

3-SIDED BRIDGE NOTES

GENERAL NOTES:

1. The following notes shall apply unless noted otherwise on the plans or specifications. In the case of conflict with the plans or specifications, the more restrictive requirements shall apply.

REFERENCE SPECIFICATIONS:

1. Design Criteria: AASHTO Bridge Design Specifications
2. Manufacture: ASTM C1504

MATERIALS:

1. Aggregate conforms to ASTM C33.
2. Portland cement conforms to ASTM C150.
3. Fly Ash conforms to ASTM C618.
4. All bar reinforcing steel conforms to ASTM A615 or A706 Grade 60.
5. Welded Wire Fabric conforms to ASTM A1064, Grade 70 or 80 KSI.
6. Admixtures conform to ASTM C494.
7. Air entraining admixtures conform to ASTM C260.
8. Concrete minimum compressive strength (at 28 days) 5000 PSI, unless greater strength is required.
9. Concrete minimum stripping strength is 2500 PSI.

DELIVERY AND INSTALLATION:

1. The contractor provides rigging and off loading at the job site.
2. The contractor provides all weld plates, shims and accessories which are not cast directly into the concrete.
3. Follow all installation procedures described in the project documents. More restrictive requirements outlined in the project documents or a corresponding geotechnical report take precedence.
4. The foundation and backfill sections of these notes provide basic installation criteria.

FOOTING PREPARATION:

1. All loose and disturbed soil shall be removed prior to placing precast footings.
2. Precast footings shall bear on either compacted structural fill or undisturbed native soils. Footings shall be underlain by at least 6" of screeded and compacted gravel.
3. If no project specifications apply, follow WSDOT Standard 7-02.3(6) A4.

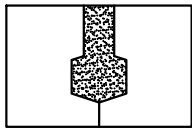
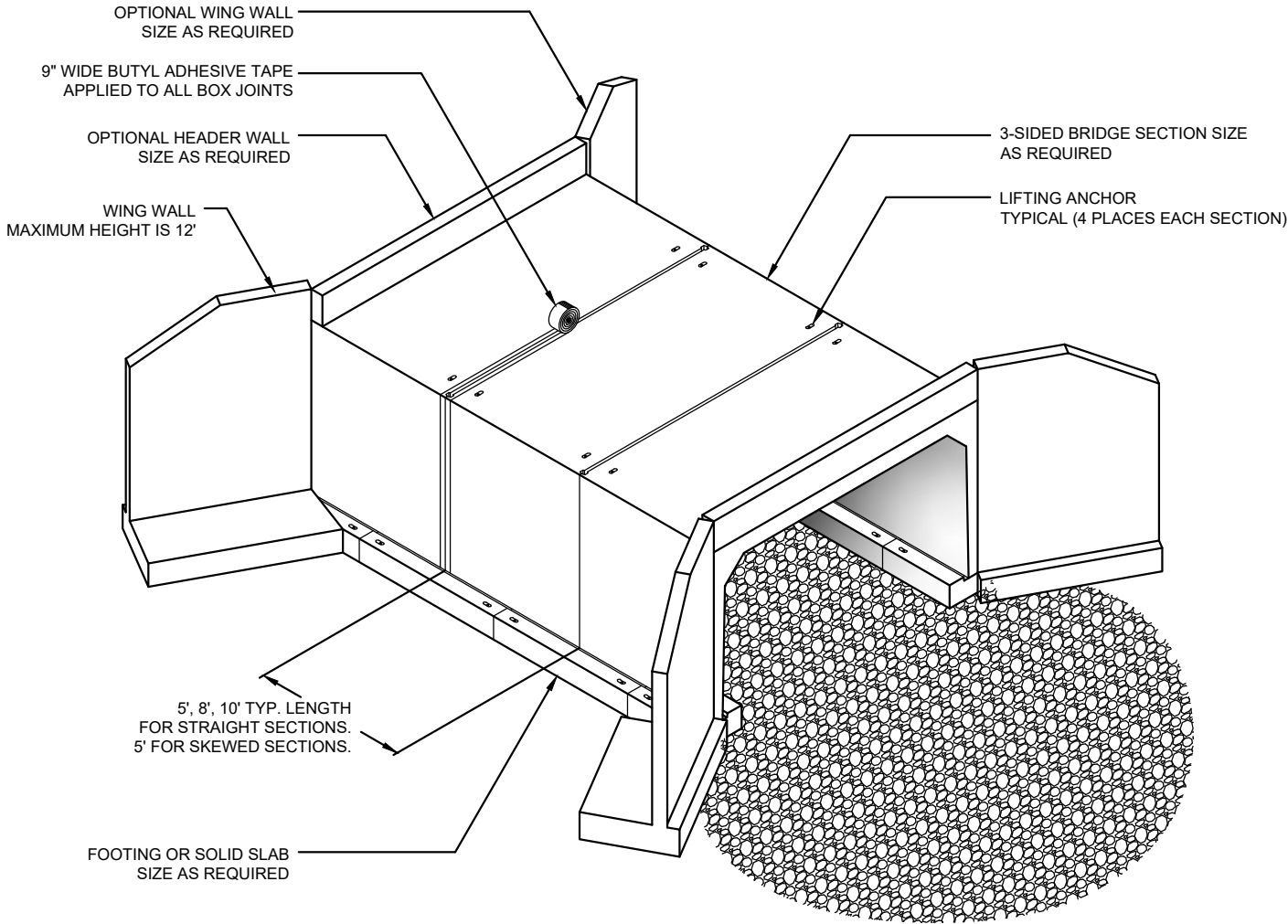
BRIDGE JOINTS:

1. Bridge units laid sequentially form a joint which requires grout or sealant to prevent soil infiltration. Where grout is required grout all joints with non-shrink grout.
2. The legs of the 3-sided bridge key into a footing. The footing key shall be cleaned of all debris. Shim plates are used in the keyway to collimate bridge units. The keyway shall be grouted to fix the bridge leg.
3. All bridge joints with gap greater than $\frac{1}{8}$ " shall be filled for application of a wide non-curing extruded butyl adhesive tape. Use a non-shrink grout conforming to ASTM C1107 and butyl tape conforming to ASTM C877.

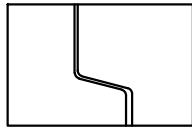
BACKFILL:

1. Backfill shall consist of well graded soil free of organics, large stones and deleterious material.
2. Backfill shall be placed in 12 inch lifts and compacted to a minimum of 90% modified proctor density.
3. Backfill shall not exceed 2' elevation difference from side to side.

3-SIDED BRIDGE

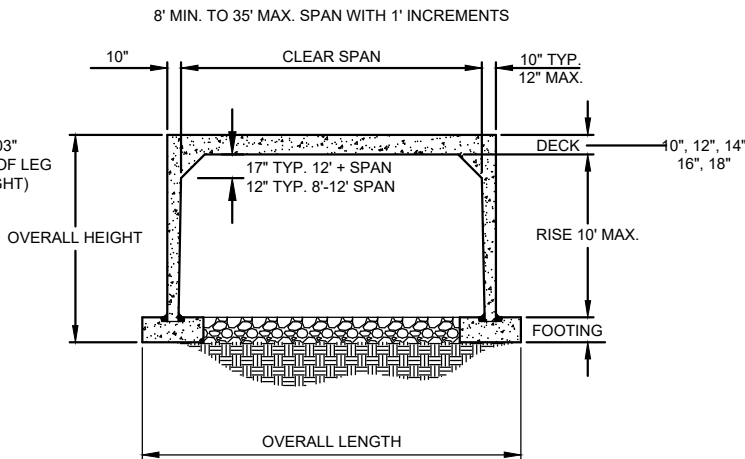


GROUT JOINT



SHIPLAP JOINT

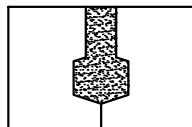
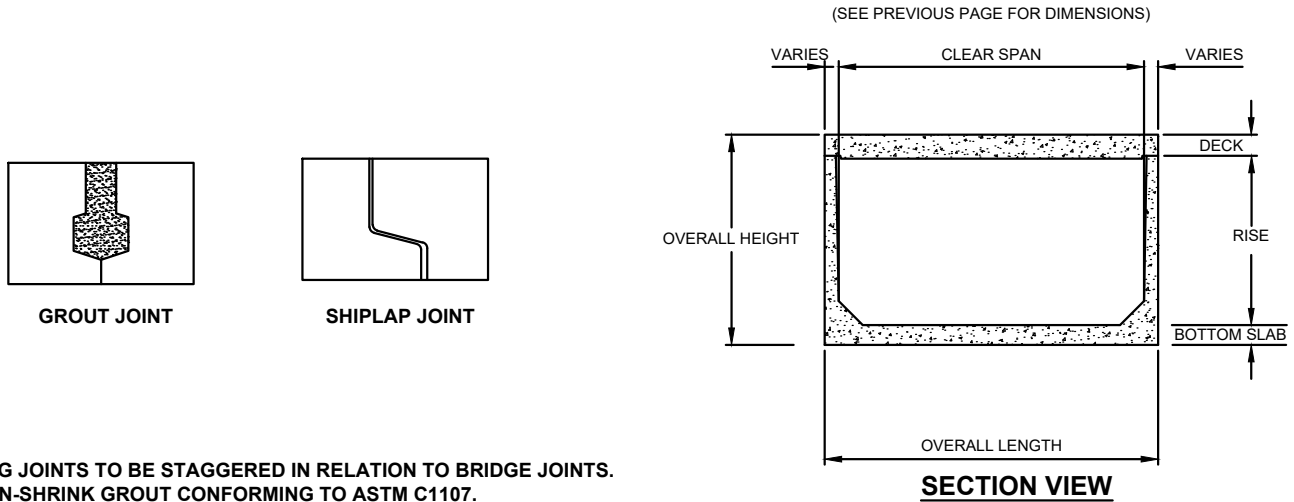
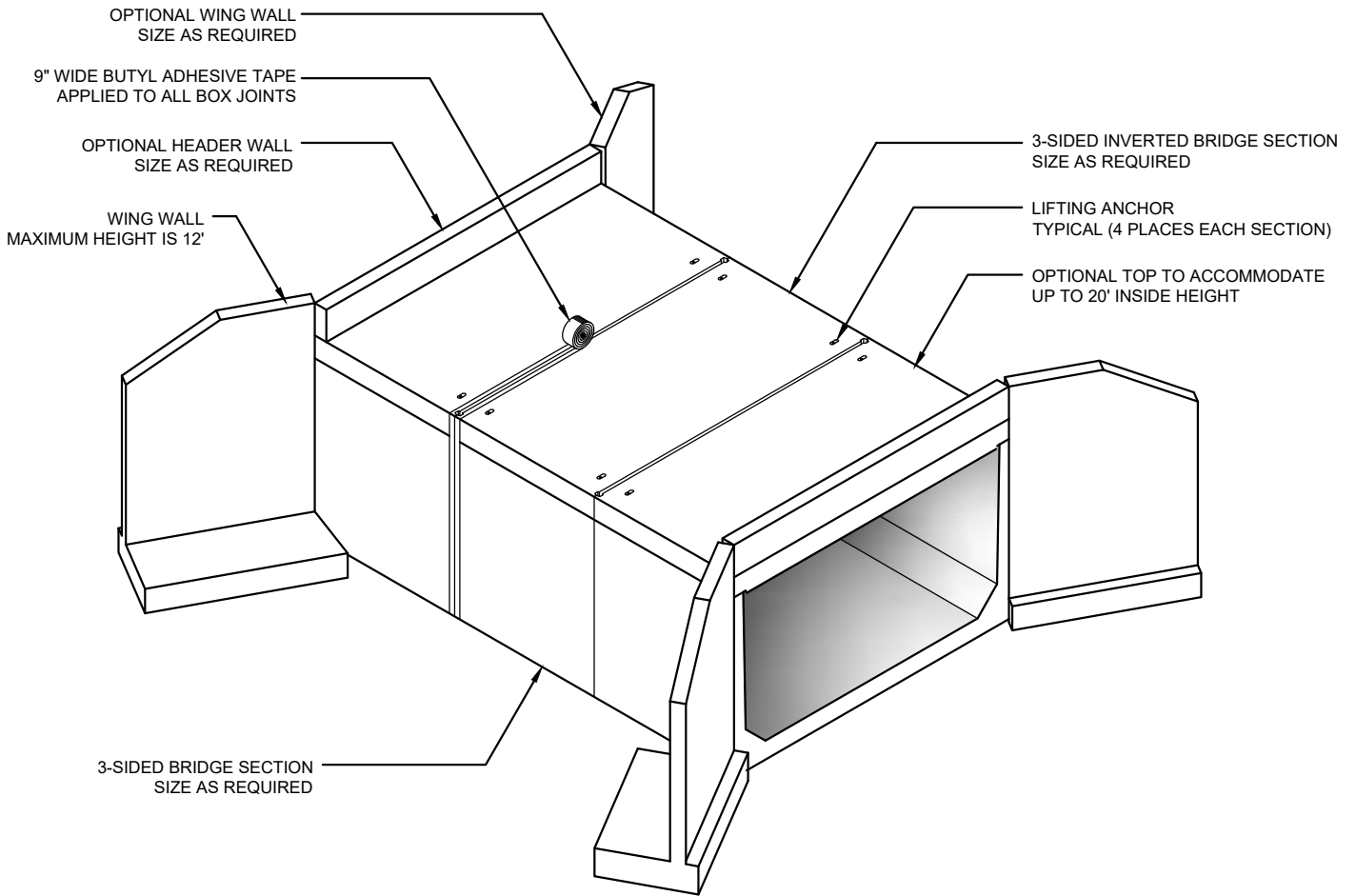
NOTE:
TYPICAL, INSIDE LEG TAPERS 2" IN 103"
FROM BOTTOM OF HAUNCH TO BOTTOM OF LEG
(8" WIDE LEG AT BOTTOM FOR 10' HEIGHT)



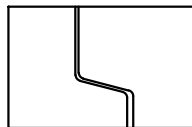
NOTES:

1. FOOTING JOINTS TO BE STAGGERED IN RELATION TO BRIDGE JOINTS.
2. WHEN REQUIRED USE NON-SHRINK GROUT CONFORMING TO ASTM C1107.
3. EACH BRIDGE JOINT SHALL BE WRAPPED WITH 9" WIDE BUTYL ADHESIVE TAPE.

SPLIT BOX CULVERT



GROUT JOINT

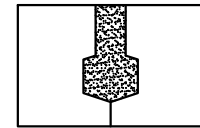
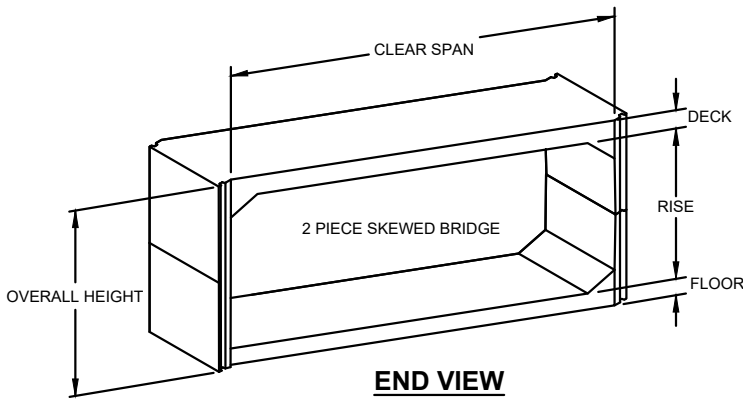
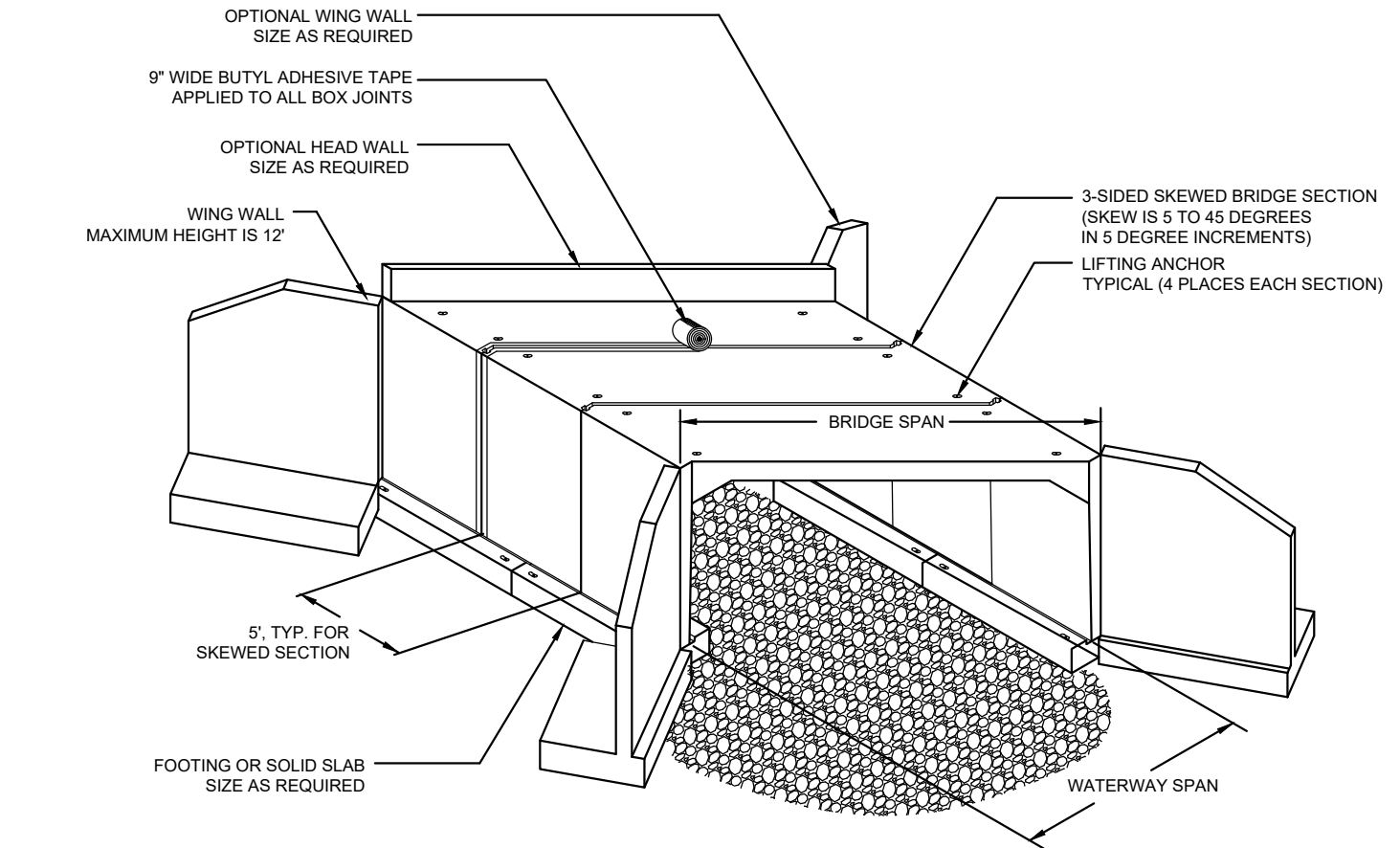


SHIPLAP JOINT

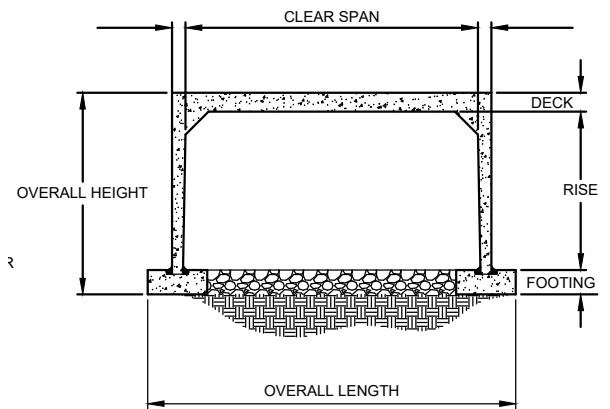
NOTES:

1. FOOTING JOINTS TO BE STAGGERED IN RELATION TO BRIDGE JOINTS.
2. USE NON-SHRINK GROUT CONFORMING TO ASTM C1107.
3. EACH BRIDGE JOINT SHALL BE WRAPPED WITH 9" WIDE BUTYL ADHESIVE TAPE.
4. LOADS ARE NOT TRANSFERRED ACROSS SHIPLAP JOINT. LOAD TRANSFER REQUIRES GROUT KEY.

3-SIDED SKEWED BRIDGE



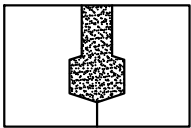
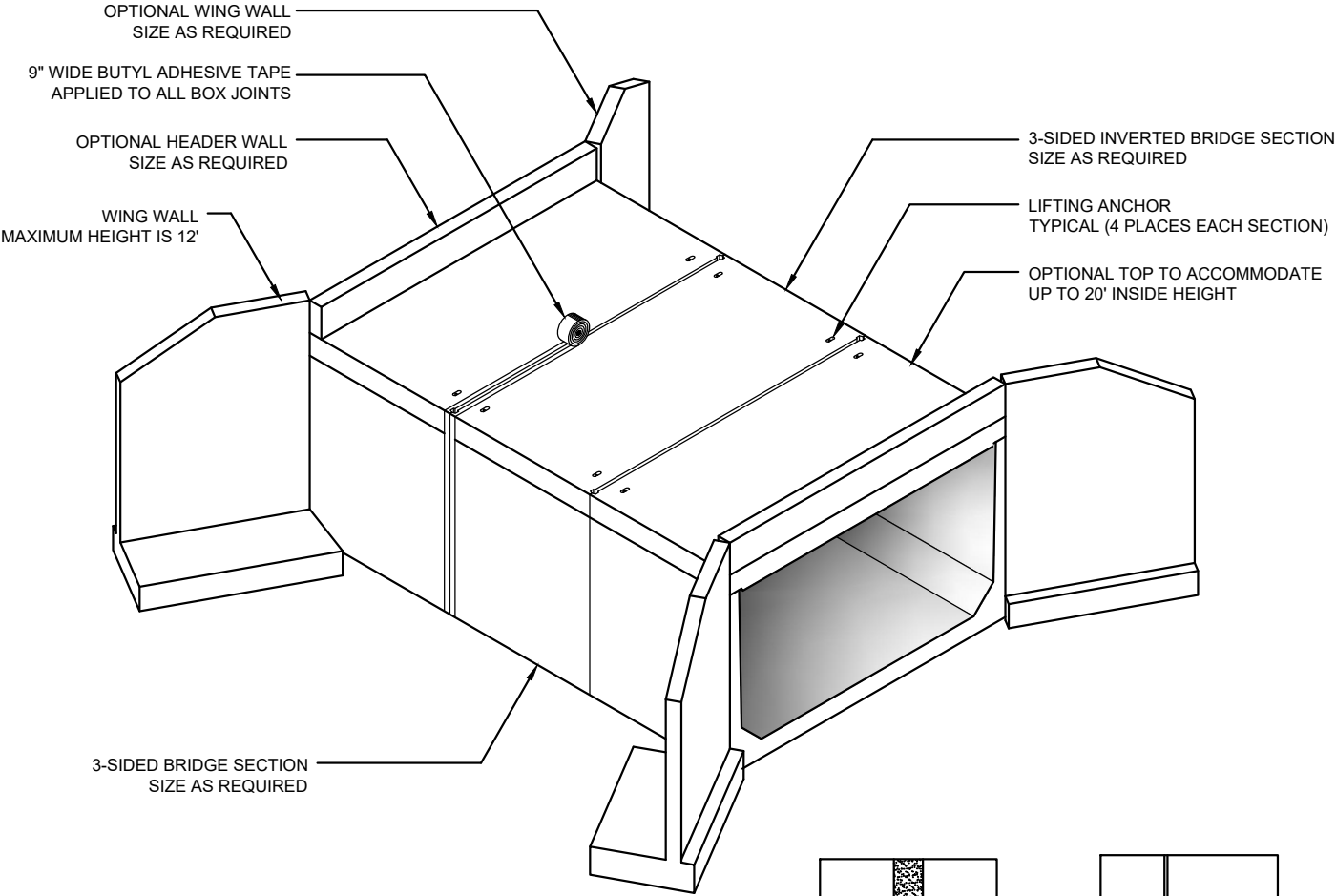
GROUT JOINT



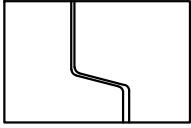
NOTES:

1. FOOTING JOINTS TO BE STAGGERED IN RELATION TO BRIDGE JOINTS.
2. USE NON-SHRINK GROUT CONFORMING TO ASTM C1107. GROUT ALL JOINTS.
3. EACH BRIDGE JOINT SHALL BE WRAPPED WITH 9" WIDE BUTYL ADHESIVE TAPE.
4. SKEWED BRIDGE REQUIRES GROUT JOINT (NO SHIPLAP)

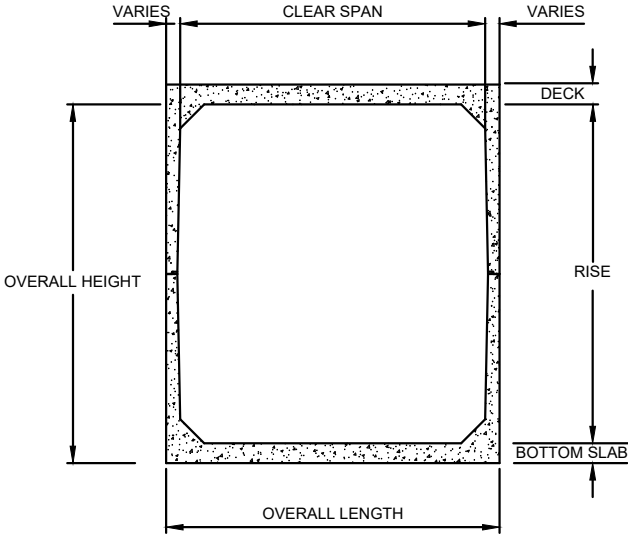
SPLIT BOX CULVERT



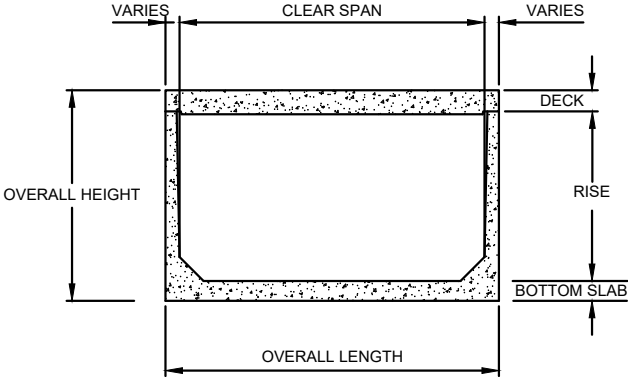
GROUT JOINT



SHIPLAP JOINT



SECTION VIEW

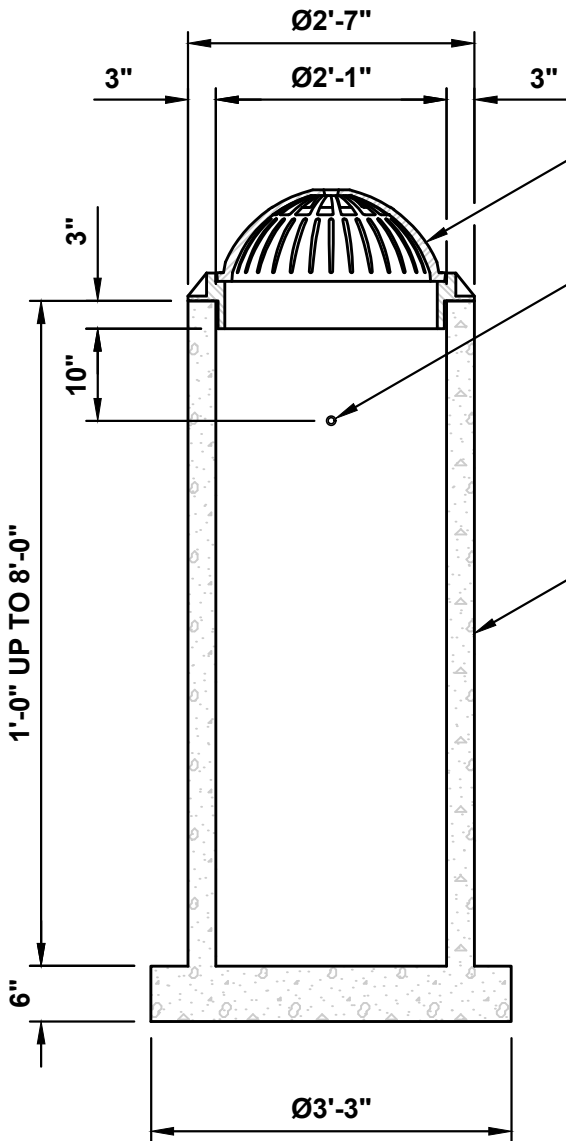
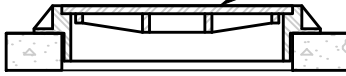


SECTION VIEW

- NOTES:**
1. WHERE REQUIRED USE NON-SHRINK GROUT CONFORMING TO ASTM C1107.
 2. EACH BRIDGE JOINT SHALL BE WRAPPED WITH 9" WIDE BUTYL ADHESIVE TAPE.

Ø24" MANHOLE - MONO BASE

CAST IRON FRAMES AND COVERS ARE AVAILABLE IN SUBURBAN 3" HEIGHT AND STANDARD 7" HEIGHT (SUBURBAN 3" HEIGHT SHOWN)



OPTIONAL "BEEHIVE" GRATE WITH LOCKING CABLE TIE-DOWN AVAILABLE

Ø⁵/₈" NC FERRULE LOOP INSERT PROVIDED TO SECURE GRATE WITH CABLE TIE-DOWN (CONTRACTOR TO PROVIDE AND INSTALL CABLE)

Ø24" MANHOLE MONO BASE (HOLES CORED TO ORDER)

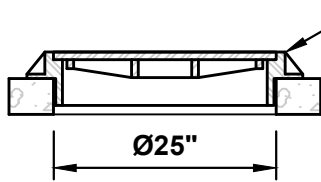
- 1'-0" (915LBS)
- 2'-0" (1,195LBS)
- 3'-0" (1,475LBS)
- 4'-0" (1,760LBS)
- 5'-0" (2,040LBS)
- 6'-0" (2,320LBS)
- 7'-0" (2,600LBS)
- 8'-0" (2,880LBS)

SECTION VIEW

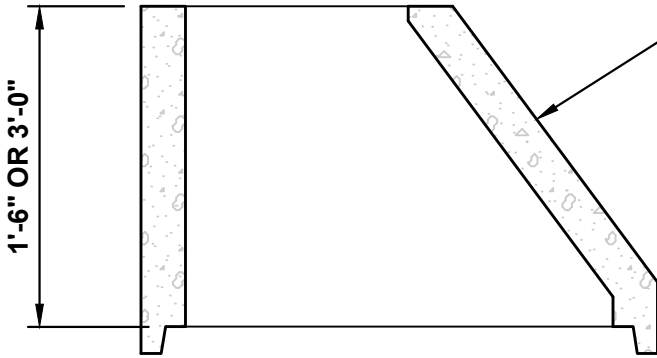
NOTES:

1. MANHOLE ASSEMBLY CONFORMS TO ASTM-C478.
2. HOLES CORED TO ORDER.
3. WEIGHTS LISTED ARE APPROXIMATE.
4. GRADE RINGS AVAILABLE AS NEEDED.

Ø48" DRYWELL - WITH ECCENTRIC CONE



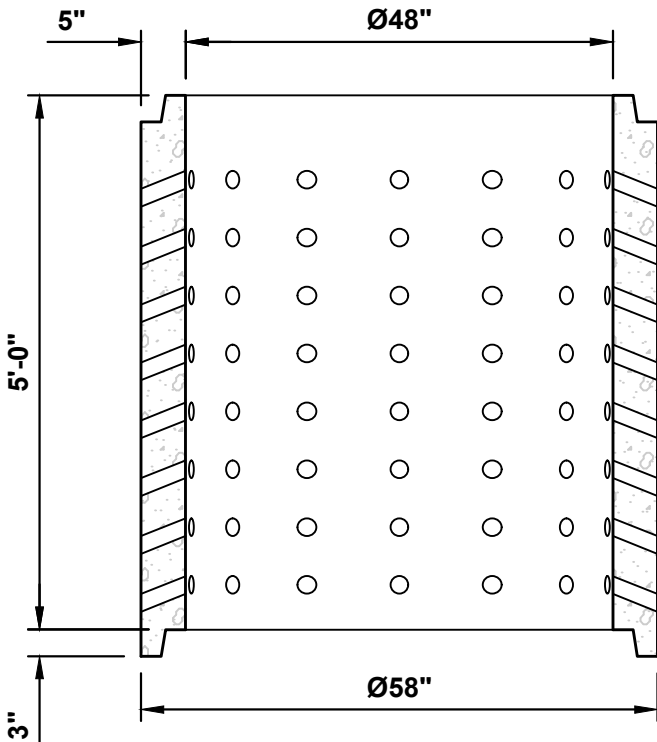
CAST IRON FRAMES AND COVERS ARE AVAILABLE IN SUBURBAN 3" HEIGHT AND STANDARD 7" HEIGHT (SUBURBAN 3" HEIGHT SHOWN)



3'-0" ECCENTRIC CONE
WEIGHT 2,565LBS

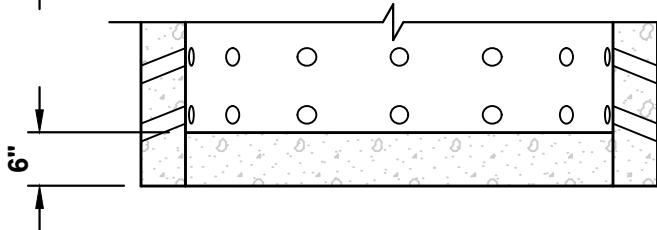
1'-6" ECCENTRIC CONE
WEIGHT 1,300LBS

CITY OF PORTLAND DRYWELL IS MANUFACTURED WITH PERFORATIONS ANGLED UPWARD OUTSIDE



CLARK COUNTY DRYWELL IS MANUFACTURED WITH (4) 6"Ø DRAINAGE HOLES IN THE BASE SLAB

5'-0" DRYWELL SECTION PERFORATED WITH (14) COLUMNS OF 2³/₈"Ø HOLES, (8) HOLES IN EACH COLUMN (112 TOTAL) WEIGHT 4,205LBS

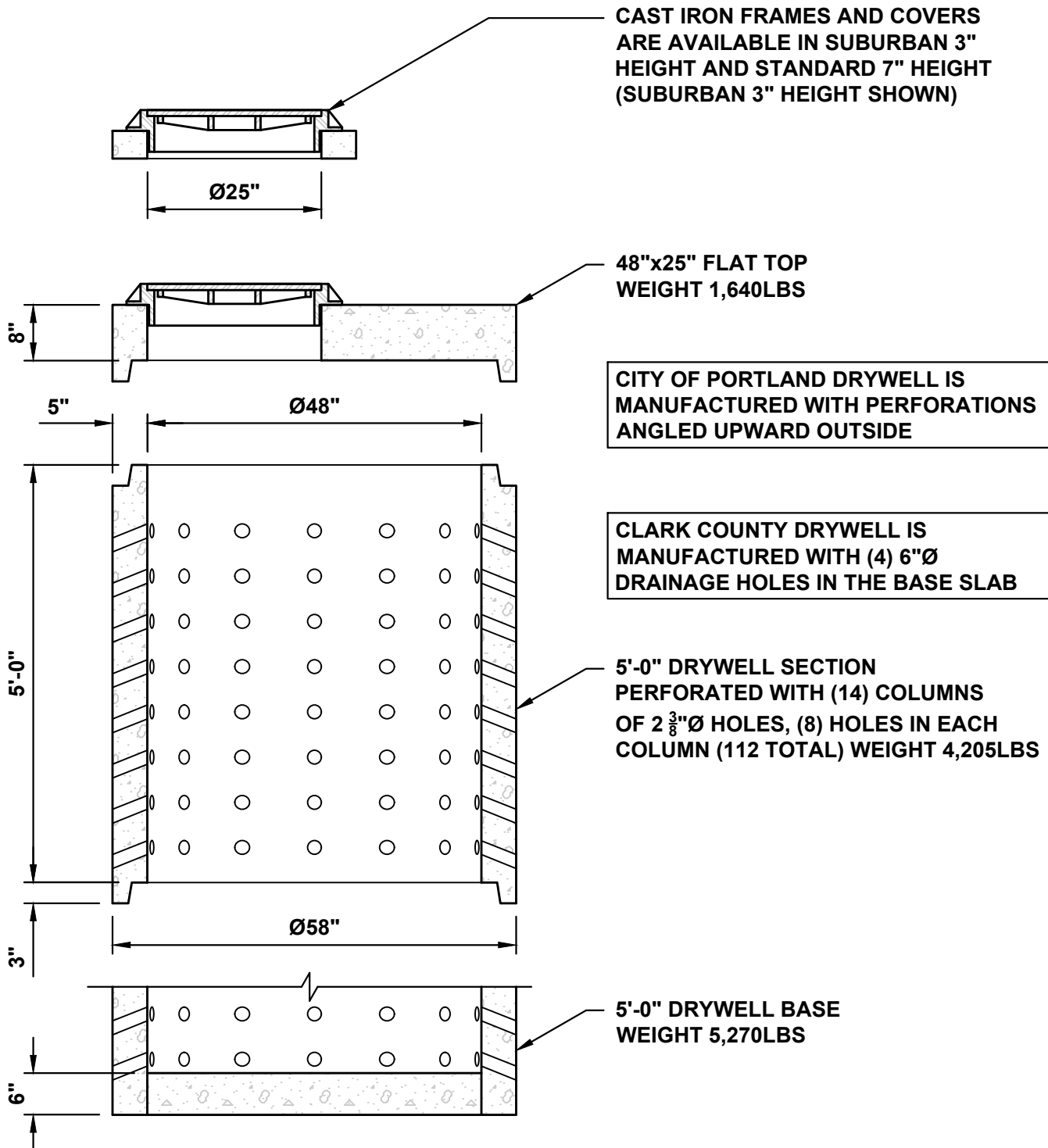


5'-0" DRYWELL BASE
WEIGHT 5,270LBS

NOTES:

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Ø48" DRYWELL - WITH FLAT TOP

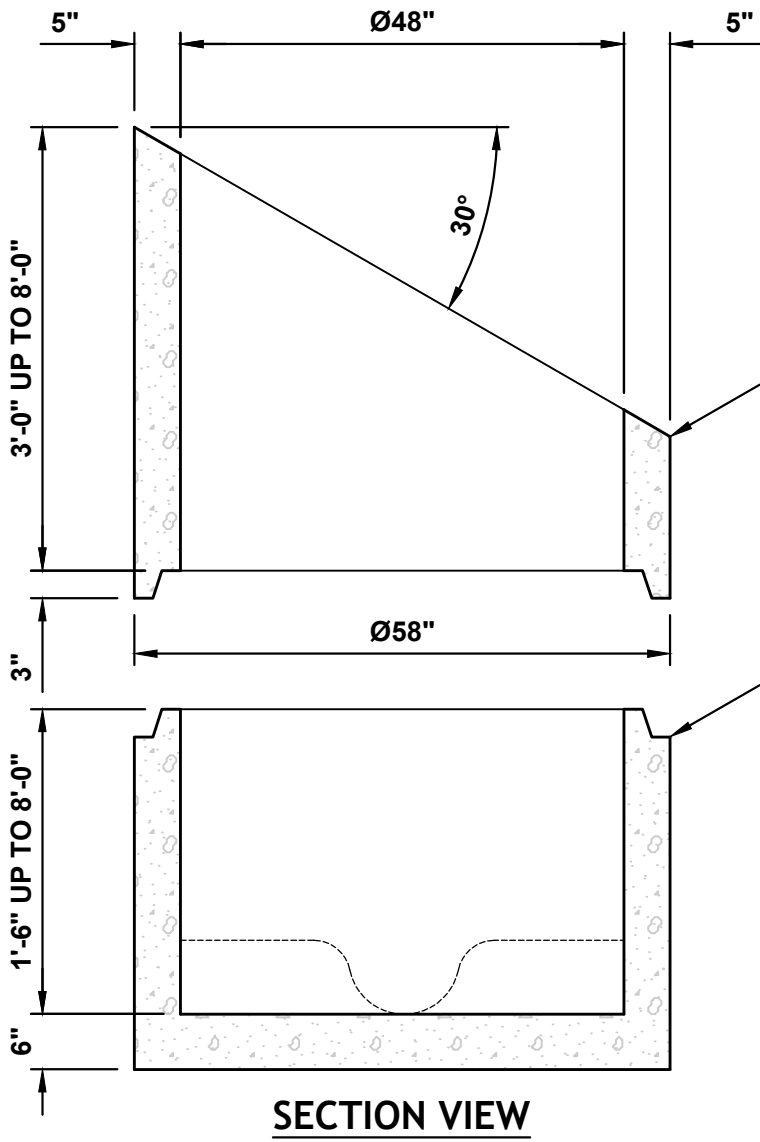


SECTION VIEW

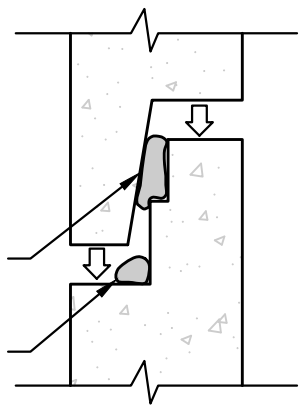
NOTES:

1. MANHOLE ASSEMBLY CONFORMS TO ASTM-C478.
2. ALL MANHOLE JOINTS SEALED WITH MASTIC OR RUBBER GASKET.
3. WEIGHTS LISTED ARE APPROXIMATE.
4. GRADE RINGS AVAILABLE AS NEEDED.

Ø48" MANHOLE - WITH 30° SLOPE



OPTIONAL GASKET
MASTIC



JOINT DETAIL

STANDARD JOINT SEALANT IS MASTIC.
RUBBER GASKET IS OPTIONAL.

Ø48" SLOPED SECTION
3'-0" (1,535LBS)
4'-0" (2,420LBS)
5'-0" (3,305LBS)
6'-0" (4,190LBS)

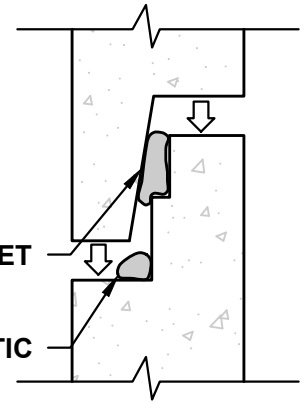
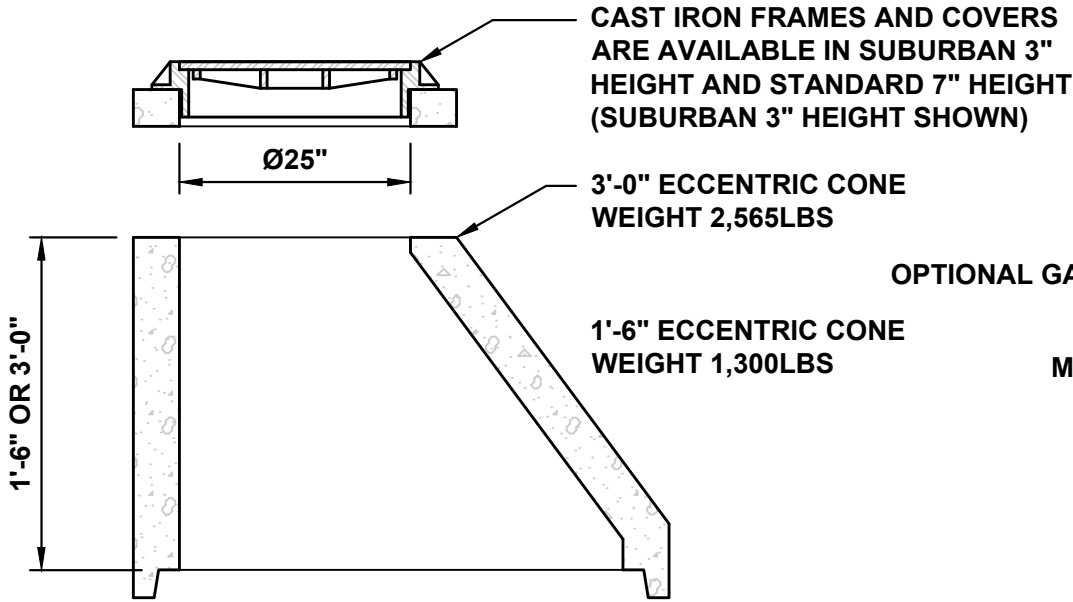
Ø48" MANHOLE MONO BASE
(PRECHANNEL OPTIONAL)
1'-6" (2,765LBS)
2'-0" (3,205LBS)
3'-0" (4,090LBS)
4'-0" (4,935LBS)
5'-0" (5,710LBS)
6'-0" (6,595LBS)
7'-0" (7,480LBS)
8'-0" (8,365LBS)

SECTION VIEW

NOTES:

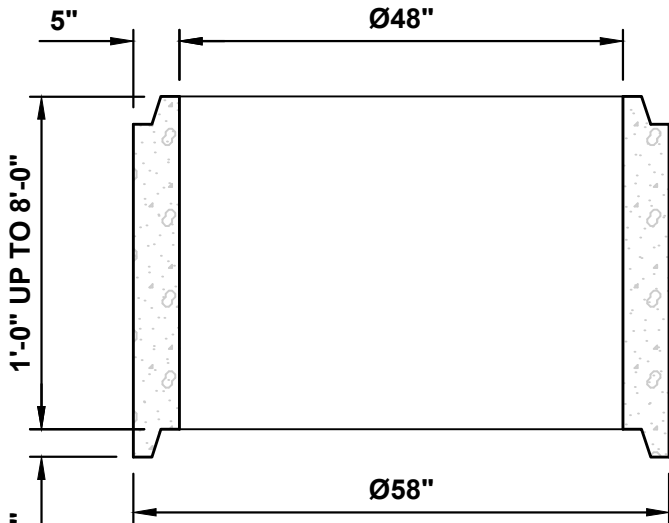
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3. WEIGHTS LISTED ARE APPROXIMATE.

Ø48 MANHOLE - WITH ECCENTRIC CONE



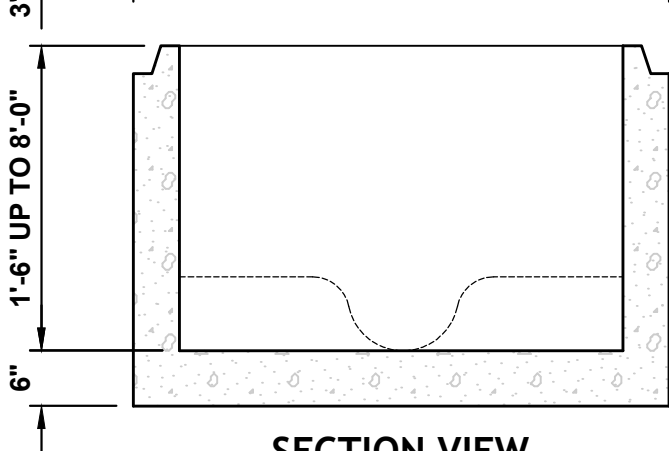
JOINT DETAIL

STANDARD JOINT SEALANT IS MASTIC.
RUBBER GASKET IS OPTIONAL.



Ø48" MANHOLE SECTION

- 1'-0" (885LBS)
- 2'-0" (1,770LBS)
- 3'-0" (2,655LBS)
- 4'-0" (3,540LBS)
- 5'-0" (4,425LBS)
- 6'-0" (5,310LBS)
- 7'-0" (6,195LBS)
- 8'-0" (7,080LBS)



Ø48" MANHOLE MONO BASE (PRECHANNEL OPTIONAL)

- 1'-6" (2,765LBS)
- 2'-0" (3,205LBS)
- 3'-0" (4,090LBS)
- 4'-0" (4,935LBS)
- 5'-0" (5,710LBS)
- 6'-0" (6,595LBS)
- 7'-0" (7,480LBS)
- 8'-0" (8,365LBS)

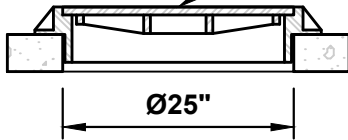
SECTION VIEW

NOTES:

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4. GRADE RINGS AVAILABLE AS NEEDED.

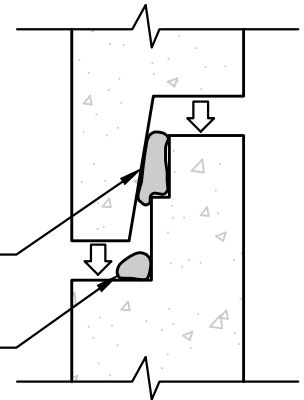
Ø48" MANHOLE - WITH FLAT TOP

CAST IRON FRAMES AND COVERS ARE AVAILABLE IN SUBURBAN 3" HEIGHT AND STANDARD 7" HEIGHT (SUBURBAN 3" HEIGHT SHOWN)



OPTIONAL GASKET

MASTIC



JOINT DETAIL

STANDARD JOINT SEALANT IS MASTIC. RUBBER GASKET IS OPTIONAL.

48"x25" FLAT TOP
WEIGHT 1,640LBS

Ø48" MANHOLE SECTION

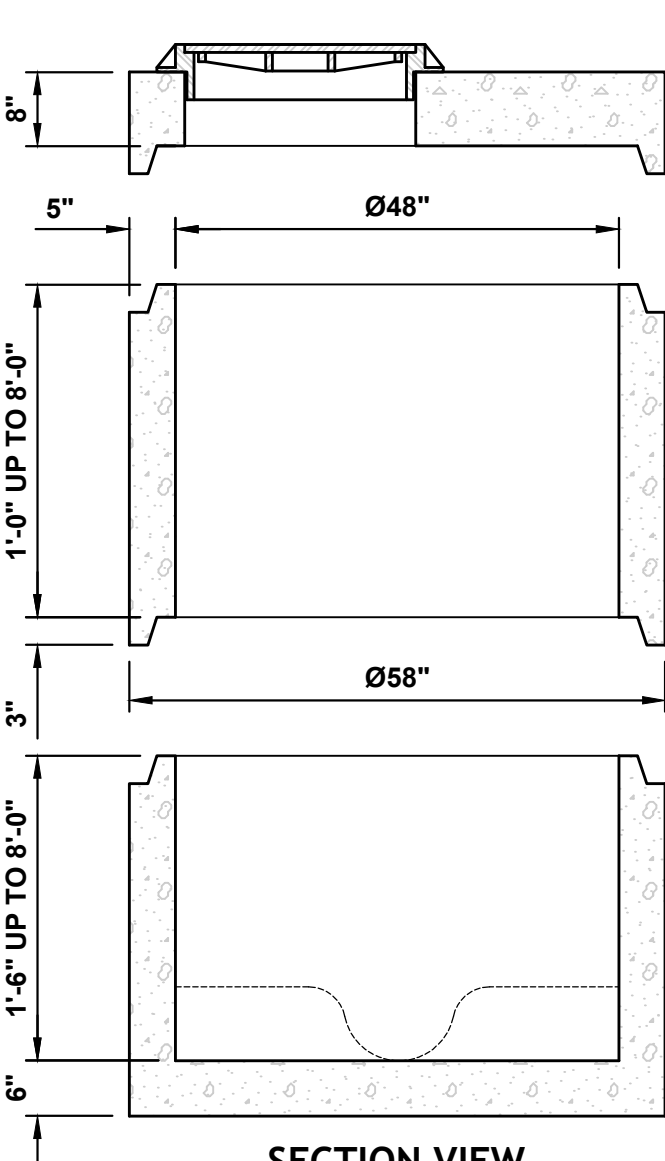
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- 7'-0" (6,195LBS)

Ø48" MANHOLE MONO BASE
(PRECHANNEL OPTIONAL)

- 1'-6" (2,765LBS)
- 2'-0" (3,205LBS)
- 3'-0" (4,090LBS)
- 4'-0" (4,935LBS)
- 5'-0" (5,710LBS)
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- 8'-0" (8,365LBS)

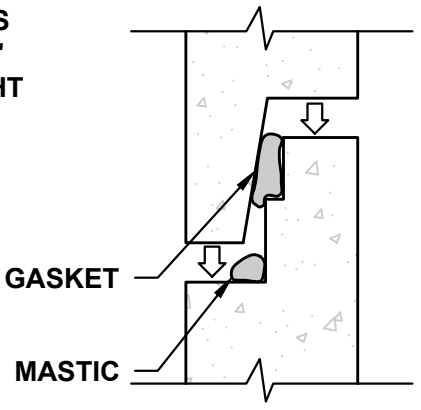
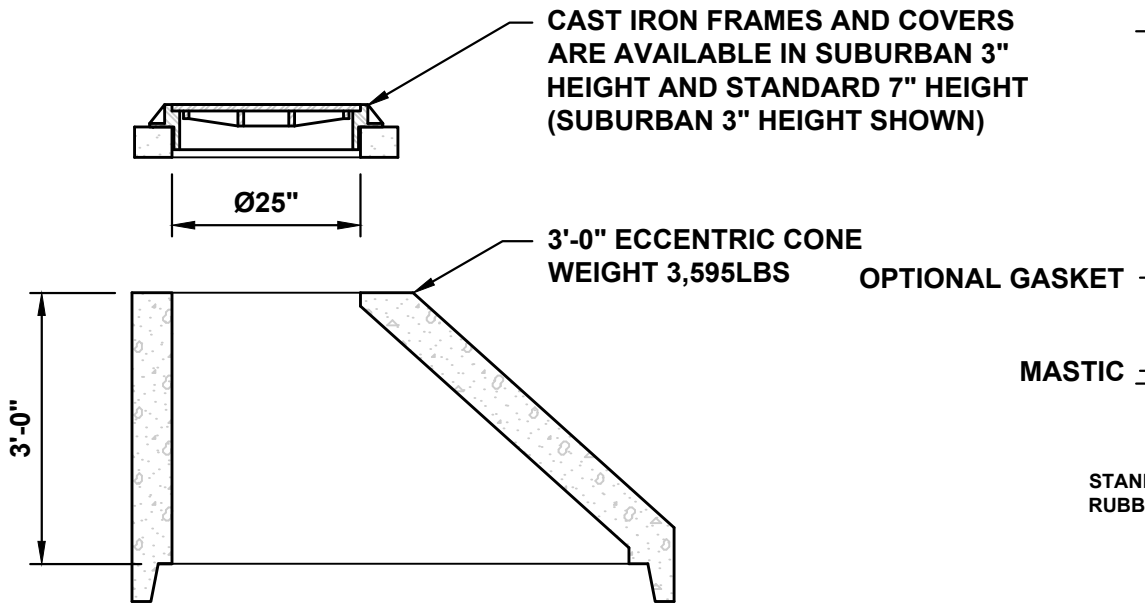
NOTES:

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3. WEIGHTS LISTED ARE APPROXIMATE.
4. GRADE RINGS AVAILABLE AS NEEDED.



