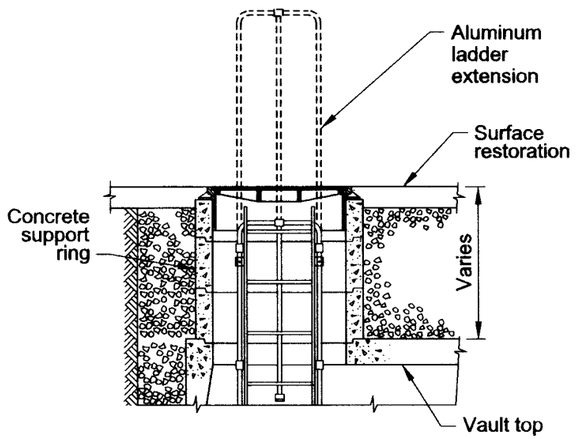
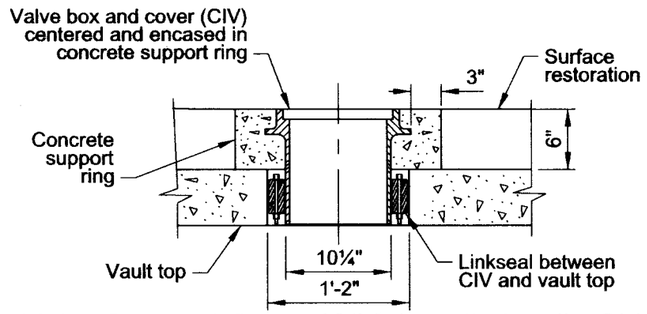
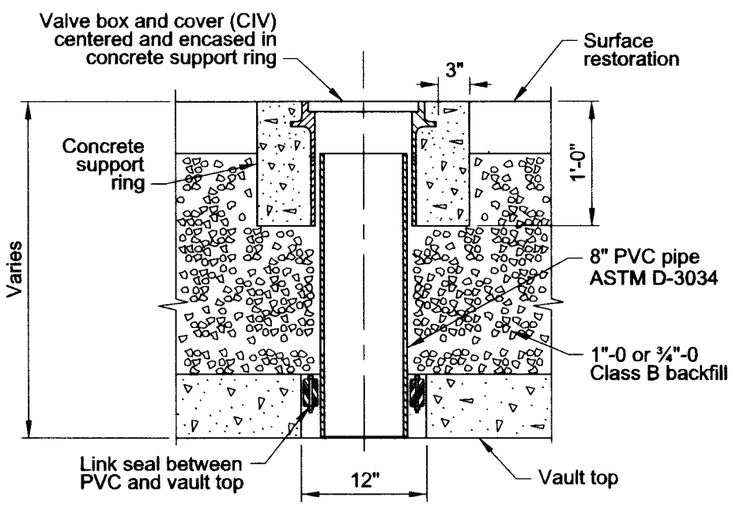


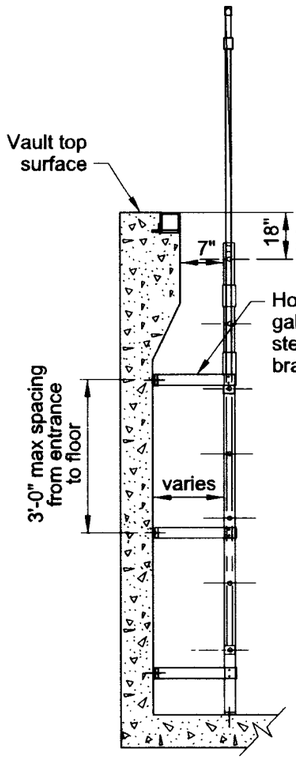
Manhole Installation (In-Street)

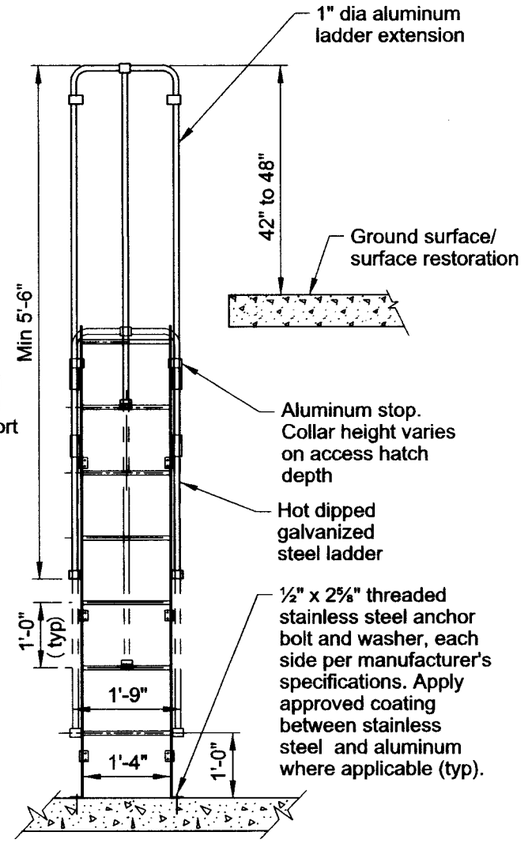


Valve Box and Cover (CIV) Installation (In-Sidewalk)



Valve Box and Cover (CIV) Installation (In-Street)





Ladder

General Notes:

1. Contractor to supply and install all piping, vault and appurtenances except for meter, strainer and dismantling assembly internal to the vault. Verify required length of spacer for meter, strainer and dismantling assembly with PWB shop.
2. Select products are listed for reference only and approved equals may be substituted.
3. Dismantling connections shall be (1) restrained FLG x FLG dismantling joints. (2) restrained FLG x PE DI nipple with wedge action or through bolt flange adapter, or (3) restrained FLG x PE nipple with a torque shear set screw flange adapter. Use in the above order of preference as required by length. Typical installations are shown.
4. Strainer is shown adjacent to meter. Dismantling assembly may be placed between strainer and meter as piping permits. Strainer may be integral to meter.
5. Piping outside of vault shall be designed for dead end restraint to facilitate dismantling pipe within the interior of the vault. Pipe restraint by Engineer.
6. Vaults shall be constructed by the manufacturer with solid walls, bottom drains (grated) and top access valve boxes and covers (CIVs) as shown. All outside surfaces shall be coated by the manufacturer with inorganic silicate pore sealant and the contractor shall provide joint gasket/sealants. Pipe penetrations shall be core drilled and sealed with mechanical seals, no knockouts.
7. Vault bottom shall be installed level for those vaults with a center sump, and vaults with trench sumps shall be set sloping toward the trench to facilitate drainage. The slope shall be approximately ¼" differential across the floor of the vault. Core a hole through the vault sumps for the drain check valves, and center drain rock surrounded by non-woven filter fabric. Extend drain rock to non-compacted native soil.
8. Obtain custom vault top for sloping sites. Fine adjustments to grade shall be made with non-shrink grout and shims per vault manufacturer's recommendation. Foundation base and backfill aggregate shall be Class B backfill, compacted to 95% density.
9. Vault access hatch doors shall be rated for H-20 wheel loads with non-skid surface per City Standards. Hatch door shall only be used in off street locations not subject to high density or heavy truck traffic. Hatch door shall have a tamper proof locking device that ensures flush closure.
10. Attach ladders, hatches, pipe supports, etc., to vault with SS anchors per manufacturer's specifications. Apply mastic coating between SS and aluminum parts.
11. All piping in vaults shall be epoxy coated. Coat DI with leafing aluminum epoxy (Carbomastic 15) per PWB standards. Bolts shall be hot dipped galvanized, SS, silicon bronze, epoxy or PTFE coated or fitted with petrolatum filled caps.
12. The spools, or spool and nipple combination between the mainline tees and bypass are optional. If spools or nipples are omitted, order vault with modified configuration for pipe penetrations and CIV locations. Provide Foster Adapter for MJ connections.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

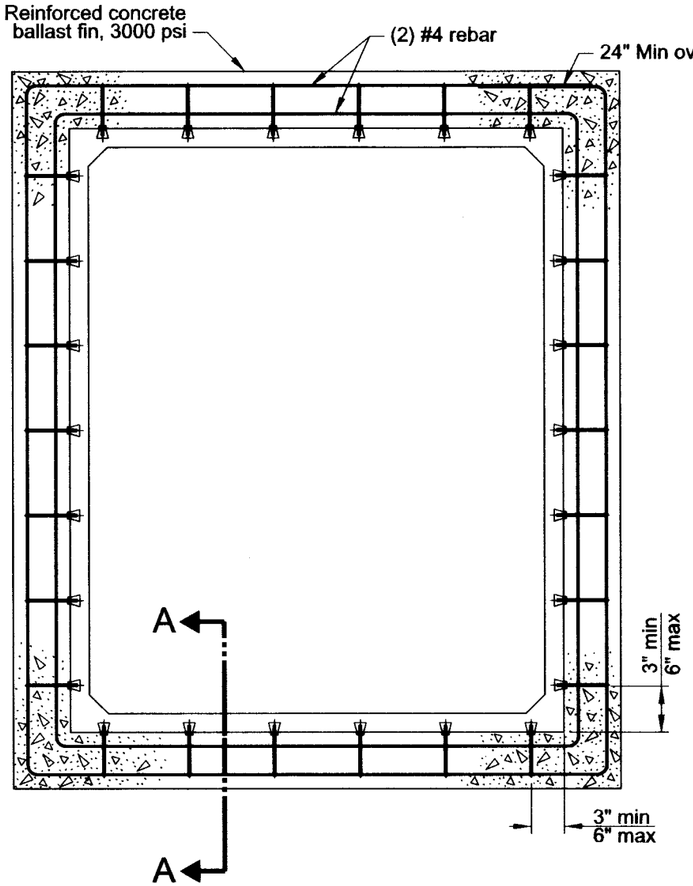
General Vault Details

Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

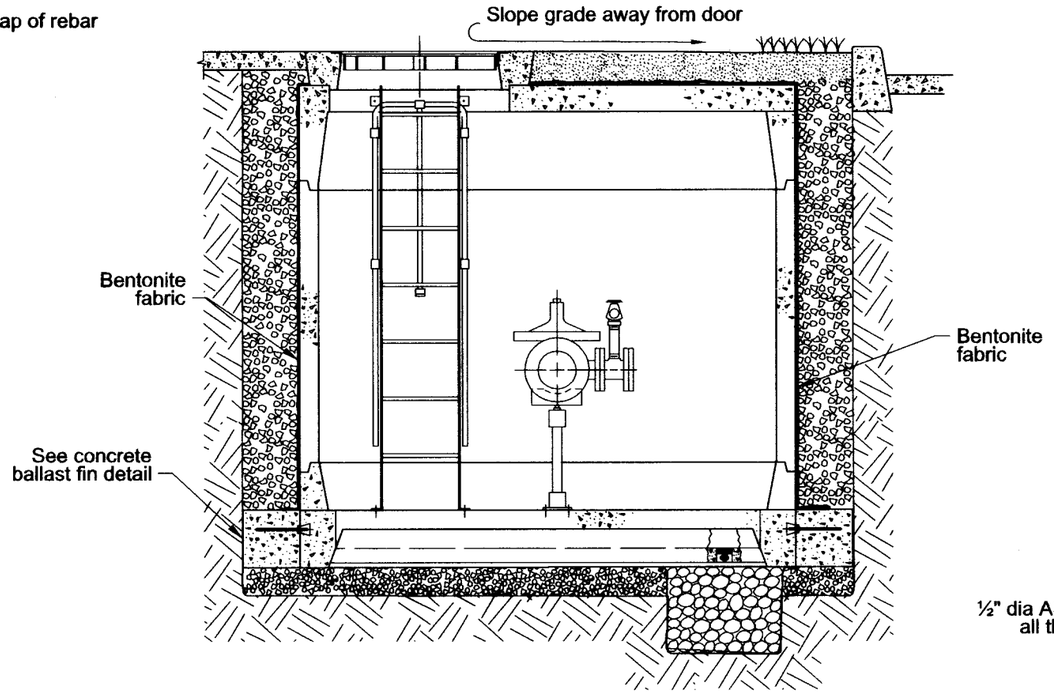
Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.
P-855

Plot Date: 8/11/2015 11:46:57 AM Filename: n:\Engineering\CAD\Standards\Working_Vaults\855_General_Vault_Details.dgn



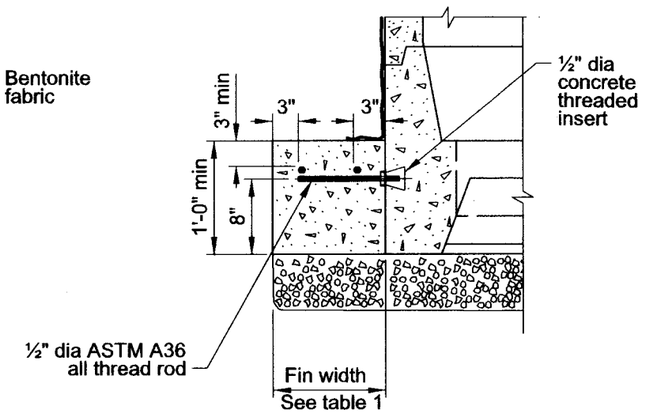
Plan View Concrete Ballast Fin Detail



Elevation View Concrete Apron Ballast Fin Detail

Table 1 - Ballast Fin Width

VAULT SIZE	FIN WIDTH
6' x 8' (Oldcastle Precast 657)	12"
8' x 10' (Oldcastle Precast 810)	18"
8' x 16' (Oldcastle Precast 816)	18"



Ballast Fin Section A-A

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

Vault Ballast Fin

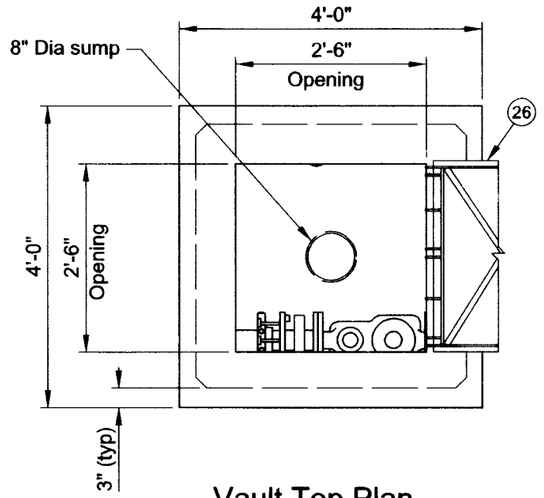
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

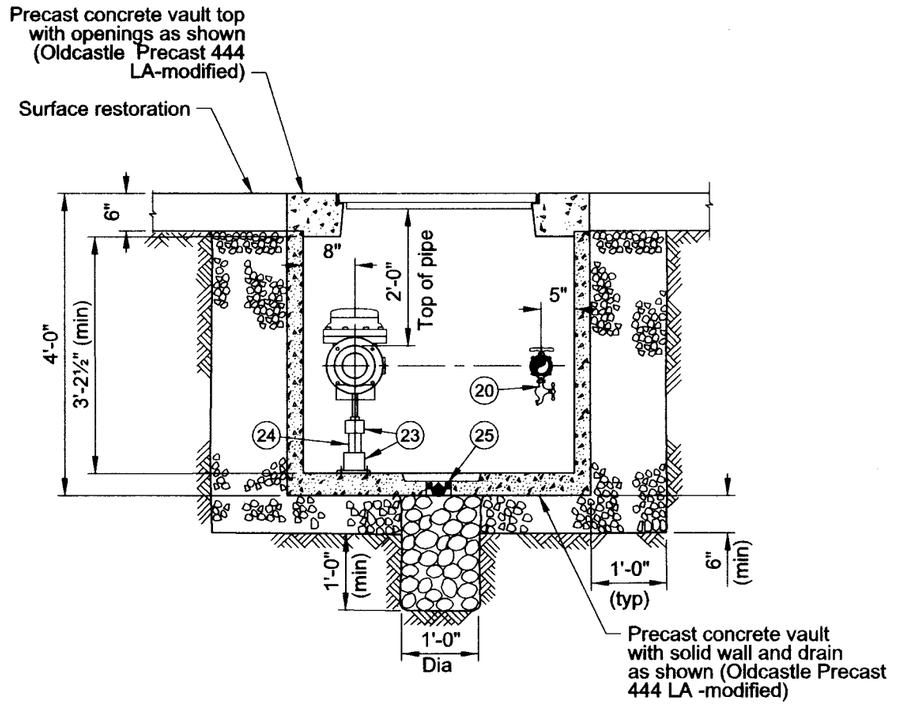
P-856

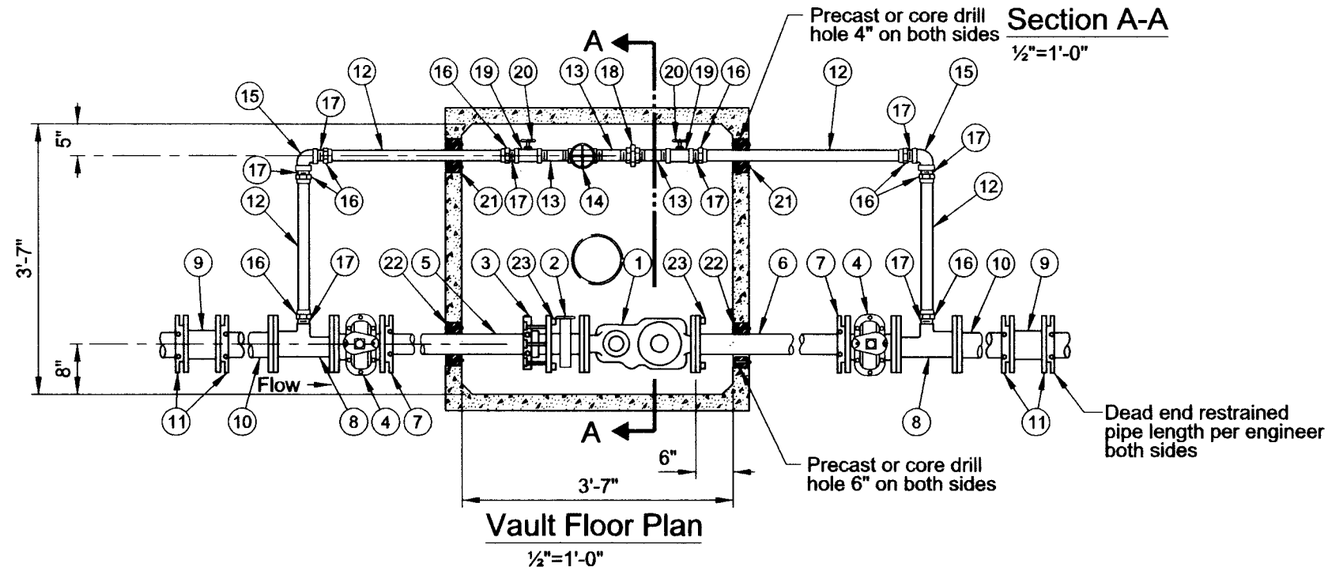
Plot Date: 7/30/2015 3:09:28 PM Filename: J:\Engineering\CAD\Standards\Working_Vaults\856_Vault_Ballast.dgn



Vault Top Plan

½"=1'-0"





Section A-A

½"=1'-0"

Vault Floor Plan

½"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	3"	1	Meter, compound with test outlet
2	3"	1	Strainer, FLG x FLG
3	3"	1	Restrained dismantling assembly (Megaflange)
4	3"	2	Gate Valve, FLG x MJ OL NRS
5	3"	1	Nipple, DI PE X PE 36" long (field fit)
6	3"	1	Nipple, DI FLG X PE 36" long (field fit)
7	3"	2	Gland, wedge action retainer (Megalug)
8	4"x3"x2"	2	Drip Tee, FLG x FLG x FIPT
9	4"	2	Solid sleeve, DI MJ
10	4"	1	Nipple, DI FLG X PE 48" long (field fit)
11	4"	4	Gland, wedge action retainer (Megalug)
12	2"	3	Tubing, copper (field fit)
13	2"	2	Nipple, brass MIPT ~3" long (field fit)
14	2"	1	Ball valve, brass FIPT x FIPT OL
15	2"	2	Common elbow, brass FIPT x FIPT, 90 degrees
16	2"	8	Coupling, brass FIPT x CC
17	2"	7	Nipple, brass close IPT
18	2"	1	Union, brass FIPT
19	2"x2"x¾"	2	Tee, brass FIPT x FIPT
20	¾"	1	Hose bib, brass MIPT
21	2"	2	Seal, mechanical penetration (Link Seal LS-315-C-6)
22	3"	2	Seal, mechanical penetration (Link Seal LS-315-C-10)
23	3"	2	Adjustable pipe support, hot dipped galvanized
24	2"	2	Pipe, galvanized steel (field fit)
25	4"	1	Drain check valve
26	2'-6"x2'-6" or larger	1	Hatch, aluminum single leaf H-20 rated.

Notes:

See General Vault Drawing (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

3" Compound Meter in 444 Vault (In Sidewalk)

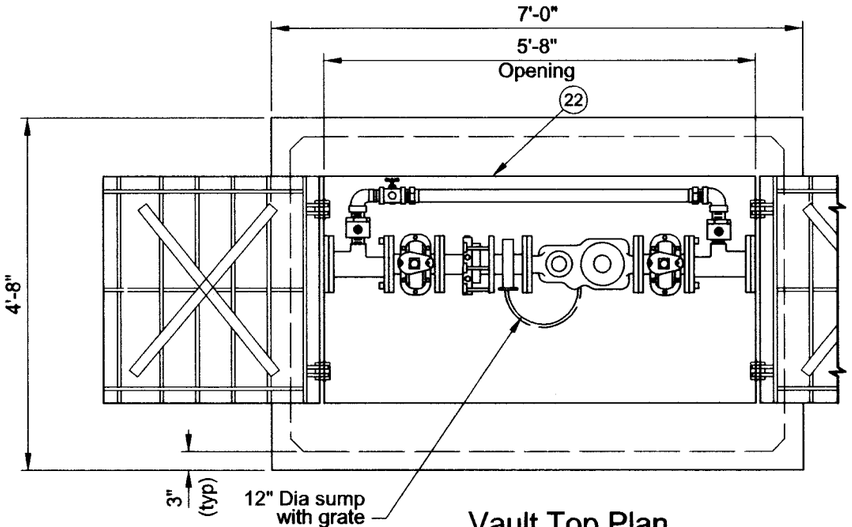
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

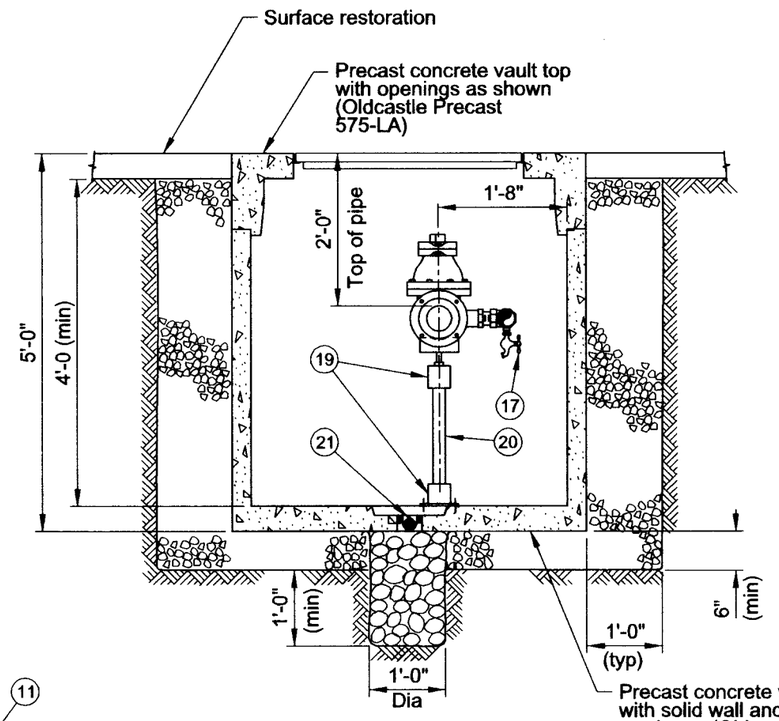
P-860

Plot Date: 7/30/2015 3:26:27 PM Filename: J:\Engineering\CAD\Standards\Working_Vaults\860_3inch_meter_444_vault_sw.dgn



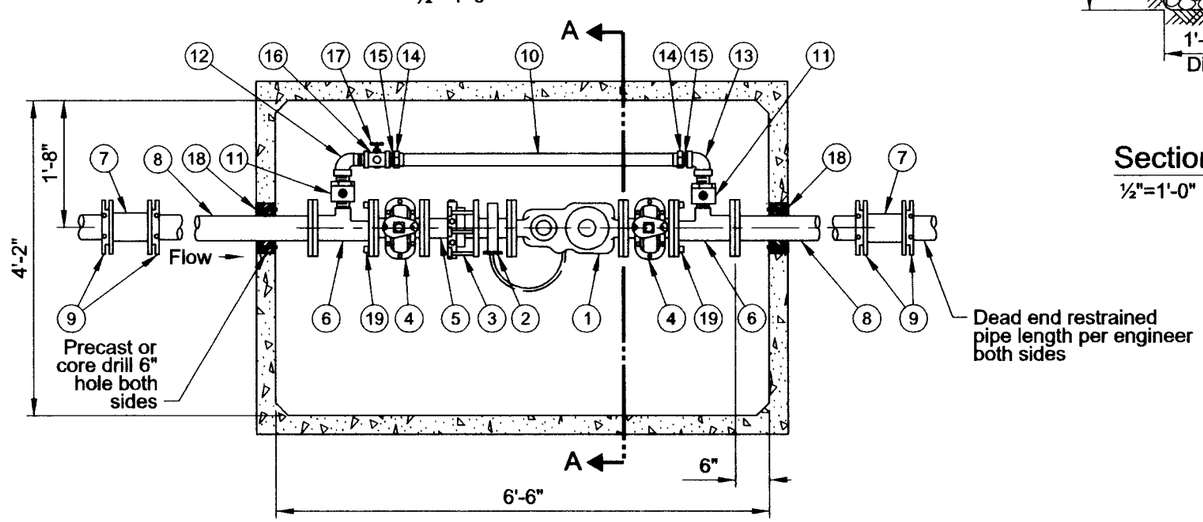
Vault Top Plan

½"=1'-0"



Section A-A

½"=1'-0"



