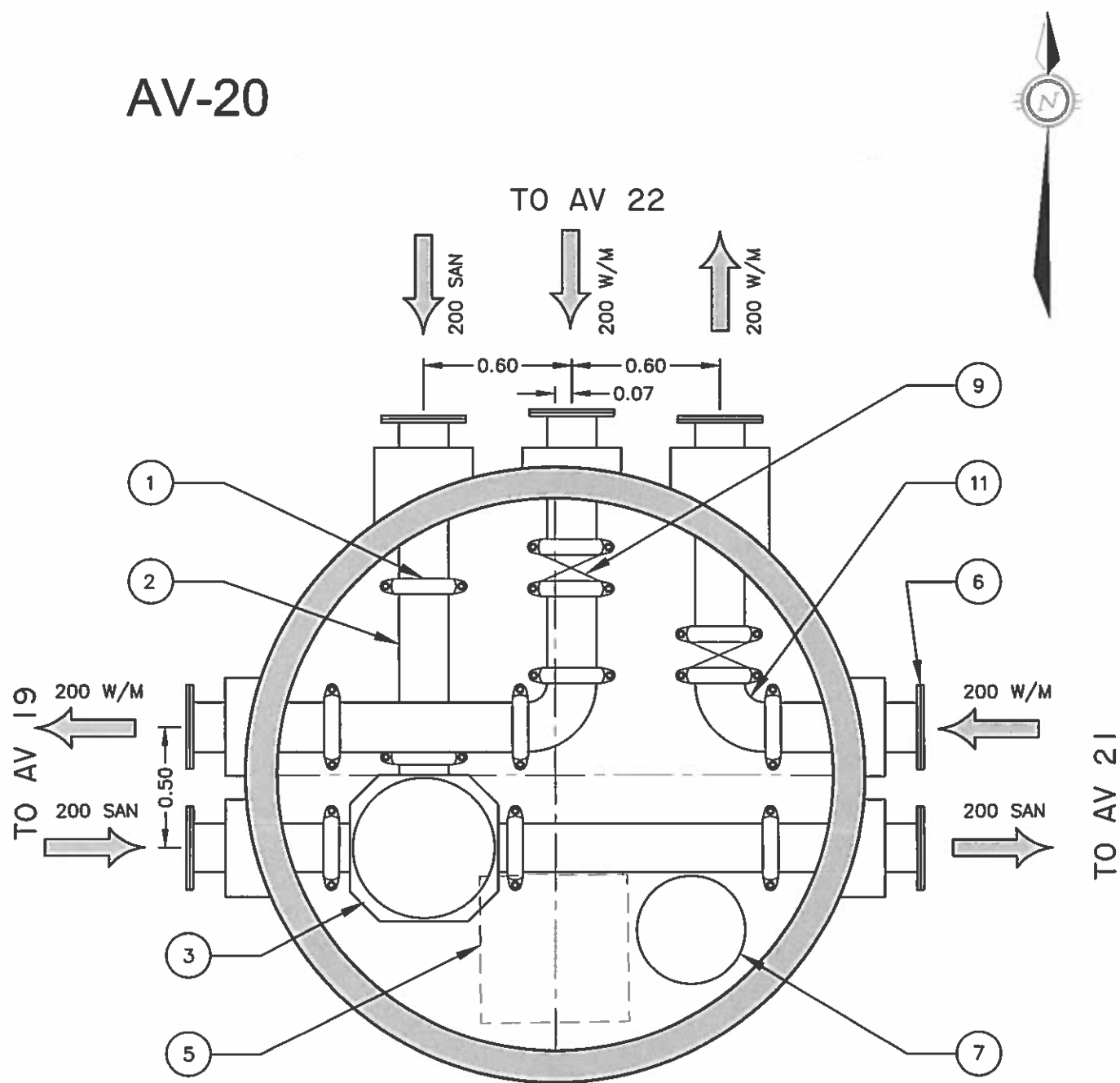
AV-19



NOTE:
AV-19 TO BE FITTED WITH 1" WATER BLEED FROM THE WATER RETURN LINE TO THE SEWER MAIN. COMPLETE WITH BACKFLOW PREVENTER. (SEE DETAIL NO. 4 ON DWG. C-328)

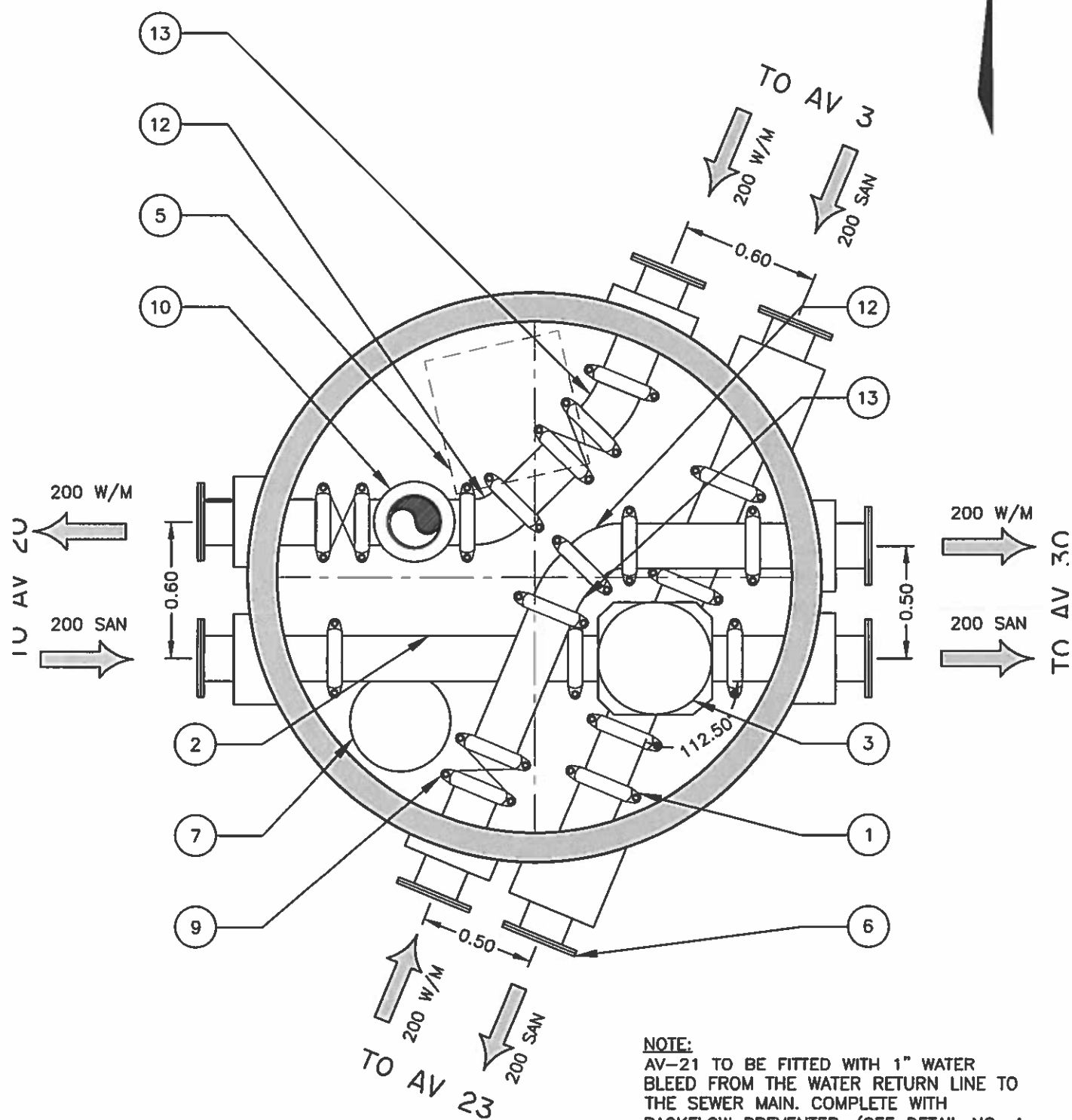
| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|---|-------|---|---------------|
| | | | | N | S | E | W | |
| AV-19 | 1.83m | 25.10m | 3.20m | | | 22.40 | | 23.15 |

AV-20



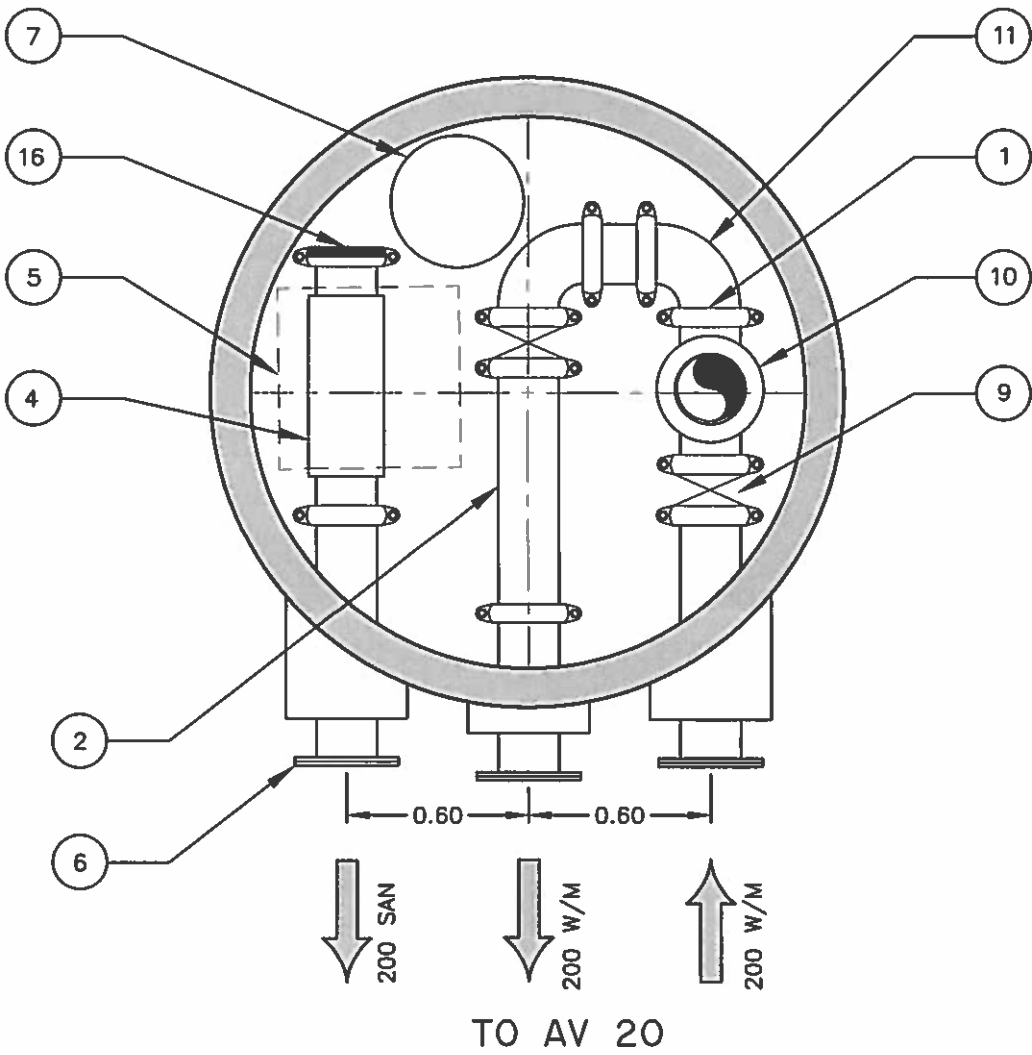
| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|---|-------|-------|---------------|
| | | | | N | S | E | W | |
| AV-20 | 225m | 23.49 | 2.90 | 21.09 | | 21.09 | 21.09 | 21.84 |

AV-21



| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|-------|-------|-------|---------------|
| | | | | N | S | E | W | |
| AV-21 | 225m | 22.85m | 3.36m | 19.99 | 19.99 | 19.99 | 19.99 | 20.74 |

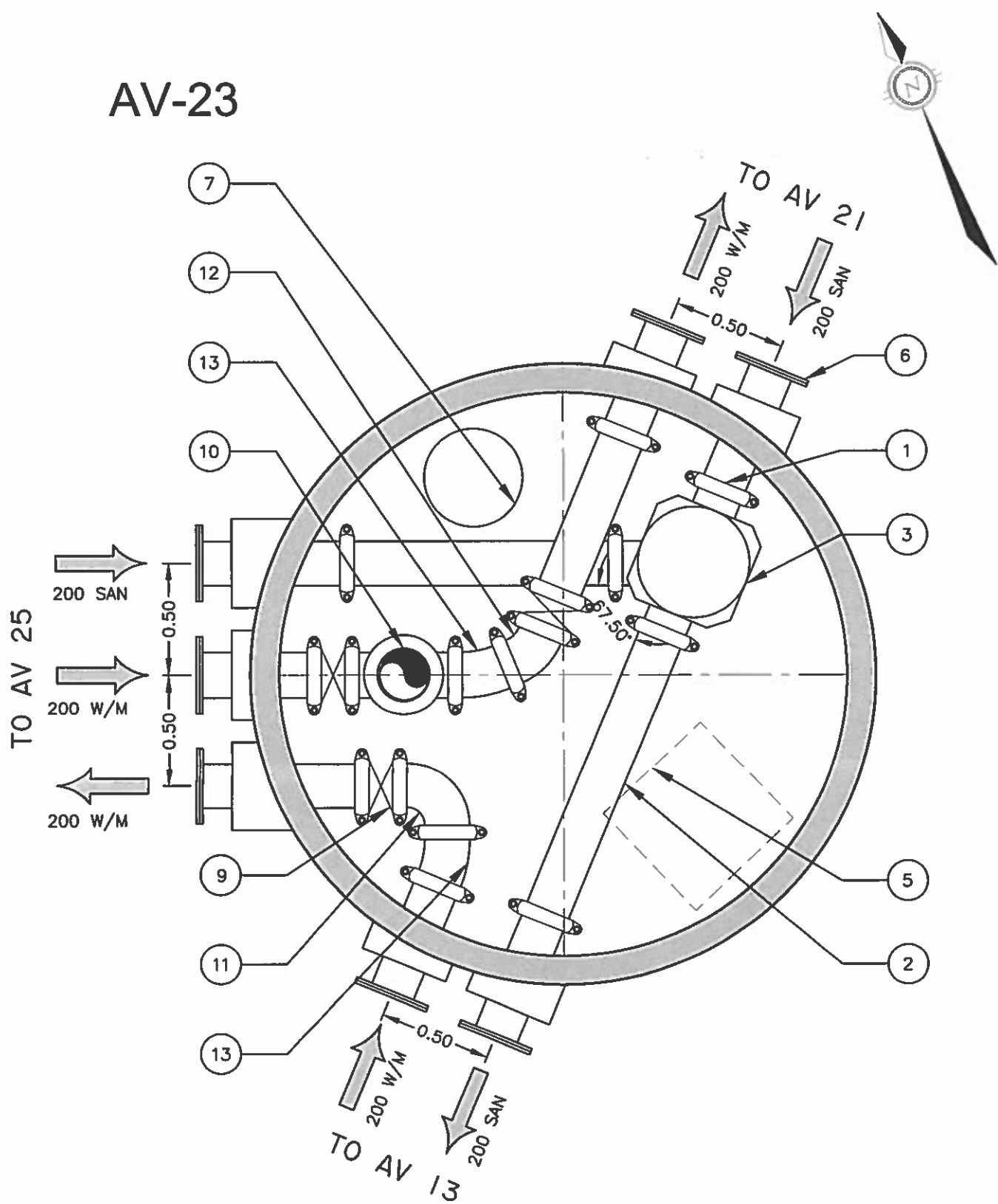
AV-22



NOTE:
AV-22 TO BE FITTED WITH 1" WATER BLEED FROM THE WATER RETURN LINE TO THE SEWER MAIN. COMPLETE WITH BACKFLOW PREVENTER. (SEE DETAIL NO. 4 ON DWG. C-328)

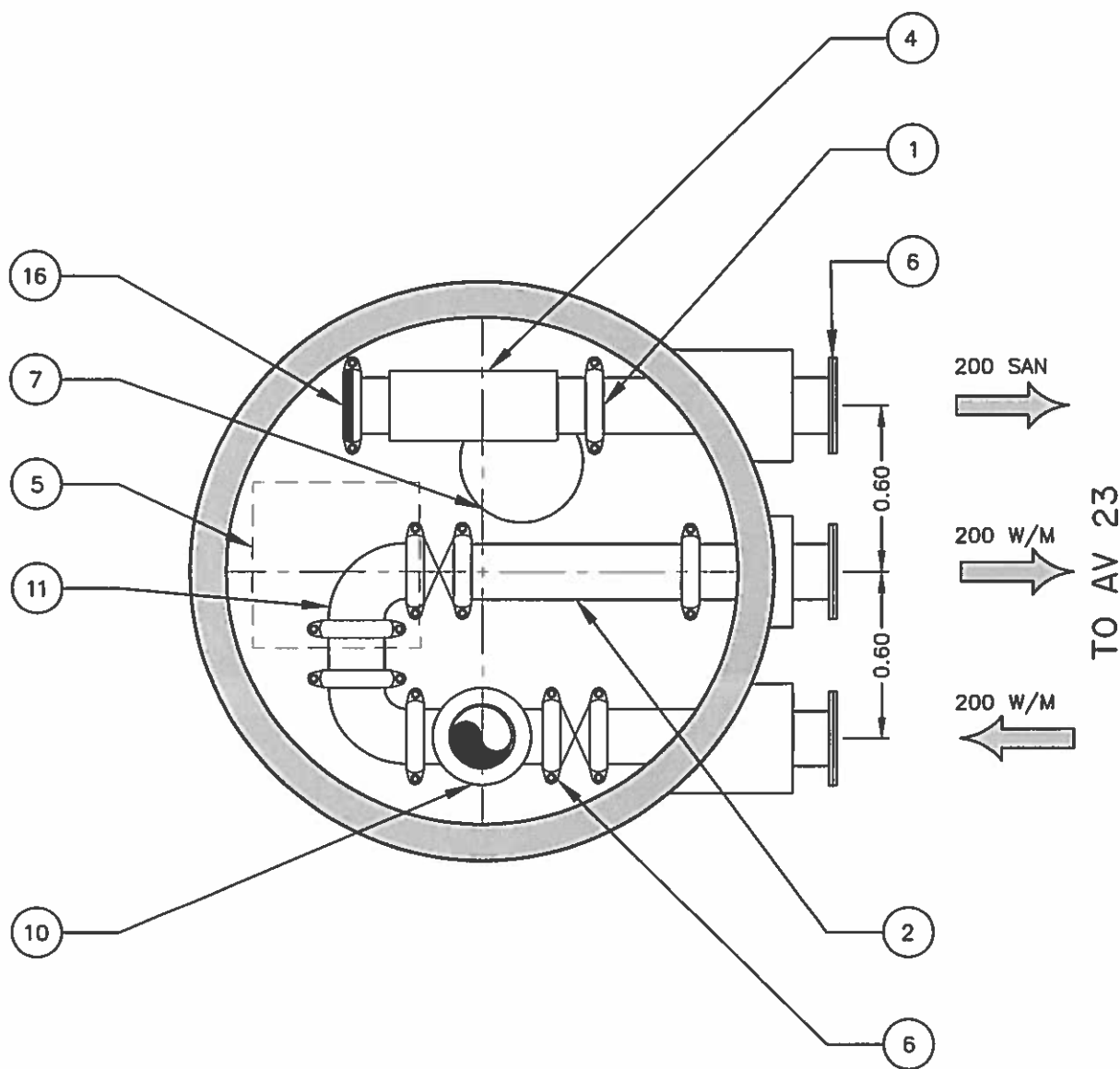
| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|-------|---|---|---------------|
| | | | | N | S | E | W | |
| AV-22 | 183m | 30.96m | 3.32m | | 28.14 | | | 28.89 |

AV-23



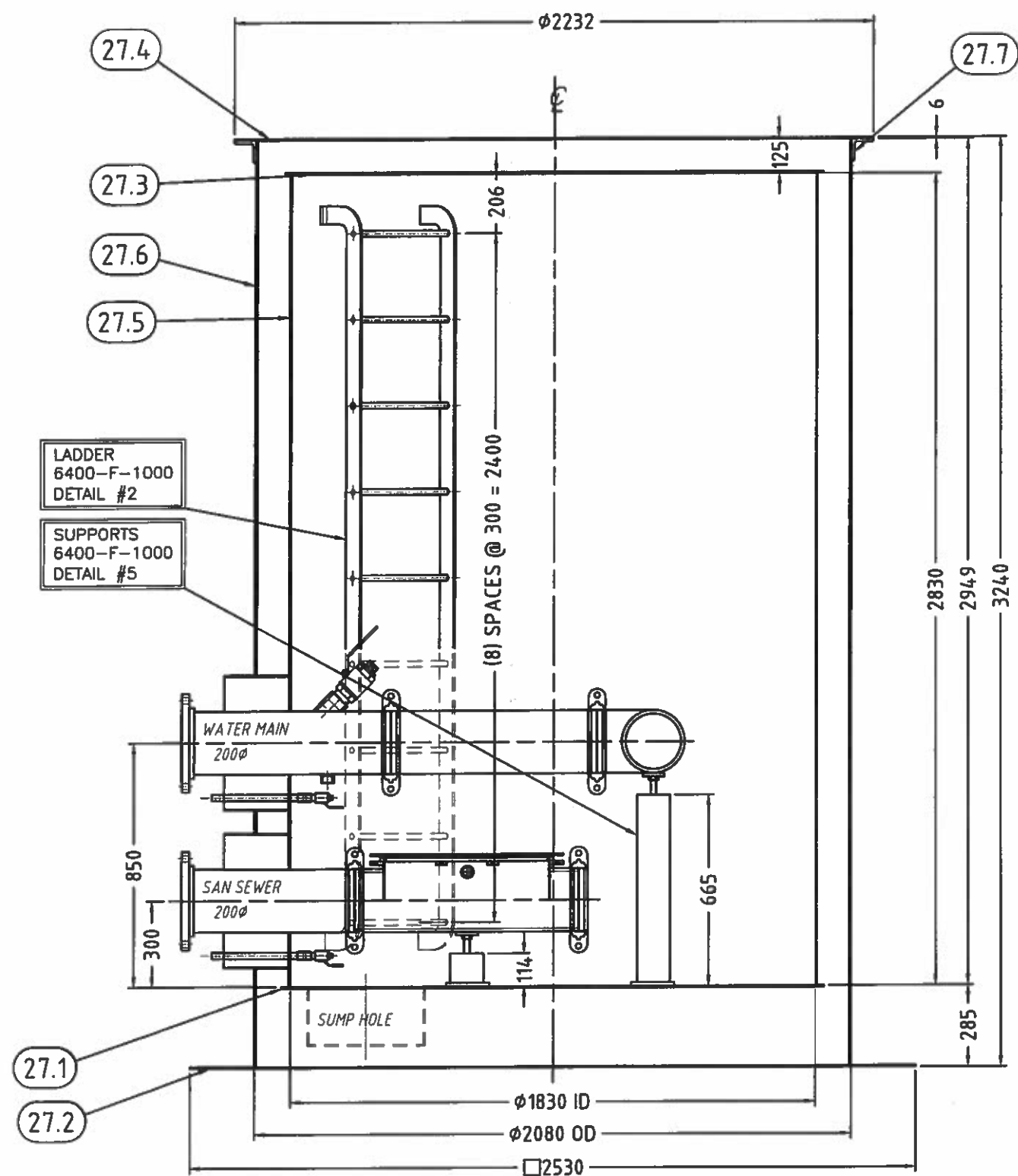
| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|-------|---|-------|---------------|
| | | | | N | S | E | W | |
| AV-23 | 2.53m | 20.1m | 3.71m | 16.90 | 16.90 | | 16.90 | 17.65 |

AV-25

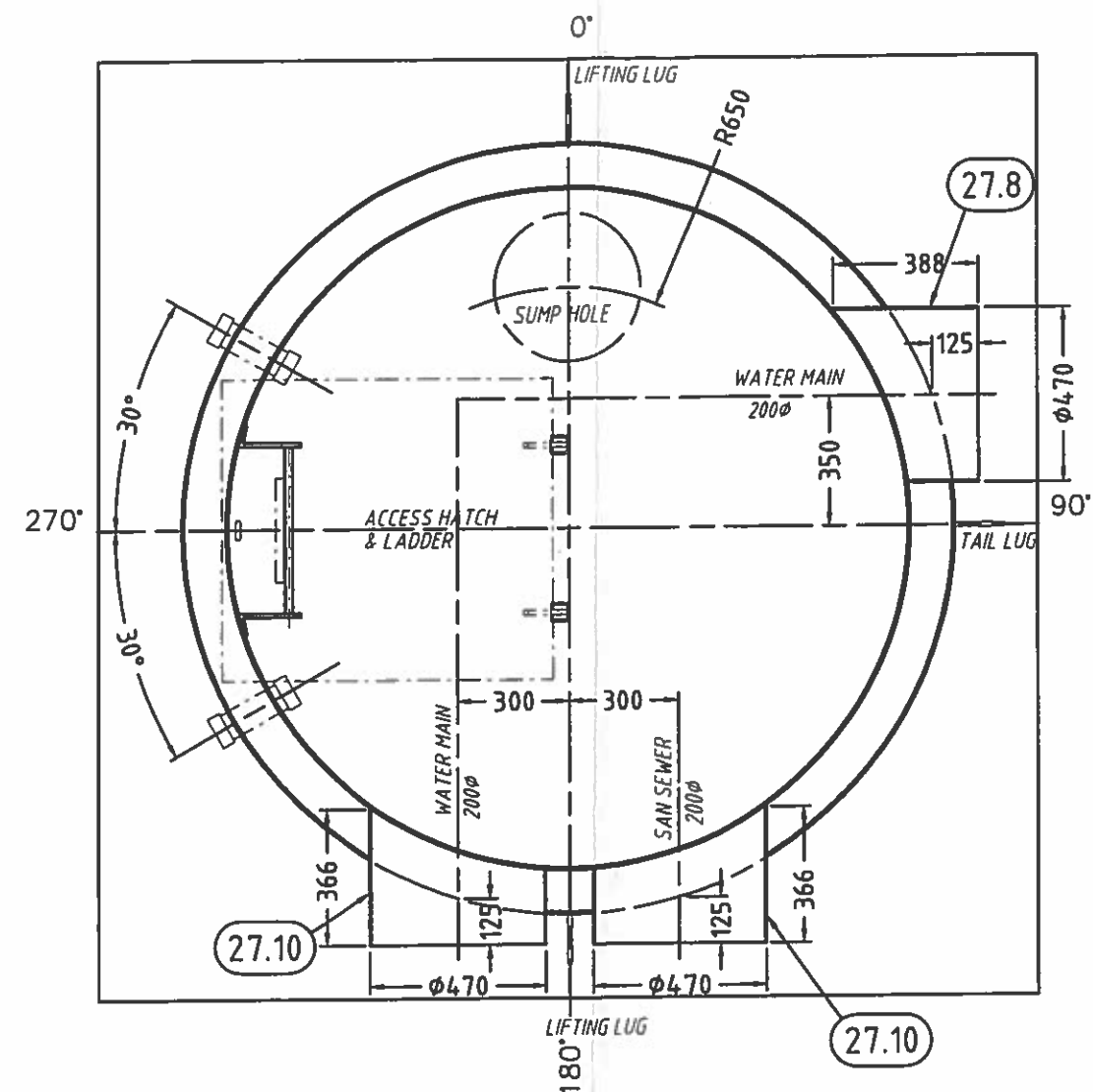


NOTE:
AV-25 TO BE FITTED WITH 1" WATER BLEED FROM THE WATER RETURN LINE TO THE SEWER MAIN. COMPLETE WITH BACKFLOW PREVENTER. (SEE DETAIL NO. 4 ON DWG. C-328)

| AV No. | INSIDE DIAMETER | AV TOP | HEIGHT | SANITARY INVERT | | | | WATERMAIN TOP |
|--------|-----------------|--------|--------|-----------------|---|-------|---|---------------|
| | | | | N | S | E | W | |
| AV-25 | 183m | 21.58m | 3.28m | | | 18.80 | | 19.55 |