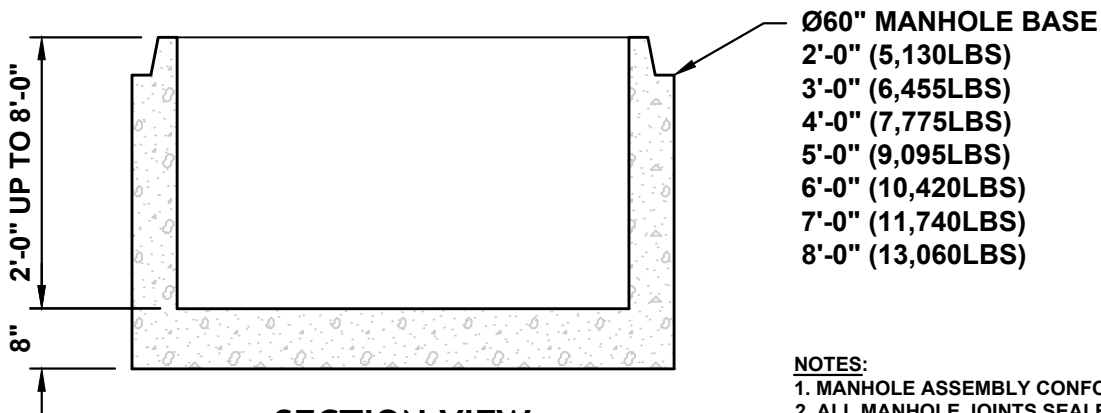
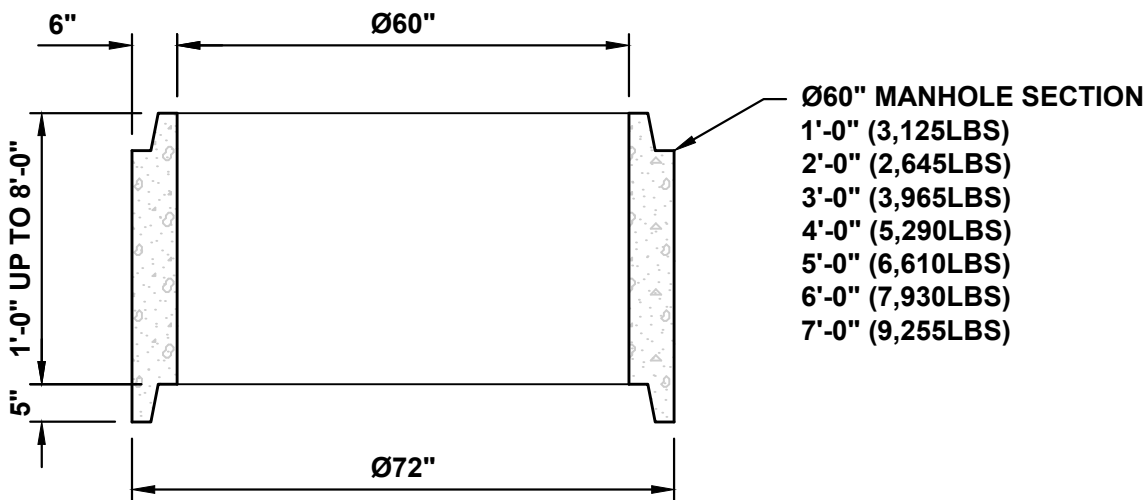
SECTION VIEW

Ø60" MANHOLE - ECCENTRIC CONE



JOINT DETAIL

STANDARD JOINT SEALANT IS MASTIC.
RUBBER GASKET IS OPTIONAL.

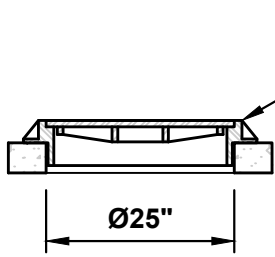


SECTION VIEW

NOTES:

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4. GRADE RINGS AVAILABLE AS NEEDED.

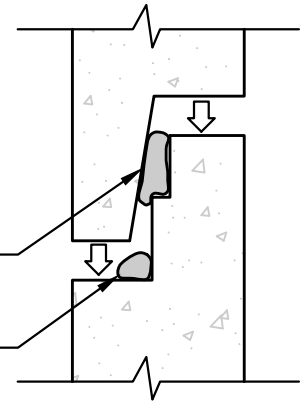
Ø60" MANHOLE - WITH FLAT TOP



CAST IRON FRAMES AND COVERS ARE AVAILABLE IN SUBURBAN 3" HEIGHT AND STANDARD 7" HEIGHT (SUBURBAN 3" HEIGHT SHOWN)

OPTIONAL GASKET

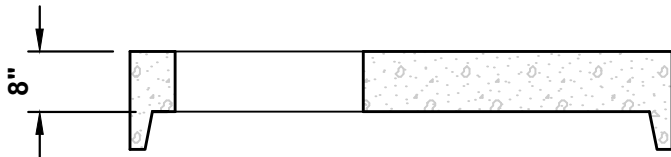
MASTIC



JOINT DETAIL

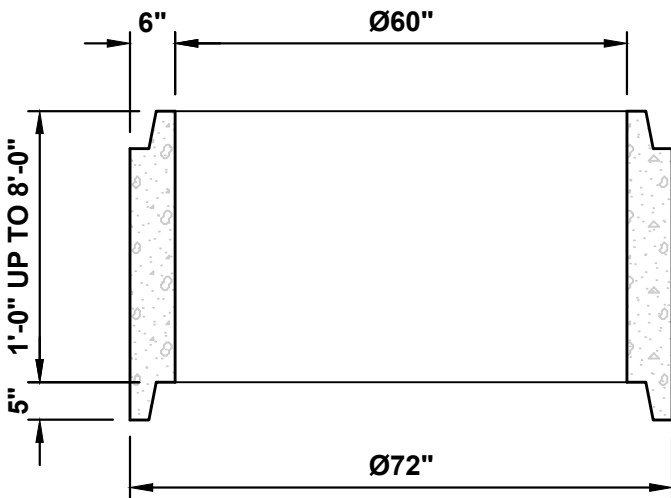
STANDARD JOINT SEALANT IS MASTIC. RUBBER GASKET IS OPTIONAL.

60"x25" FLAT TOP
WEIGHT 2,615LBS



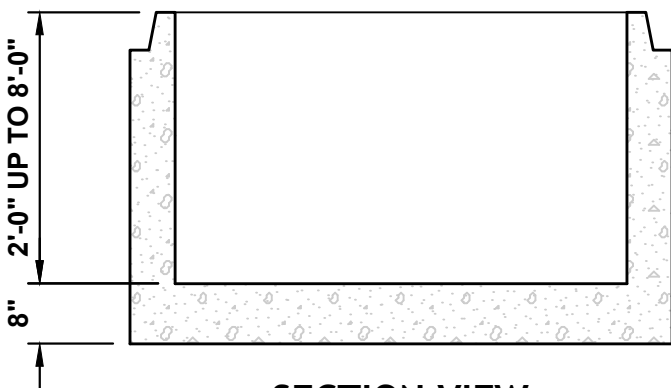
Ø60" MANHOLE SECTION

- 1'-0" (3,125LBS)
- 2'-0" (2,645LBS)
- 3'-0" (3,965LBS)
- 4'-0" (5,290LBS)
- 5'-0" (6,610LBS)
- 6'-0" (7,930LBS)
- 7'-0" (9,255LBS)



Ø60" MANHOLE BASE

- 2'-0" (5,130LBS)
- 3'-0" (6,455LBS)
- 4'-0" (7,775LBS)
- 5'-0" (9,095LBS)
- 6'-0" (10,420LBS)
- 7'-0" (11,740LBS)
- 8'-0" (13,060LBS)

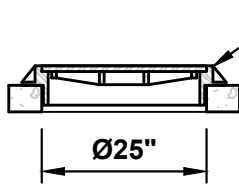


SECTION VIEW

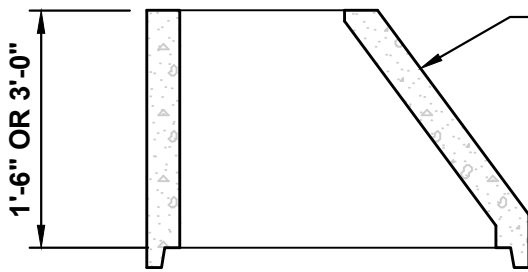
NOTES:

1. MANHOLE ASSEMBLY CONFORMS TO ASTM-C478.
2. ALL MANHOLE JOINTS SEALED WITH MASTIC OR RUBBER GASKET.
3. WEIGHTS LISTED ARE APPROXIMATE.
4. GRADE RINGS AVAILABLE AS NEEDED.

Ø72" MANHOLE - WITH ECCENTRIC CONE

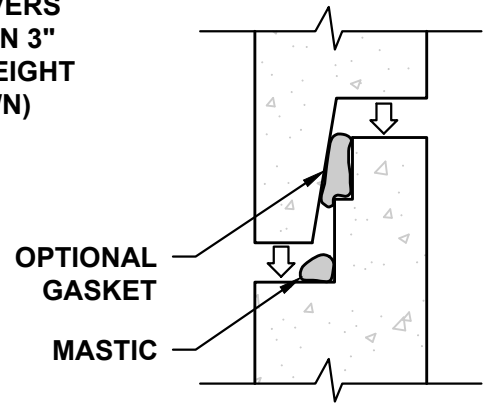


CAST IRON FRAMES AND COVERS ARE AVAILABLE IN SUBURBAN 3" HEIGHT AND STANDARD 7" HEIGHT (SUBURBAN 3" HEIGHT SHOWN)



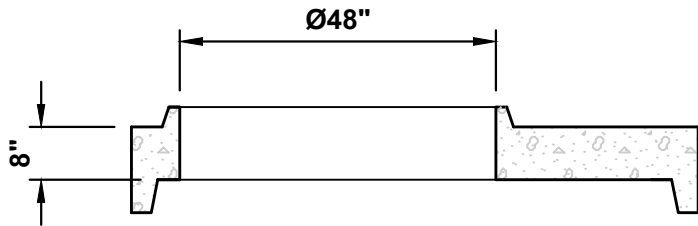
3'-0" ECCENTRIC CONE
WEIGHT 2,565LBS

1'-6" ECCENTRIC CONE
WEIGHT 1,300LBS

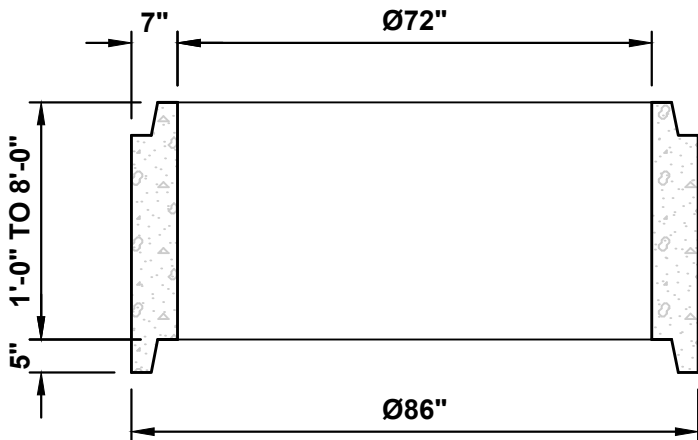


JOINT DETAIL

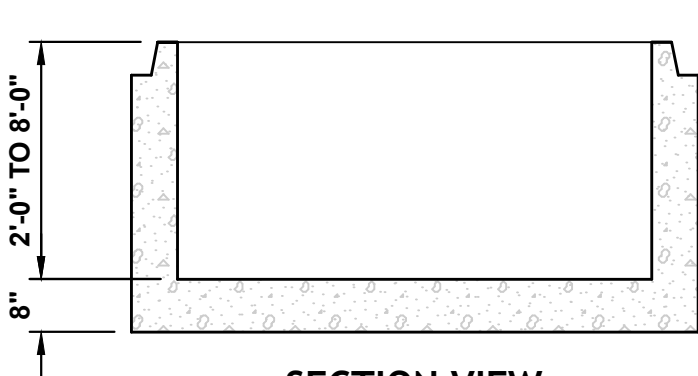
STANDARD JOINT SEALANT IS MASTIC.
RUBBER GASKET IS OPTIONAL.



72" x 48"
REDUCING SLAB
WEIGHT (3,260LBS)



Ø72" MANHOLE SECTION
1'-0" (1,850LBS)
2'-0" (3,695LBS)
3'-0" (5,540LBS)
4'-0" (7,385LBS)
5'-0" (9,230LBS)
6'-0" (11,075LBS)
7'-0" (12,925LBS)
8'-0" (14,770LBS)



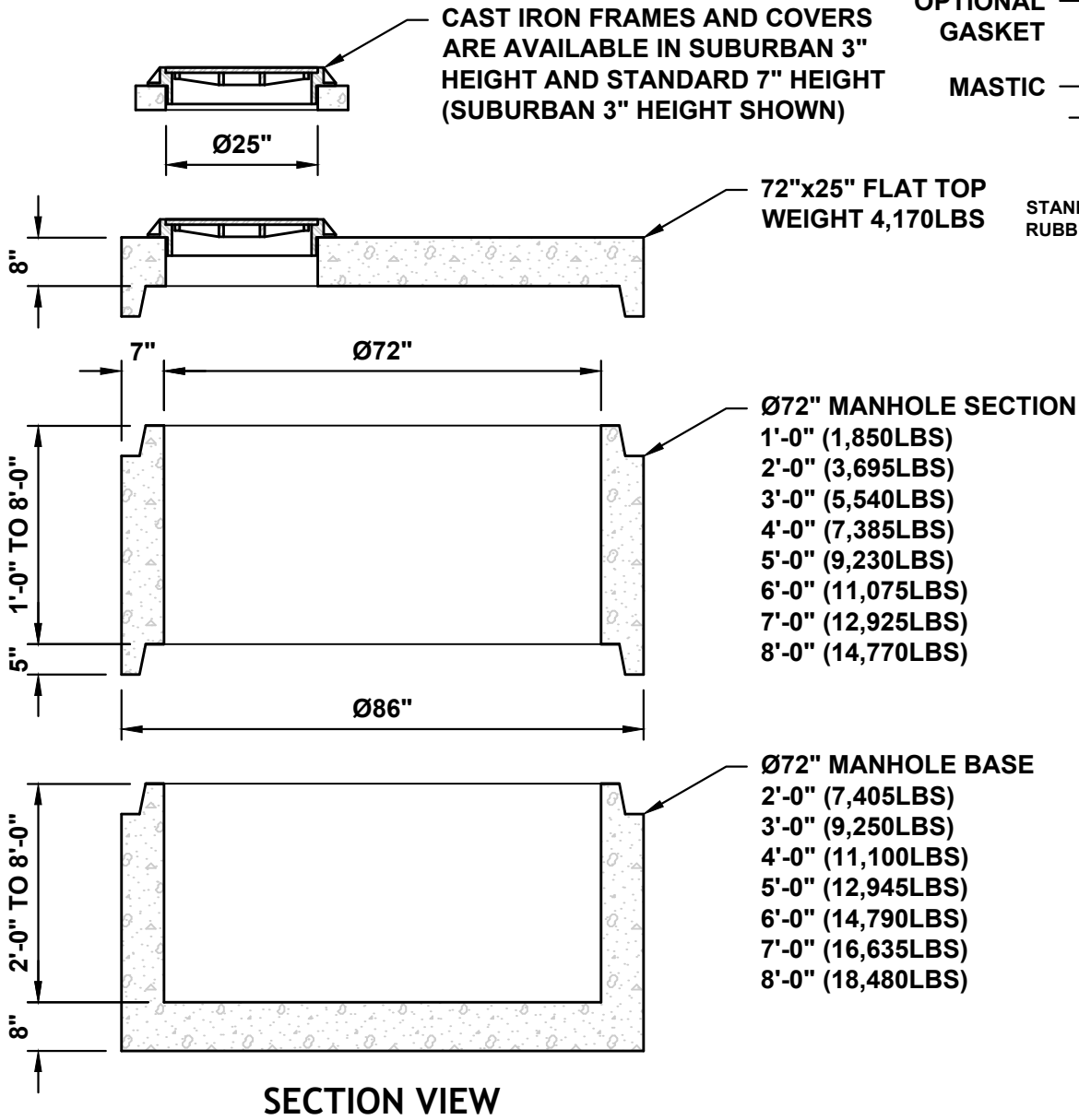
Ø72" MANHOLE BASE
2'-0" (7,405LBS)
3'-0" (9,250LBS)
4'-0" (11,100LBS)
5'-0" (12,945LBS)
6'-0" (14,790LBS)
7'-0" (16,635LBS)
8'-0" (18,480LBS)

SECTION VIEW

NOTES:

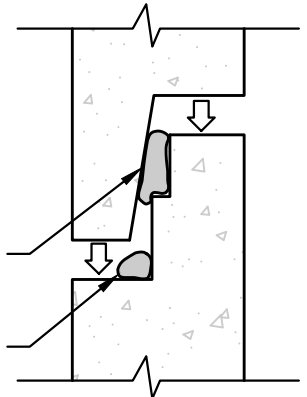
1. MANHOLE ASSEMBLY CONFORMS TO ASTM-C478.
2. ALL MANHOLE JOINTS SEALED WITH MASTIC OR RUBBER GASKET.
3. WEIGHTS LISTED ARE APPROXIMATE.
4. GRADE RINGS AVAILABLE AS NEEDED.

Ø72" MANHOLE - FLAT TOP



OPTIONAL
GASKET

MASTIC



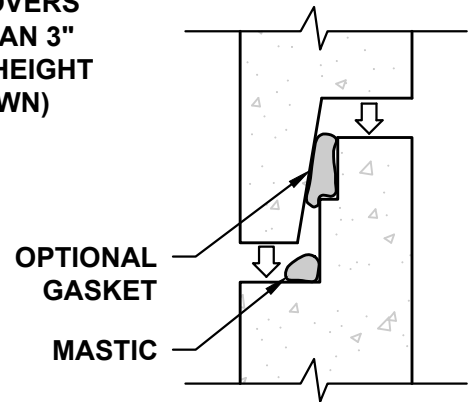
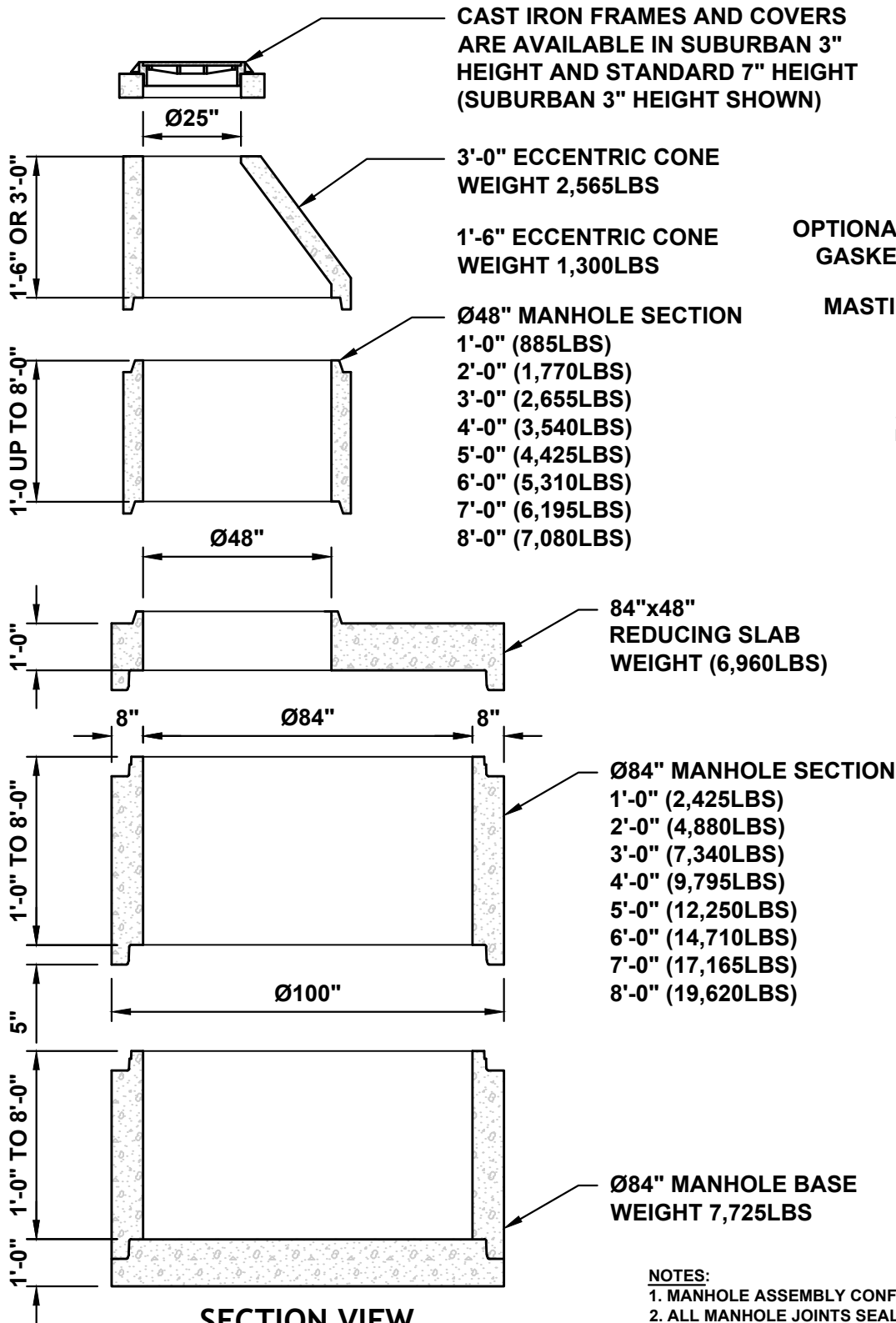
JOINT DETAIL

STANDARD JOINT SEALANT IS MASTIC.
RUBBER GASKET IS OPTIONAL.

NOTES:

1. MANHOLE ASSEMBLY CONFORMS TO ASTM-C478.
2. ALL MANHOLE JOINTS SEALED WITH MASTIC OR RUBBER GASKET.
3. WEIGHTS LISTED ARE APPROXIMATE.
4. GRADE RINGS AVAILABLE AS NEEDED.

Ø84" MANHOLE - WITH REDUCING SLAB



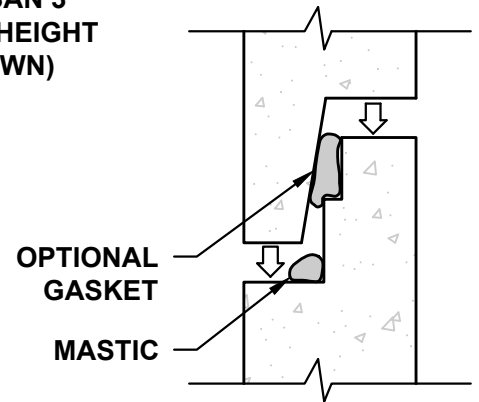
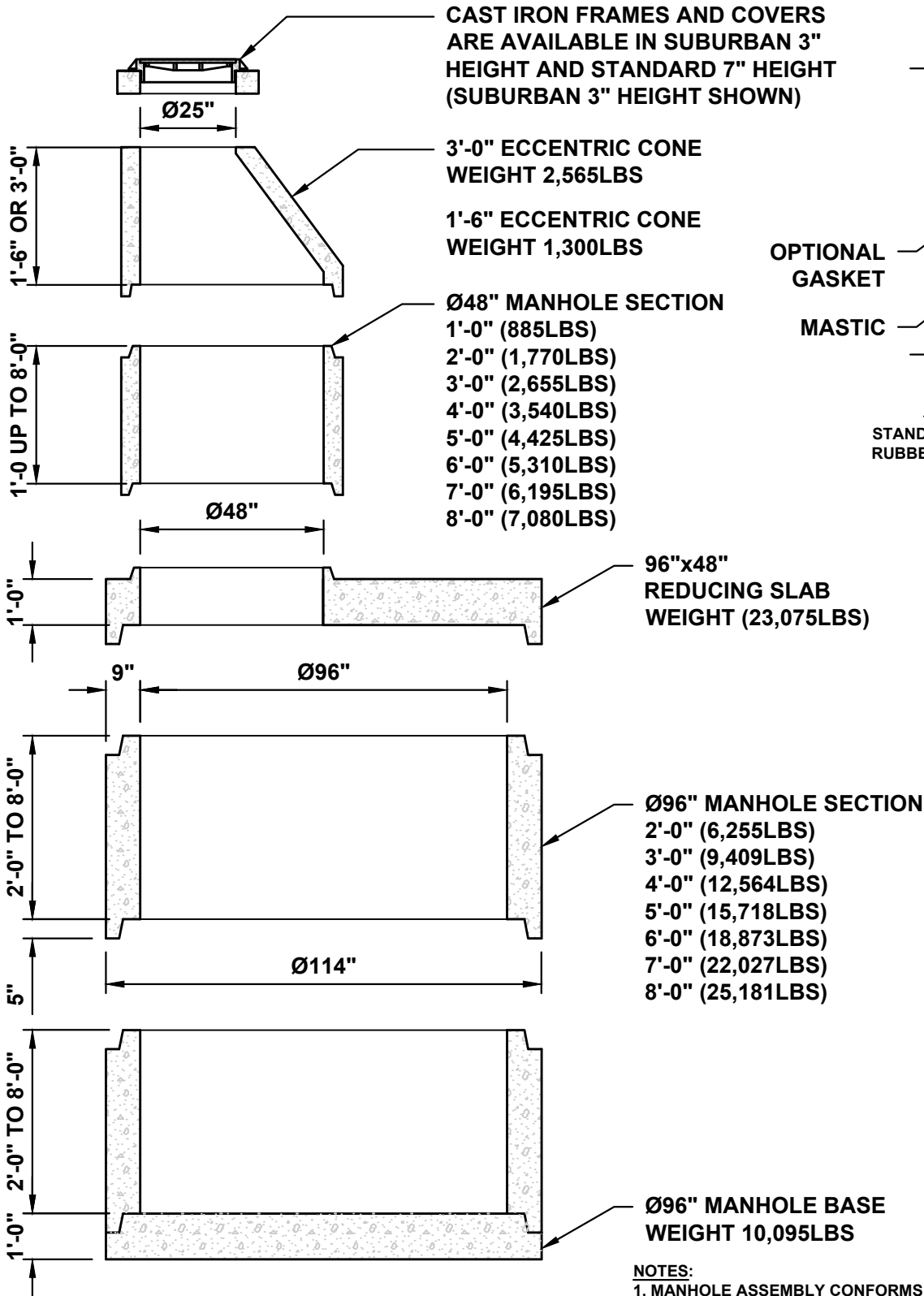
JOINT DETAIL

STANDARD JOINT SEALANT IS MASTIC. RUBBER GASKET IS OPTIONAL.

NOTES:

1. MANHOLE ASSEMBLY CONFORMS TO ASTM-C478.
2. ALL MANHOLE JOINTS SEALED WITH MASTIC OR RUBBER GASKET.
3. WEIGHTS LISTED ARE APPROXIMATE.
4. GRADE RINGS AVAILABLE AS NEEDED.

Ø96" MANHOLE - WITH REDUCING SLAB



JOINT DETAIL

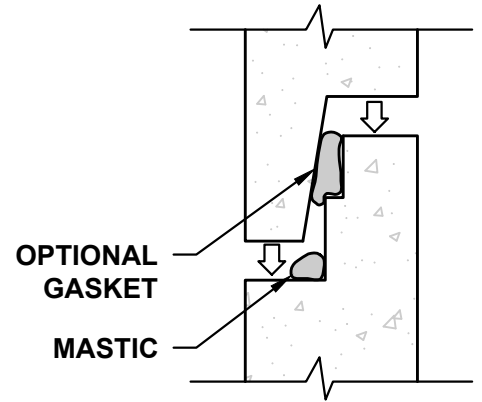
STANDARD JOINT SEALANT IS MASTIC.
RUBBER GASKET IS OPTIONAL.

SECTION VIEW

NOTES:

1. MANHOLE ASSEMBLY CONFORMS TO ASTM-C478.
2. ALL MANHOLE JOINTS SEALED WITH MASTIC OR RUBBER GASKET.
3. WEIGHTS LISTED ARE APPROXIMATE.
4. GRADE RINGS AVAILABLE AS NEEDED.

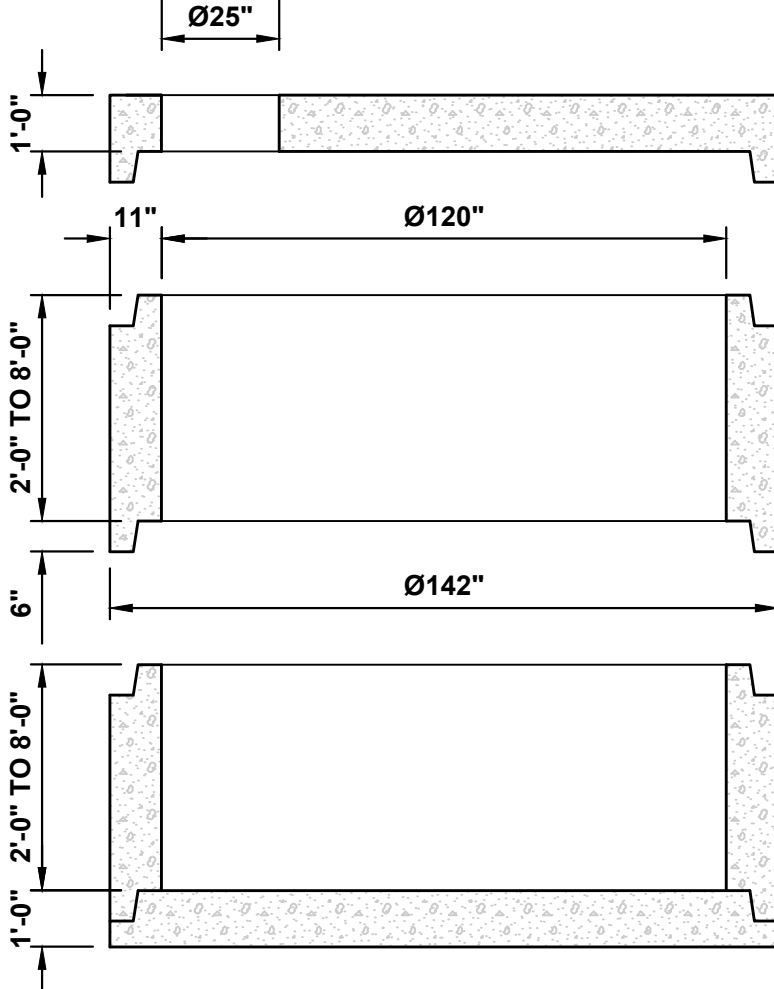
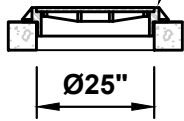
Ø120" MANHOLE - WITH FLAT TOP



JOINT DETAIL

STANDARD JOINT SEALANT IS MASTIC.
RUBBER GASKET IS OPTIONAL.

CAST IRON FRAMES AND COVERS ARE AVAILABLE IN SUBURBAN 3" HEIGHT AND STANDARD 7" HEIGHT (SUBURBAN 3" HEIGHT SHOWN)



120"x25" FLAT TOP
WEIGHT 18,150 LBS
120"x48" FLAT TOP (REDUCING)
WEIGHT 16,750 LBS

Ø120" MANHOLE SECTION
2'-0" (9,481 LBS)
3'-0" (14,293 LBS)
4'-0" (19,064 LBS)
5'-0" (23,875 LBS)
6'-0" (28,646 LBS)
7'-0" (33,459 LBS)
8'-0" (38,230 LBS)

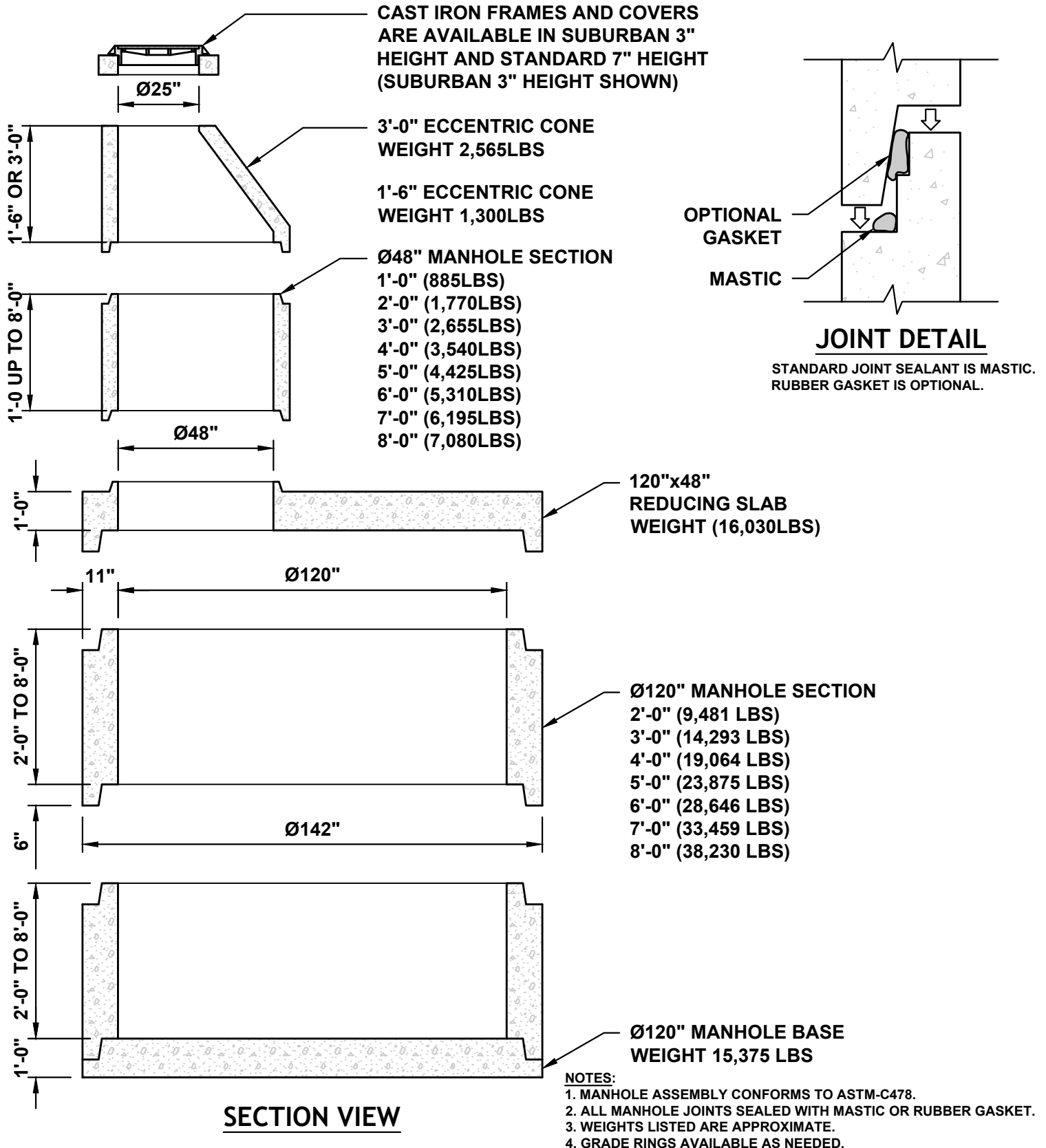
Ø120" MANHOLE BASE
WEIGHT 15,375 LBS

SECTION VIEW

NOTES:

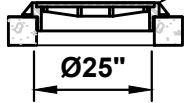
1. MANHOLE ASSEMBLY CONFORMS TO ASTM-C478.
2. ALL MANHOLE JOINTS SEALED WITH MASTIC OR RUBBER GASKET.
3. WEIGHTS LISTED ARE APPROXIMATE.
4. GRADE RINGS AVAILABLE AS NEEDED.

Ø120" MANHOLE - WITH REDUCING SLAB



Ø144" MANHOLES - WITH REDUCING SLAB

CAST IRON FRAMES AND COVERS ARE AVAILABLE IN SUBURBAN 3" HEIGHT AND STANDARD 7" HEIGHT (SUBURBAN 3" HEIGHT SHOWN)

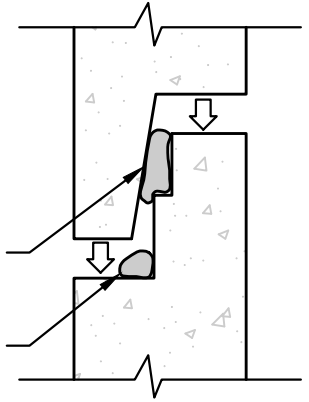


3'-0" ECCENTRIC CONE
WEIGHT 2,565LBS

1'-6" ECCENTRIC CONE
WEIGHT 1,300LBS

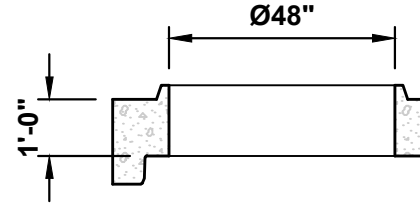
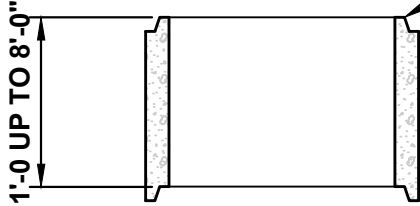
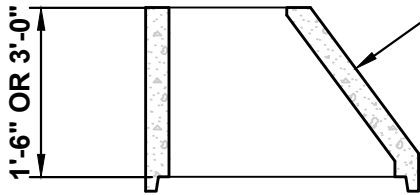
Ø48" MANHOLE SECTION
1'-0" (885LBS)
2'-0" (1,770LBS)
3'-0" (2,655LBS)
4'-0" (3,540LBS)
5'-0" (4,425LBS)
6'-0" (5,310LBS)
7'-0" (6,195LBS)
8'-0" (7,080LBS)

OPTIONAL
GASKET
MASTIC

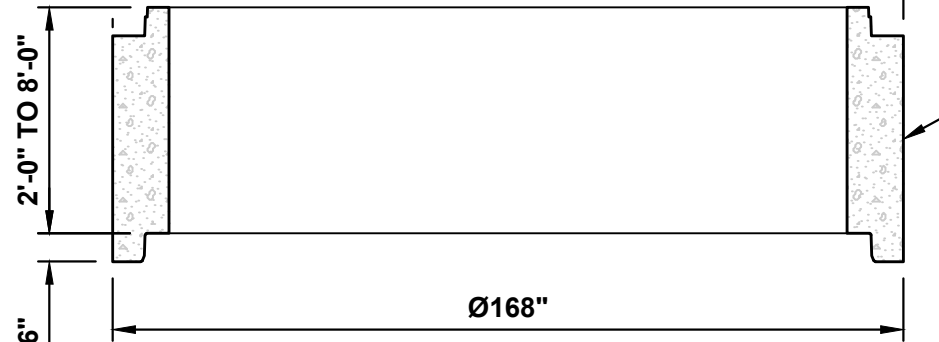
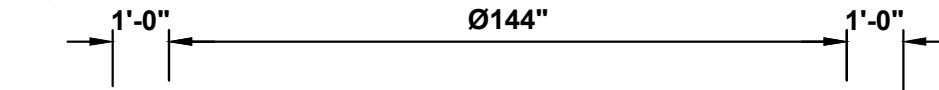


JOINT DETAIL

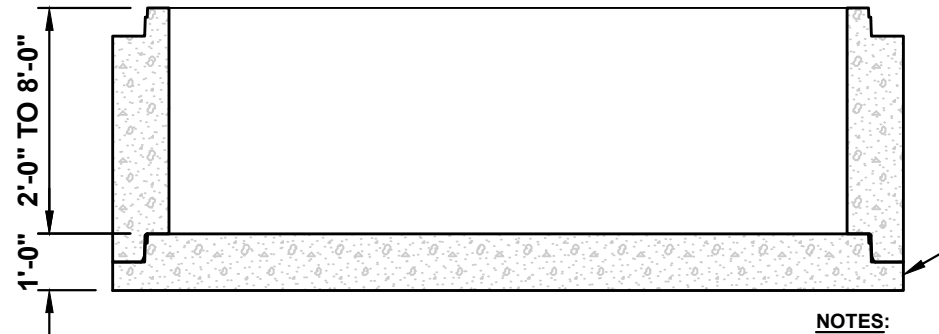
STANDARD JOINT SEALANT IS MASTIC.
RUBBER GASKET IS OPTIONAL.



144"x48"
REDUCING SLAB
WEIGHT (9,435LBS)



Ø144" MANHOLE SECTION
2'-0" (12,300LBS)
3'-0" (18,544LBS)
4'-0" (24,747LBS)
5'-0" (30,990LBS)
6'-0" (37,194LBS)
7'-0" (43,397LBS)
8'-0" (49,600LBS)



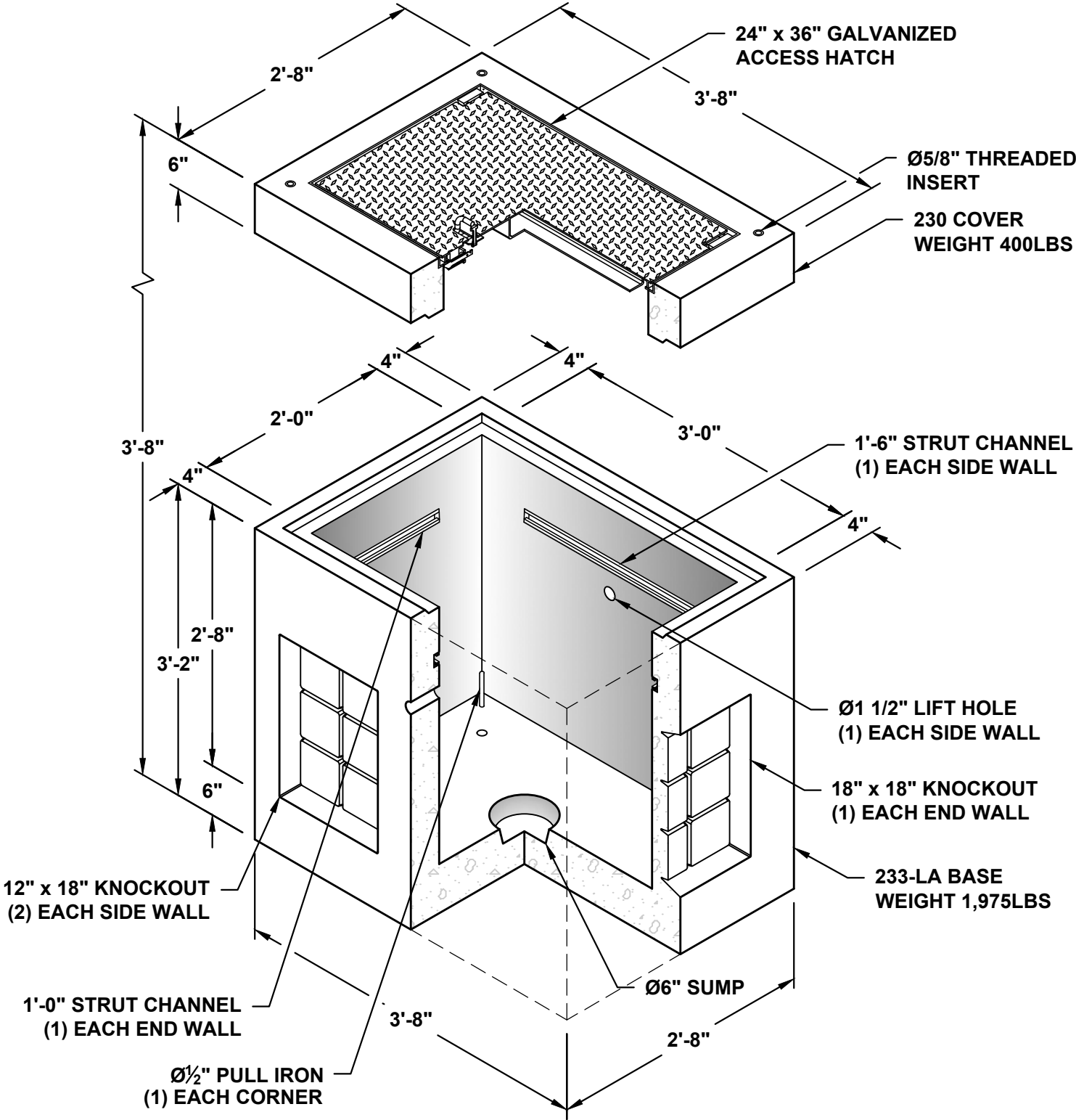
Ø144" MANHOLE BASE
WEIGHT 21,900LBS

SECTION VIEW

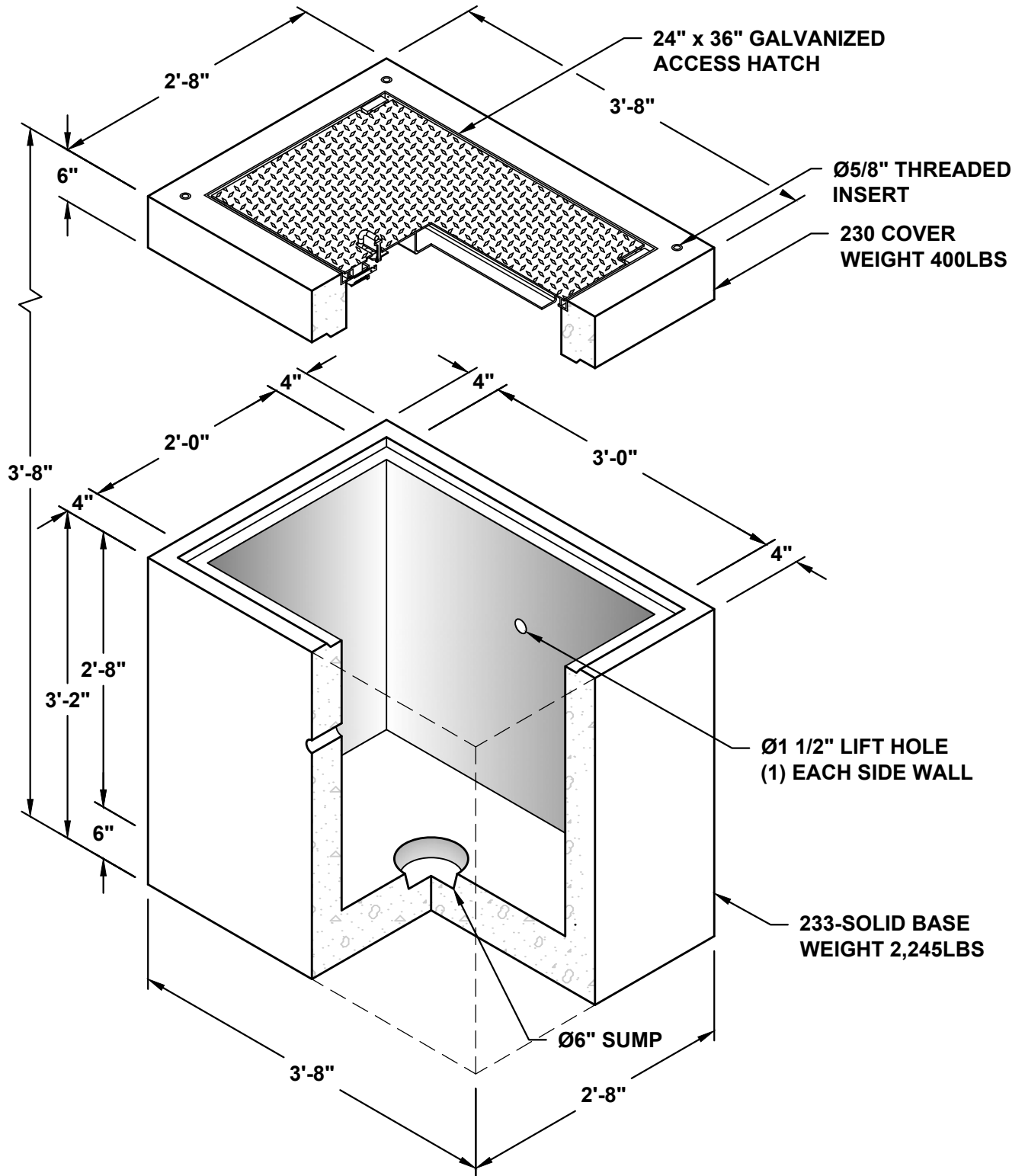
NOTES:

1. MANHOLE ASSEMBLY CONFORMS TO ASTM-C478.
2. ALL MANHOLE JOINTS SEALED WITH MASTIC OR RUBBER GASKET.
3. WEIGHTS LISTED ARE APPROXIMATE.
4. GRADE RINGS AVAILABLE AS NEEDED.