Vault Floor Plan

½"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	3"	1	Meter, compound with test outlet
2	3"	1	Strainer, FLG x FLG
3	3"	1	Restrained dismantling assembly (Megaflange)
4	3"	2	Gate Valve, FLG x FLG OL NRS
5	3"	1	Nipple, DI FLG X PE 8"-9" long (field fit)
6	4"x3"x2"	2	Drip Tee, FLG x FLG x FIPT
7	4"	2	Solid sleeve, DI MJ
8	4"	2	Nipple, DI FLG X PE ~48" long (field fit)
9	4"	4	Gland, wedge action retainer (Megalug)
10	2"	1	Tubing, copper (field fit)
11	2"	2	Corporation stop, ball valve, MIPT x MIPT
12	2"	1	Street elbow, brass IPT
13	2"	1	Common elbow, brass FIPT x FIPT, 90 degrees
14	2"	2	Coupling, brass FIPT x CC
15	2"	2	Nipple, brass close IPT
16	2"x2"x¾"	1	Tee, brass FIPT x FIPT
17	¾"	1	Hose bib, brass MIPT
18	4"	2	Seal, mechanical penetration (Link Seal LS-410-C-7)
19	3"	2	Adjustable pipe support, hot dipped galvanized
20	2"	2	Pipe, galvanized steel (field fit)
21	4"	1	Drain check valve
22	72" x 36"	1	Hatch, galvanized steel double door H-20 rated

Notes:

See General Vault Drawing (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU

Chief Engineer

Standard Drawing Title

3" Compound Meter with 2" Bypass in 575 Vault (In Sidewalk)

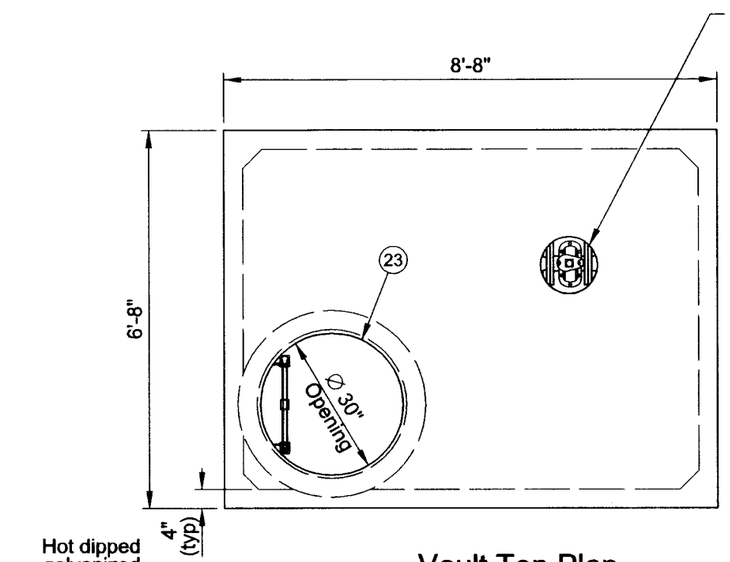
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

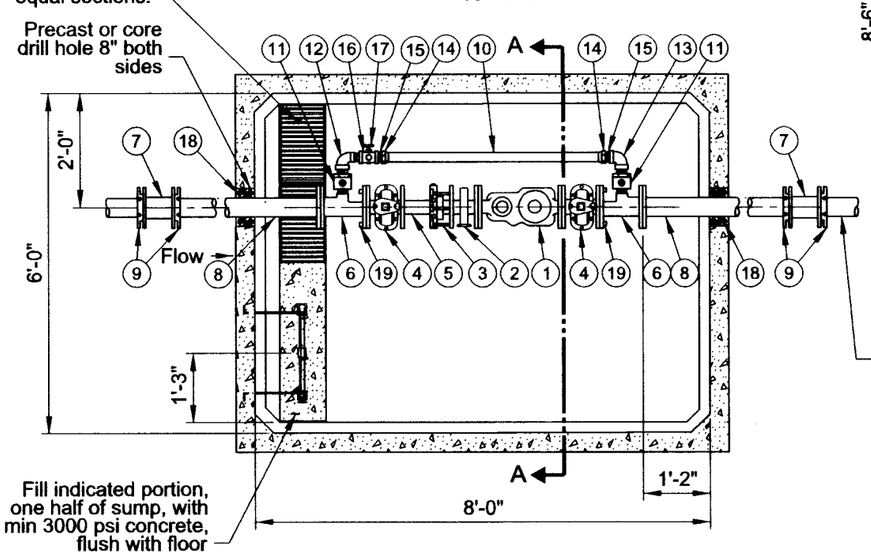
P-861

Plot Date: 7/30/2015 3:35:08 PM Filename: J:\Engineering\CAD\Standards\Working_Vaults\861_3in_m_2in_bp_575vault_sw.dgn



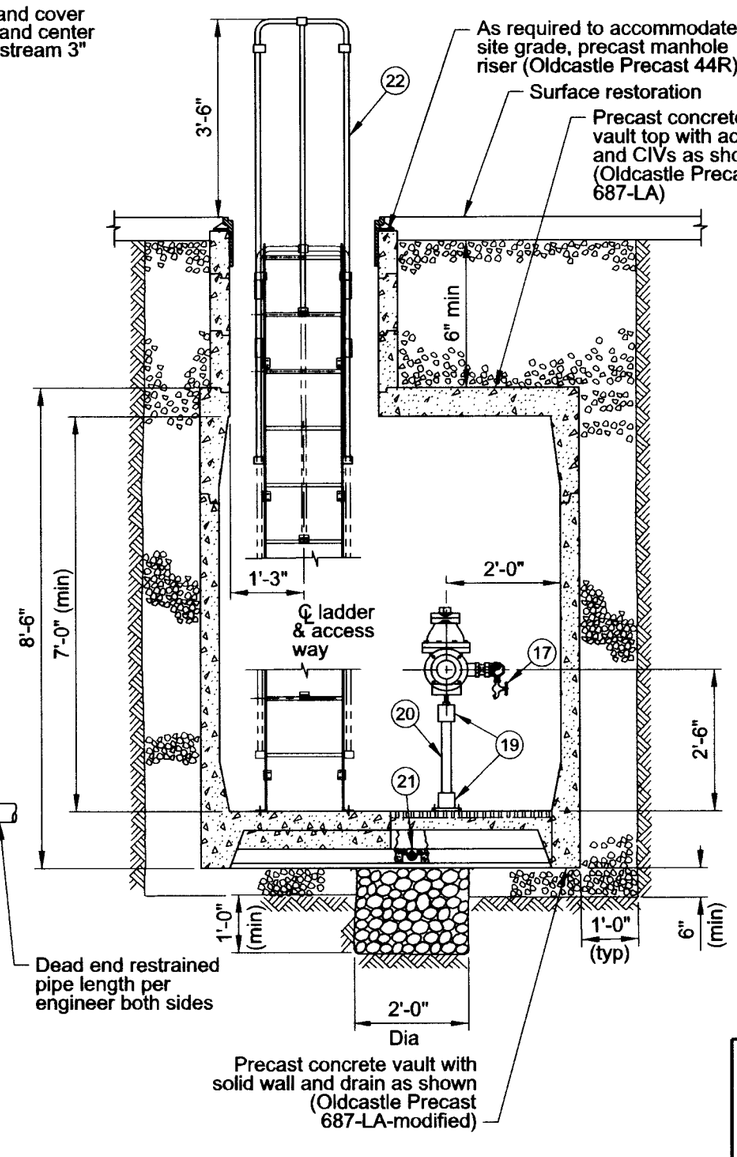
Vault Top Plan

⅜"=1'-0"



Vault Floor Plan

⅜"=1'-0"



Section A-A

⅜"=1'-0"

List of Parts			
Item No	Size	Qty	Description
1	3"	1	Meter, compound with test outlet
2	3"	1	Strainer, FLG x FLG
3	3"	1	Restrained dismantling assembly (Megaflange)
4	3"	2	Gate Valve, FLG x FLG OL NRS
5	3"	1	Nipple, DI FLG X PE 8"-9" long (field fit)
6	4"x3"x2"	1	Drip Tee, FLG x FLG x FIPT
7	4"	2	Solid sleeve, DI MJ
8	4"	2	Nipple, DI FLG X PE 48" long (field fit)
9	4"	4	Gland, wedge action retainer (Megalug)
10	2"	1	Tubing, copper (field fit)
11	2"	2	Corporation stop, ball valve, MIPT x MIPT
12	2"	1	Street elbow, brass IPT
13	2"	1	Common elbow, brass FIPT x FIPT, 90 degrees
14	2"	2	Coupling, brass FIPT, x CC
15	2"	2	Nipple, brass close IPT
16	2"x2"x¾"	1	Tee, brass FIPT x FIPT
17	¾"	1	Hose bib, brass MIPT
18	4"	2	Seal, mechanical penetration (Link Seal LS-410-C-7)
19	3"	2	Adjustable pipe support, hot dipped galvanized
20	2"	2	Pipe, galvanized steel (field fit)
21	4"	1	Drain check valve
22		1	Ladder, galv steel with aluminum extension (field fit)
23	30"	1	Manhole frame and cover, 30" true opening

Notes:
See General Vault Detail (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

3" Compound Meter with 2" Bypass in 687 Vault (In Street)

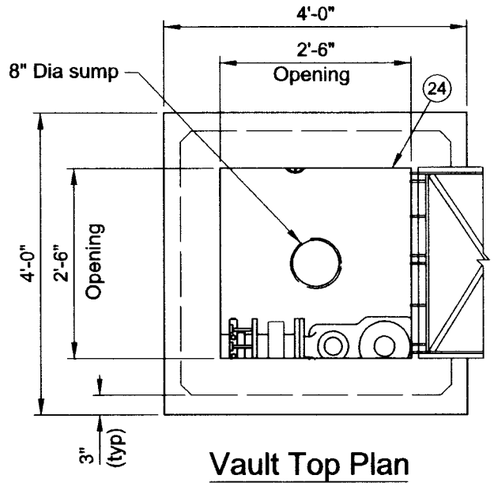
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

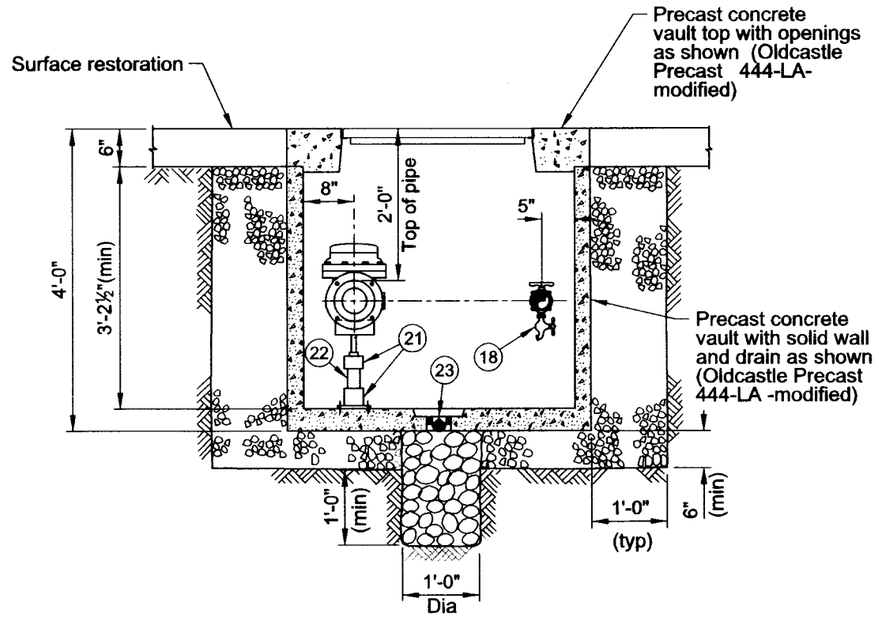
P-862

Plot Date: 7/31/2015 10:53:33 PM Filename: J:\Engineering\CAD\Standards\Working_Vaults\862_3in_m_2in_bp_687v.dgn



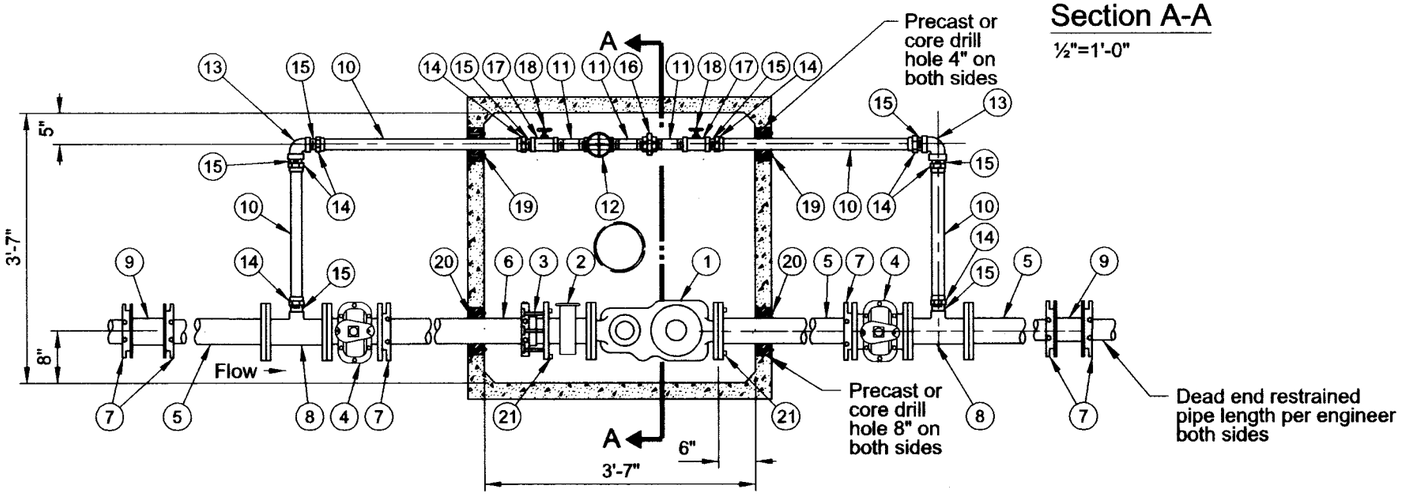
Vault Top Plan

½"=1'-0"



Section A-A

½"=1'-0"



Vault Floor Plan

½"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	4"	1	Meter, compound with test outlet
2	4"	1	Strainer, FLG x FLG
3	4"	1	Restrained dismantling assembly (MegaFlange)
4	4"	2	Gate Valve, FLG x MJ OL
5	4"	3	Nipple, DI FLG X PE 36" long (field fit)
6	4"	1	Nipple, DI PE X PE long 36" (field fit)
7	4"	6	Gland, wedge action retainer (Megalug)
8	4"x4"x2"	2	Drip Tee, FLG x FLG X FIPT
9	4"	2	Solid sleeve, DI MJ
10	2"	4	Tubing, copper (field fit)
11	2"	3	Nipple, brass MIPT 3" long
12	2"	1	Ball valve, brass FIPT x FIPT OL
13	2"	2	Common elbow, brass FIPT x FIPT 90 degrees
14	2"	8	Coupling, brass FIPT x CC
15	2"	7	Nipple, brass close IPT
16	2"	1	Union, brass FIPT
17	2"x2"x¾"	2	Tee, brass FIPT x FIPT
18	¾"	2	Hose bib, brass MIPT
19	2"	2	Seal, mechanical penetration (Link Seal LS-315-C-6)
20	4"	2	Seal, mechanical penetration (Link Seal LS-410-C-7)
21	4"	2	Adjustable pipe support, hot-dipped galvanized
22	2"	2	Pipe, galvanized steel (field fit)
23	4"	1	Drain check valve
24	2'-6"x2'-6" or larger	1	Hatch, aluminum single leaf H-20 rated

Note:

See General Vault Drawing (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

4" Compound Meter in 4-4-4 Vault (In Sidewalk)

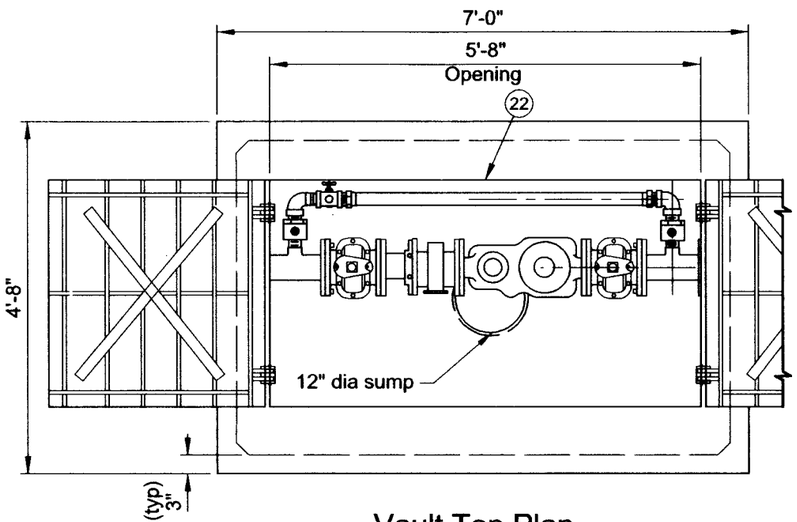
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

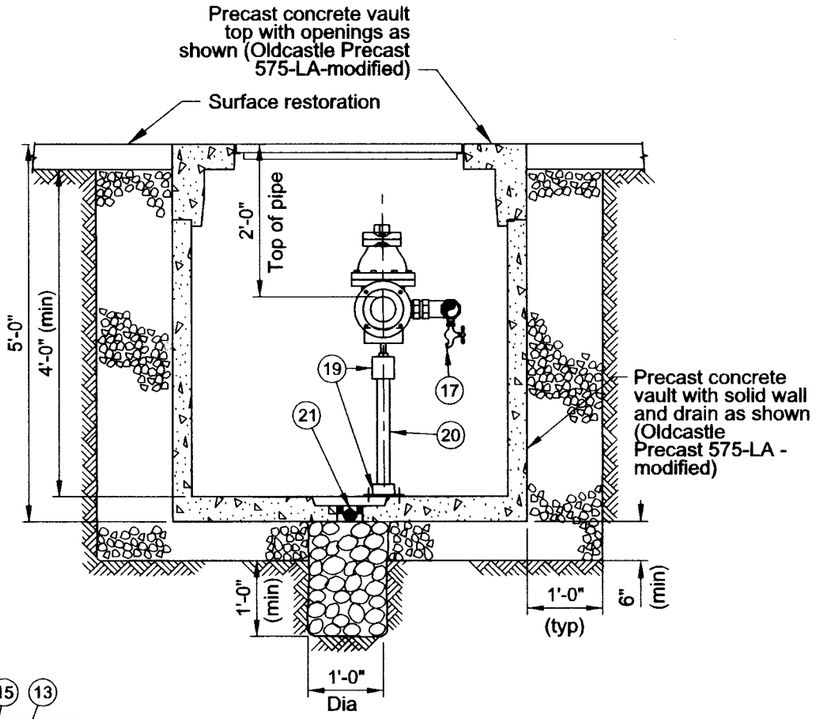
P-865

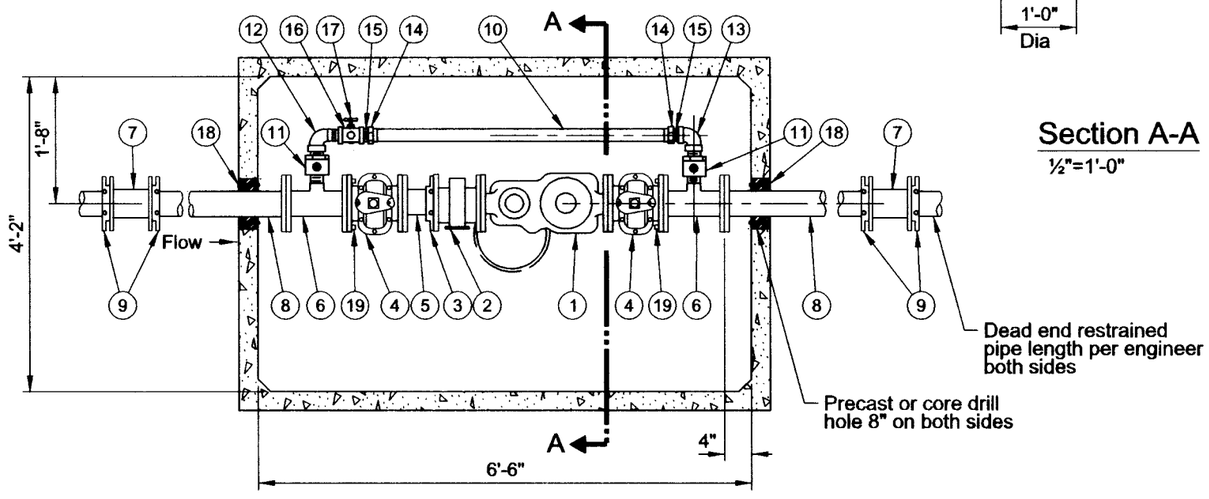
Plot Date: 7/31/2015 7:13:57 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\865_4in_m_444v.dgn



Vault Top Plan

½"=1'-0"





Section A-A

½"=1'-0"

Vault Floor Plan

½"=1'-0"

List of Parts			
Item No	Size	Qty	Description
1	4"	1	Meter, compound with test outlet
2	4"	1	Strainer, FLG x FLG
3	4"	1	Flange adapter, torque shear set-screw (Uniflange)
4	4"	2	Gate Valve, FLG x FLG OL
5	4"	1	Nipple, DI FLG x PE 8"-9" long (field fit)
6	4"x4"x2"	2	Drip Tee, FLG x FLG x FIPT
7	4"	2	Solid sleeve, DI MJ
8	4"	2	Nipple, DI FLG X PE 48" long (field fit)
9	4"	4	Gland, wedge action retainer (Megalug)
10	2"	1	Tubing, copper (field fit)
11	2"	2	Corporation stop, ball valve, MIPT x MIPT
12	2"	1	Street elbow, brass IPT
13	2"	1	Common elbow, brass FIPT x FIPT, 90 degrees
14	2"	2	Coupling, brass FIPT x CC
15	2"	2	Nipple, brass close IPT
16	2"x2"x¾"	1	Tee, brass FIPT x FIPT
17	¾"	1	Hose bib, brass MIPT
18	4"	2	Seal, mechanical penetration (Link Seal LS-410-C-7)
19	4"	2	Adjustable pipe support, hot-dipped galvanized
20	2"	2	Pipe, galvanized steel (field fit)
21	4"	1	Drain check valve
22	72" x 36"	1	Hatch, galvanized steel double door H-20 rated

Notes:

1. See General Vault Drawing (P-855) for construction and material notes.
2. No full dismantling assembly, flange adapter only.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

4" Compound Meter with 2" Bypass in 575 Vault (In Sidewalk)

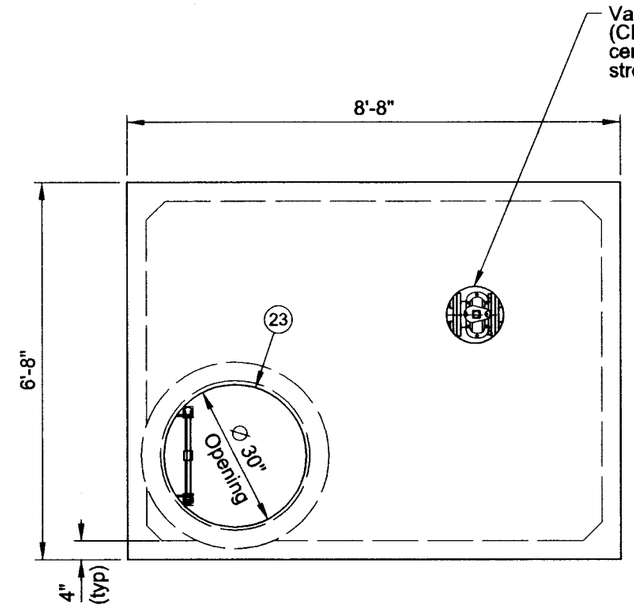
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

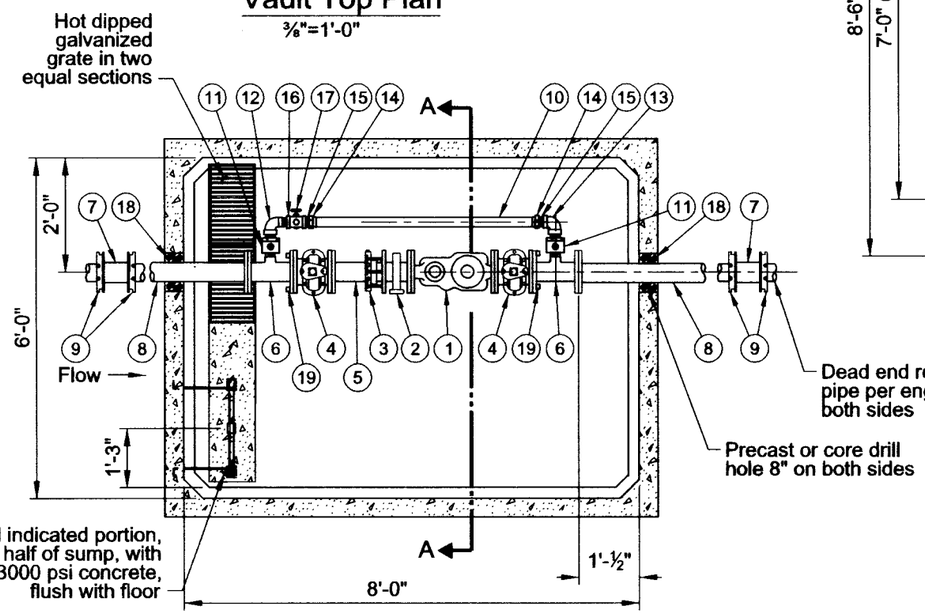
P-866

Plot Date: 7/31/2015 6:56:16 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\866_4in_m_2in_bp_.dgn