SECTION "A-A"

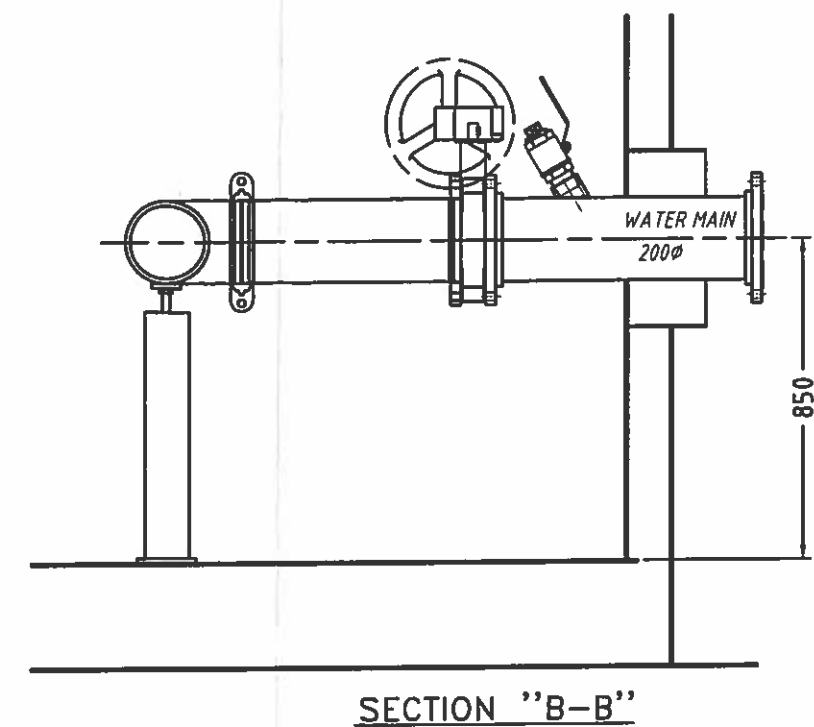
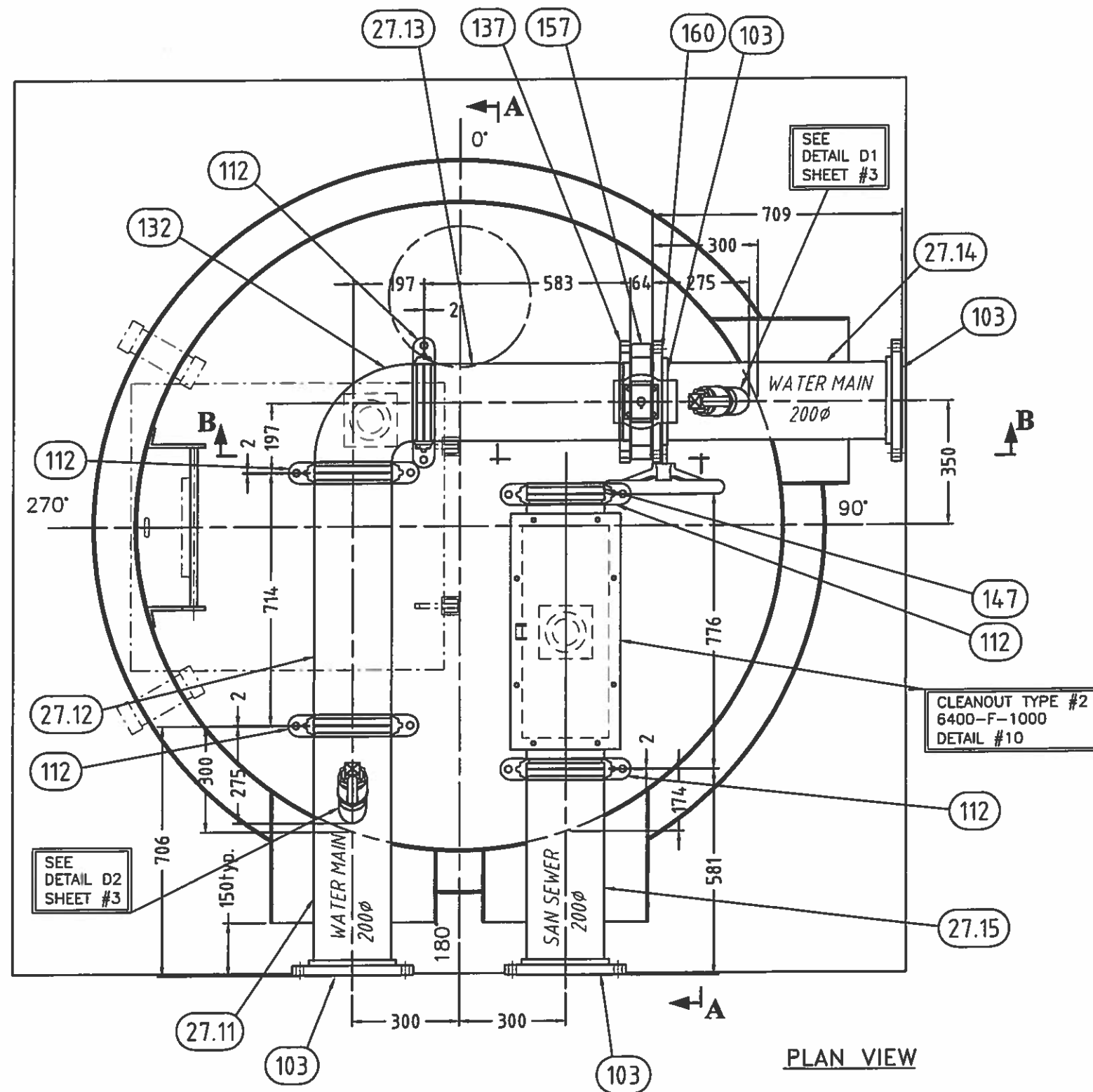



SHELL DETAIL

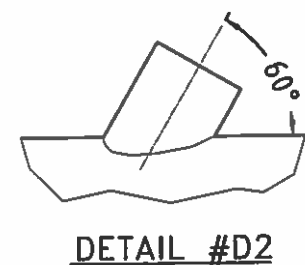
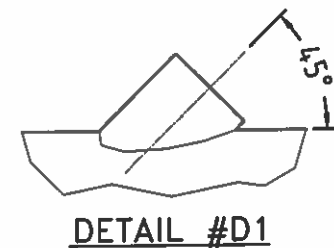
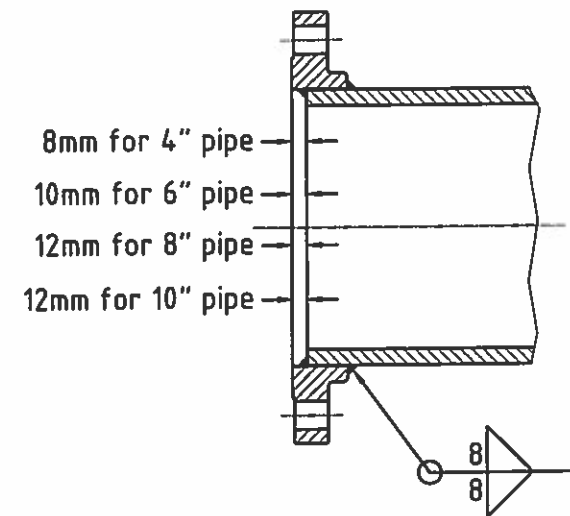
GENERAL NOTES:

- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS


| | | | |
|---|---------------------|-----------------|----------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
| <p>Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel (450) 444-0566 Fax (450) 444-2227 www.berliefalco.com</p> <p>CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC.</p> | | | |
| CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AV27 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No.: 6400-F-AV27 | | DESS. PAR: G.L. | |
| DRAWING No.: 6400-F-AV27 | | DRAW BY: | |
| SCALE: X/X" = X" | QTE: 1 | DATE: 01-04-14 | FEUILLE: 1 / 3 |
| | | | REV: A |

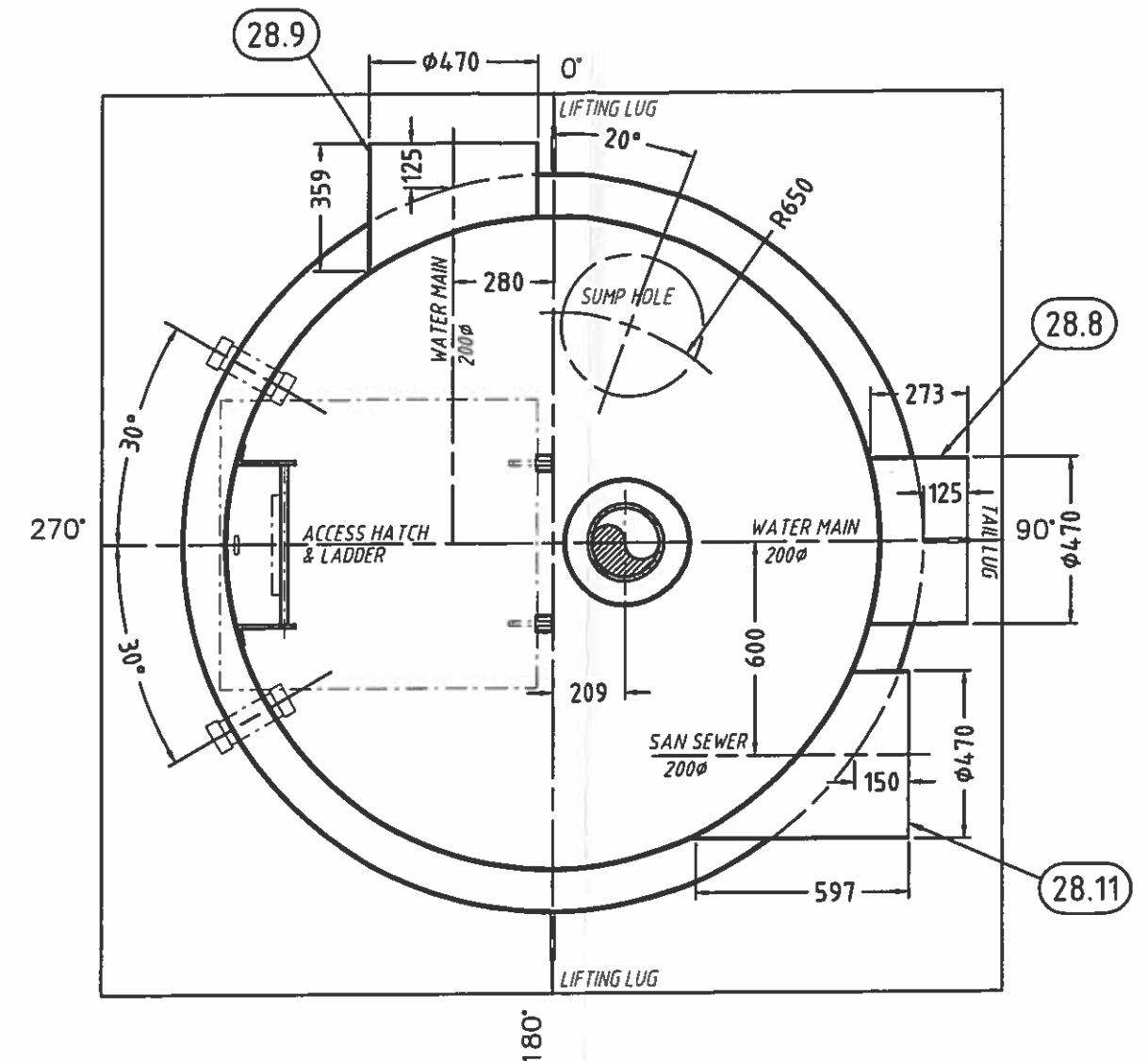
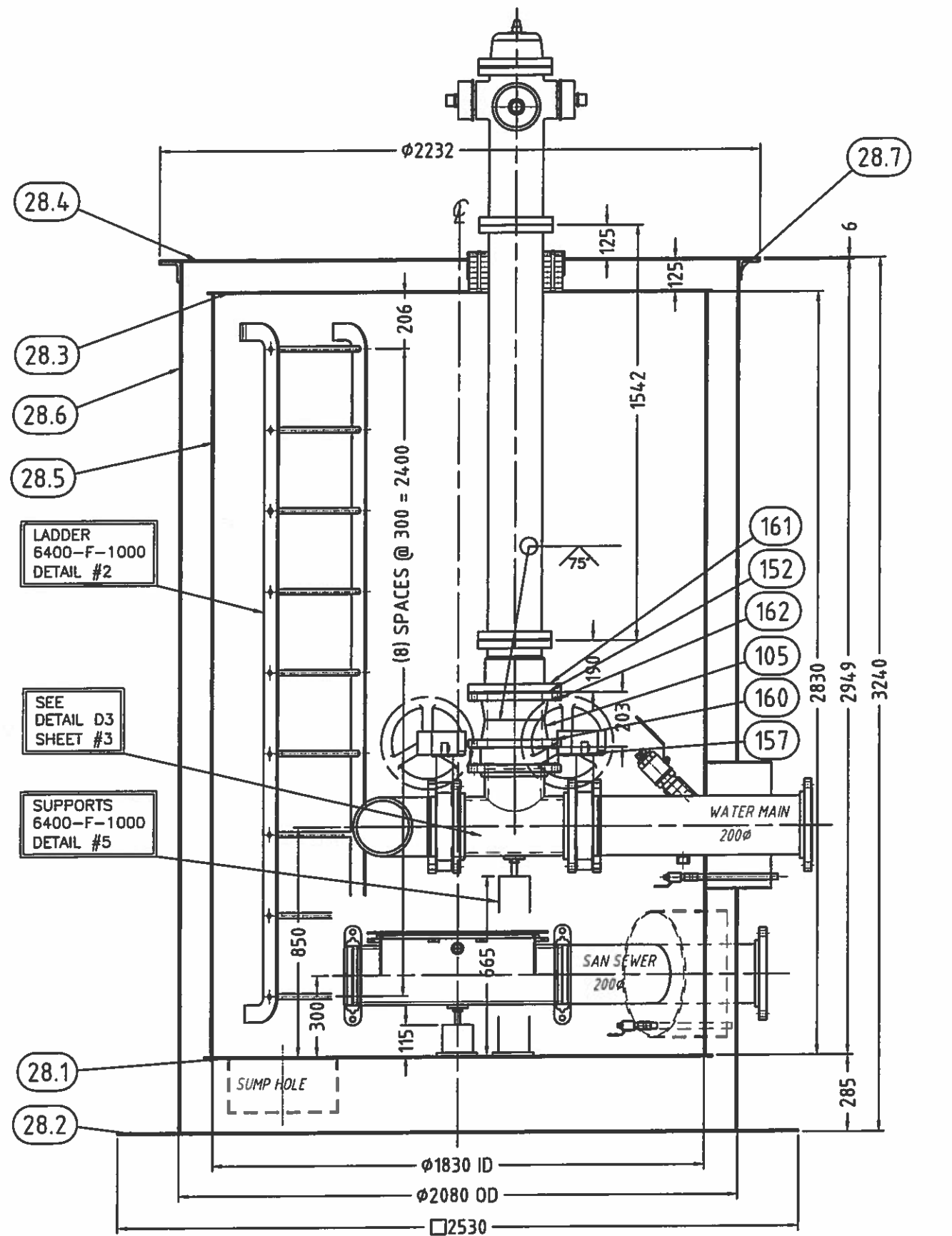


| | | | |
|---|---------------------|--|--------------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
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| CLIENT: CUSTOMER: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: TITLE: | | ACCESS VAULT AV27 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | |
| DESSIN No. DRAWING No: | | DESS. PAR DRAWBY: | |
| 6400-F-AV27 | | G.L. | |
| SCALE: | QTE: QTY: | DATE: | FEUILLE: SHEET: |
| X/X" = X" | 1 | 01-04-14 | 2 / 3 |
| | | | A |




| Item | Qty | Description | Material |
|-------|-----|---|-------------|
| 27.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø1892mm | A36 |
| 27.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2530mm x 2530mm | A36 |
| 27.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø1878mm | A36 |
| 27.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2232mm | A36 |
| 27.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 5767mm x 2830mm LG. | A36 |
| 27.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 6515mm x 3218mm LG. | A36 |
| 27.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 27.8 | 1 | PL. 1/4" THK. x 388 x 1456mm LG. | A36 |
| 27.10 | 2 | PL. 1/4" THK. x 366 x 1456mm LG. | A36 |
| 27.11 | 1 | PIPE 8" SCH.80 x 694mm LG. vic groove 1 end | A-53-B |
| 27.12 | 1 | PIPE 8" SCH.80 x 714mm LG. vic groove 2 end | A-53-B |
| 27.13 | 1 | PIPE 8" SCH.80 x 583mm LG. vic groove 2 end | A-53-B |
| 27.14 | 1 | PIPE 8" SCH.80 x 685mm LG. | A-53-B |
| 27.15 | 1 | PIPE 8" SCH.80 x 569mm LG. vic groove 1 end | A-53-B |
| 103 | 4 | FLANGE SORF 8" - 150# | SA 105 |
| 112 | 5 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 132 | 1 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| 137 | 1 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 147 | 1 | 8" VICTAULIC CAP, #60 | GALV C.S. |
| 157 | 1 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 16 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |

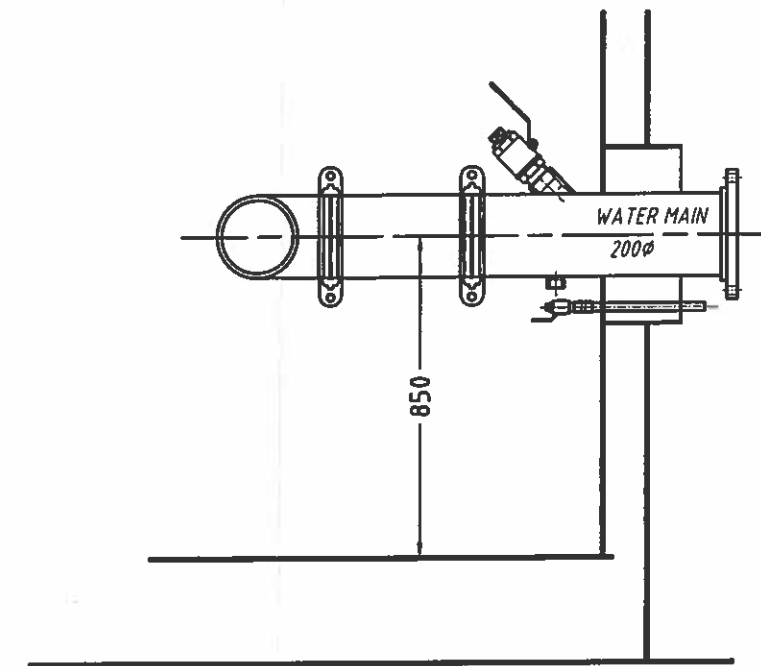
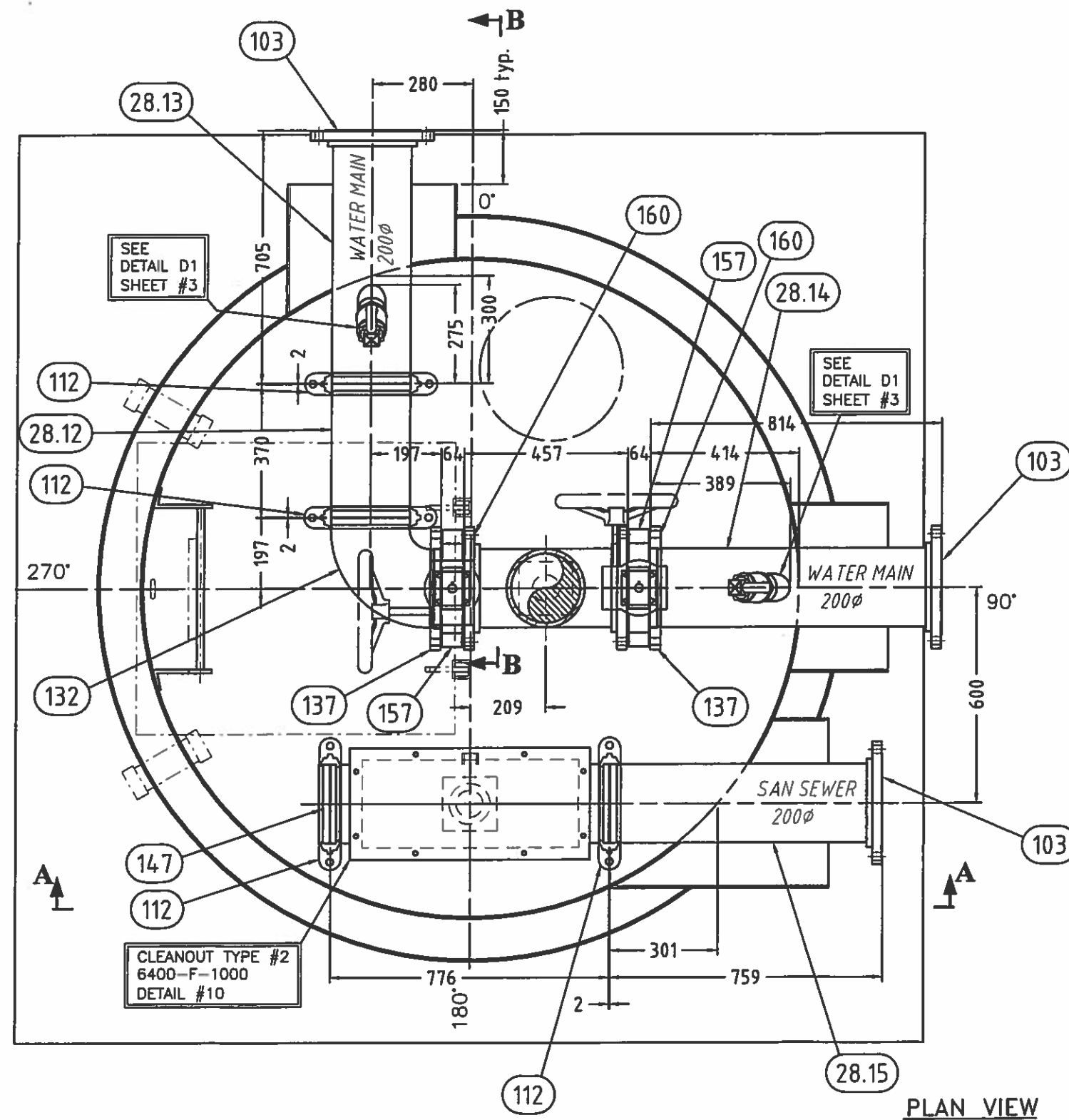
| | | | |
|---|---------------------|--|--------------------------|
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| REV. | DESCRIPTION | DATE | DESS/DRAWN |
|  Falco Technologies Inc., a company of BERLIE-FALCO | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | |
| CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICIALE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC. | | | |
| CLIENT: | | | |
| CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: | | | |
| TITLE: ACCESS VAULT AV27 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No. DRAWING No: | | DESS. PAR: DRAW BY: | |
| 6400-F-AV27 | | G.L. | |
| SCALE: X/X" = X" | QTE: QTY: 1 | DATE: 01-04-14 | FEUILLE: SHEET: 3 / 3 |
| | | | REV: A |



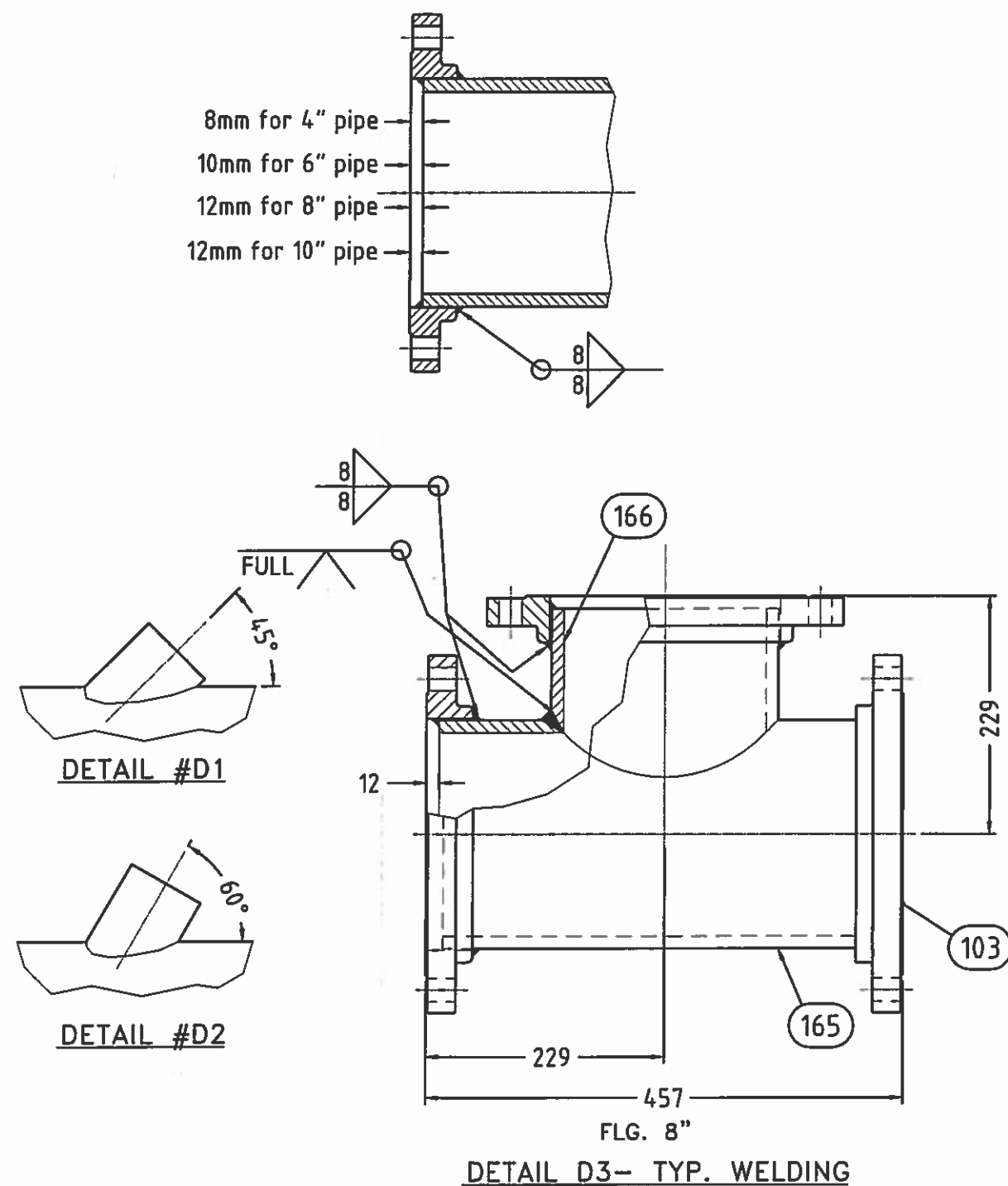
GENERAL NOTES:

- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS


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| | | | |
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| CLIENT: CUSTOMER: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: TITLE: | | ACCESS VAULT AV28 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | |
| DESSIN No.: DRAWING No: | | DESS. PAR: DRAW BY: | |
| 6400-F-AV28 | | G.L. | |
| SCALE: $X/X'' = X''$ | QTE: QTY: | DATE: | FEUILLE: SHEET: |
| 1 | 01-04-14 | 1 / 3 | A |

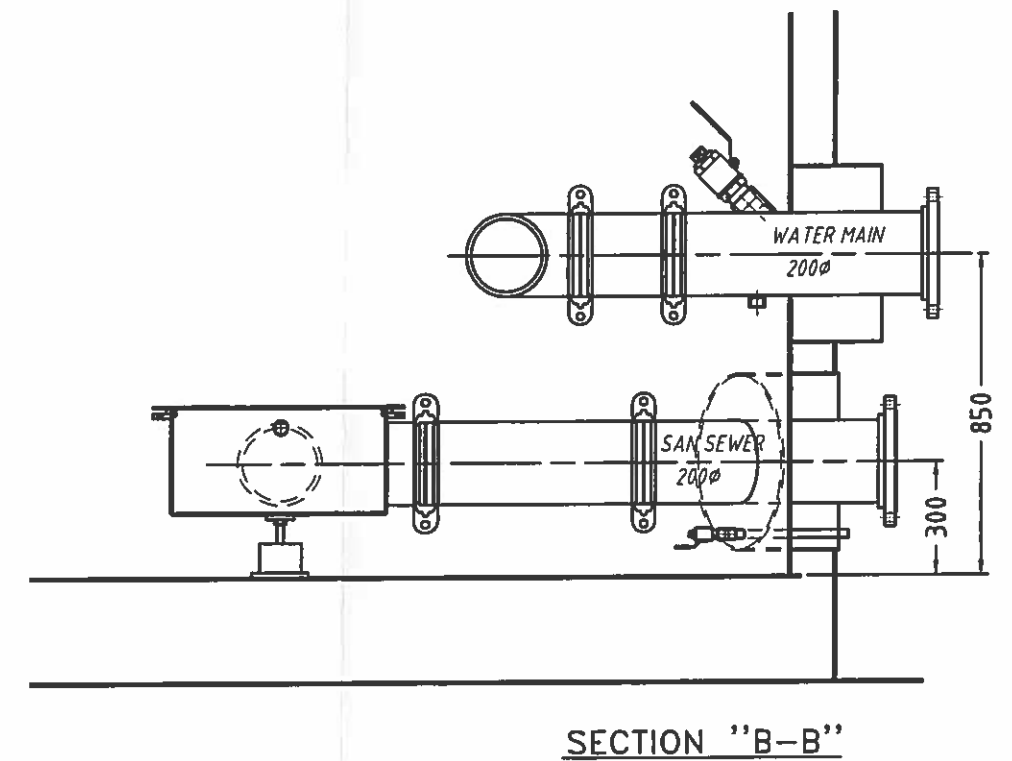
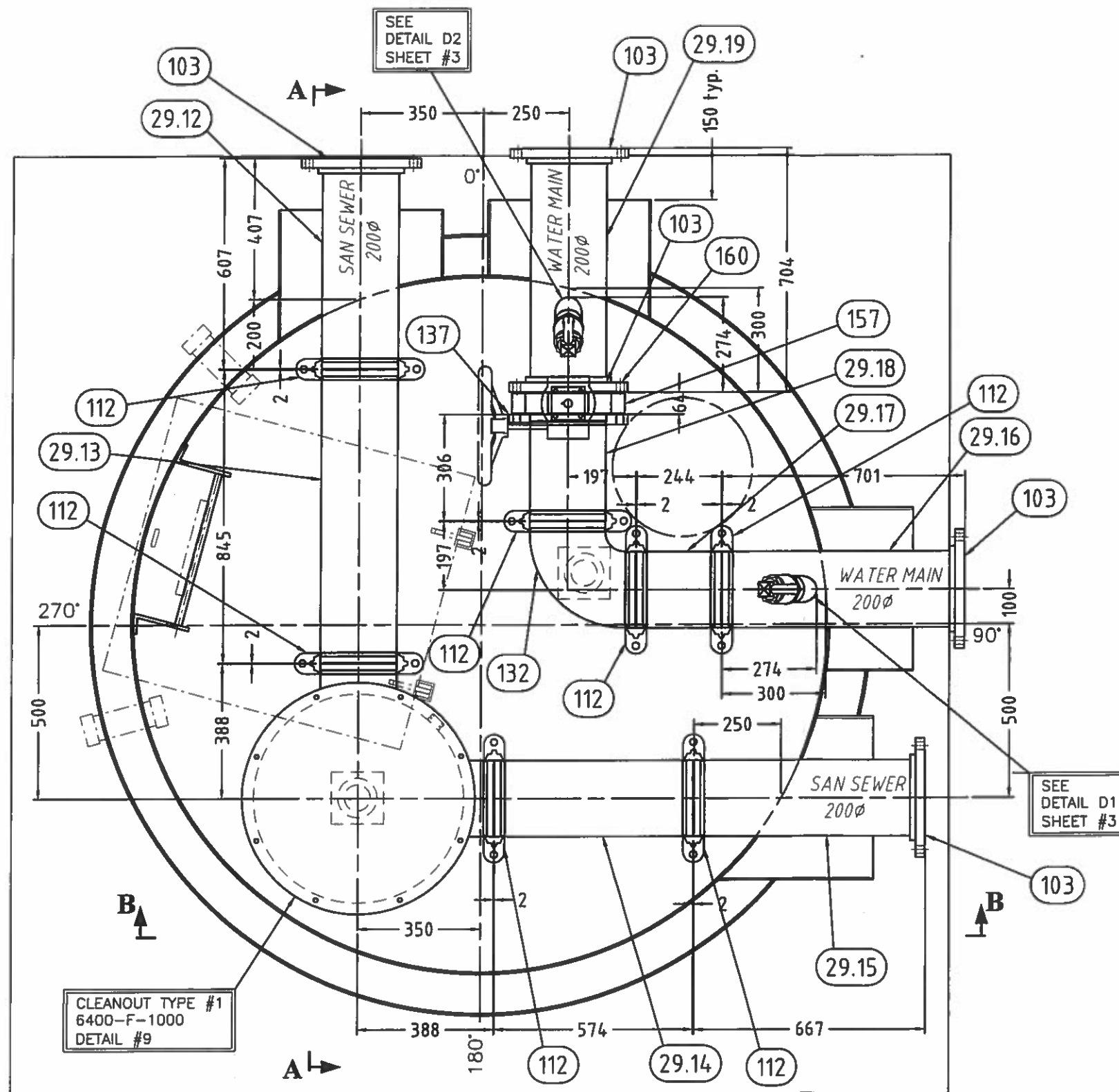



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|---|---------------------|-------------------------------|-----------------------|
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| <p>CUSTOMER: GOVERNEMENT OF NUNAVUT</p> | | | |
| <p>TITLE: ACCESS VAULT AV28 NEW UTILIDOR DESIGN RESOLUTE BAY, NU</p> | | | |
| <p>DESSIN No.: 6400-F-AV28</p> | | <p>DESS. PAR: G.L.</p> | |
| SCALE: X/X" = X" | QTE: 1 | DATE: 01-04-14 | FEUILLE: 2 / 3 |
| | | | REV: A |

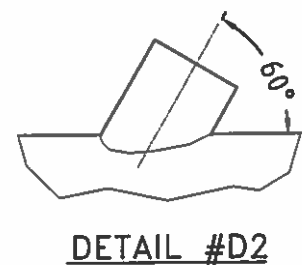
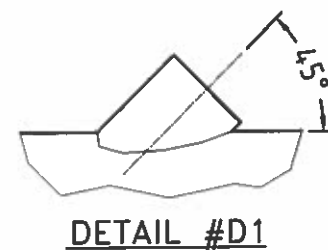
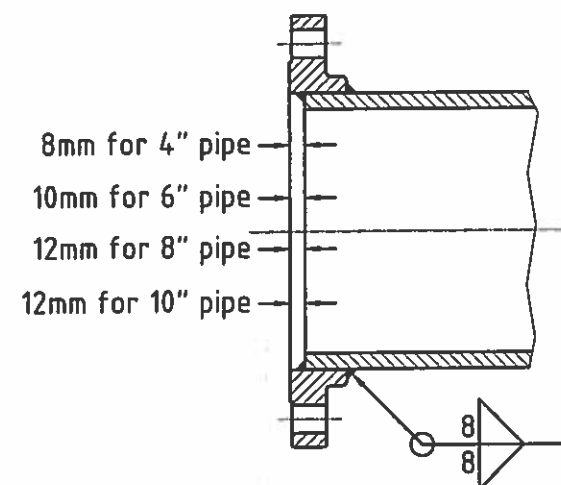


| Item | Qty | Description | Material |
|-------|-----|---|-------------|
| 28.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø1892mm | A36 |
| 28.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2530mm x 2530mm | A36 |
| 28.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø1878mm | A36 |
| 28.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2232mm | A36 |
| 28.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 5767mm x 2830mm LG. | A36 |
| 28.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 6515mm x 3218mm LG. | A36 |
| 28.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 28.8 | 1 | PL. 1/4" THK. x 273 x 1456mm LG. | A36 |
| 28.9 | 1 | PL. 1/4" THK. x 359 x 1456mm LG. | A36 |
| 28.11 | 1 | PL. 1/4" THK. x 597 x 1456mm LG. | A36 |
| 28.12 | 1 | PIPE 8" SCH.80 x 370mm LG. vic groove 2 end | A-53-B |
| 28.13 | 1 | PIPE 8" SCH.80 x 693mm LG. vic groove 1 end | A-53-B |
| 28.14 | 1 | PIPE 8" SCH.80 x 802mm LG. vic groove 1 end | A-53-B |
| 28.15 | 1 | PIPE 8" SCH.80 x 759mm LG. vic groove 1 end | A-53-B |
| 103 | 6 | FLANGE SORF 8" - 150# | SA 105 |
| 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 |
| 112 | 4 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 132 | 1 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| 137 | 2 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 147 | 1 | 8" VICTAULIC CAP , #60 | GALV C.S. |
| 152 | 1 | 1/8" THK. GASKET FOR 8"FLG. #150 | SOFT RUBBER |
| 157 | 3 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 48 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |
| 161 | 8 | 3/4-10 HEX.-BOLT, 3 1/2"LG | PLATED C.S. |
| 162 | 8 | 3/4-10 HEX. NUT | PLATED C.S. |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B |


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| CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AV28 TITLE: NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | | |
| DESSIN No.: 6400-F-AV28 | | DESS PAR: G.L. | |
| DRAWING No.: | | DRAW BY: | |
| SCALE: X/X" = X" | QTE: 1 | DATE: 01-04-14 | FEUILLE: 3 / 3 |
| | | REV: A | |

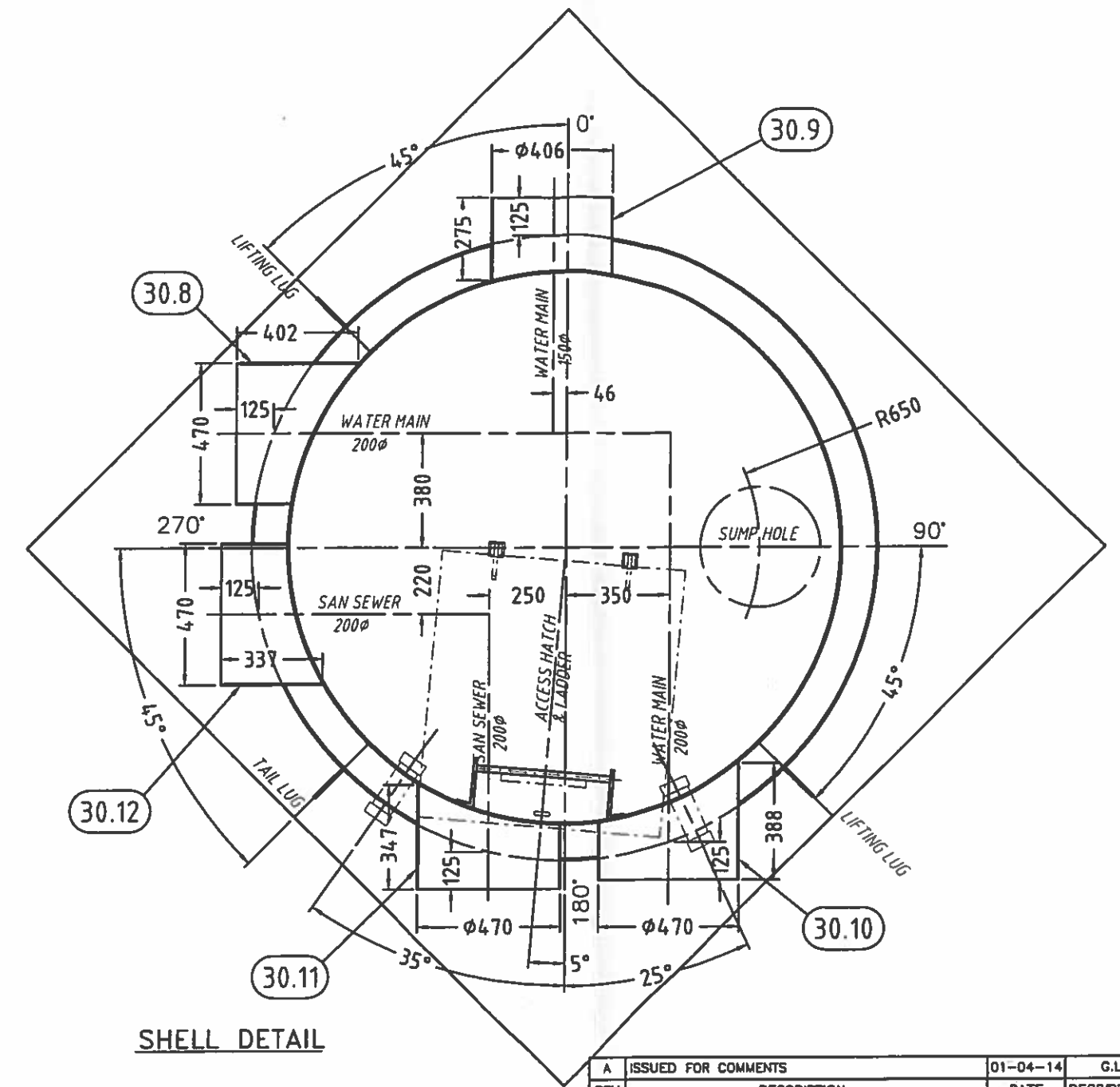
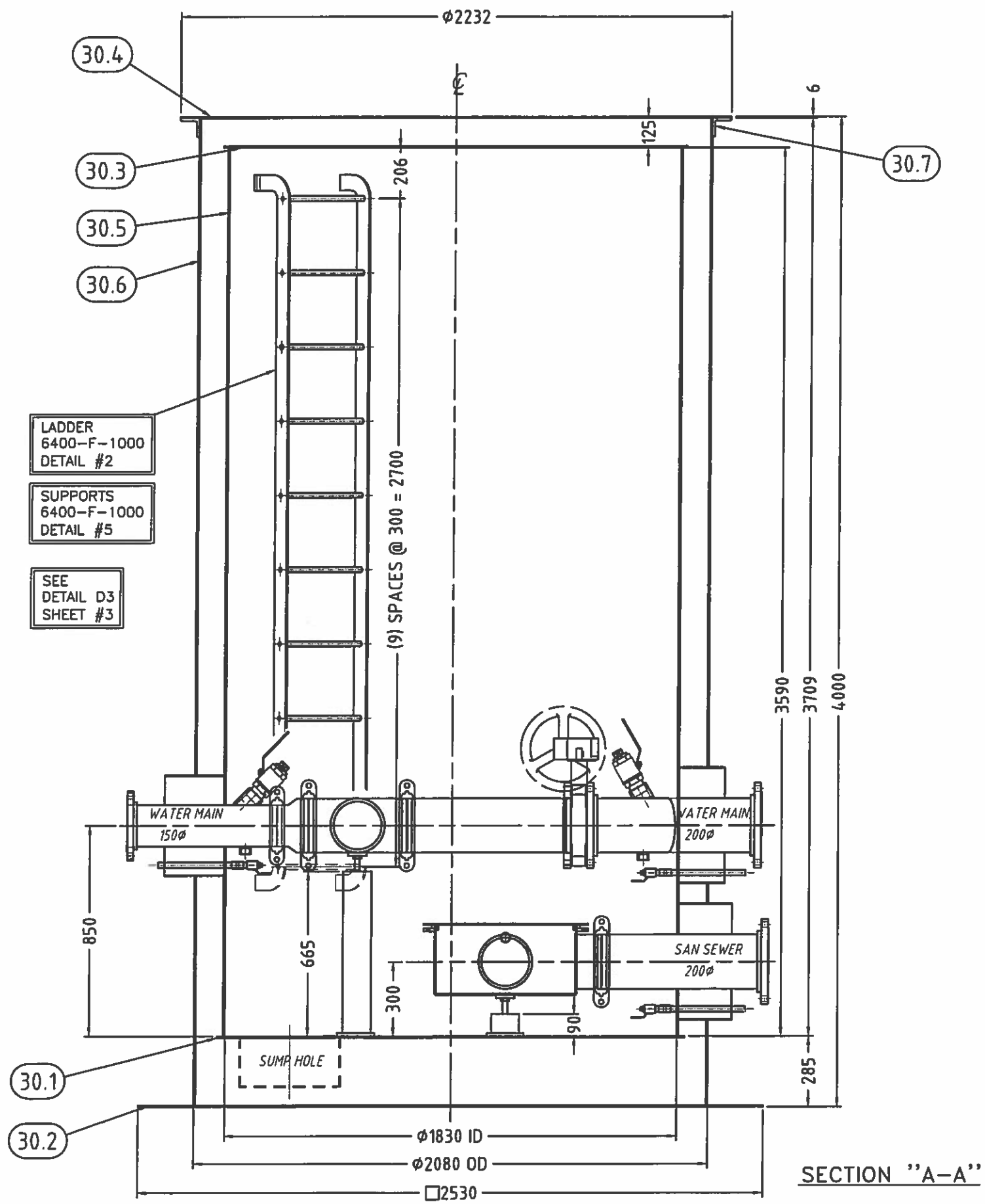


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| CLIENT: CUSTOMER: | | GOVERNEMENT OF NUNAVUT | | |
| TITRE: TITLE: | | ACCESS VAULT AV29 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | |
| DESSIN No.: DRAWING No: | | DESS. PAR: DRAW BY: | | |
| 6400-F-AV29 | | G.L. | | |
| SCALE: | QTE: QTY: | DATE: | FEUILLE: SHEET: | REV: |
| X"X" = X" | 1 | 01-04-14 | 2 / 3 | A |



| Item | Qty | Description | Material |
|-------|-----|---|-------------|
| 29.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2062mm | A36 |
| 29.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2700mm x 2700mm | A36 |
| 29.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2048mm | A36 |
| 29.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2403mm | A36 |
| 29.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 6303mm x 2630mm LG. | A36 |
| 29.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 7048mm x 3018mm LG. | A36 |
| 29.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 29.8 | 1 | PL. 1/4" THK. x 371 x 1456mm LG. | A36 |
| 29.9 | 1 | PL. 1/4" THK. x 337 x 1456mm LG. | A36 |
| 29.10 | 1 | PL. 1/4" THK. x 294 x 1456mm LG. | A36 |
| 29.11 | 1 | PL. 1/4" THK. x 439 x 1456mm LG. | A36 |
| 29.12 | 1 | PIPE 8" SCH.80 x 595mm LG. vic groove 1 end | A-53-B |
| 29.13 | 1 | PIPE 8" SCH.80 x 845mm LG. vic groove 2 end | A-53-B |
| 29.14 | 1 | PIPE 8" SCH.80 x 574mm LG. vic groove 2 end | A-53-B |
| 29.15 | 1 | PIPE 8" SCH.80 x 655mm LG. vic groove 1 end | A-53-B |
| 29.16 | 1 | PIPE 8" SCH.80 x 689mm LG. vic groove 1 end | A-53-B |
| 29.17 | 1 | PIPE 8" SCH.80 x 244mm LG. vic groove 2 end | A-53-B |
| 29.18 | 1 | PIPE 8" SCH.80 x 306mm LG. vic groove 2 end | A-53-B |
| 29.19 | 1 | PIPE 8" SCH.80 x 680mm LG. | A-53-B |
| 103 | 5 | FLANGE SORF 8" - 150# | SA 105 |
| 112 | 7 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 132 | 1 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| 137 | 1 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 157 | 1 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 16 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |

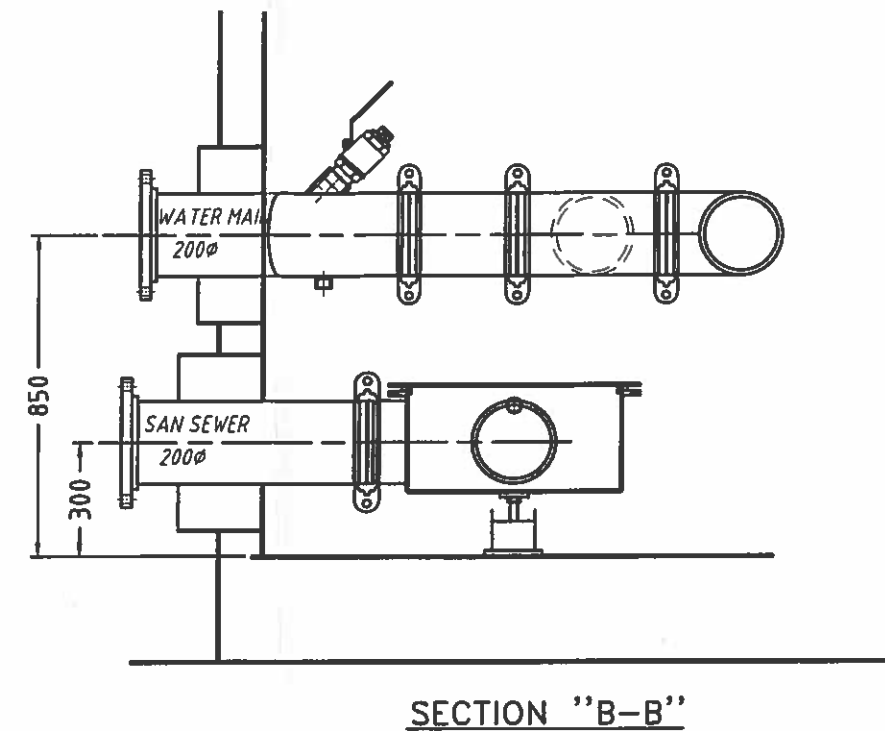
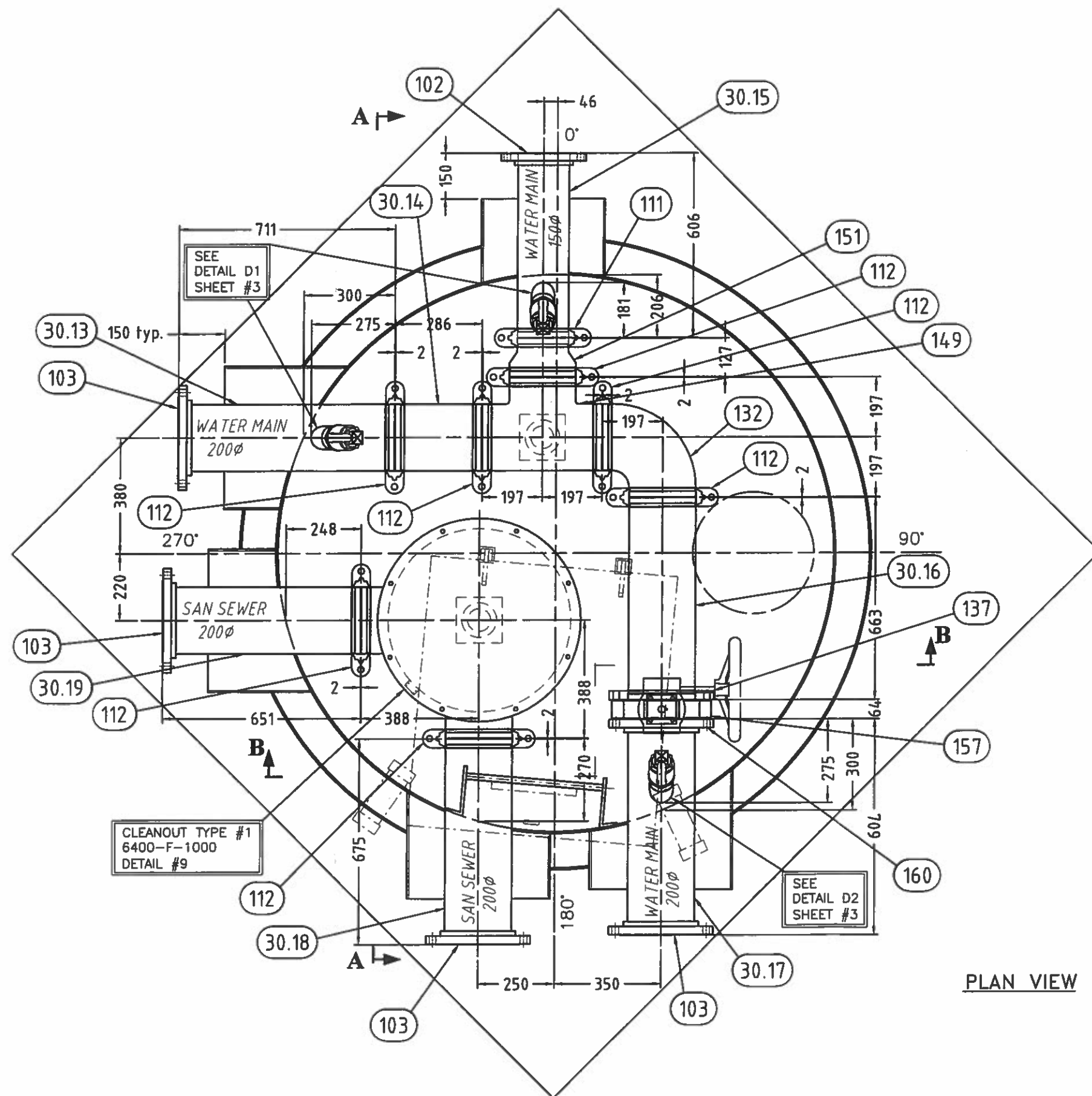
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|--|---------------------|--|------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
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| CLIENT: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV29 | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY, NU | |
| DESSIN No.: | | DESS PAR: | |
| DRAWING No. 6400-F-AV29 | | DRAW BY: G.L. | |
| | QTE: | DATE: | FEUILLE: |
| SCALE | QTY: | 1 | SHEET: |
| X/X" = X" | | 01-04-14 | 3 / 3 |
| | | | REV: A |