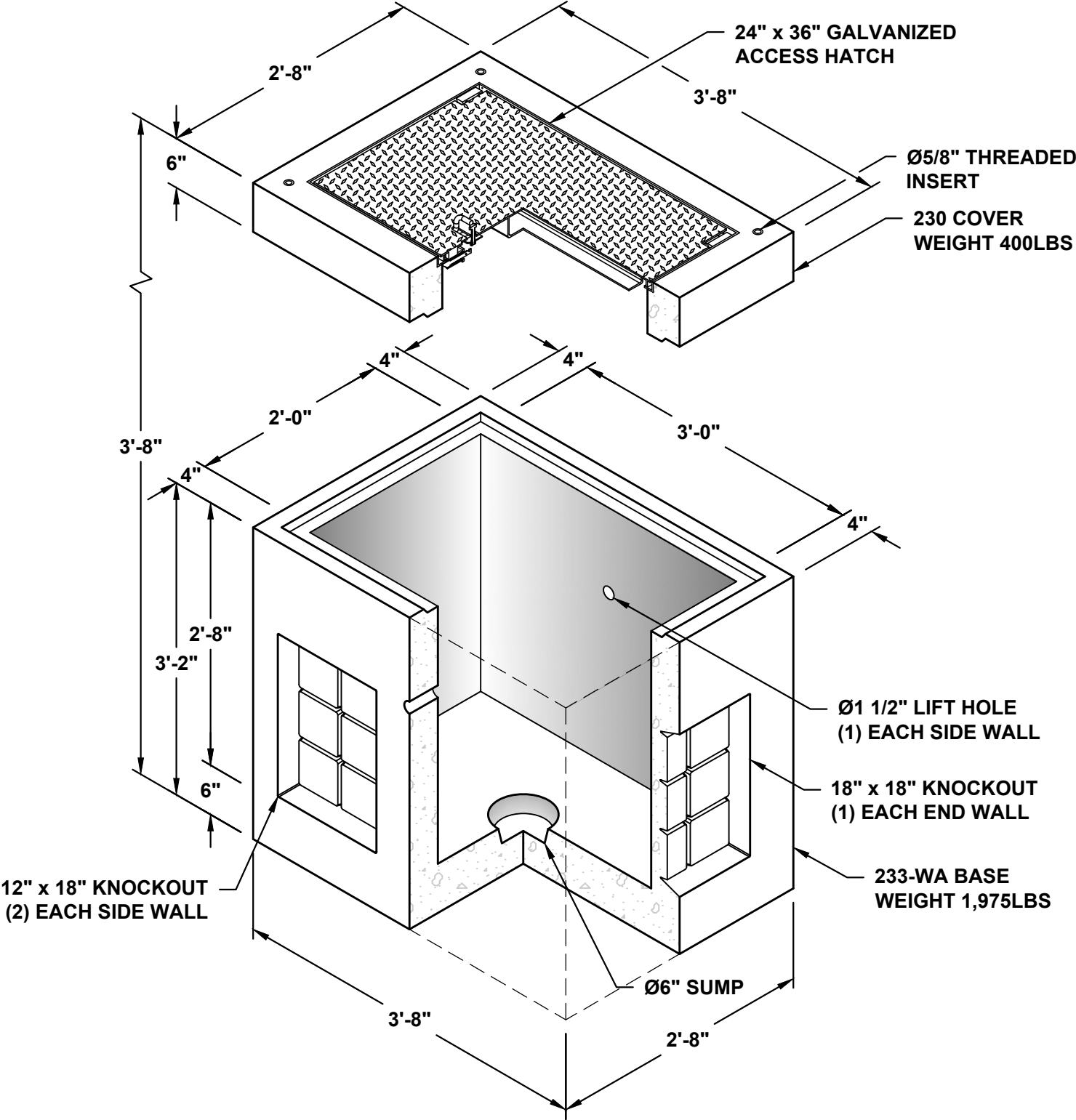
233 LA-2436 VAULT



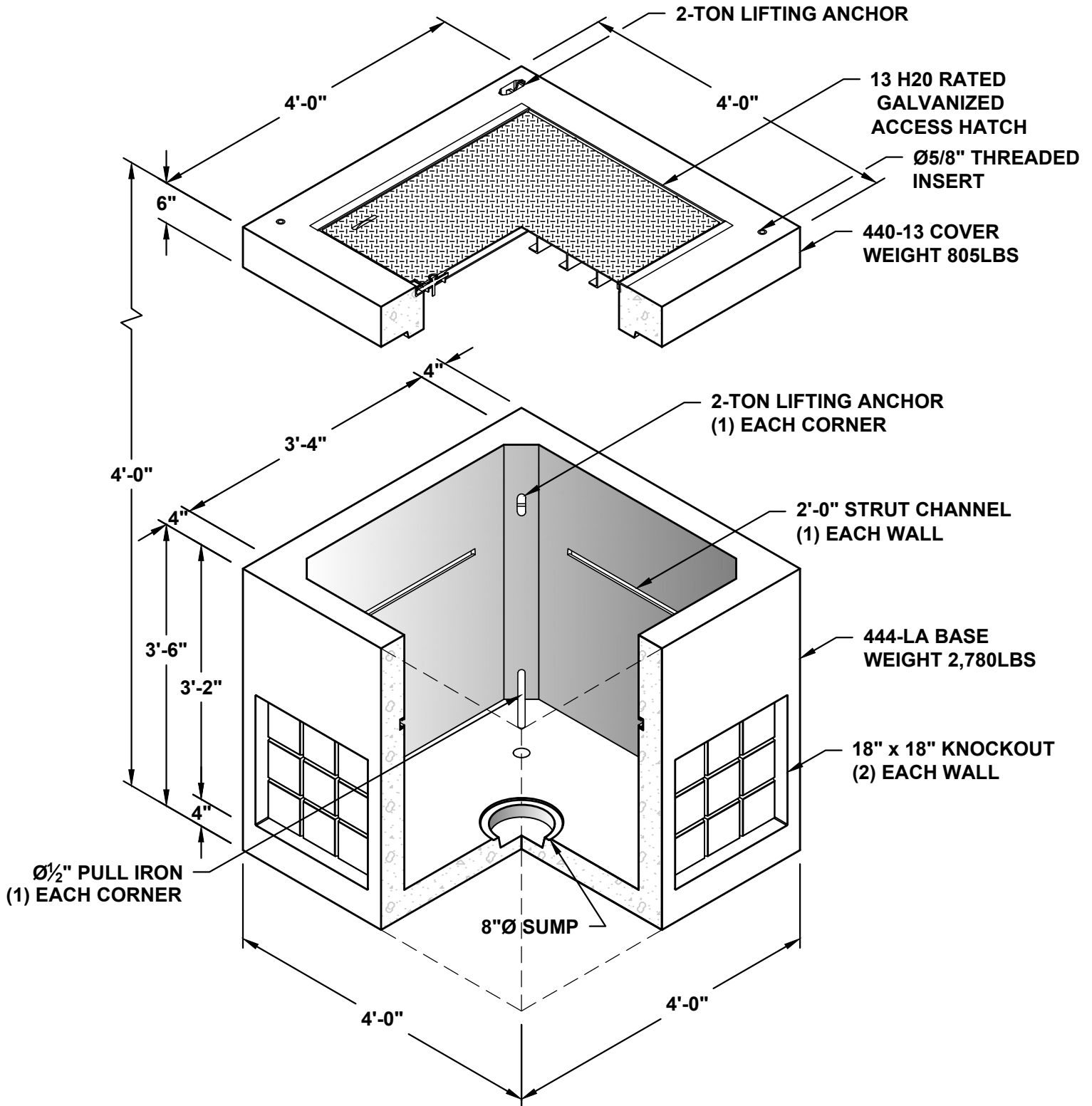
233 SOLID-2436 VAULT



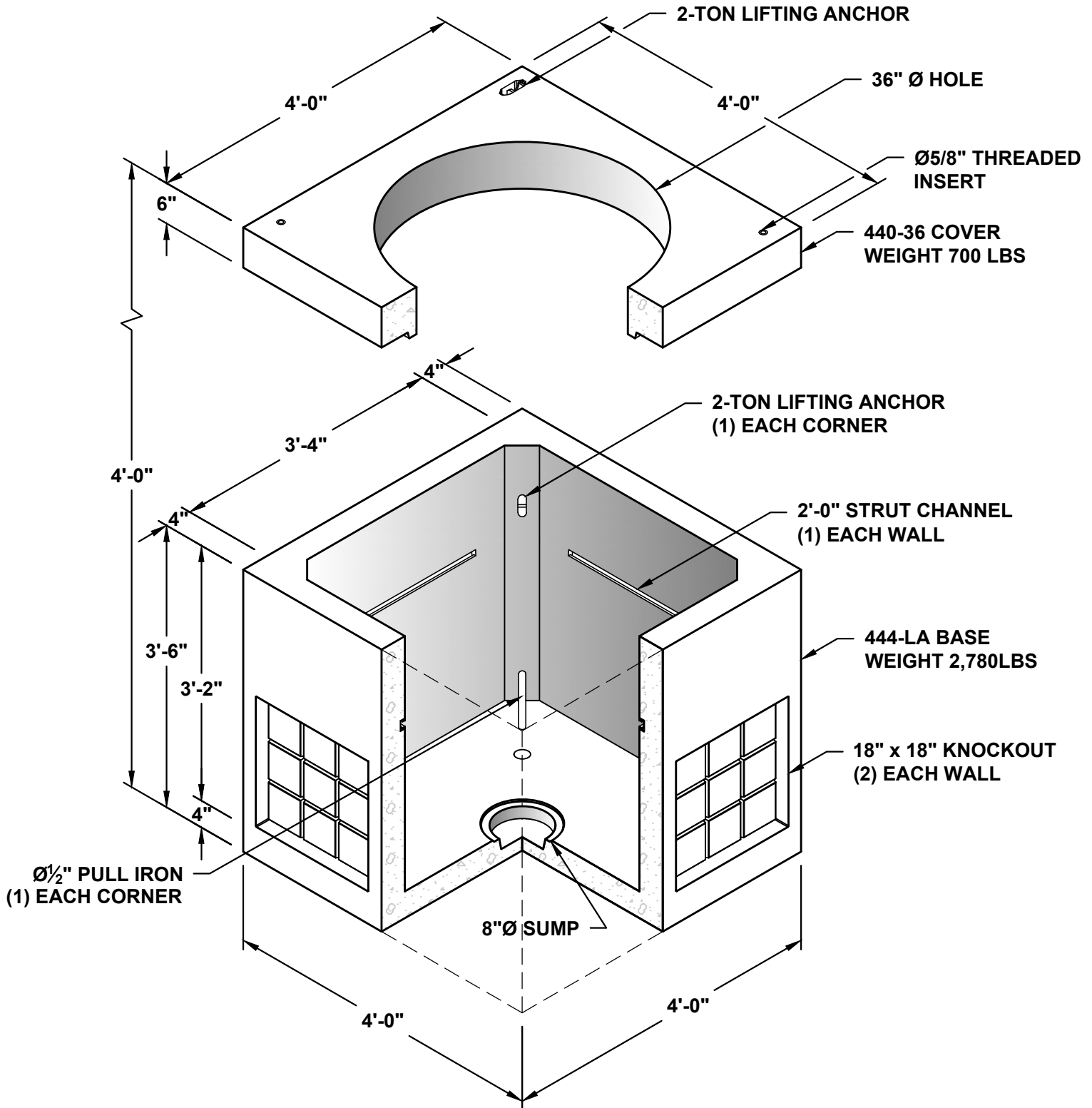
233 WA-2436 VAULT



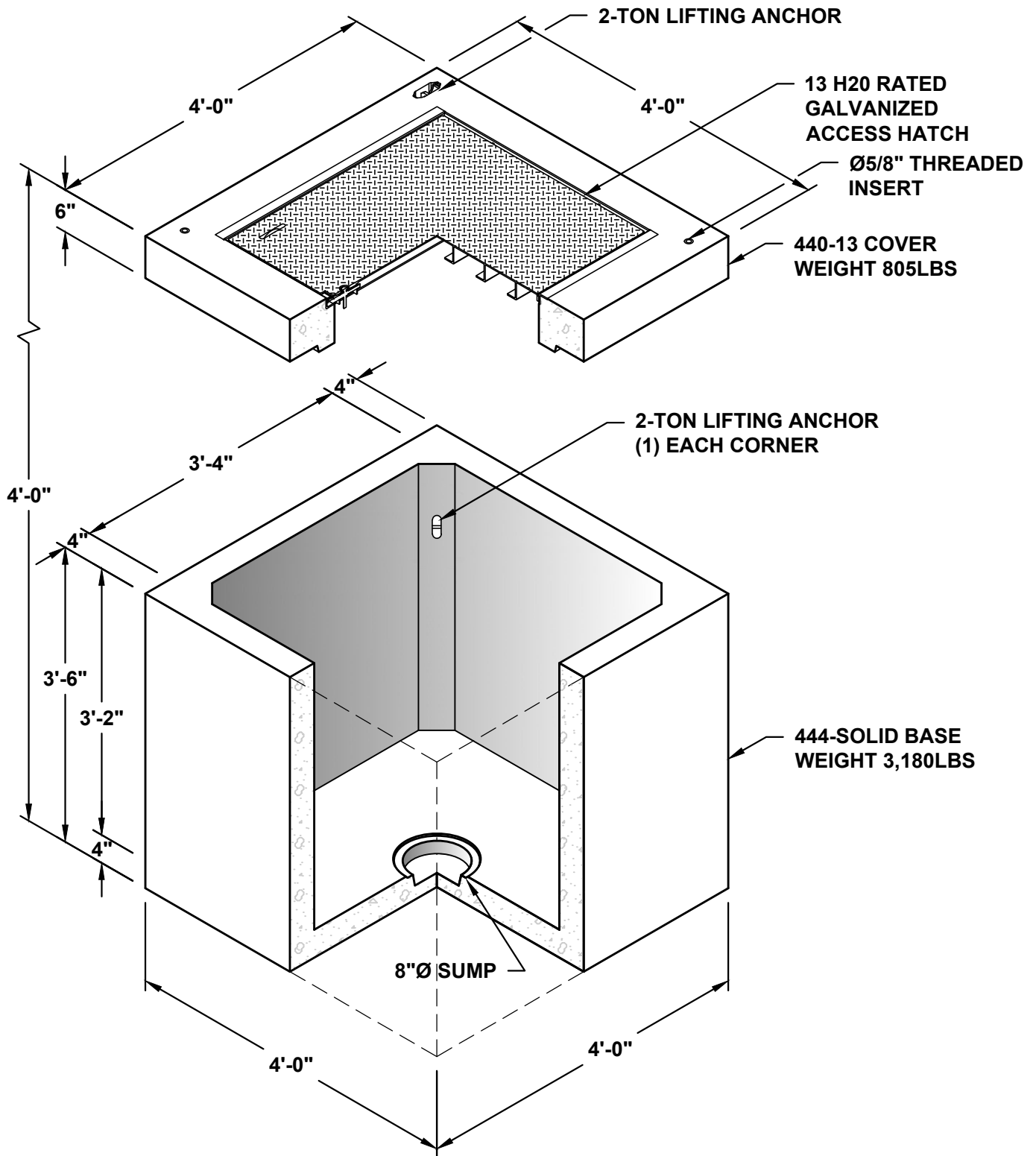
444 LA-13 VAULT



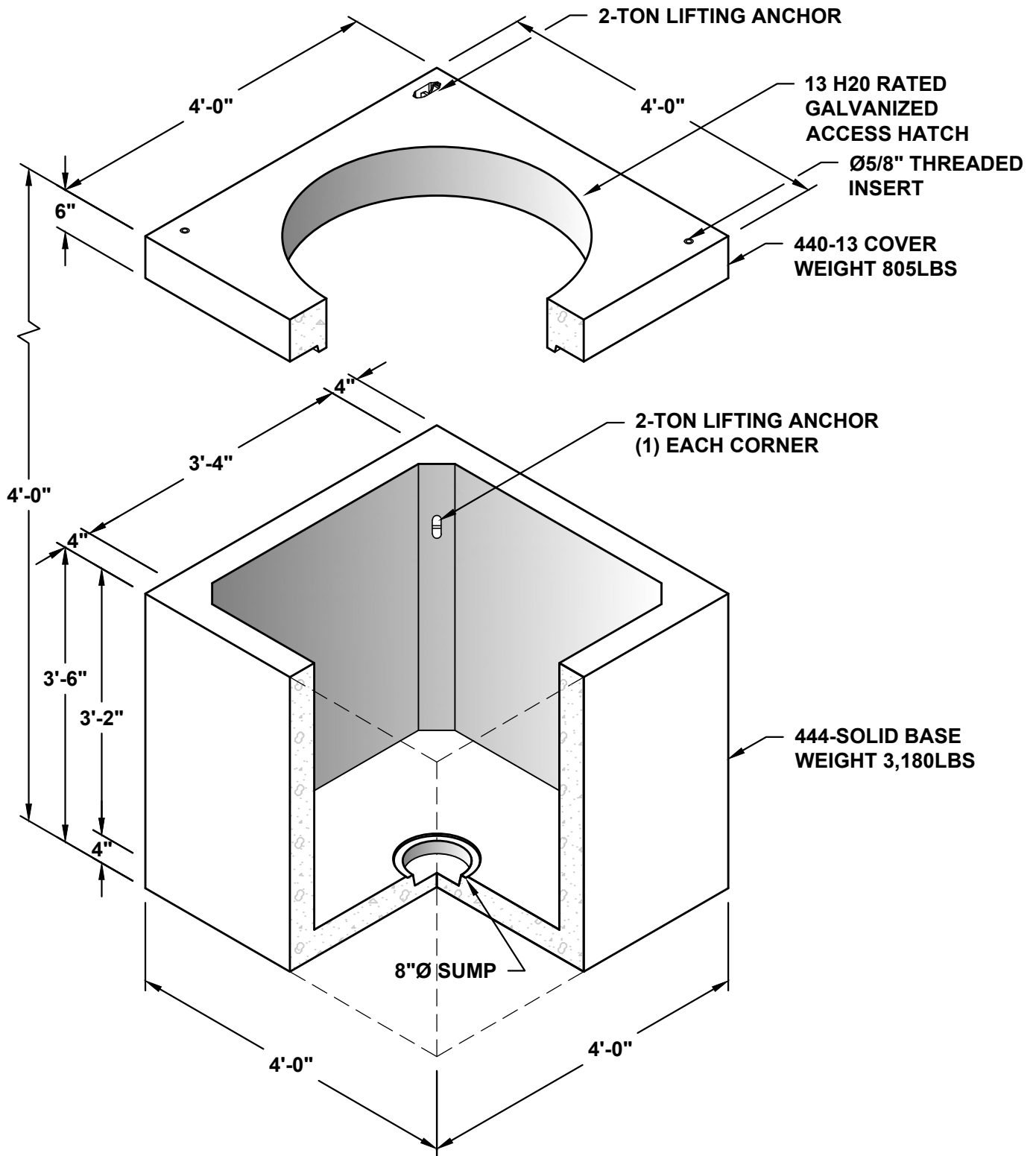
444 LA-36 VAULT



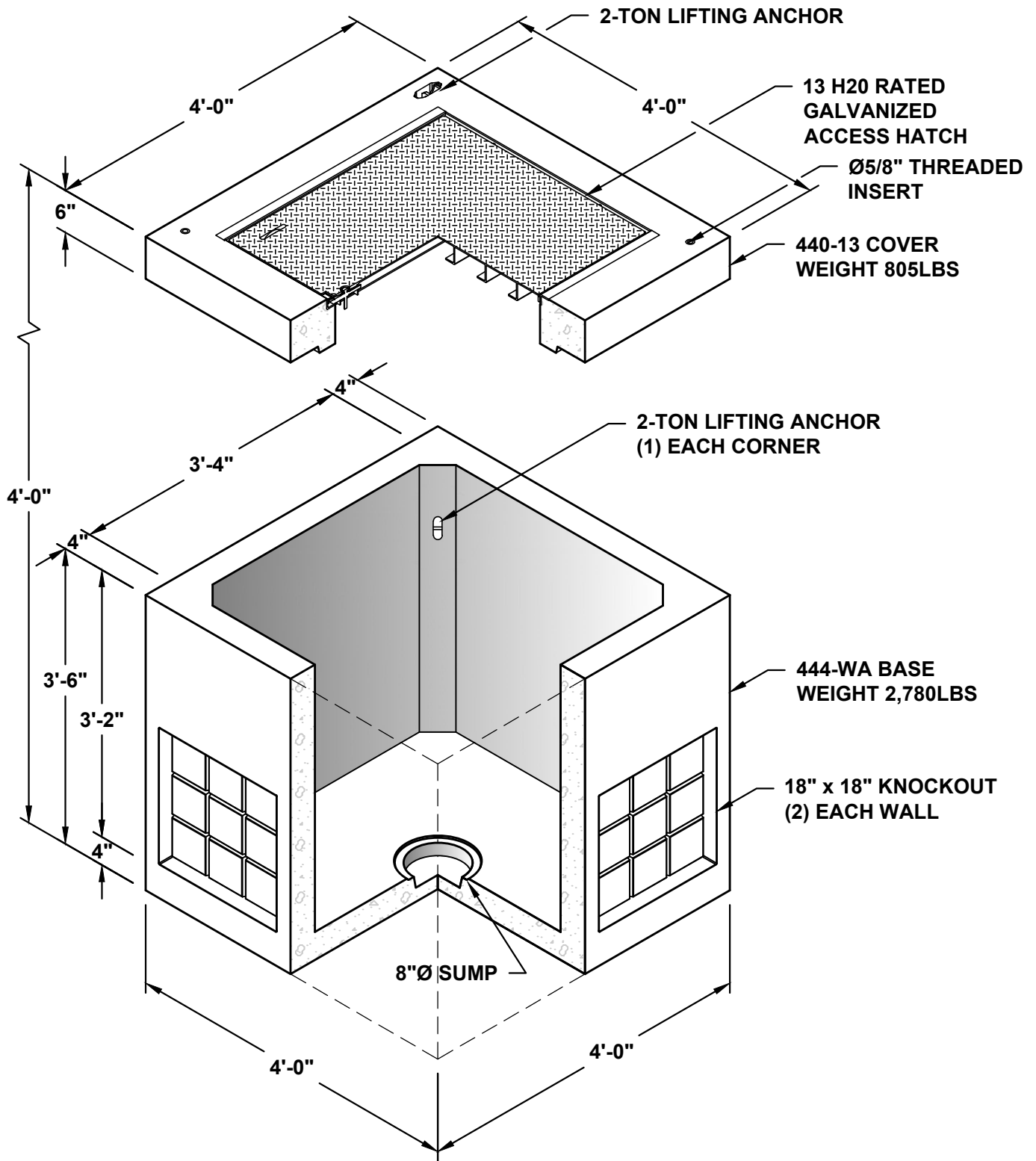
444 SOLID-13 VAULT



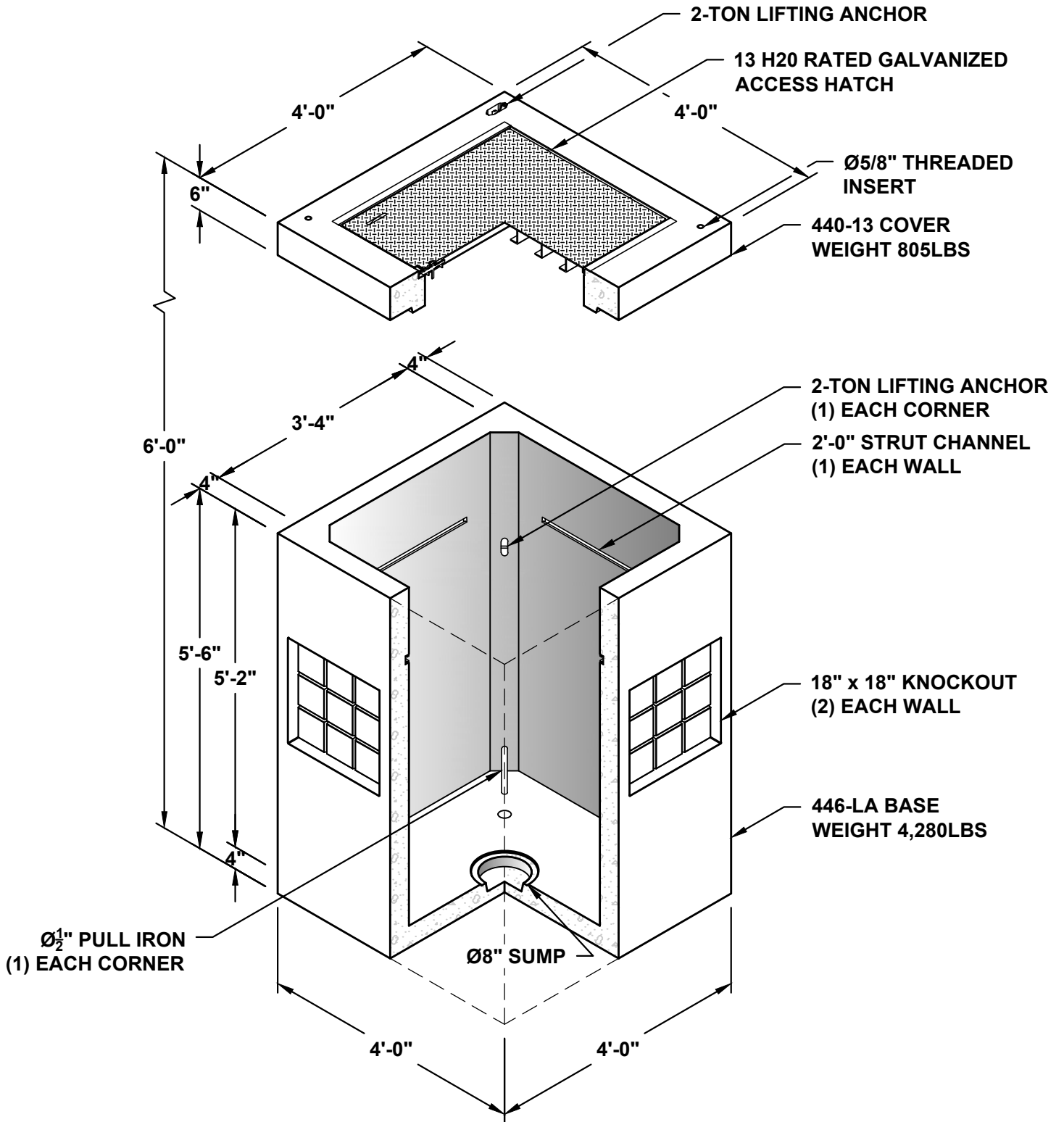
444 SOLID-13 VAULT



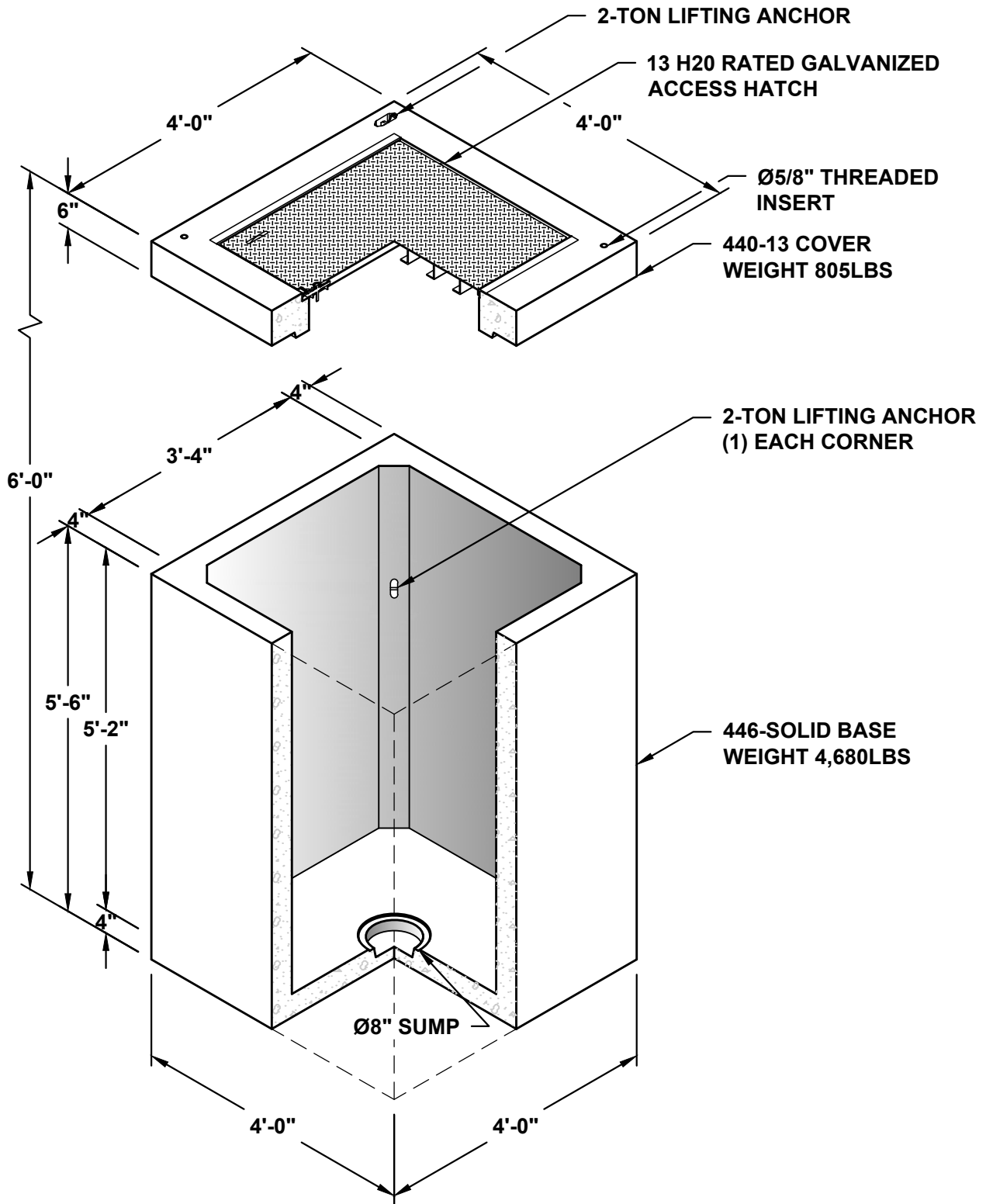
444 WA-13 VAULT



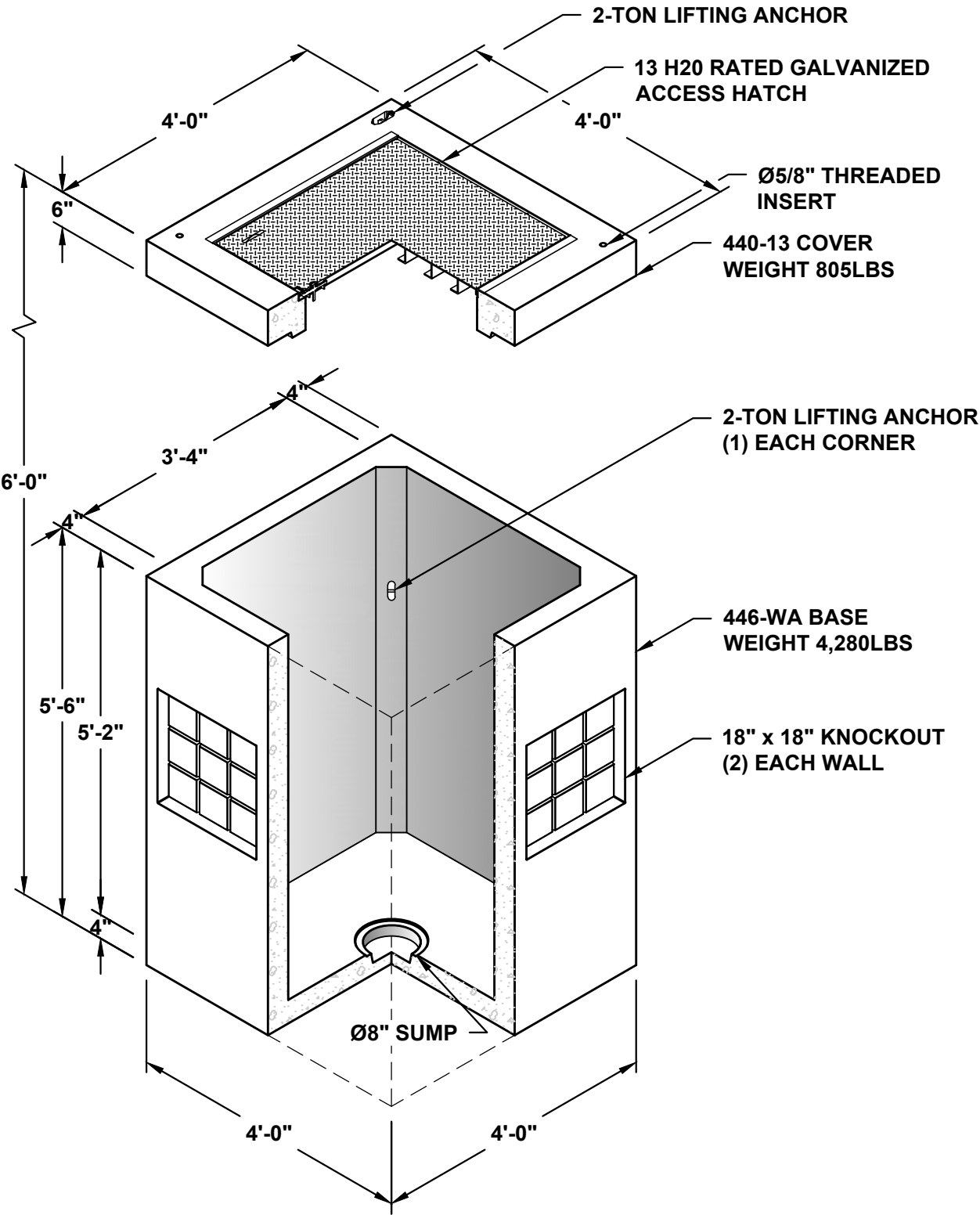
446 LA-13 VAULT



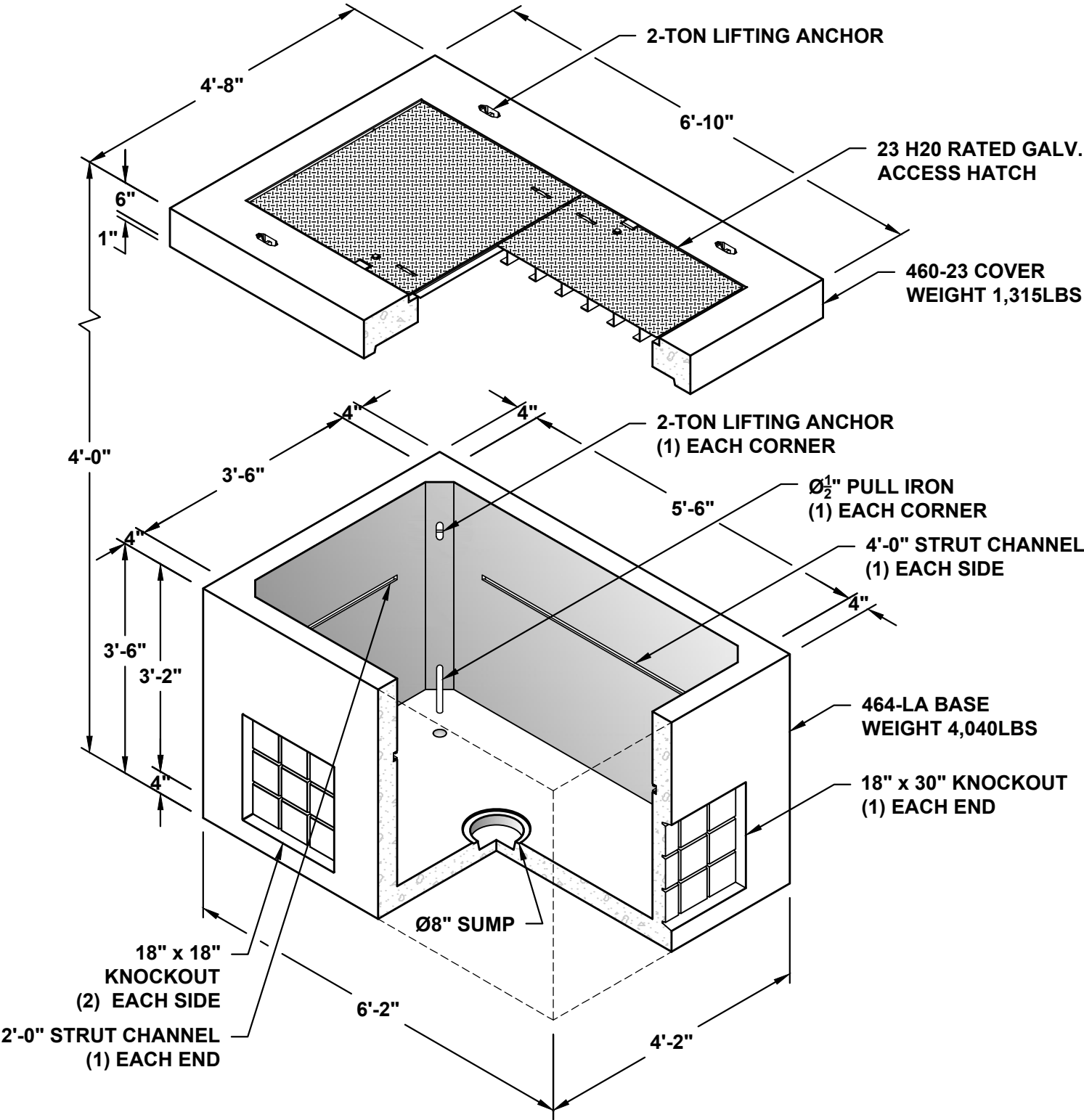
446 SOLID-13 VAULT



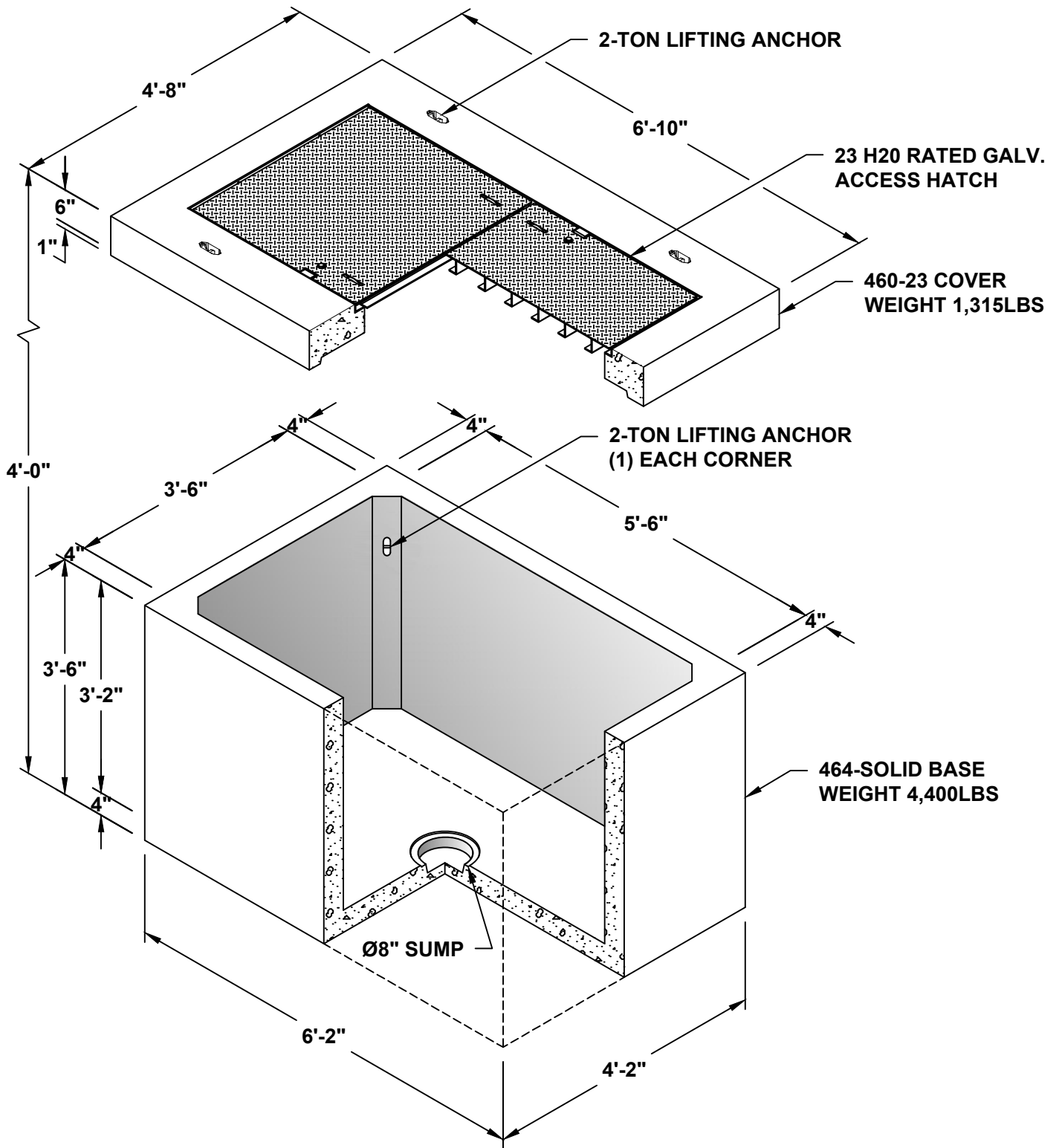
446 WA-13 VAULT



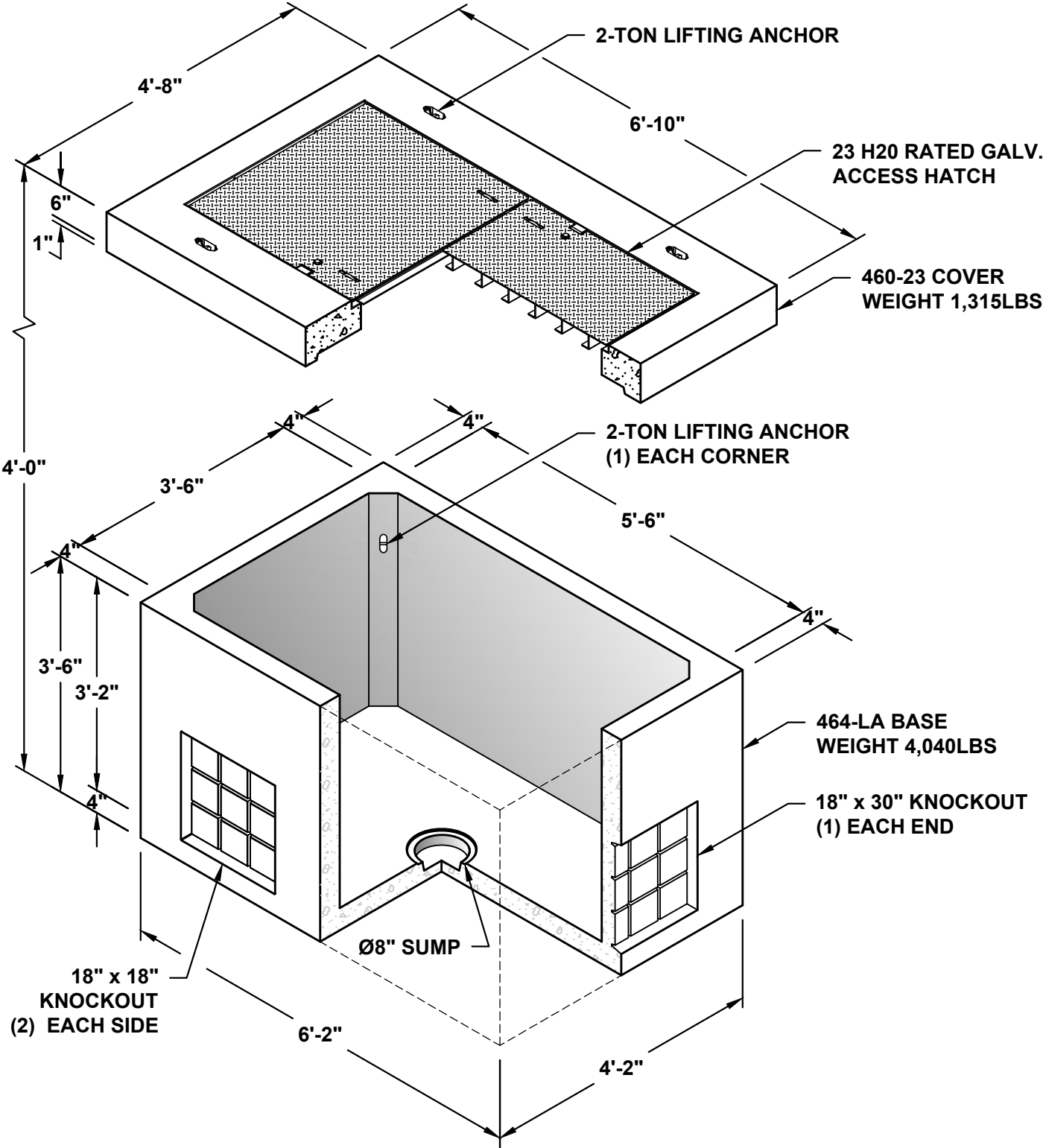
464 LA-23 VAULT



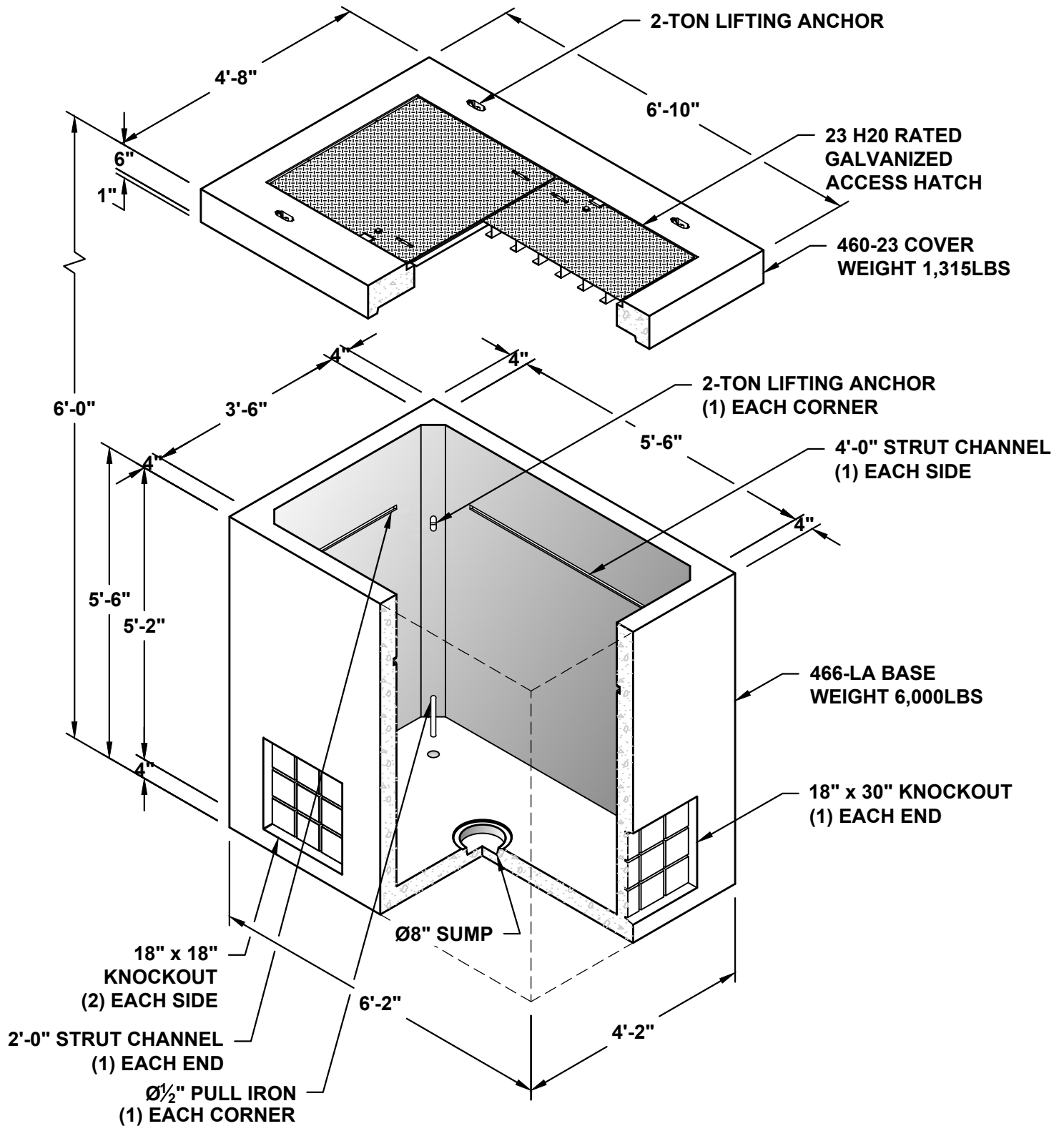
464 SOLID-23 VAULT



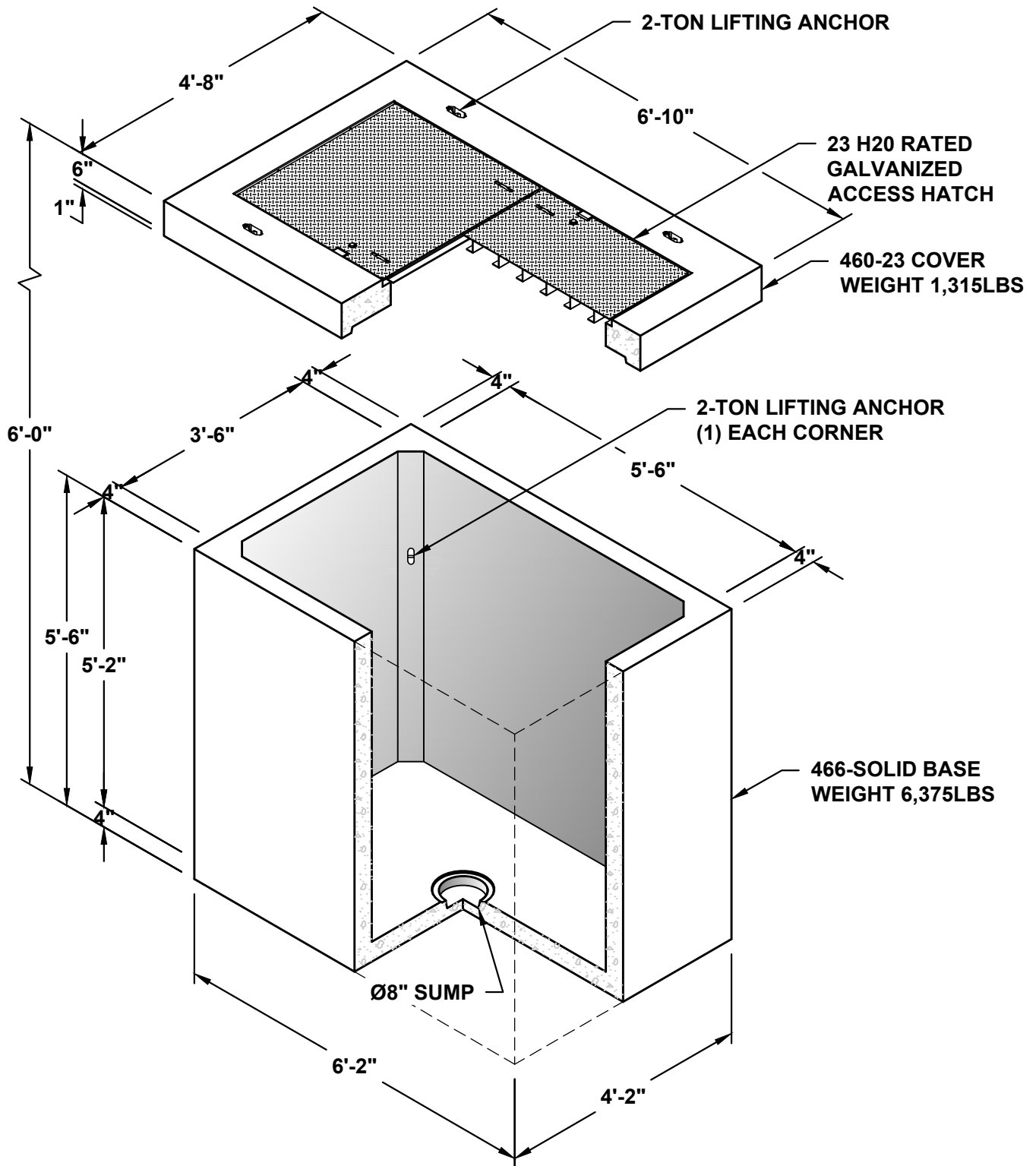
464 WA-23 VAULT



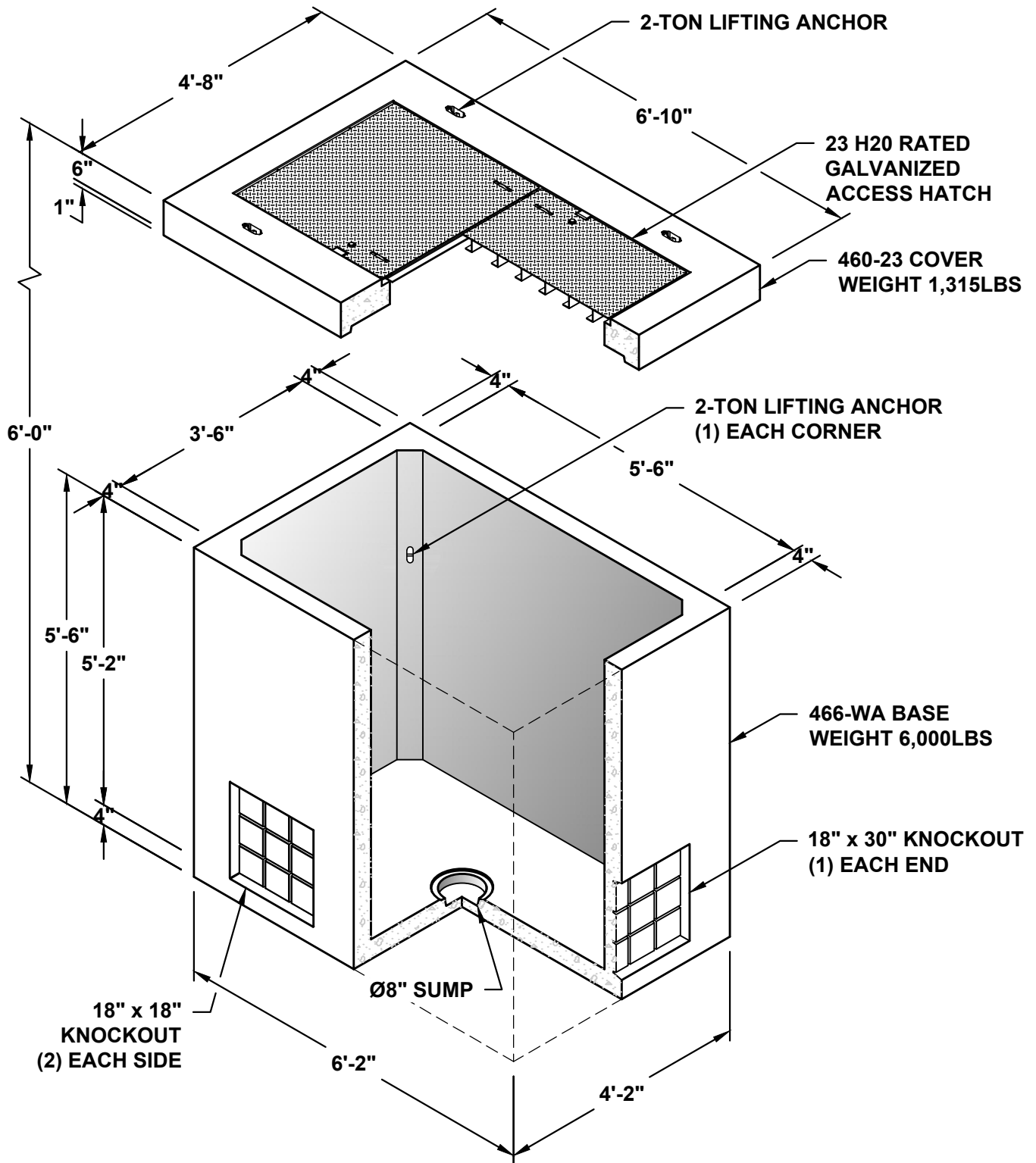
466 LA-23 VAULT



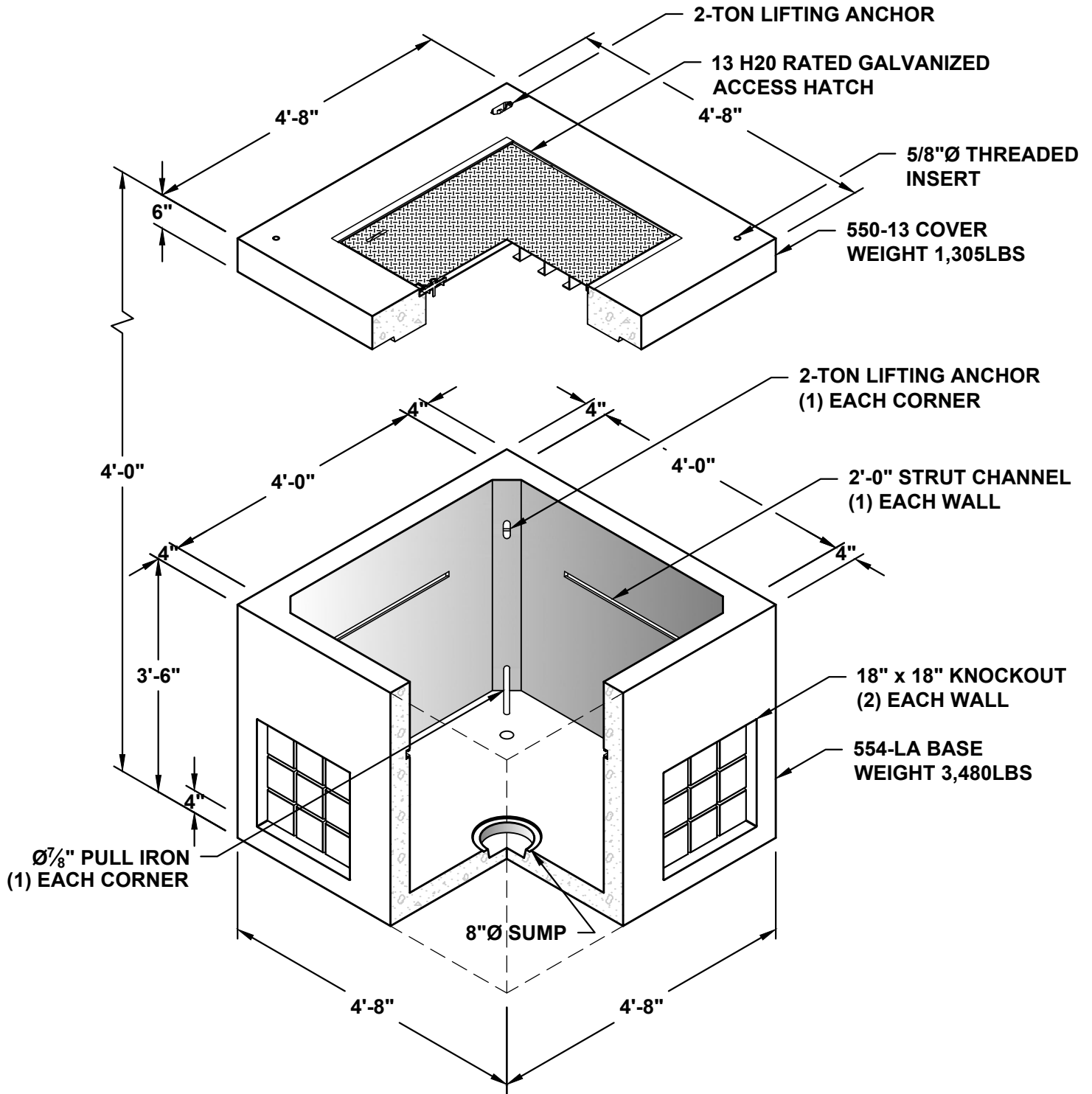
466 SOLID-23 VAULT



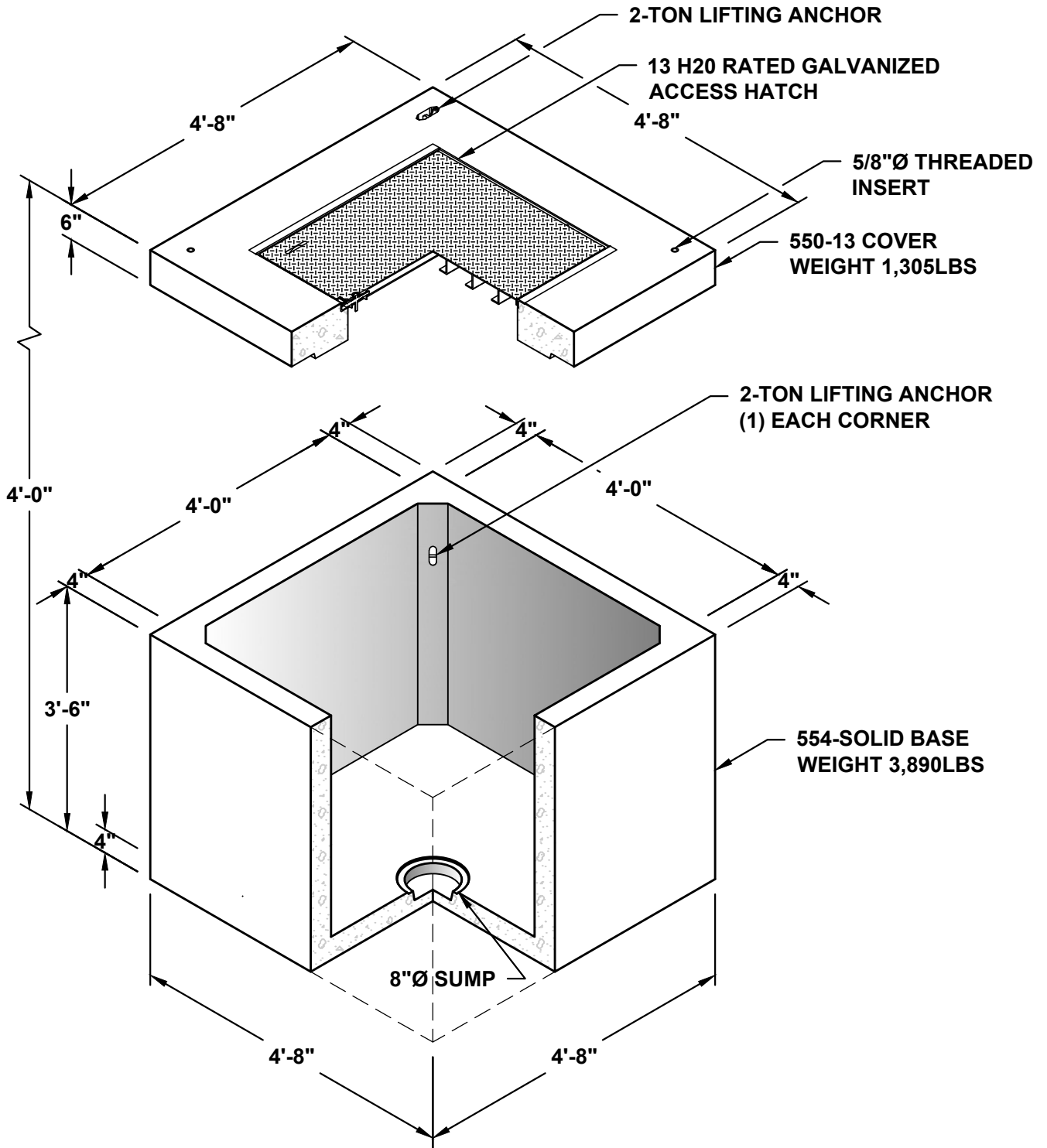
466 WA-23 VAULT



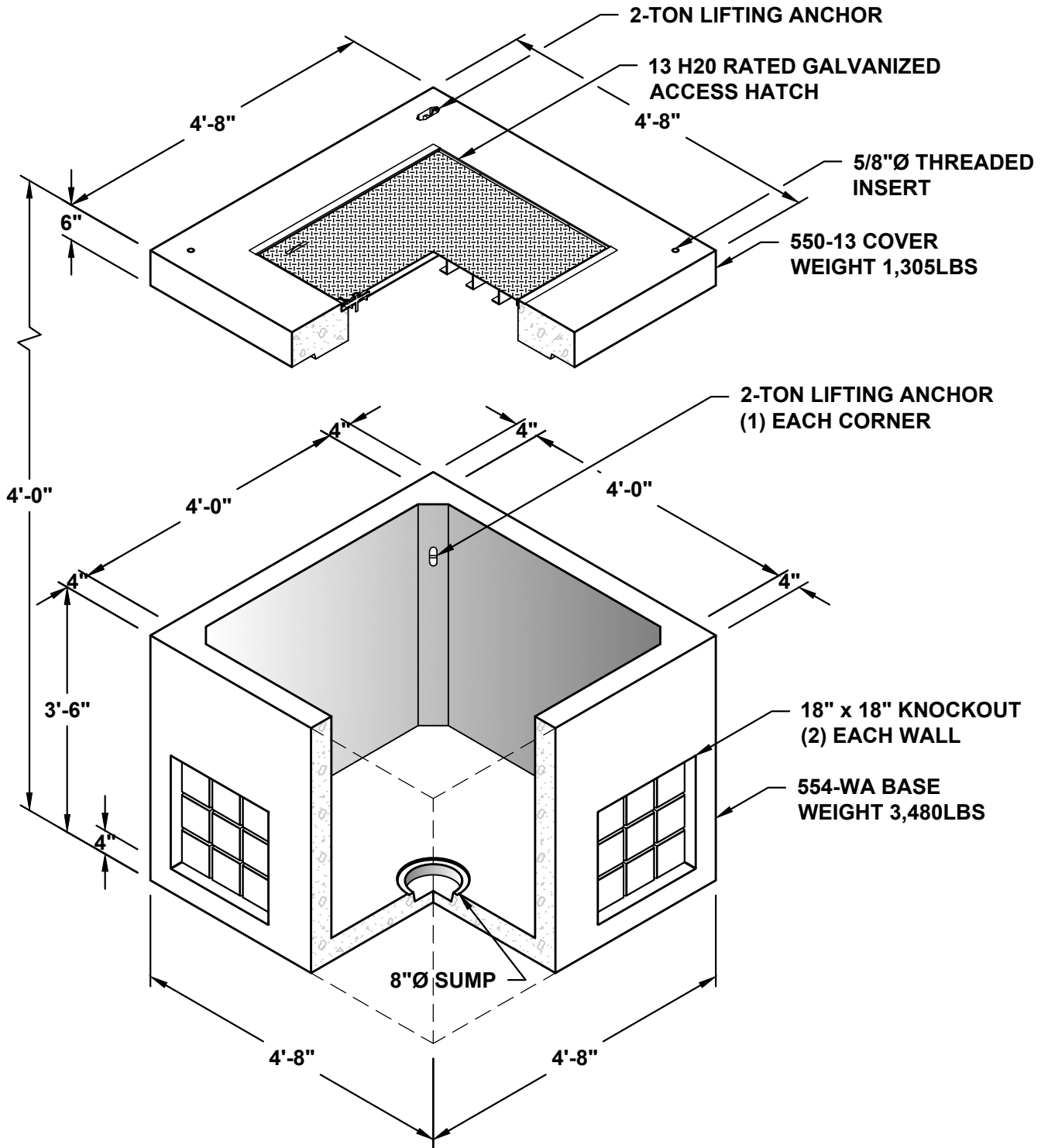
554 LA-13 VAULT



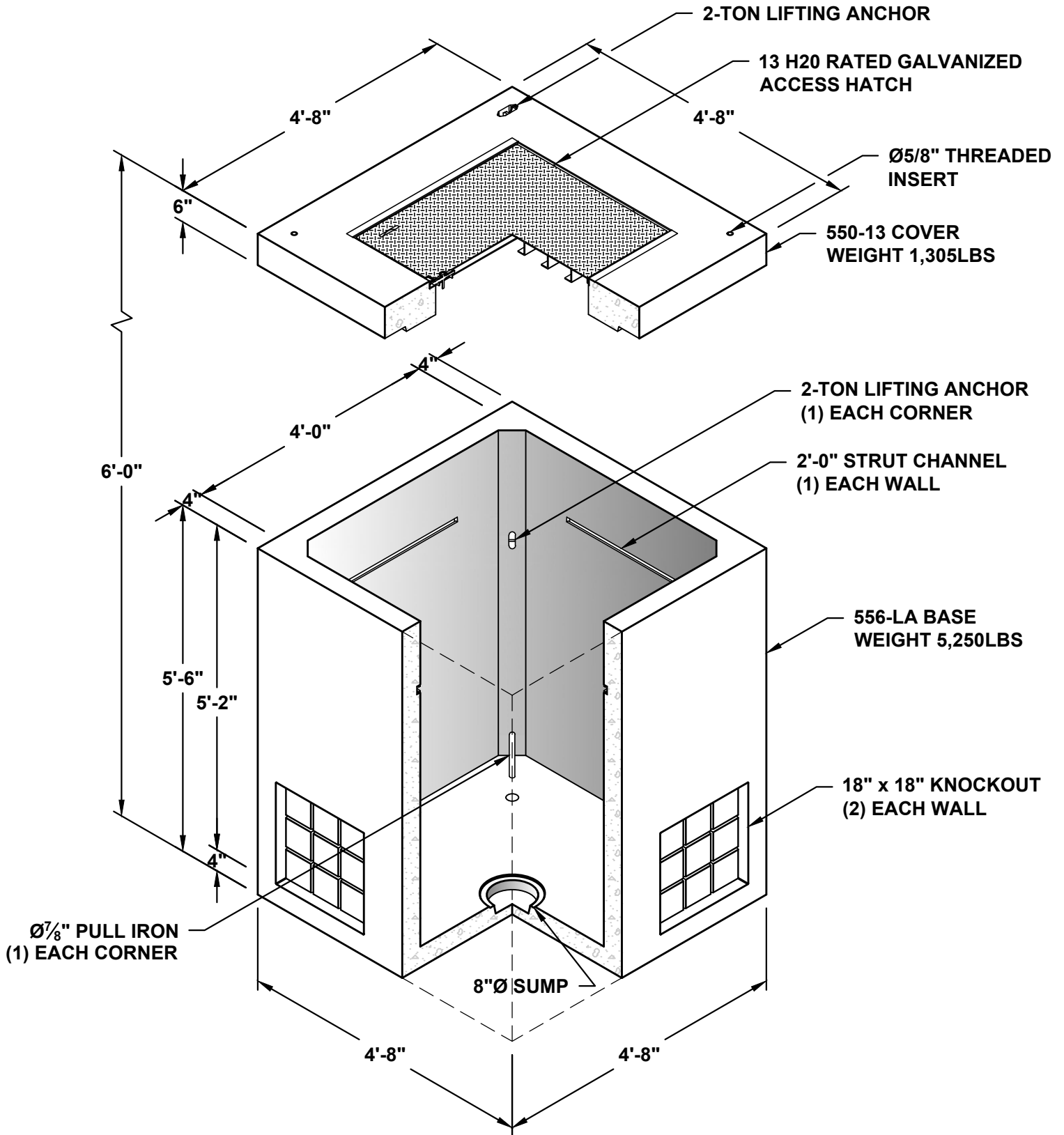