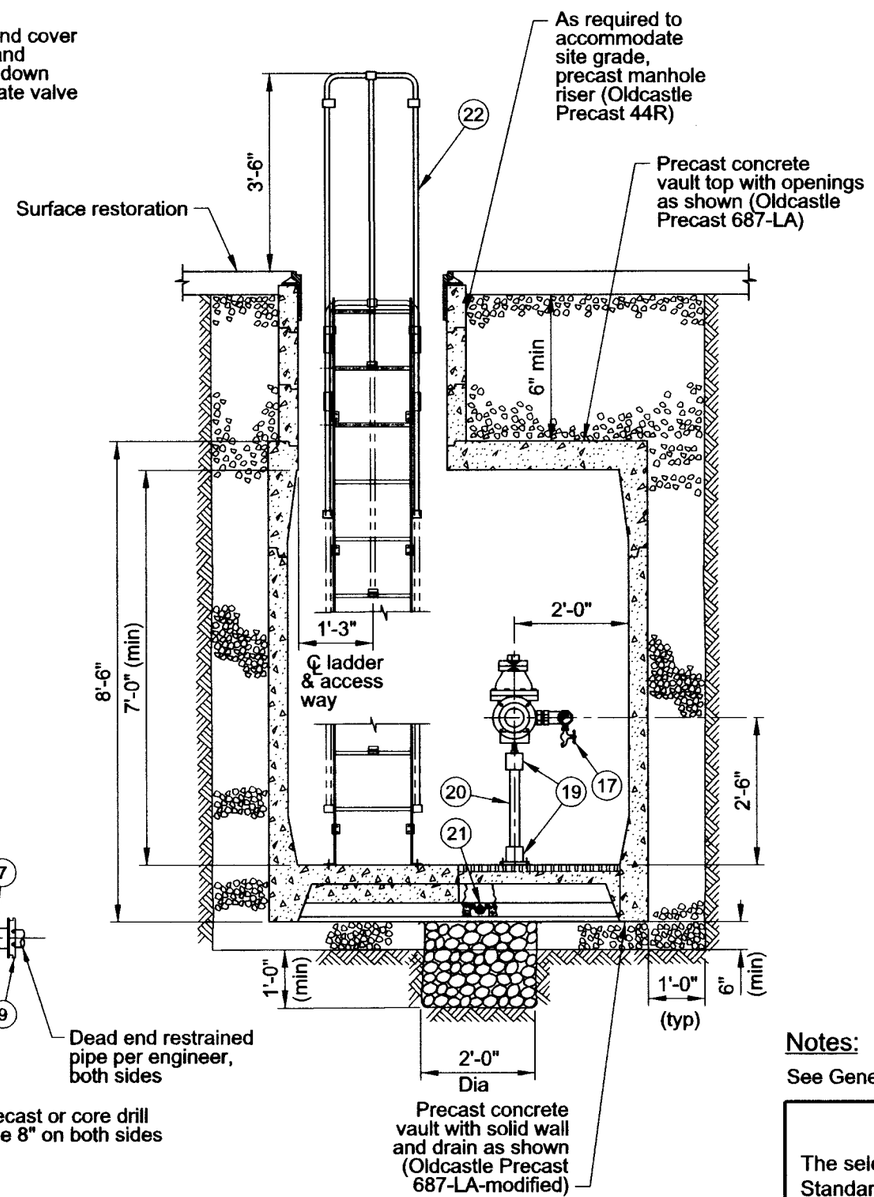
Vault Top Plan

⅜"=1'-0"



Vault Floor Plan

⅜"=1'-0"



Section A-A

⅜"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	4"	1	Meter, compound with test outlet
2	4"	1	Strainer, FLG x FLG
3	4"	1	Restrained dismantling assembly (MegaFlange)
4	4"	2	Gate Valve, FLG x FLG OL
5	4"	1	Nipple, DI FLG x PE 8"-9" long (field fit)
6	4"x4"x2"	2	Drip Tee, FLG x FLG x FIPT
7	4"	2	Solid sleeve, DI MJ
8	4"	2	Nipple, DI FLG X PE 48" long (field fit)
9	4"	4	Gland, wedge action retainer (Megalug)
10	2"	1	Tubing, copper (field fit)
11	2"	2	Corporation stop, ball valve, MIPT x MIPT
12	2"	1	Street elbow, brass IPT
13	2"	1	Common elbow, brass FIPT x FIPT, 90 degrees
14	2"	2	Coupling, brass FIPT x CC
15	2"	2	Nipple. brass close IPT
16	2"x2"x¾"	1	Tee, brass FIPT x FIPT
17	¾"	1	Hose bib, brass MIPT
18	4"	2	Seal, mechanical penetration (Link Seal LS-410-C-7)
19	4"	2	Adjustable pipe support, hot dipped galvanized
20	2"	2	Pipe, galvanized steel (field fit)
21	4"	1	Drain check valve
22		1	Ladder, galv steel with aluminum extension (field fit) (Oldcastle Precast)
23	30"	1	Manhole frame and cover, 30" true opening

Notes:

See General Vault Drawing (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

4" Compound Meter with 2" Bypass in 6-8-7 Vault (In Street)

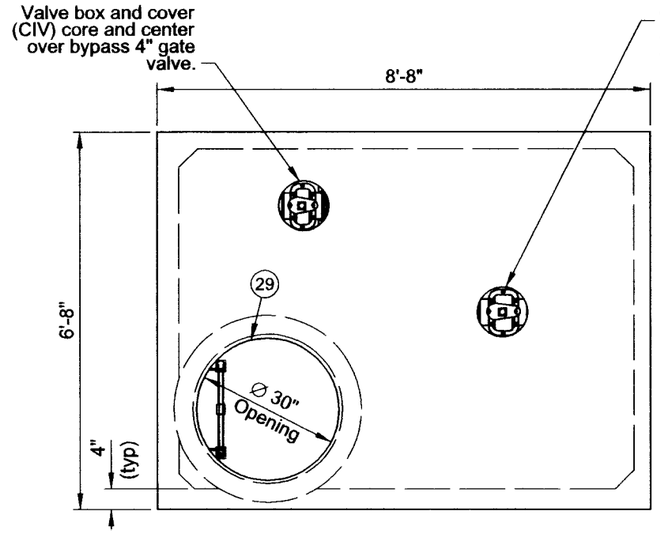
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

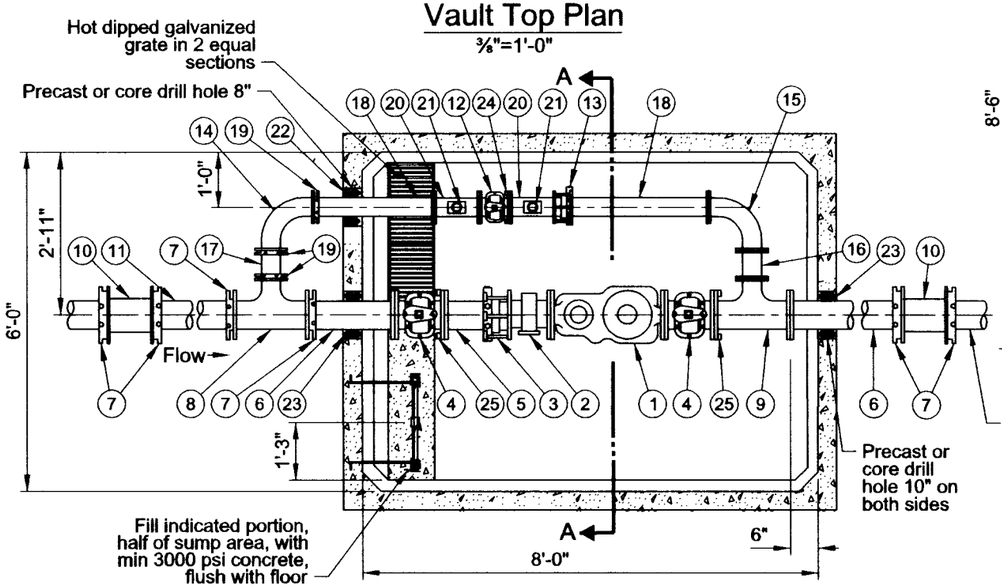
P-867

Plot Date: 7/31/2015 10:09:05 PM Filename: J:\Engineering\CAD\Standards\Working_Vaults\867_4inm_2inbp_687.dgn



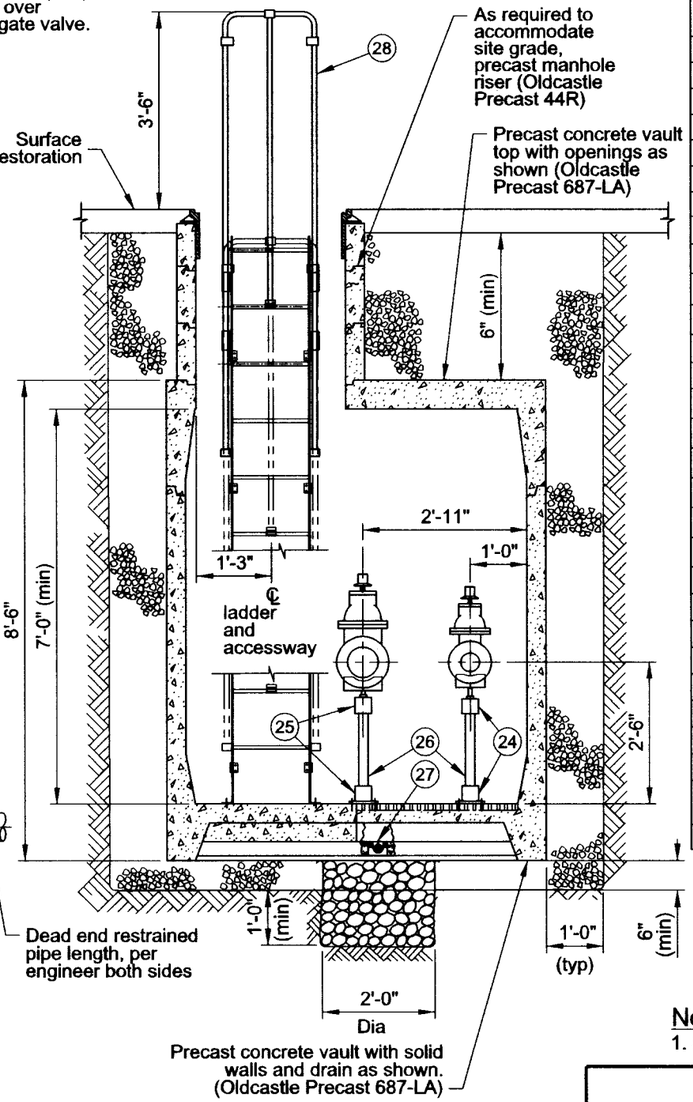
Vault Top Plan

⅜"=1'-0"



Vault Floor Plan

⅜"=1'-0"



Section A-A

⅜"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	6"	1	Meter, compound with test outlet
2	6"	1	Strainer, FLG x FLG
3	6"	1	Restrained dismantling assembly (MegaFlange)
4	6"	2	Gate Valve, FLG x FLG OL
5	6"	1	Nipple, DI FLG x PE 8"-9" long (field fit)
6	6"	2	Nipple, DI FLG x PE 36" long (field fit)
7	6"	6	Gland, wedge action retainer (Megalug)
8	6"x6"x4"	2	Tee, DI MJ x MJ
9	6"x6"x4"	1	Tee, DI FLG x FLG
10	6"	2	Solid sleeve, DI MJ
11	6"	1	Nipple, DI PE x PE 36" long (field fit)
12	4"	1	Gate valve, FLG x FLG OL
13	4"	1	Restrained dismantling assembly (MegaFlange)
14	4"	1	Bend, DI MJ long radius 90 degrees
15	4"	1	Bend, DI FLG long radius 90 degrees
16	4"	1	Spool, DI FLG x FLG 6" long
17	4"	1	Nipple, DI PE x PE 8"-9" long (field fit)
18	4"	2	Nipple, DI FLG x PE 36" long (field fit)
19	4"	3	Gland, wedge action retainer (Megalug)
20	4"x4"x2"	2	Drip tee, FLG x FLG x FIPT
21	2"	2	Gate Valve, brass with plug
22	4"	1	Seal, mechanical penetration (Link Seal LS-410-C-7)
23	6"	2	Seal, mechanical penetration (Link Seal LS-410-C-10)
24	4"	1	Adjustable pipe support, hot dipped galvanized
25	6"	2	Adjustable pipe support, hot dipped galvanized
26	2"	3	Pipe, galvanized steel (field fit)
27	4"	1	Drain check valve
28		1	Ladder, galv steel with aluminum extension (field fit) (Oldcastle Precast)
29	30"	1	Manhole frame and cover, 30" true opening

Notes:

1. See General Vault Detail (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

6" Compound Meter with 4" Bypass in 6-8-7 Vault (In Street)

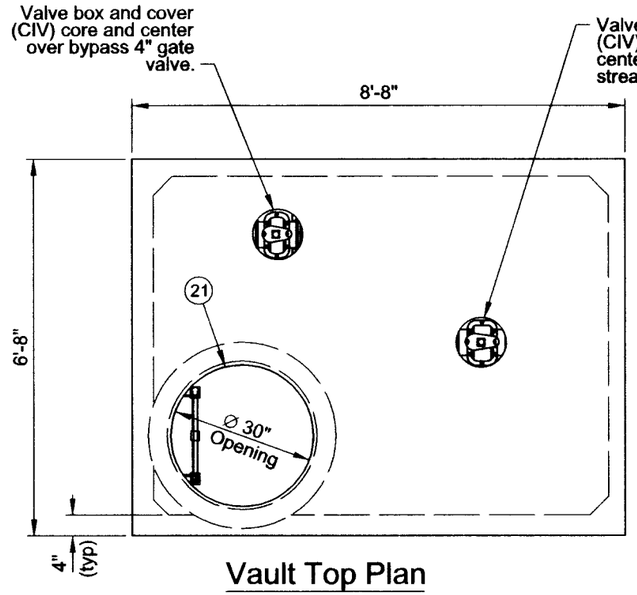
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

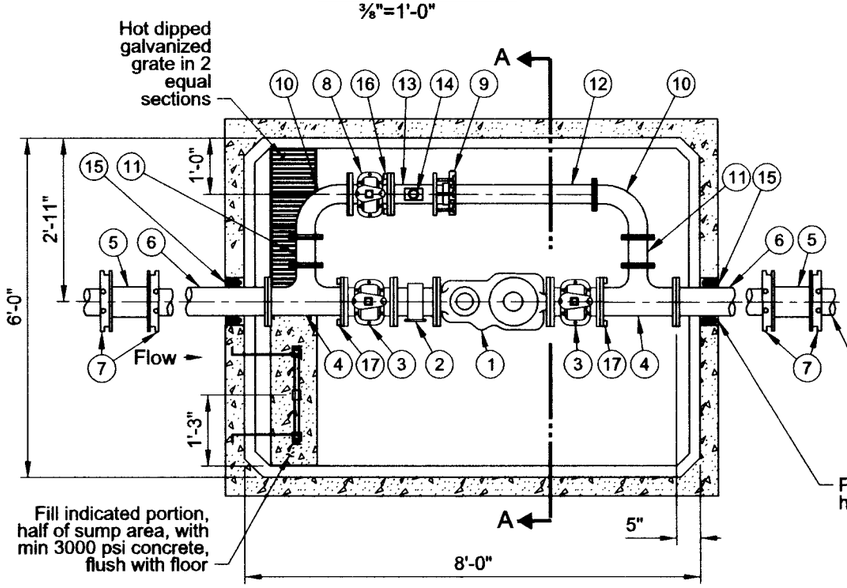
P-869

Plot Date: 7/31/2015 7:37:45 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\869_6inm_2inby_687_str.dgn



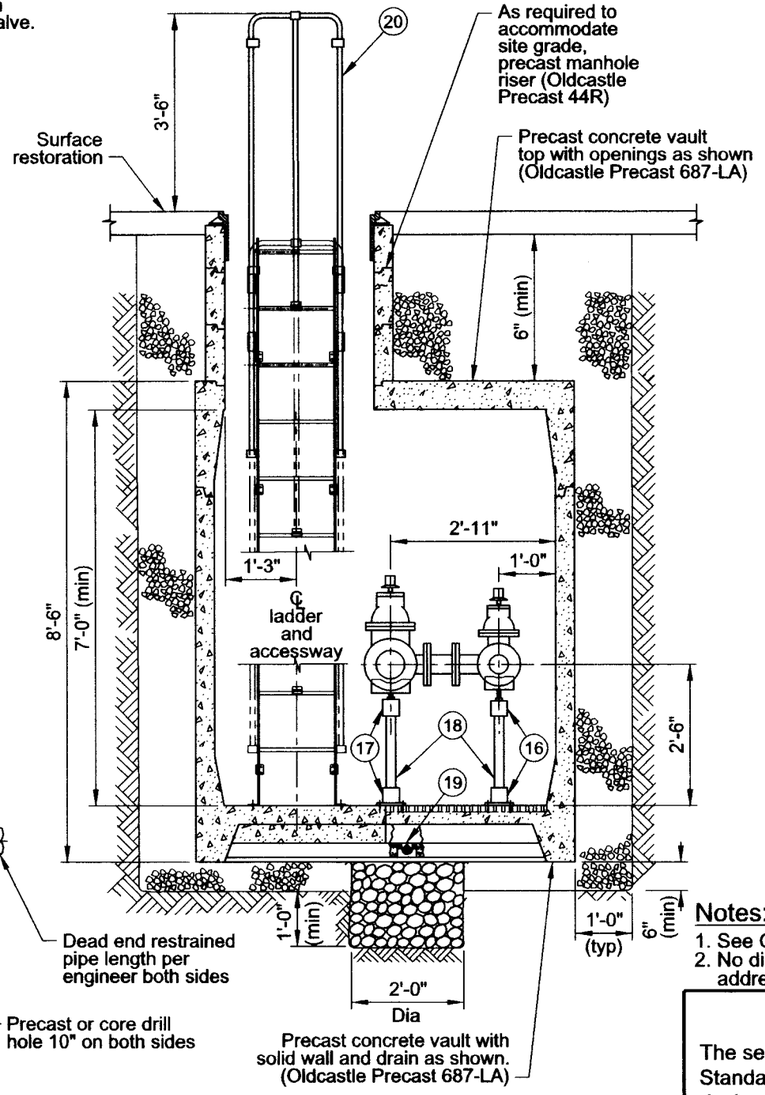
Vault Top Plan

3/8"=1'-0"



Vault Floor Plan

3/8"=1'-0"



Section A-A

3/8"=1'-0"

List of Parts			
Item No	Size	Qty	Description
1	6"	1	Meter, compound with test outlet
2	6"	1	Strainer, FLG x FLG
3	6"	2	Gate Valve, FLG x FLG OL
4	6"x6"x4"	2	Tee, DI FLG x FLG
5	6"	2	Solid sleeve, DI MJ
6	6"	2	Nipple, DI FLG x PE 48" long (field fit)
7	6"	4	Gland, wedge action retainer (Megalug)
8	4"	1	Gate valve, FLG x FLG OL
9	4"	1	Restrained dismantling assembly (MegaFlange)
10	4"	2	Bend, DI FLG long radius 90 degrees
11	4"	2	Spool, DI FLG 6" long
12	4"	1	Nipple, DI FLG x PE 36" long (field fit)
13	4"x4"x2"	1	Drip tee, FLG x FLG x FIPT
14	2"	1	Gate Valve, brass with plug
15	6"	2	Seal, mechanical penetration (Link Seal LS-410-C-10)
16	4"	1	Adjustable pipe support, hot dipped galvanized
17	6"	2	Adjustable pipe support, hot dipped galvanized
18	2"	3	Pipe, galvanized steel (field fit)
19	4"	1	Drain check valve
20		1	Ladder, galv steel with aluminum extension (field fit) (Oldcastle Precast)
21	30"	1	Manhole frame and cover, 30" true opening

Notes:

1. See General Vault Detail for construction and material notes.
2. No dismantling assembly - space constraint. Space constraint may be addressed by meter with integral strainer.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

6" Compound Meter with 4" Bypass in 6-8-7 Vault (In Street)

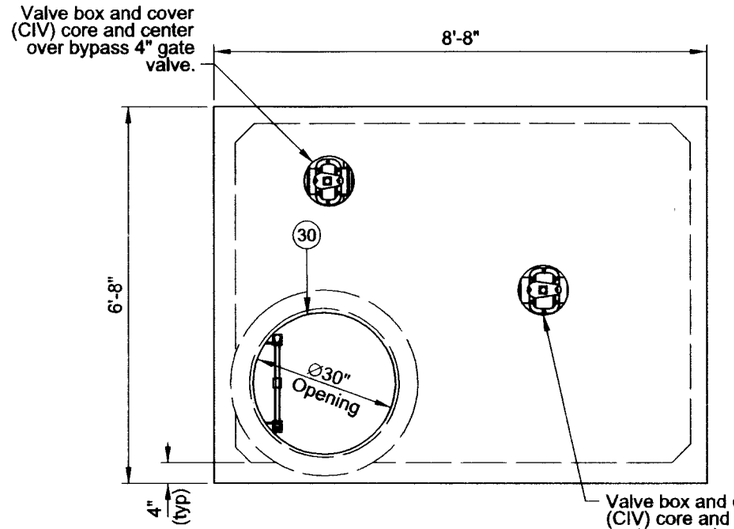
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

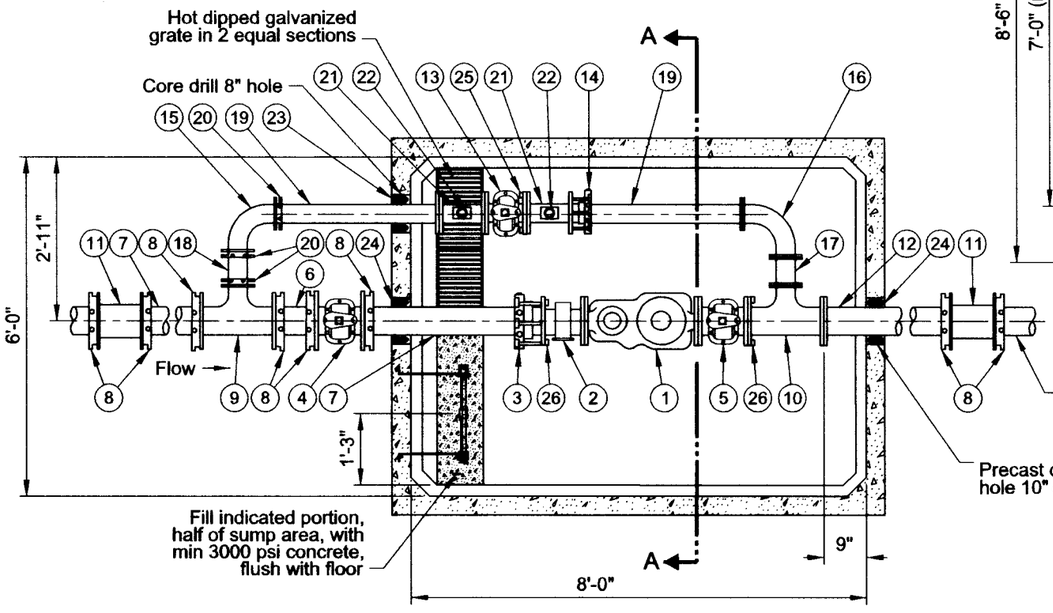
P-869b

Plot Date: 7/31/2015 7:49:07 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\869b_6inm_2inby_687_str.dgn



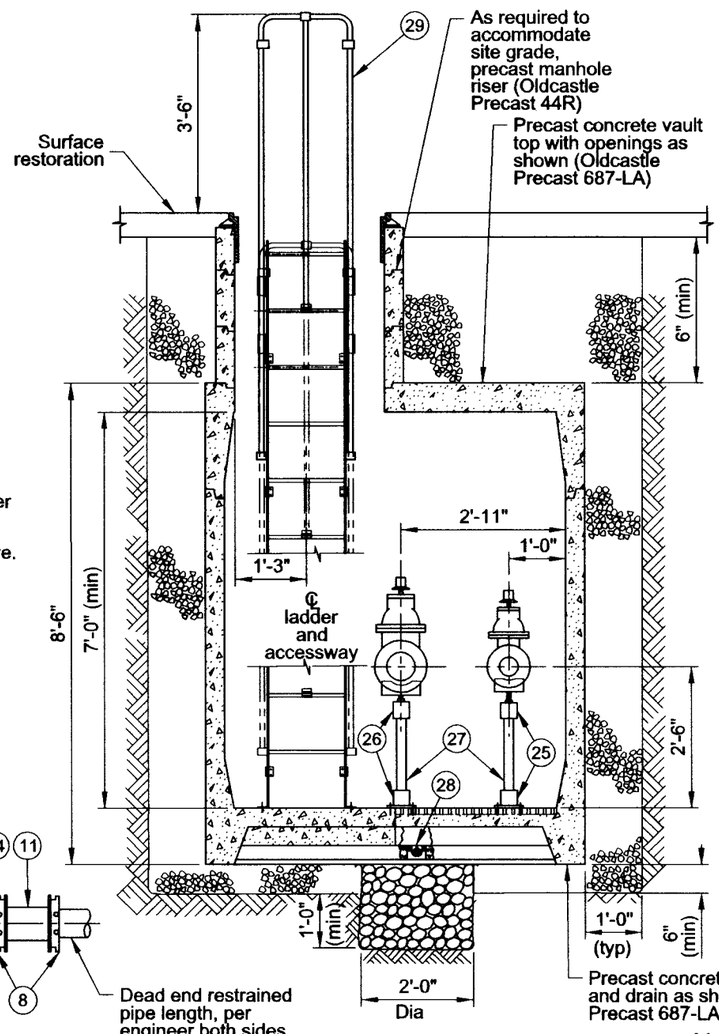
Vault Top Plan

⅜"=1'-0"



Vault Floor Plan

⅜"=1'-0"



Section A-A

⅜"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	6"	1	Meter, compound with test outlet
2	6"	1	Strainer, FLG x FLG
3	6"	1	Restrained dismantling assembly (MegaFlange)
4	6"	1	Gate valve, MJ x MJ OL
5	6"	1	Gate valve, FLG x FLG OL
6	6"	1	Nipple, DI PE X PE 8"-9" long (field fit)
7	6"	2	Nipple, DI PE X PE 36" long (field fit)
8	6"	8	Gland, wedge action retainer (Megalug)
9	6"x6"x4"	1	Tee, DI MJ x MJ
10	6"x6"x4"	1	Tee, DI FLG x FLG
11	6"	2	Solid sleeve, DI MJ
12	6"	1	Nipple, DI FLG X PE 48" long (field fit)
13	4"	1	Gate valve, FLG x FLG OL
14	4"	1	Restrained dismantling assembly (Megaflange)
15	4"	1	Bend, DI MJ long radius 90 degrees
16	4"	1	Bend, DI FLG long radius 90 degrees
17	4"	1	Spool, DI FLG x FLG 6" long
18	4"	1	Nipple, DI PE X PE 8"-9" long (field fit)
19	4"	2	Nipple, DI FLG X PE 36" long (field fit)
20	4"	3	Gland, wedge action retainer (Megalug)
21	4"x4"x2"	2	Drip tee, FLG x FLG x FIPT
22	2"	2	Gate Valve, brass with plug
23	4"	1	Seal, mechanical penetration (Link Seal LS-410-C-7)
24	6"	2	Seal, mechanical penetration (Link Seal LS-410-C-10)
25	4"	1	Adjustable pipe support, hot dipped galvanized
26	6"	2	Adjustable pipe support, hot dipped galvanized
27	2"	3	Pipe, galvanized steel (field fit)
28	4"	1	Drain check valve
29		1	Ladder, galv steel with aluminum extension (field fit) (Oldcastle Precast)
30	30"	1	Manhole frame and cover, 30" true opening