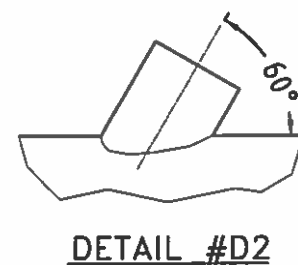
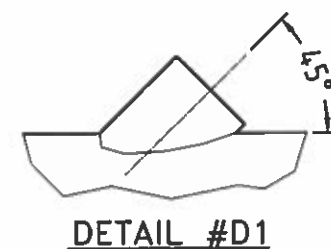
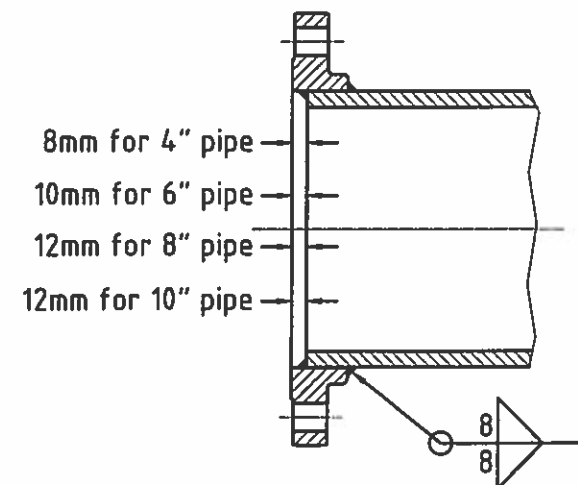
GENERAL NOTES:

- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE: BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS


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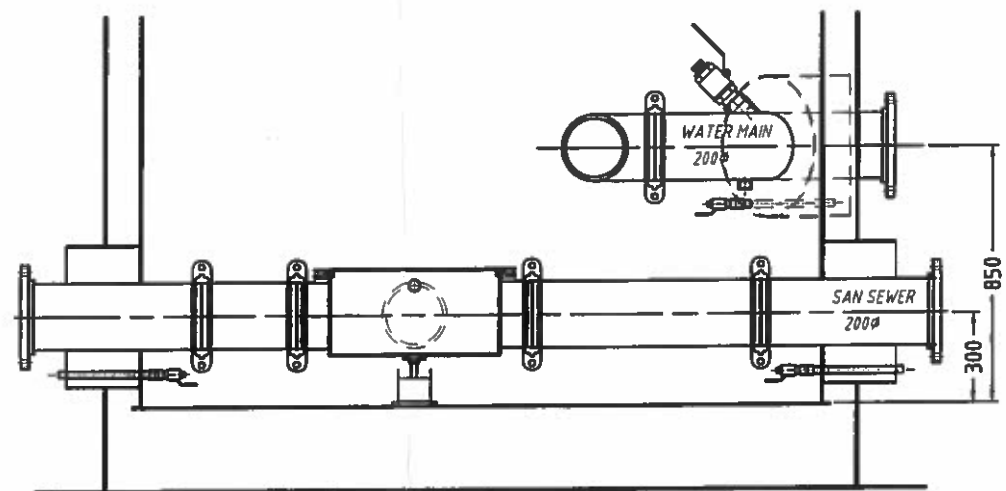
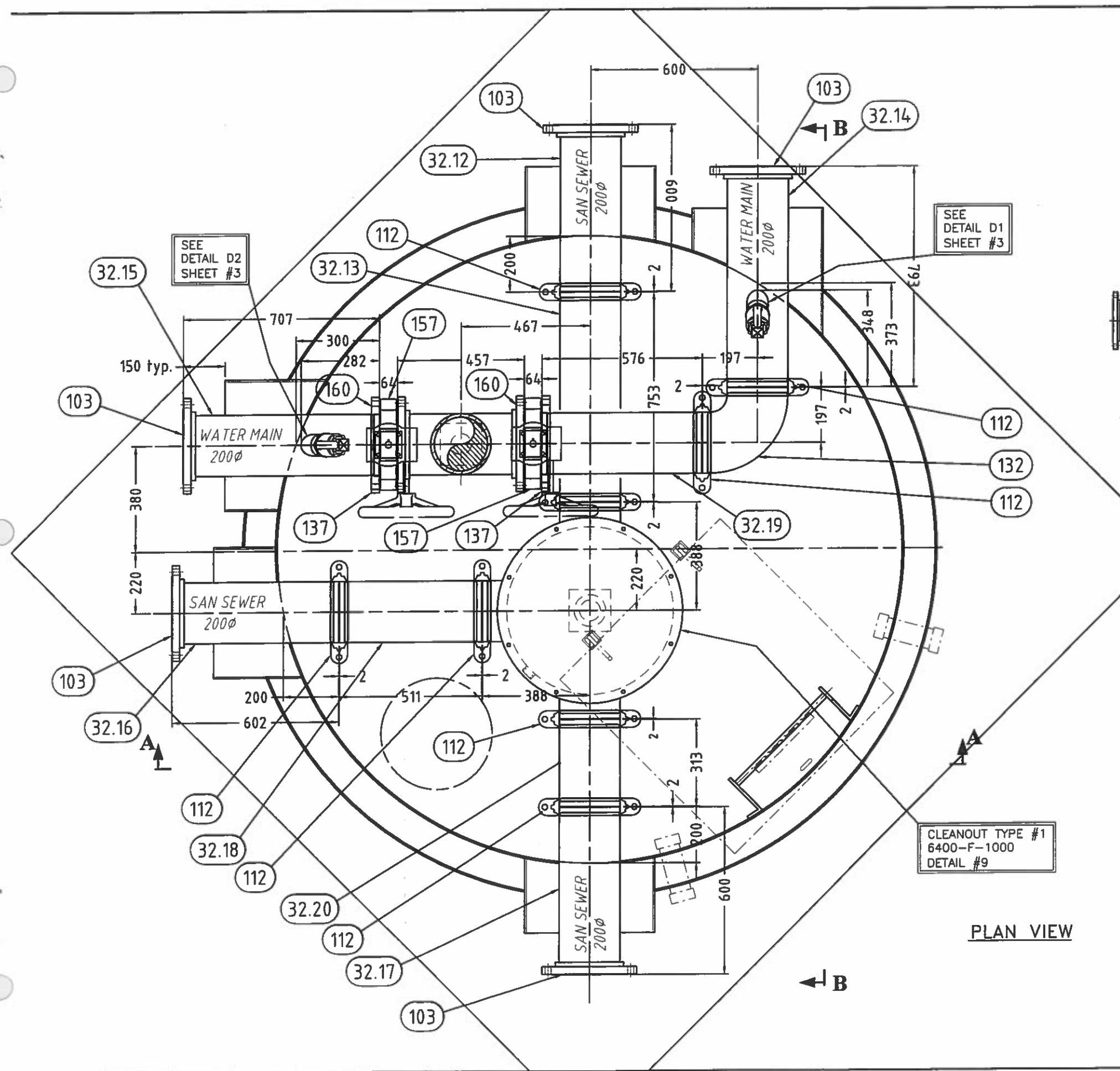


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| CLIENT: CUSTOMER: | | | | |
| GOVERNEMENT OF NUNAVUT | | | | |
| TITRE: TITLE: | | | | |
| ACCESS VAULT AV30 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | | | |
| DESSIN No.: DRAWING No: | | DESS. PAR: DRAW BY: | | |
| 6400-F-AV30 | | G.L. | | |
| SCALE: | QTE: QTY: | DATE: | FEUILLE: SHEET: | REV: |
| X/X" = X" | 1 | 01-04-14 | 2 / 3 | A |




| Item | Qty | Description | Material |
|-------|-----|---|-------------|
| 30.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø1892mm | A36 |
| 30.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2530mm x 2530mm | A36 |
| 30.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø1878mm | A36 |
| 30.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2232mm | A36 |
| 30.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 5767mm x 3590mm LG. | A36 |
| 30.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 6515mm x 3978mm LG. | A36 |
| 30.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 30.8 | 1 | PL. 1/4" THK. x 402 x 1456mm LG. | A36 |
| 30.9 | 1 | PL. 1/4" THK. x 275 x 1255mm LG. | A36 |
| 30.10 | 1 | PL. 1/4" THK. x 388 x 1456mm LG. | A36 |
| 30.11 | 1 | PL. 1/4" THK. x 347 x 1456mm LG. | A36 |
| 30.12 | 1 | PL. 1/4" THK. x 337 x 1456mm LG. | A36 |
| 30.13 | 1 | PIPE 8" SCH.80 x 699mm LG. vic groove 1 end | A-53-B |
| 30.14 | 1 | PIPE 8" SCH.80 x 286mm LG. vic groove 2 end | A-53-B |
| 30.15 | 1 | PIPE 6" SCH.80 x 596mm LG. vic groove 1 end | A-53-B |
| 30.16 | 1 | PIPE 8" SCH.80 x 663m LG. vic groove 2 end | A-53-B |
| 30.17 | 1 | PIPE 8" SCH.80 x 685mm LG. vic groove 1 end | A-53-B |
| 30.18 | 1 | PIPE 8" SCH.80 x 663mm LG. vic groove 1 end | A-53-B |
| 30.19 | 1 | PIPE 8" SCH.80 x 639mm LG. vic groove 1 end | A-53-B |
| 102 | 1 | FLANGE SORF 6" - 150# | SA 105 |
| 103 | 4 | FLANGE SORF 8" - 150# | SA 105 |
| 111 | 1 | 6" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 112 | 7 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 132 | 1 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| 137 | 1 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 149 | 1 | 8" VICTAULIC TEE, #20 | GALV. |
| 151 | 1 | 8" @ 6" VICTAULIC CONCENTRIC REDUCER, #50 | GALV C.S. |
| 157 | 1 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 16 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |

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| REV. | DESCRIPTION | DATE | DESS/DRAWN |
|  Falco Technologies Inc., a company of BERLIE-FALCO | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | |
| CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC. | | | |
| CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: TITLE: ACCESS VAULT AV30 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No.: DRAWING No: 6400-F-AV30 | | DESS. PAR: DRAW BY: G.L. | |
| SCALE: X/X" = X" | QTE: QTY: 1 | DATE: 01-04-14 | FEUILLE: SHEET: 3 / 3 |
| | | | REV: A |

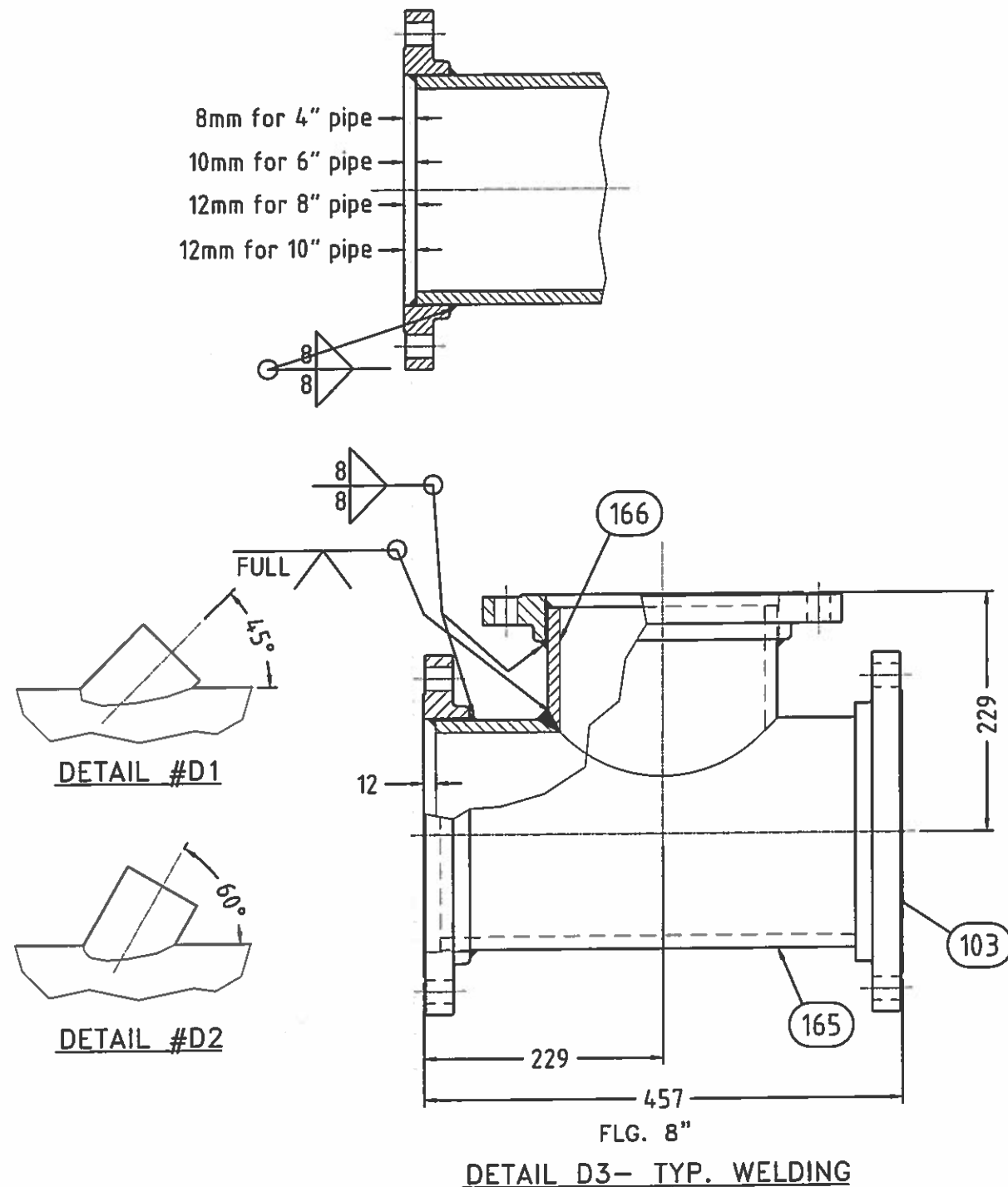



SECTION "C-C"

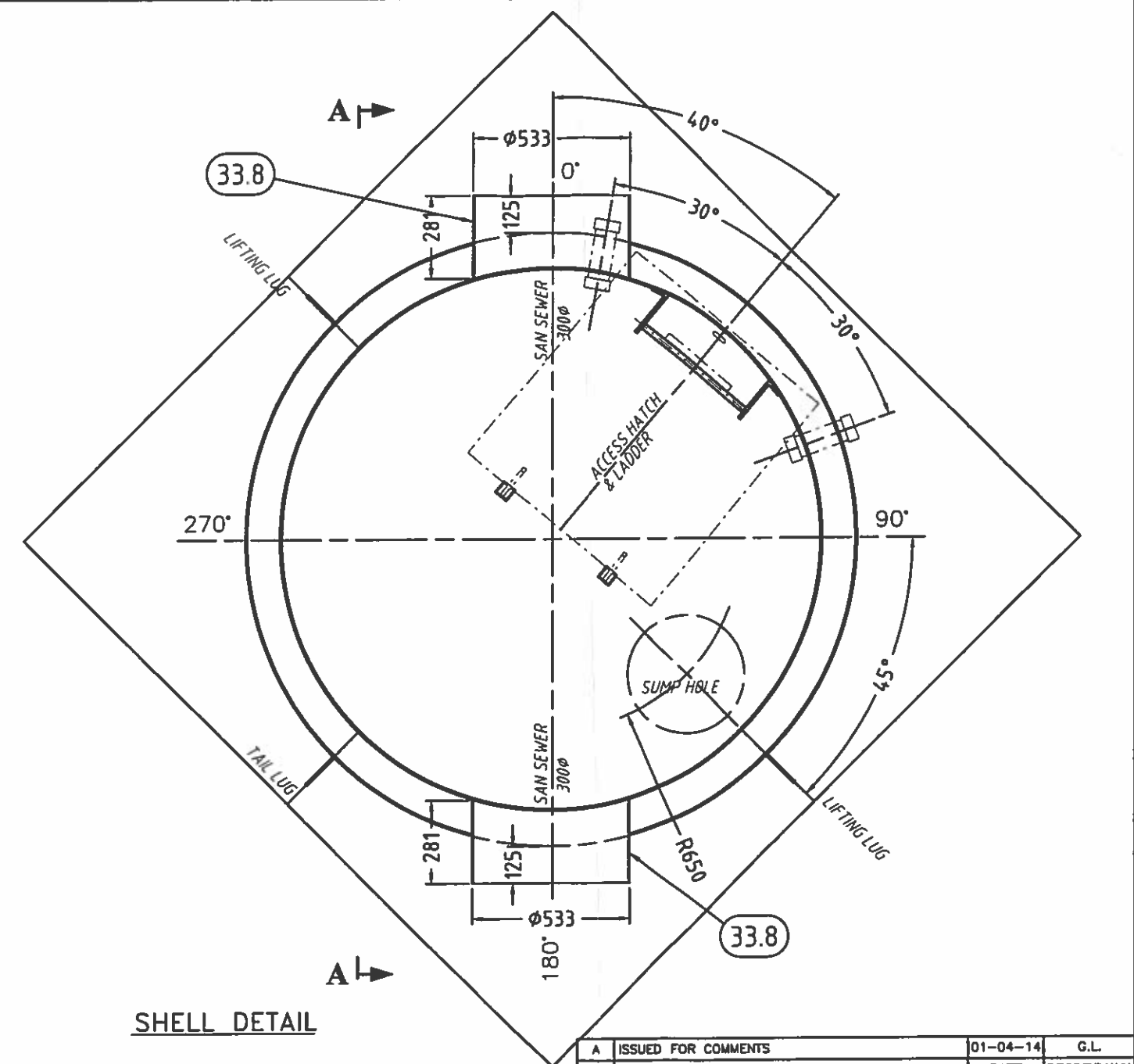
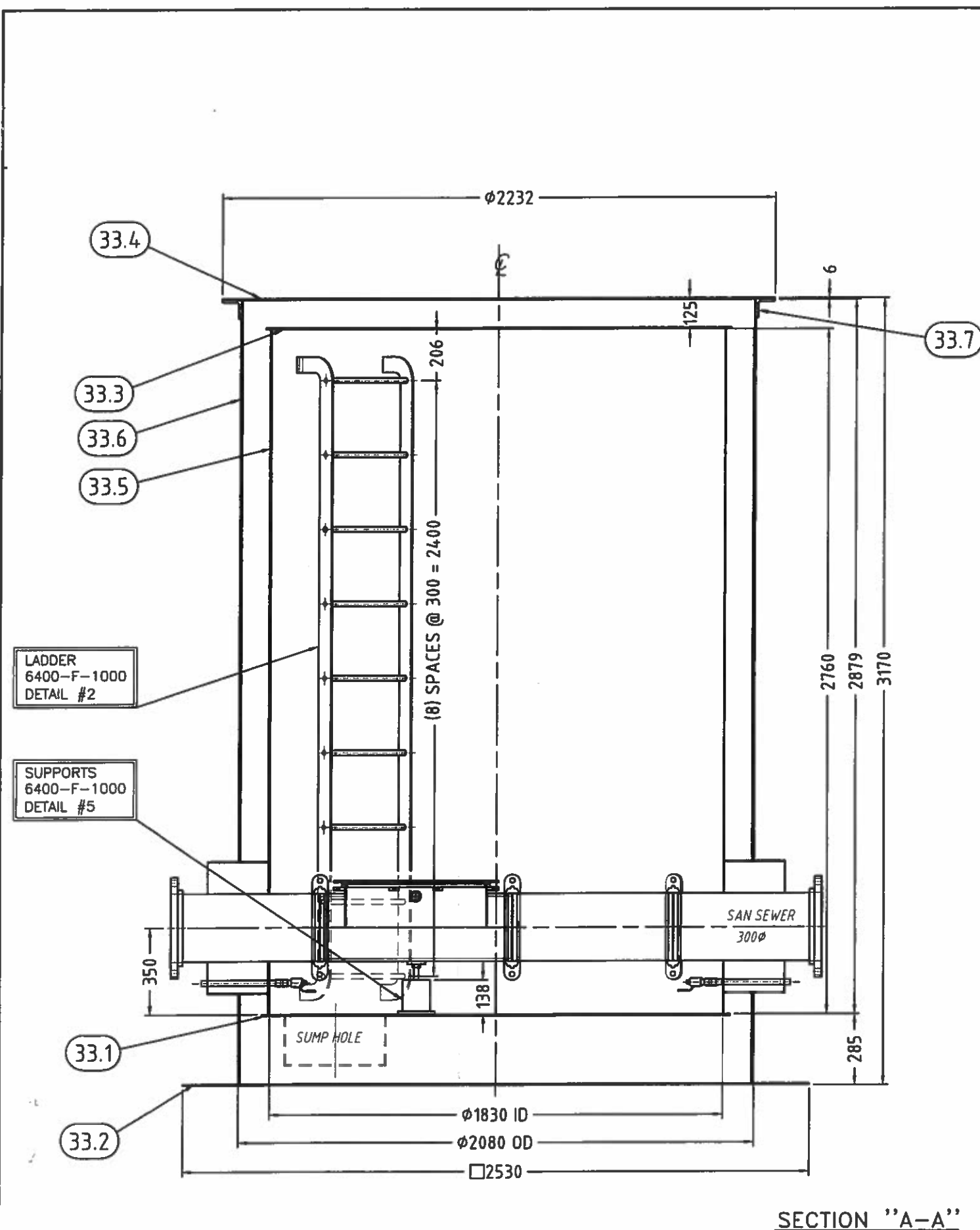
PLAN VIEW

| | | | | |
|---|-------------|--|--------------|------|
| A ISSUED FOR COMMENTS | | 01-04-14 | G.L. | |
| REV. | DESCRIPTION | DATE | DESS/DRAWN | |
|  Falco Technologies Inc., a company of BERLIE-FALCO | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | | |
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| CLIENT: | | GOVERNEMENT OF NUNAVUT | | |
| CUSTOMER: | | GOVERNEMENT OF NUNAVUT | | |
| TITRE: | | ACCESS VAULT AV32 | | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | |
| DESSIN No.: | | DESS. PAR: | | |
| DRAWING No: 6400-F-AV32 | | DRAW BY: G.L. | | |
| | QTE: | DATE: | FEUILLE: | REV: |
| SCALE: X/X" = X" | QTY: 1 | 01-04-14 | SHEET: 2 / 3 | A |

| Item | Qty | Description | Material | Item | Qty | Description | Material |
|------|-----|----------------------------|-------------|-------|-----|---|-------------|
| 161 | 8 | 3/4-10 HEX.-BOLT, 3 1/2"LG | PLATED C.S. | 32.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2312mm | A36 |
| 162 | 8 | 3/4-10 HEX. NUT | PLATED C.S. | 32.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2950mm x 2950mm | A36 |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B | 32.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2298mm | A36 |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B | 32.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2653mm | A36 |
| | | | | 32.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 7088mm x 2690mm LG. | A36 |
| | | | | 32.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 7843mm x 3078mm LG. | A36 |
| | | | | 32.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| | | | | 32.8 | 2 | PL. 1/4" THK. x 267 x 1456mm LG. | A36 |
| | | | | 32.9 | 1 | PL. 1/4" THK. x 452 x 1456mm LG. | A36 |
| | | | | 32.10 | 1 | PL. 1/4" THK. x 362 x 1456mm LG. | A36 |
| | | | | 32.11 | 1 | PL. 1/4" THK. x 317 x 1456mm LG. | A36 |
| | | | | 32.12 | 1 | PIPE 8" SCH.80 x 588mm LG. vic groove 1 end | A-53-B |
| | | | | 32.13 | 1 | PIPE 8" SCH.80 x 753mm LG. vic groove 2 end | A-53-B |
| | | | | 32.14 | 1 | PIPE 8" SCH.80 x 781mm LG. vic groove 1 end | A-53-B |
| | | | | 32.15 | 1 | PIPE 8" SCH.80 x 695mm LG. vic groove 1 end | A-53-B |
| | | | | 32.16 | 1 | PIPE 8" SCH.80 x 590mm LG. vic groove 1 end | A-53-B |
| | | | | 32.17 | 1 | PIPE 8" SCH.80 x 588mm LG. vic groove 1 end | A-53-B |
| | | | | 32.18 | 1 | PIPE 8" SCH.80 x 511mm LG. vic groove 2 end | A-53-B |
| | | | | 32.19 | 1 | PIPE 8" SCH.80 x 576mm LG. vic groove 2 end | A-53-B |
| | | | | 32.20 | 1 | PIPE 8" SCH.80 x 313mm LG. vic groove 2 end | A-53-B |
| | | | | 103 | 8 | FLANGE SORF 8" - 150# | SA 105 |
| | | | | 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 |
| | | | | 112 | 8 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| | | | | 132 | 1 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| | | | | 137 | 2 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| | | | | 157 | 3 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| | | | | 160 | 48 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |




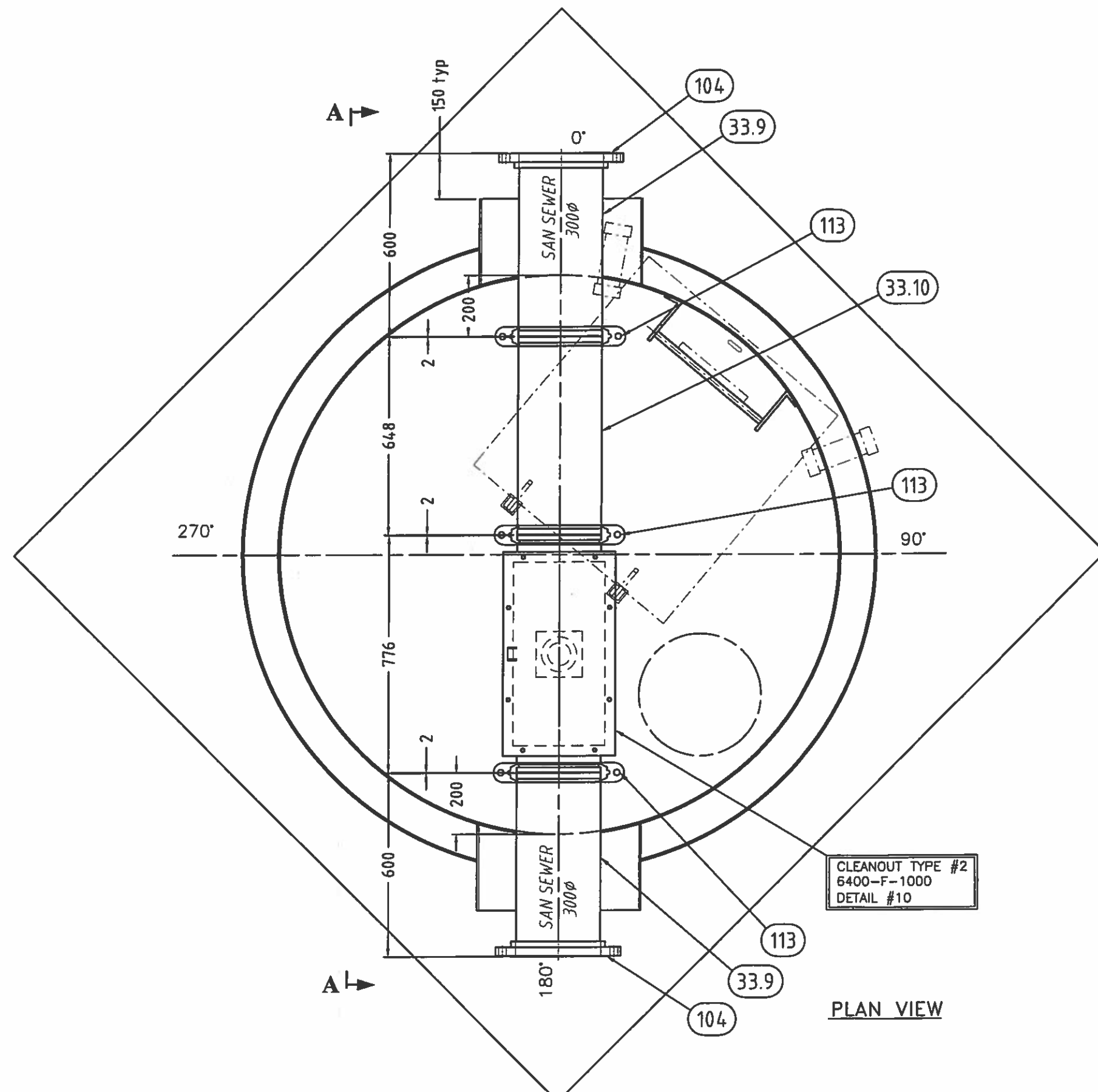
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|--|---------------------|--|--------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
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| CLIENT: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV32 | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY, NU | |
| DESSIN No.: | | DESS. PAR: | |
| DRAWING No. 6400-F-AV32 | | DRAW BY: G.L. | |
| | QTE: | DATE: | FEUILLE: |
| SCALE: X/X" = X" | QTY: 1 | 01-04-14 | SHEET: 3 / 3 |
| | | | REV: A |