554 SOLID-13 VAULT



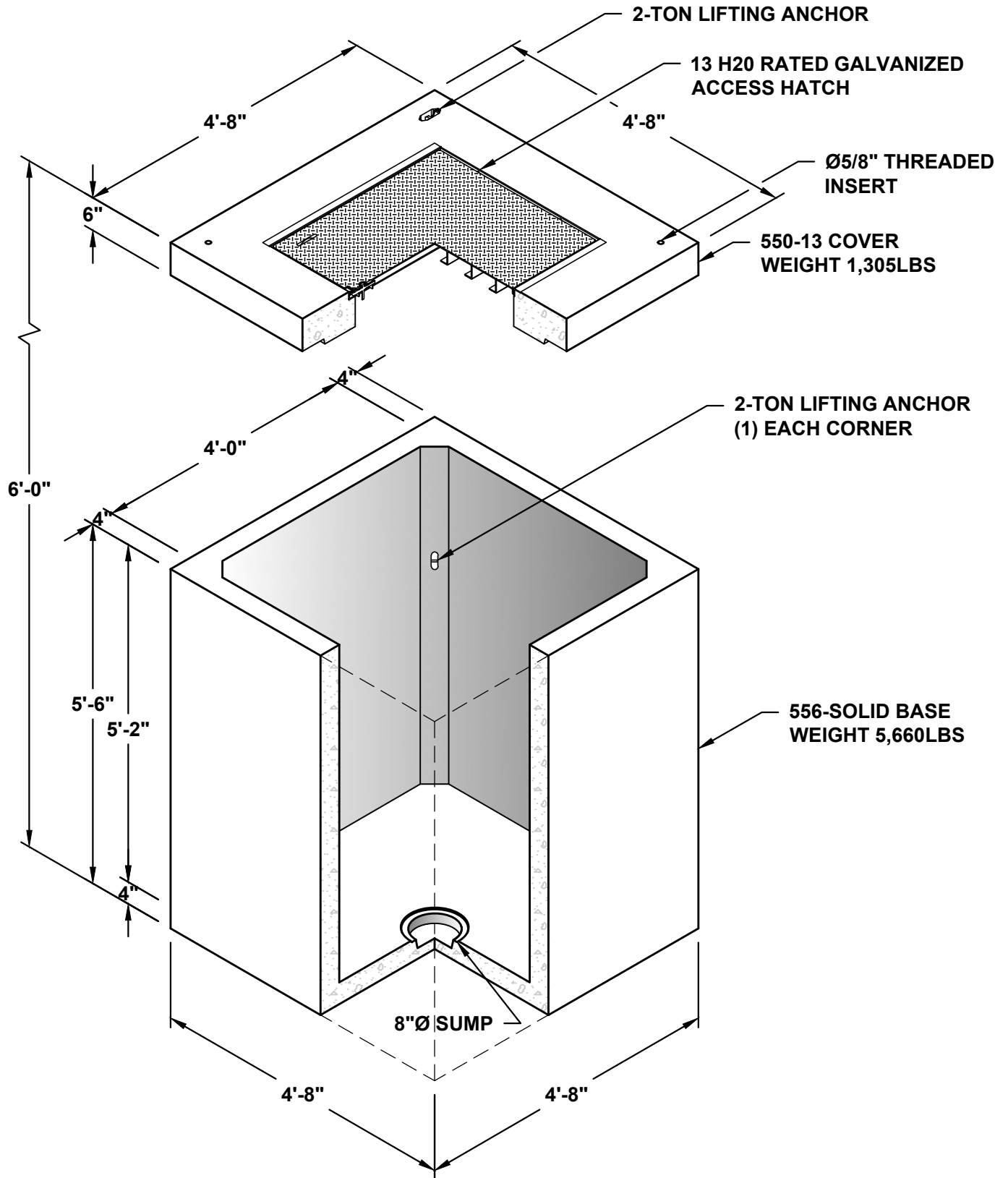
554 WA-13 VAULT



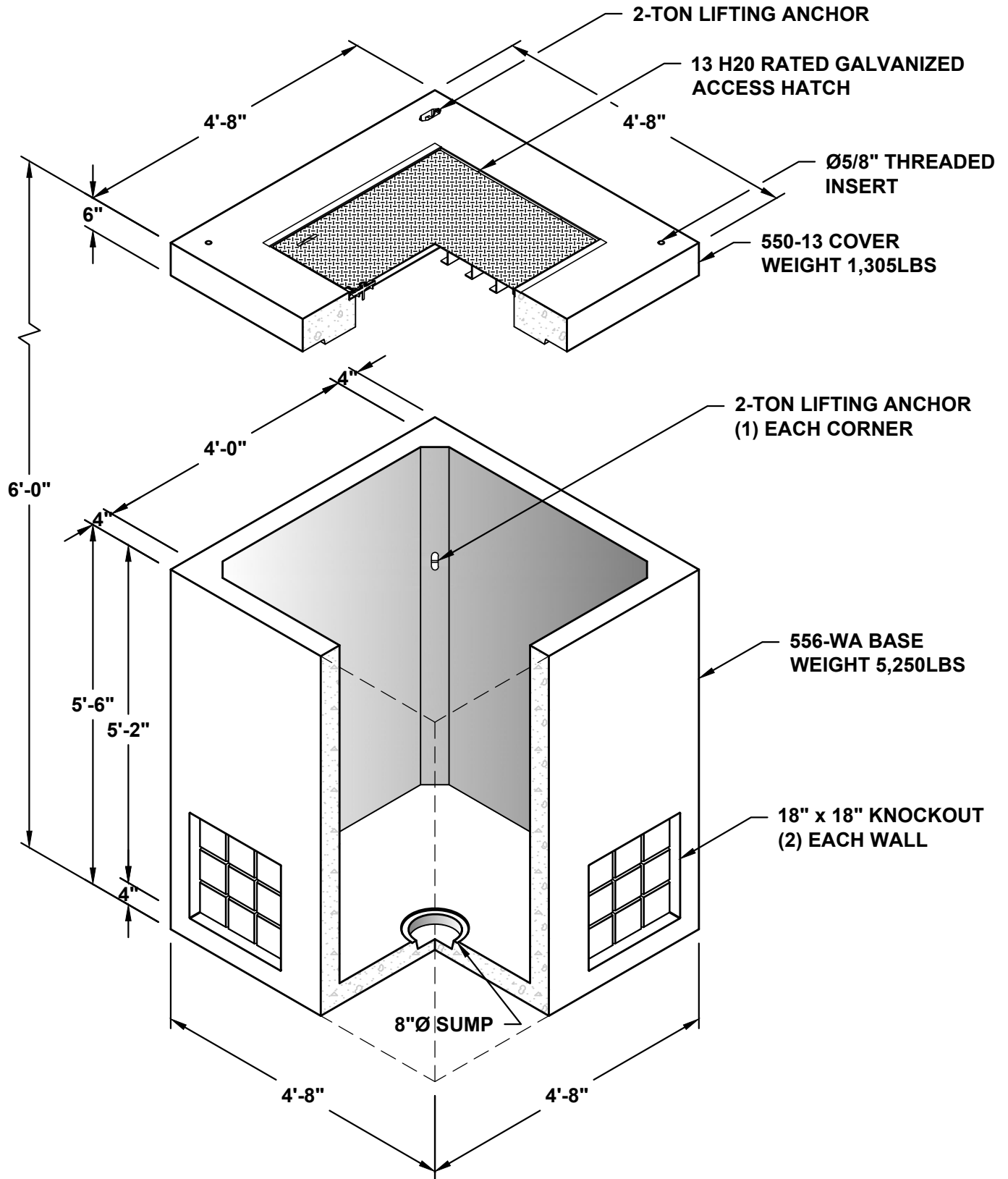
556 LA-13 VAULT



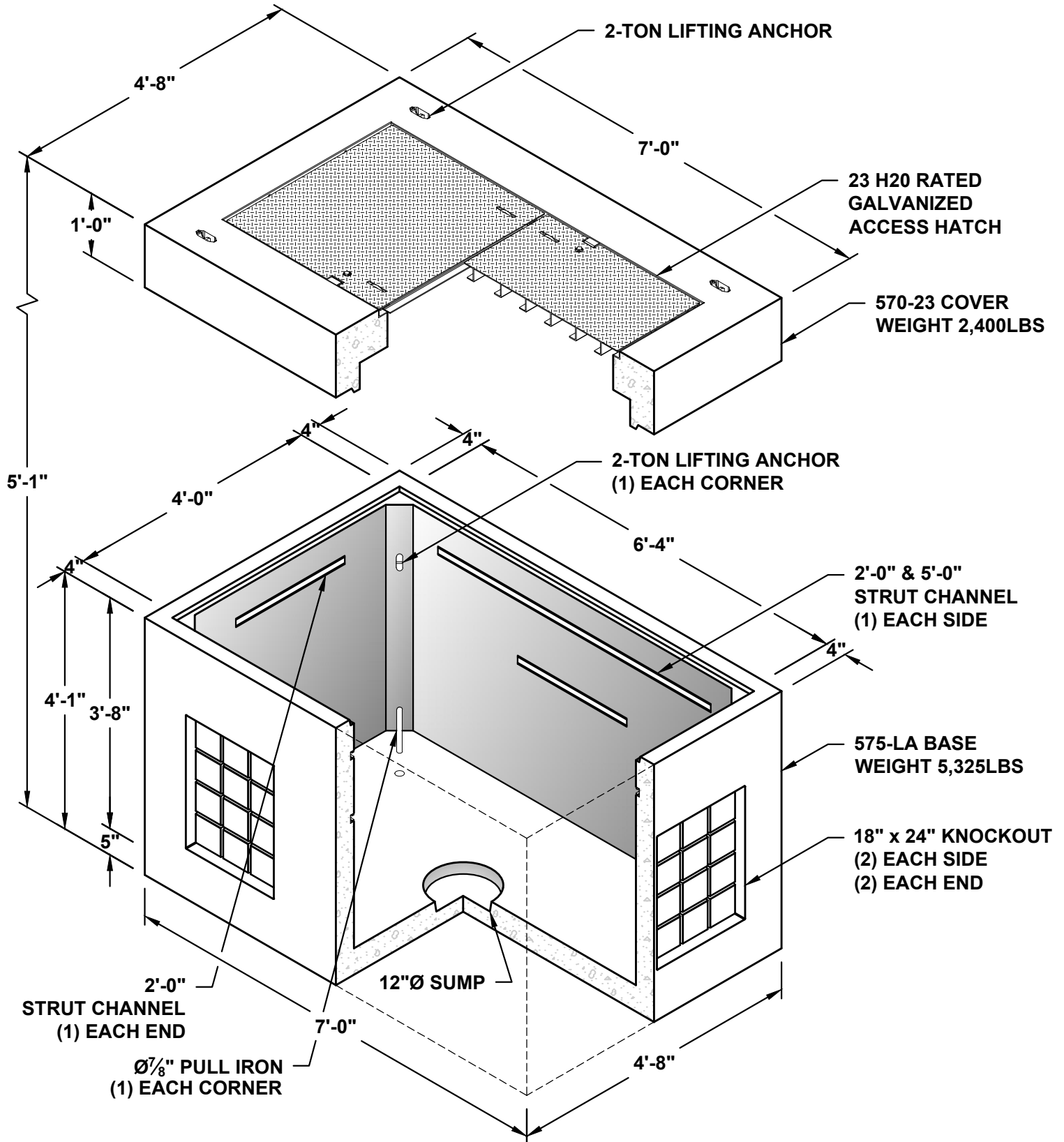
556 SOLID-13 VAULT



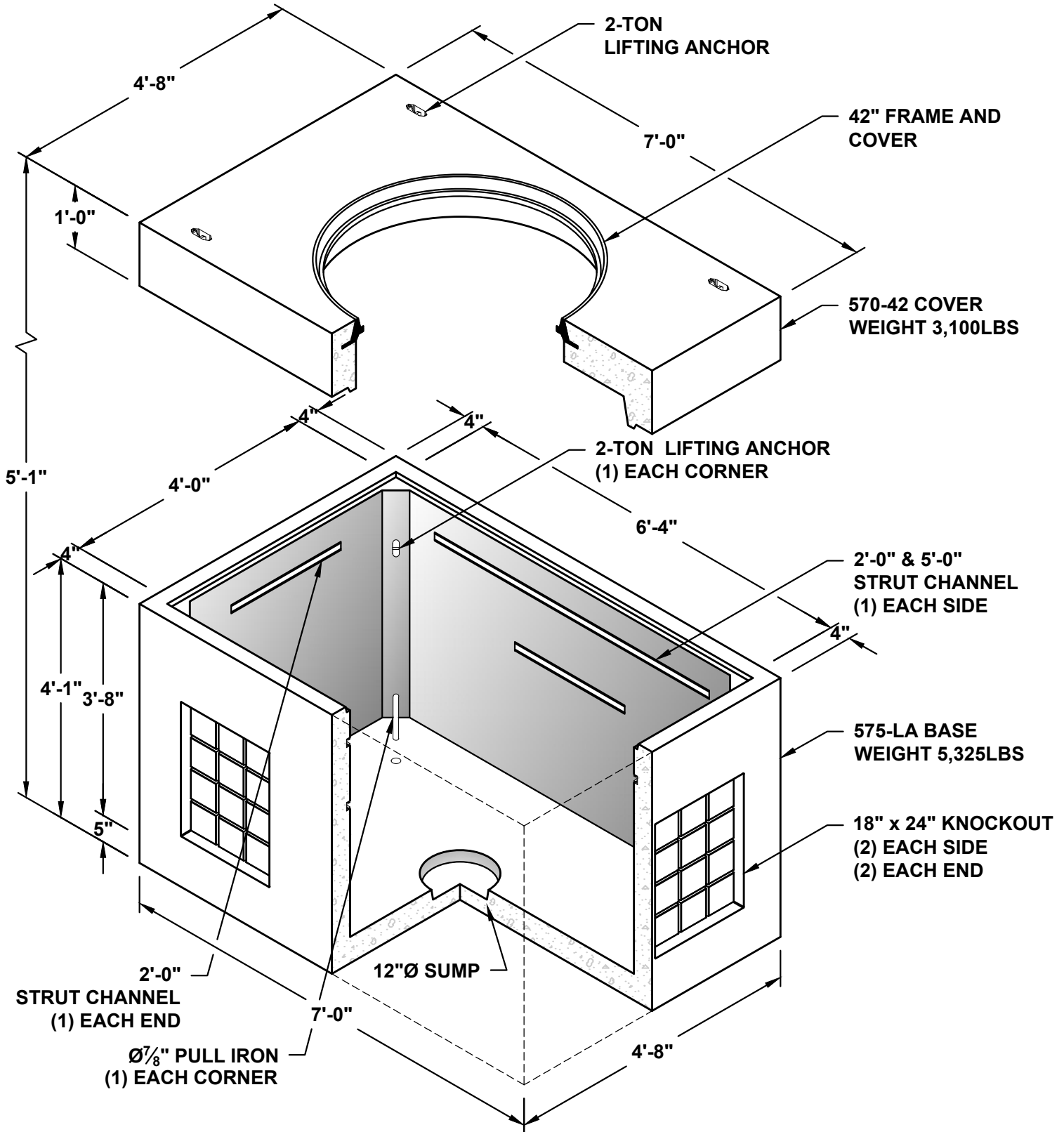
556 WA-13 VAULT



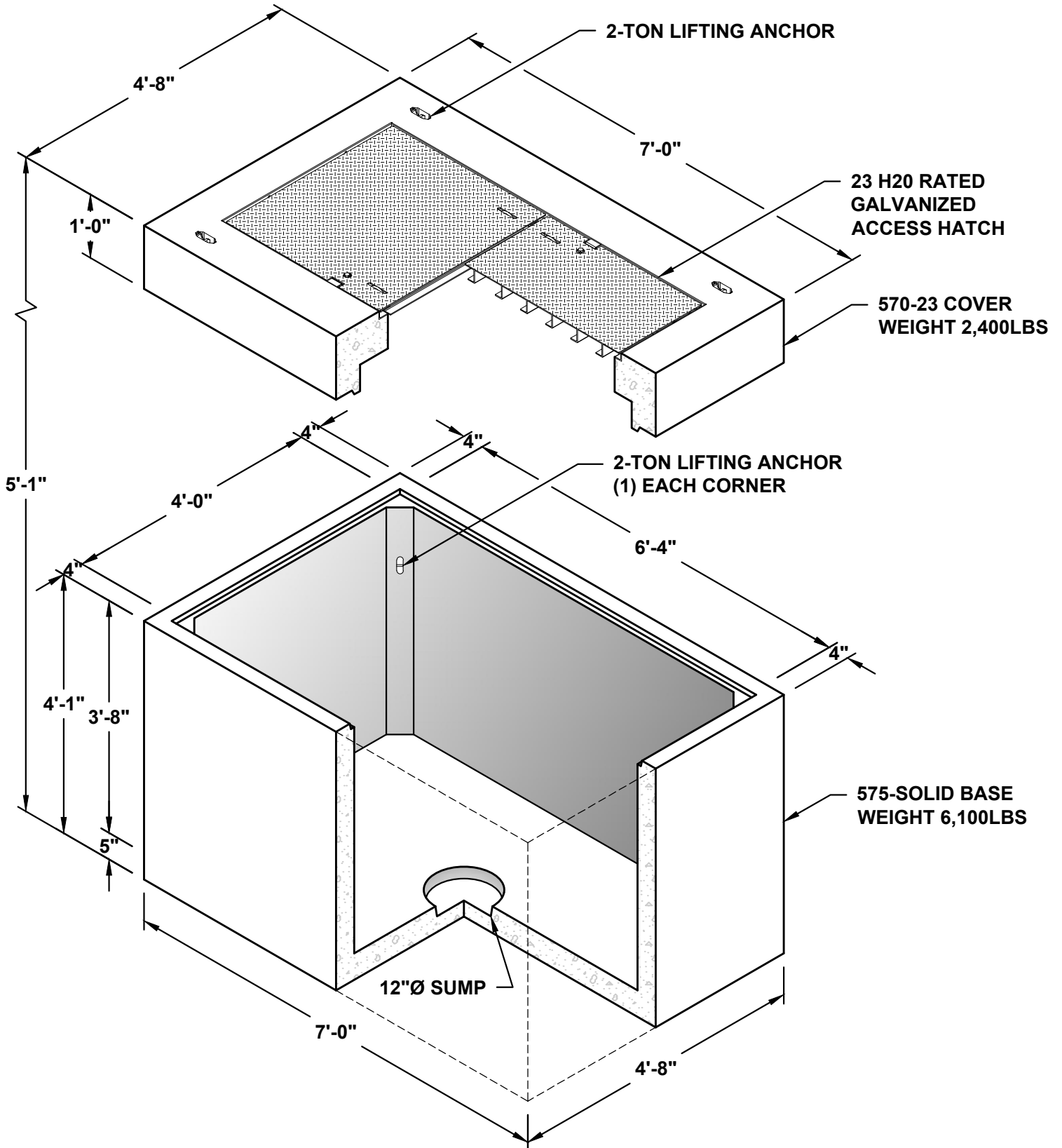
575 LA-23 VAULT



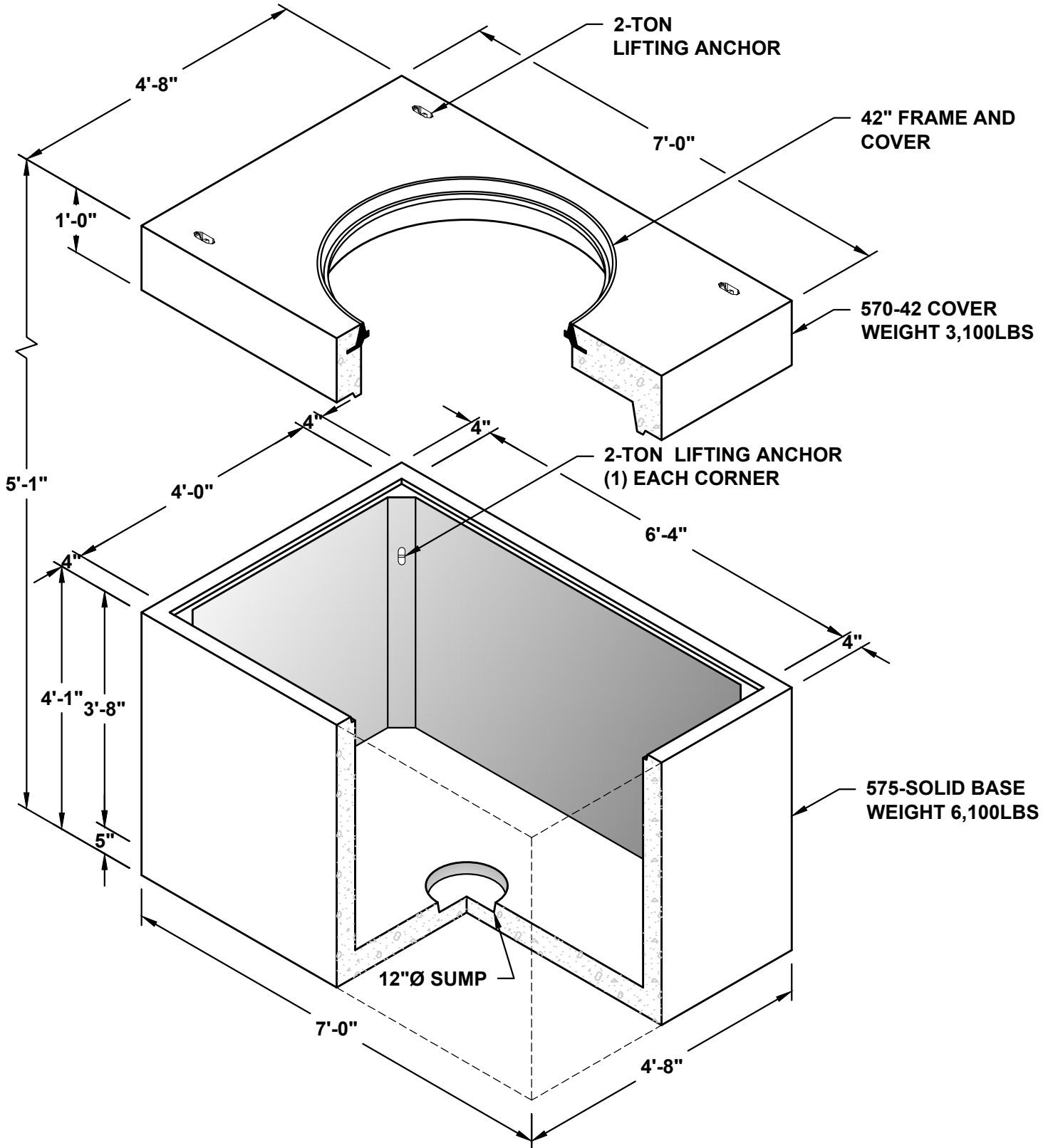
575 LA-42 VAULT



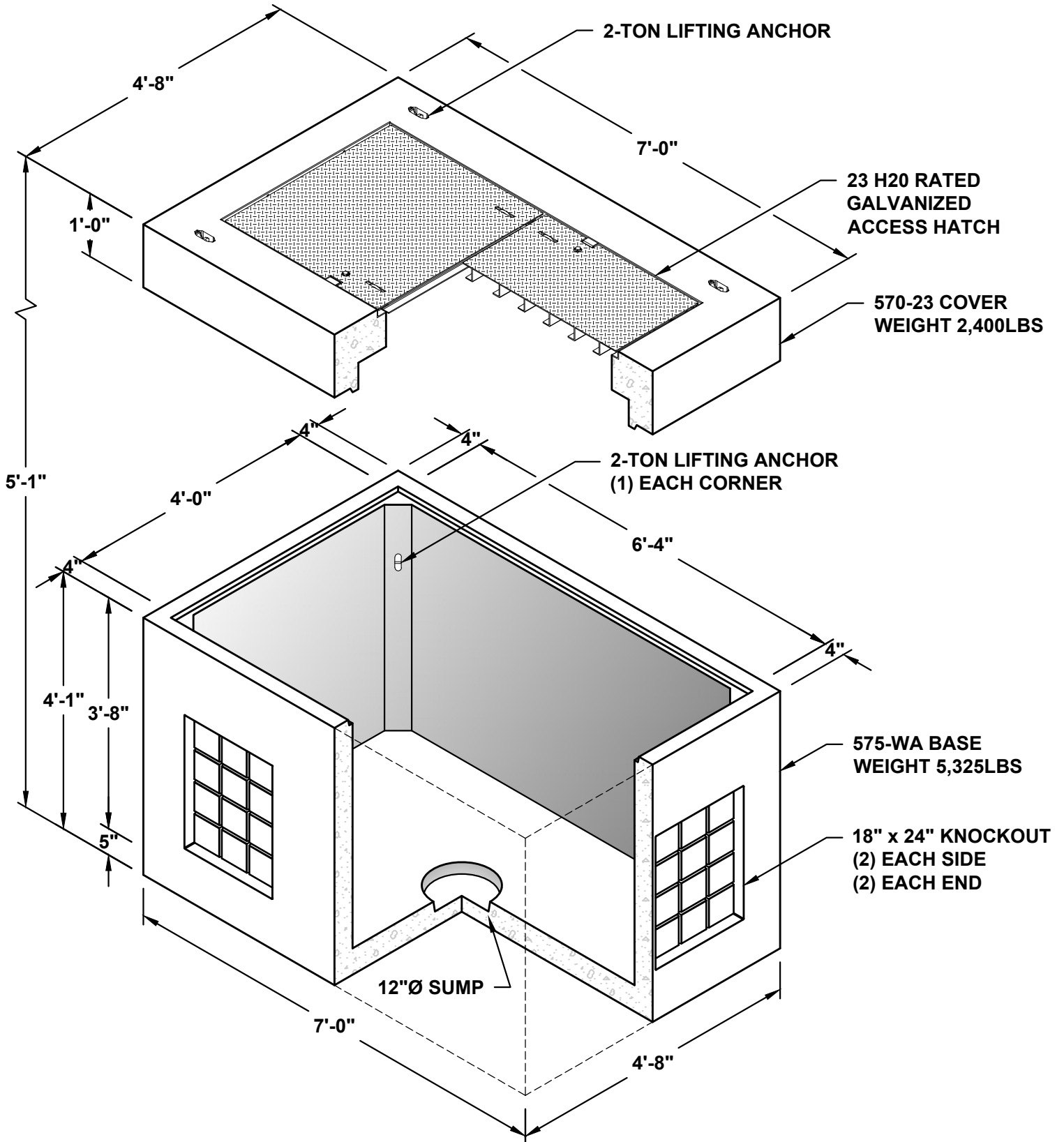
575 SOLID-23 VAULT



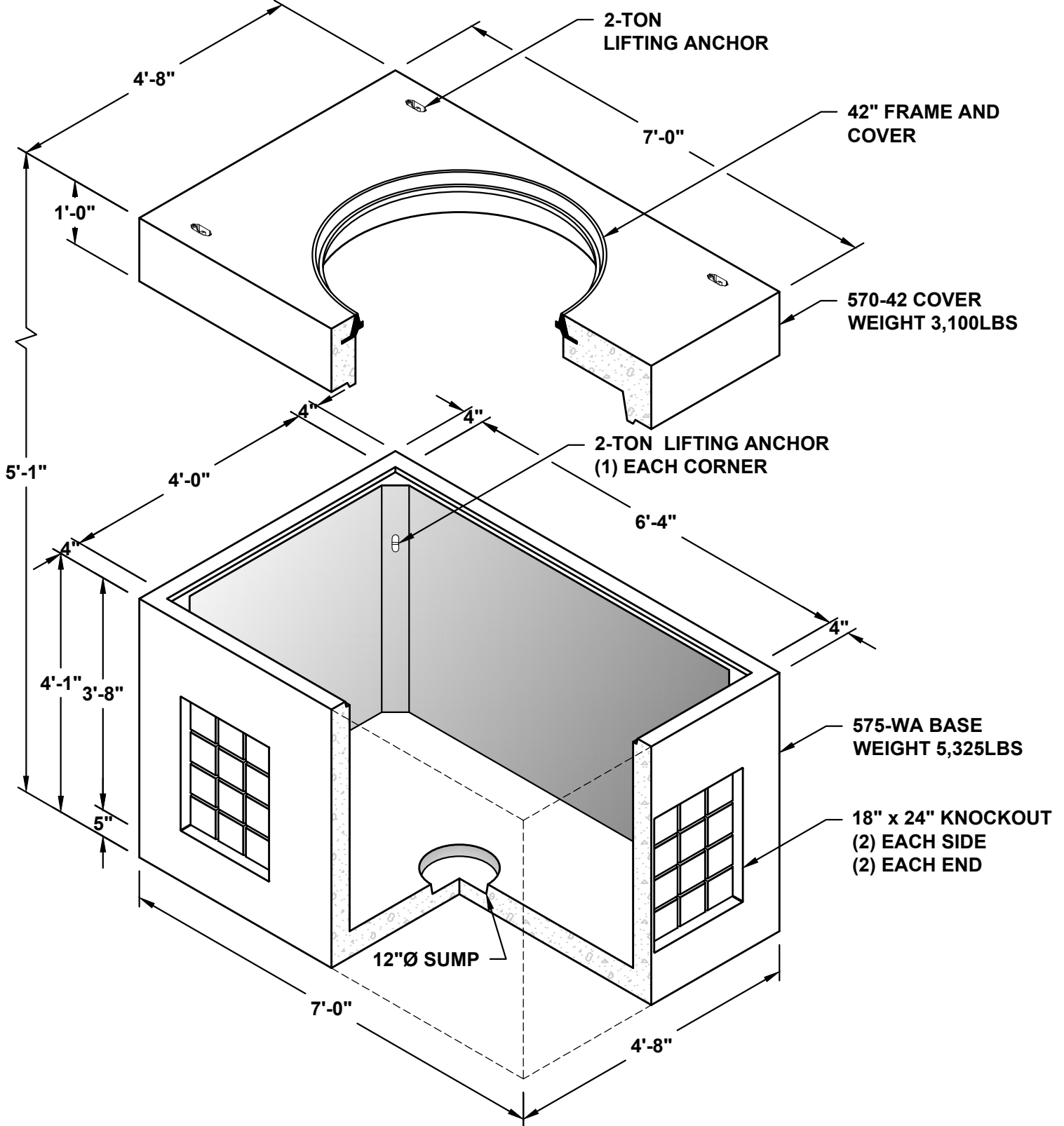
575 SOLID-42 VAULT



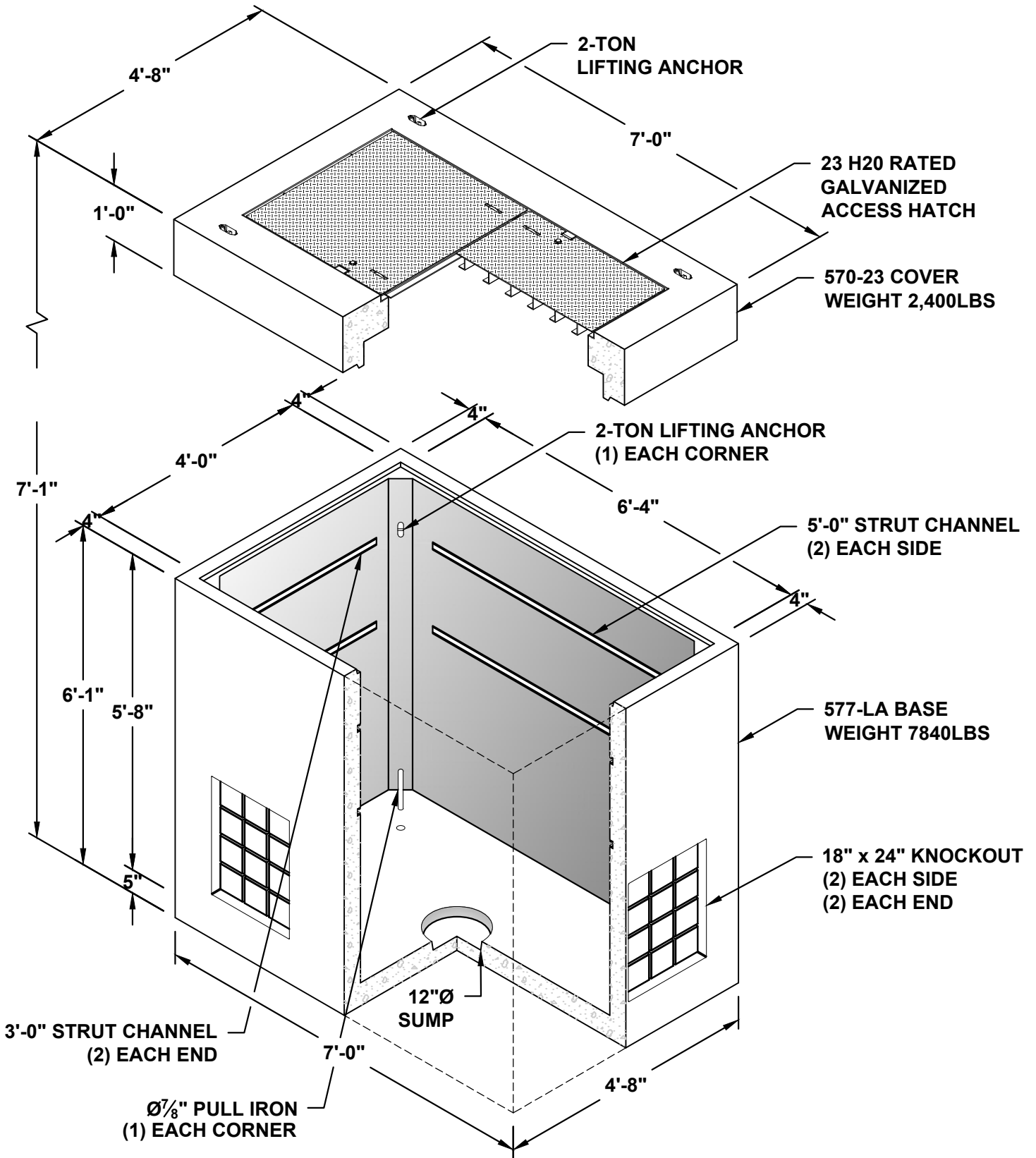
575 WA-23 VAULT



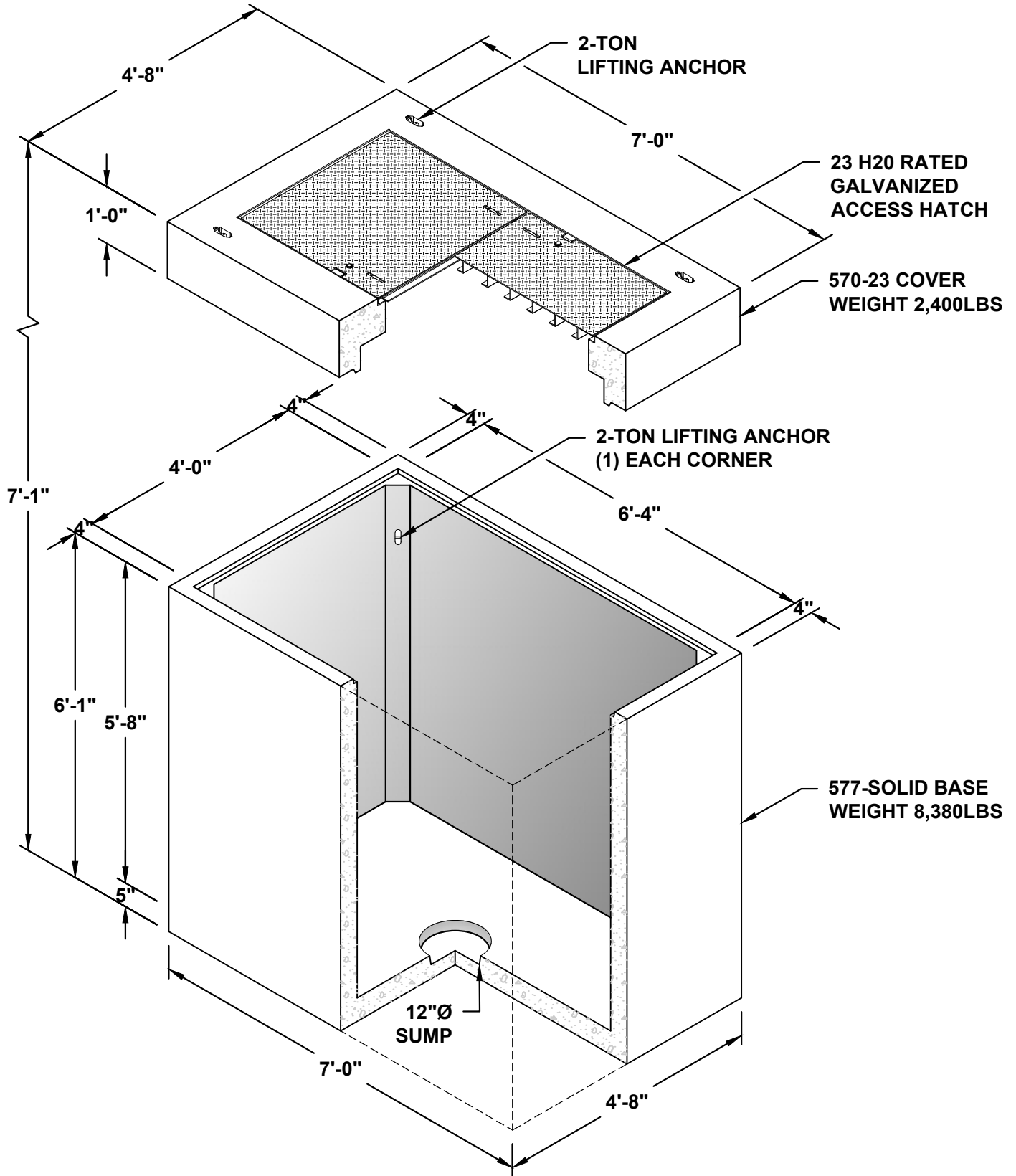
575 WA-42 VAULT



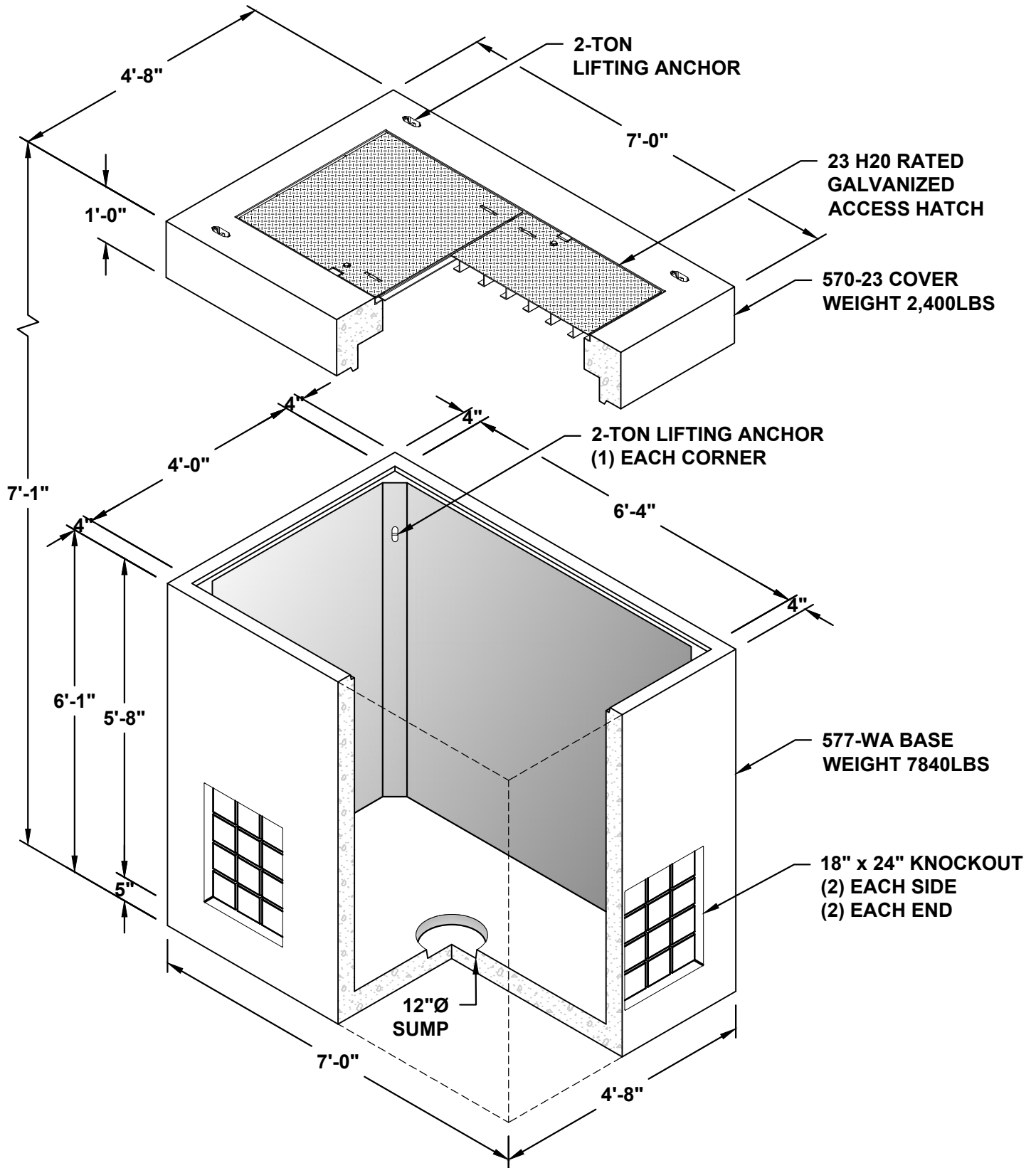
577 LA-23 VAULT



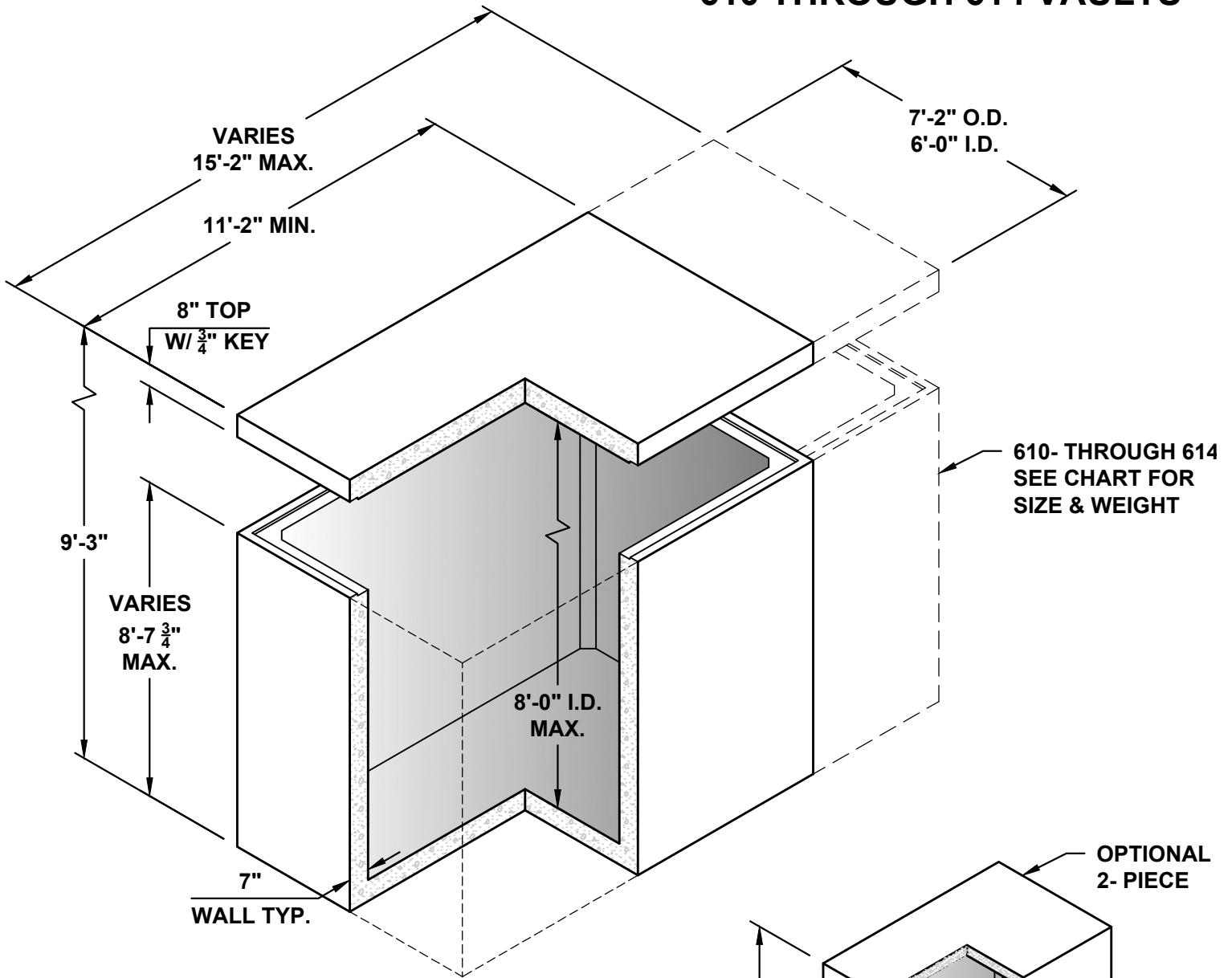
577 SOLID-23 VAULT



577 WA-23 VAULT



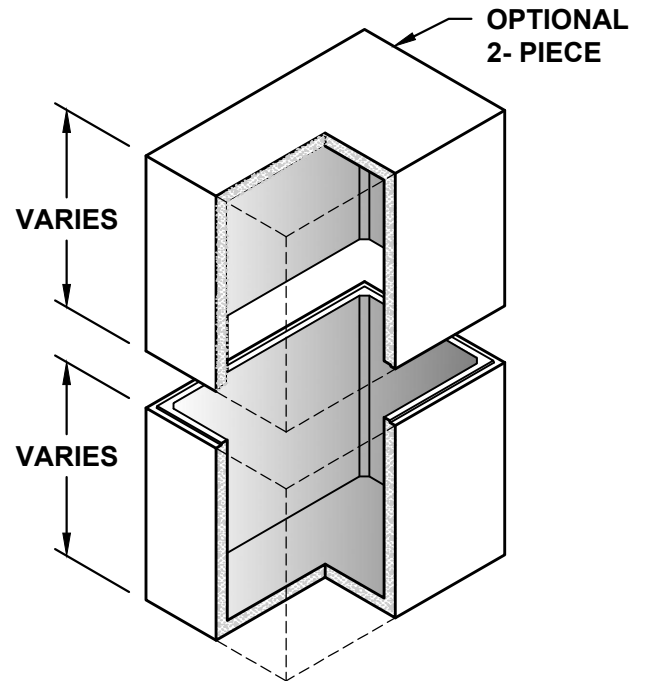
610 THROUGH 614 VAULTS



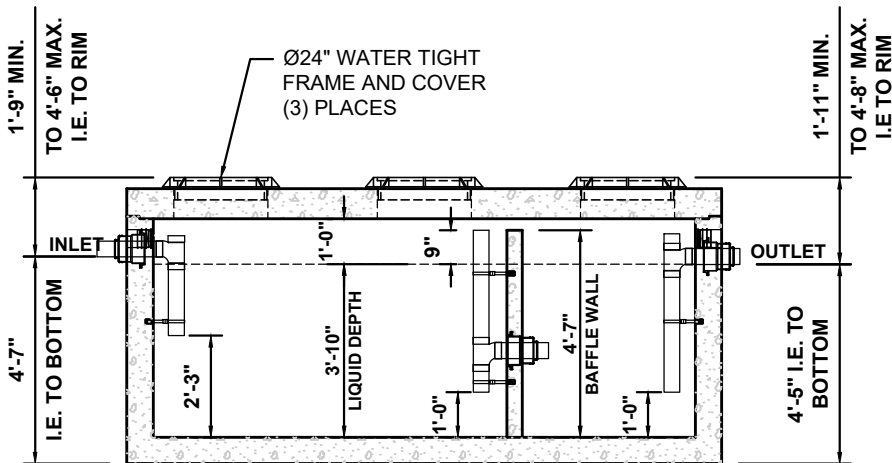
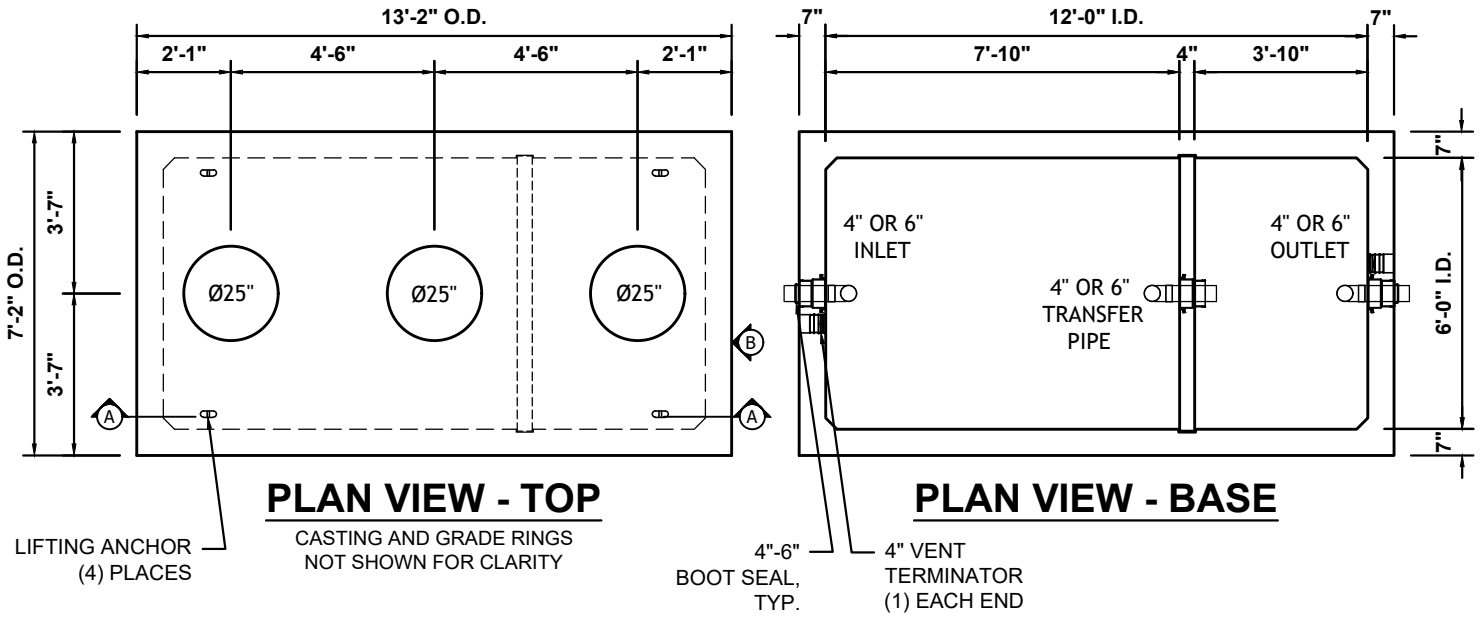
610 THROUGH 614 IN 2FT. INCREMENTS					
VAULT	WIDTH I.D.	LENGTH I.D.	HEIGHT I.D.	TOP WEIGHT	BASE WEIGHT
610	6'-0"	10'-0"	8'-0"	7,920 LBS	31,270 LBS
612	6'-0"	12'-0"	8'-0"	9,340 LBS	35,320 LBS
614	6'-0"	14'-0"	8'-0"	10,750 LBS	39,380 LBS