Notes:

1. See General Vault Detail (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

6" Compound Meter with 4" Bypass in 6-8-7 Vault (In Street)

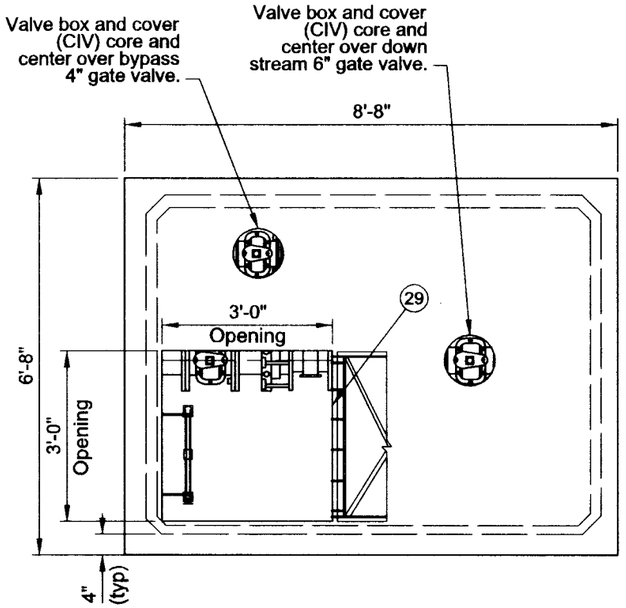
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

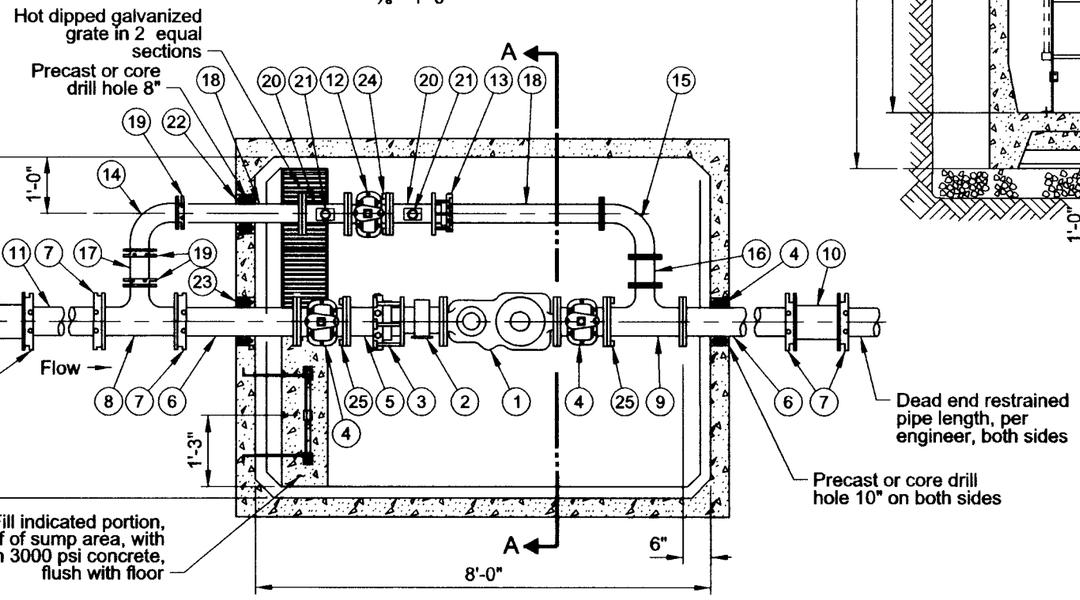
P-869c

Plot Date: 7/31/2015 8:55:17 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\869c_6inm_2inby_687_str.dgn



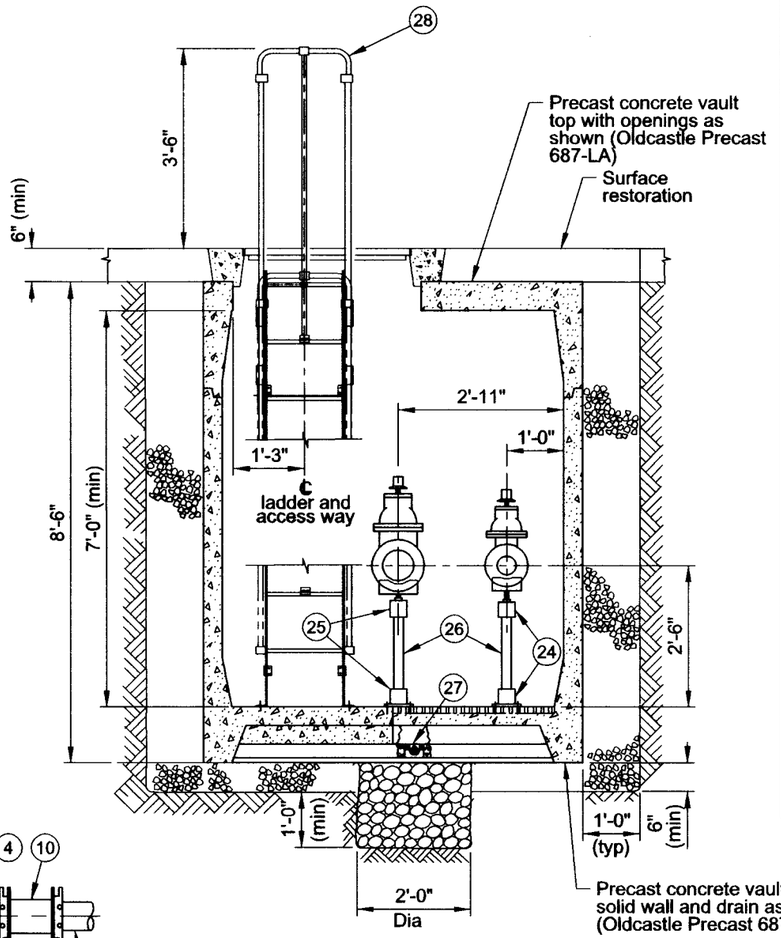
Vault Top Plan

3/8"=1'-0"



Vault Floor Plan

3/8"=1'-0"



Section A-A

3/8"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	6"	1	Meter, compound with test outlet
2	6"	1	Strainer, FLG x FLG
3	6"	1	Restrained dismantling assembly (MegaFlange)
4	6"	2	Gate Valve, FLG x FLG OL
5	6"	1	Nipple, DI FLG x PE 8"-9" long (field fit)
6	6"	2	Nipple, DI FLG x PE 36" long (field fit)
7	6"	6	Gland, wedge action retainer (Megalug)
8	6"x6"x4"	1	Tee, DI MJ x MJ
9	6"x6"x4"	1	Tee, DI FLG x FLG
10	6"	2	Solid sleeve, DI MJ
11	6"	1	Nipple, DI PE x PE 48" long (field fit)
12	4"	1	Gate valve, FLG x FLG OL
13	4"	1	Restrained dismantling assembly (MegaFlange)
14	4"	1	Bend, DI MJ long radius 90 degrees
15	4"	1	Bend, DI FLG long radius 90 degrees
16	4"	1	Spool, DI FLG x FLG 6" long
17	4"	1	Nipple, DI PE x PE 8"-9" long (field fit)
18	4"	2	Nipple, DI FLG x PE 36" long (field fit)
19	4"	3	Gland, wedge action retainer (Megalug)
20	4"x4"x2"	2	Drip tee, FLG x FLG x FIPT
21	2"	2	Gate Valve, brass with plug
22	4"	1	Seal, mechanical penetration (Link Seal LS-410-C-7)
23	6"	2	Seal, mechanical penetration (Link Seal LS-410-C-10)
24	4"	1	Adjustable pipe support, hot dipped galvanized
25	6"	2	Adjustable pipe support, hot dipped galvanized
26	2"	3	Pipe, galvanized steel (field fit)
27	4"	1	Drain check valve
28		1	Ladder, galv steel with aluminum extension (field fit) (Oldcastle Precast)
29	3'-0"x3'-0"	1	Hatch, aluminum single leaf H-20 rated with hold open arm

Notes:

1. See General Vault Detail (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

6" Compound Meter with 4" Bypass in 6-8-7 Vault (In Sidewalk)

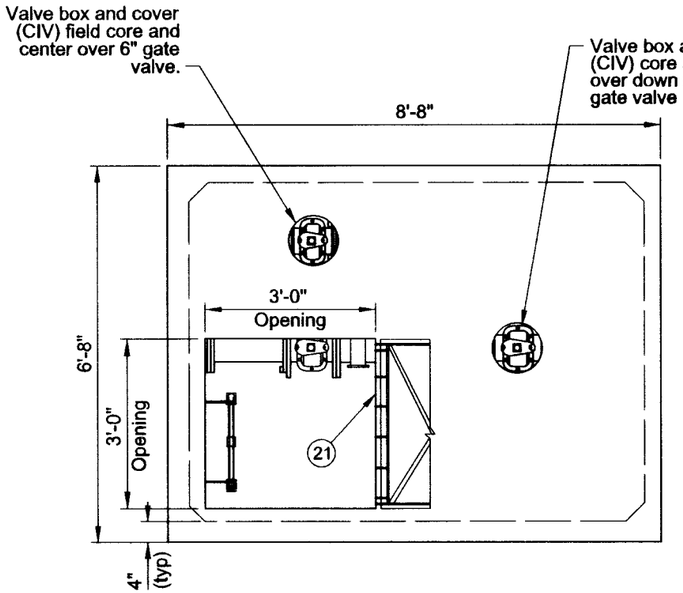
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

P-870

Plot Date: 7/31/2015 9:09:59 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\870_6inm_4inby_687_swk.dgn



Vault Top Plan

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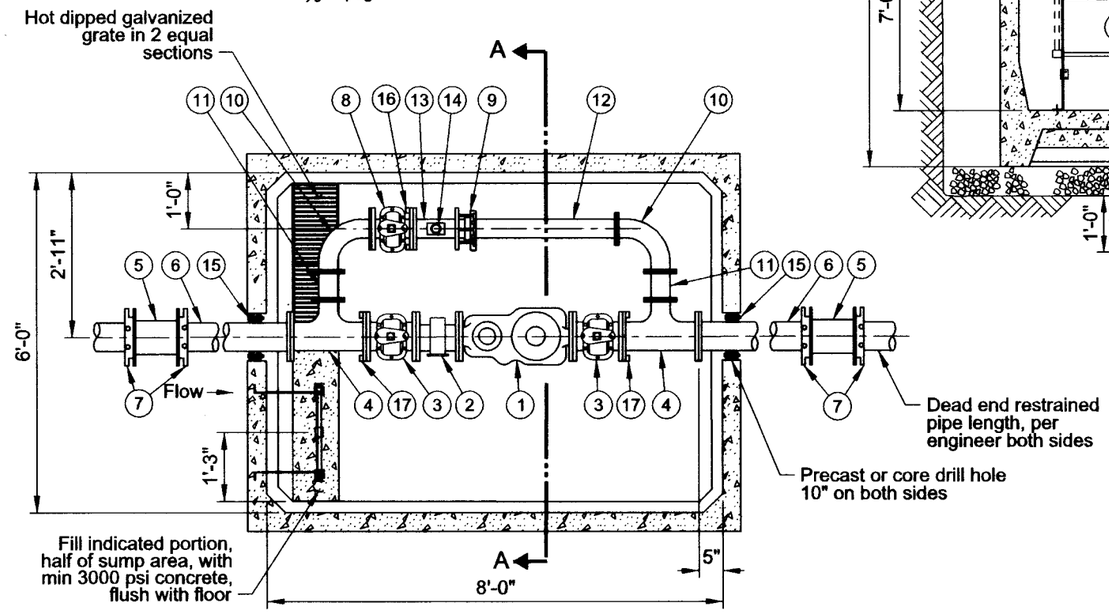
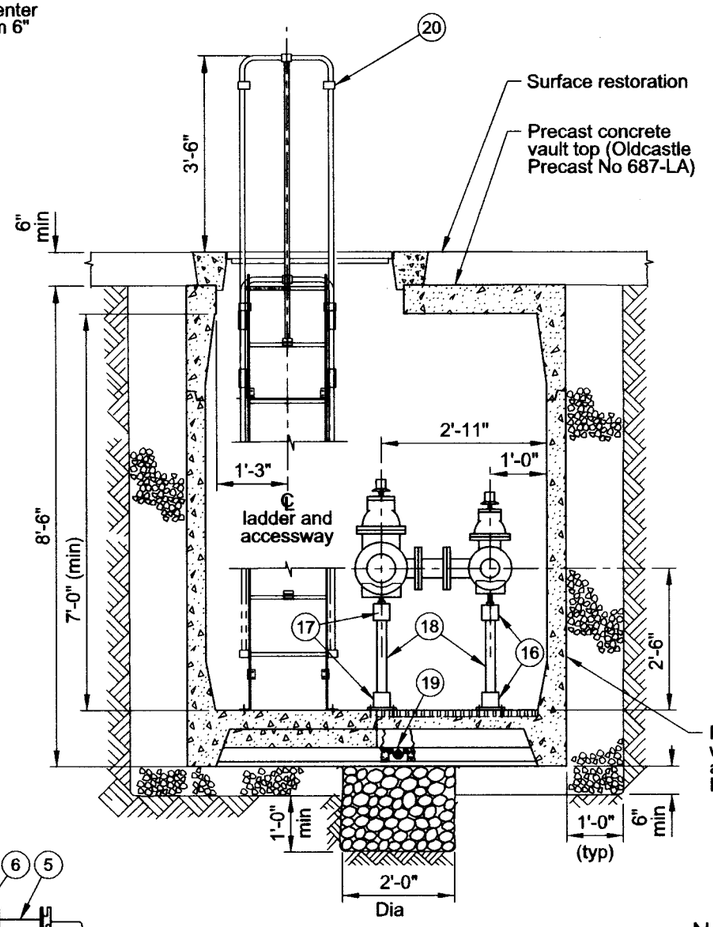


Vault Floor Plan

⅜"=1'-0"



Section A-A

⅜"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	6"	1	Meter, compound with test outlet
2	6"	1	Strainer, FLG x FLG
3	6"	2	Gate Valve, FLG x FLG OL
4	6"x6"x4"	2	Tee, DI FLG x FLG
5	6"	2	Solid sleeve, DI MJ
6	6"	2	Nipple, DI FLG X PE 48" long (field fit)
7	6"	4	Gland, wedge action retainer (Megalug)
8	4"	1	Gate valve, FLG x FLG OL
9	4"	1	Restrained dismantling assembly (MegaFlange)
10	4"	2	Bend, DI FLG long radius 90 deg
11	4"	2	Spool, DI FLG 6" long
12	4"	1	Nipple, DI FLG X PE 36" long (field fit)
13	4"x4"x2"	1	Drip tee, FLG x FLG x FIPT
14	2"	1	Gate valve, brass with plug
15	6"	2	Seal, mechanical penetration (Link Seal LS-410-C-10)
16	4"	1	Adjustable pipe support, hot dipped galvanized
17	6"	2	Adjustable pipe support, hot dipped galvanized
18	2"	3	Pipe, galvanized steel (field fit)
19	4"	1	Drain check valve
20		1	Ladder, galv steel with aluminum extension (field fit) (Oldcastle Precast)
21	3-0"x3-0"	1	Hatch, aluminum single leaf H-20 rated with hold open arm

Notes:
1. See General Vault Detail (P-855) for construction and material notes.
2. No dismantling assembly - space constraint. Space constraint may be addressed by meter with integral strainer.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON
Chief Engineer

Standard Drawing Title

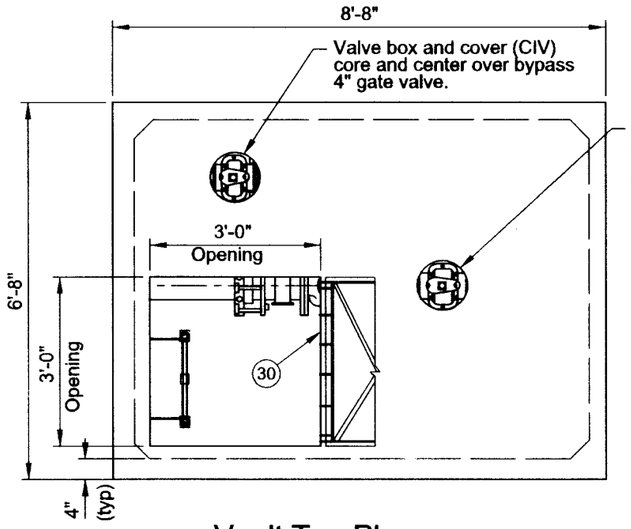
6" Compound Meter with 4" Bypass in 6-8-7 Vault (In Sidewalk)

Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

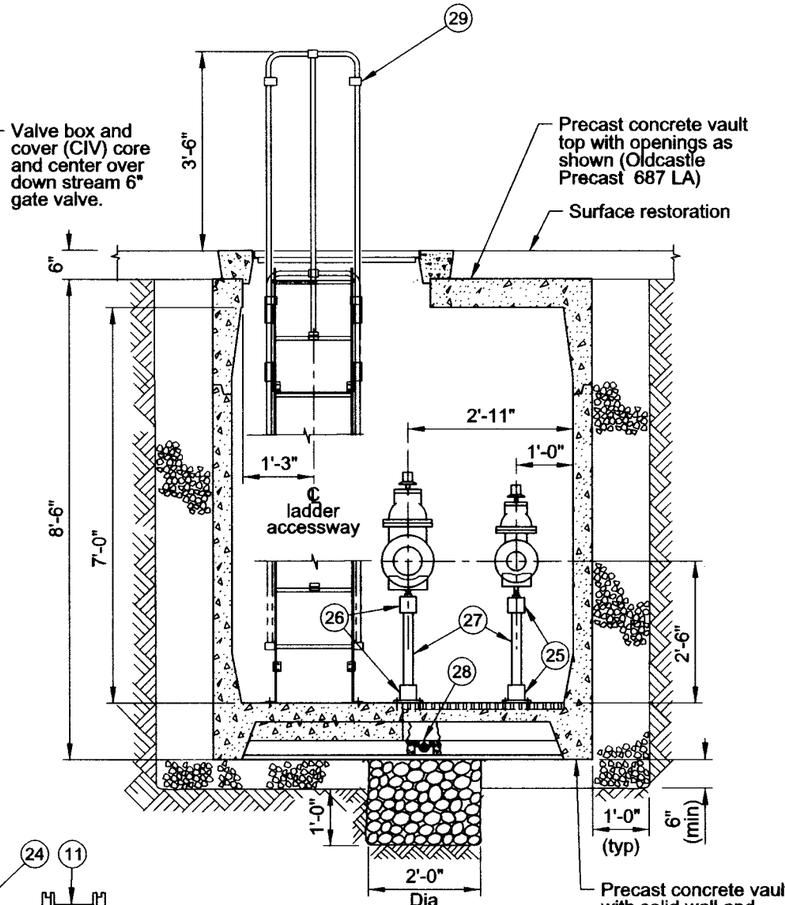
Standard Drawing No.
P-870b

Plot Date: 8/4/2015 10:09:44 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\870b_6inm_4inby_687_swk.dgn



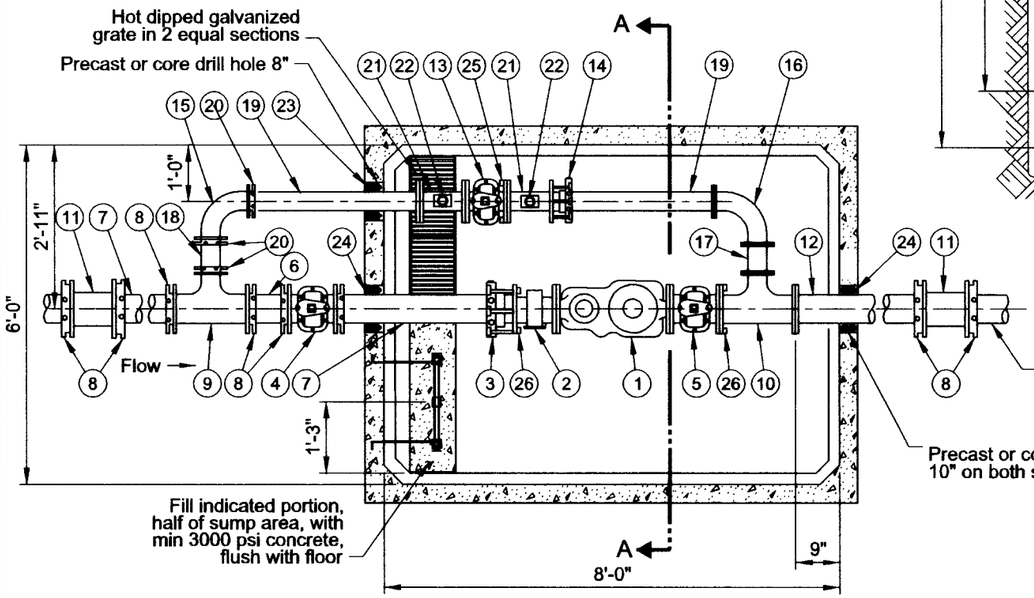
Vault Top Plan

⅜"=1'-0"



Section A-A

⅜"=1'-0"



Vault Floor Plan

⅜"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	6"	1	Meter, compound with test outlet
2	6"	1	Strainer, FLG x FLG
3	6"	1	Restrained dismantling assembly (MegaFlange)
4	6"	1	Gate valve, MJ x MJ OL
5	6"	1	Gate valve, FLG x FLG OL
6	6"	1	Nipple, DI PE X PE 8"-9" long (field fit)
7	6"	2	Nipple, DI PE X PE 36" long (field fit)
8	6"	8	Gland, wedge action retainer (Megalug)
9	6"x6"x4"	1	Tee, DI MJ x MJ
10	6"x6"x4"	1	Tee, DI FLG x FLG
11	6"	2	Solid sleeve, DI MJ
12	6"	1	Nipple, DI FLG X PE 48" long (field fit)
13	4"	1	Gate valve, FLG x FLG OL
14	4"	1	Restrained dismantling assembly (MegaFlange)
15	4"	1	Bend, DI MJ long radius 90 degrees
16	4"	1	Bend, DI FLG long radius 90 degrees
17	4"	1	Spool, DI FLG x FLG 6" long
18	4"	1	Nipple, DI PE X PE 8"-9" long (field fit)
19	4"	2	Nipple, DI FLG X PE 36" long (field fit)
20	4"	3	Gland, wedge action retainer (Megalug)
21	4"x4"x2"	2	Drip tee, FLG x FLG x FIPT
22	2"	2	Gate Valve, brass with plug
23	4"	1	Seal, mechanical penetration (Link Seal LS-410-C-7)
24	6"	2	Seal, mechanical penetration (Link Seal LS-410-C-10)
25	4"	1	Adjustable pipe support, hot dipped galvanized
26	6"	2	Adjustable pipe support, hot dipped galvanized
27	2"	3	Pipe, galvanized steel (field fit)
28	4"	1	Drain check valve
29		1	Ladder, galv steel with aluminum extension (field fit) (Oldcastle Precast)
30	3'-0"x3'-0"	1	Hatch, aluminum single leaf H-20 rated with hold open arm

Notes:

1. See General Vault Detail (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

6" Compound Meter with 4" Bypass in 6-8-7 Vault (In Sidewalk)

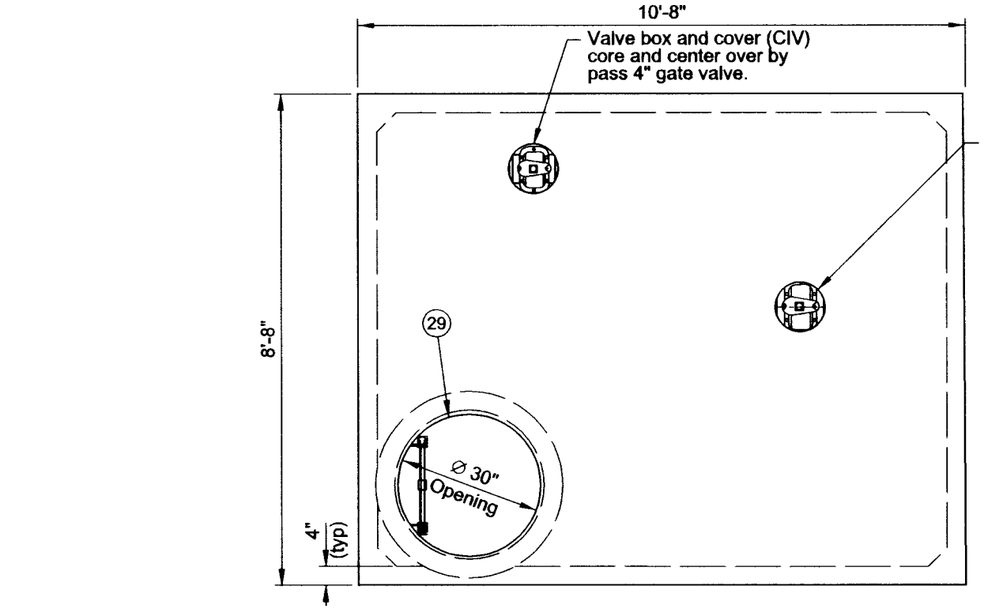
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