GENERAL NOTES:

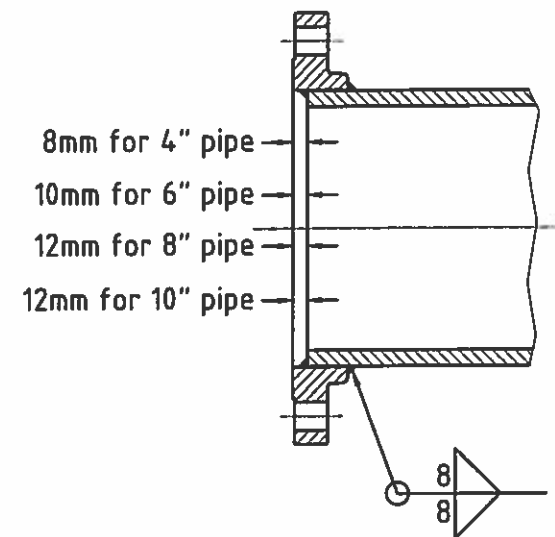
- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS

| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
|---|---------------------|--|------------|
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
|  <p>Falco Technologies Inc., a company of BERLIE-FALCO</p> | | 1245 rue Industrielle La Prairie (Quebec) JSR 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | |
| | | | |
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| CLIENT: | | | |
| CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: | | | |
| TITLE: ACCESS VAULT AV33 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | | |
| DESSIN No: | | DESS PAR: | |
| DRAWING No: 6400-F-AV33 | | DRAW BY: G.L. | |
| | QTE: | DATE: | FEUILLE: |
| SCALE: | QTY: | | SHEET: |
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| | | | REV: A |




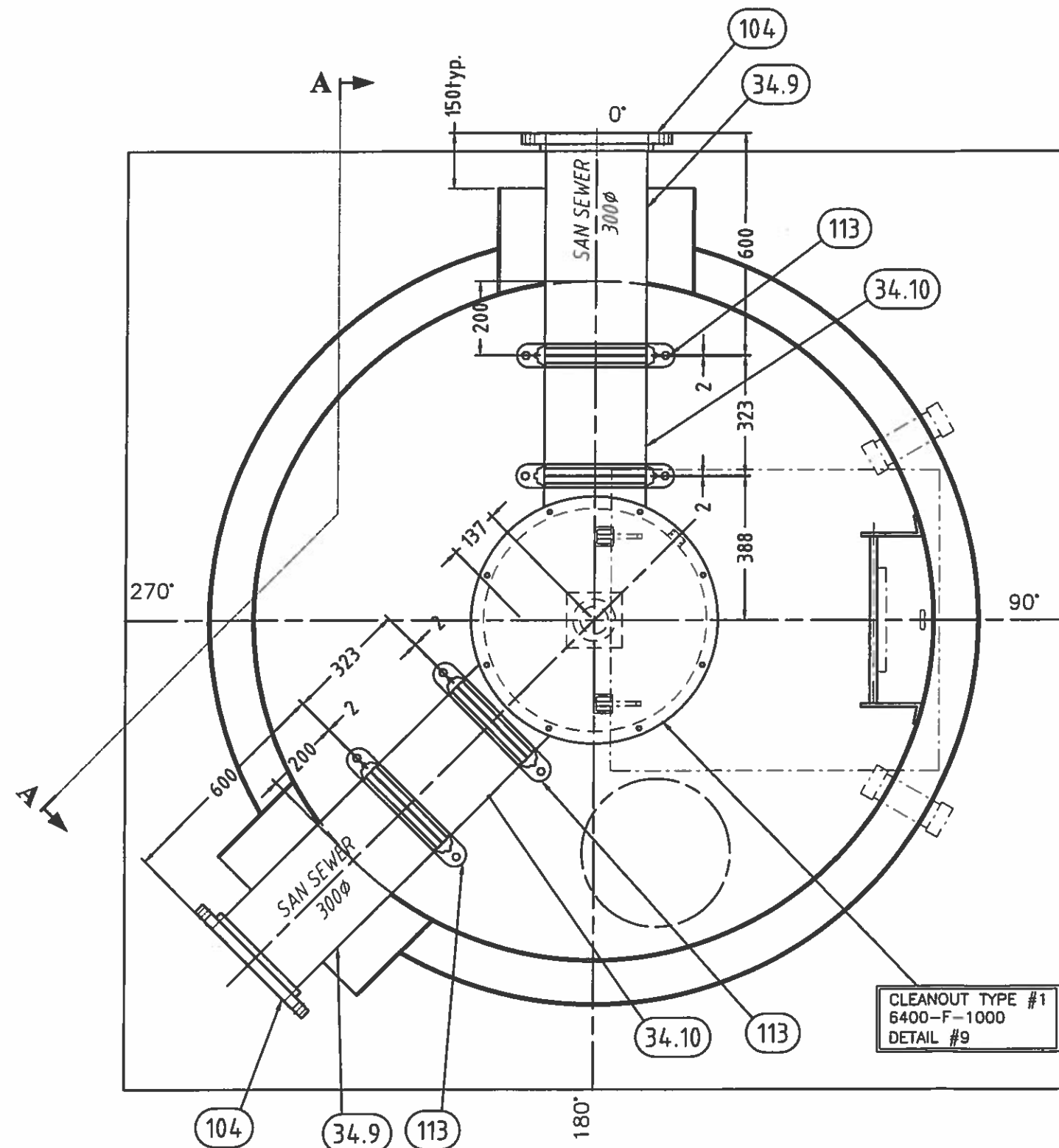
PLAN VIEW

| | | | |
|---|---------------------|---------------------------------------|------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
| <p>CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICABLE AUX INTERETS DE FALCO TECHNOLOGIES INC.</p> <p>THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC.</p> | | | |
| CLIENT: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV33 | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY , NU | |
| DESSIN No: | | DESS. PAR: | |
| DRAWING No: | | DRAW BY: | |
| 6400-F-AV33 | | G.L. | |
| SCALE: | QTE: | DATE: | FEUILLE: |
| X/X" = X" | QTY: | 01-04-14 | SHEET: |
| | 1 | | 1 / 3 |
| | | | REV: |
| | | | A |




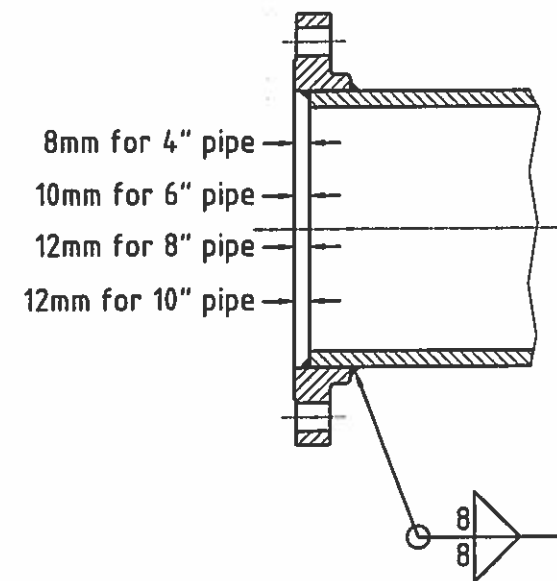
| Item | Qty | Description | Material |
|-------|-----|--|------------|
| 33.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø1892mm | A36 |
| 33.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2530mm x 2530mm | A36 |
| 33.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø1878mm | A36 |
| 33.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2232mm | A36 |
| 33.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 5767mm x 2760mm LG. | A36 |
| 33.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 6515mm x 3148mm LG. | A36 |
| 33.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 33.8 | 2 | PL. 1/4" THK. x 281 x 1654mm LG. | A36 |
| 33.9 | 2 | PIPE 10" SCH.80 x 588mm LG. vic groove 1 end | A-53-B |
| 33.10 | 1 | PIPE 10" SCH.80 x 648mm LG. vic groove 2 end | A-53-B |
| 104 | 2 | FLANGE SORF 10" - 150# | SA 105 |
| 113 | 3 | 10" VICTAULIC COUPLING STYLE 77 | GALV C.S. |

| | | | |
|---|---------------------|--|--------------------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
|  Falco Technologies Inc., a company of BERLIE-FALCO | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel (450) 444-0566 Fax (450) 444-2227 www.berliefalco.com | |
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| CLIENT: | | | |
| CUSTOMER: GOUVERNEMENT OF NUNAVUT | | | |
| TITRE: | | | |
| TITLE: ACCESS VAULT AV33 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | | |
| DESSIN No. DRAWING No: 6400-F-AV33 | | DESS. PAR: DRAW BY: G.L. | |
| SCALE: X/X" = X" | QTE: QTY: 1 | DATE: 01-04-14 | FEUILLE: SHEET: 3 / 3 |
| | | | REV: A |




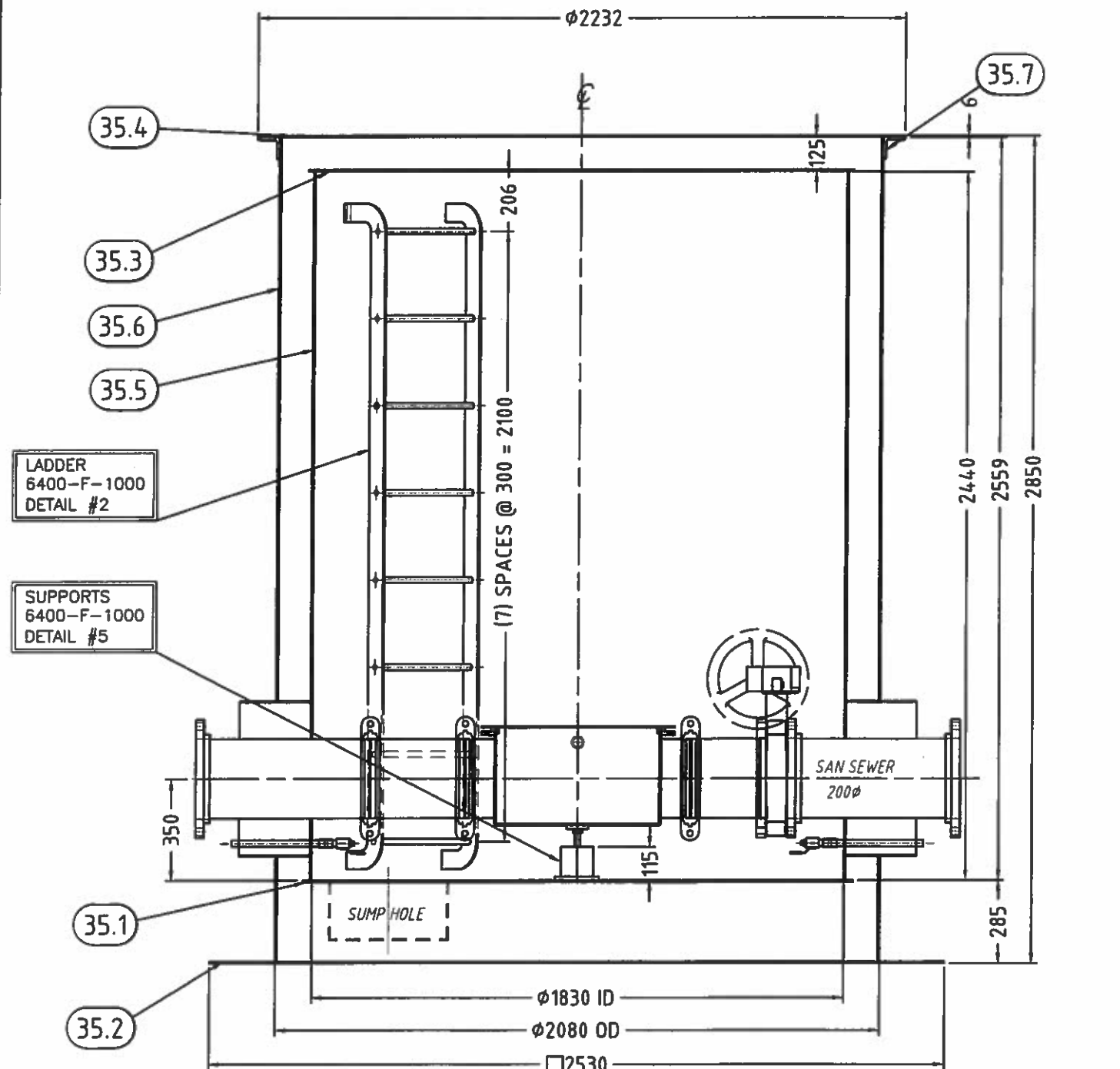
PLAN VIEW

| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
|---|---------------------|--|---------------------------------------|
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
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| CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: TITLE: ACCESS VAULT AV34 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No.: DRAWING No: 6400-F-AV34 | | DESS. PAR: DRAW BY: G.L. | |
| SCALE: $X/X'' = X''$ | QTE: QTY: 1 | DATE: 01-04-14 | FEUILLE: SHEET: 2 / 3 REV: A |

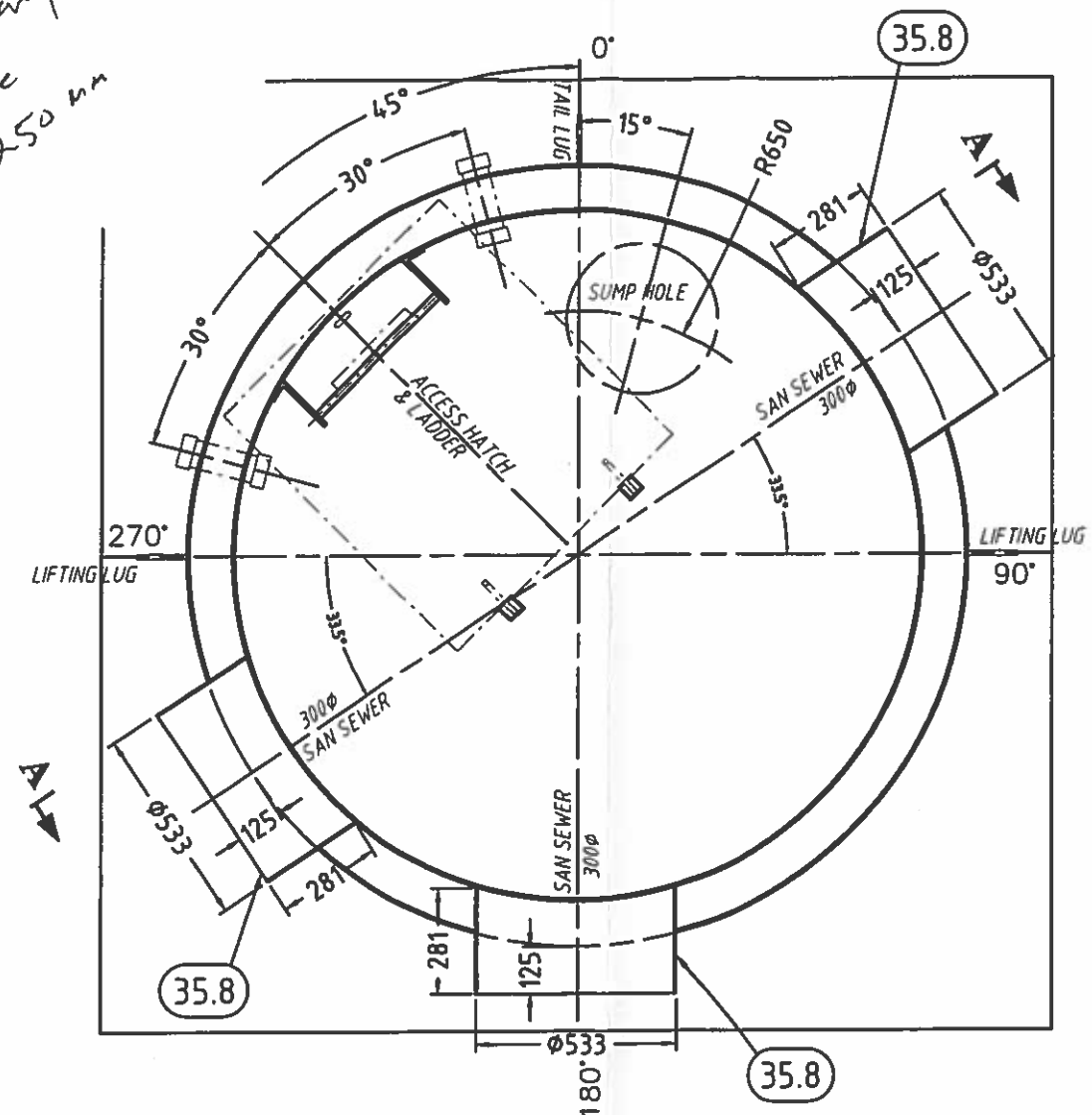


| Item | Qty | Description | Material |
|-------|-----|--|------------|
| 34.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø1892mm | A36 |
| 34.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2530mm x 2530mm | A36 |
| 34.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø1878mm | A36 |
| 34.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2232mm | A36 |
| 34.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 5767mm x 2340mm LG. | A36 |
| 34.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 6515mm x 2728mm LG. | A36 |
| 34.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 34.8 | 2 | PL. 1/4" THK. x 281 x 1654mm LG. | A36 |
| 34.9 | 2 | PIPE 10" SCH.80 x 588mm LG. vic groove 1 end | A-53-B |
| 34.10 | 2 | PIPE 10" SCH.80 x 323mm LG. vic groove 2 end | A-53-B |
| 104 | 2 | FLANGE SORF 10" - 150# | SA 105 |
| 113 | 4 | 10" VICTAULIC COUPLING STYLE 77 | GALV C.S. |

| | | | |
|---|---------------------|--|--------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
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| CLIENT: | | | |
| CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: | | | |
| TITLE: ACCESS VAULT AV34 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | | |
| DESSIN No.: | | DESS. PAR: | |
| DRAWING No: 6400-F-AV34 | | DRAWBY: G.L. | |
| | QTE: | DATE: | FEUILLE: |
| SCALE: X/X" = X" | QTY: 1 | 01-04-14 | SHEET: 3 / 3 |
| | | | REV: A |




SECTION "A-A"

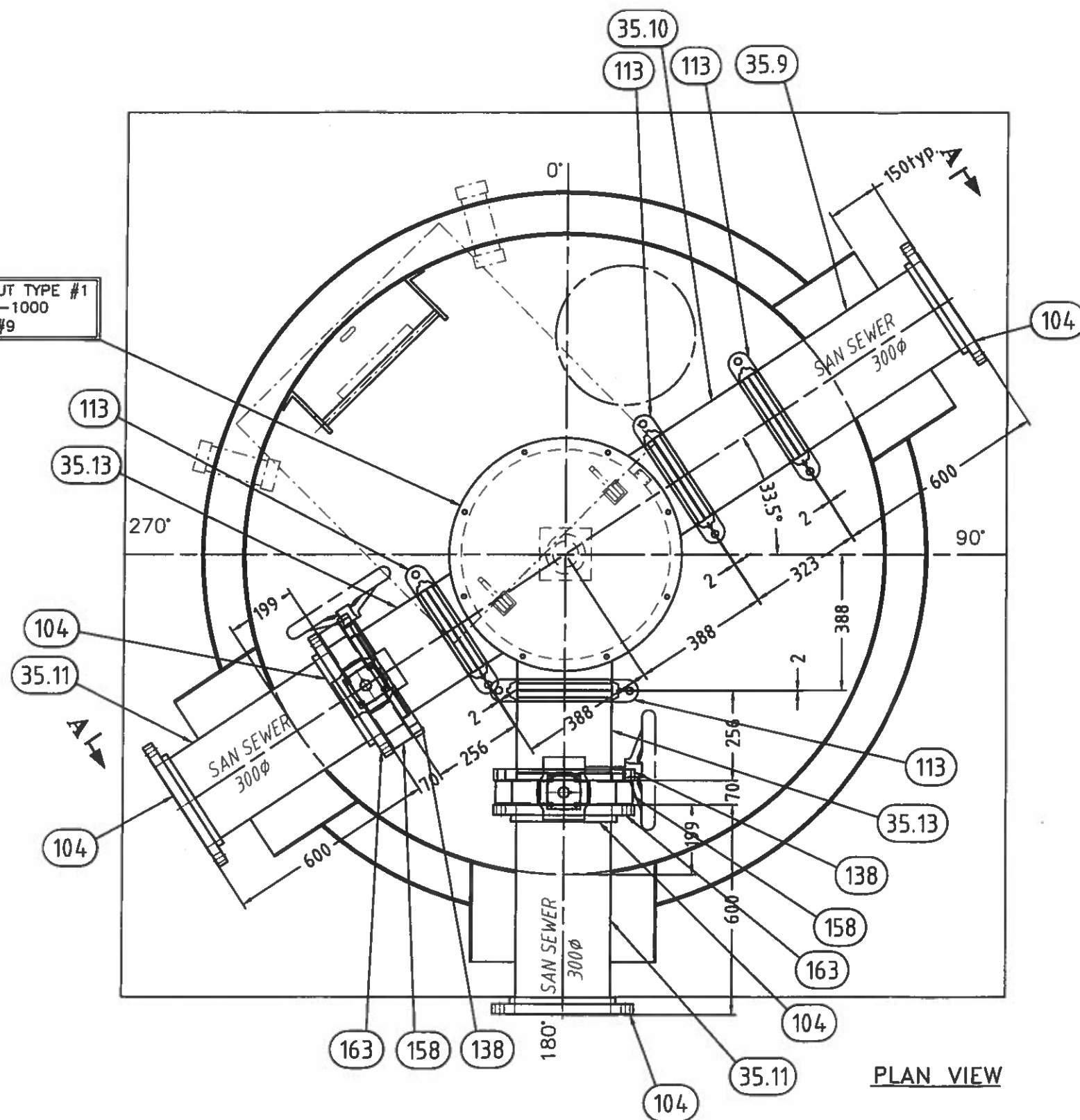


GENERAL NOTES:


- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS

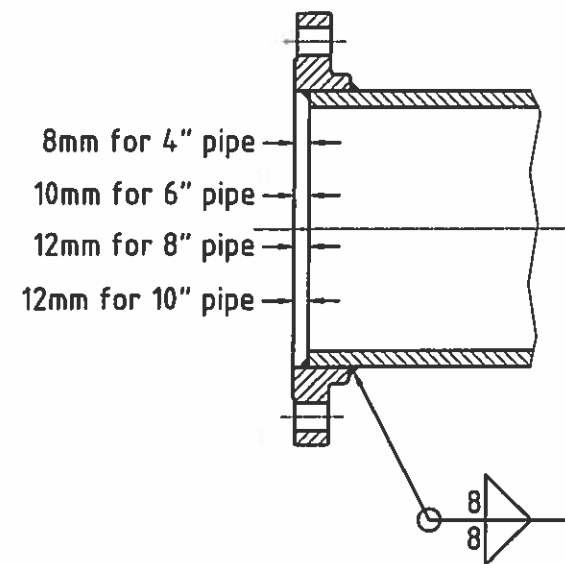
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| <p>CLIENT: CUSTOMER:</p> | | <p>GOVERNEMENT OF NUNAVUT</p> | |
| <p>TITRE: TITLE:</p> | | <p>ACCESS VAULT AV35 NEW UTILIDOR DESIGN RESOLUTE BAY , NU</p> | |
| <p>DESSIN No.: DRAWING No:</p> | | <p>DESS. PAR: DRAWBY:</p> | |
| <p>6400-F-AV35</p> | | <p>G.L.</p> | |
| <p>..... SCALE: X/X" = X"</p> | <p>QTE: QTY:</p> | <p>DATE:</p> | <p>FEUILLE: SHEET:</p> |
| <p>1</p> | <p>01-04-14</p> | <p>1 / 3</p> | <p>A</p> |