NOTE:
WEIGHTS BASED ON 7"
FLOOR AND 8" TOP SLAB

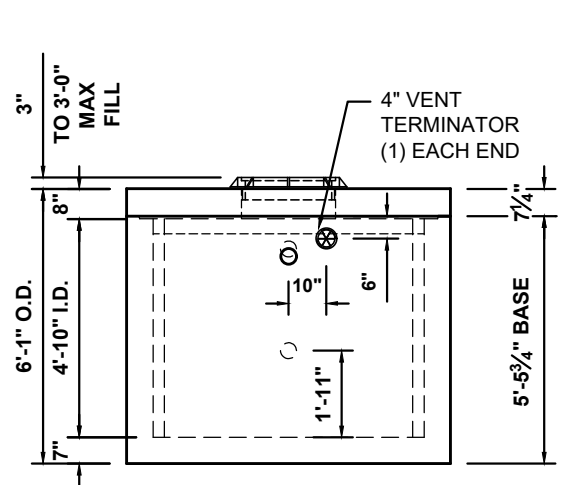
NOTE:
HEIGHT OF BASE AND TOP ADJUSTABLE, 8'-0" I.D. MAX EACH SECTION, BASE FLOOR AND TOP DECK THICKNESS AS REQUIRED.
OPTIONAL TOP ACCESS, MANHOLE FRAME & COVERS, AND HATCHES AS NEEDED.
VARIOUS SIZES AVAILABLE.
OPTIONAL ACCESSORIES: STRUT CHANNEL, SUMPS, INSERTS, LADDERS, ETC.



2000 GALLON GREASE INTERCEPTOR (612)



SECTION A-A



VIEW-B

PIPE AND FITTINGS NOT SHOWN FOR CLARITY

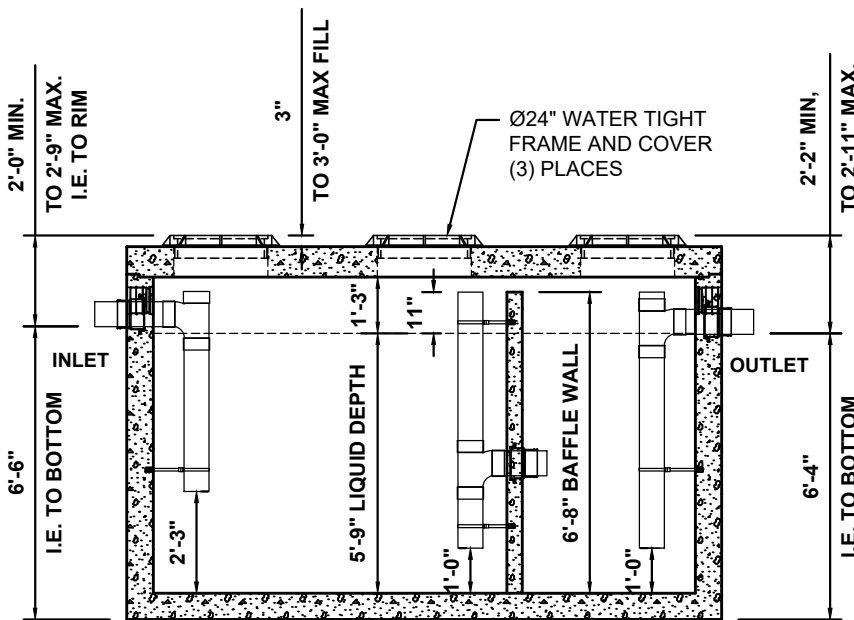
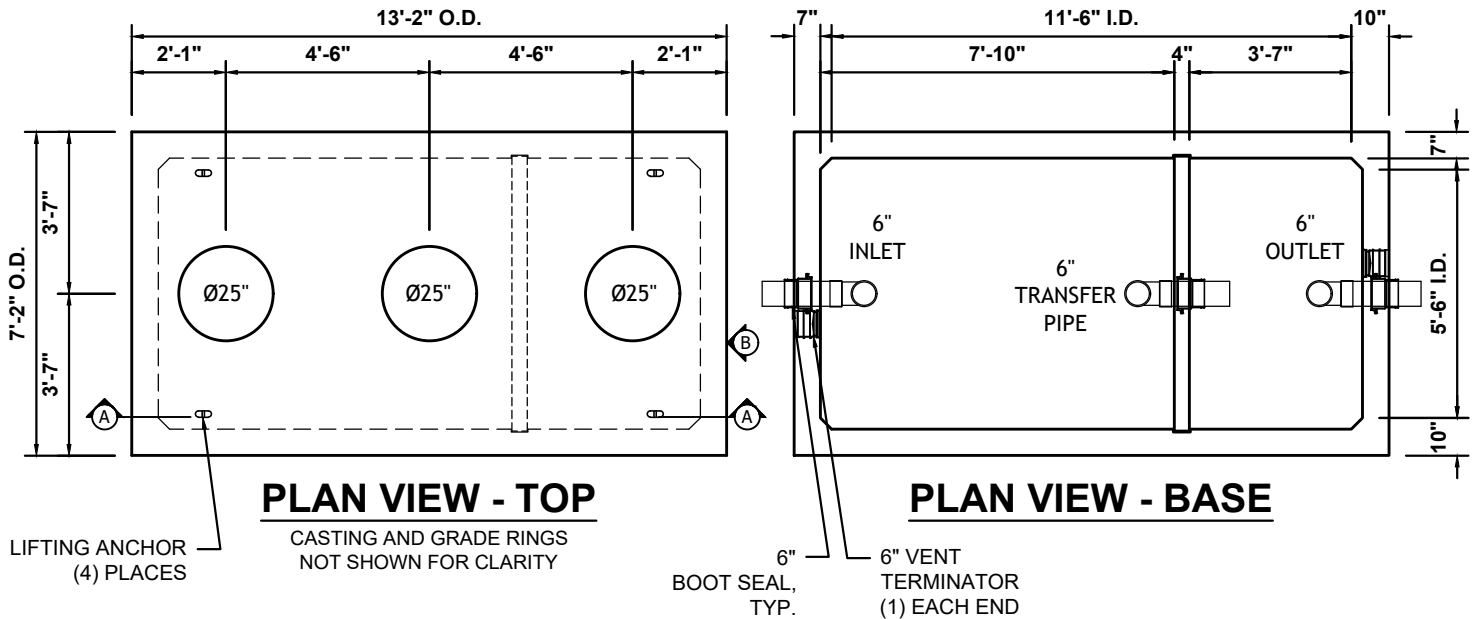
NOTES:

- Maximum DFU's = 216 for 2,000 gallon size Interceptor.
- Heaviest pick weight = approx. 25,940lbs.
- Vault meets or exceeds ASTM-C1613 & IAPMO/ANSI Z1001.
- H20 Traffic Rated.
- Fill completely with clean water prior to start-up of system.
- Gray water only.
- Ventilate Interceptor before servicing.
- It is the responsibility of the owner to service this unit.
- Interior plumbing included.
- Grade rings available as needed.

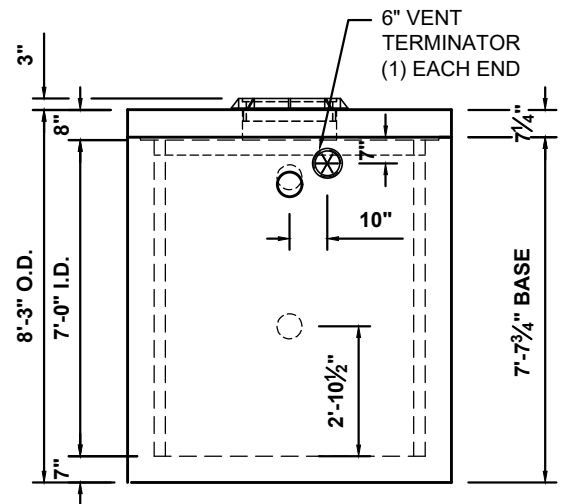


"IAPMO Listed"

3000 GALLON GREASE INTERCEPTOR (612)



SECTION A-A



VIEW-B

PIPE AND FITTINGS NOT SHOWN FOR CLARITY

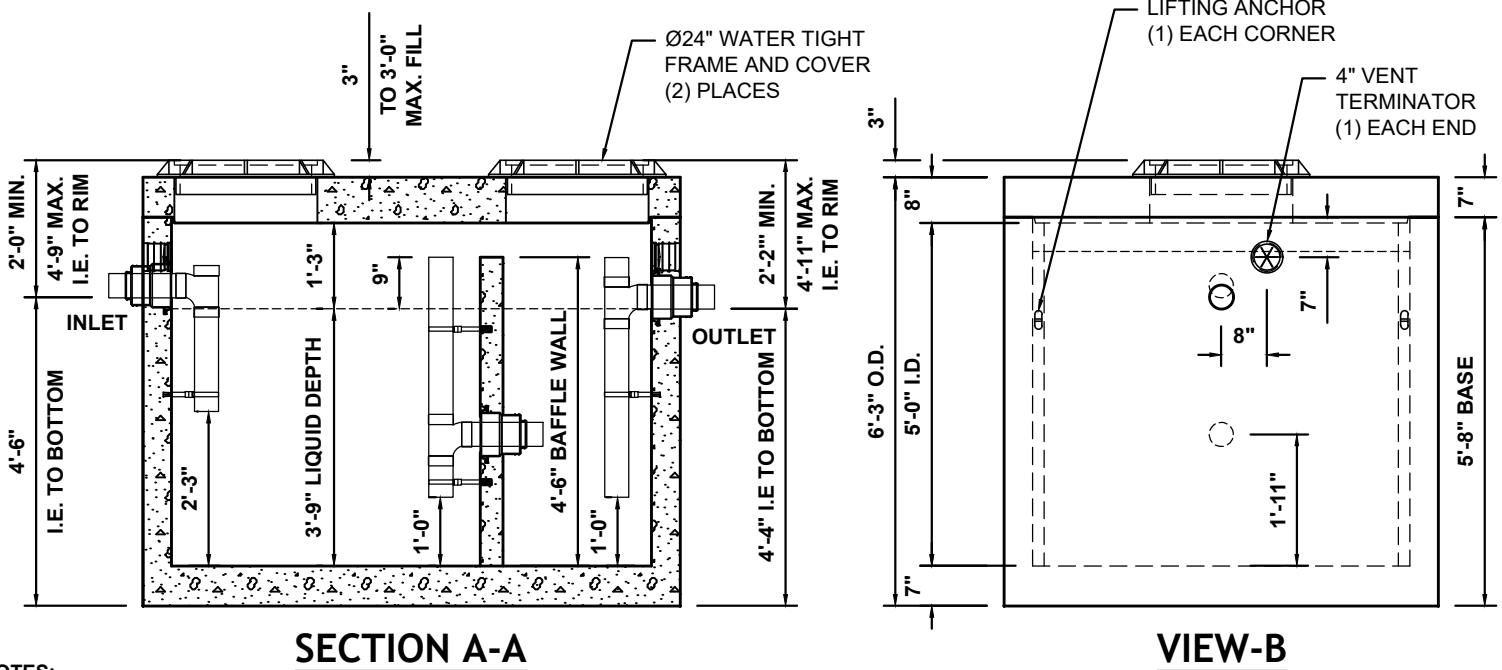
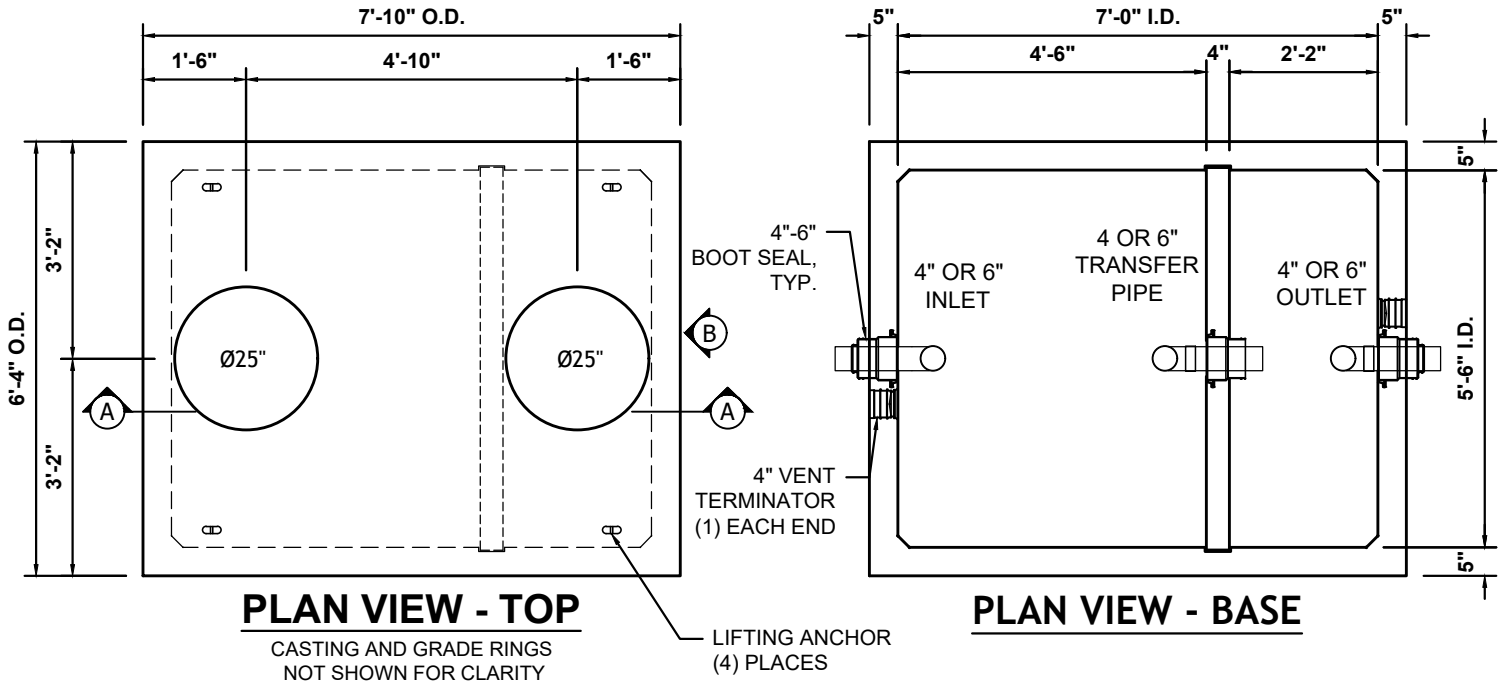
NOTES:

- Maximum DFU's = 372 for 3,000 gallon size Interceptor.
- Heaviest pick weight = approx. 33,820lbs.
- Vault meets or exceeds ASTM-C1613 & IAPMO/ANSI Z1001.
- H20 Traffic Rated.
- Fill completely with clean water prior to start-up of system.
- Gray water only.
- Ventilate Interceptor before servicing.
- It is the responsibility of the owner to service this unit.
- Interior plumbing included.
- Grade rings available as needed.



"IAPMO Listed"

1000 GALLON GREASE INTERCEPTOR (675)



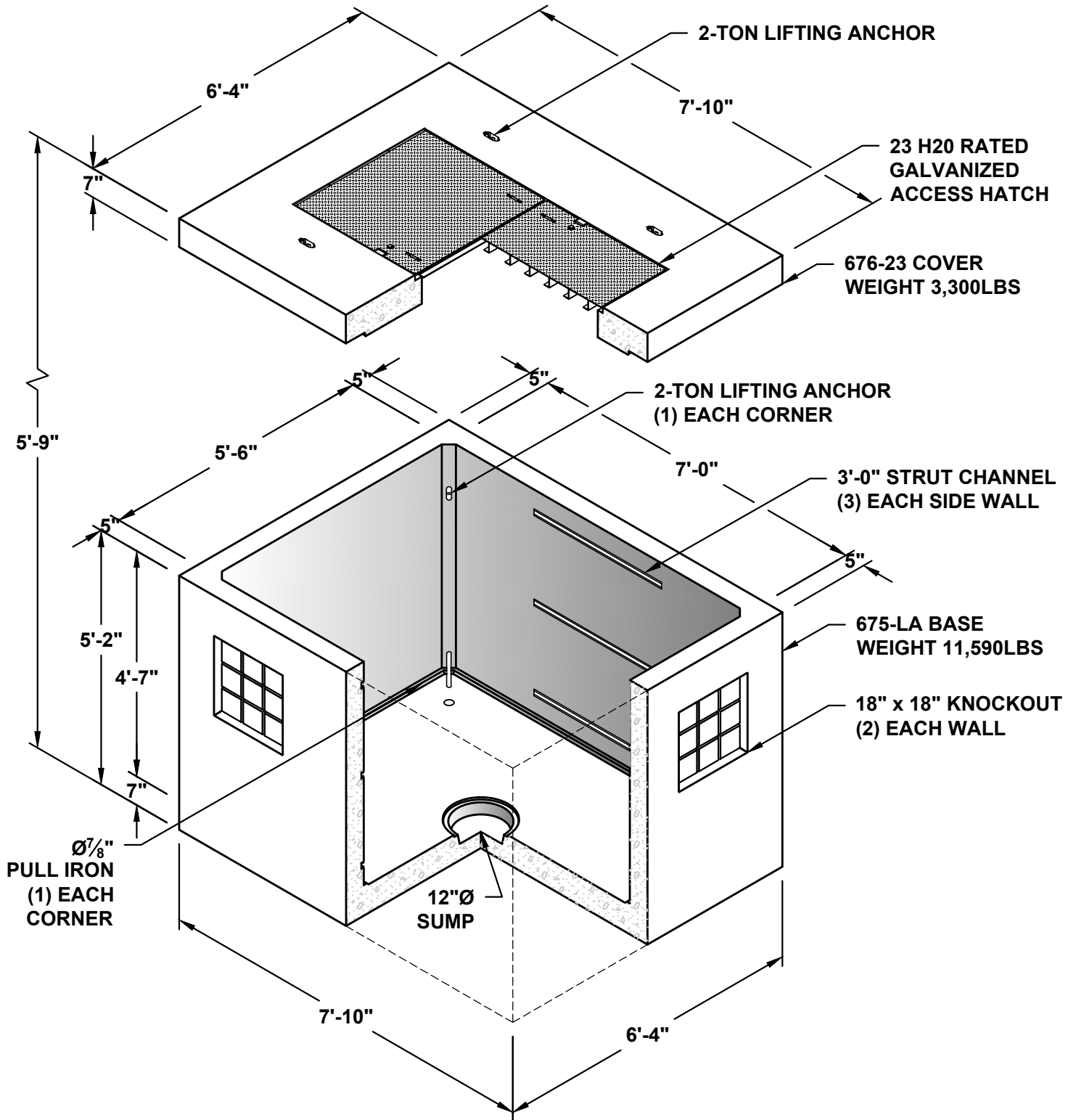
NOTES:

- Maximum DFU's = 35 for 1,000 gallon size Interceptor.
- Heaviest pick weight = approx. 14,075lbs.
- Vault meets or exceeds ASTM-C1613 & IAPMO/ANSI Z1001.
- H20 Traffic Rated.
- Fill completely with clean water prior to start-up of system.
- Gray water only.
- Ventilate Interceptor before servicing.
- It is the responsibility of the owner to service this unit.
- Interior plumbing included.
- Grade rings available as needed.

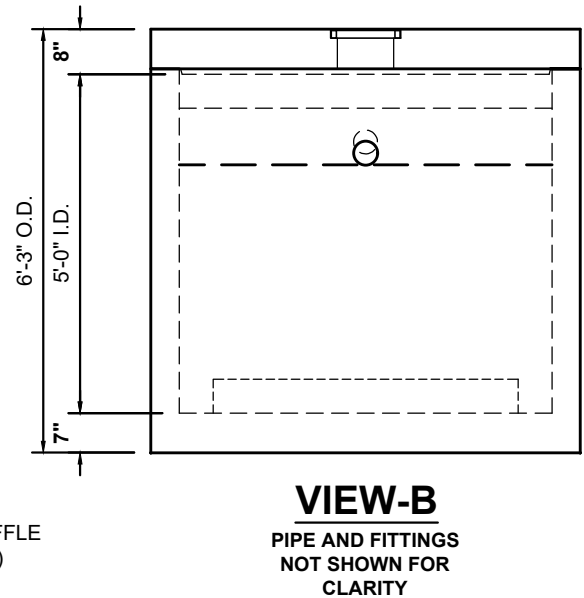
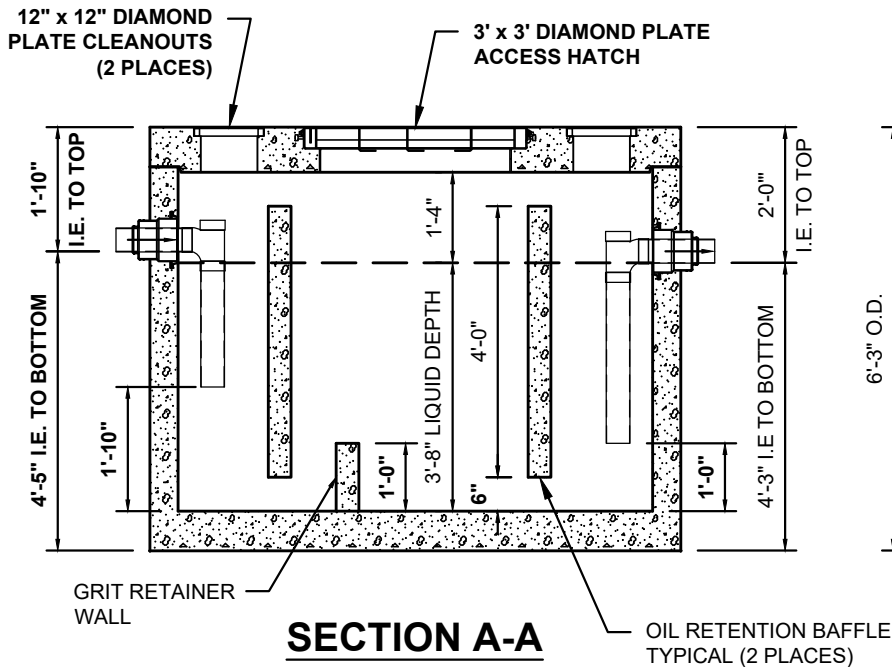
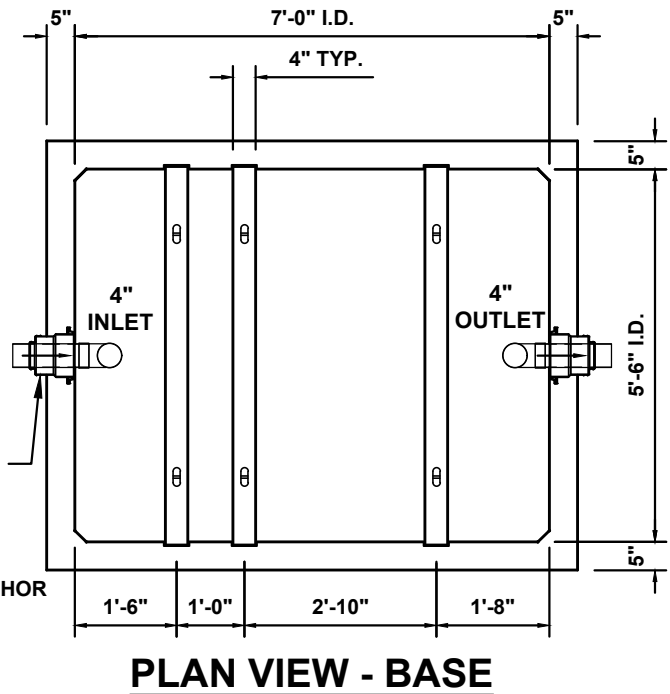
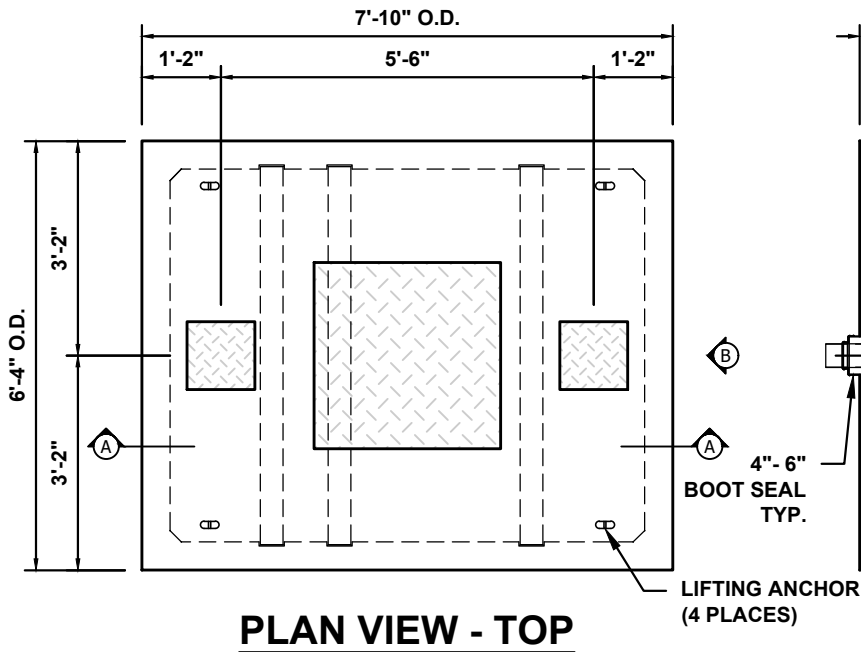


"IAPMO Listed"

675 LA-23 VAULT



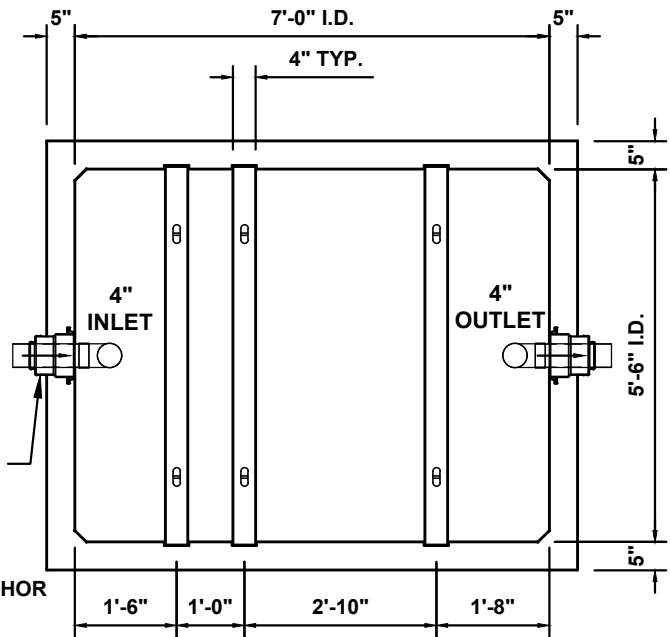
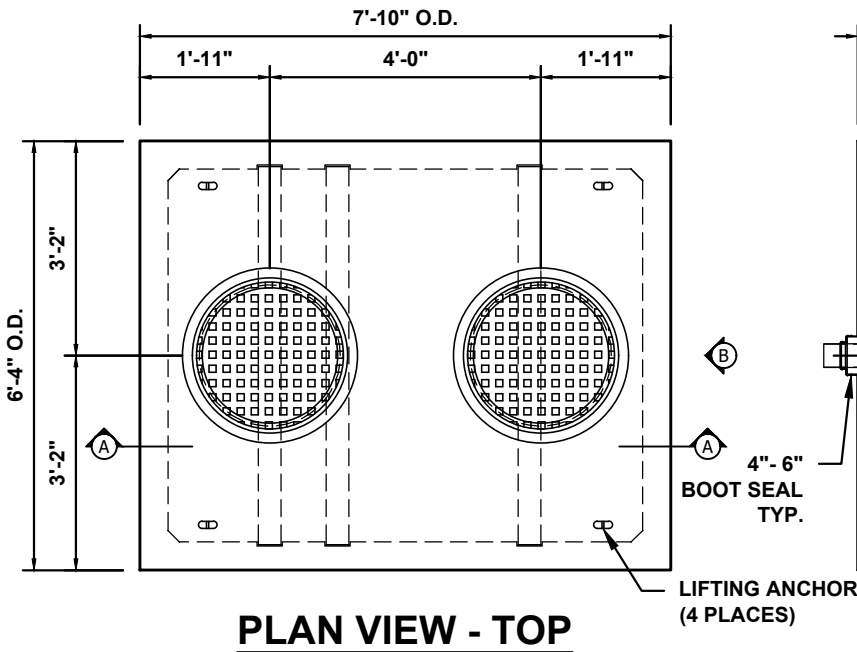
1000 OIL WATER SEPARATOR (675)



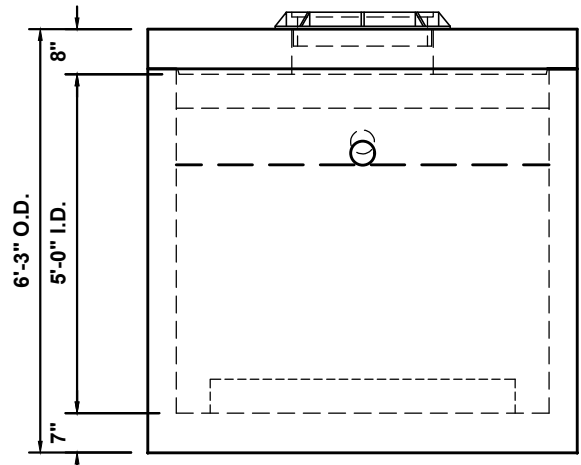
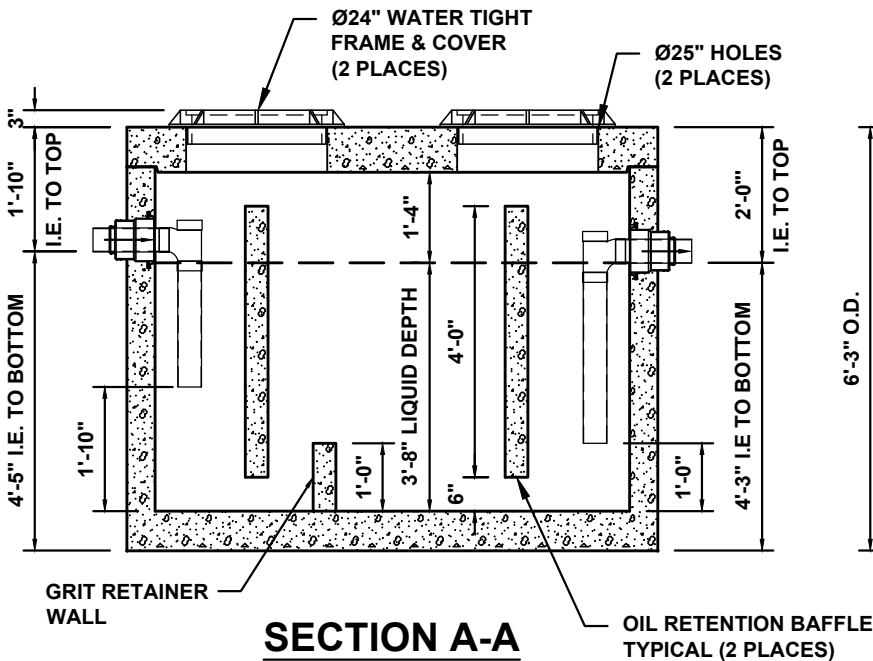
NOTES:

1. HEAVIEST PICK WEIGHT = APPROX. 13,600LBS.
2. VAULT MEETS OR EXCEEDS ASTM-C857 & H20-44.
3. 33.6 GPM FLOW RATE AT 30 MINUTE RETENTION.
4. 288 GALLONS PER VERTICAL FOOT.
5. 1,000 GALLON CAPACITY AT 3'-8" LIQUID DEPTH.
6. IT IS THE RESPONSIBILITY OF THE OWNER TO SERVICE THIS UNIT.

1000 OIL WATER SEPARATOR (675)



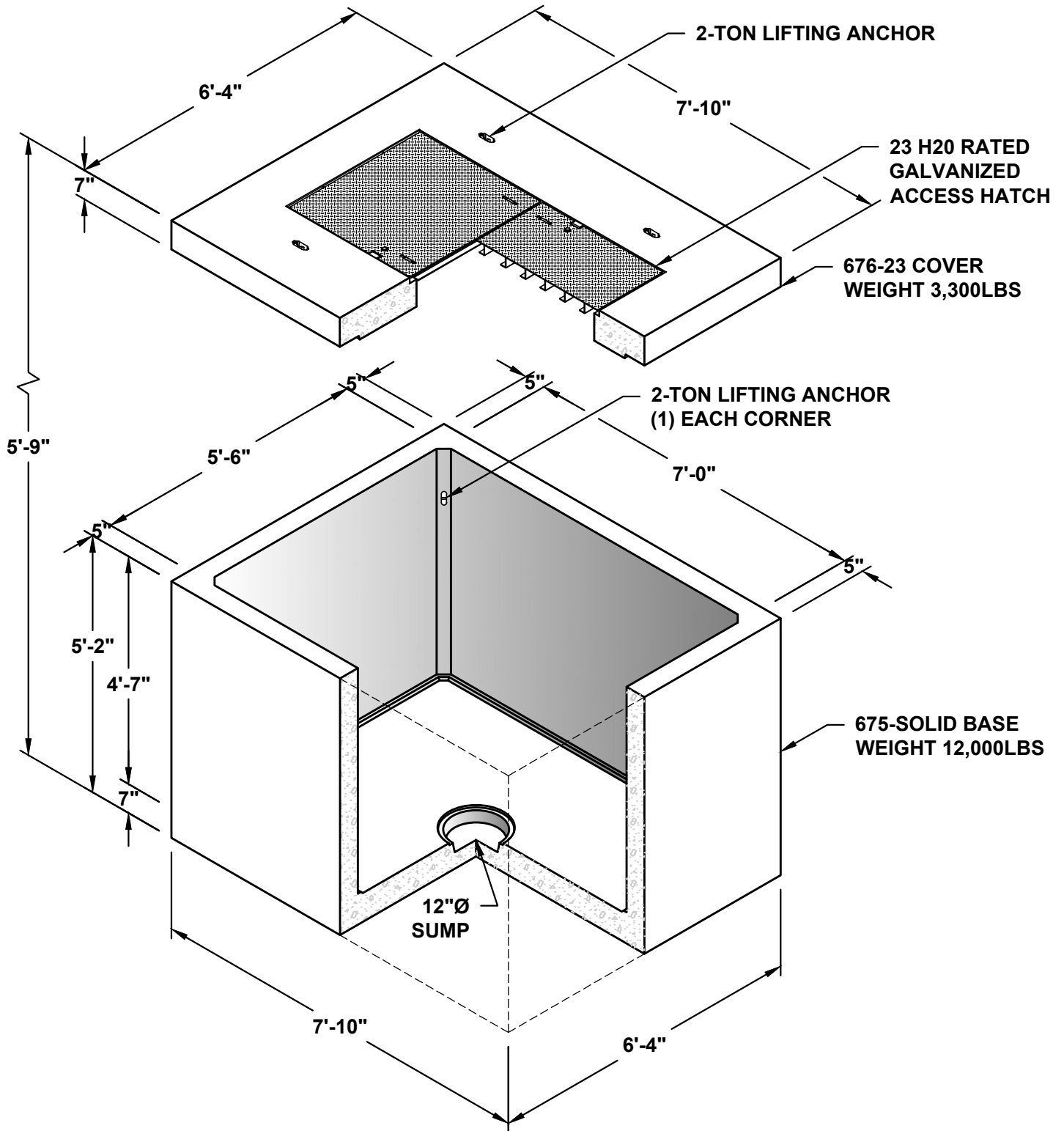
2", 3", 4" AND 6"
GRADE RINGS
AVAILABLE AS NEEDED



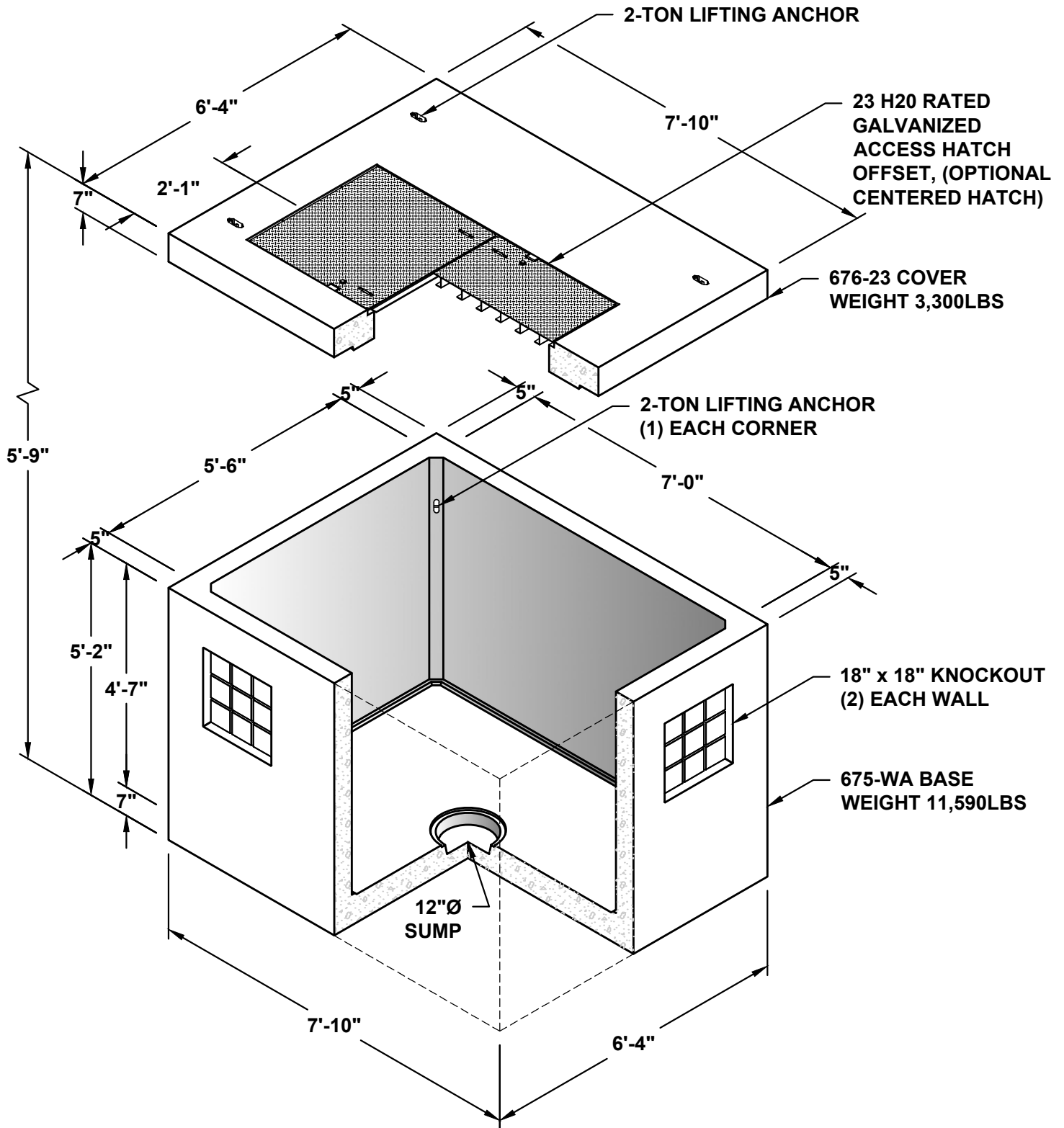
VIEW-B
PIPE AND FITTINGS
NOT SHOWN FOR
CLARITY

- NOTES:**
1. HEAVIEST PICK WEIGHT = APPROX. 13,600LBS.
 2. VAULT MEETS OR EXCEEDS ASTM-C857 & H20-44.
 3. 33.6 GPM FLOW RATE AT 30 MINUTE RETENTION.
 4. 288 GALLONS PER VERTICAL FOOT.
 5. 1,000 GALLON CAPACITY AT 3'-8" LIQUID DEPTH.
 6. IT IS THE RESPONSIBILITY OF THE OWNER TO SERVICE THIS UNIT.