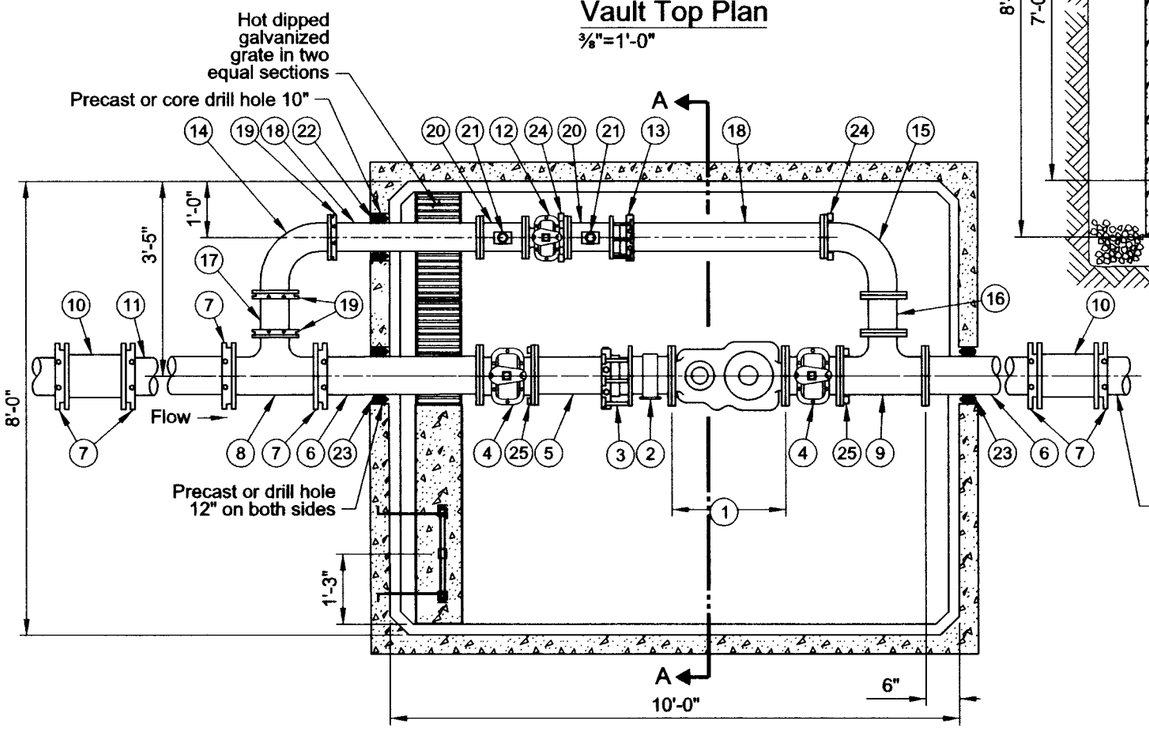
P-870c

Plot Date: 7/31/2015 9:37:15 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\870c_6inm_4inby_687_swk.dgn



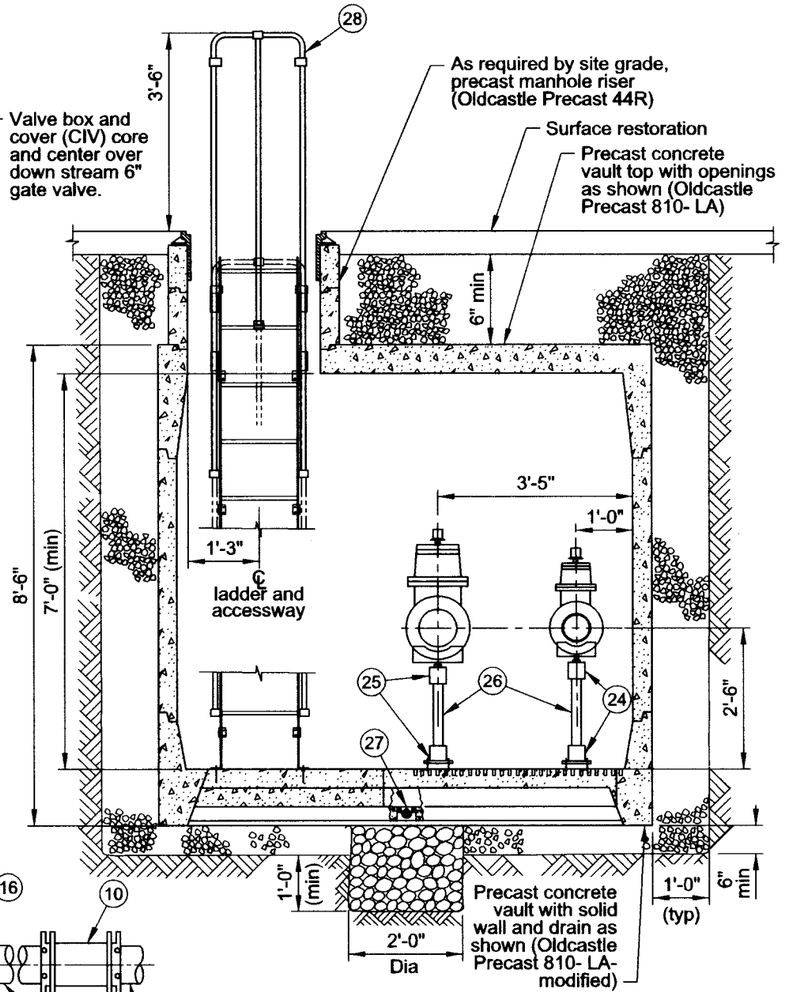
Vault Top Plan

3/8"=1'-0"



Vault Floor Plan

3/8"=1'-0"



Section A-A

3/8"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	8"	1	Compound meter with test outlet
2	8"	1	Strainer
3	8"	1	Restrained dismantling assembly (MegaFlange)
4	8"	2	Gate valve, FLG x FLG OL
5	8"	1	Nipple, DI FLG X PE 8"-9" long (field fit)
6	8"	2	Nipple, DI FLG x PE 48" long (field fit)
7	8"	6	Gland, wedge action retainer (Megalug)
8	8"x8"x6"	1	Tee, DI MJ x MJ
9	8"x8"x6"	1	Tee, DI FLG x FLG
10	8"	2	Solid sleeve, DI MJ
11	8"	1	Nipple, DI PE x PE 36" long (field fit)
12	6"	1	Gate valve, FLG x FLG OL
13	6"	1	Restrained dismantling assembly (MegaFlange)
14	6"	1	Bend, DI MJ long radius 90 degrees
15	6"	1	Bend, DI FLG long radius 90 degrees
16	6"	1	Spool, DI FLG 6" long (field fit)
17	6"	1	Nipple, DI PE x PE 8"-9" long (field fit)
18	6"	2	Nipple, DI FLG x PE 48" long (field fit)
19	6"	3	Gland, wedge action retainer (Megalug)
20	6"x6"x2"	2	Drip tee, FLG x FLG x FIPT
21	2"	2	Gate Valve, brass with plug
22	6"	1	Seal mechanical penetration (Linkseal LS-410-C-10)
23	8"	2	Seal mechanical penetration (Linkseal LS-400-C-9)
24	6"	2	Adjustable pipe support, Hot-dipped galvanized
25	8"	2	Adjustable pipe support, Hot-dipped galvanized
26	2"	4	Pipe, galvanized steel (field fit)
27	4"	1	Drain check valve
28		1	Ladder, galv steel with aluminum extension (field fit) (Oldcastle Precast)
29	30"	1	Manhole frame and cover, 30" true opening

Notes:

1. See General Vault Detail (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON
Chief Engineer

Standard Drawing Title

8" Compound meter with 6" Bypass in 8-10-7 Vault (In Street)

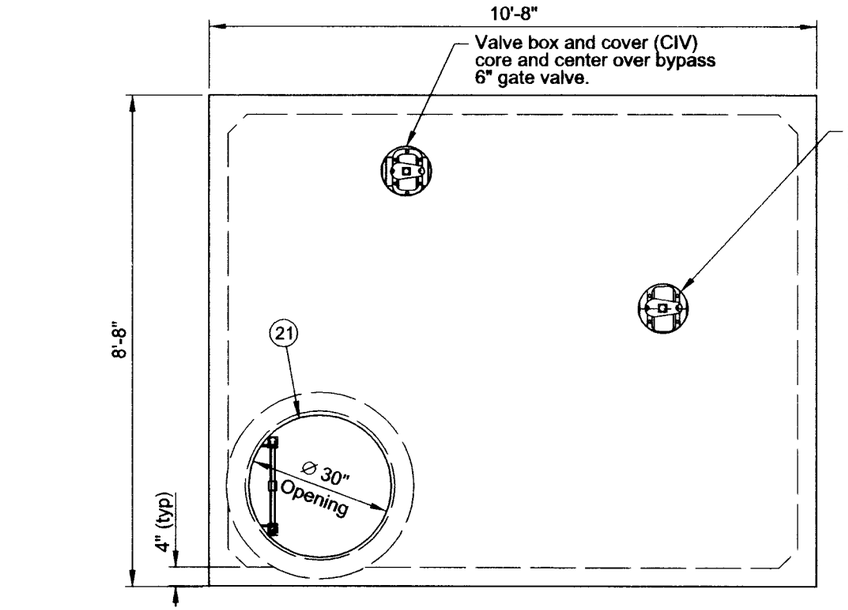
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

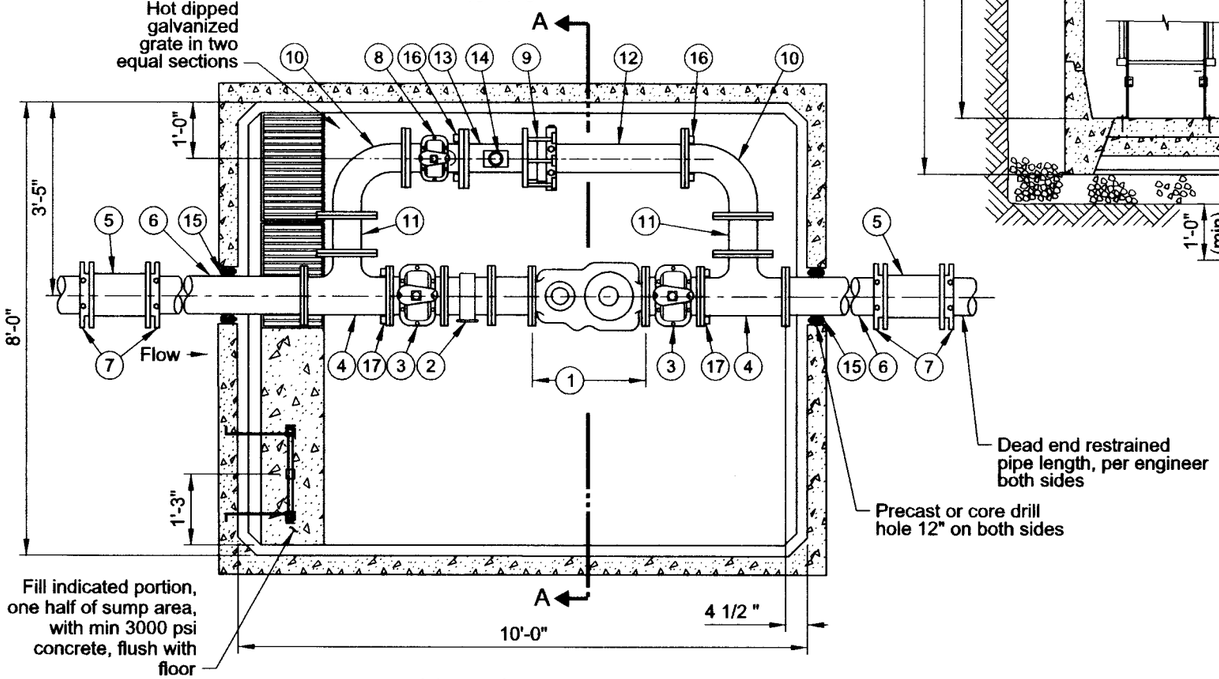
P-871

Plot Date: 7/31/2015 9:54:26 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\871_8inm_6inby_810_7.str.dgn



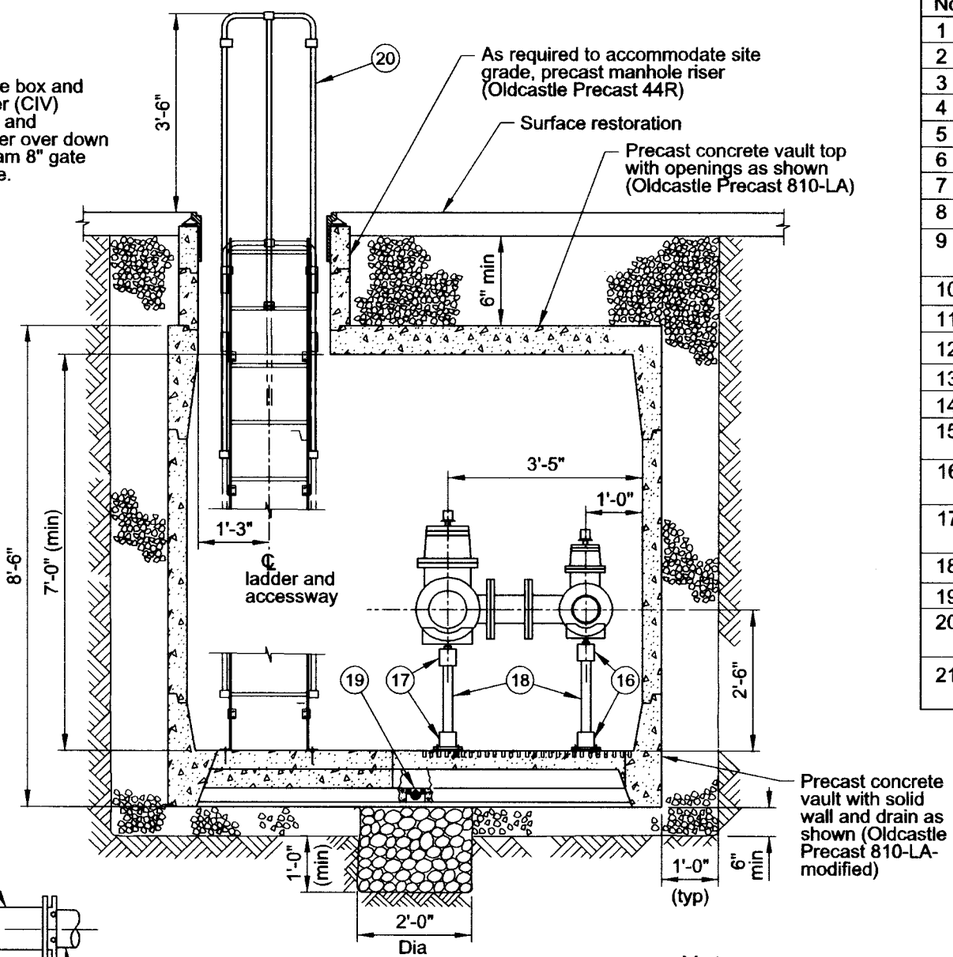
Vault Top Plan

⅜"=1'-0"



Vault Floor Plan

⅜"=1'-0"



Section A-A

⅜"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	8"	1	Meter, Compound with test outlet
2	8"	1	Strainer
3	8"	2	Gate valve, FLG x FLG OL
4	8"x8"x6"	2	Tee, DI FLG x FLG
5	8"	2	Solid sleeve, DI MJ
6	8"	2	Nipple, DI FLG x PE 48" long (field fit)
7	8"	4	Gland, wedge action retainer (Megalug)
8	6"	1	Gate valve, FLG x FLG OL
9	6"	1	Restrained dismantling assembly (MegaFlange)
10	6"	2	Bend, DI FLG long radius 90 degrees
11	6"	2	Spool, DI FLG x FLG 8"-9" long
12	6"	1	Nipple, DI FLG x PE 36" long (field fit)
13	6"x6"x2"	1	Drip tee, FLG X FLG x FIPT
14	2"	1	Gate valve, brass with plug
15	8"	2	Seal mechanical penetration (LinkSeal LS-400-C-9)
16	6"	2	Adjustable pipe support, Hot-dipped galvanized
17	8"	2	Adjustable pipe support, Hot-dipped galvanized
18	2"	4	Pipe, galvanized steel (field fit)
19	4"	1	Drain check valve
20		1	Ladder, galvanized steel with aluminum extension (field fit) (Oldcastle Precast)
21	30"	1	Manhole frame and cover, 30" true opening

Notes:

1. See General Vault Detail (P-855) for construction and material notes.
2. No dismantling assembly - space constraint. Space constraint may be addressed by meter with integral strainer.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

8" Compound meter with 6" Bypass in 8-10-7 Vault (In Street)

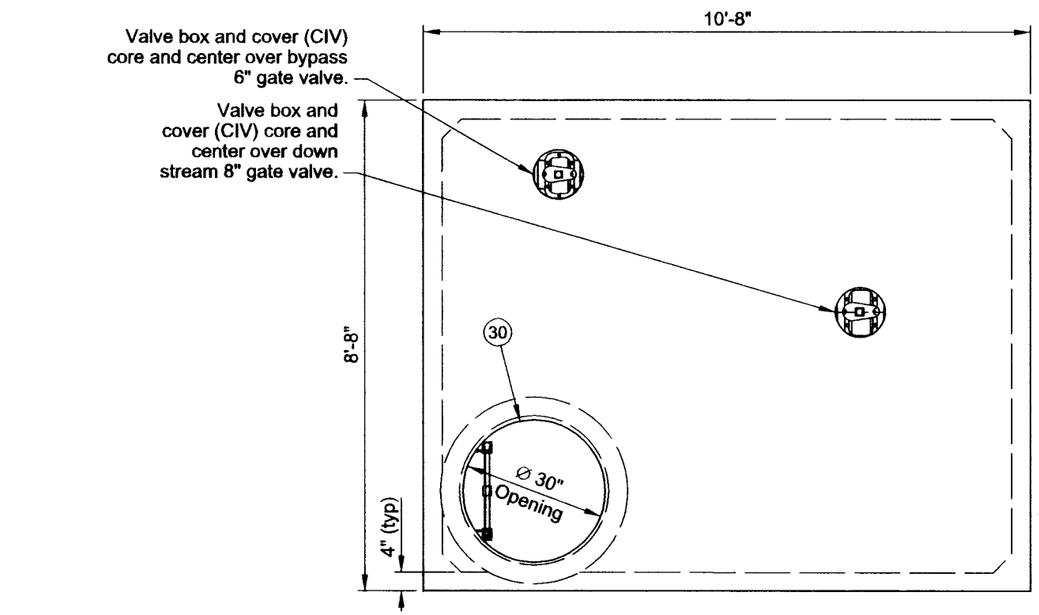
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

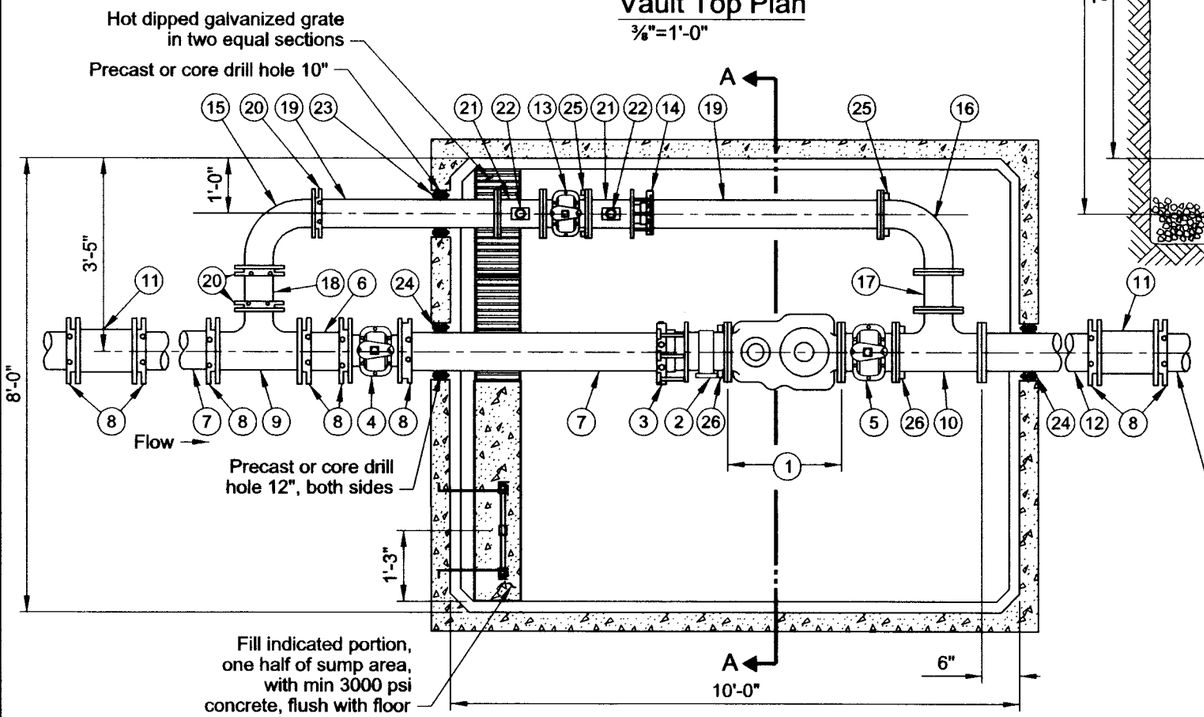
P-871b

Plot Date: 7/31/2015 10:08:05 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\871b_8inm_6inby_8107_str.dgn



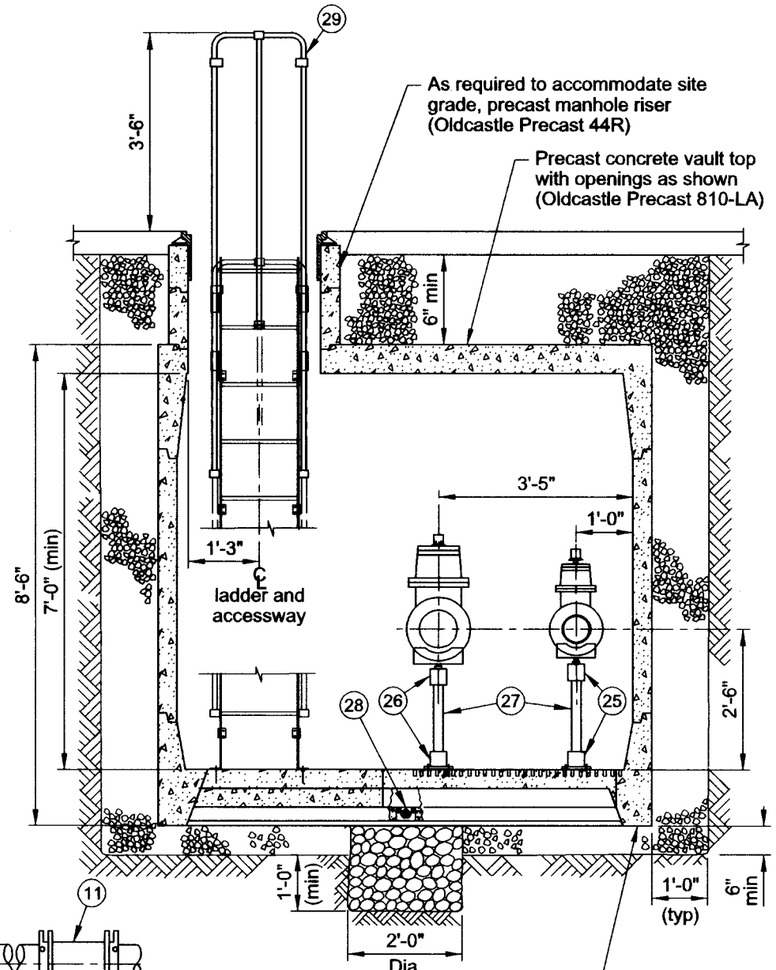
Vault Top Plan

3/8"=1'-0"



Vault Floor Plan

3/8"=1'-0"



Section A-A

3/8"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	8"	1	Compound meter with test outlet
2	8"	1	Strainer
3	8"	1	Restrained dismantling assembly (MegaFlange)
4	8"	1	Gate valve, MJ x MJ OL
5	8"	1	Gate valve, FLG x FLG OL
6	8"	1	Nipple, DI PE X PE 8"-9" long (field fit)
7	8"	1	Nipple, DI PE X PE 48" long (field fit)
8	8"	8	Gland, wedge action retainer (Megalug)
9	8"x8"x6"	1	Tee, DI MJ x MJ
10	8"x8"x6"	2	Tee, DI FLG x FLG
11	8"	2	Solid sleeve, DI MJ
12	8"	1	Nipple, DI FLG x PE 48" long (field fit)
13	6"	1	Gate valve, FLG x FLG OL
14	6"	1	Restrained dismantling assembly (MegaFlange)
15	6"	1	Bend, DI MJ long radius 90 degrees
16	6"	1	Bend, DI FLG long radius 90 deg
17	6"	1	Spool, DI FLG 6" long
18	6"	1	Nipple, DI PE x PE 8"- 9" long (field fit)
19	6"	2	Nipple, DI FLG x PE 48" long (field fit)
20	6"	3	Gland, wedge action retainer (Megalug)
21	6" x 2"	2	Drip tee, FLG x FLG x FIPT
22	2"	2	Gate valve, brass with plug
23	6"	1	Seal mechanical penetration (Linkseal LS-410-C-10)
24	8"	2	Seal mechanical penetration (Linkseal LS-400-C-9)
25	6"	2	Adjustable pipe support, Hot-dipped galvanized
26	8"	2	Adjustable pipe support, Hot-dipped galvanized
27	2"	4	Pipe, galvanized steel (field fit)
28	4"	1	Drain check valve
29		1	Ladder, galvanized steel with aluminum extension (field fit) (Oldcastle Precast)
30	30"	1	Manhole frame and cover, 30" true opening

Notes:

1. See General Vault Detail (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

8" Compound meter with 6" Bypass in 8-10-7 Vault (In Street)