CLEANOUT TYPE #1
6400-F-1000
DETAIL #9




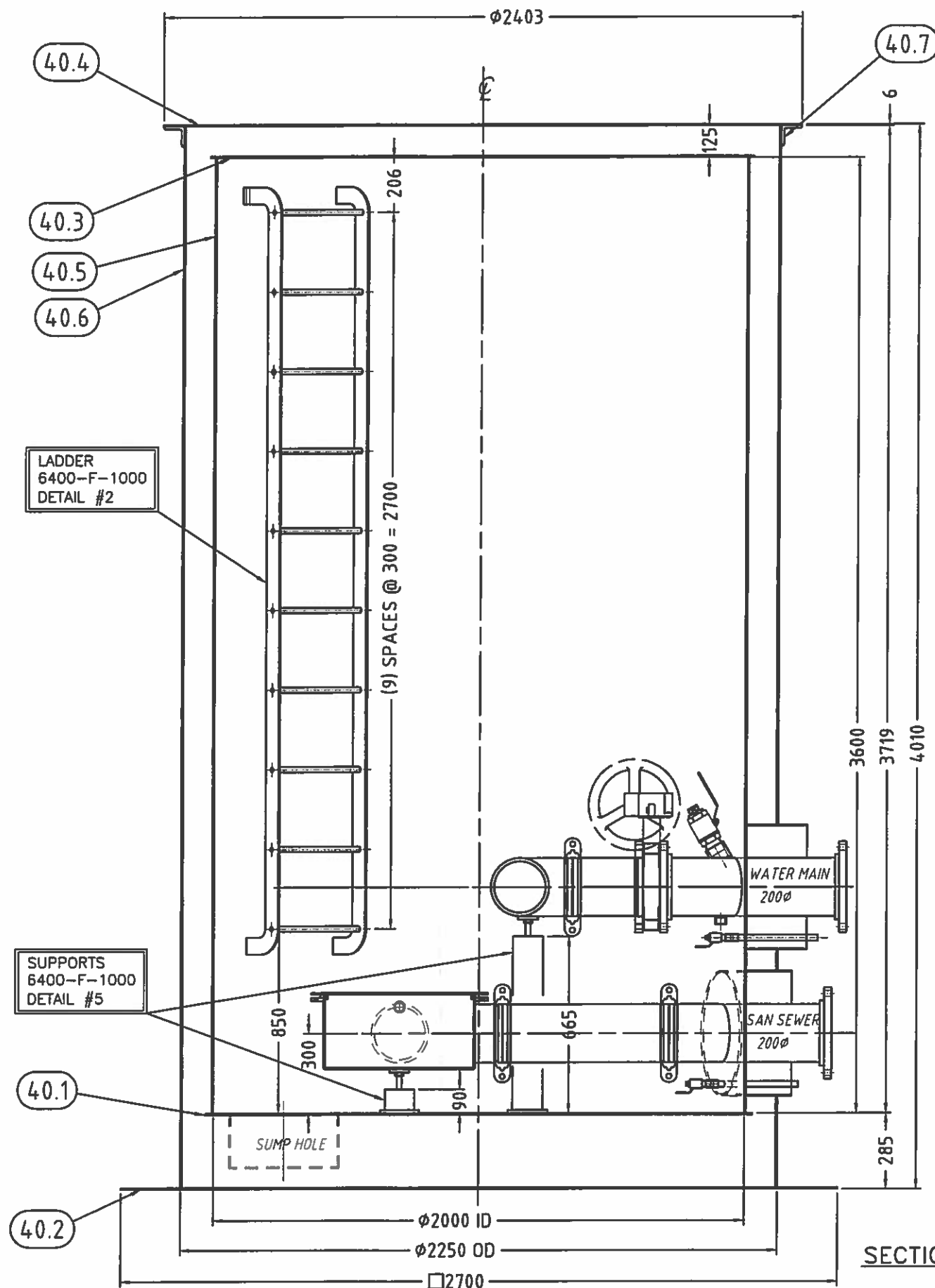
PLAN VIEW

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|---|---------------------|----------|------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
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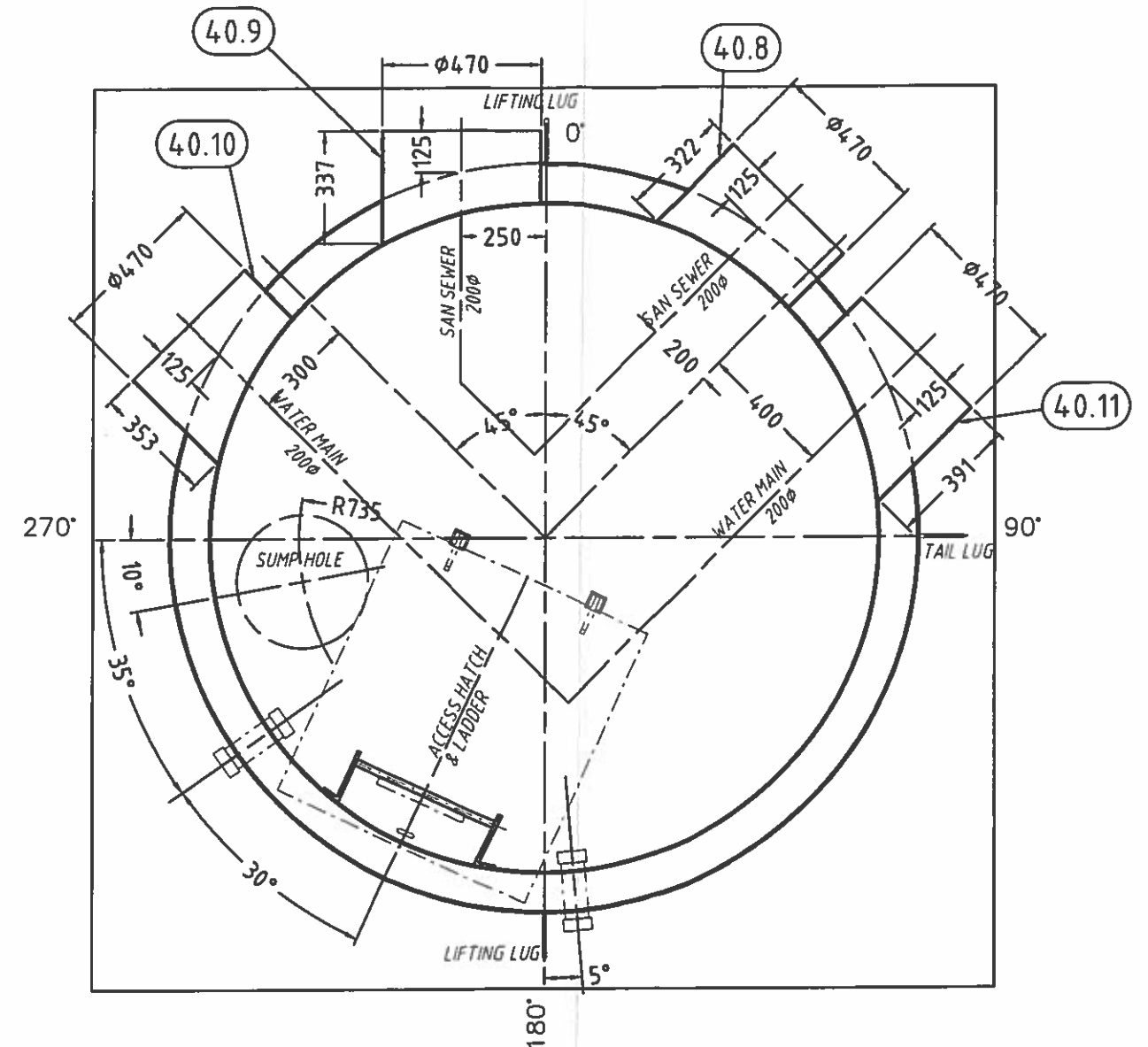


| Item | Qty | Description | Material |
|-------|-----|--|-------------|
| 35.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø1892mm | A36 |
| 35.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2530mm x 2530mm | A36 |
| 35.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø1878mm | A36 |
| 35.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2232mm | A36 |
| 35.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 5767mm x 2440mm LG. | A36 |
| 35.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 6515mm x 2828mm LG. | A36 |
| 35.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 35.8 | 3 | PL. 1/4" THK. x 281 x 1654mm LG. | A36 |
| 35.9 | 1 | PIPE 10" SCH.80 x 588mm LG. vic groove 1 end | A-53-B |
| 35.10 | 1 | PIPE 10" SCH.80 x 323mm LG. vic groove 2 end | A-53-B |
| 35.11 | 2 | PIPE 10" SCH.80 x 576mm LG. | A-53-B |
| 35.13 | 2 | PIPE 10" SCH.80 x 256mm LG. vic groove 2 end | A-53-B |
| 104 | 5 | FLANGE SORF 10" - 150# | SA 105 |
| 113 | 4 | 10" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 138 | 2 | 10" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 158 | 2 | 10" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 163 | 48 | BOLT 7/8-NC x 2 1/2"LG + FLAT WASHER | PLATED C.S. |

| | | | |
|--|-----------------------|------------------------------------|---------------------------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
|  Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | | | |
| CE DOCUMENT EST LA PROPRIÉTÉ DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNÉ SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ÊTRE UTILISÉ, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PRÉJUDICABLE AUX INTÉRÊTS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC. | | | |
| CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: TITLE: ACCESS VAULT AV35 NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | | |
| DESSIN No.: DRAWING No: 6400-F-AV35 | | DESS. PAR: DRAW BY: G.L. | |
| SCALE: X/X" = X" | QTE: QTY: 1 | DATE: 01-04-14 | FEUILLE: SHEET: 3 / 3 |
| | | | REV: A |



SECTION "A-A"

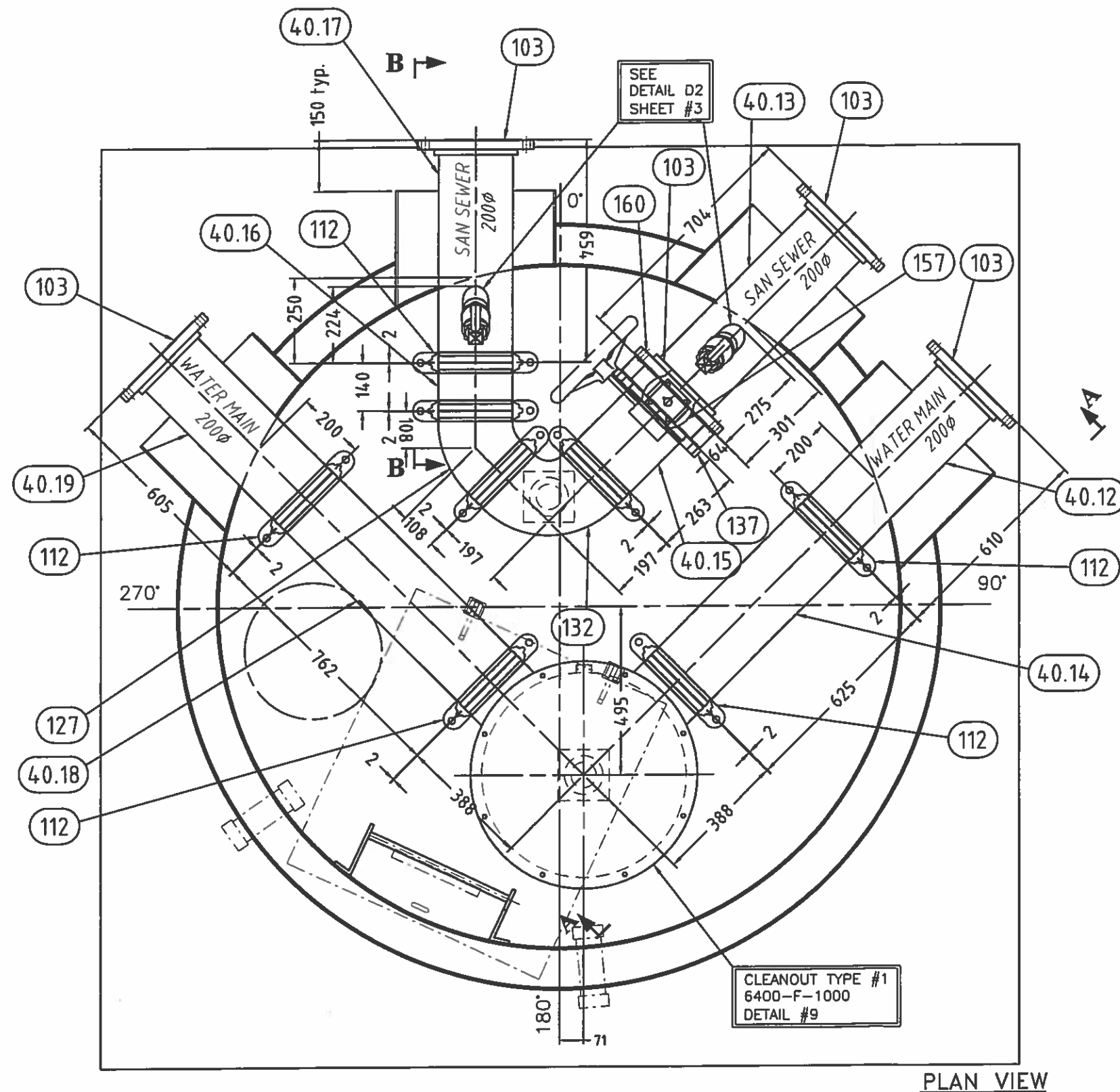


SHELL DETAIL

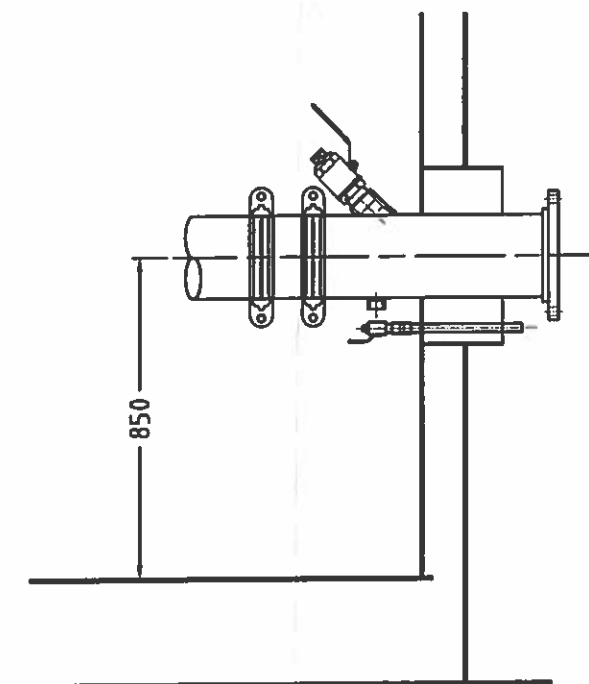
GENERAL NOTES:

- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE: BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS


| | | | |
|---|---------------------|----------------|----------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
| <p>Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel (450) 444-0566 Fax (450) 444-2227 www.berliefalco.com</p> | | | |
| <p>CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC.</p> | | | |
| CLIENT: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AV40 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No.: 6400-F-AV40 | | DESS PAR: G.L. | |
| DRAWING No.: | | DRAW BY: | |
| SCALE: X/X" = X" | QTE: 1 | DATE: 01-04-14 | FEUILLE: 1 / 3 |
| | | | REV: A |

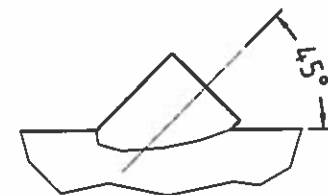
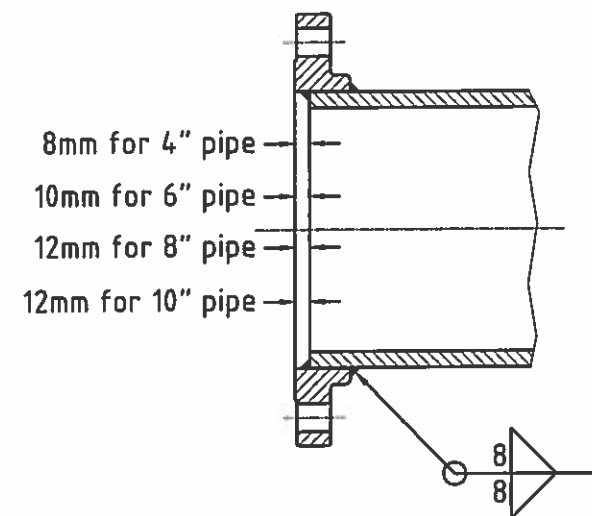


PLAN VIEW



SECTION "B-B"

| | | | |
|--|-------------|-----------------|----------------|
| A ISSUED FOR COMMENTS | | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
|  Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel (450) 444-0566 Fax (450) 444-2227 www.berriefalco.com | | | |
| CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC. | | | |
| CLIENT: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AV40 TITLE: NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No.: 6400-F-AV40 | | DESS. PAR: G.L. | |
| SCALE: X/X" = X" | QTE: 1 | DATE: 01-04-14 | FEUILLE: 2 / 3 |
| | | | REV: A |




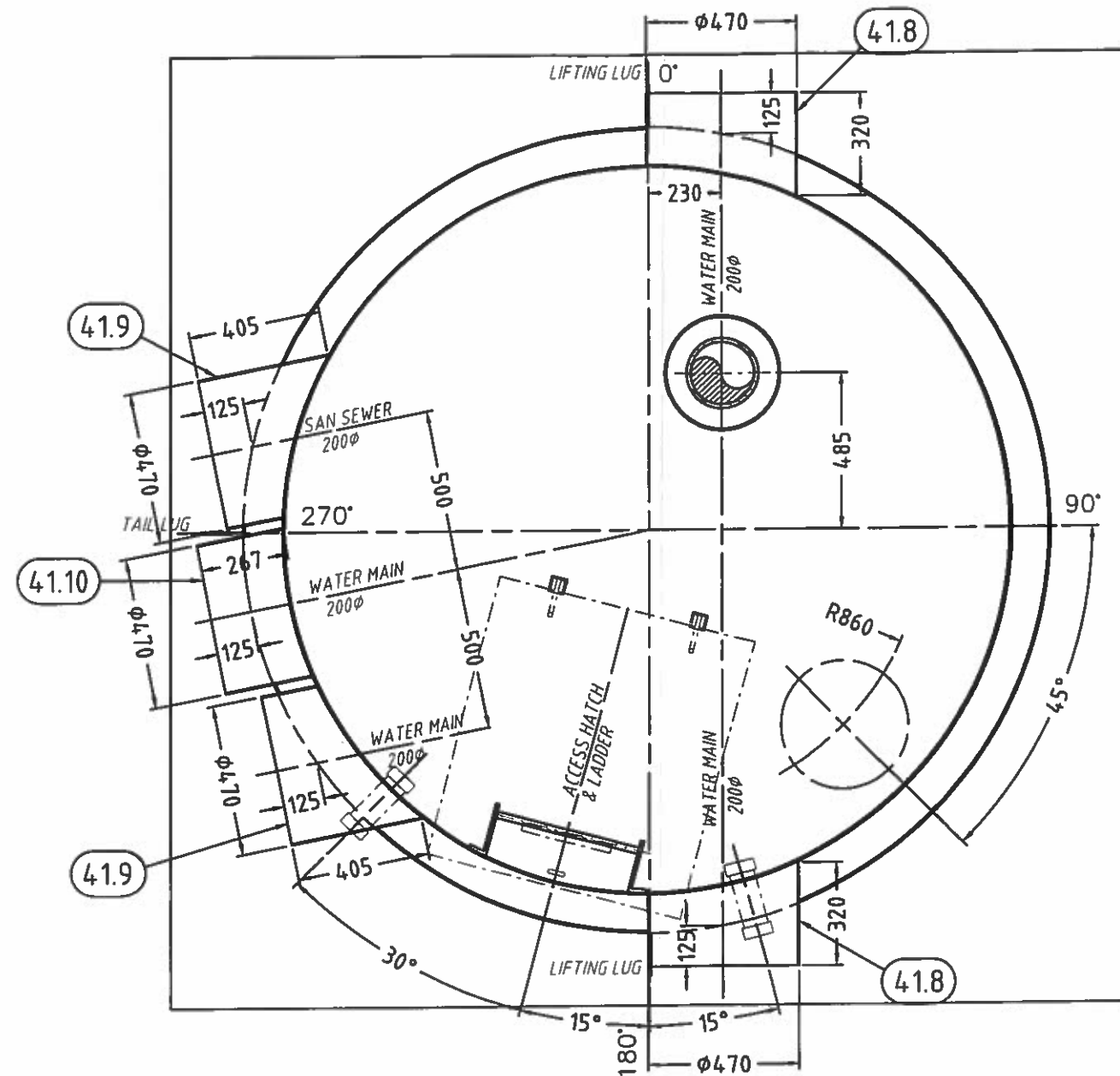
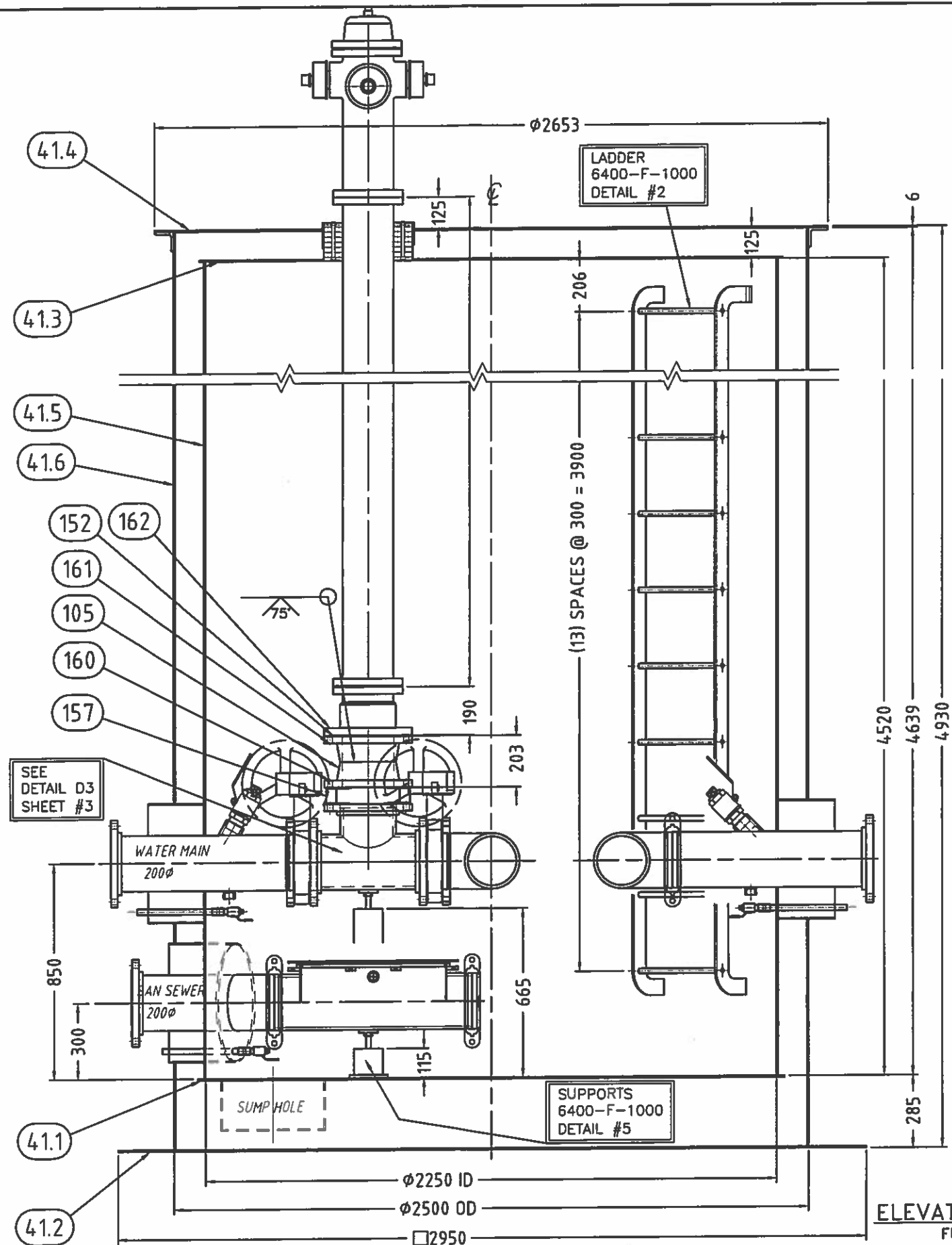
DETAIL #D1



DETAIL #D2

| Item | Qty | Description | Material |
|-------|-----|---|-------------|
| 40.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2062mm | A36 |
| 40.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2700mm x 2700mm | A36 |
| 40.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2048mm | A36 |
| 40.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2403mm | A36 |
| 40.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 6303mm x 3600mm LG. | A36 |
| 40.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 7048mm x 3988mm LG. | A36 |
| 40.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 40.8 | 1 | PL. 1/4" THK. x 322 x 1456mm LG. | A36 |
| 40.9 | 1 | PL. 1/4" THK. x 337 x 1456mm LG. | A36 |
| 40.10 | 1 | PL. 1/4" THK. x 353 x 1456mm LG. | A36 |
| 40.11 | 1 | PL. 1/4" THK. x 391 x 1456mm LG. | A36 |
| 40.12 | 1 | PIPE 8" SCH.80 x 598mm LG. vic groove 1 end | A-53-B |
| 40.13 | 1 | PIPE 8" SCH.80 x 680mm LG. | A-53-B |
| 40.14 | 1 | PIPE 8" SCH.80 x 625mm LG. vic groove 2 end | A-53-B |
| 40.15 | 1 | PIPE 8" SCH.80 x 263mm LG. vic groove 2 end | A-53-B |
| 40.16 | 1 | PIPE 8" SCH.80 x 140mm LG. vic groove 2 end | A-53-B |
| 40.17 | 1 | PIPE 8" SCH.80 x 654mm LG. vic groove 1 end | A-53-B |
| 40.18 | 1 | PIPE 8" SCH.80 x 762mm LG. vic groove 2 end | A-53-B |
| 40.19 | 1 | PIPE 8" SCH.80 x 593mm LG. vic groove 1 end | A-53-B |
| 103 | 5 | FLANGE SORF 8" - 150# | SA 105 |
| 112 | 8 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 127 | 1 | 8" VICTAULIC ELBOW 45°, #11 | GALV C.S. |
| 132 | 1 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| 137 | 1 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 157 | 1 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 16 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |

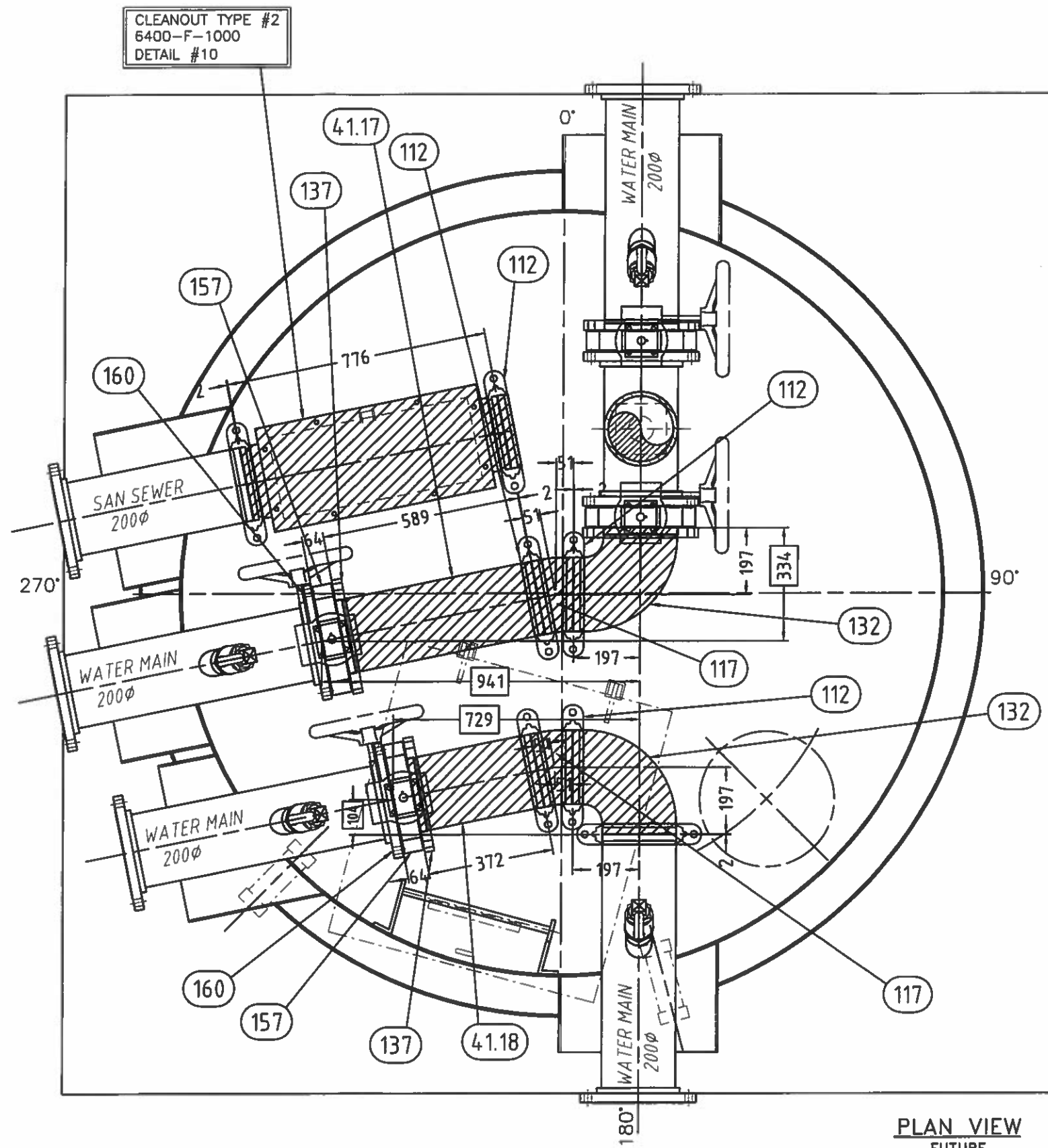
| | | | |
|--|---------------------|-------------------------|-----------------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
|  Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | | | |
| CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC. | | | |
| CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AV40 TITLE: NEW UTILIDOR DESIGN RESOLUTE BAY , NU | | | |
| DESSIN No.: DRAWING No: 6400-F-AV40 | | DESS PAR: DRAW BY: G.L. | |
| SCALE: X/X" = X" | QTE: QTY: 1 | DATE: 01-04-14 | FEUILLE: SHEET: 3 / 3 |
| | | | REV: A |