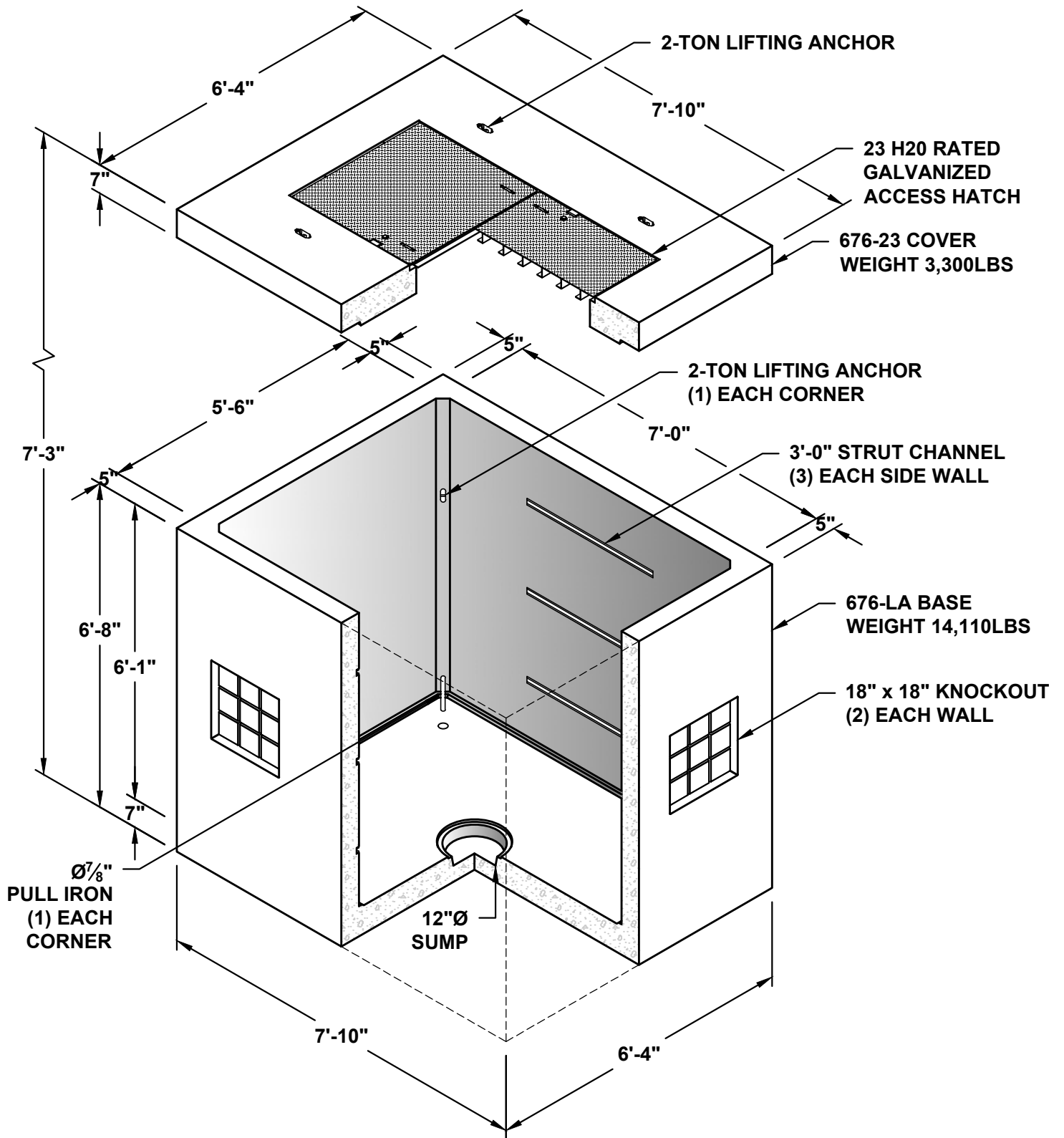
675 SOLID-23 VAULT



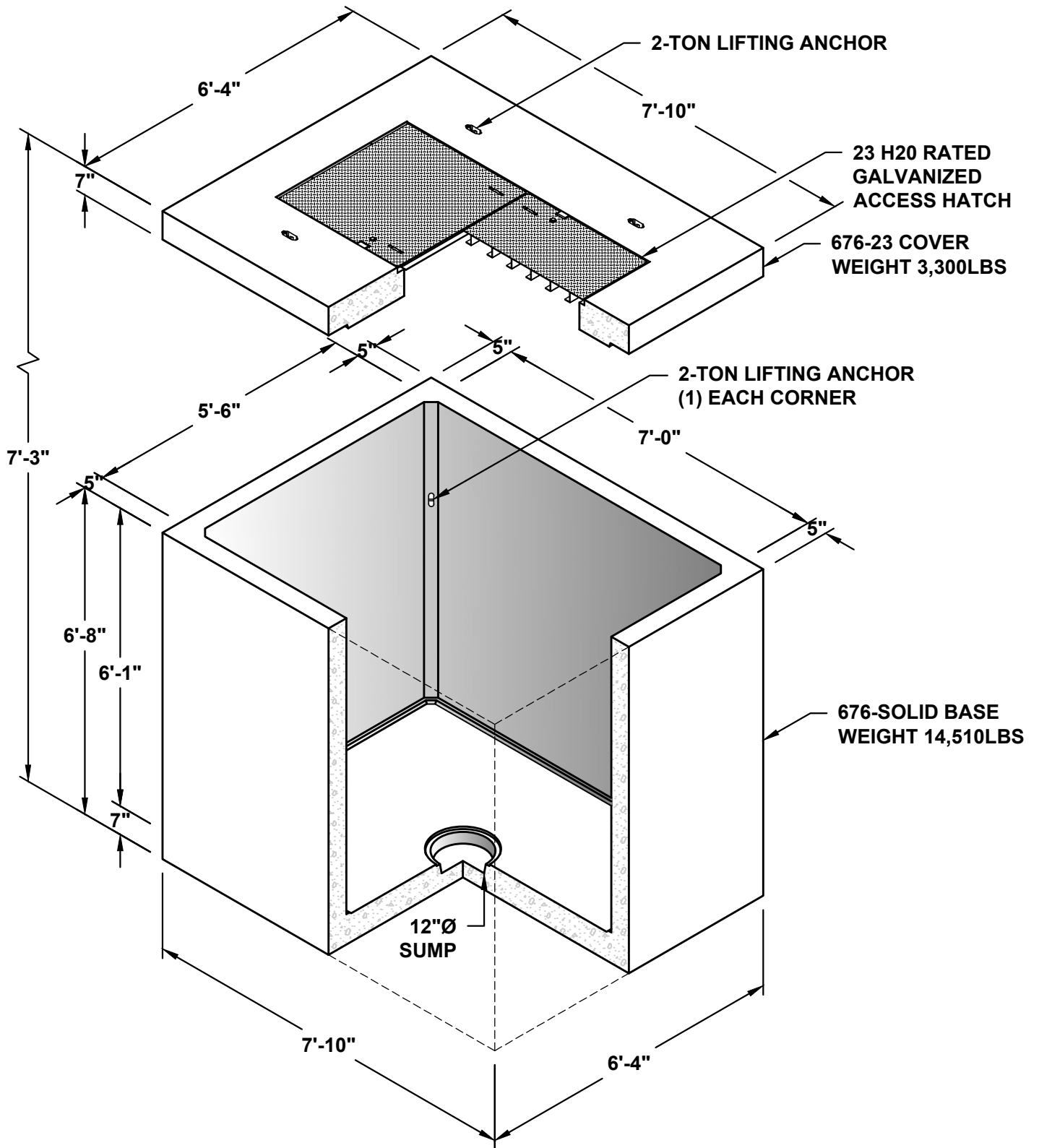
675 WA-23 VAULT



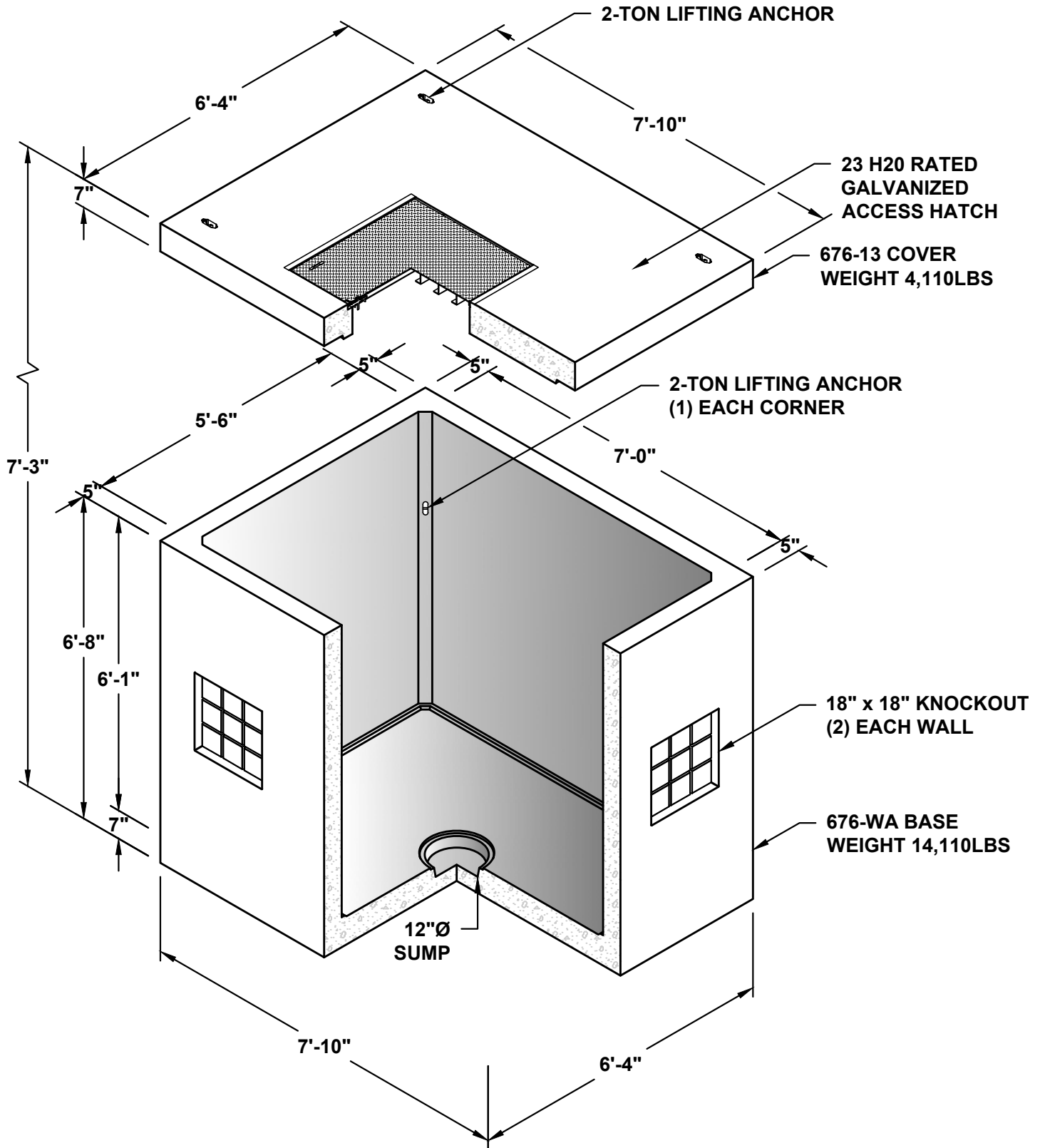
676 LA-23 VAULT



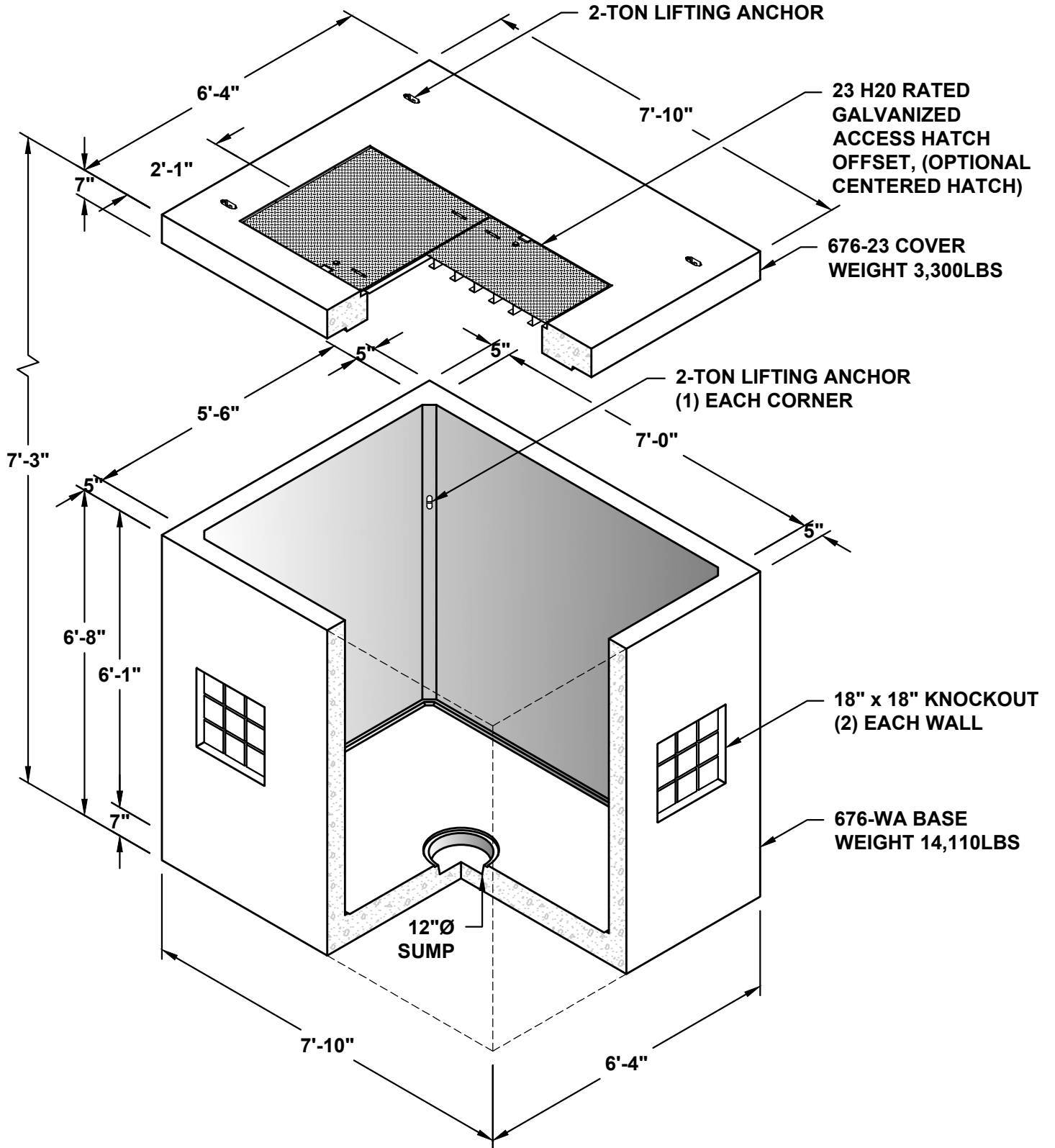
676 SOLID-23 VAULT



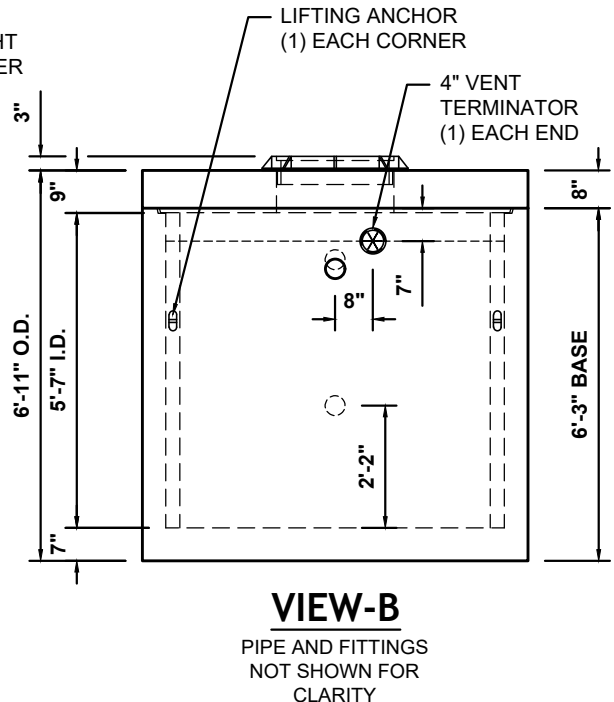
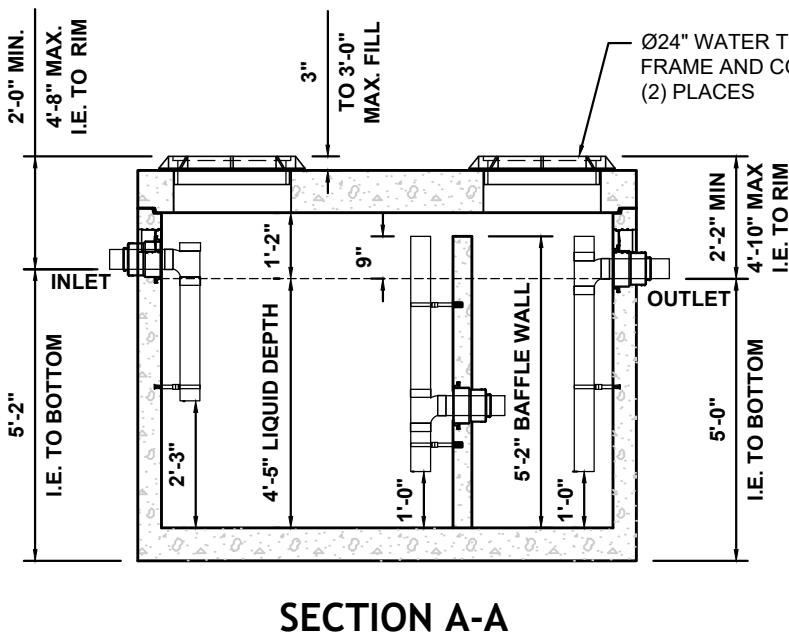
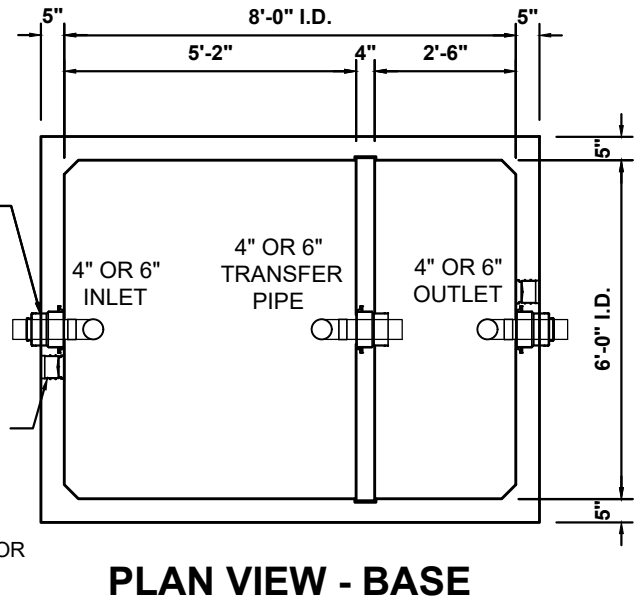
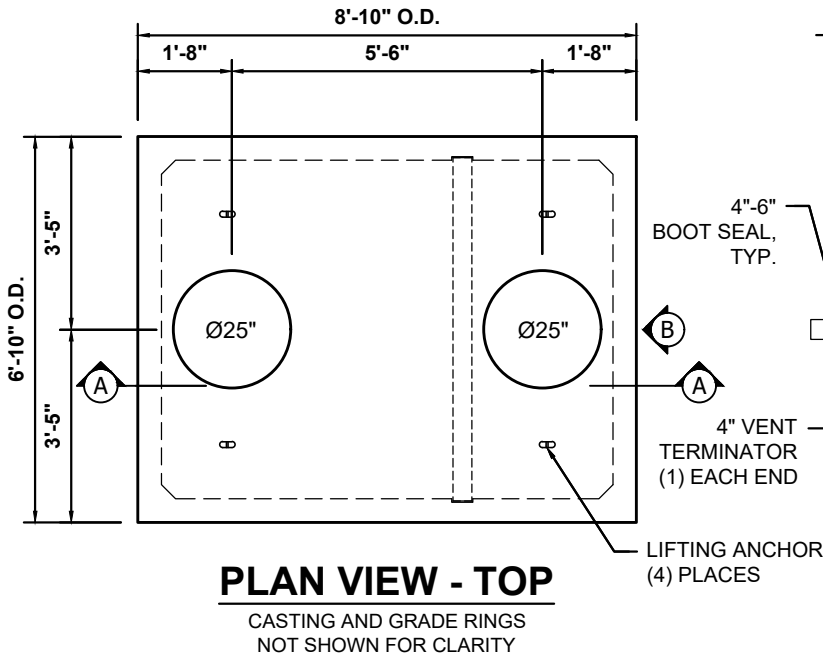
676 WA-13 VAULT



676 WA-23 VAULT



1500 GALLON GREASE INTERCEPTOR (686)



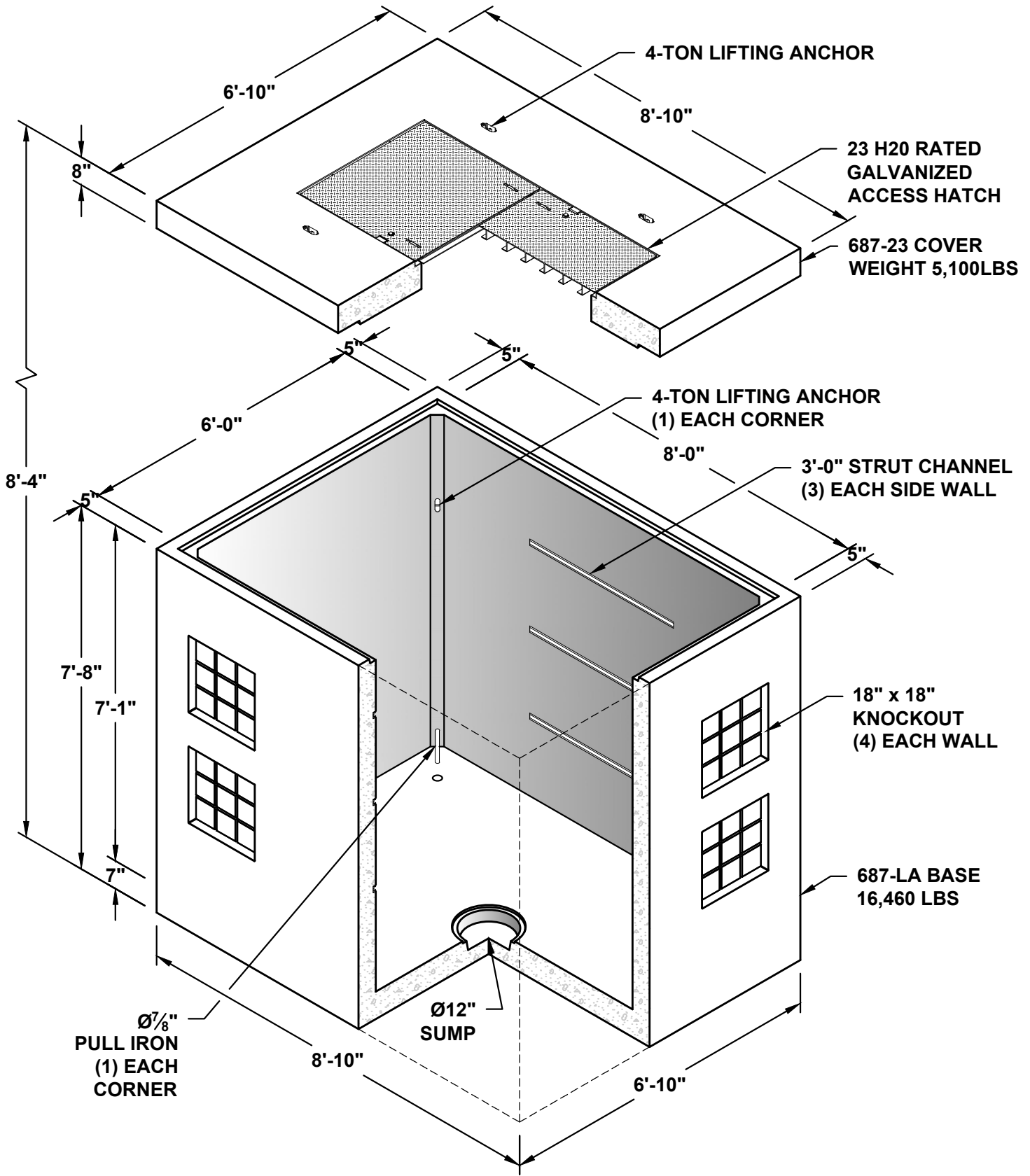
NOTES:

- Maximum DFU's = 172 for 1,500 gallon size Interceptor.
- Heaviest pick weight = approx. 17,190lbs.
- Vault meets or exceeds ASTM-C1613 & IAPMO/ANSI Z1001.
- H20 Traffic Rated.
- Fill completely with clean water prior to start-up of system.
- Gray water only.
- Ventilate Interceptor before servicing.
- It is the responsibility of the owner to service this unit.
- Interior plumbing included.
- Grade rings available as needed.

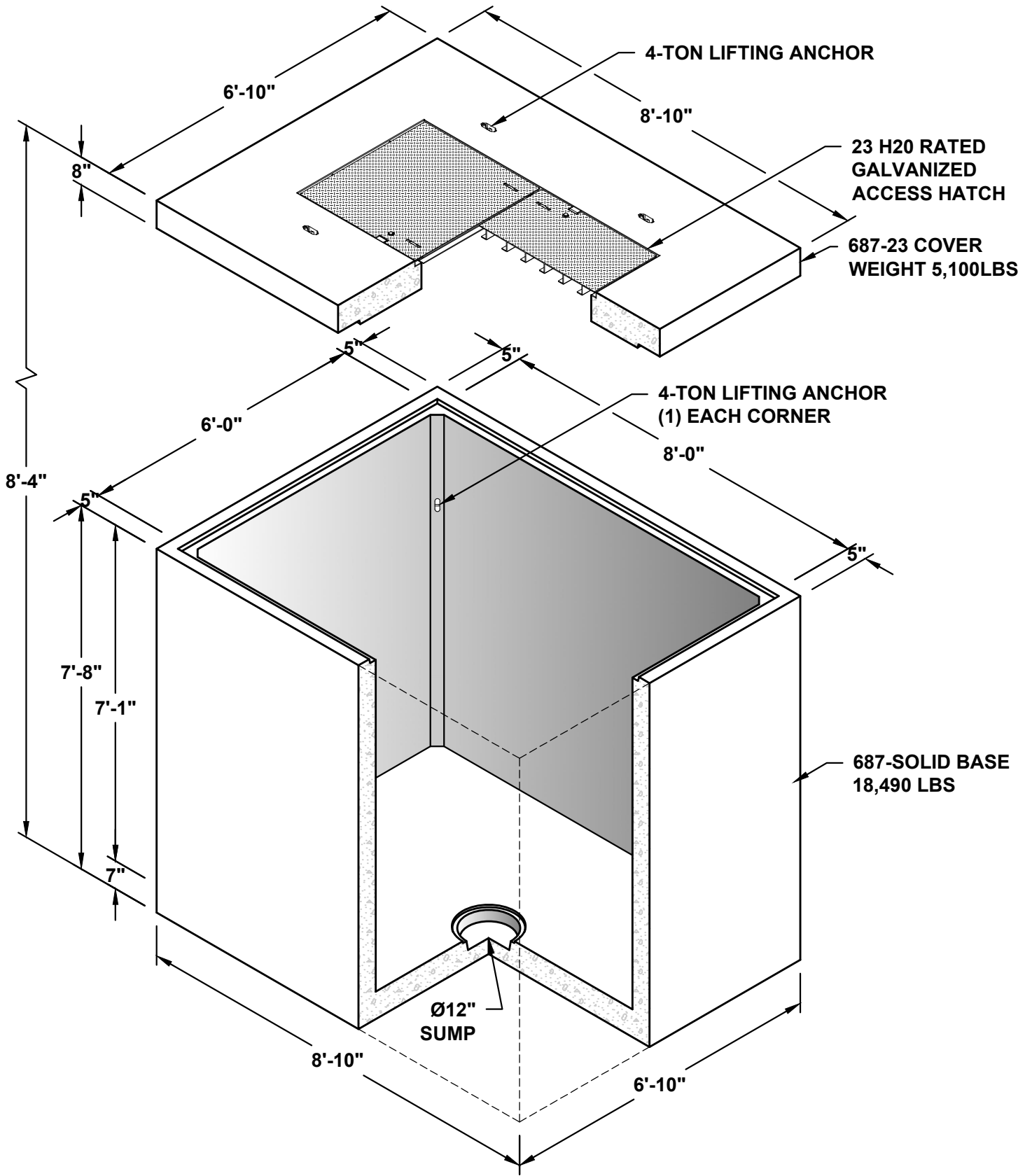


"IAPMO Listed"

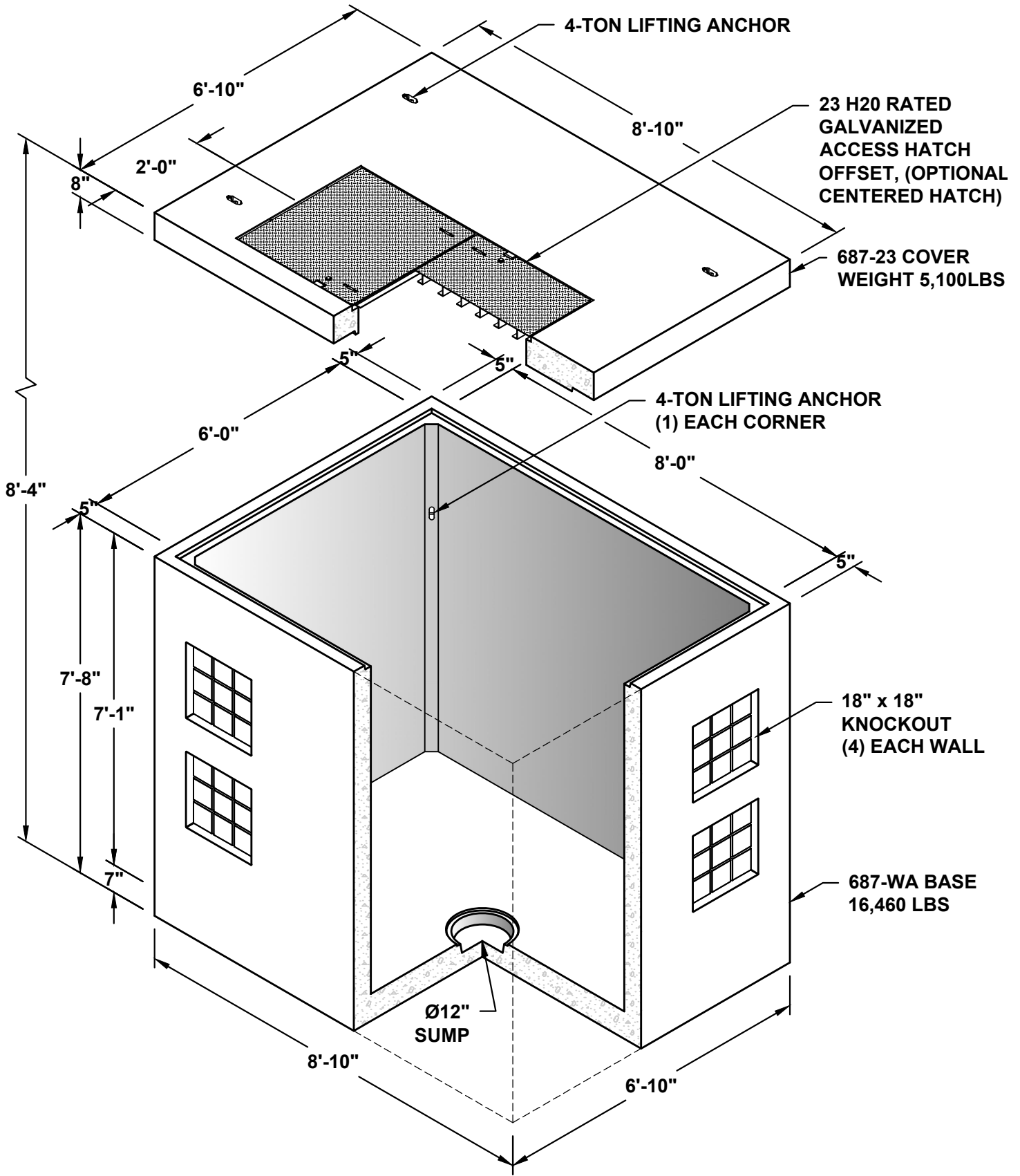
687 LA-23 VAULT



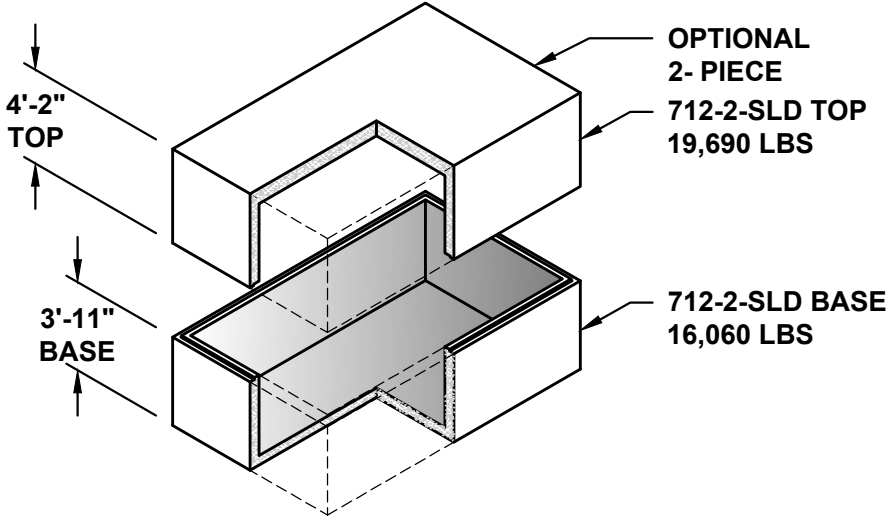
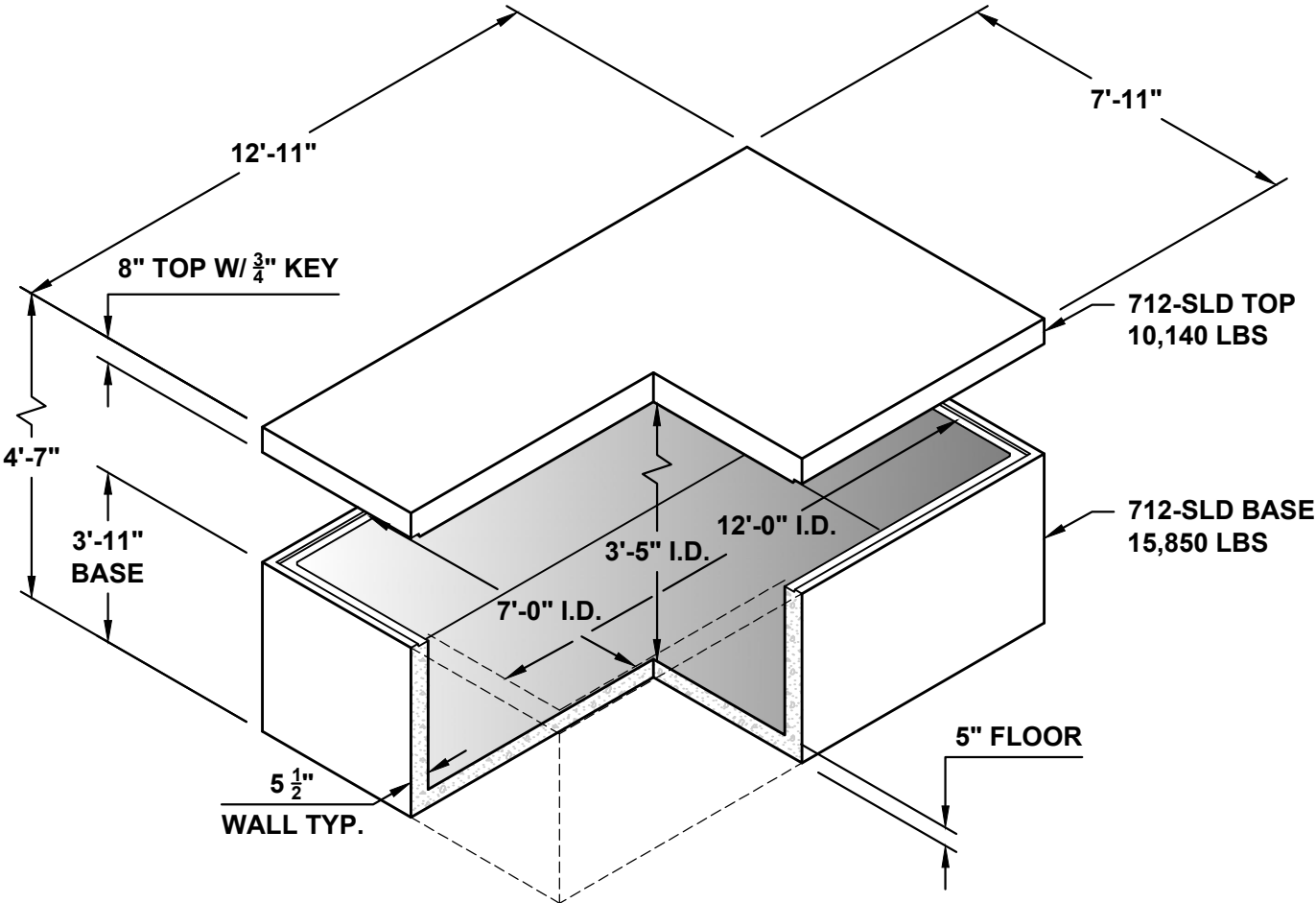
687 SOLID-23 VAULT



687 WA-23 VAULT

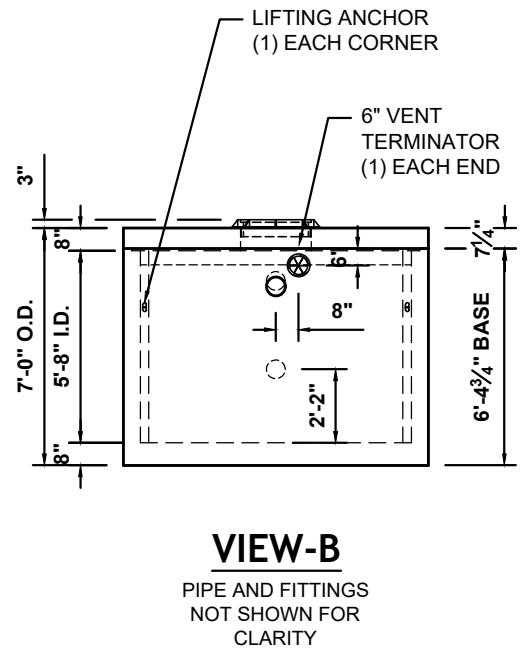
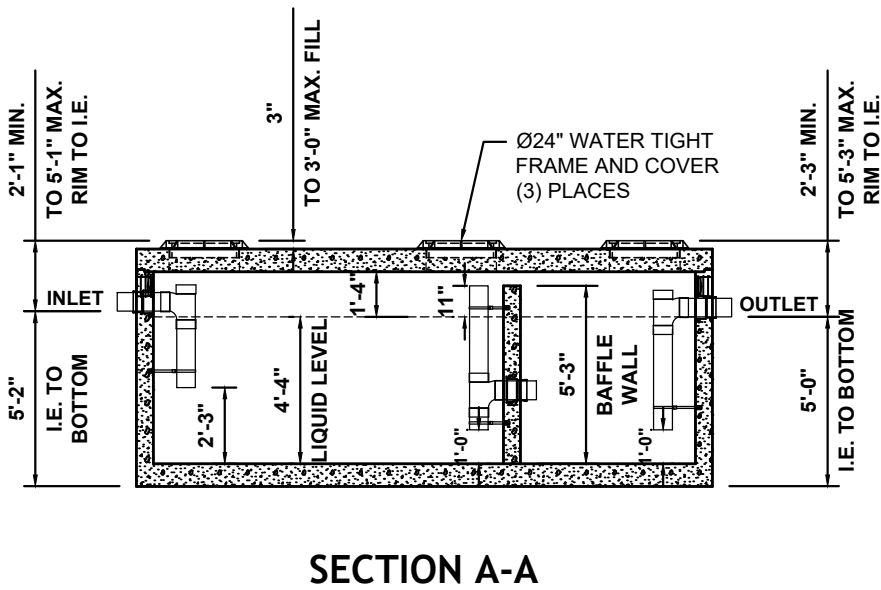
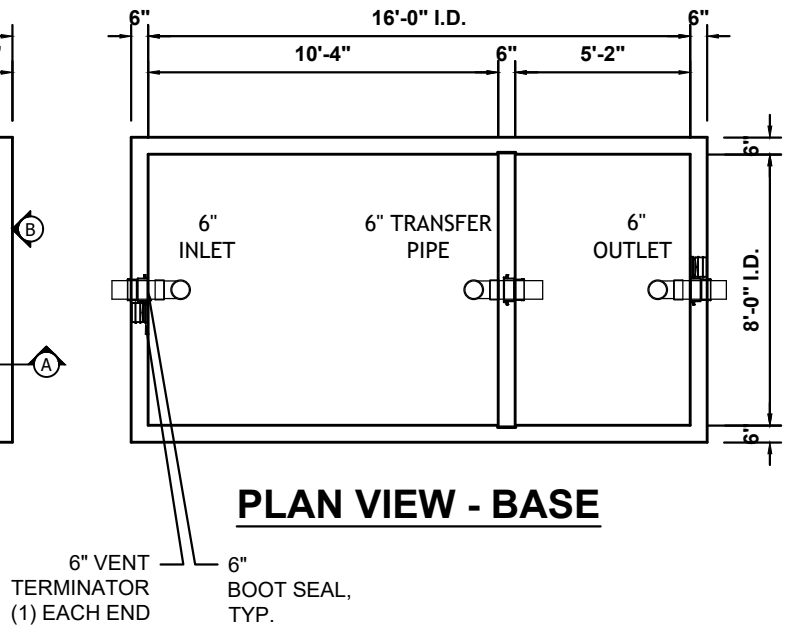
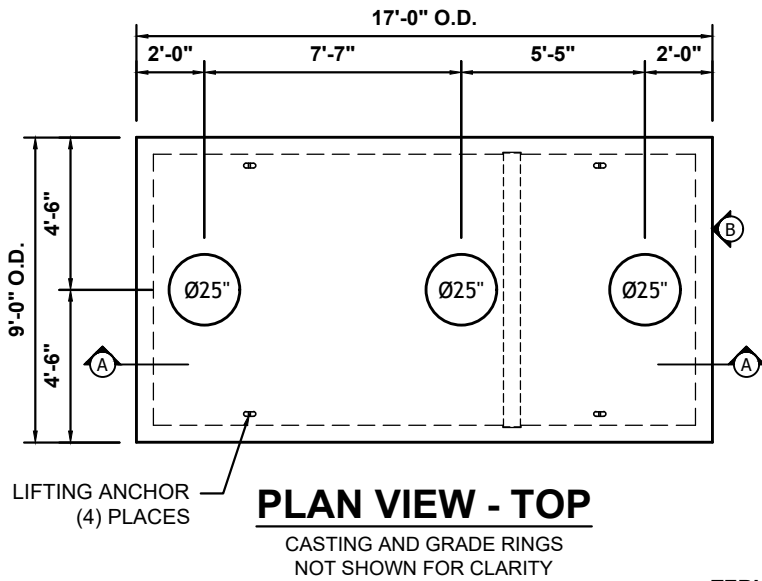


712 - VAULT



NOTE:
 HEIGHT OF BASE & TOP ADJUSTABLE AS REQUIRED.
 OPTIONAL TOP ACCESS, MANHOLE FRAME & COVERS, & HATCHES AS
 NEEDED. VARIES SIZES AVAILABLE.
 OPTIONAL ACCESSORIES: STRUT CHANNEL, SUMPS, INSERTS,
 LADDERS, ETC.

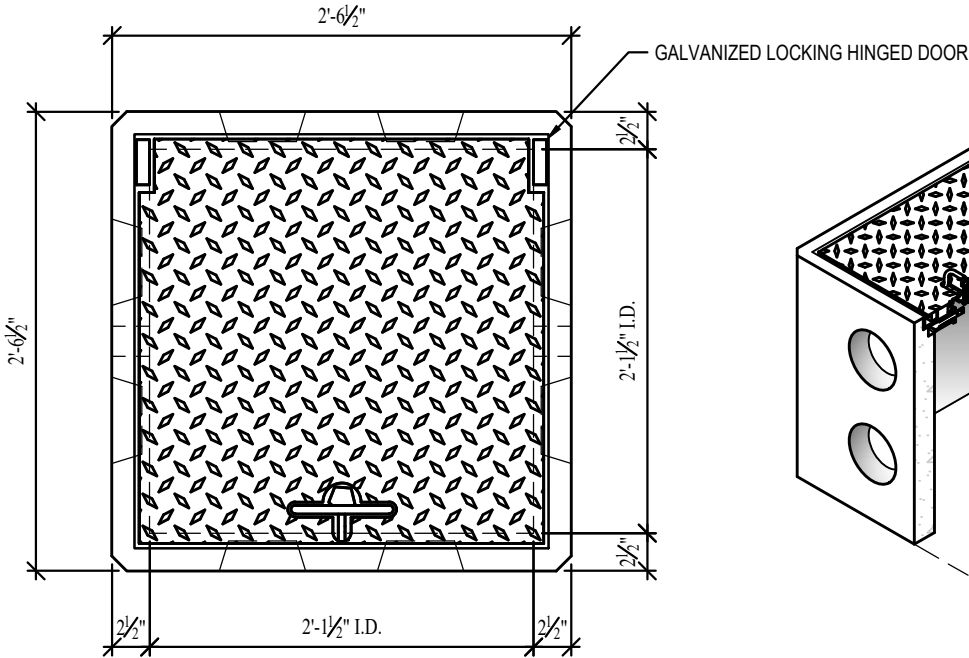
4000 GALLON GREASE INTERCEPTOR (816)



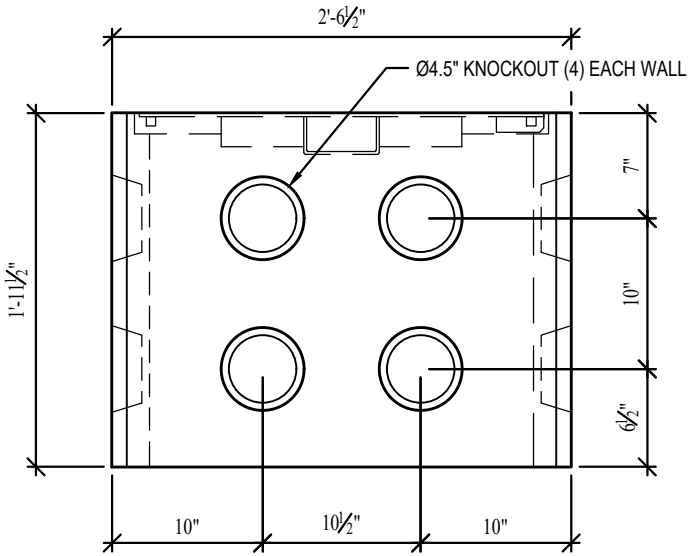
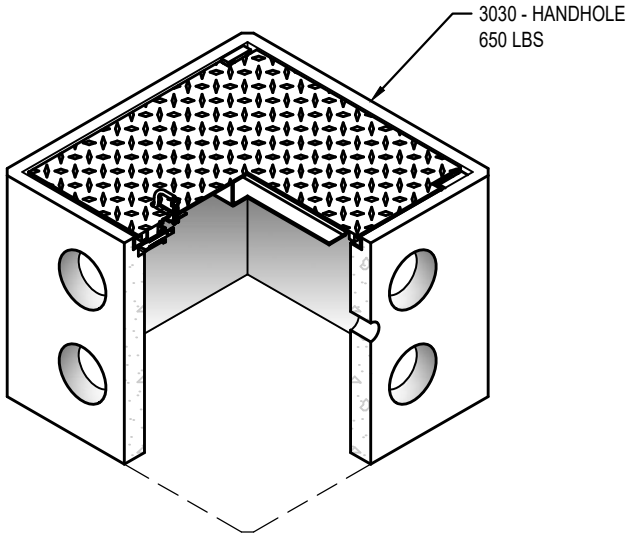
NOTES:

- Maximum DFU's = 428 for 4,000 gallon size Interceptor.
- Heaviest pick weight = approx. 39,810lbs.
- Vault meets or exceeds ASTM-C1613 & IAPMO/ANSI Z1001.
- H20 Traffic Rated.
- Fill completely with clean water prior to start-up of system.
- Gray water only.
- Ventilate Interceptor before servicing.
- It is the responsibility of the owner to service this unit.
- Interior plumbing included.
- Grade rings available as needed.

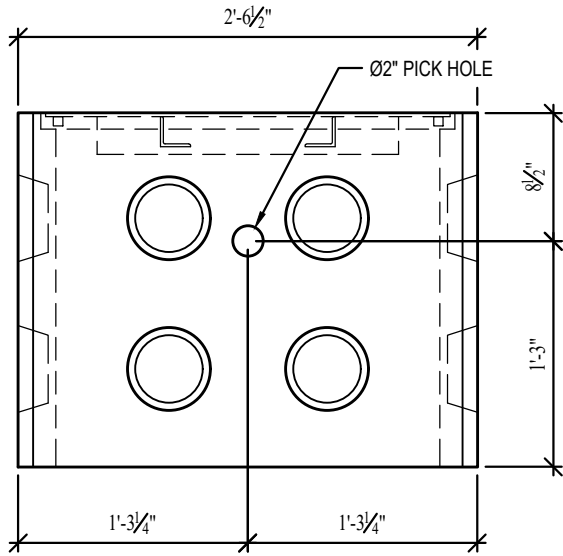
3030 - HANDHOLE



PLAN VIEW

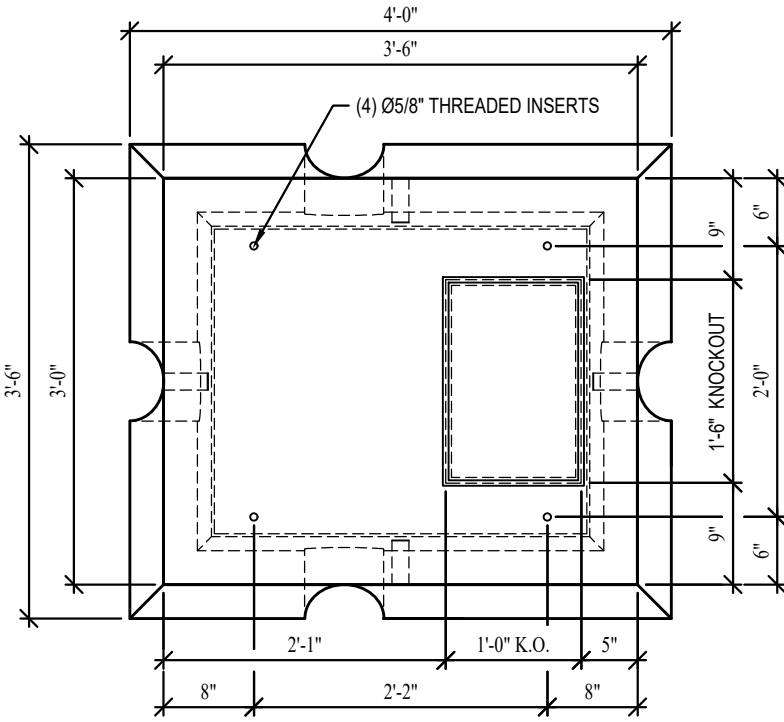


SIDE VIEW

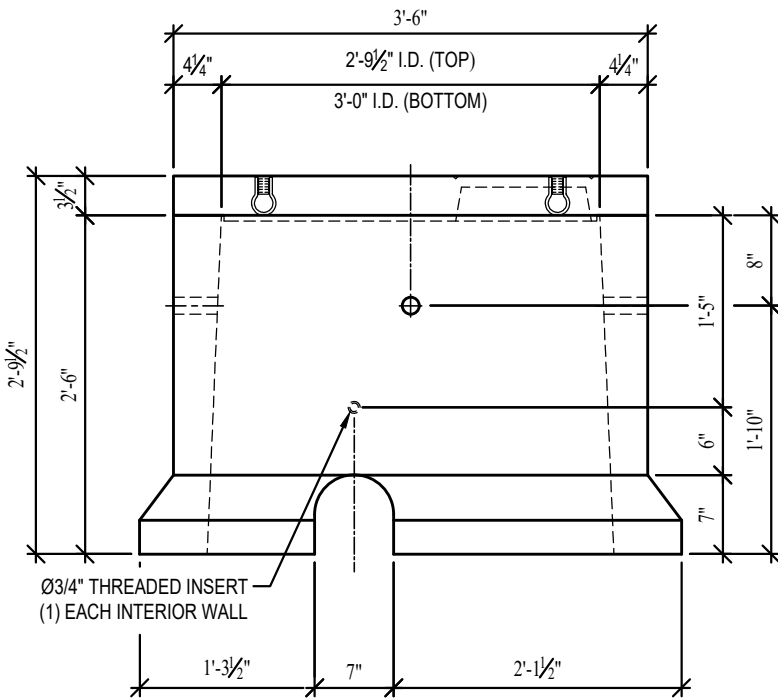
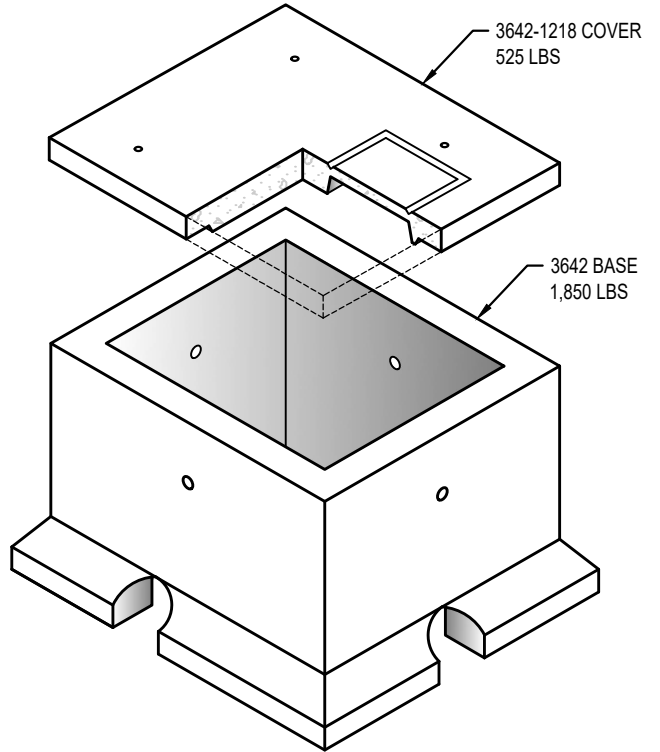


END VIEW

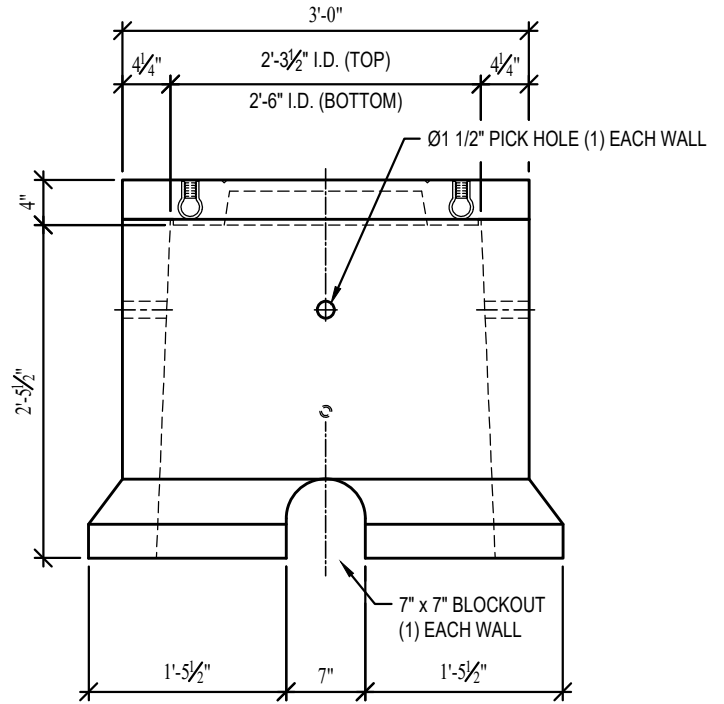
3642 - HANDHOLE



PLAN VIEW

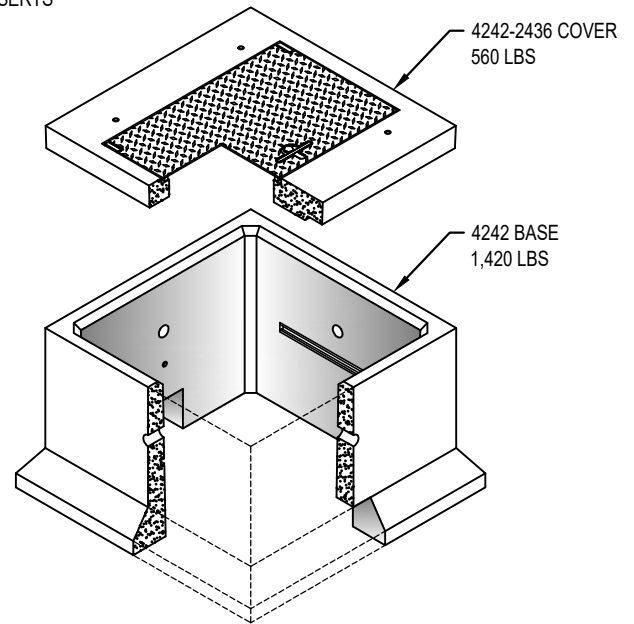
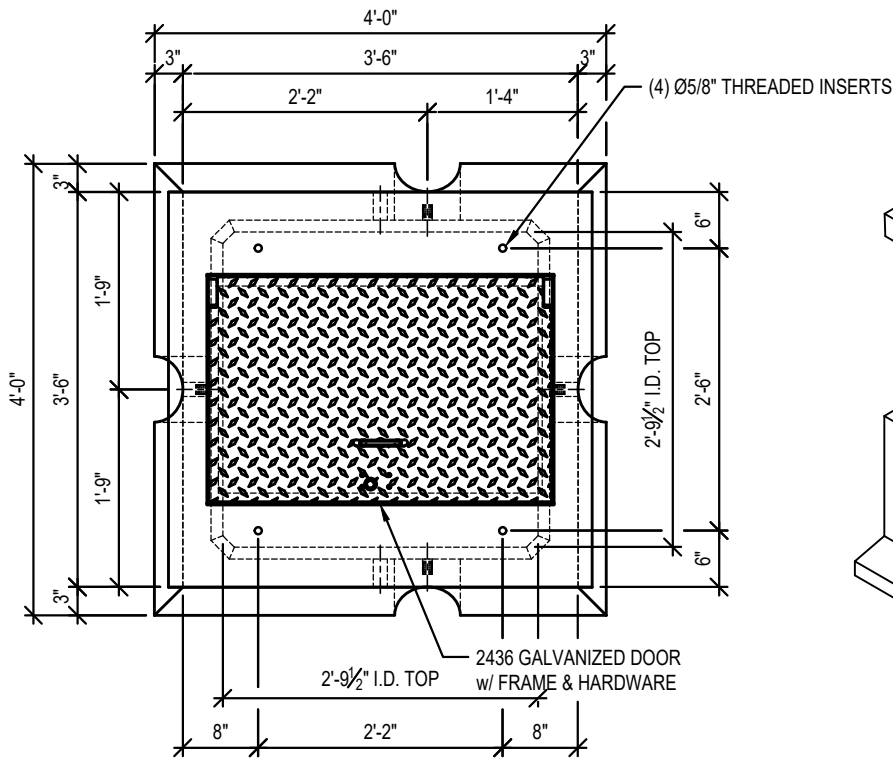


SIDE VIEW

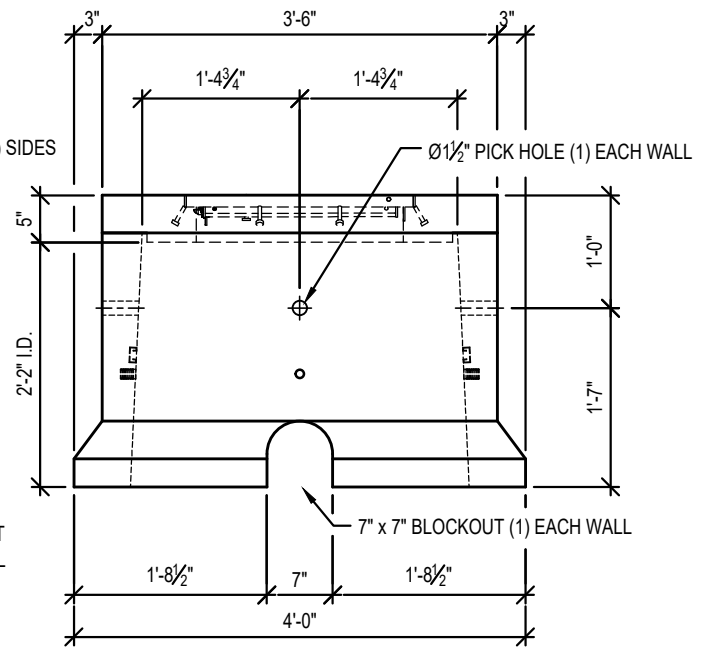
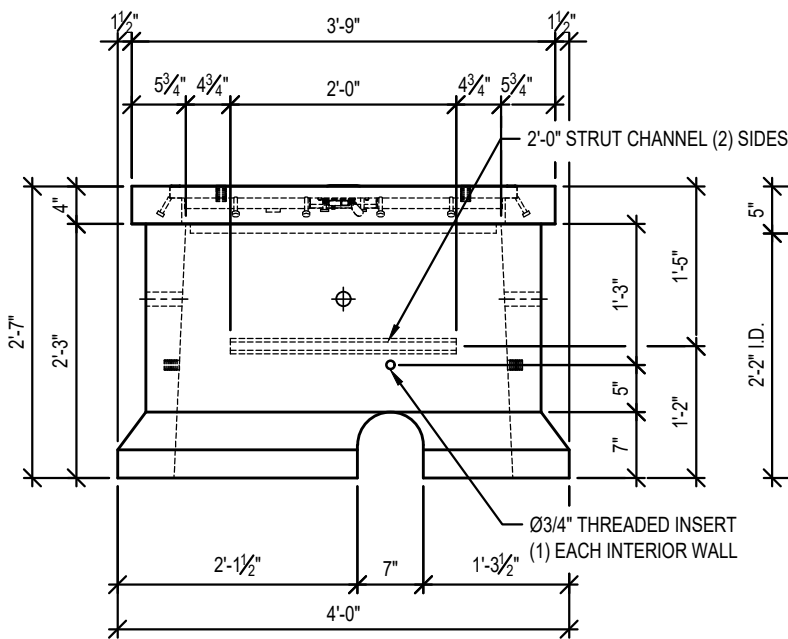