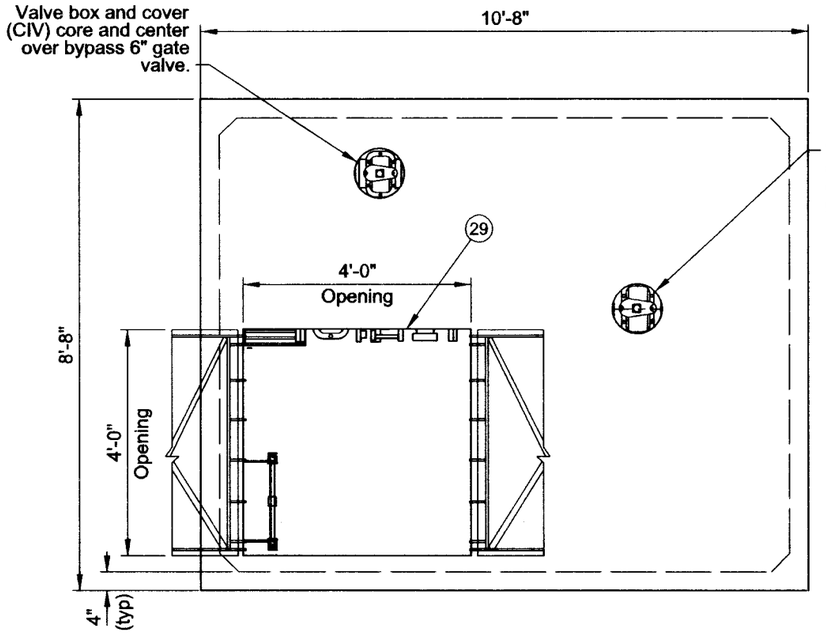
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

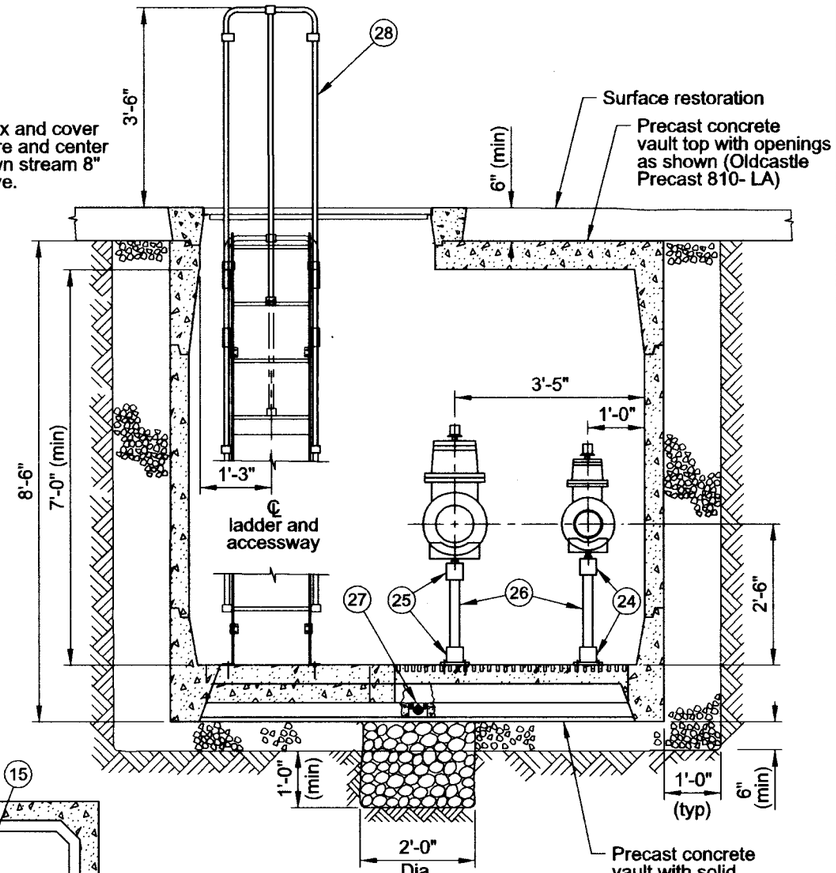
P-871c

Plot Date: 8/4/2015 7:56:12 AM Filename: JN:Engineering\CAD\Standards\Working_Vaults\871c_8inm_6inby_8107_str.dgn



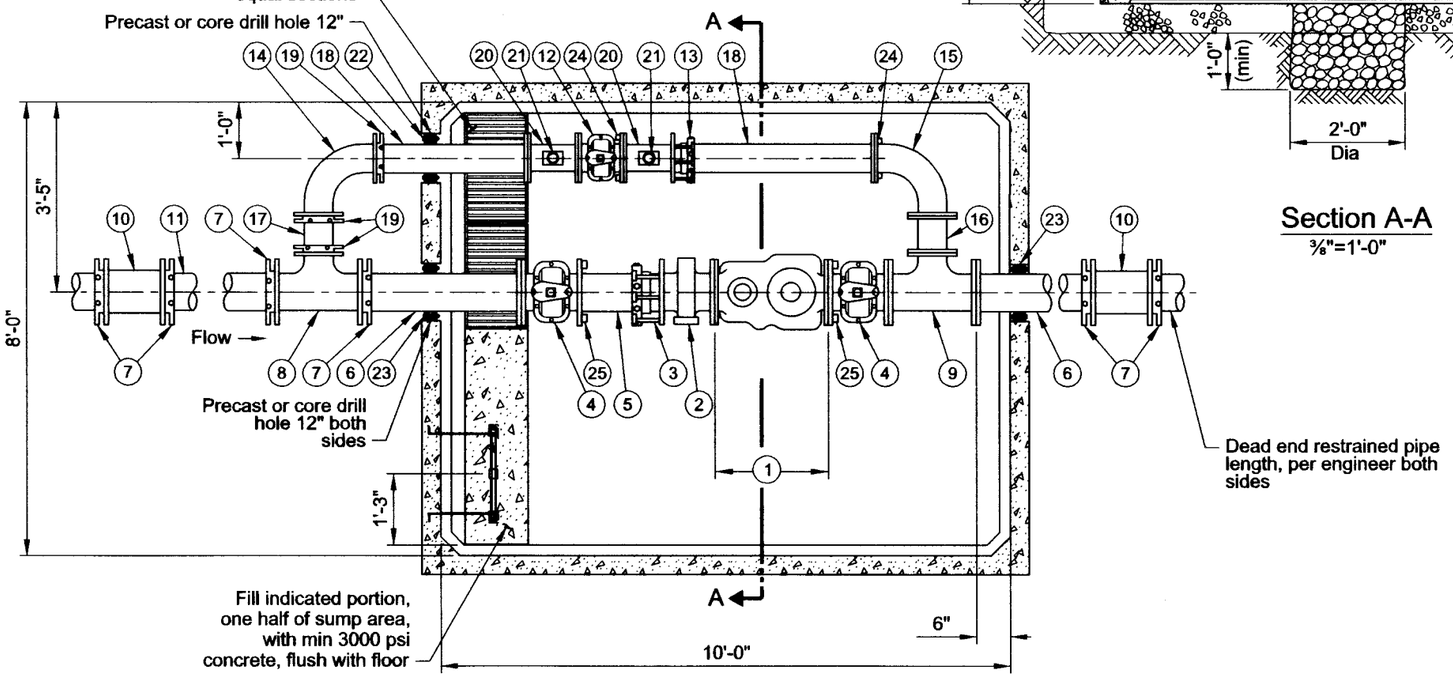
Vault Top Plan

3/8"=1'-0"



Section A-A

3/8"=1'-0"



Vault Floor Plan

3/8"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	8"	1	Compound meter with test outlet
2	8"	1	Strainer
3	8"	1	Restrained dismantling assembly (MegaFlange)
4	8"	2	Gate valve, FLG x FLG OL
5	8"	1	Nipple, DI FLG X PE 8"-9" long (field fit)
6	8"	2	Nipple, DI FLG x PE 48" long (field fit)
7	8"	6	Gland, wedge action retainer (Megalug)
8	8"x8"x6"	1	Tee, DI MJ x MJ
9	8"x8"x6"	1	Tee, DI FLG x FLG
10	8"	2	Solid sleeve, DI MJ
11	8"	1	Nipple, DI PE x PE 36" long (field fit)
12	6"	1	Gate valve, FLG x FLG OL
13	6"	1	Restrained dismantling assembly (MegaFlange)
14	6"	1	Bend, DI MJ long radius 90 degrees
15	6"	1	Bend, DI FLG long radius 90 degrees
16	6"	1	Spool, DI FLG 6" long
17	6"	1	Nipple, DI PE x PE 8"-9" long (field fit)
18	6"	2	Nipple, DI FLG x PE 48" long (field fit)
19	6"	3	Gland, wedge action retainer (Megalug)
20	6"x6"x2"	2	Drip tee, FLG x FLG x FIPT
21	2"	2	Gate Valve, brass with plug
22	6"	1	Seal mechanical penetration (Linkseal LS-410-C-10)
23	8"	2	Seal mechanical penetration (Linkseal LS-400-C-9)
24	6"	2	Adjustable pipe support, Hot-dipped galvanized
25	8"	2	Adjustable pipe support, Hot-dipped galvanized
26	2"	4	Pipe, galvanized steel (field fit)
27	4"	1	Drain check valve
28		1	Ladder, galv steel with aluminum extension (field fit) (Oldcastle Precast)
29	4'-0"x4'-0"	1	Hatch, aluminum double leaf H-20 rated with hold open arm

Notes:

1. See General Vault Detail (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

8" Compound meter with 6" Bypass in 8-10-7 Vault (In Sidewalk)

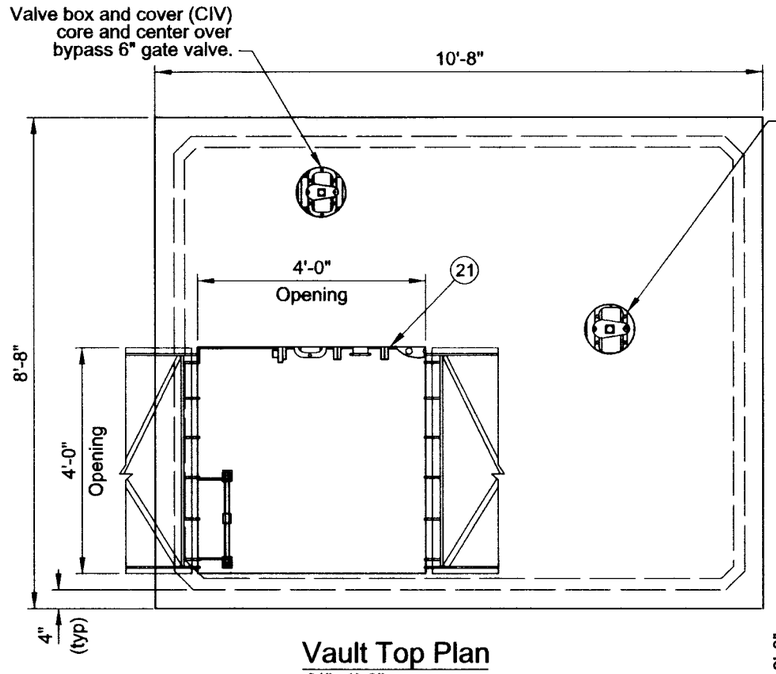
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

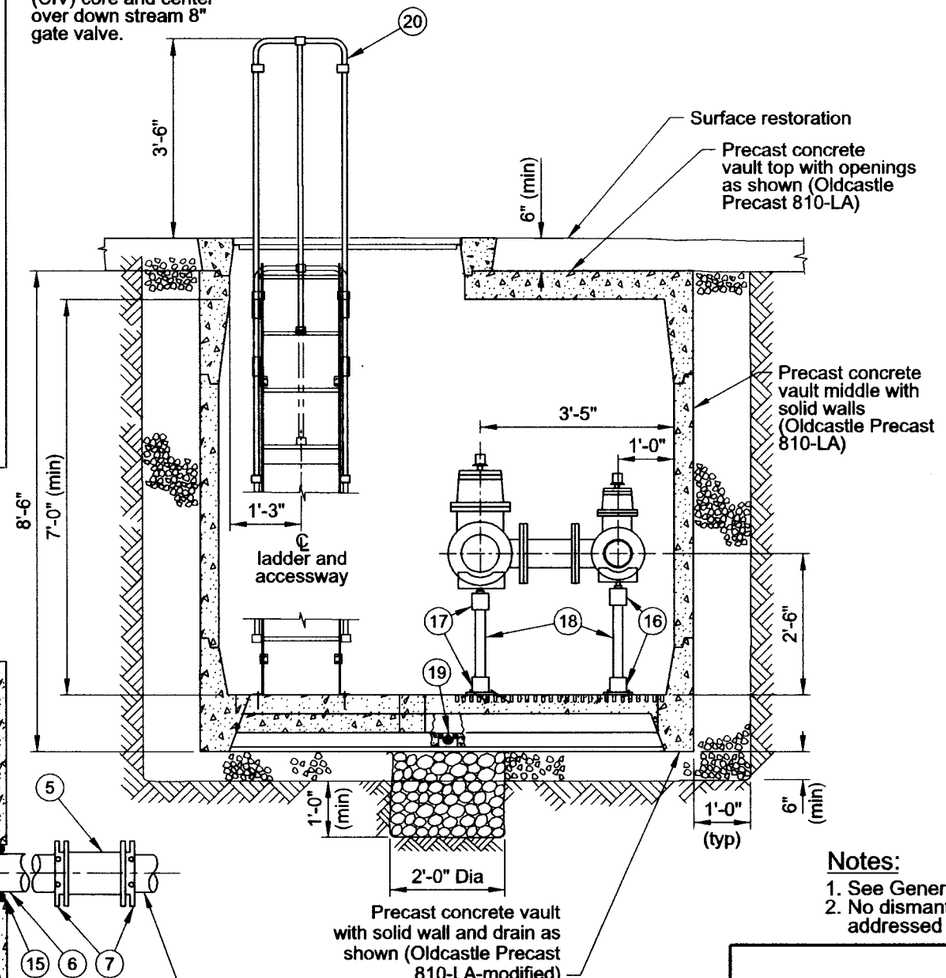
P-872

Plot Date: 8/4/2015 9:12:22 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\872_8inm_6inby_8107_swk.dgn



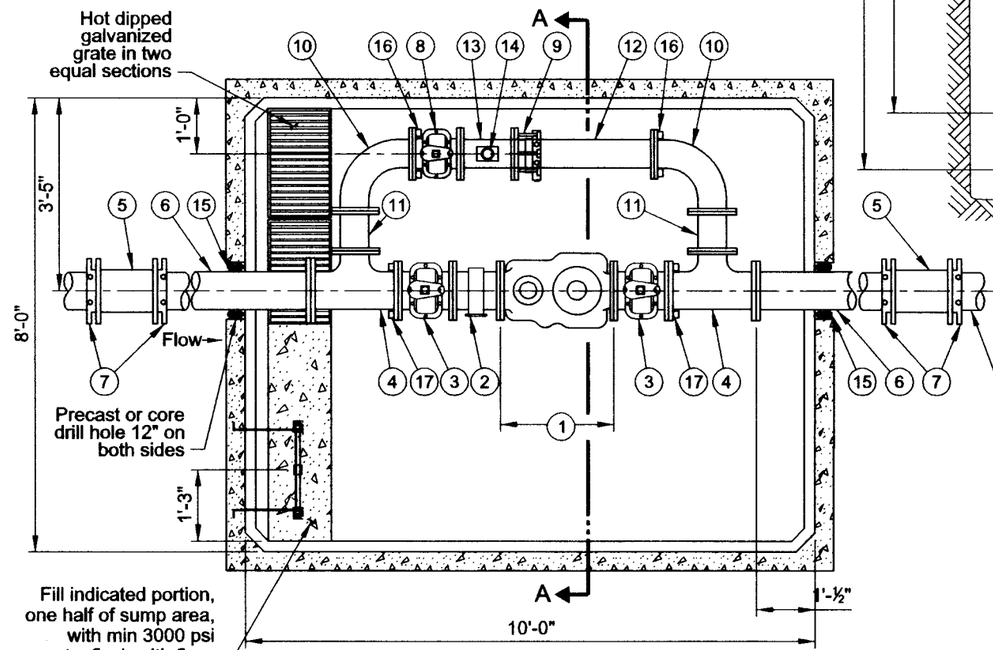
Vault Top Plan

3/8"=1'-0"



Section A-A

3/8"=1'-0"



Vault Floor Plan

3/8"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	8"	1	Compound meter with test outlet
2	8"	1	Strainer
3	8"	2	Gate valve, FLG x FLG OL
4	8"x8"x6"	2	Tee, DI FLG x FLG
5	8"	2	Solid sleeve, DI MJ
6	8"	2	Nipple, DI FLG x PE 48" long (field fit)
7	8"	4	Gland, wedge action retainer (Megalug)
8	6"	1	Gate valve, FLG x FLG OL
9	6"	1	Restrained dismantling assembly (MegaFlange)
10	6"	2	Bend, DI FLG long radius 90 deg
11	6"	2	Spool, DI FLG 6" long
12	6"	1	Nipple, DI FLG x PE 48" long (field fit)
13	6"x6"x2"	1	Drip tee, FLG x FLG X FIPT
14	2"	1	Gate valve, brass with plug
15	8"	2	Seal mechanical penetration (Linkseal LS-400-C-9)
16	6"	2	Adjustable pipe support, Hot-dipped galvanized
17	8"	2	Adjustable pipe support, Hot-dipped galvanized
18	2"	4	Pipe, galvanized steel (field fit)
19	4"	1	Drain check valve
20		1	Ladder, galvanized steel with aluminum extension (field fit) (Oldcastle Precast)
21	4'-0"x4'-0"	1	Hatch, aluminum double leaf H-20 rated with hold open arm

Notes:

1. See General Vault Detail (P-855) for construction and material notes.
2. No dismantling assembly - space constraint. Space constraint may be addressed by meter with integral strainer.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

8" Compound meter with 6" Bypass in 8-10-7 Vault (In Sidewalk)

Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

P-872b

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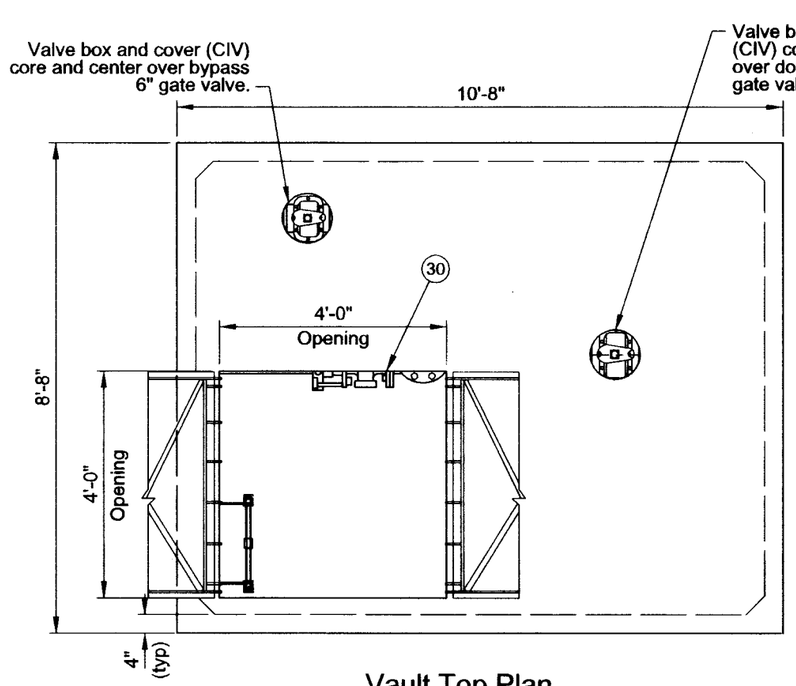
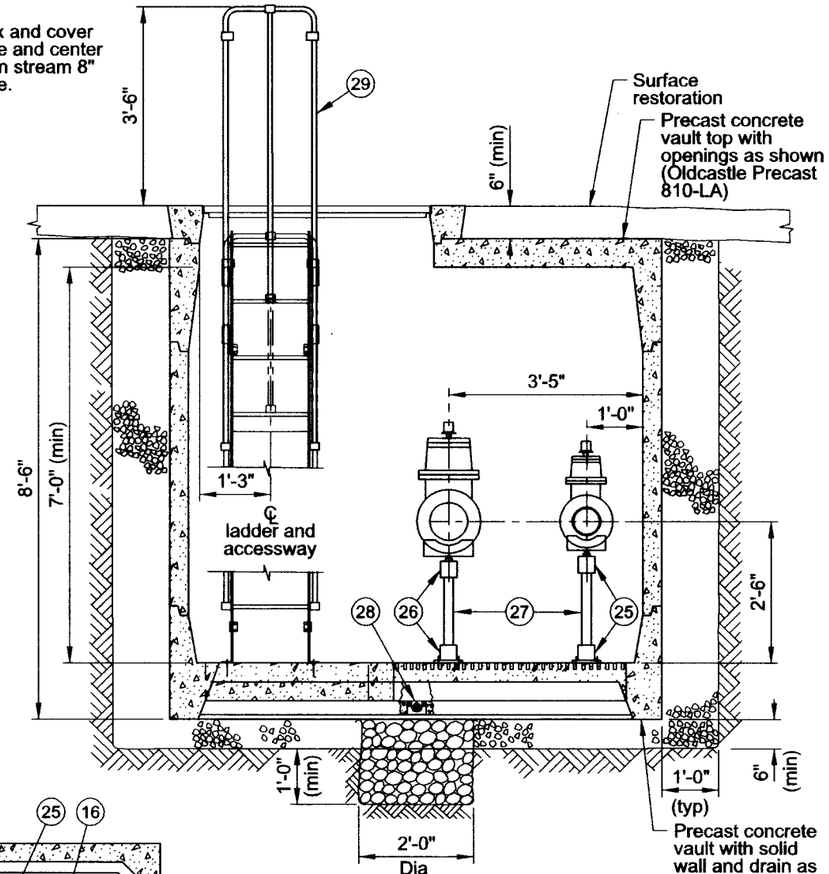


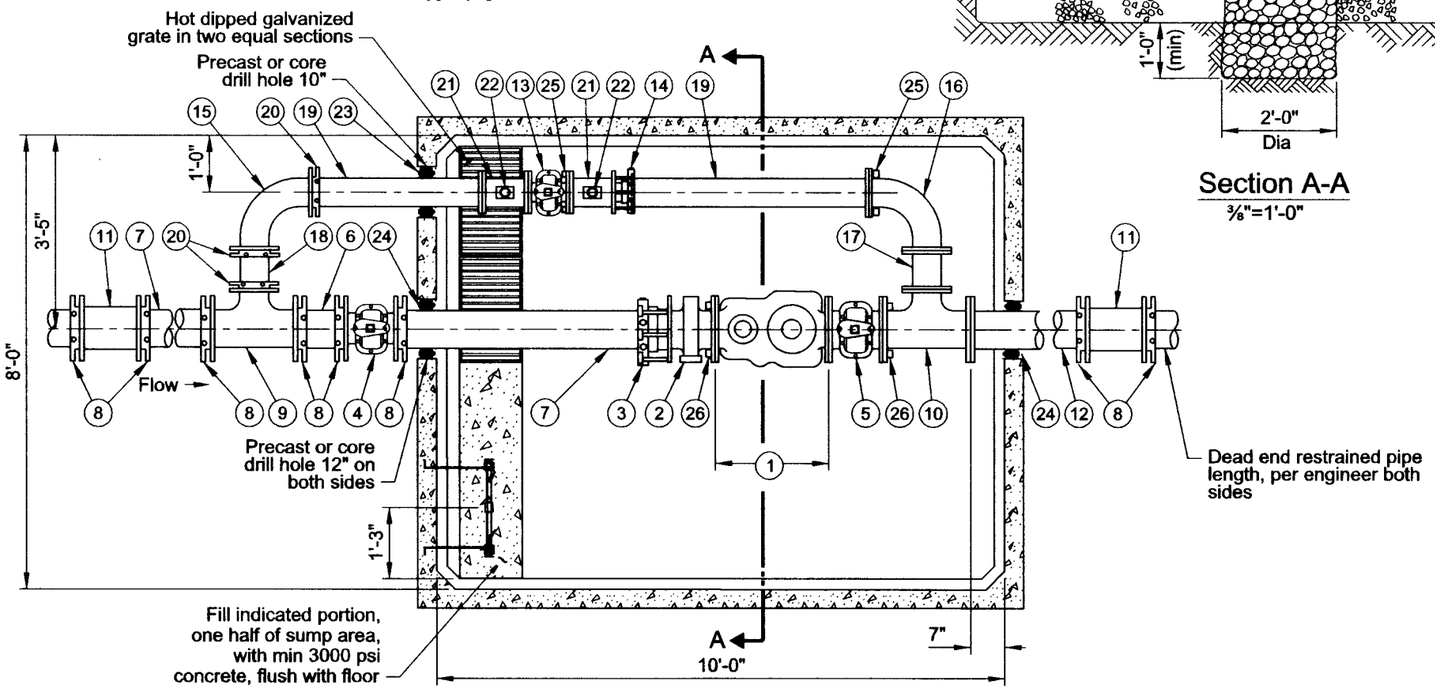
Vault Top Plan

3/8"=1'-0"



Section A-A

3/8"=1'-0"



Vault Floor Plan

3/8"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	8"	1	Compound meter with test outlet
2	8"	1	Strainer
3	8"	1	Restrained dismantling assembly (MegaFlange)
4	8"	1	Gate valve, MJ x MJ OL
5	8"	2	Gate valve, FLG x FLG OL
6	8"	1	Nipple, DI PE X PE 8"-9" long (field fit)
7	8"	2	Nipple, DI PE X PE 48" long (field fit)
8	8"	8	Gland, wedge action retainer (Megalug)
9	8"x8"x6"	1	Tee, DI MJ x MJ
10	8"x8"x6"	2	Tee, DI FLG x FLG
11	8"	2	Solid sleeve, DI MJ
12	8"	1	Nipple, DI FLG x PE 48" long (field fit)
13	6"	1	Gate valve, FLG x FLG OL
14	6"	1	Restrained dismantling assembly (MegaFlange)
15	6"	1	Bend, DI MJ long radius 90 degrees
16	6"	1	Bend, DI FLG long radius 90 degrees
17	6"	1	Spool, DI FLG 6" long
18	6"	1	Nipple, DI PE x PE 8"- 9" long (field fit)
19	6"	2	Nipple, DI FLG x PE 48" long (field fit)
20	6"	3	Gland, wedge action retainer (Megalug)
21	6" x 2"	2	Drip tee, FLG x FLG x FIPT
22	2"	2	Gate valve, brass with plug
23	6"	1	Seal mechanical penetration (Linkseal LS-410-C-10)
24	8"	2	Seal mechanical penetration (Linkseal LS-400-C-9)
25	6"	2	Adjustable pipe support, Hot-dipped galvanized
26	8"	2	Adjustable pipe support, Hot-dipped galvanized
27	2"	4	Pipe, galvanized steel (field fit)
28	4"	1	Drain check valve
29		1	Ladder, galvanized steel with aluminum extension (field fit) (Oldcastle Precast)
30	4'-0" x 4'-0"	1	Hatch, aluminum double leaf H-20 rated with hold open arm