GENERAL NOTES:

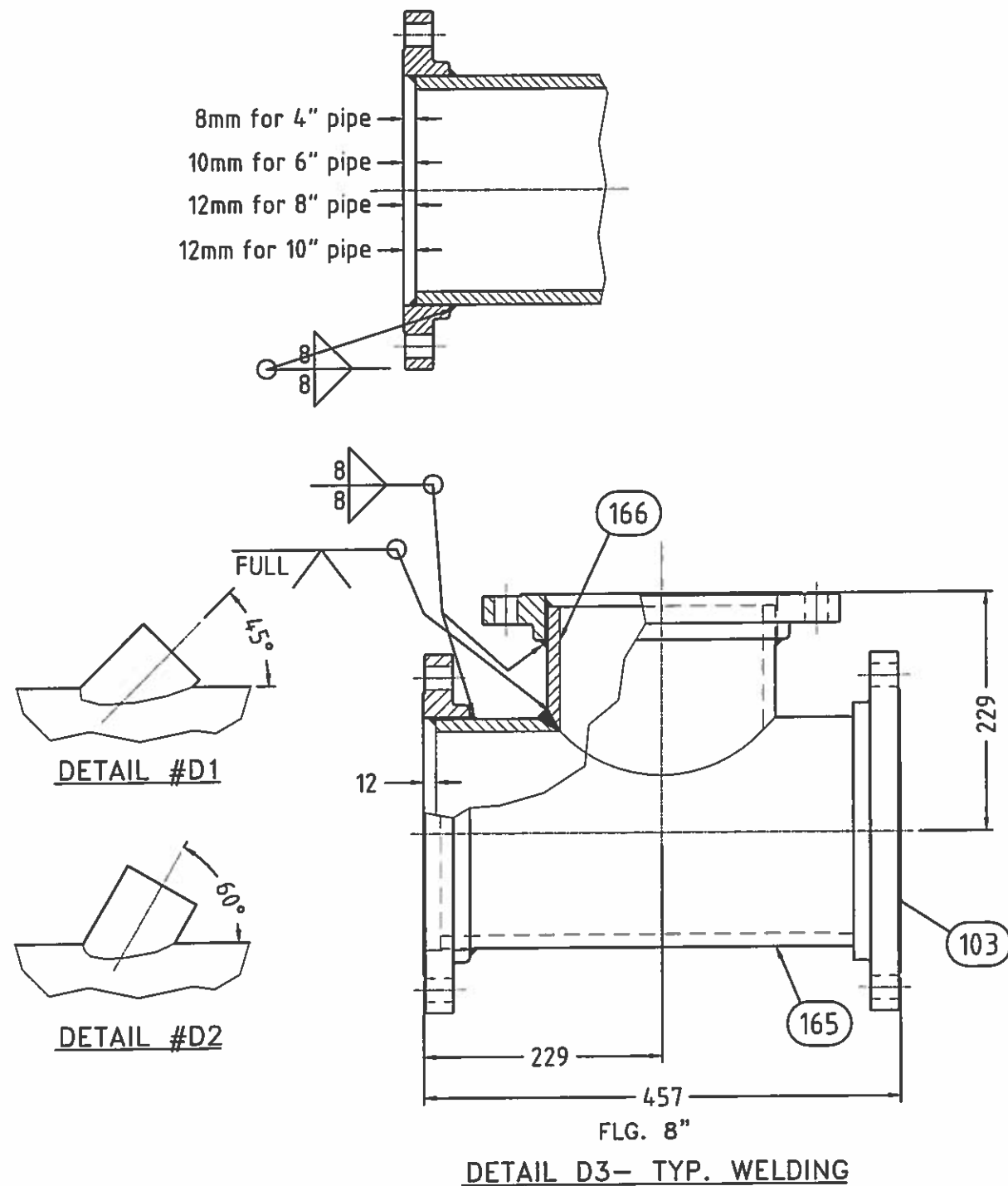
- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS


| | | | |
|---|---|-----------|--------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
| <p>Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com</p> <p>CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC.</p> | | | |
| CLIENT: | GOVERNEMENT OF NUNAVUT | | |
| TITRE: | ACCESS VAULT AV41 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | |
| DESSIN No.: | 6400-F-AV41 | DESS PAR: | G.L. |
| DRAWING No.: | | DRAW BY: | |
| SCALE: | QTE: | DATE: | FEUILLE: |
| X/X" = X" | QTY: 1 | 01-04-14 | SHEET: 1 / 4 |
| | | | REV: A |

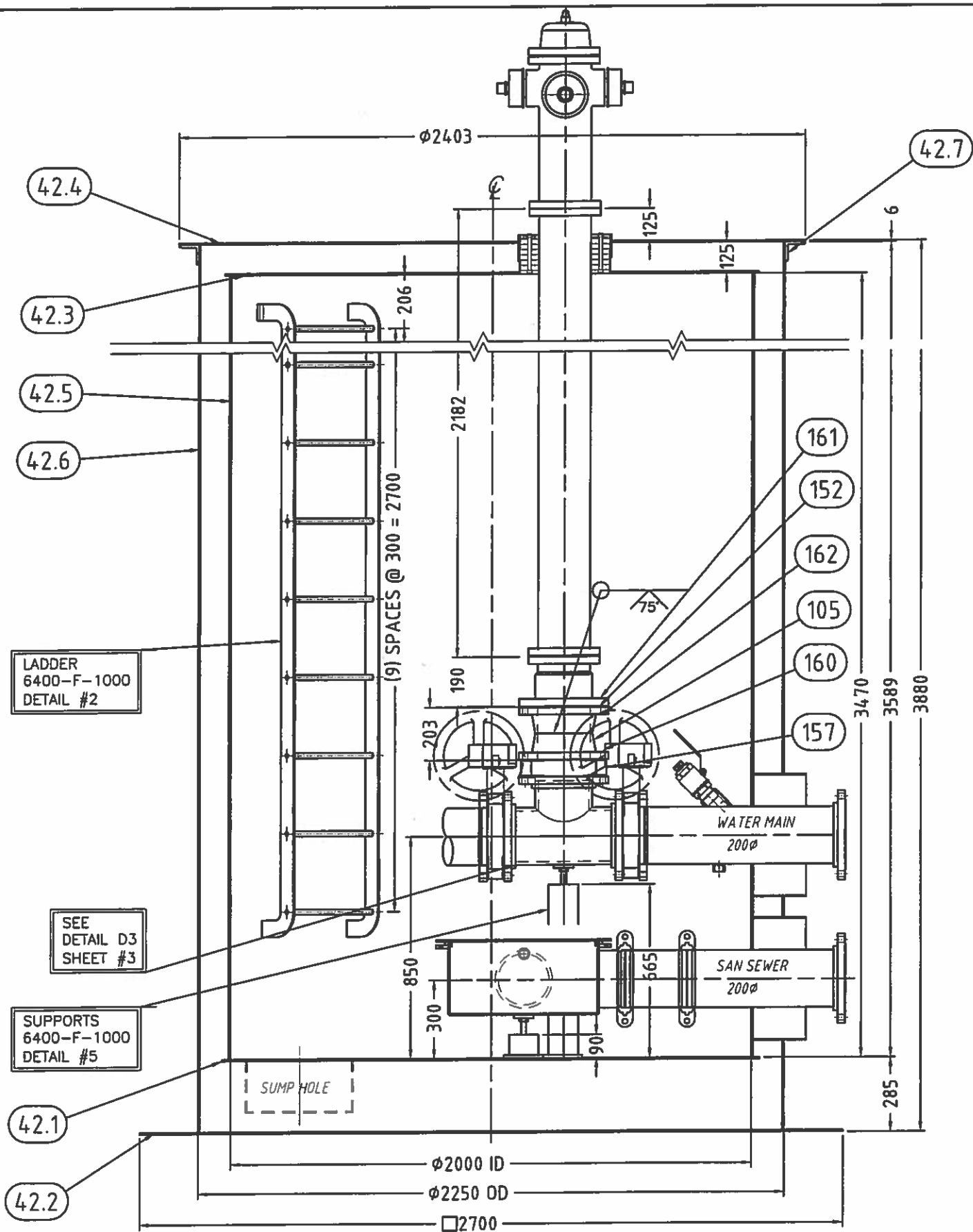


| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
|---|---------------------|----------|------------|
| REV | DESCRIPTION | DATE | DESS/DRAWN |
| <p>  Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com </p> <p> CE DOCUMENT EST LA PROPRIETE DE FALCO TECHNOLOGIES INC. ET LUI SERA RETOURNE SUR DEMANDE. SA REPRODUCTION EST INTERDITE SANS AUTORISATION, ET IL NE DOIT PAS ETRE UTILISE, DIRECTEMENT OU INDIRECTEMENT, DE FAÇON PREJUDICABLE AUX INTERETS DE FALCO TECHNOLOGIES INC. THIS DOCUMENT IS THE PROPERTY OF FALCO TECHNOLOGIES INC. AND SHALL NOT BE TRACED OR REPRODUCED OR USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF FALCO TECHNOLOGIES INC. </p> <p> CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT </p> <p> TITRE: TITLE: ACCESS VAULT AV41 NEW UTILIDOR DESIGN RESOLUTE BAY , NU </p> <p> DESSIN No: DRAWING No: 6400-F-AV41 </p> <p> DESS. PAR: DRAW BY: G.L. </p> <p> SCALE: X/X" = X" </p> <p> QTE: QTY: 1 </p> <p> DATE: 01-04-14 </p> <p> FEUILLE: SHEET: 3 / 4 </p> <p> REV: A </p> | | | |

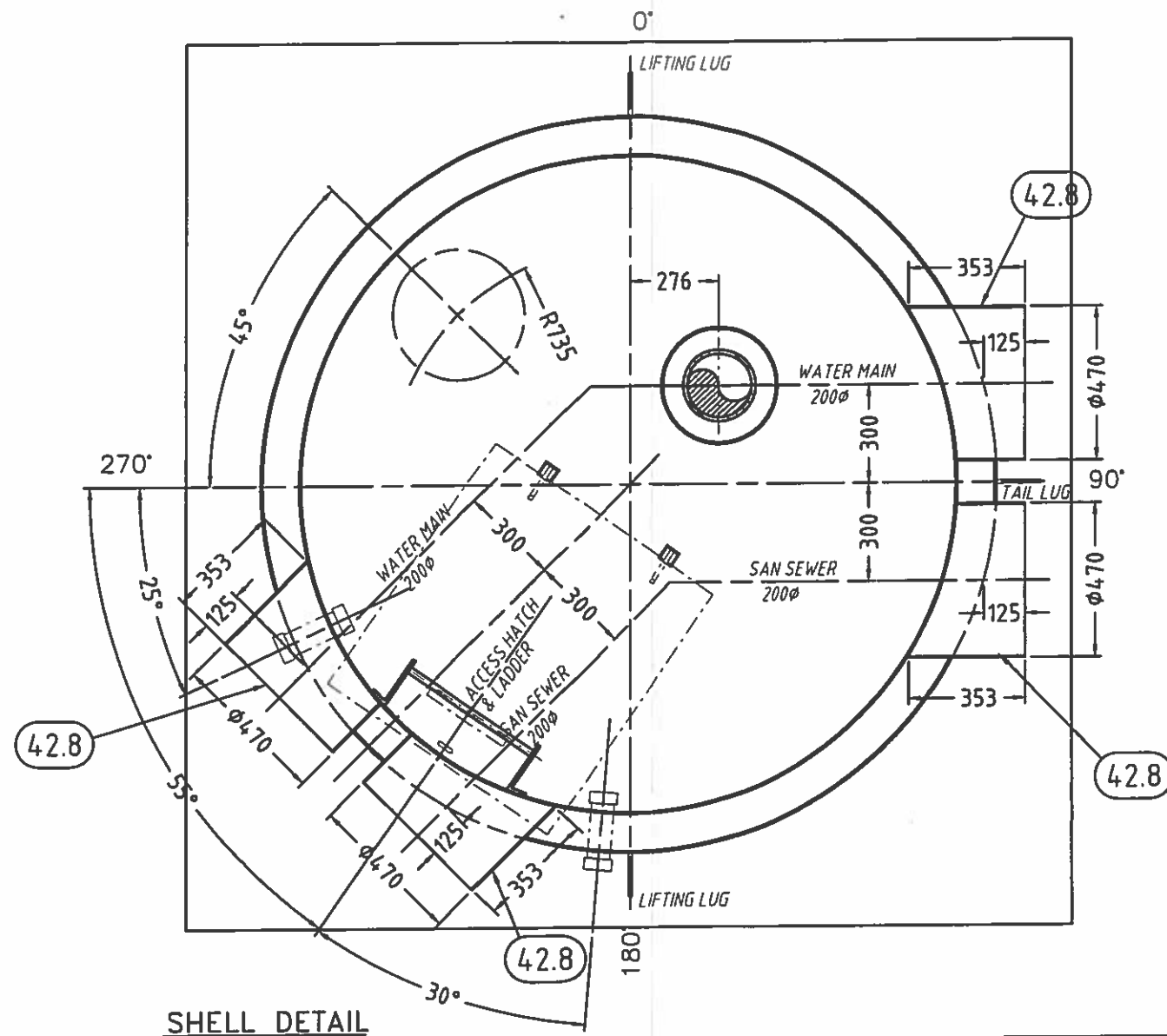
| Item | Qty | Description | Material | Item | Qty | Description | Material |
|------|-----|---|-------------|-------|-----|--|-------------|
| 157 | 5 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | | 41.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2312mm | A36 |
| 160 | 80 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. | 41.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2950mm x 2950mm | A36 |
| 161 | 24 | 3/4-10 HEX.-BOLT, 3 1/2"LG | PLATED C.S. | 41.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2298mm | A36 |
| 162 | 24 | 3/4-10 HEX. NUT | PLATED C.S. | 41.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2653mm | A36 |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B | 41.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 7088mm x 4520mm LG. | A36 |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B | 41.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 7843mm x 4908mm LG. | A36 |
| | | | | 41.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| | | | | 41.8 | 2 | PL. 1/4" THK. x 320 x 1456mm LG. | A36 |
| | | | | 41.9 | 2 | PL. 1/4" THK. x 405 x 1456mm LG. | A36 |
| | | | | 41.10 | 1 | PL. 1/4" THK. x 267 x 1456mm LG. | A36 |
| | | | | 41.11 | 1 | PIPE 8" SCH.80 x 715mm LG. vic groove 1 end | A-53-B |
| | | | | 41.12 | 1 | PIPE 8" SCH.80 x 903mm LG. vic groove 2 end | A-53-B |
| | | | | 41.13 | 1 | PIPE 8" SCH.80 x 564mm LG. vic groove 1 end | A-53-B |
| | | | | 41.14 | 1 | PIPE 8" SCH.80 x 774mm LG. | A-53-B |
| | | | | 41.15 | 1 | PIPE 8" SCH.80 x 777mm LG. | A-53-B |
| | | | | 41.16 | 1 | PIPE 8" SCH.80 x 779mm LG. vic groove 1 end | A-53-B |
| | | | | 41.17 | 1 | PIPE 8" SCH.80 x 589mm LG. vic groove 2 end | A-53-B |
| | | | | 41.18 | 1 | PIPE 8" SCH.80 x 372mm LG. vic groove 2 end | A-53-B |
| | | | | 103 | 10 | FLANGE SORF 8" - 150# | SA 105 |
| | | | | 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 |
| | | | | 112 | 7 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| | | | | 117 | 2 | 8" VICTAULIC ELBOW 11 1/4°, #13 | GALV C.S. |
| | | | | 132 | 2 | 8" VICTAULIC ELBOW 90°, #10 | GALV C.S. |
| | | | | 137 | 4 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| | | | | 142 | 2 | BLIND FLANGE 8" - 150# | SA 105 |
| | | | | 147 | 1 | 8" VICTAULIC CAP, #60 | GALV C.S. |
| | | | | 152 | 3 | 1/8" THK. GASKET FOR 8"FLG. #150 | SOFT RUBBER |



| | | | |
|--|---------------------|--|--------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
|  Falco Technologies Inc., a company of BERLIE-FALCO | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | |
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| CLIENT: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV41 | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY, NU | |
| DESSIN No.: | | DESS. PAR: | |
| DRAWING No: 6400-F-AV41 | | DRAW BY: G.L. | |
| | QTE: | DATE: | FEUILLE: |
| SCALE: X/X" = X" | QTY: 1 | 01-04-14 | SHEET: 4 / 4 |
| | | | REV: A |



SECTION "A-A"

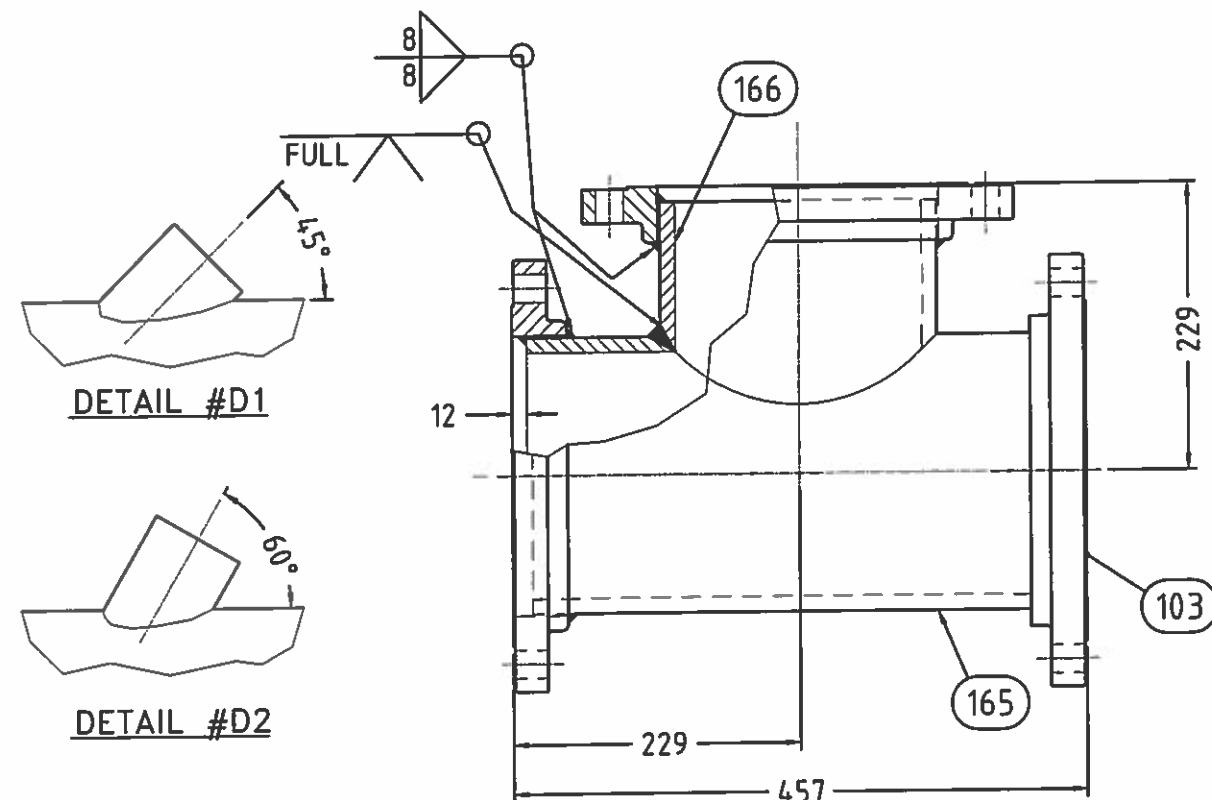
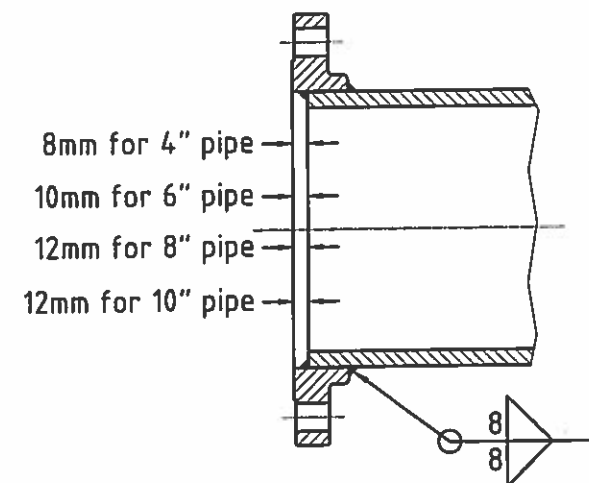


SHELL DETAIL

GENERAL NOTES:

- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE:
BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD
VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS

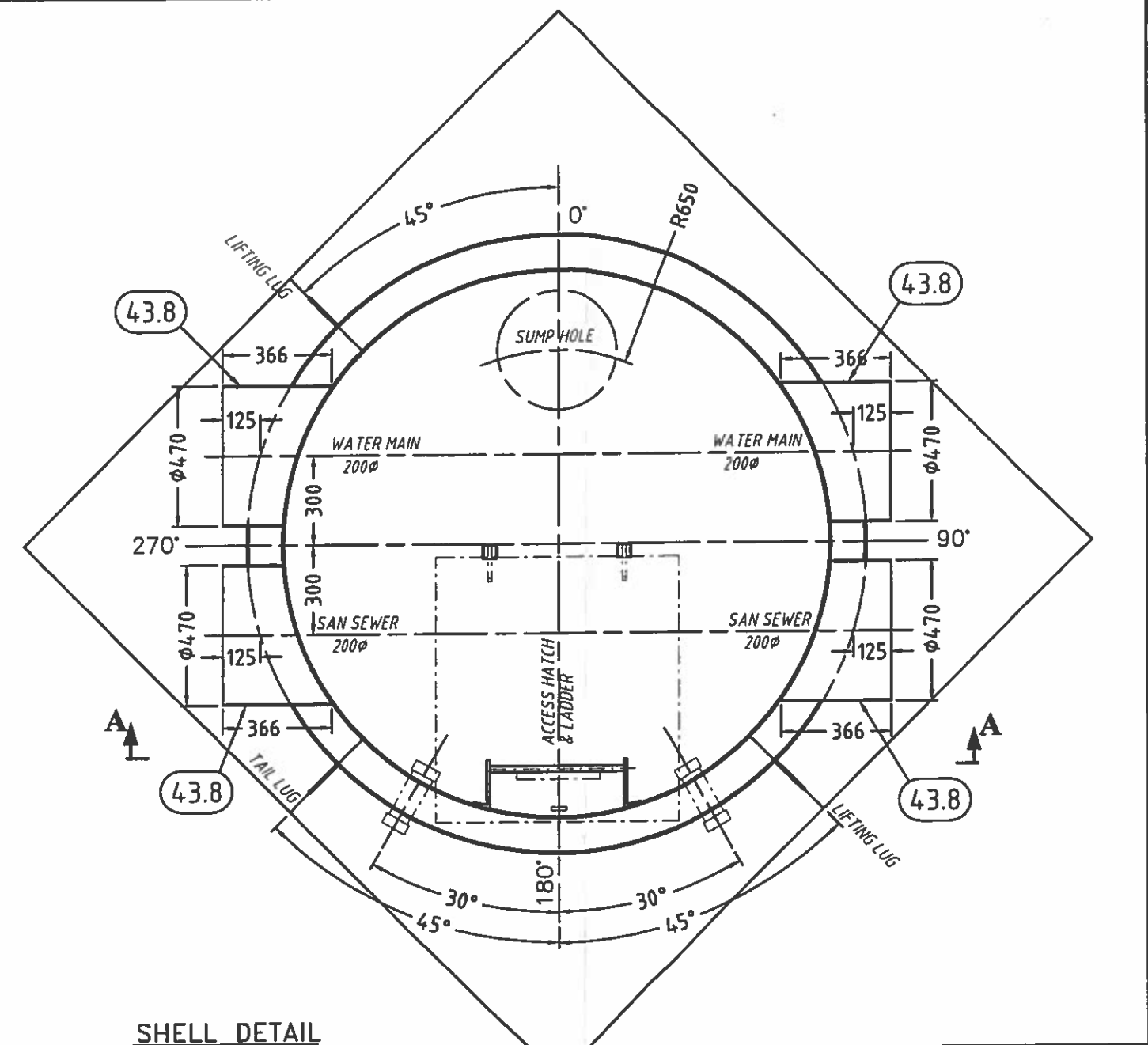
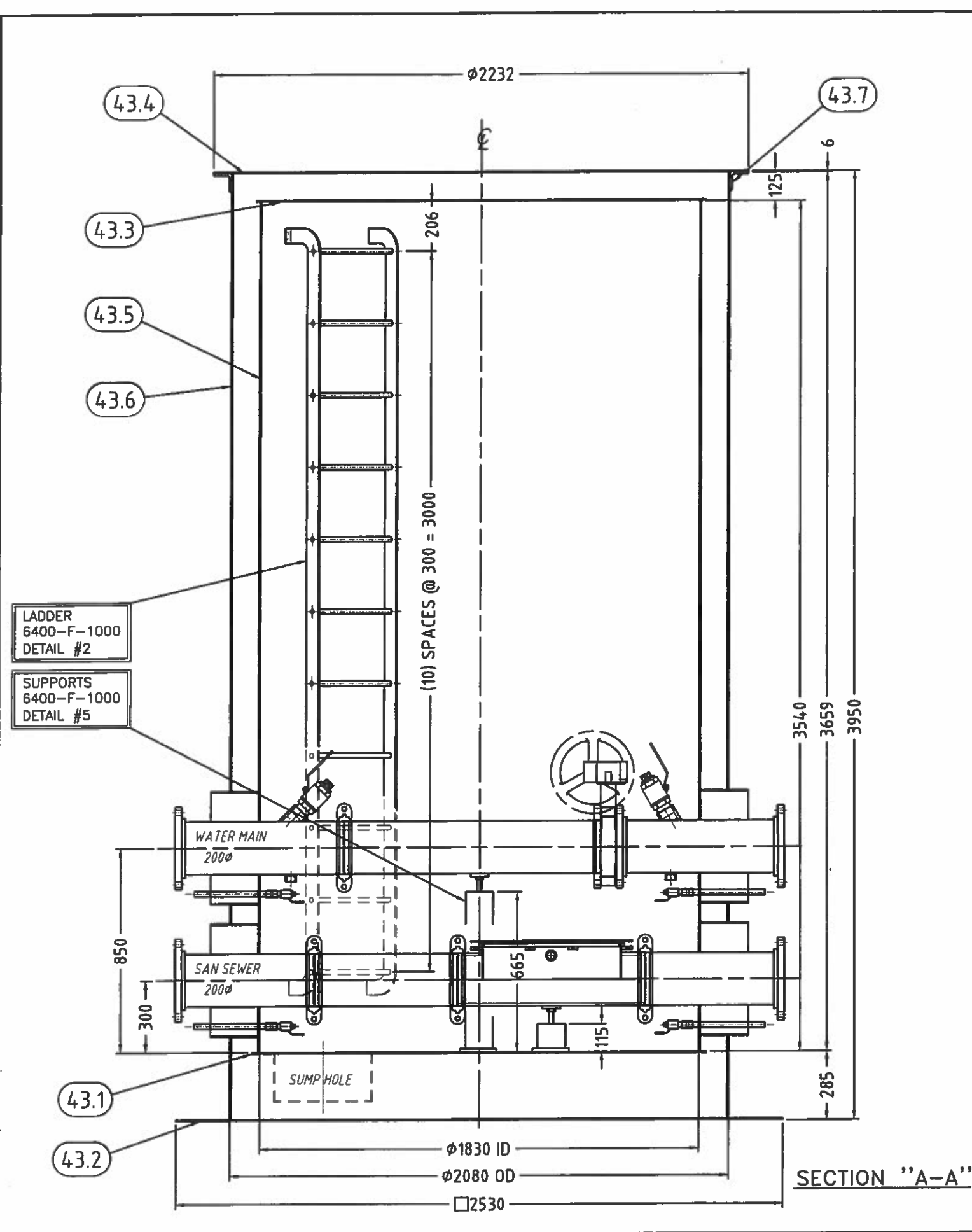
| | | | |
|--|-----------------------|-----------------------------------|---------------------------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
| Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com | | | |
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| CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AV42 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No: DRAWING No: 6400-F-AV42 | | DESS PAR: DRAW BY: G.L. | |
| SCALE: X/X" = X" | QTE: QTY: 1 | DATE: 01-04-14 | FEUILLE: SHEET: 1 / 3 |
| | | | REV: A |