END VIEW

4242 - HANDHOLE



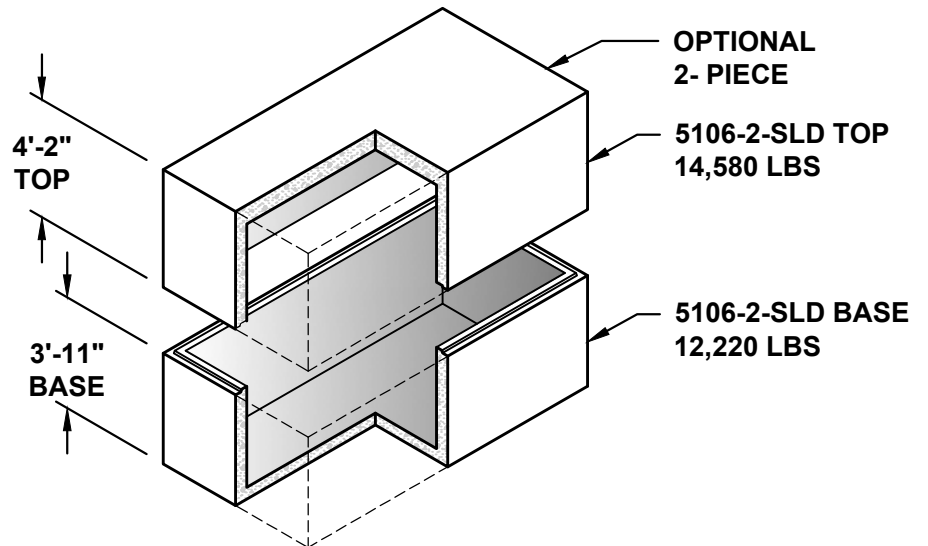
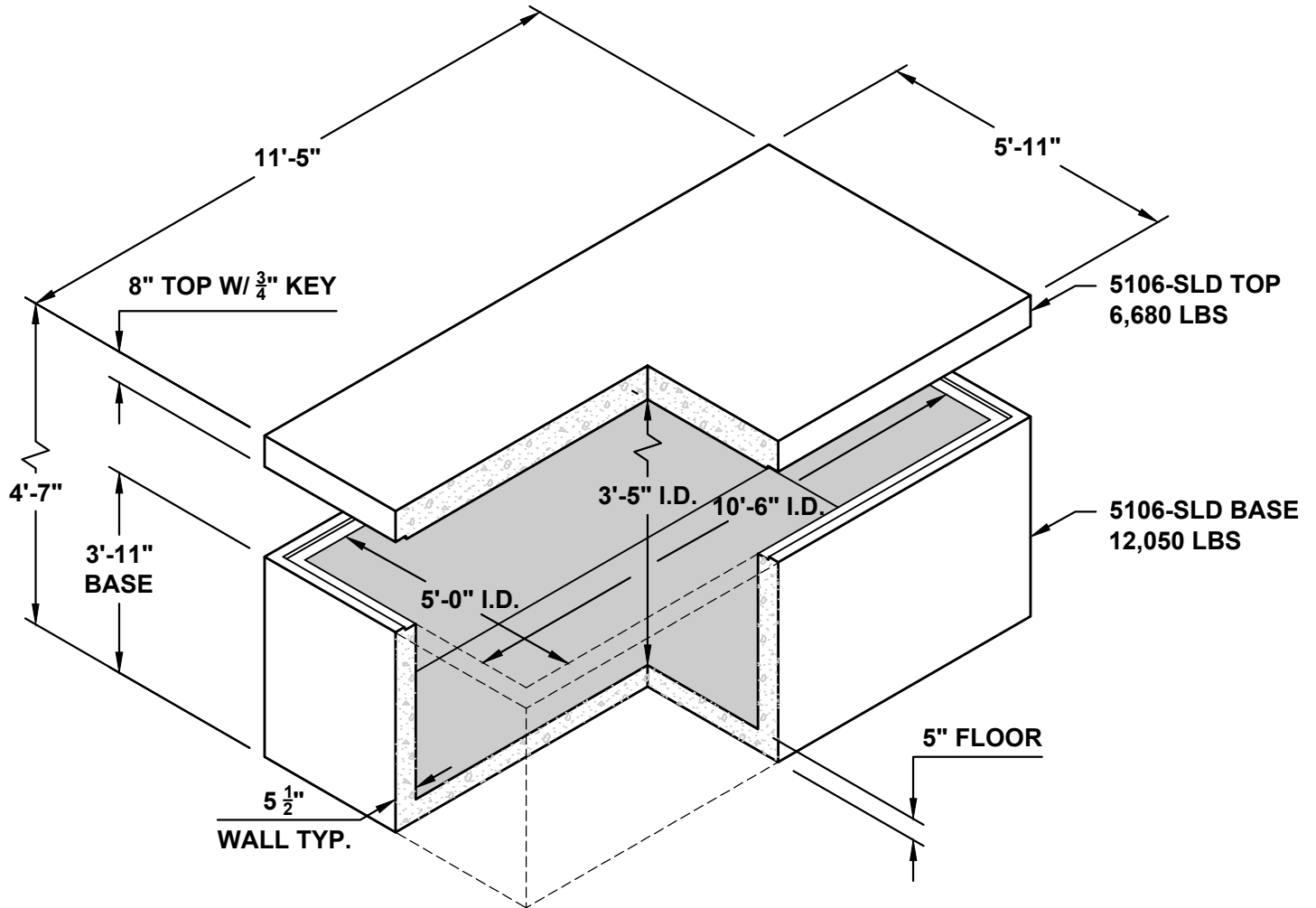
PLAN VIEW



SIDE VIEW

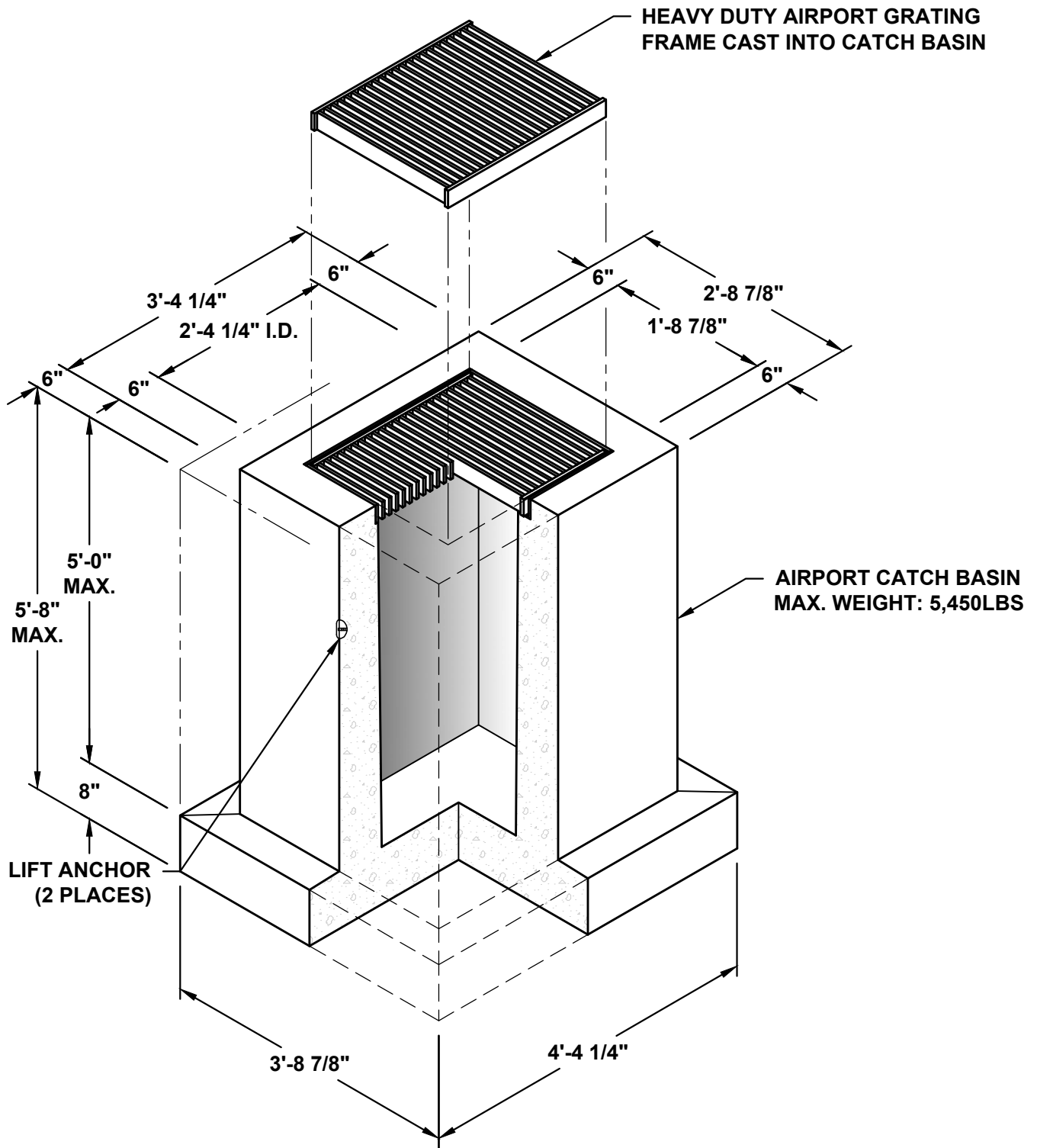
END VIEW

5106 - VAULT



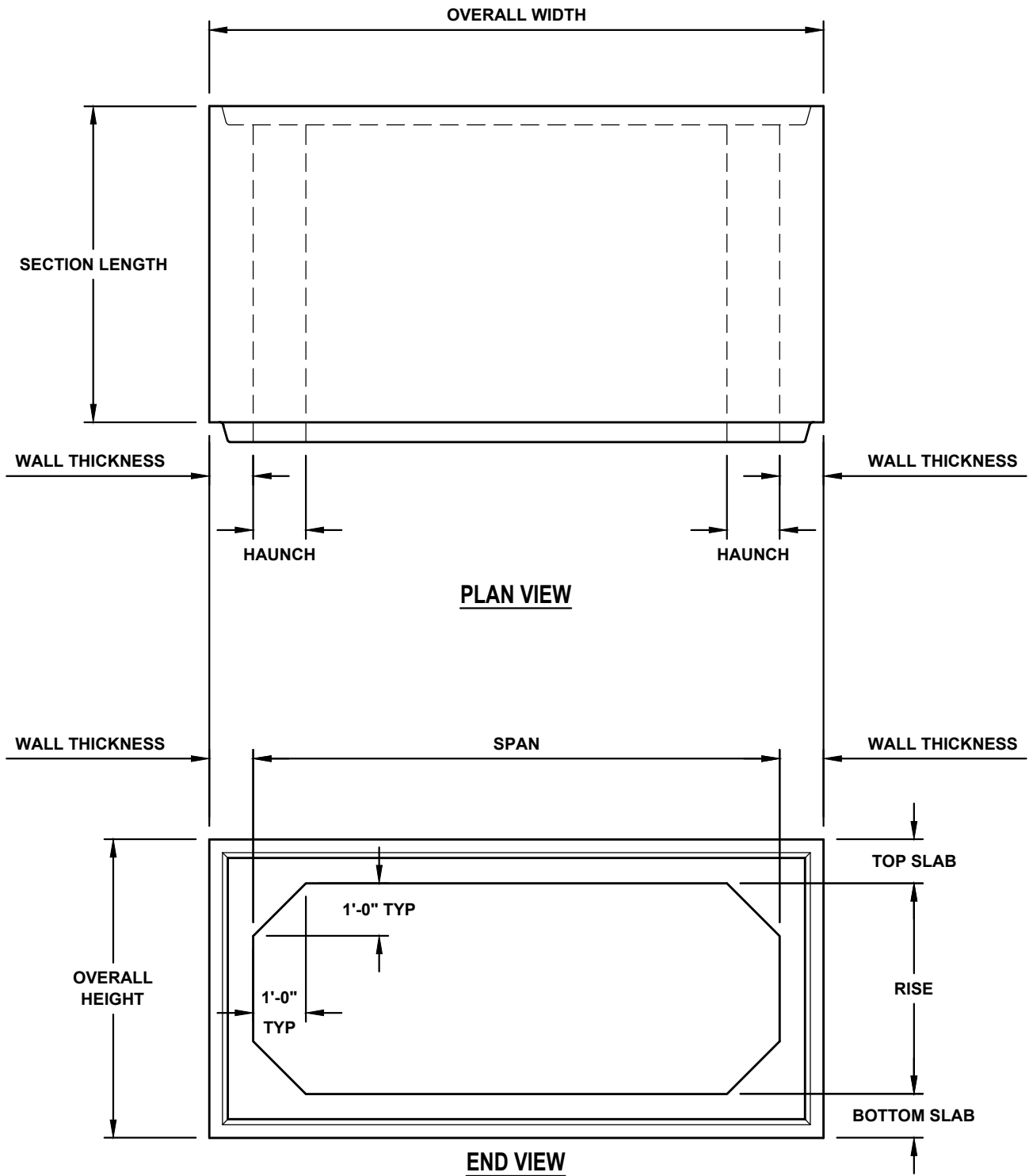
NOTE:
 HEIGHT OF BASE & TOP ADJUSTABLE AS REQUIRED.
 OPTIONAL TOP ACCESS, MANHOLE FRAME & COVERS, & HATCHES AS NEEDED. VARIES SIZES AVAILABLE.
 OPTIONAL ACCESSORIES: STRUT CHANNEL, SUMPS, INSERTS, LADDERS, ETC.

AIRPORT - CATCH BASIN - 100KIP



- NOTES:**
 1. REFER TO SUBMITTAL DRAWING(S) FOR HOLE SIZES & LOCATIONS.
 2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

BOX CULVERT - LAYOUT



BOX CULVERT - NOTES

GENERAL NOTES:

1. The following notes shall apply unless noted otherwise on the plans or specifications. In the case of conflict with the plans or specifications, the more restrictive requirements shall apply.

REFERENCE SPECIFICATIONS:

1. Design Criteria: LRFD Bridge Design Specifications
2. Manufacture: ASTM C1577

MATERIALS:

1. Aggregate conforms to ASTM C33.
2. Portland cement conforms to ASTM C150.
3. Fly Ash conforms to ASTM C618.
4. All bar reinforcing steel conforms to ASTM A615 Grade 60.
5. Welded Wire Fabric conforms to ASTM A1064, 70 or 80 KSI.
6. Admixtures conform to ASTM C494.
7. Concrete minimum compressive strength (at 28 days) 4000 PSI, unless greater strength is required.

DELIVERY AND INSTALLATION:

1. The contractor provides rigging and off loading at the job site.
2. The contractor provides all weld plates and accessories which are not cast directly into the concrete.
3. Follow any installation procedures described in the project documents. More restrictive requirements outlined in the project documents or a corresponding geotechnical report take precedence.
4. The subgrade preparation and backfill sections of these notes provide basic installation criteria.

SUBGRADE PREPARATION:

1. All loose and disturbed soil shall be removed prior to placing box sections.
2. The box sections shall be underlain by at least 6 inches of screeded compacted gravel over compacted structural fill or undisturbed native soils.
3. If no project specifications apply, follow WSDOT Standard 7-02.3(6) A4.

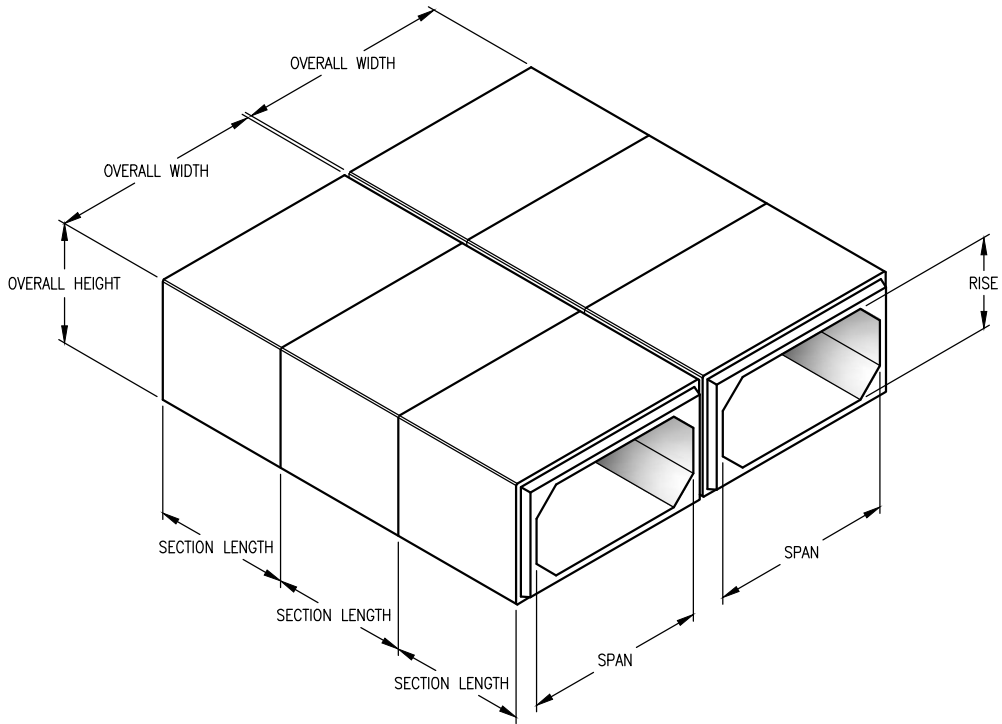
BOX JOINTS:

1. Box culverts are supplied with a joint mastic which prevents dirt from infiltrating the joint. This gasket is not water tight.
2. For projects requiring a watertight joint, prepare the joint as shown on page 4. After fitting the joint with the joint mastic gasket and adhesive tape, use a non-shrink grout conforming to ASTM C1107; mastic gasket conforming to ASTM C990, and butyl tape conforming to ASTM C877.

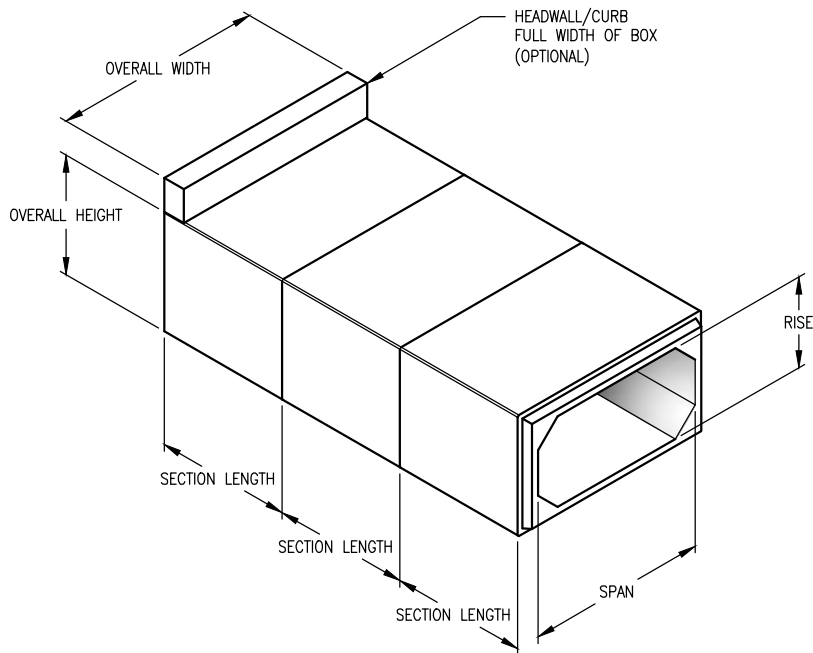
BACKFILL:

1. Backfill shall consist of well graded soil free of organics and deleterious material and large stones.
2. Backfill shall be placed in 12 inch lifts and compacted to a minimum of 90% modified proctor density.

BOX CULVERT - OPTIONAL INSTALLATIONS

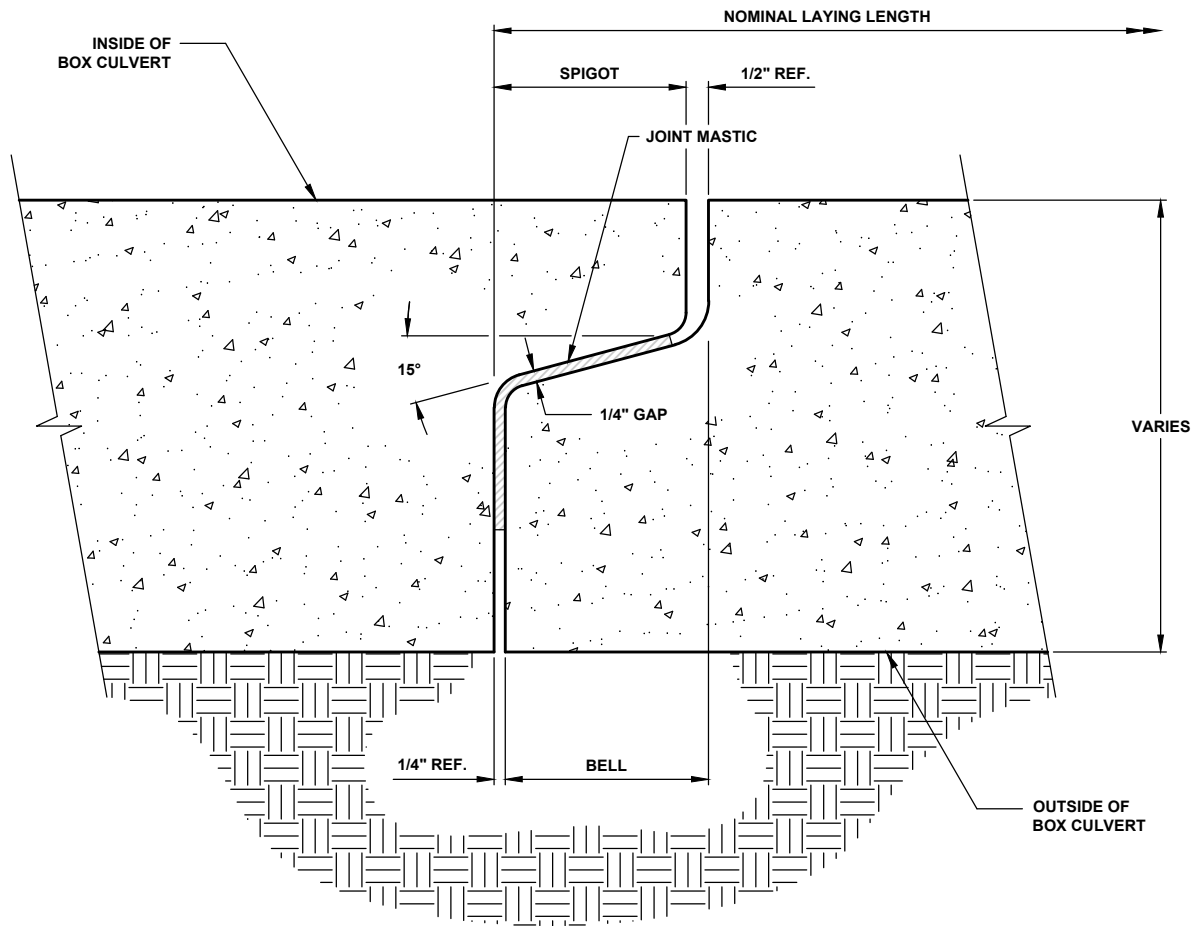


DOUBLE BARREL MULTIPLE UNIT INSTALLATION



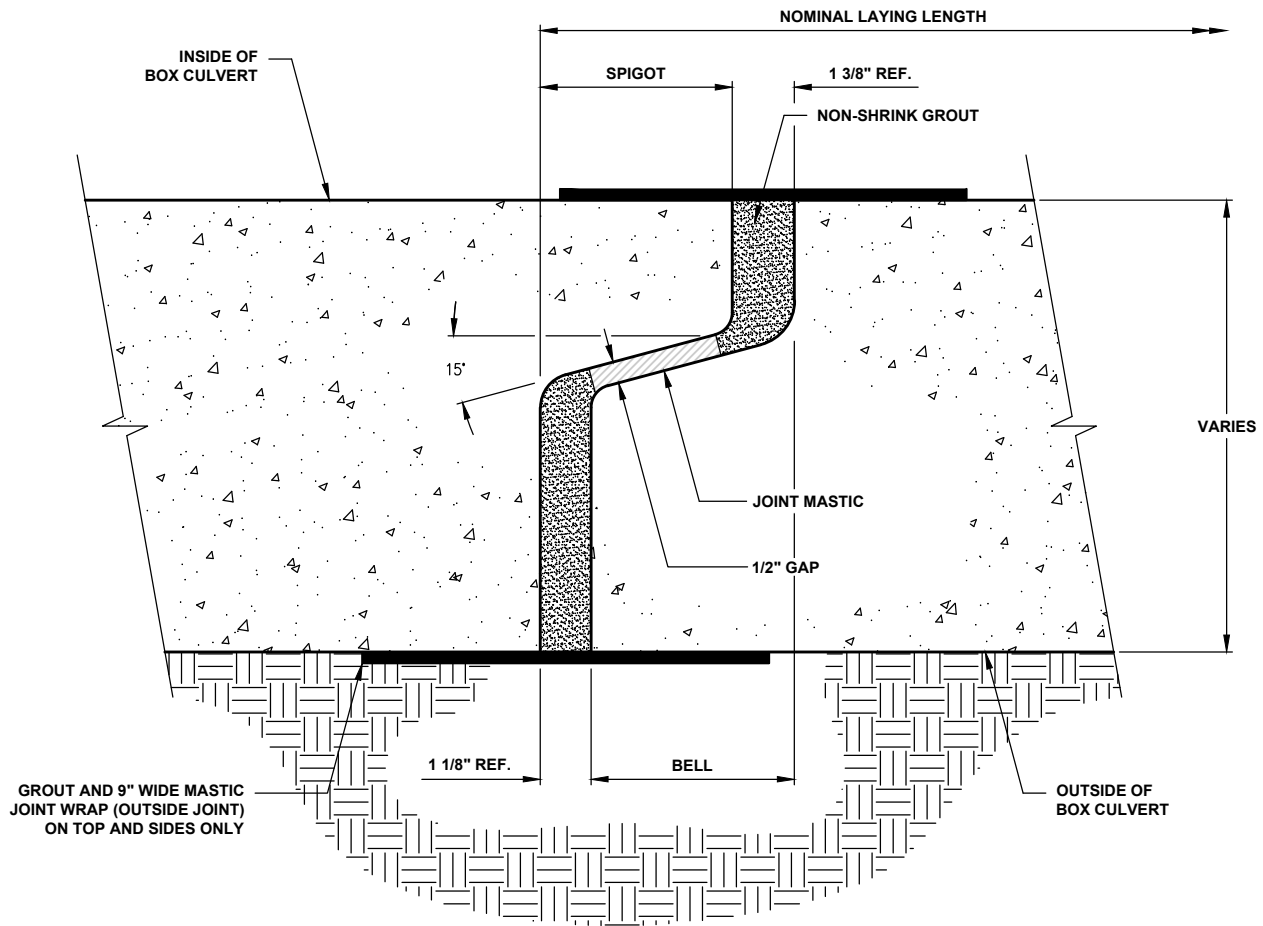
MULTIPLE UNIT INSTALLATION

BOX CULVERT - STANDARD JOINT DETAIL



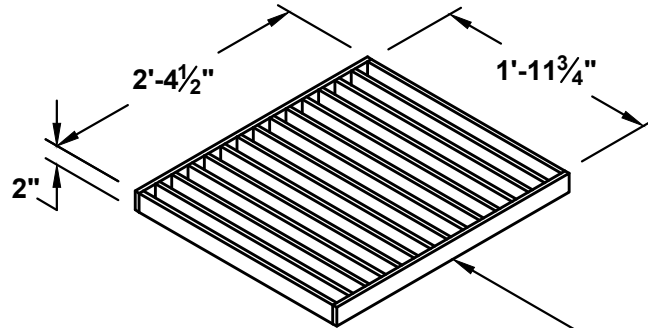
BOX JOINT SECTION

BOX CULVERT - WATERTIGHT JOINT DETAIL

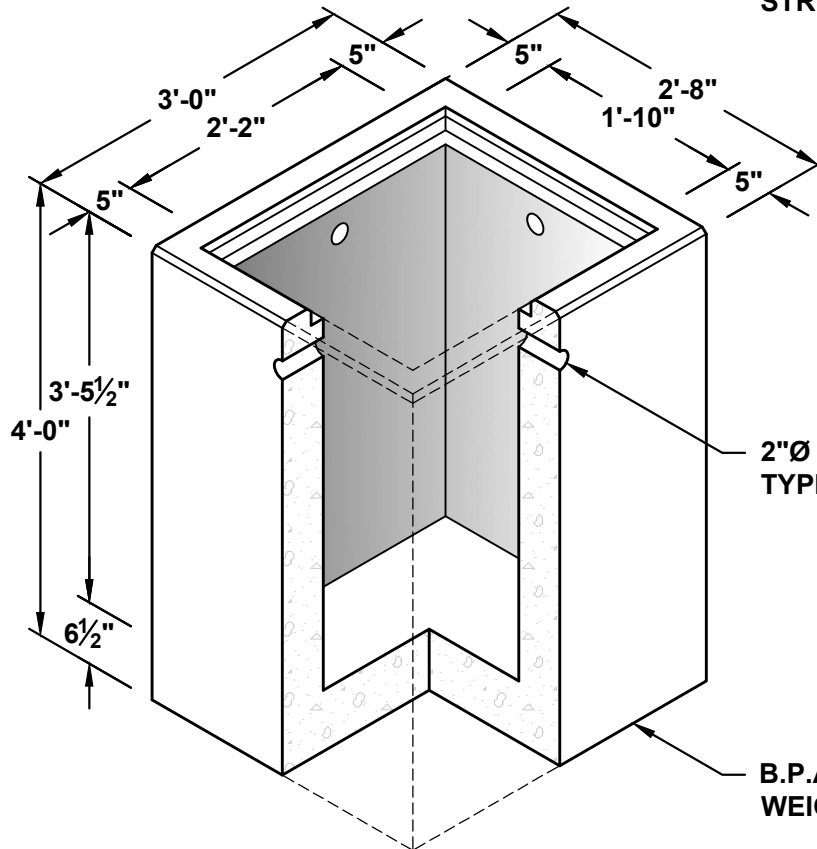


WATERTIGHT BOX JOINT SECTION

B.P.A. - CATCH BASIN



GRATE CONSTRUCTION
 $\frac{1}{2}$ " x 2" BARS @ 2" O.C.
STRUCTURAL STEEL A-36

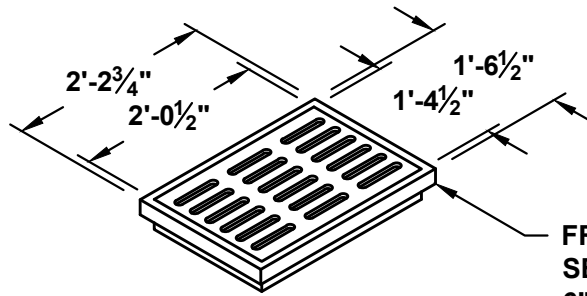


2"Ø WEEP HOLE
TYPICAL (1) EACH WALL

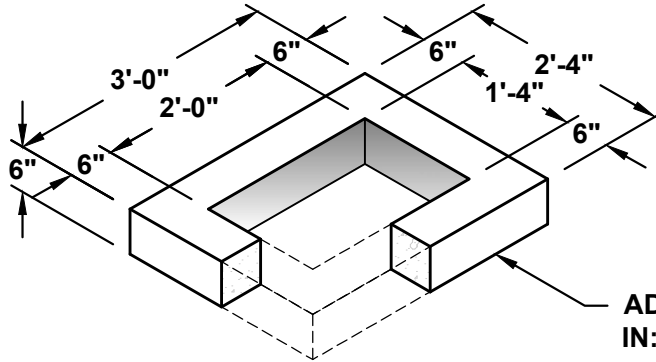
B.P.A. CATCH BASIN
WEIGHT 2,765LBS

NOTES:
1. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

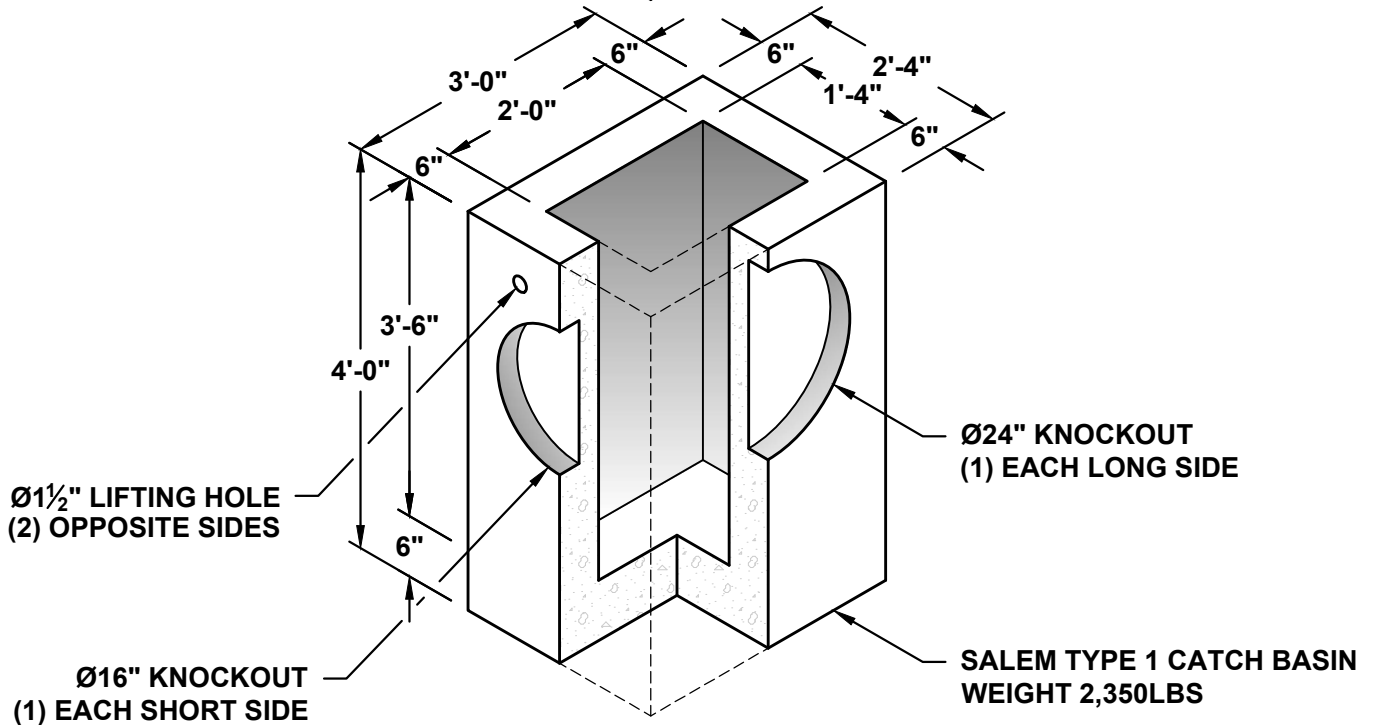
CITY OF SALEM - TYPE 1 CATCH BASIN



FRAME & GRATE AVAILABLE SEPARATELY OR CAST INTO 6" RISER



ADJUSTMENT RISER AVAILABLE IN: 4", 6" AND 12" HEIGHTS



Ø1½" LIFTING HOLE
(2) OPPOSITE SIDES

Ø24" KNOCKOUT
(1) EACH LONG SIDE

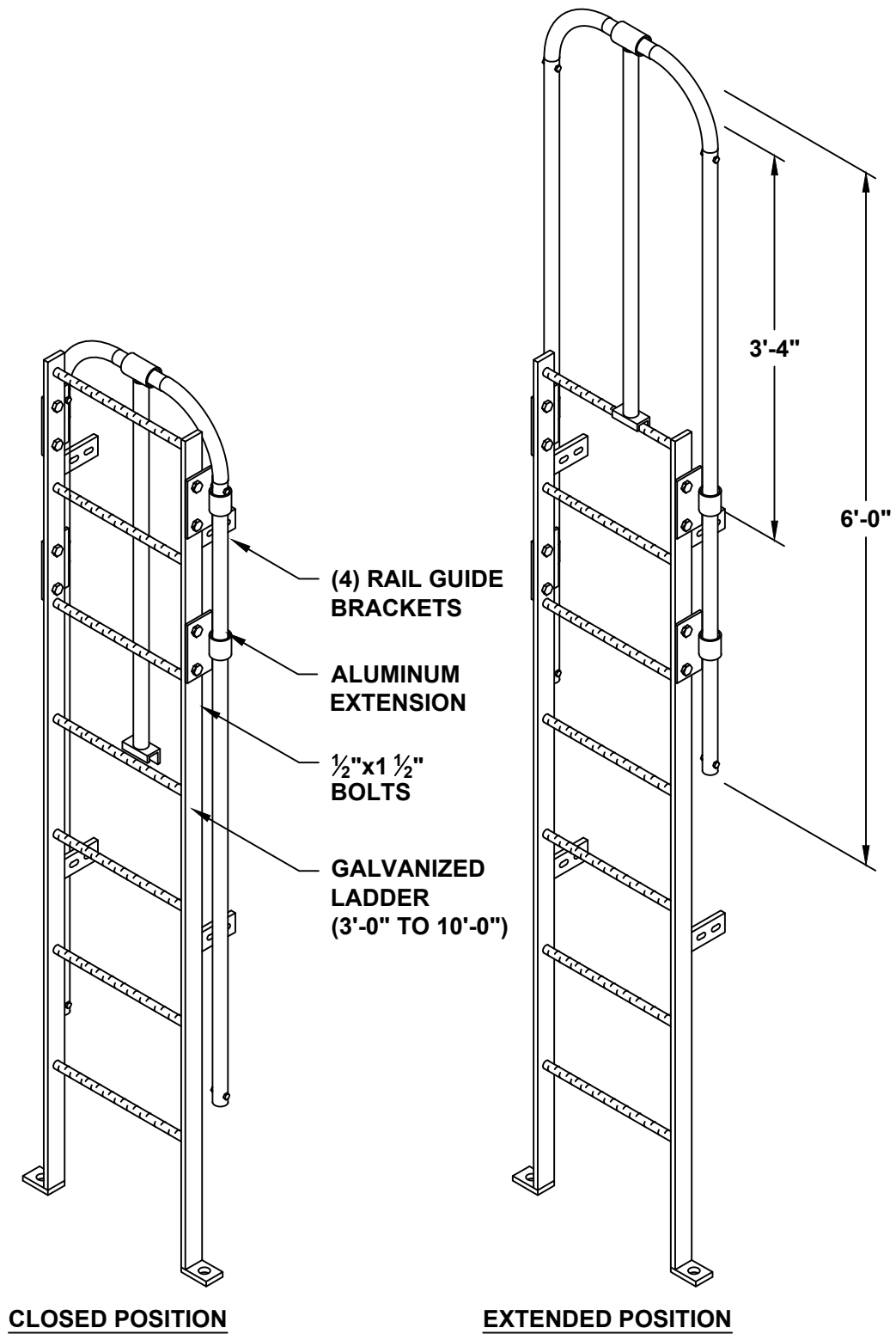
Ø16" KNOCKOUT
(1) EACH SHORT SIDE

SALEM TYPE 1 CATCH BASIN
WEIGHT 2,350LBS

NOTES:

1. MEETS OR EXCEEDS CITY OF SALEM STANDARD DRAWING NO. 200.
2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

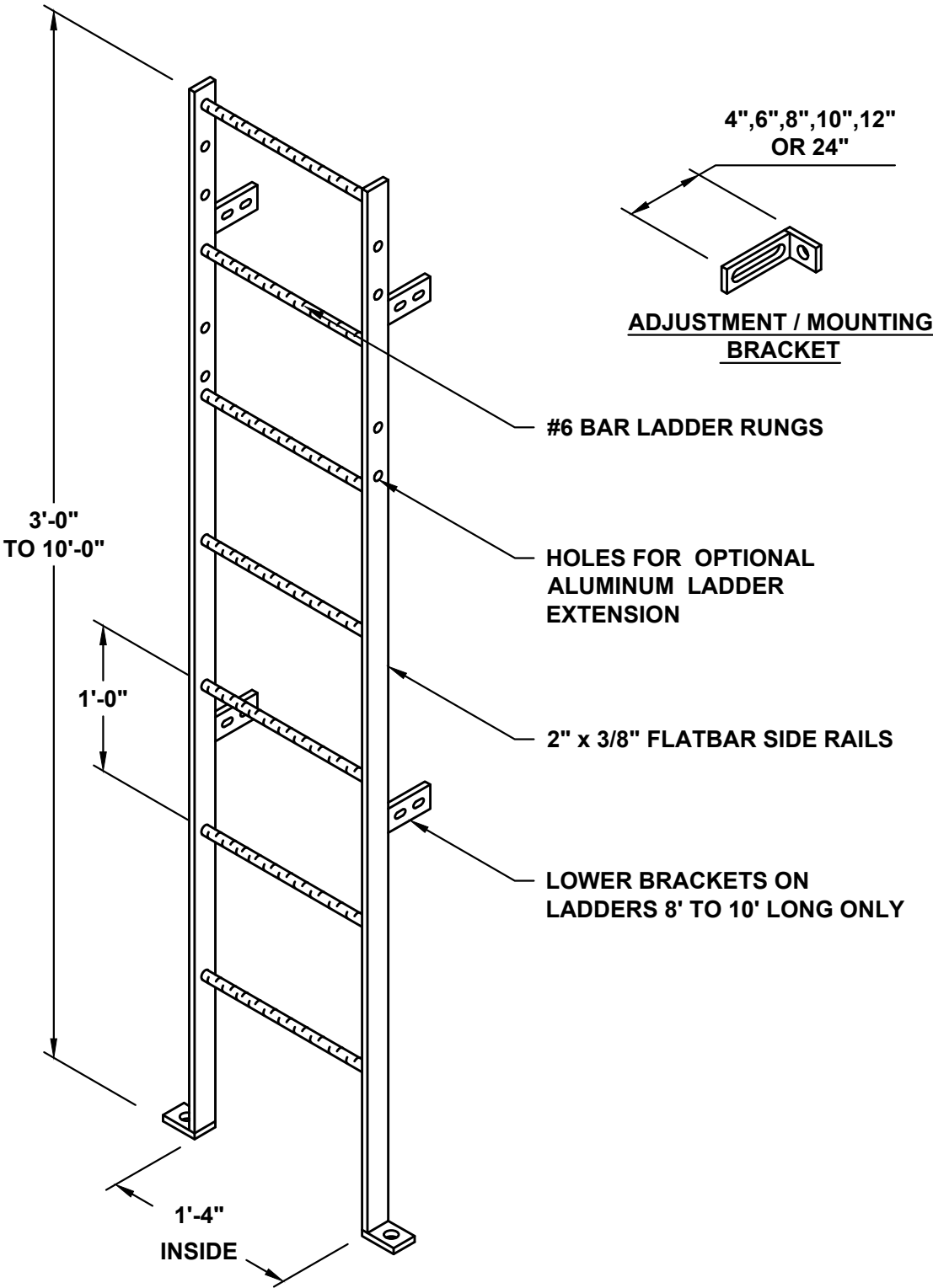
GALVANIZED VAULT LADDER W/ ALUMIN. EXTENSION



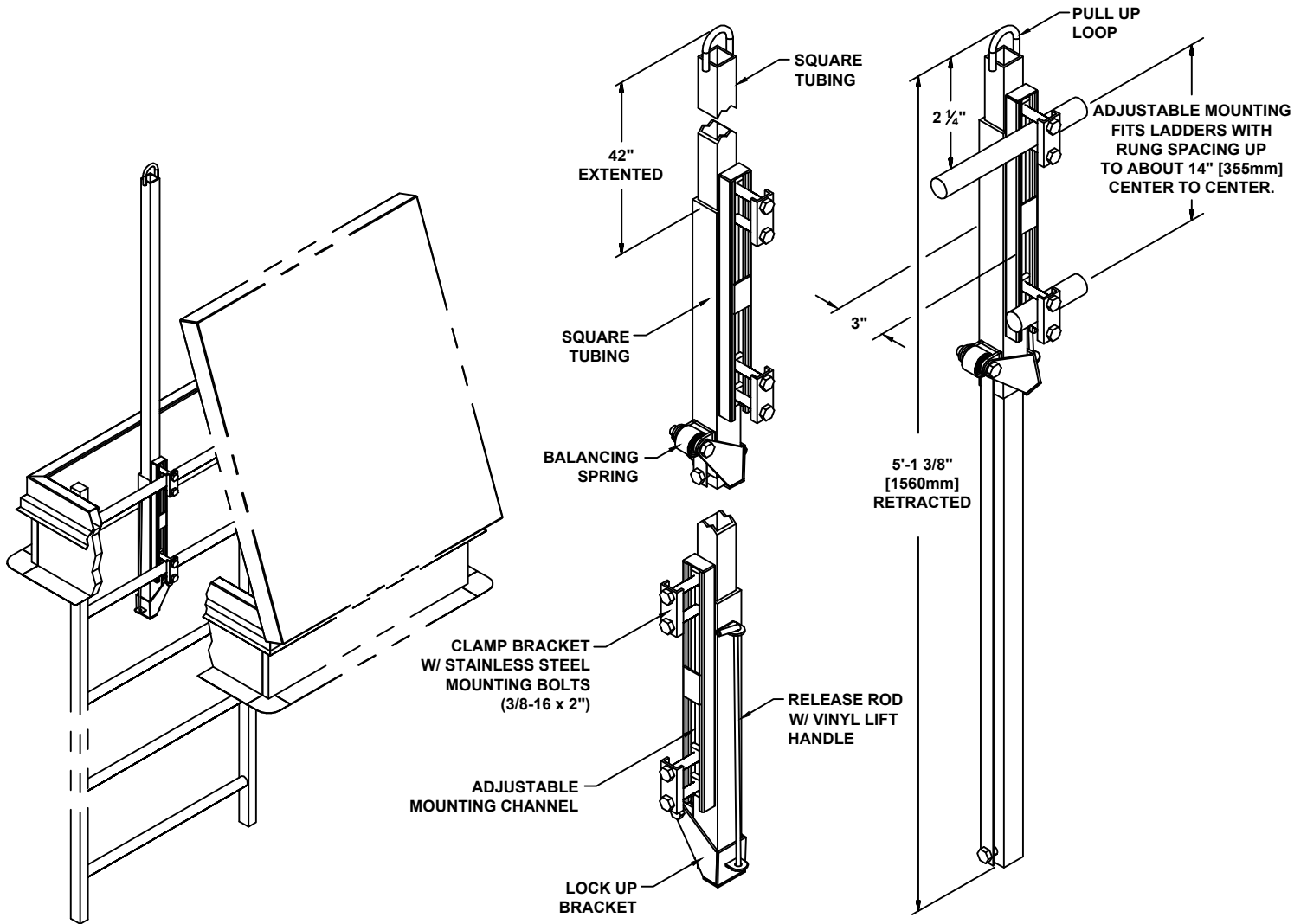
CLOSED POSITION

EXTENDED POSITION

GALVANIZED VAULT LADDER

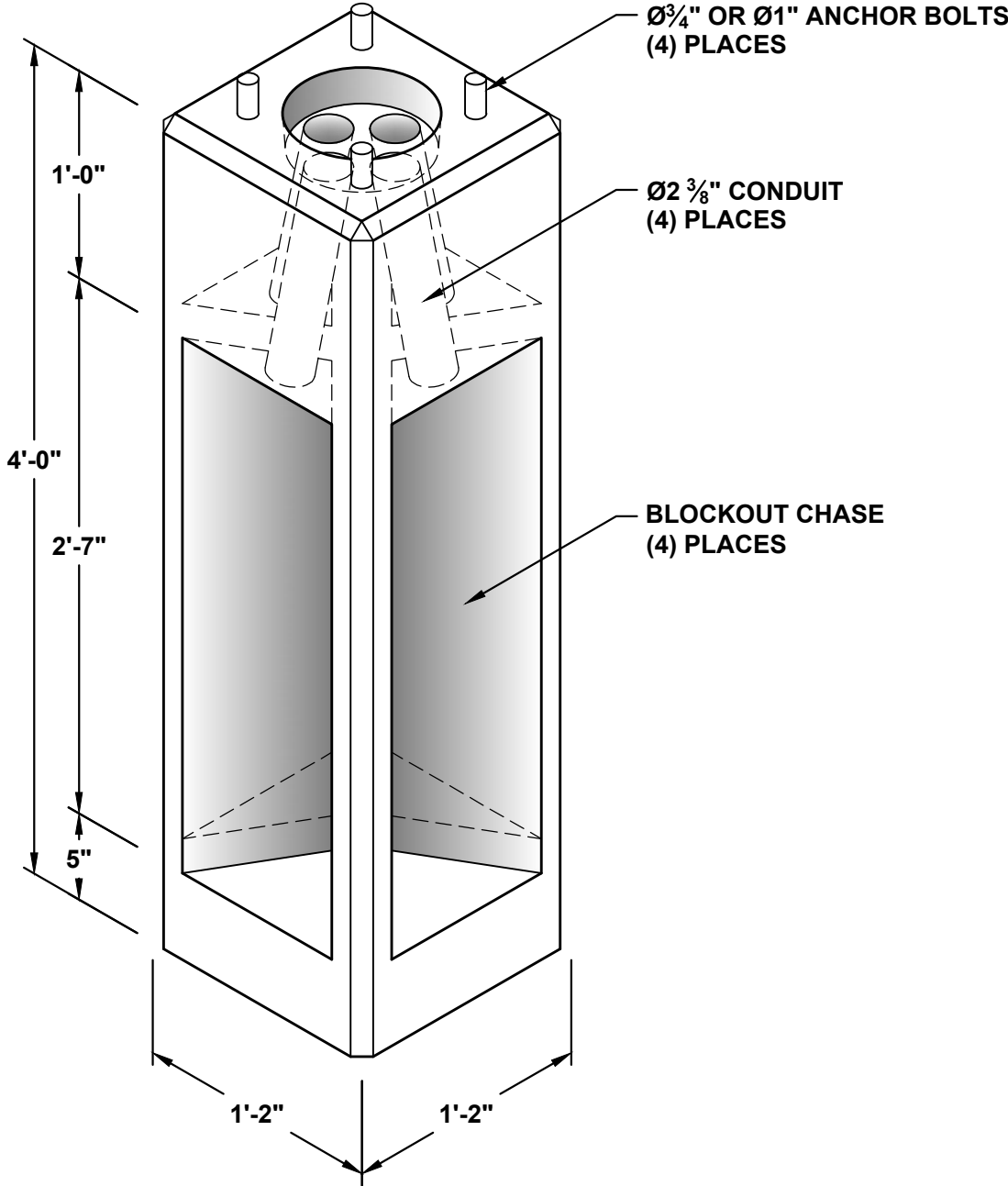


LADDER UP SAFETY POST



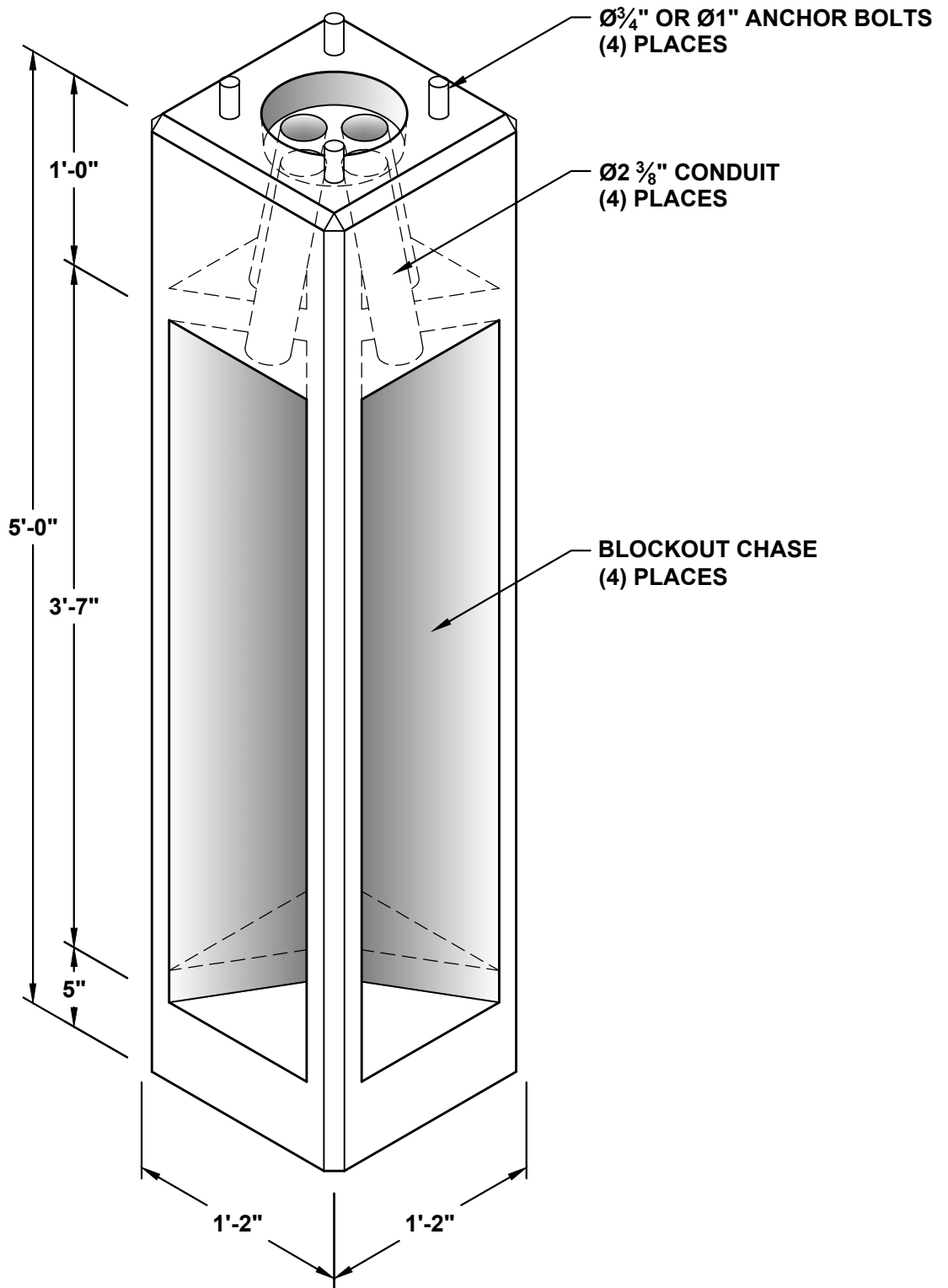
CLAMP BRACKET MAY BE REVERSED TO ACCOMMODATE RUNG SIZES OF 3/4" TO 1 1/4" WITH STANDARD 2" BOLTS FURNISHED. LARGER RUNGS WILL REQUIRE LONGER BOLTS.