Notes:

1. See General Vault Detail (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

8" Compound meter with 6" Bypass in 8-10-7 Vault (In Sidewalk)

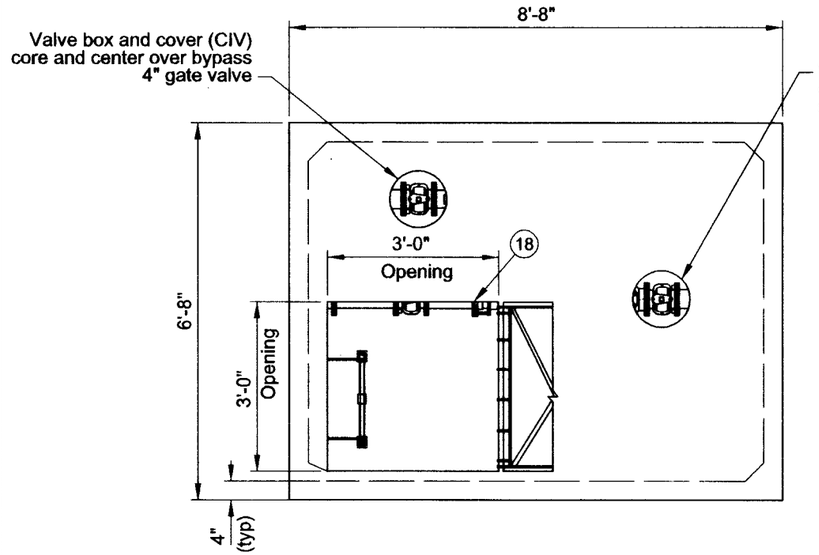
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

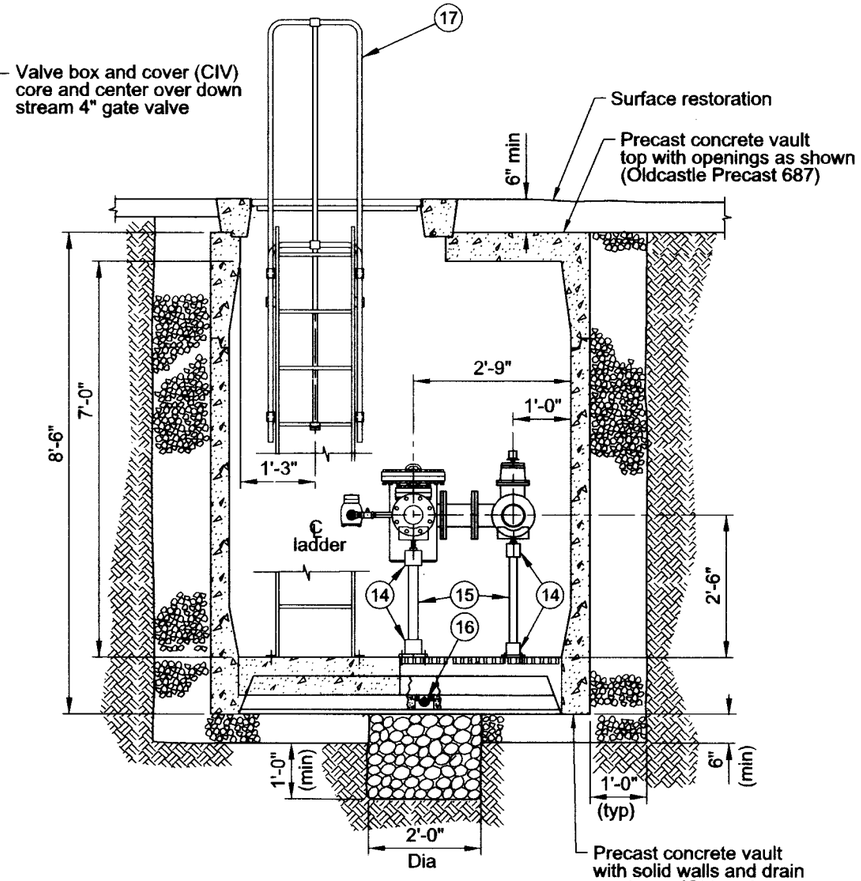
P-872c

Plot Date: 8/4/2015 9:19:28 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\872c_8inm_6inby_8107_skw.dgn



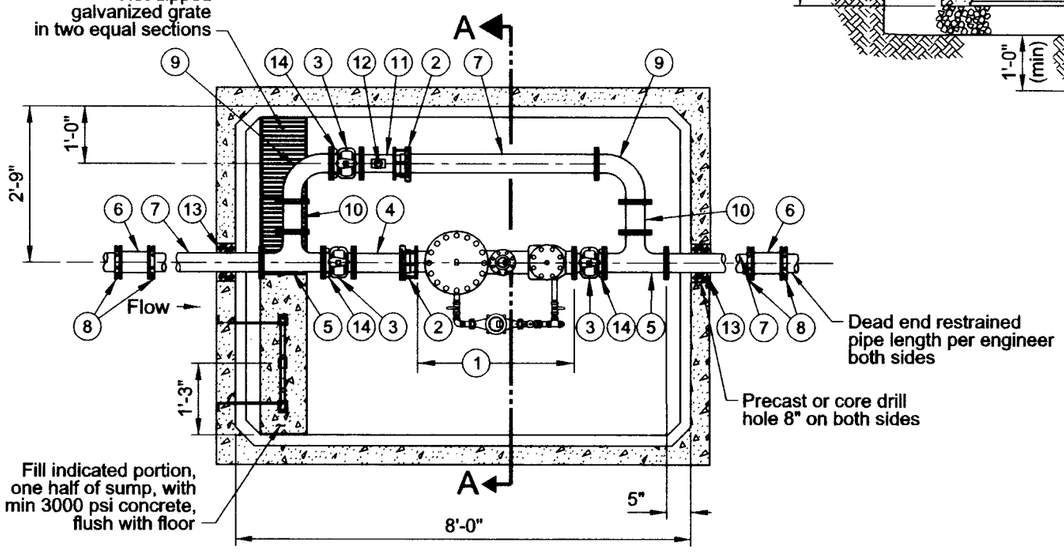
Vault Top Plan

3/8"=1'-0"



Section A-A

3/8"=1'-0"



Vault Floor Plan

3/8"=1'-0"

List of Parts			
Item No	Size	Qty	Description
1	4"	1	Meter, combination with test outlet
2	4"	2	Restrained dismantling assembly (MegaFlange)
3	4"	3	Gate valve, FLG x FLG OL
4	4"	1	Nipple, FLG x PE DI , 8"~9" (field fit)
5	4"x4"x4"	2	Tee, DI FLG x FLG
6	4"	2	Solid sleeve DI MJ
7	4"	3	Nipple DI, FLG x PE 48" long, (field fit)
8	4"	4	Gland, wedge action retainer (Megalug)
9	4"	2	Bend, DI FLG long radius 90 degrees
10	4"	2	Spool, DI FLG x FLG 6" long
11	4"x4"x2"	1	Drip tee, FLG x FLG x FIPT
12	2"	1	Gate valve, brass with plug
13	4"	2	Seal, Mechanical penetration (Linkseal LS-410-C-7)
14	4"	3	Adjustable pipe support, hot dipped galv
15	2"	3	Pipe, galv steel (field fit)
16	4"	1	Drain check valve
17		1	Ladder, galv steel with aluminum extension (field fit) (Oldcastle Precast)
18	3'-0"x3'-0"	1	Hatch, aluminum single leaf H-20 rated with hold open arm

Notes:

See General Vault Drawing (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

4" Combination Meter with 4" Bypass in 6-8-7 Vault (In Sidewalk)

Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

P-874

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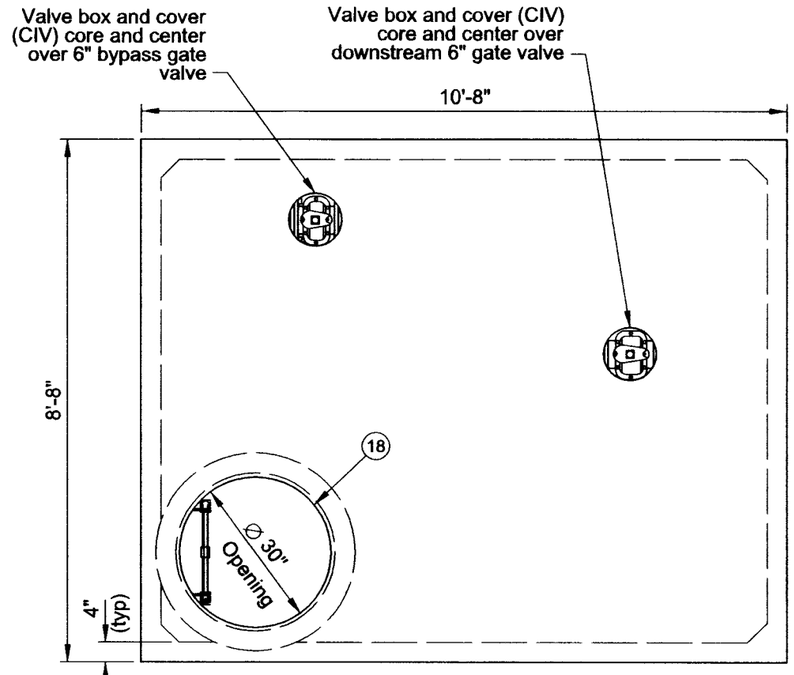
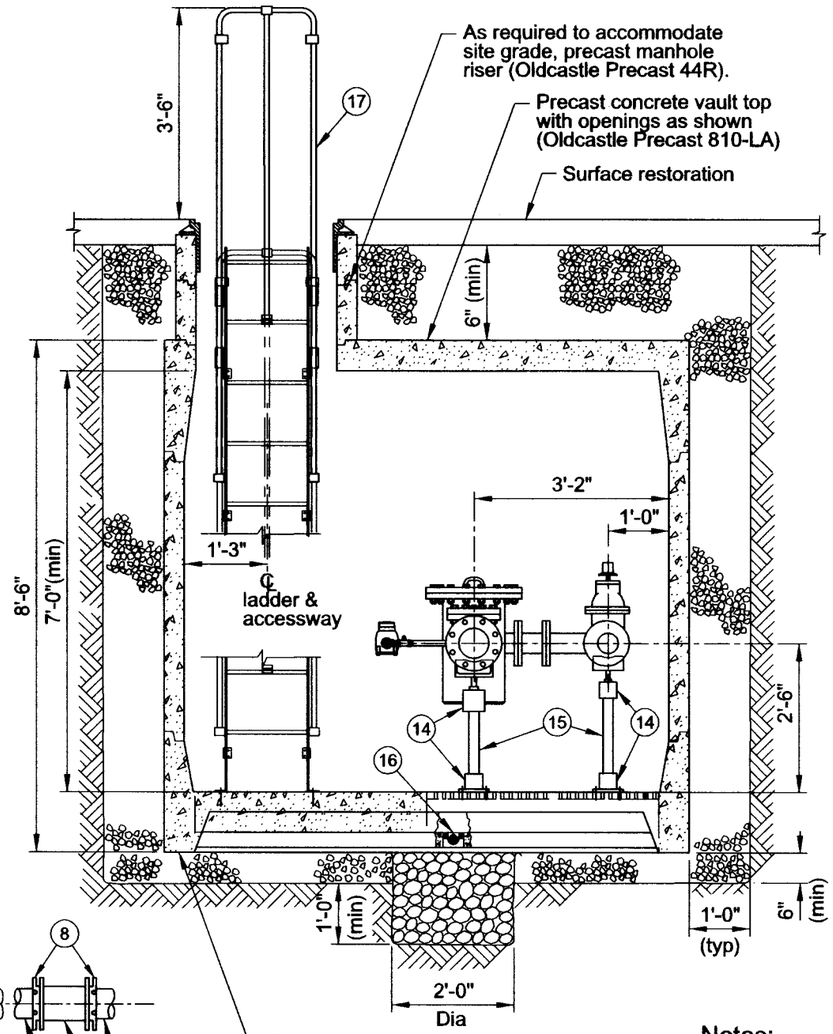


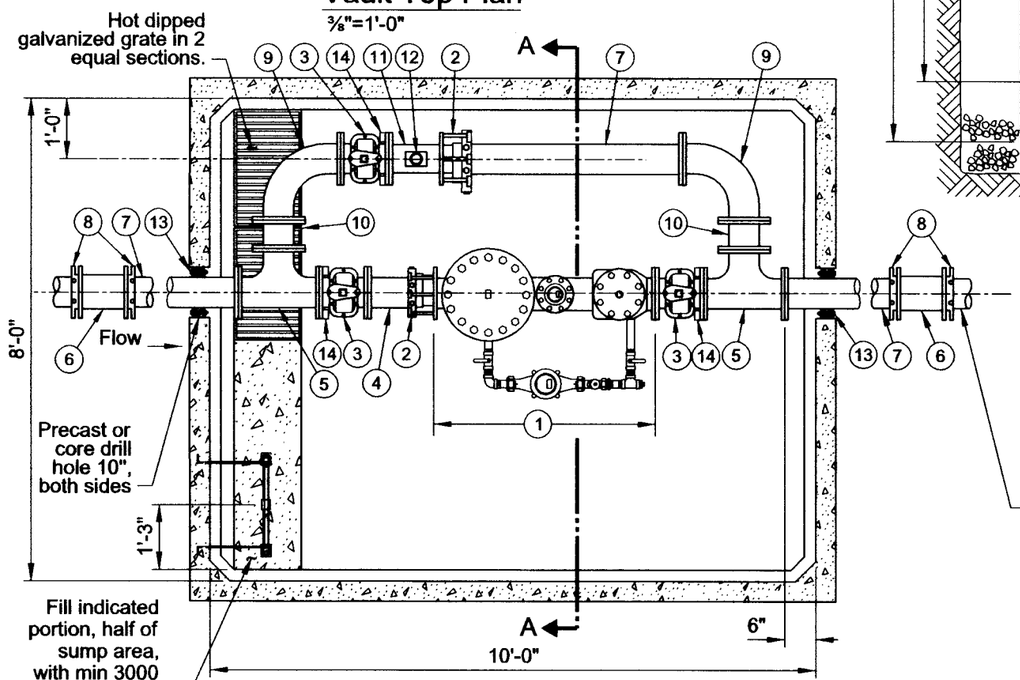
Vault Top Plan

3/8"=1'-0"



Section A-A

3/8"=1'-0"



Vault Floor Plan

3/8"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	6"	1	Meter, combination with test outlet
2	6"	2	Restrained dismantling assembly (Megaflange)
3	6"	3	Gate valve, FLG x FLG OL
4	6"	1	Nipple, DI FLG X PE 8"-9" long (field fit)
5	6"x6"x6"	2	Tee, DI FLG x FLG
6	6"	2	Solid sleeve, DI MJ
7	6"	3	Nipple, DI FLG X PE 48" long (field fit)
8	6"	4	Gland, wedge action retainer (Megalug)
9	6"	2	Bend, DI FLG long radius 90 degrees
10	6"	2	Spool, DI FLG x FLG 6" long
11	6"x6"x2"	1	Drip tee, FLG x FLG x FIPT
12	2"	1	Gate valve, brass with plug
13	6"	2	Seal, mechanical penetration (Link Seal LS-410-C-10)
14	6"	3	Adjustable pipe support, hot dipped galvanized
15	2"	3	Pipe, galvanized steel (field fit)
16	4"	1	Drain check valve
17		1	Ladder, galvanized steel with aluminum extension (field fit) (Oldcastle Precast)
18	30"	1	Manhole frame and cover, 30" true opening

Notes:

See General Vault Drawing (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

6" Combination Meter with 6" Bypass in 8-10-7 Vault (In Street)

Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

P-875

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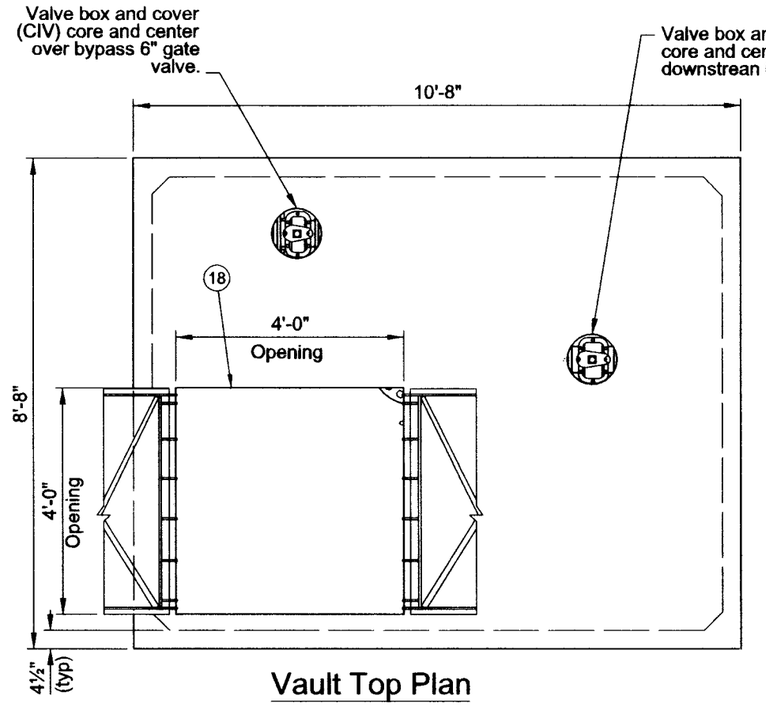
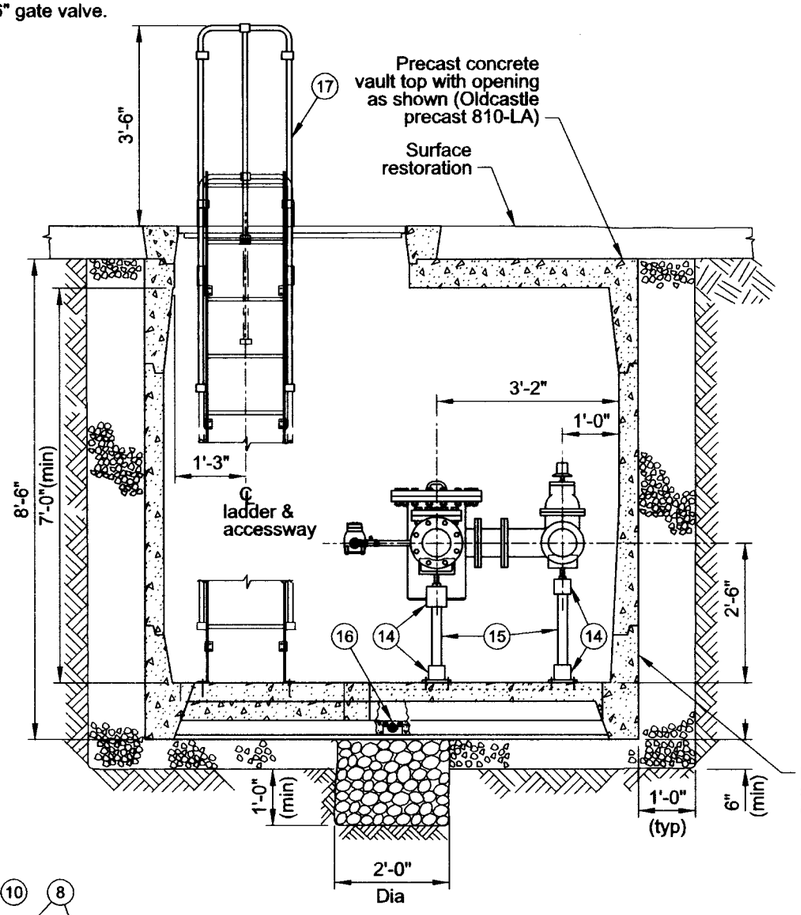


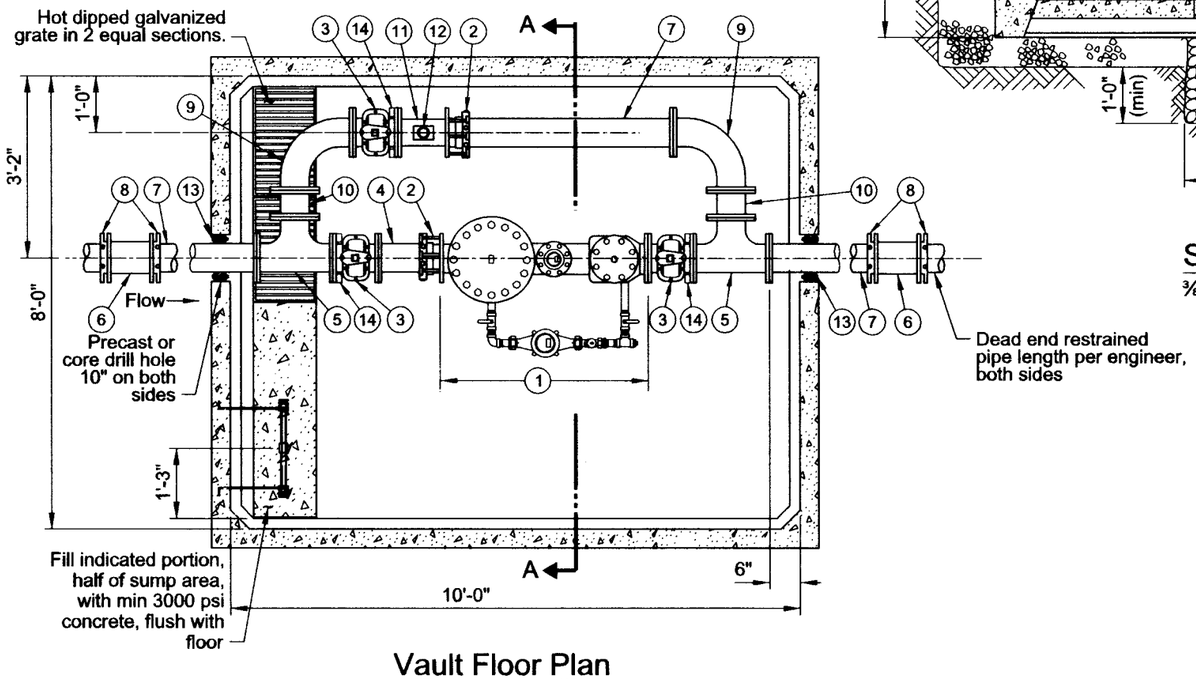
Vault Top Plan

⅜"=1'-0"



Section A-A

⅜"=1'-0"



Vault Floor Plan

⅜"=1'-0"

List of Parts			
Item No	Size	Qty	Description
1	6"	1	Meter, combination with test outlet
2	6"	2	Restrained dismantling assembly (Megaflange)
3	6"	3	Gate valve, FLG x FLG OL
4	6"	1	Nipple, DI FLG X PE 8"-9" long (field fit)
5	6"x6"x6"	2	Tee, DI FLG x FLG
6	6"	2	Solid sleeve, DI MJ
7	6"	3	Nipple, DI FLG X PE 48" long (field fit)
8	6"	4	Gland, wedge action retainer (Megalug)
9	6"	2	Bend, DI FLG long radius 90 degrees
10	6"	2	Spool, DI FLG x FLG 6" long
11	6"x6"x2"	1	Drip tee, FLG x FLG x FIPT
12	2"	1	Gate valve, brass with plug
13	6"	2	Seal, mechanical penetration (Link Seal LS-410-C-10)
14	6"	3	Adjustable pipe support, hot dipped galvanized
15	2"	3	Pipe, galvanized steel (field fit)
16	4"	1	Drain check valve
17		1	Ladder, galv steel with aluminum extension (field fit) (Oldcastle Precast)
18	4'-0"x4'-0"	1	Hatch, aluminum double leaf H-20 rated with hold open arm

Notes:

See General Vault Drawing (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

6" Combination Meter with 6" Bypass in 8-10-7 Vault (In Sidewalk)

Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

P-876

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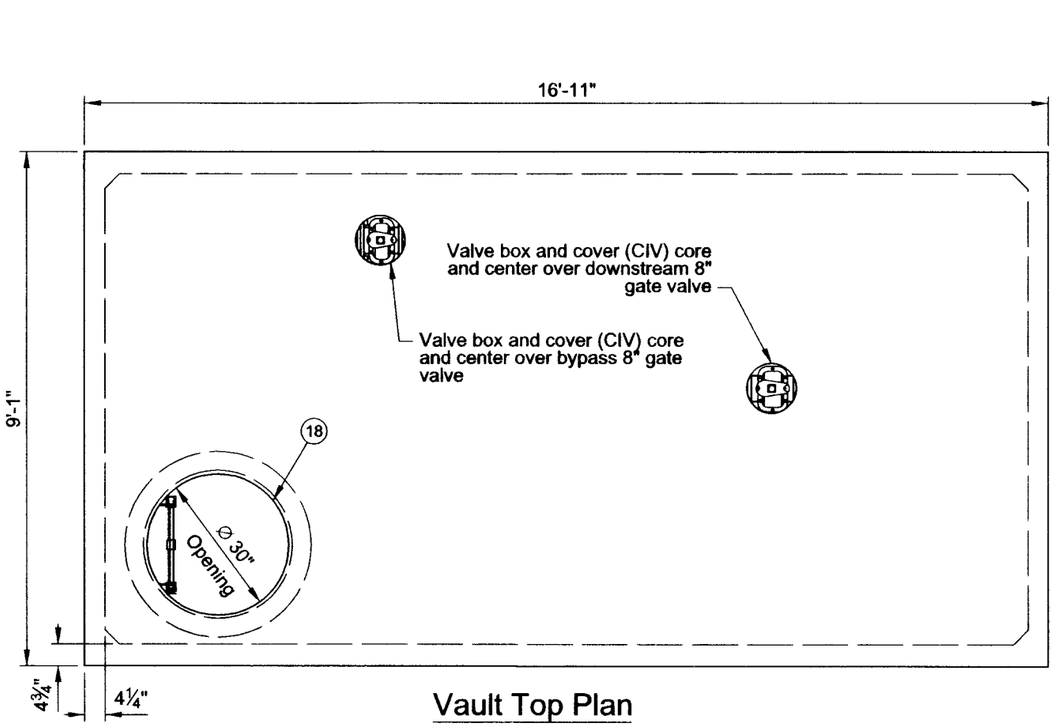
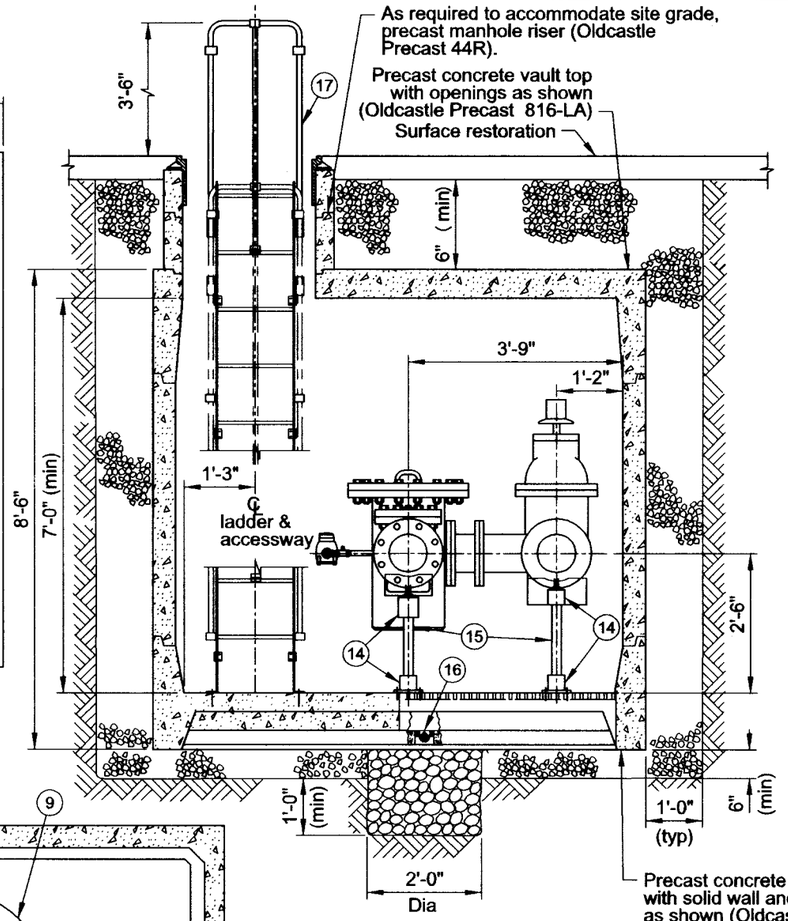