DETAIL D3- TYP. WELDING

| Item | Qty | Description | Material |
|-------|-----|---|-------------|
| 42.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø2062mm | A36 |
| 42.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2700mm x 2700mm | A36 |
| 42.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø2048mm | A36 |
| 42.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2403mm | A36 |
| 42.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 6303mm x 3470mm LG. | A36 |
| 42.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 7048mm x 3858mm LG. | A36 |
| 42.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 42.8 | 4 | PL. 1/4" THK. x 353 x 1456mm LG. | A36 |
| 42.9 | 1 | PIPE 8" SCH.80 x 666mm LG. vic groove 2 end | A-53-B |
| 42.10 | 1 | PIPE 8" SCH.80 x 693mm LG. vic groove 1 end | A-53-B |
| 42.11 | 2 | PIPE 8" SCH.80 x 238mm LG. vic groove 2 end | A-53-B |
| 42.12 | 2 | PIPE 8" SCH.80 x 593mm LG. vic groove 1 end | A-53-B |
| 42.13 | 1 | PIPE 8" SCH.80 x 779mm LG. vic groove 1 end | A-53-B |
| 103 | 7 | FLANGE SORF 8" - 150# | SA 105 |
| 105 | 2 | FLANGE WN 8" 150#, BORE | SA-105 |
| 112 | 6 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 127 | 1 | 8" VICTAULIC ELBOW 45°, #11 | GALV C.S. |
| 137 | 2 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 152 | 1 | 1/8" THK. GASKET FOR 8"FLG. #150 | SOFT RUBBER |
| 157 | 3 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 48 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |
| 161 | 8 | 3/4-10 HEX.-BOLT, 3 1/2"LG | PLATED C.S. |
| 162 | 8 | 3/4-10 HEX. NUT | PLATED C.S. |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B |

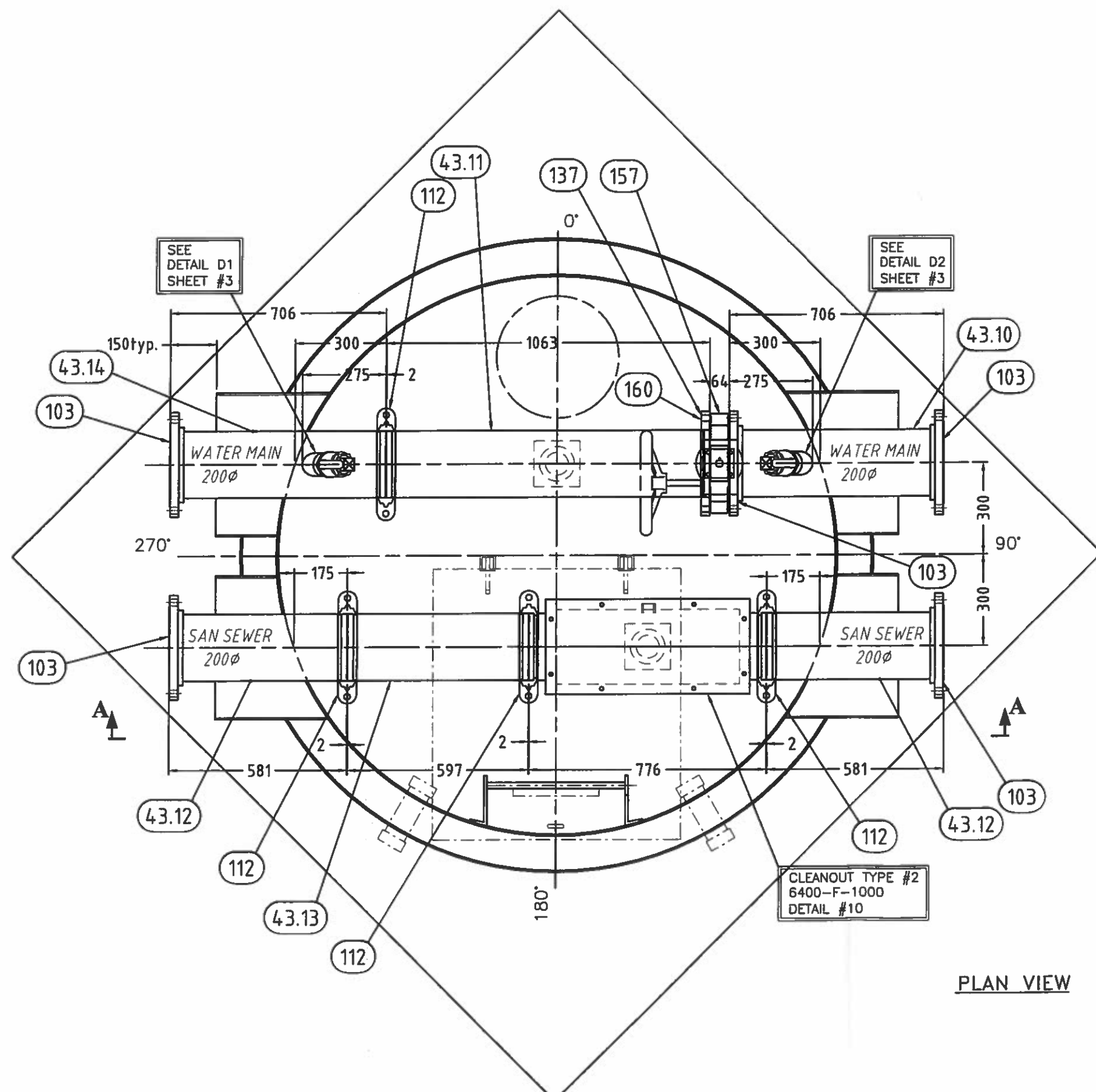
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|---|---------------------|---------------------------------------|------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
| <p>Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel. (450) 444-0566 Fax (450) 444-2227 www.berliefalco.com</p> | | | |
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| CLIENT: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV42 | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY , NU | |
| DESSIN No.: | | DESS. PAR: | |
| DRAWING No. 6400-F-AV42 | | DRAWBY: G.L. | |
| SCALE: | QTE: | DATE: | FEUILLE: |
| X/X" = X" | 1 | 01-04-14 | 3 / 3 |
| | | | REV: A |




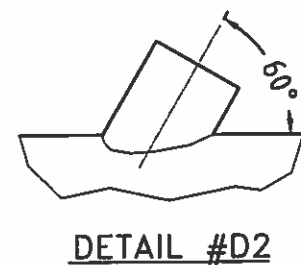
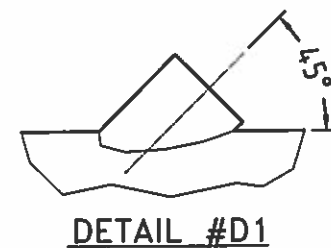
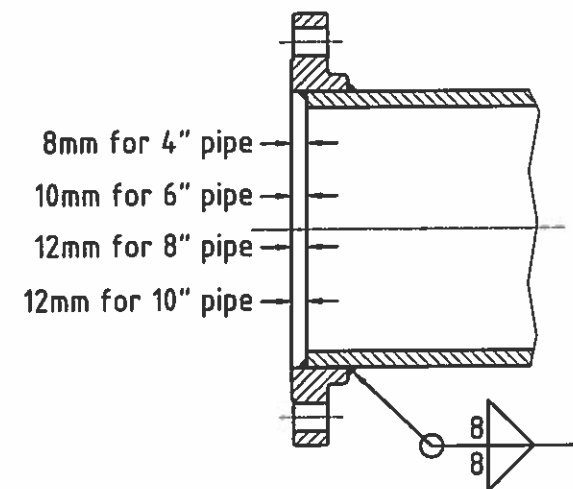
GENERAL NOTES:

- 1 - VICTAULIC FITTINGS SHALL BE HOT DIPPED GALVANIZED INSIDE & OUT COUPLINGS SHALL BE STYLE 77 C/W GRADE E GASKETS
- 2 - ALL NUTS, BOLTS, WASHERS, SCREW, ETC... SHALL BE HOT DIP GALVANIZED OR CADMIUM PLATED
- 3 - FLANGE ADAPTERS FOR GROOVE JOINT PIPE SHALL BE VICTAULIC STYLE 741
- 4 - VALVE: BUTTERFLY VALVES SHALL BE LUG TYPE, WITH HYCAR SHAFT SEAL AND SEAT, BRONZE DISK, 316SS SHAFT AND STAINLESS STEEL BOLTS, FITTED WITH A ROTARY MANUAL ACTUATOR AND HANDWHEEL, CRANE QUARTERMASTER 44BXZ-GD VALVES SHALL BE INSTALLED WITH CADMIUM PLATED HEXAGONAL HEAD BOLTS


| | | | |
|--|---------------------------------------|-----------------------|---------------------|
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| REV. | DESCRIPTION | DATE | DESS/DRAWN |
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| | BERLIE-FALCO | JSR 2E4 | Tel: (450) 444-0566 |
| | | | Fax: (450) 444-2227 |
| | | | www.berliefalco.com |
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| CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: ACCESS VAULT AV43 | | | |
| TITRE: NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No.: 6400-F-AV43 | | DESS. PAR: G.L. | |
| DRAWING No.: 6400-F-AV43 | | DRAW BY: G.L. | |
| SCALE: X/X" = X" | QTE: 1 | DATE: 01-04-14 | FEUILLE: 1 / 3 |
| | | | REV: A |

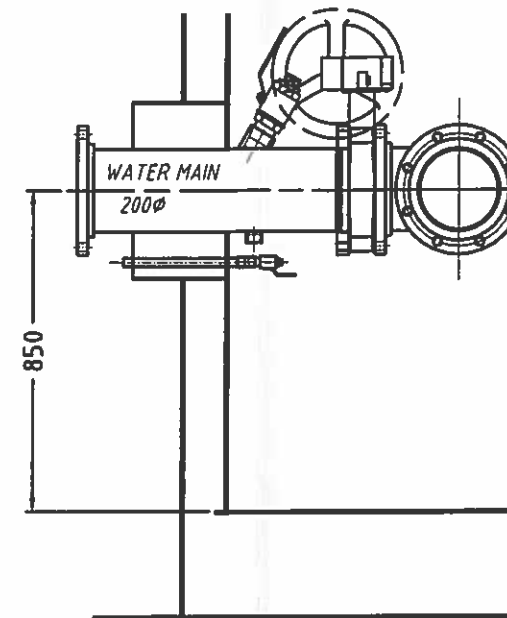
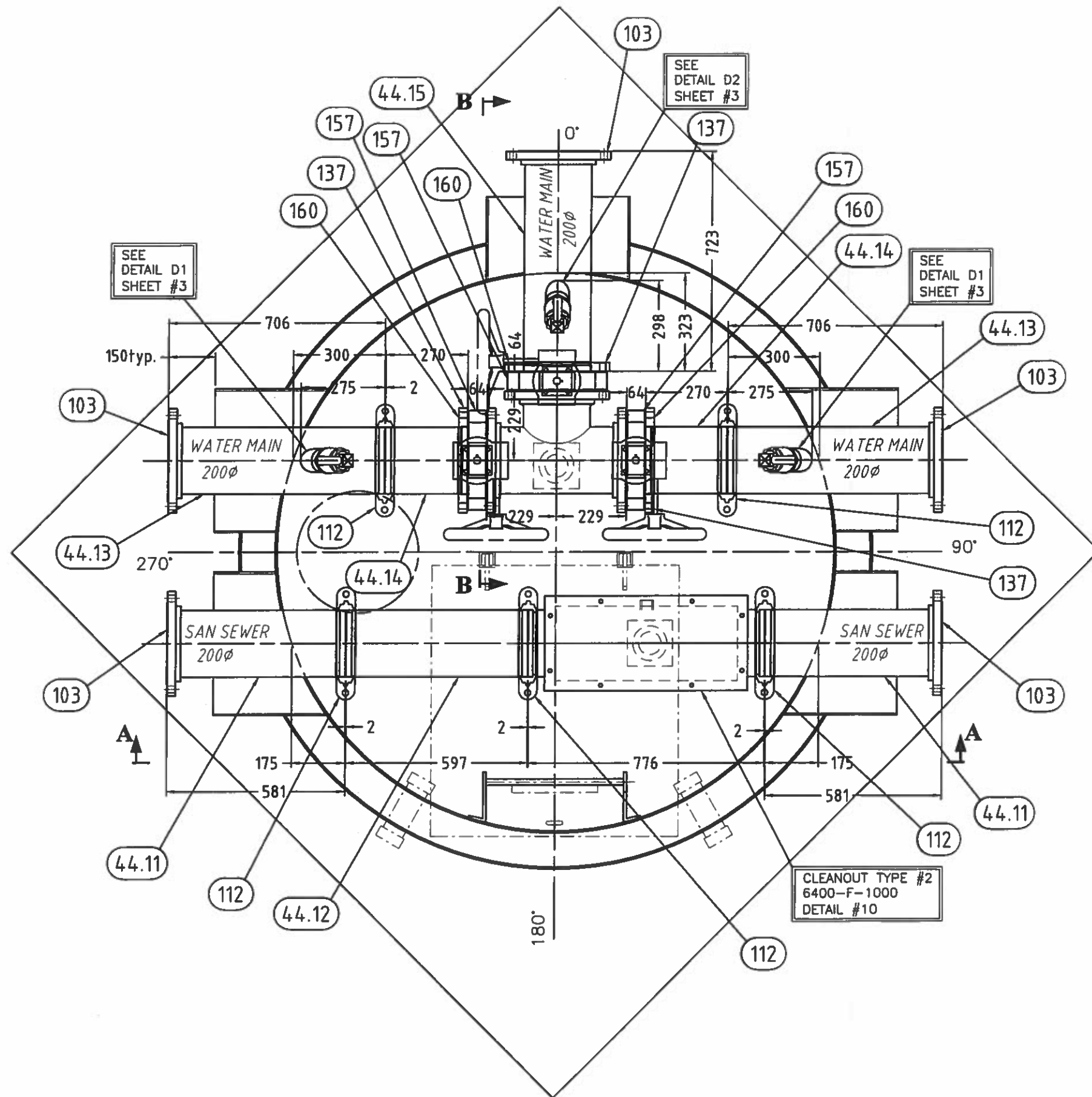


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|--|---------------------|--|------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV. | DESCRIPTION | DATE | DESS/DRAWN |
|  <p>Falco Technologies Inc., a company of BERLIE-FALCO</p> | | 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel (450) 444-0566 Fax (450) 444-2227 www.berliefalco.com | |
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| CLIENT: | | | |
| CUSTOMER: | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV43 | |
| TITLE: | | NEW UTILDOR DESIGN RESOLUTE BAY , NU | |
| DESSIN No.: | | DESS. PAR: | |
| DRAWING No: | | DRAW BY: | |
| 6400-F-AV43 | | G.L. | |
| QTE: | | DATE: | |
| QTY: | | FEUILLE: | |
| 1 | | SHEET: | |
| 01-04-14 | | 2 / 3 | |
| REV: | | A | |



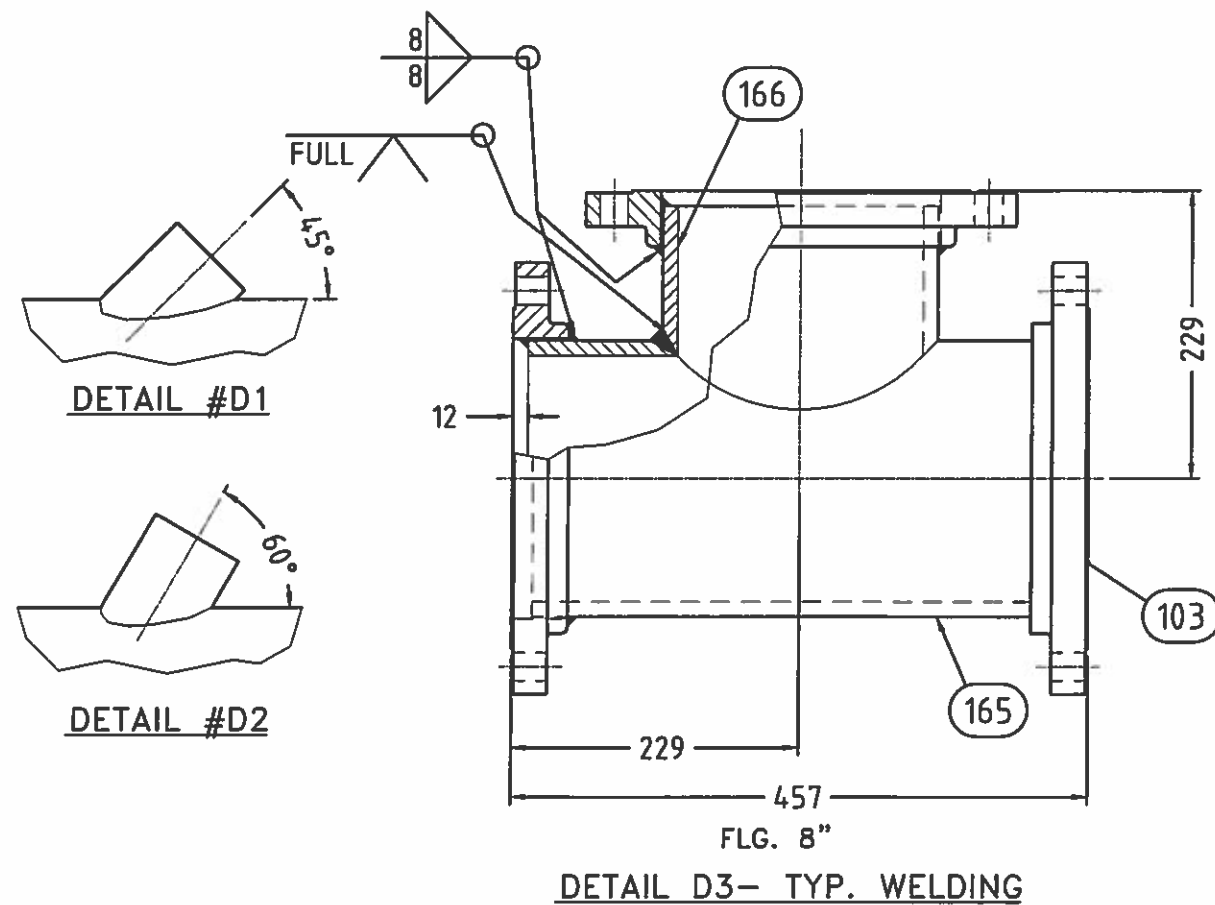
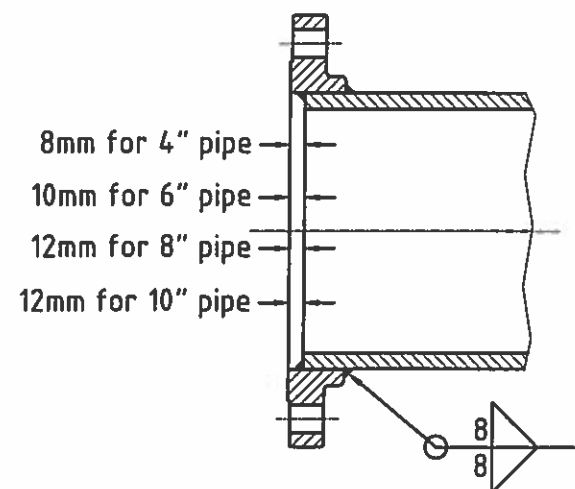
| Item | Qty | Description | Material |
|-------|-----|---|-------------|
| 43.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø1892mm | A36 |
| 43.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2530mm x 2530mm | A36 |
| 43.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø1878mm | A36 |
| 43.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2232mm | A36 |
| 43.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 5767mm x 3540mm LG. | A36 |
| 43.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 6515mm x 3928mm LG. | A36 |
| 43.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 43.8 | 4 | PL. 1/4" THK. x 366 x 1456mm LG. | A36 |
| 43.10 | 1 | PIPE 8" SCH.80 x 682mm LG. | A-53-B |
| 43.11 | 1 | PIPE 8" SCH.80 x 1063mm LG. vic groove 2 end | A-53-B |
| 43.12 | 2 | PIPE 8" SCH.80 x 569mm LG. vic groove 1 end | A-53-B |
| 43.13 | 1 | PIPE 8" SCH.80 x 597mm LG. vic groove 2 end | A-53-B |
| 43.14 | 1 | PIPE 8" SCH.80 x 694mm LG. vic groove 1 end | A-53-B |
| 103 | 5 | FLANGE SORF 8" - 150# | SA 105 |
| 112 | 4 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 137 | 1 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 157 | 1 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 16 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |

| | | | |
|--|---------------------|---|--------------|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
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| CLIENT: | | CUSTOMER: | |
| | | GOVERNEMENT OF NUNAVUT | |
| TITRE: | | ACCESS VAULT AV43 | |
| TITRE: | | NEW UTILIDOR DESIGN RESOLUTE BAY , NU | |
| DESSIN No.: | | DESS. PAR: | |
| DRAWING No: 6400-F-AV43 | | DRAW BY: G.L. | |
| | QTE: | DATE: | FEUILLE: |
| SCALE: X/X" = X" | QTY: 1 | 01-04-14 | SHEET: 3 / 3 |
| | | | REV: A |




SECTION "B-B"

| | | | |
|--|--------------------------------|--|--|
| A | ISSUED FOR COMMENTS | 01-04-14 | G.L. |
| REV | DESCRIPTION | DATE | DESS/DRAWN |
| <p>Falco Technologies Inc., a company of BERLIE-FALCO 1245 rue Industrielle La Prairie (Quebec) J5R 2E4 Tel: (450) 444-0566 Fax: (450) 444-2227 www.berliefalco.com</p> | | | |
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| <p>CLIENT: CUSTOMER: GOVERNEMENT OF NUNAVUT</p> | | | |
| <p>TITRE: TITLE: ACCESS VAULT AV44 NEW UTILIDOR DESIGN RESOLUTE BAY , NU</p> | | | |
| <p>DESSIN No.: DRAWING No: 6400-F-AV44</p> | | <p>DESS. PAR: DRAWN BY: G.L.</p> | |
| <p>SCALE: X/X" = X"</p> | <p>QTE: QTY: 1</p> | <p>DATE: 01-04-14</p> | <p>FEUILLE: SHEET: 2 / 3</p> |
| | | | <p>REV: A</p> |



| Item | Qty | Description | Material |
|-------|-----|---|-------------|
| 44.1 | 1 | BOTTOM INTERNAL PL. 1/4" THK. x Ø1892mm | A36 |
| 44.2 | 1 | BOTTOM EXTERNAL PL. 3/8" THK. x 2530mm x 2530mm | A36 |
| 44.3 | 1 | TOP INTERNAL PL. 1/4" THK. x Ø1878mm | A36 |
| 44.4 | 1 | TOP EXTERNAL PL. 1/4" THK. x Ø2232mm | A36 |
| 44.5 | 1 | INTERNAL SHELL PL. 1/4" THK. x 5767mm x 3490mm LG. | A36 |
| 44.6 | 1 | EXTERNAL SHELL PL. 1/4" THK. x 6515mm x 3878mm LG. | A36 |
| 44.7 | 1 | ANGLE 3" x 3" x 1/4" | G40.21-44W |
| 44.8 | 1 | PL. 1/4" THK. x 273 x 1456mm LG. | A36 |
| 44.10 | 4 | PL. 1/4" THK. x 366 x 1456mm LG. | A36 |
| 44.11 | 2 | PIPE 8" SCH.80 x 569mm LG. vic groove 1 end | A-53-B |
| 44.12 | 1 | PIPE 8" SCH.80 x 597mm LG. vic groove 2 end | A-53-B |
| 44.13 | 2 | PIPE 8" SCH.80 x 694mm LG. vic groove 1 end | A-53-B |
| 44.14 | 2 | PIPE 8" SCH.80 x 270mm LG. vic groove 2 end | A-53-B |
| 44.15 | 1 | PIPE 8" SCH.80 x 711mm LG. vic groove 1 end | A-53-B |
| 103 | 8 | FLANGE SORF 8" - 150# | SA 105 |
| 112 | 5 | 8" VICTAULIC COUPLING STYLE 77 | GALV C.S. |
| 137 | 3 | 8" VICTAULIC FLANGE STYLE 741 | GALV C.S. |
| 157 | 3 | 8" BUTTERFLY VALVE - CRANE MODEL 44BXZ-GD FULL LUG WITH ROTARY ACTUATOR AND HANDWHEEL (OR EQUIV.) | |
| 160 | 48 | BOLT 3/4-10UNC x 2 1/4"LG + FLAT WASHER | PLATED C.S. |
| 165 | 1 | PIPE 8" SCH.80 x 433mm LG. | A-53-B |
| 166 | 1 | PIPE 8" SCH.80 x 217mm LG. | A-53-B |

| | | | |
|--|---------------------|---------------|------------|
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| REV | DESCRIPTION | DATE | DESS/DRAWN |
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| CLIENT: | | | |
| CUSTOMER: GOVERNEMENT OF NUNAVUT | | | |
| TITRE: | | | |
| TITRE: ACCESS VAULT AV44 NEW UTILIDOR DESIGN RESOLUTE BAY, NU | | | |
| DESSIN No.: | | DESS. PAR: | |
| DRAWING No: 6400-F-AV44 | | DRAW BY: G.L. | |
| SCALE: | QTE: | DATE: | FEUILLE: |
| X/X" = X" | 1 | 01-04-14 | 3 / 3 |
| | | | REV: |
| | | | A |

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