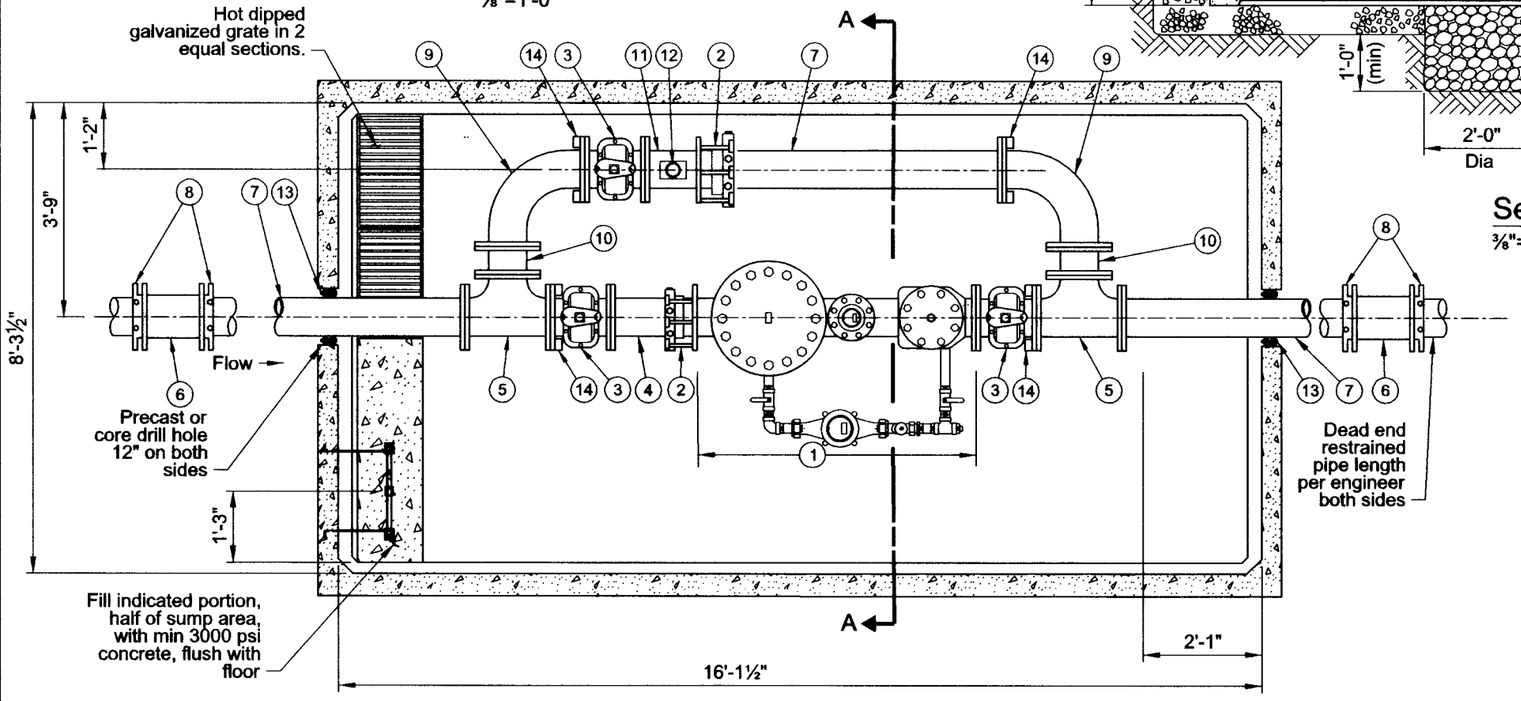
Vault Top Plan

⅜"=1'-0"



Section A-A

⅜"=1'-0"



Vault Floor Plan

⅜"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	8"	1	Meter, combination with test outlet
2	8"	2	Restrained dismantling assembly (Megaflange)
3	8"	3	Gate Valve, FLG x FLG OL
4	8"	1	Nipple, DI FLG X PE 8"-9" long (field fit)
5	8"x8"x8"	2	Tee, FLG x FLG
6	8"	2	Solid sleeve, DI MJ
7	8"	3	Nipple, DI FLG X PE 48" long (field fit)
8	8"	4	Gland, wedge action retainer (Megalug)
9	8"	2	Bend, DI FLG long radius 90 degrees
10	8"	2	Spool, DI FLG x FLG 6" long
11	8"x8"x2"	1	Drip tee, FLG x FLG x FIPT
12	2"	1	Gate valve, brass with plug
13	8"	2	Seal, mechanical penetration (Link Seal LS-400-C-9)
14	8"	4	Adjustable pipe support, hot dipped galvanized
15	2"	3	Pipe, galvanized steel (field fit)
16	4"	1	Drain check valve
17		1	Ladder, galvanized steel with aluminum extension (field fit) (Oldcastle Precast)
18	30"	1	Manhole frame and cover, 30" true opening

Notes:

See General Vault Drawing (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

8" Combination Meter with 8" Bypass in 8-16-7 Vault (In Street)

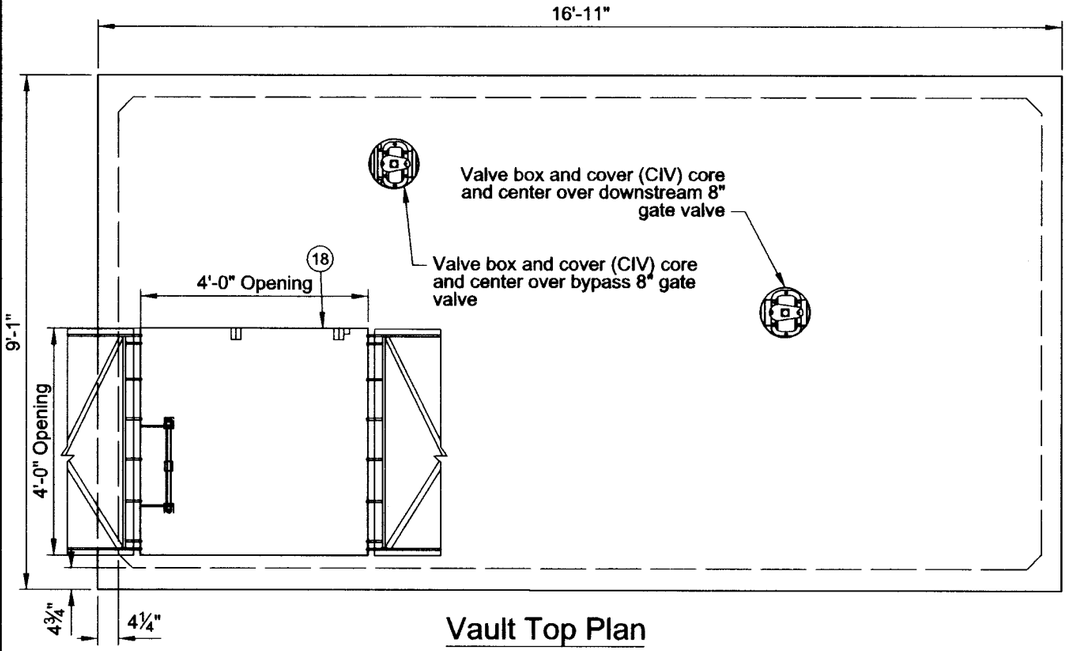
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

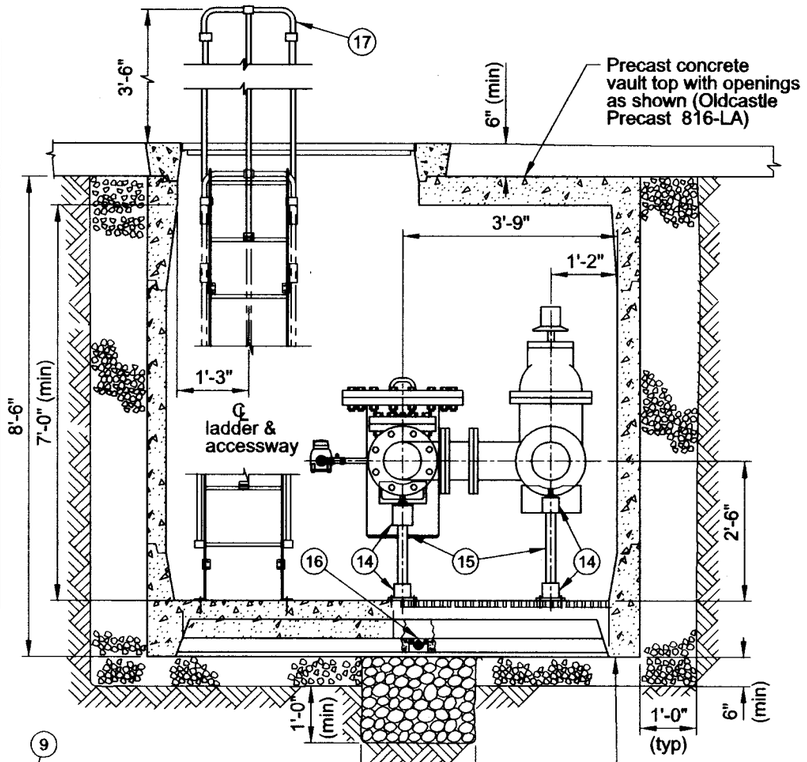
P-877

Plot Date: 7/31/2015 2:16:07 PM Filename: J:\Engineering\CAD\Standards\Working_Vaults\877_8inm_8inby_8167_str.dgn



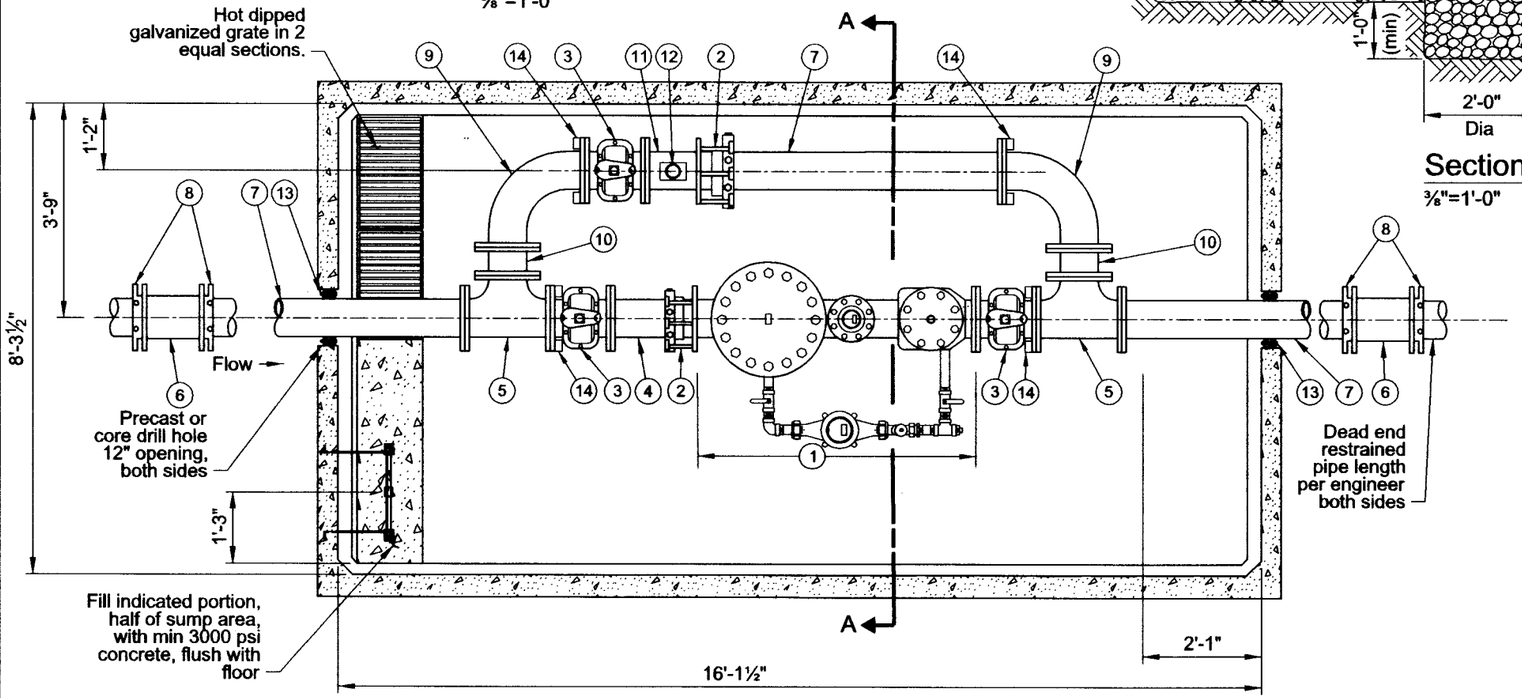
Vault Top Plan

⅜"=1'-0"



Section A-A

⅜"=1'-0"



Vault Floor Plan

⅜"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	8"	1	Meter, combination with test outlet
2	8"	2	Restrained dismantling assembly (Megaflange)
3	8"	3	Gate Valve, FLG x FLG OL
4	8"	1	Nipple, DI FLG X PE 8"-9" long (field fit)
5	8"x8"x8"	2	Tee, FLG x FLG
6	8"	2	Solid sleeve, DI MJ
7	8"	3	Nipple, DI FLG X PE 48" long (field fit)
8	8"	4	Gland, wedge action retainer (Megalug)
9	8"	2	Bend, DI FLG long radius 90 degrees
10	8"	2	Spool, DI FLG x FLG 6" long
11	8"x8"x2"	1	Drip tee, FLG x FLG x FIPT
12	2"	1	Gate valve, brass with plug
13	8"	2	Seal, mechanical penetration (Link Seal LS-400-C-9)
14	8"	4	Adjustable pipe support, hot dipped galvanized
15	4"	3	Pipe, galvanized steel (field fit)
16	8"	1	Drain check valve
17		1	Ladder, galvanized steel with aluminum extension (field fit) (Oldcastle Precast)
18	4'-0"x4'-0"	1	Hatch, aluminum double leaf H-20 rated (Syracuse Casting ECD-15HD)

Notes:

See General Vault Drawing (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

8" Combination Meter with 8" Bypass in 8-16-7 Vault (In Sidewalk)

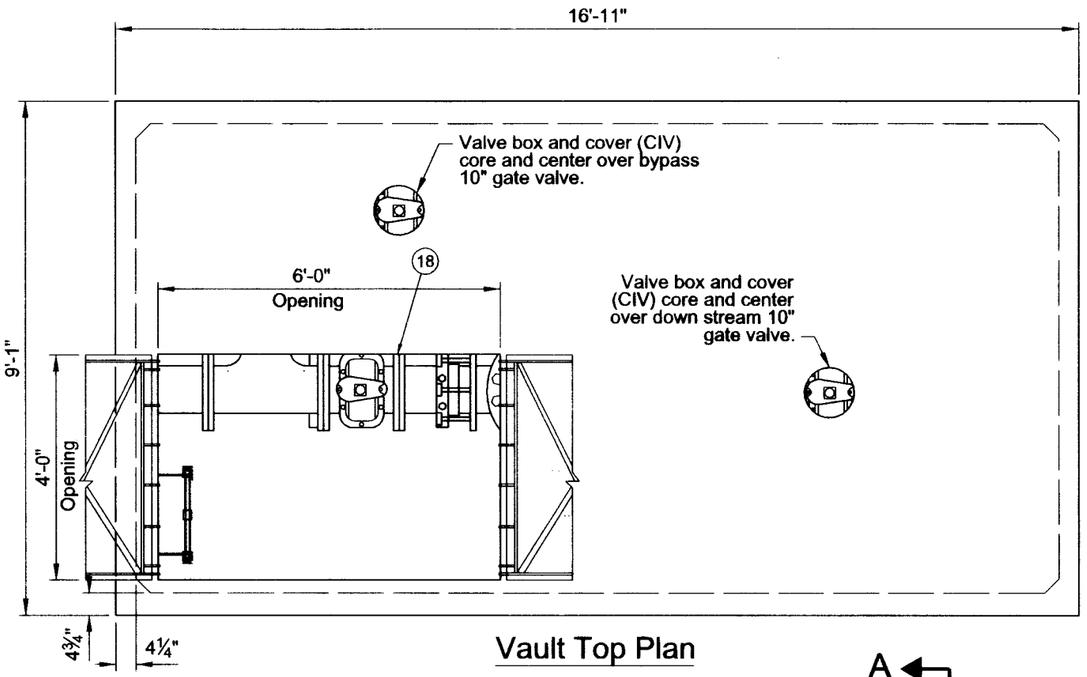
Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

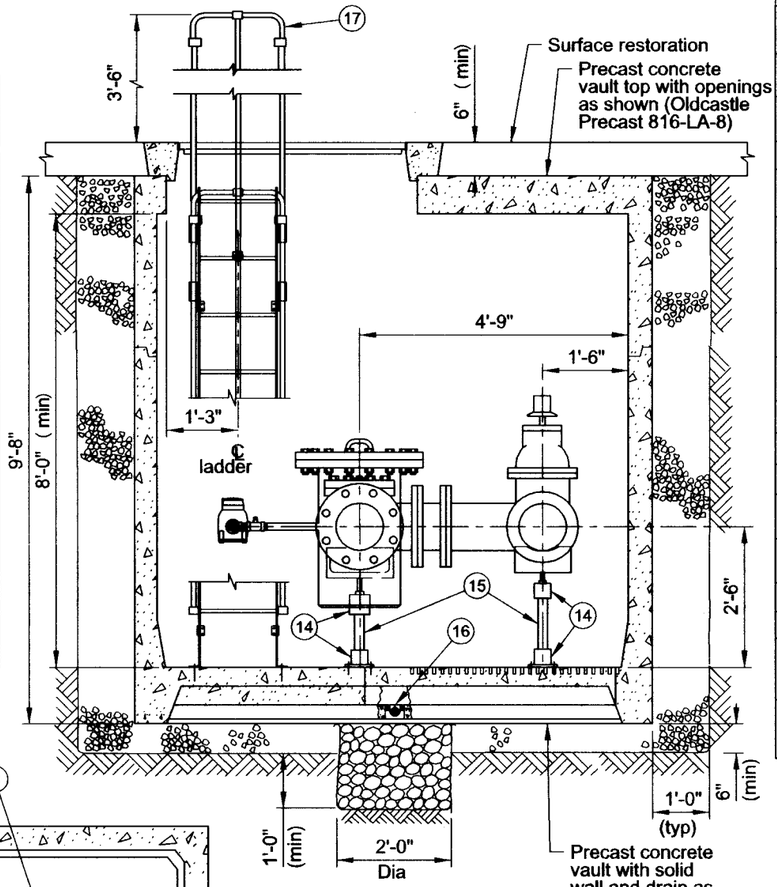
P-878

Plot Date: 7/31/2015 2:37:27 PM Filename: n:\Engineering\CAD\Standards\Working_Vaults\878_8inm_8inby_8i67_swk.dgn



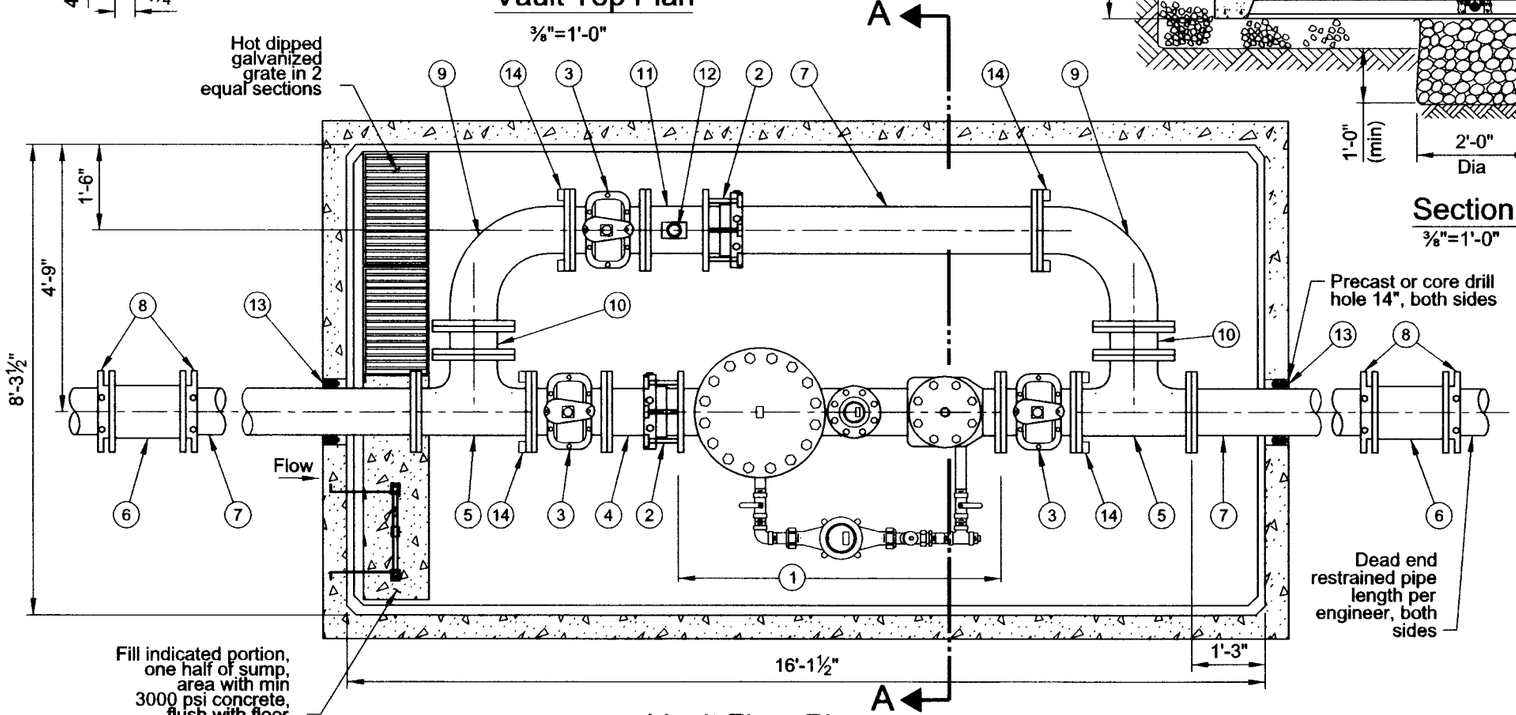
Vault Top Plan

⅜"=1'-0"



Section A-A

⅜"=1'-0"



Vault Floor Plan

⅜"=1'-0"

List of Parts

Item No	Size	Qty	Description
1	10"	1	Meter, combination with test outlet
2	10"	2	Restrained dismantling assembly (Megaflange)
3	10"	3	Gate Valve, FLG x FLG OL
4	10"	1	Nipple, DI FLG X PE 8"-9" long (field fit)
5	10"x10"x10"	2	Tee, FLG x FLG
6	10"	2	Solid sleeve, DI MJ
7	10"	3	Nipple, DI FLG X PE 48" long (field fit)
8	10"	4	Gland, wedge action retainer (Megalug)
9	10"	2	Bend, DI FLG long radius 90 degrees
10	10"	2	Spool, DI FLG x FLG 6" long
11	10"x10"x2"	1	Drip tee, FLG x FLG x FIPT
12	2"	1	Gate valve, brass with plug
13	10"	2	Seal, mechanical penetration (Link Seal LS-400-C-10)
14	10"	4	Adjustable pipe support, hot dipped galvanized
15	2"	4	Pipe, galvanized steel (field fit)
16	4"	1	Drain check valve
17		1	Ladder, galvanized steel with aluminum extension (field fit) (Oldcastle Precast)
18	4'-0"x6'-0"	1	Hatch, aluminum double leaf H-20 rated (Syracuse casting ECD-17HD)

Notes:

See General Vault Drawing (P-855) for construction and material notes.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

PORTLAND WATER BUREAU
CITY OF PORTLAND, OREGON

Chief Engineer

Standard Drawing Title

10" Combination Meter with an 10" bypass in 8-16-8 vault (in sidewalk)

Note:
All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.

Effective Date	Aug 17 2015
Calc. Book No.	PWB 1
Baseline Report Date	Aug 17 2015

Standard Drawing No.

P-880

Plot Date: 8/3/2015 8:12:41 AM Filename: J:\Engineering\CAD\Standards\Working_Vaults\880_10inm_10inby_8168_swk.dgn