14" x 48" SQUARE LIGHT POLE BASE



NOTES:
1. APPROXIMATE WEIGHT: 550LBS
2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

14" x 60" SQUARE LIGHT POLE BASES



NOTES:

1. APPROXIMATE WEIGHT: 650LBS
2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

MANHOLE HOLE SIZE DATA

MANHOLE - STANDARD HOLE SIZE DATA									
ADS N-12 CORRUGATED POLYETHYLENE DRAINAGE PIPE					P.V.C. (SDR-35) SEWER PIPE				
NOMINAL SIZE (in.)	HOLE SIZE (in.)	BOOT NPC, Inc. MODEL #:	WALL THICKNESS (in.)	OUTSIDE DIAMETER (in.)	NOMINAL SIZE (in.)	HOLE SIZE (in.)	BOOT NPC, Inc. MODEL #:	WALL THICKNESS (in.)	OUTSIDE DIAMETER (in.)
4"	7"	-	0.020"	4.78"	4"	7"	S106-7S	0.120"	4.215"
6"	12"	-	0.020"	6.92"	6"	12"	S106-12B	0.180"	6.275"
8"	12"	-	0.025"	9.11"	8"	12"	S106-12A	0.240"	8.400"
10"	16"	-	0.025"	11.36"	10"	16"	S106-16B	0.300"	10.50"
12"	18"	-	0.035"	14.45"	12"	16"	S106-16A	0.360"	12.50"
15"	20"	-	0.035"	17.57"	15"	20"	S106-20B	0.437"	15.30"
18"	24"	-	0.050"	21.20"	18"	24"	S206-24A	0.536"	18.70"
21"	26"	-	0.050"	24.70"	21"	26"	S206-26	0.532"	22.05"
24"	32"	-	0.050"	27.80"	24"	28"	S206-28	0.711"	24.80"
30"	42"	-	0.050"	36.07"	27"	32"	S206-32	-	27.95"
36"	48"	-	0.050"	42.46"	30"	36"	S206-36	-	32.00"
42"	54"	-	0.050"	46.75"	36"	42"	S206-42	-	38.30"
48"	60"	-	0.050"	52.70"	-	-	-	-	-

MANHOLE - STANDARD HOLE SIZE DATA (cont'd.)									
DUCTILE IRON PIPE (C-900 PVC, CMP, SDR 21 PVC)					REINFORCED CONCRETE PIPE				
NOMINAL SIZE (in.)	HOLE SIZE (in.)	BOOT NPC, Inc. MODEL #:	WALL THICKNESS (in.)	OUTSIDE DIAMETER (in.)	NOMINAL SIZE (in.)	HOLE SIZE (in.)	BOOT NPC, Inc. MODEL #:	WALL THICKNESS (in.)	OUTSIDE DIAMETER (in.)
4"	7"	S106-7S	0.260"	4.800"	6"	12"	S106-12A	1.00"	8.00"
6"	12"	S106-12B	0.280"	6.900"	8"	12"/14"	S106-14	1.25"	10.5"
8"	12"	S106-12	0.300"	9.050"	10"	16"	S106-16A	1.25"	12.5"
10"	16"	S106-16B	0.320"	11.10"	12"	20"	S106-20WP	2.50"	17.0"
12"	16"	S106-16	0.340"	13.20"	15"	24"	S206-24	2.50"	20.0"
14"	20"	S106-20B	0.360"	15.30"	18"	26"/28"	S206-26	2.50"	23.0"
16"	20"	S106-20A	0.340"	17.40"	21"	32"	S206-30	2.75"	26.5"
18"	24"	S206-24A	0.350"	19.50"	24"	36"	S206-34L	3.00"	30.0"
20"	24"	S206-24L	0.360"	21.60"	27"	38"	S206-38L	3.25"	33.5"
24"	28"	S206-28L	0.380"	25.80"	30"	42"	S206-42	3.50"	37.0"
30"	36"	S206-36	0.390"	32.00"	36"	48"	S206-48	4.00"	44.0"
36"	42"	S206-42	0.430"	38.30"	42"	54"/56"	S206-54L	4.50"	51.0"
42"	48"	S206-48	-	44.50"	48"	64"	-	5.00"	58.0"
48"	54"	S206-54L	-	50.80"	54"	72"	-	5.50"	65.0"
54"	60"	S206-60	-	57.56"	60"	78"	-	6.00"	72.0"
-	-	-	-	-	72"	92"	-	7.00"	86.0"

MANHOLE HOLE SIZE DATA

MANHOLE - MAXIMUM HOLE SIZE DATA							
I.D.	Wall Thickness	O.D.	Max Hole Size	Min. Dist Between Holes	Max Hole Size @ 90°	Inches/Deg. I.D.	Inches/Deg. O.D.
48"	5"	58"	36"	8"	28"	0.419"	0.506"
60"	6"	72"	48"	8"	36"	0.524"	0.628"
72"	7"	86"	60"	12"	42"	0.628"	0.750"
84"	8"	100"	72"	12"	50"	0.733"	0.873"
96"	9"	114"	84"	12"	58"	0.838"	0.995"
120"	11"	142"	108"	12"	76"	1.047"	1.239"
144"	13"	170"	132"	12"	92"	1.257"	1.484"

MANHOLE NOTES

GENERAL NOTES:

1. The following notes shall apply unless noted otherwise on the plans or specifications. In the case of conflict with the plans or specifications, the more restrictive requirements shall apply.

REFERENCE SPECIFICATIONS:

1. Design Criteria: AASHTO Manhole Design Specifications
2. Manufacture: ASTM C478

MATERIALS:

1. Aggregate conforms to ASTM C33.
2. Portland cement conforms to ASTM C150.
3. Fly Ash conforms to ASTM C618.
4. All bar reinforcing steel conforms to ASTM A615 Grade 60.
5. Welded Wire Fabric conforms to ASTM A1064, 65 KSI.
6. Admixtures conform to ASTM C494.
7. Concrete minimum compressive strength (at 28 days) 4000 PSI, unless greater strength is required.

DELIVERY AND INSTALLATION:

1. The contractor provides rigging and off loading at the job site.
2. The contractor provides all weld plates and accessories which are not cast directly into the concrete.
3. Follow any installation procedures described in the project documents. More restrictive requirements outlined in the project documents or a corresponding geotechnical report take precedence. Refer to ASTM C1821 for installation methods.
4. The subgrade preparation and backfill sections of these notes provide basic installation criteria.

SUBGRADE PREPARATION:

1. All loose and disturbed soil shall be removed prior to placing manhole sections.
2. The manhole sections should be underlain by at least 4 inches of compacted gravel over compacted structural fill or undisturbed native soils.

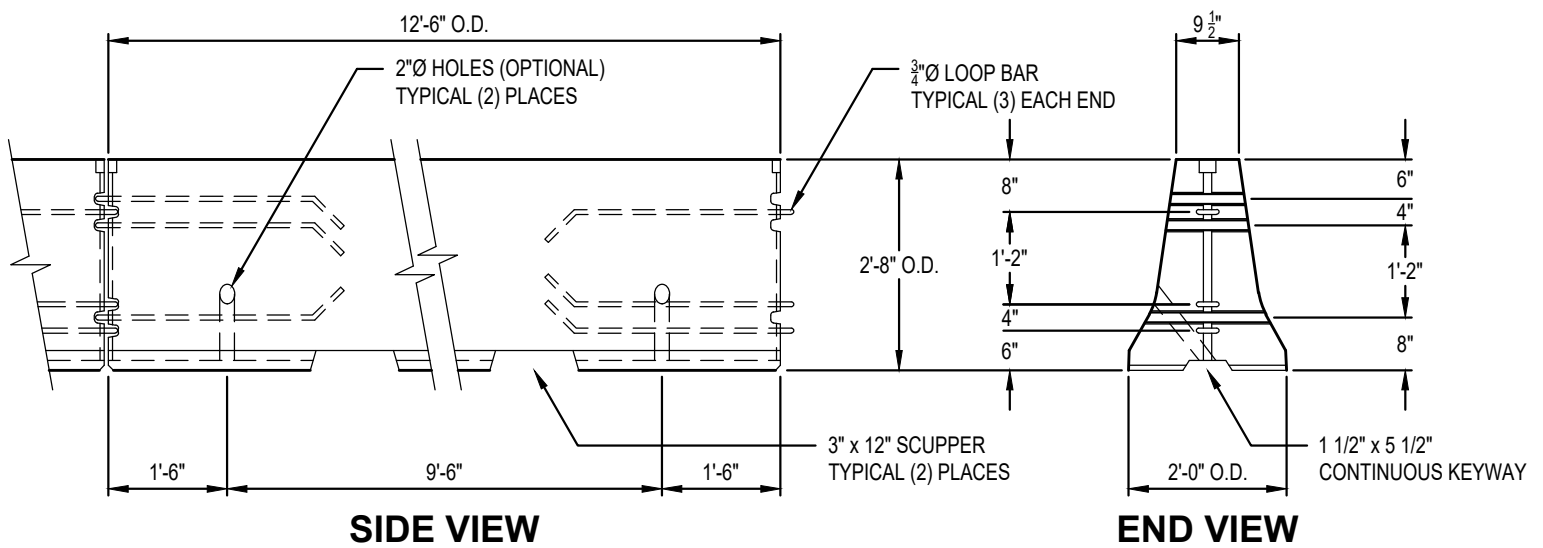
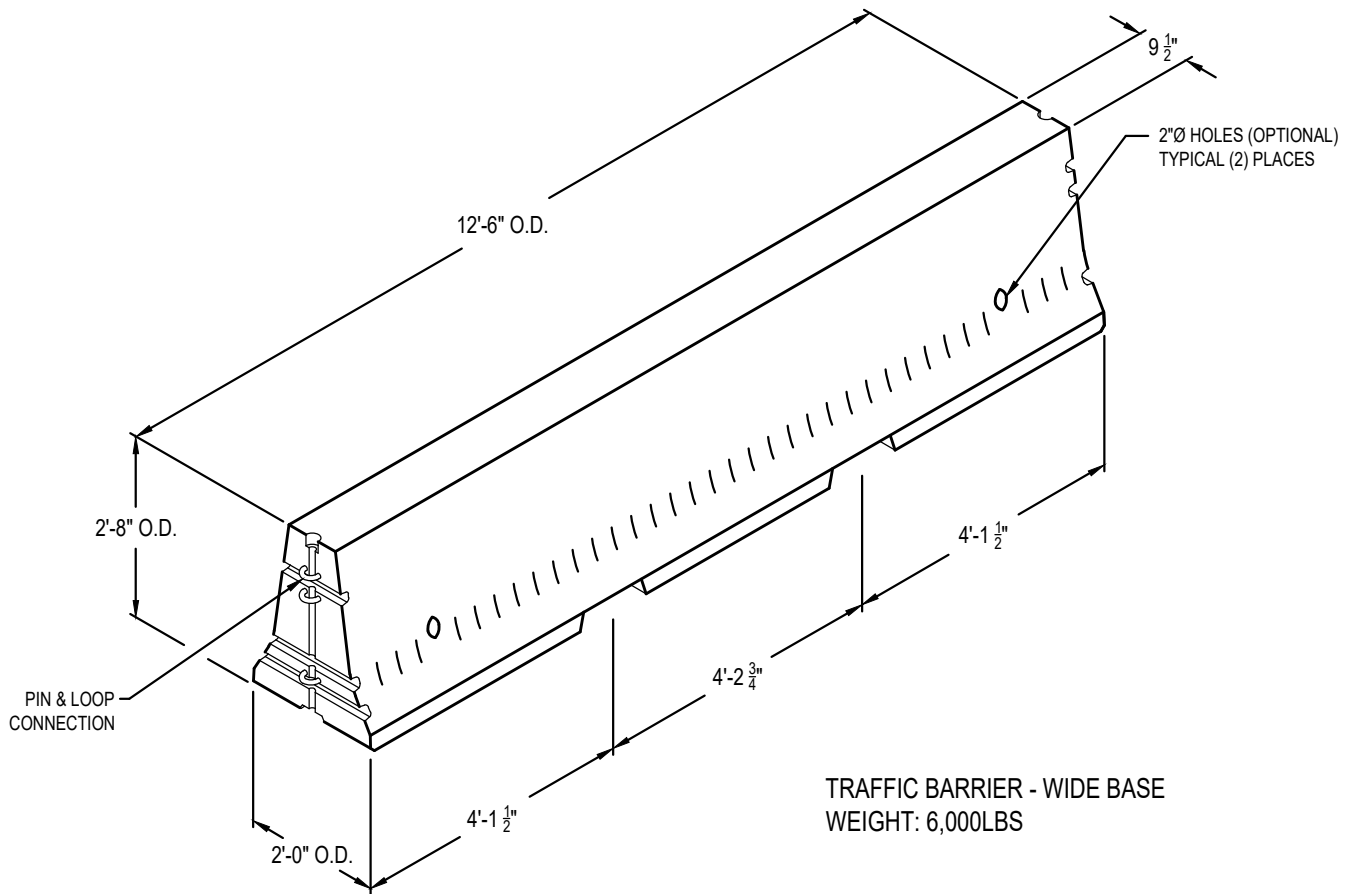
MANHOLE JOINTS:

1. Joints using a mastic sealant use a material in compliance with ASTM C990.
2. Rubber gasketed joints conform to ASTM C443.

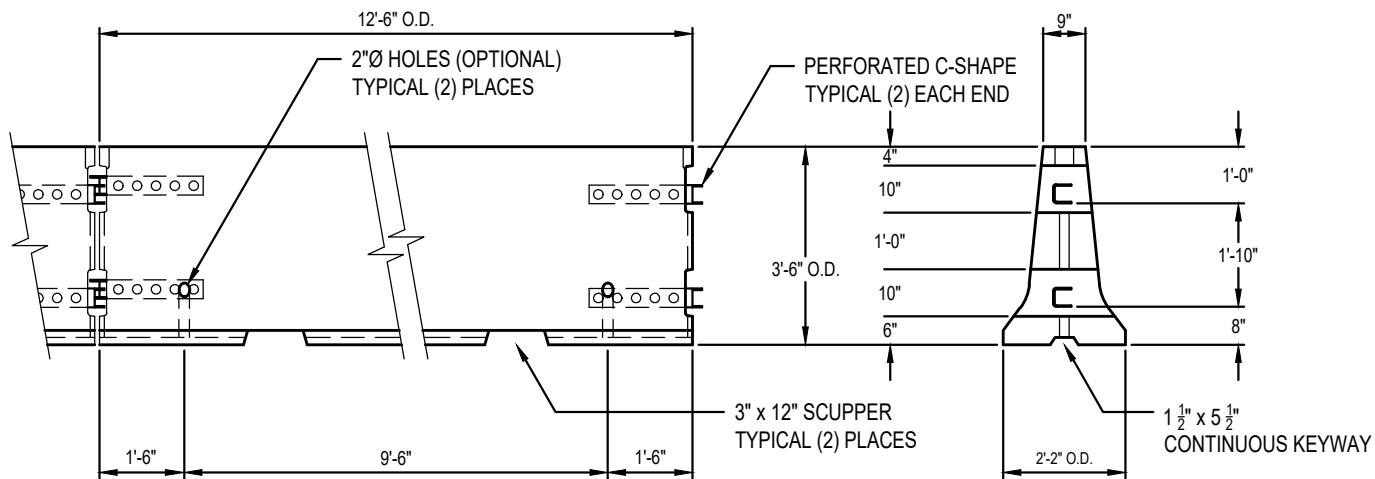
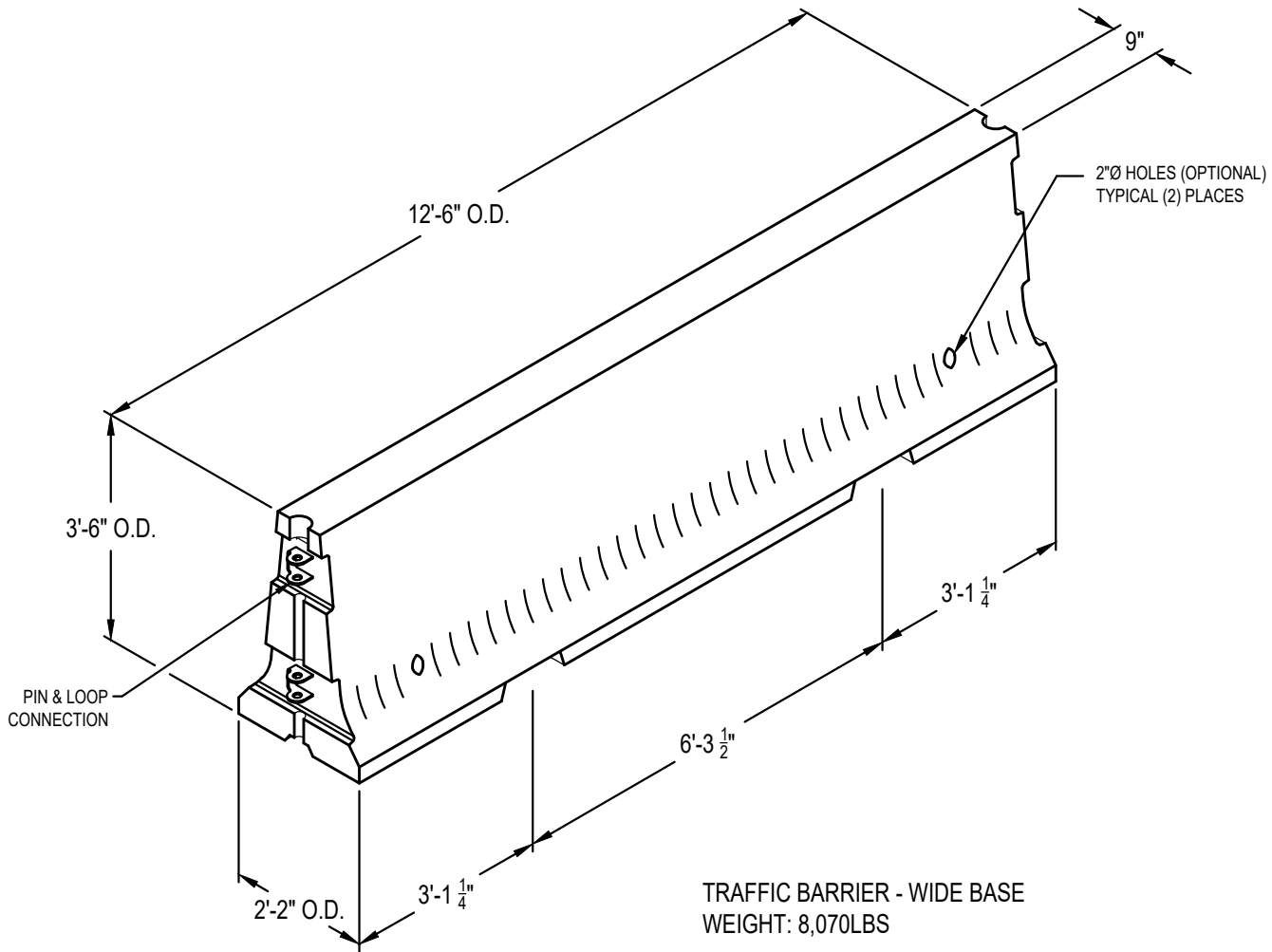
BACKFILL:

1. Backfill should consist of well graded soil free of organics and deleterious material.
2. Backfill should be placed in 12 inch lifts and compacted to a minimum of 90% modified proctor density.

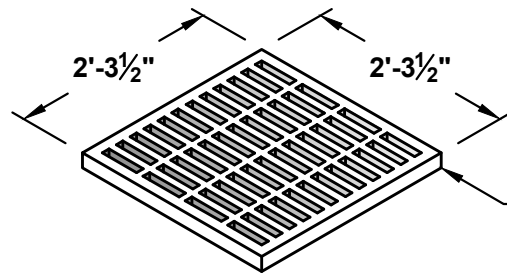
ODOT RD500 BARRIER



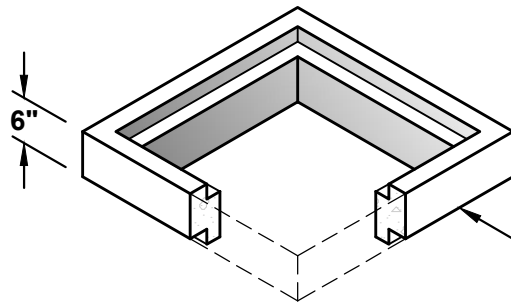
ODOT RD545 BARRIER



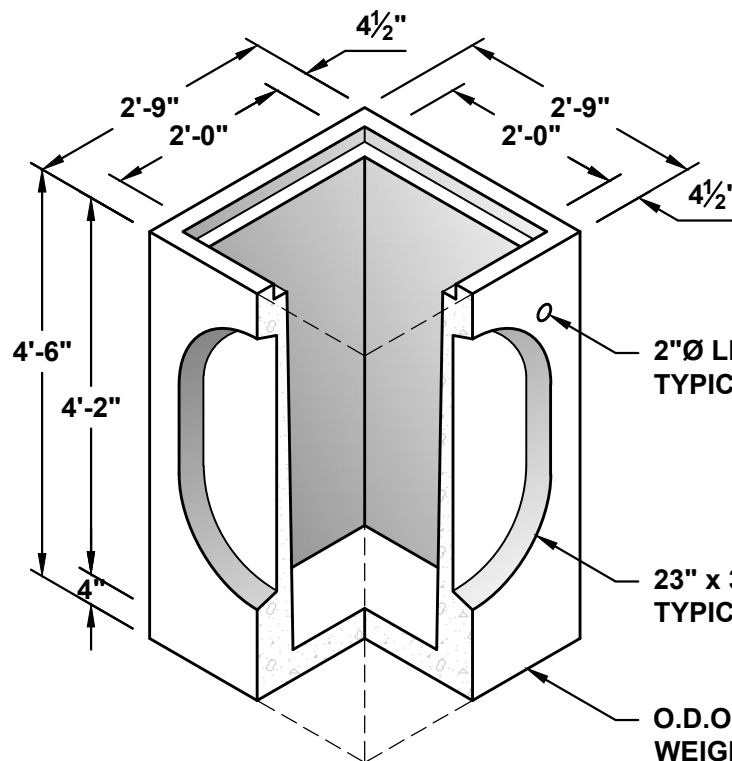
O.D.O.T. - TYPE 3 CATCH BASIN



**TYPE 3 CATCH BASIN GRATE
WEIGHT 100LBS**



**ADJUSTMENT RISER AVAILABLE
IN: 4", 6" AND 12" HEIGHTS**



**2"Ø LIFTING HOLE
TYPICAL (2) PLACES**

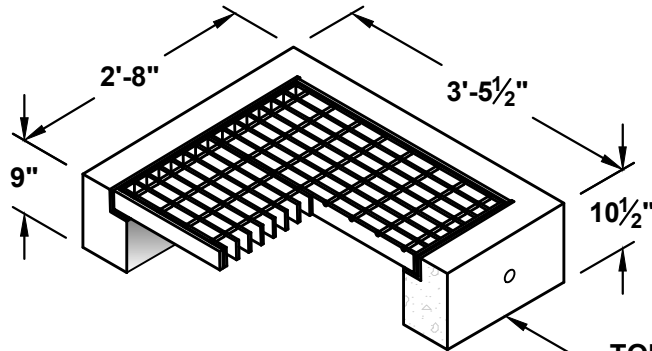
**23" x 34" KNOCKOUT
TYPICAL (1) EACH WALL**

**O.D.O.T. TYPE 3 CATCH BASIN
WEIGHT 2,600LBS**

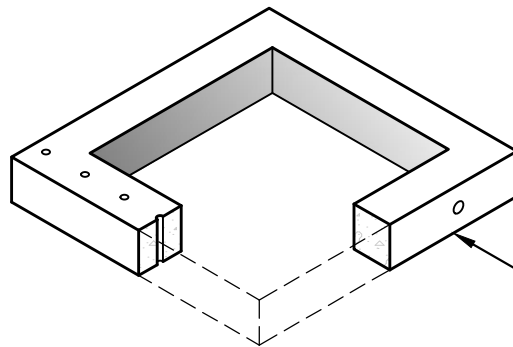
NOTES:

1. MEETS OR EXCEEDS ODOT STANDARD DRAWING NO. RD378.
2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

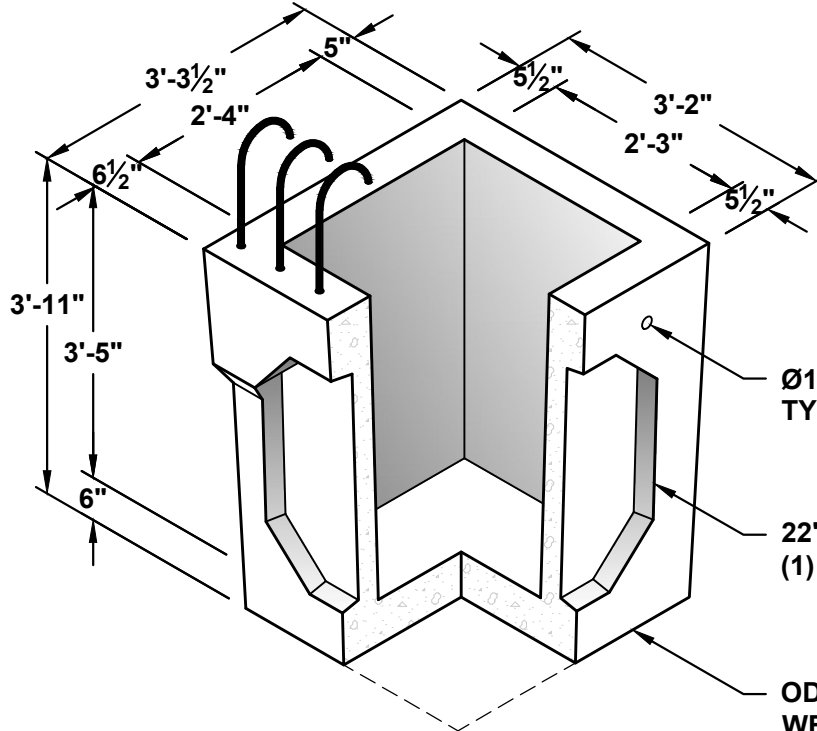
O.D.O.T. - TYPE CG2 CATCH BASIN



TOP UNIT PROVIDED WITH
O.S.H.D. TYPE 2 FRAME & GRATE
WEIGHT 550LBS



ADJUSTMENT RISER AVAILABLE
IN: 6" AND 12" HEIGHT



Ø1 1/2" LIFTING HOLE
TYPICAL (2) PLACES

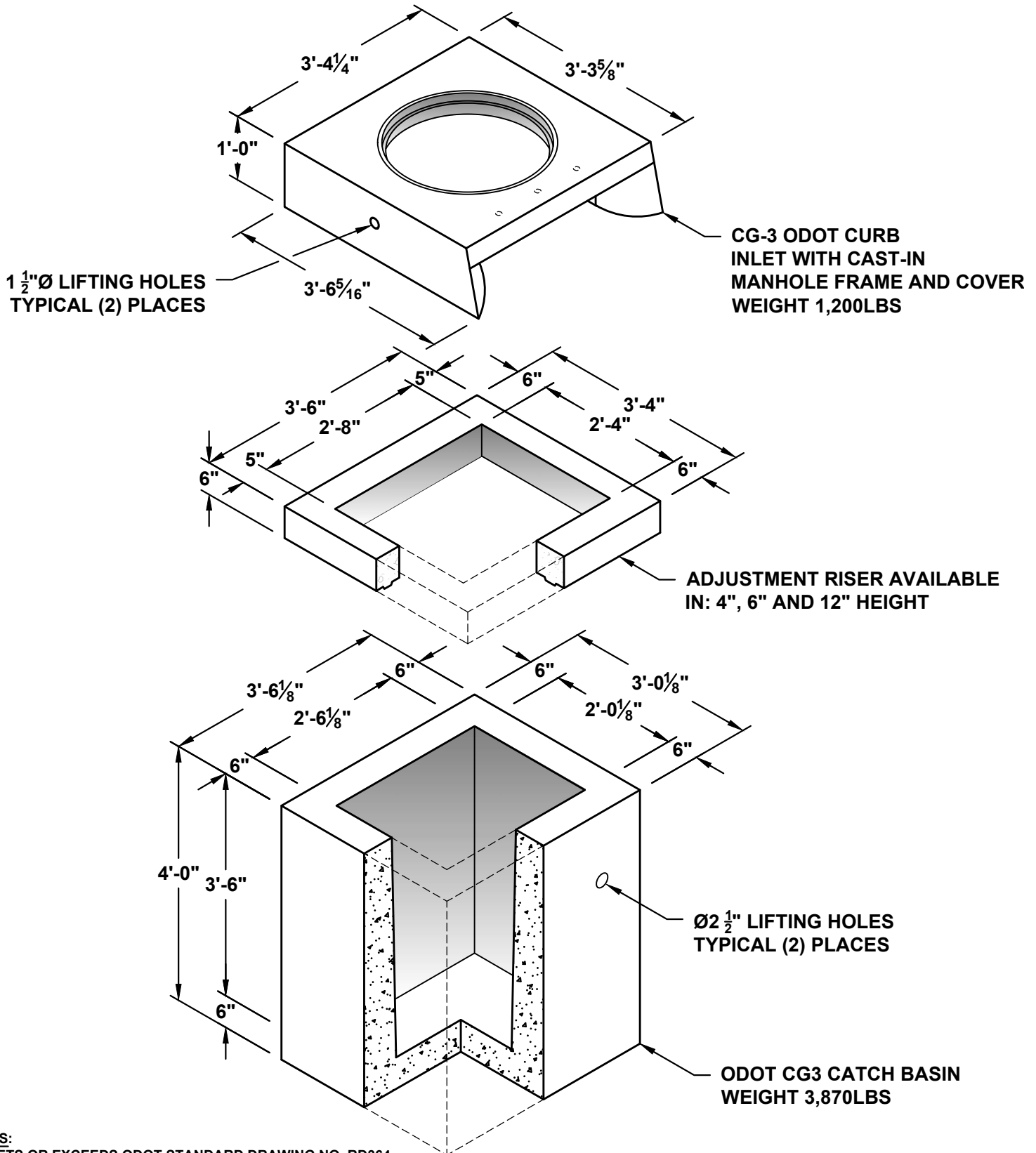
22" x 30" KNOCKOUT
(1) EACH WALL

ODOT CG2 CATCH BASIN
WEIGHT 2,900LBS

NOTES:

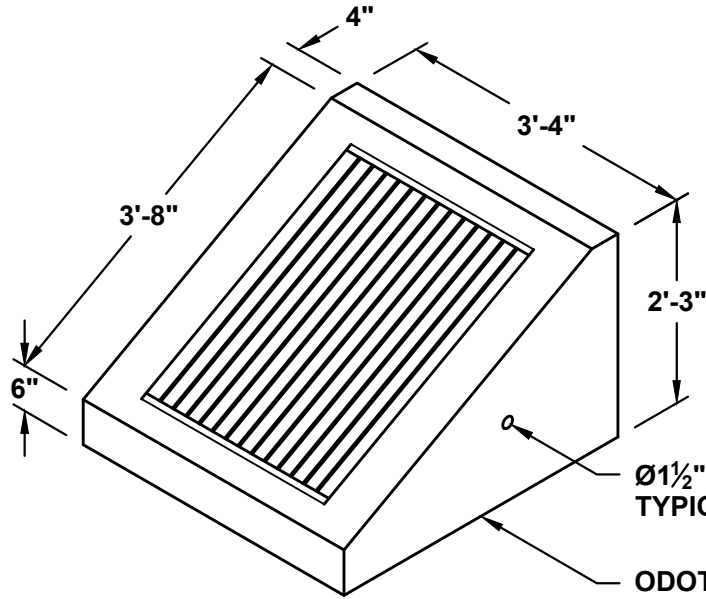
1. MEETS OR EXCEEDS ODOT STANDARD DRAWING NO. RD366.
2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

O.D.O.T. - TYPE CG-3 CATCH BASIN

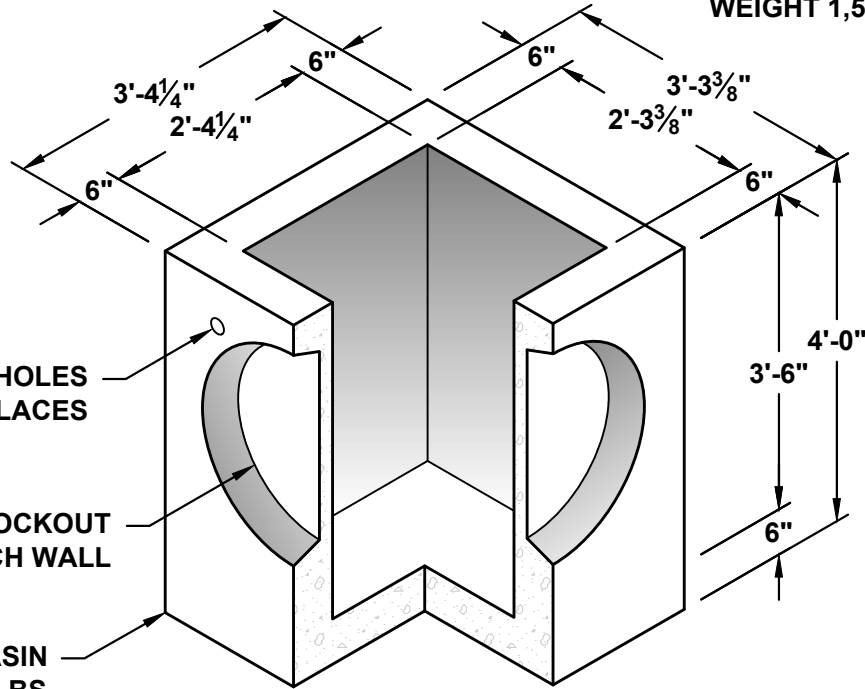


- NOTES:**
 1. MEETS OR EXCEEDS ODOT STANDARD DRAWING NO. RD364.
 2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

O.D.O.T. - G2 CATCH BASIN WITH DITCH INLET



ODOT TYPE D - DITCH INLET
 PROVIDED WITH O.S.H.D.
 TYPE 2 FRAME & GRATE
 WEIGHT 1,500LBS

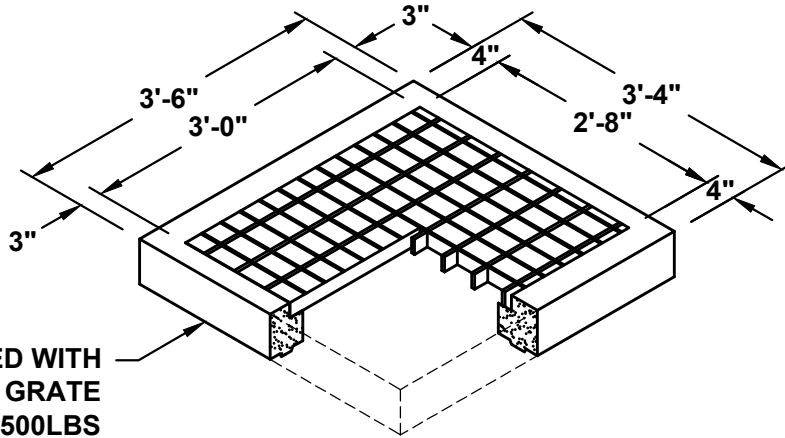


ODOT G2 CATCH BASIN
 WEIGHT 3,050LBS

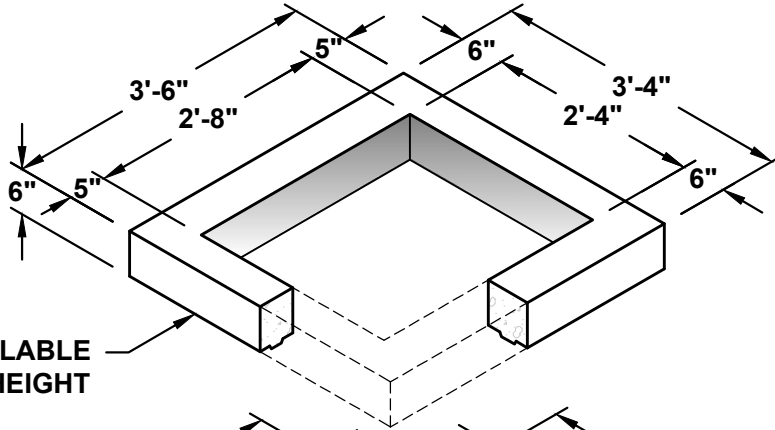
NOTES:

1. MEETS OR EXCEEDS ODOT STANDARD DRAWING NO. RD370.
2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

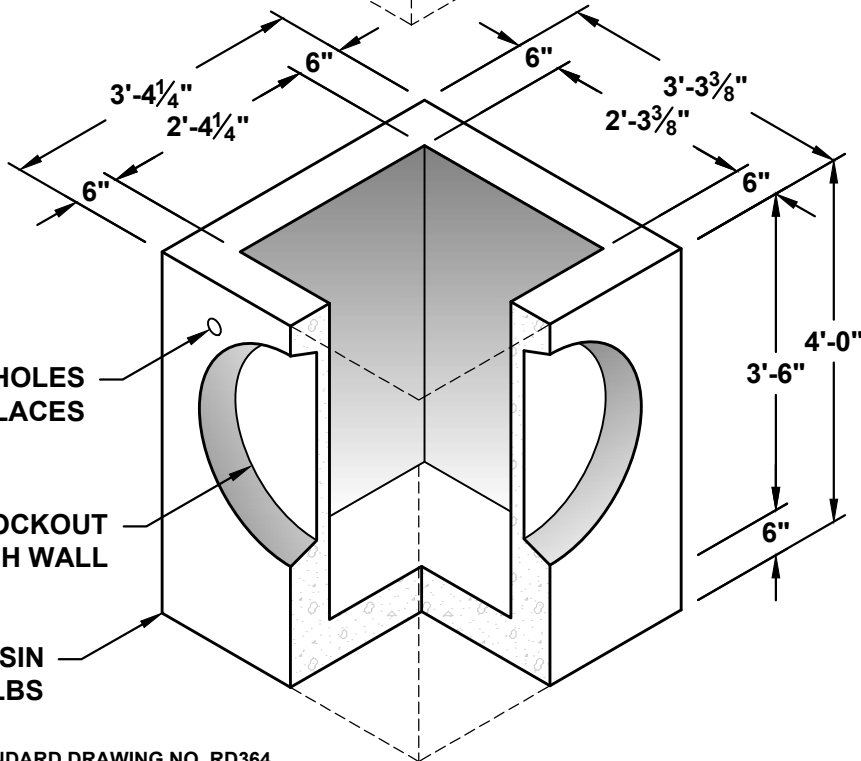
O.D.O.T. - TYPE G2 CATCH BASIN



TOP UNIT PROVIDED WITH
O.S.H.D. TYPE 2 FRAME & GRATE
WEIGHT 1,500LBS



ADJUSTMENT RISER AVAILABLE
IN: 4", 6" AND 12" HEIGHT



Ø2" LIFTING HOLES
TYPICAL (2) PLACES

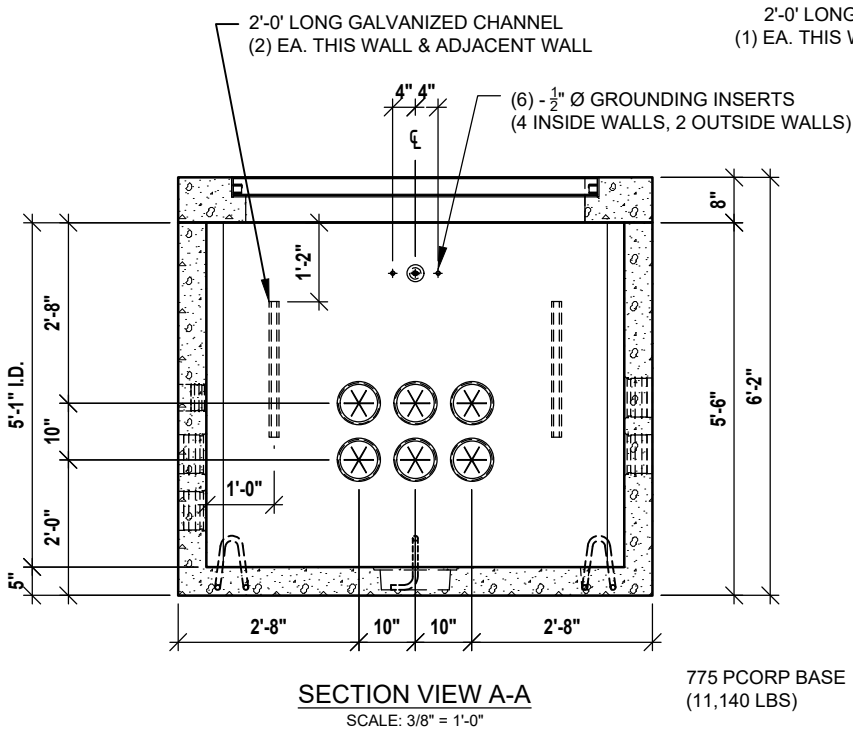
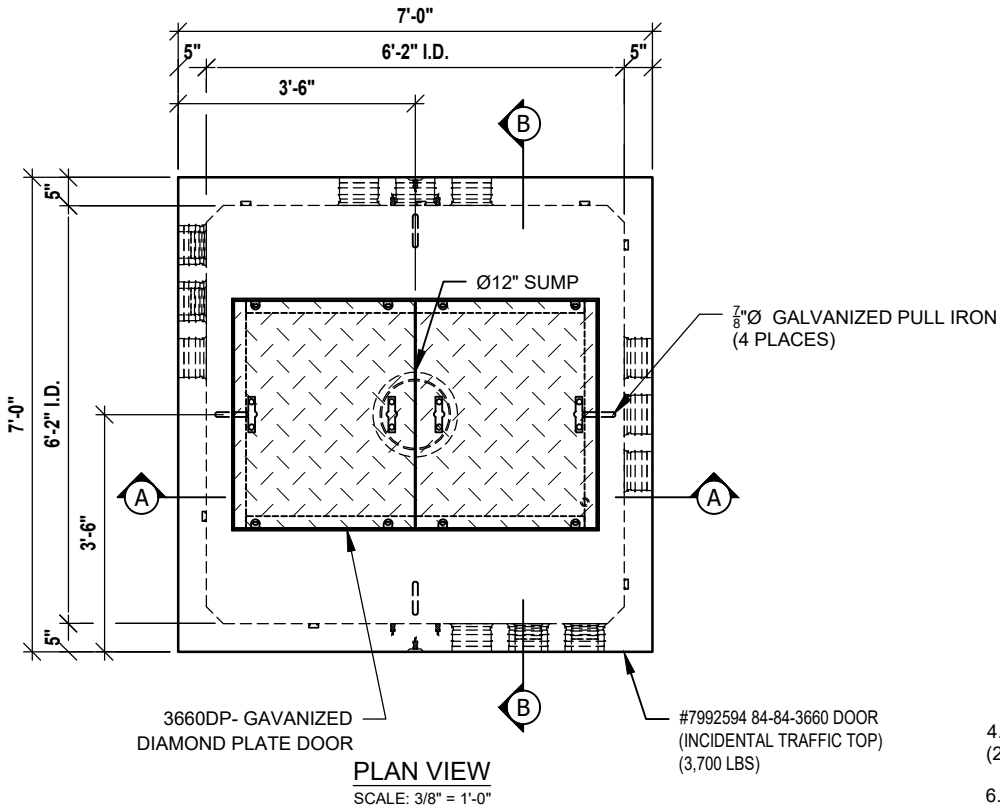
Ø26" KNOCKOUT
(1) EACH WALL

ODOT G2 CATCH BASIN
WEIGHT 3,050LBS

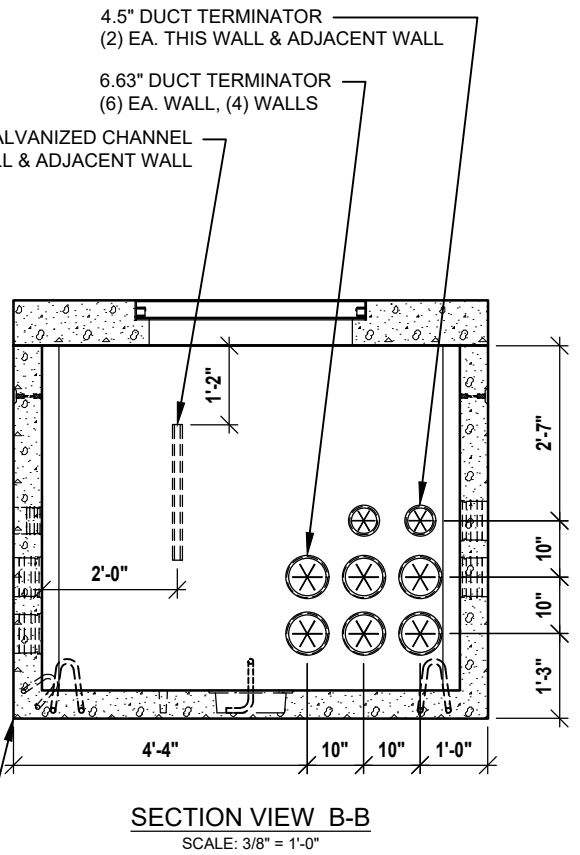
NOTES:

1. MEETS OR EXCEEDS ODOT STANDARD DRAWING NO. RD364.
2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

PACIFIC CORP 775 INC. TRAFFIC #7992594



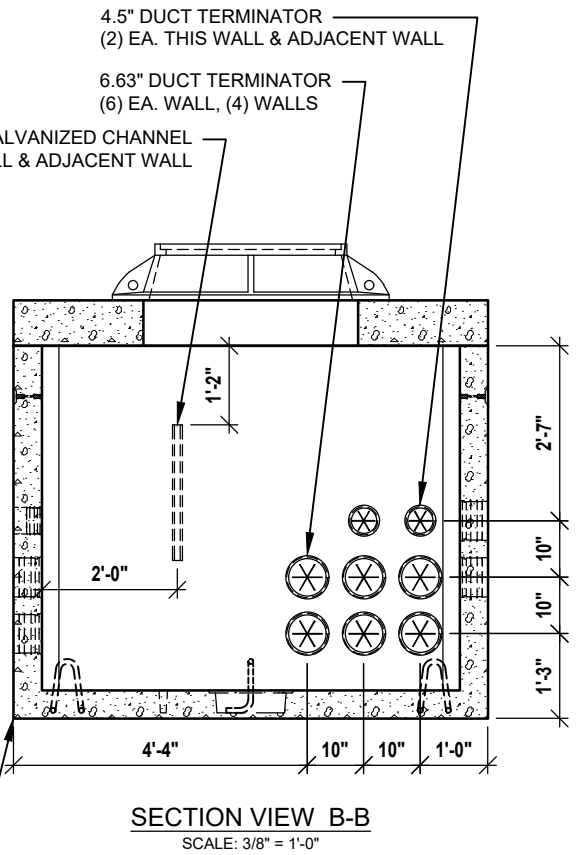
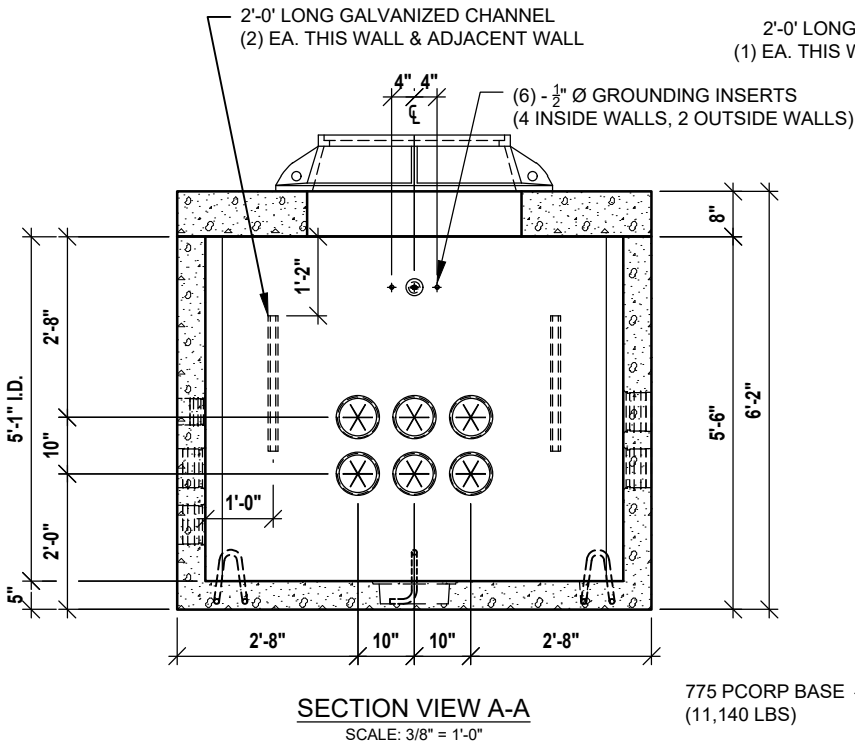
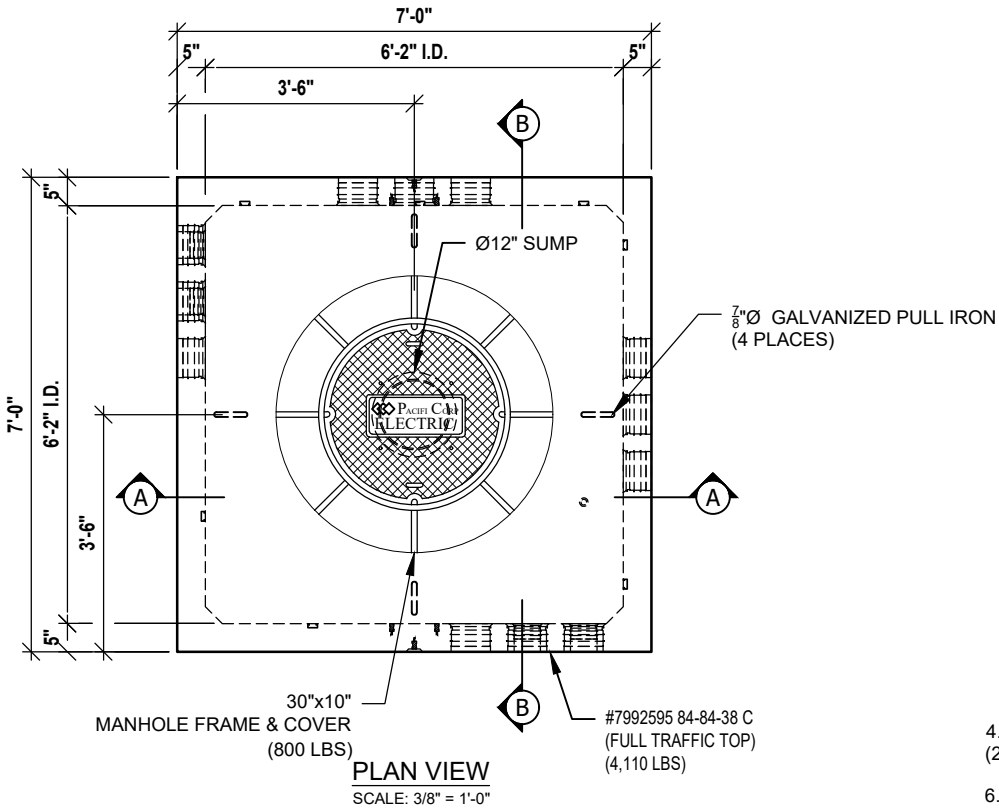
775 PCORP BASE (11,140 LBS)



NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG631 11-01-13

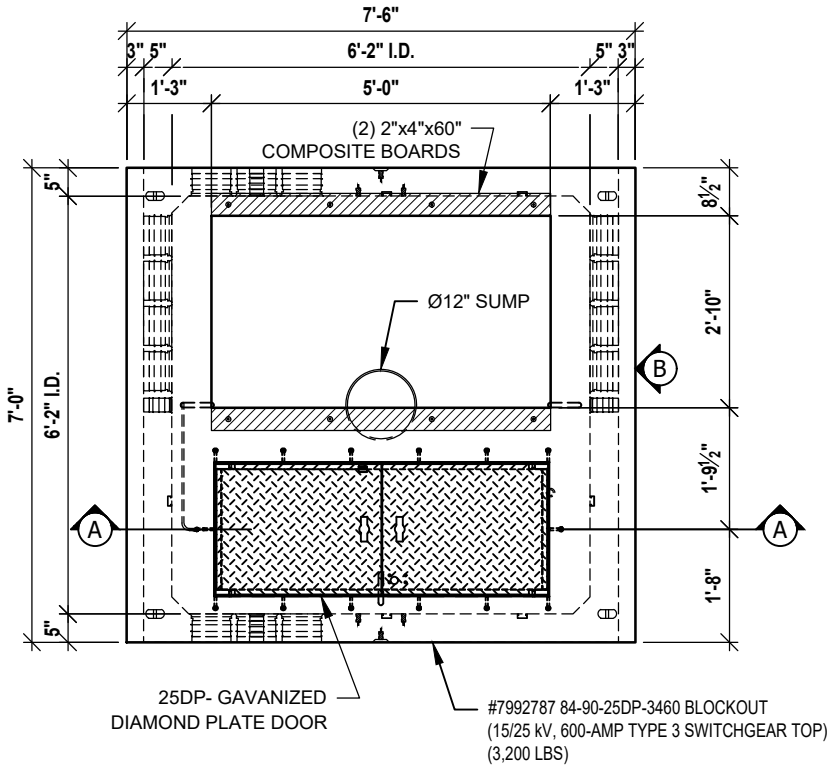
PACIFIC CORP 775 FULL TRAFFIC #7992595



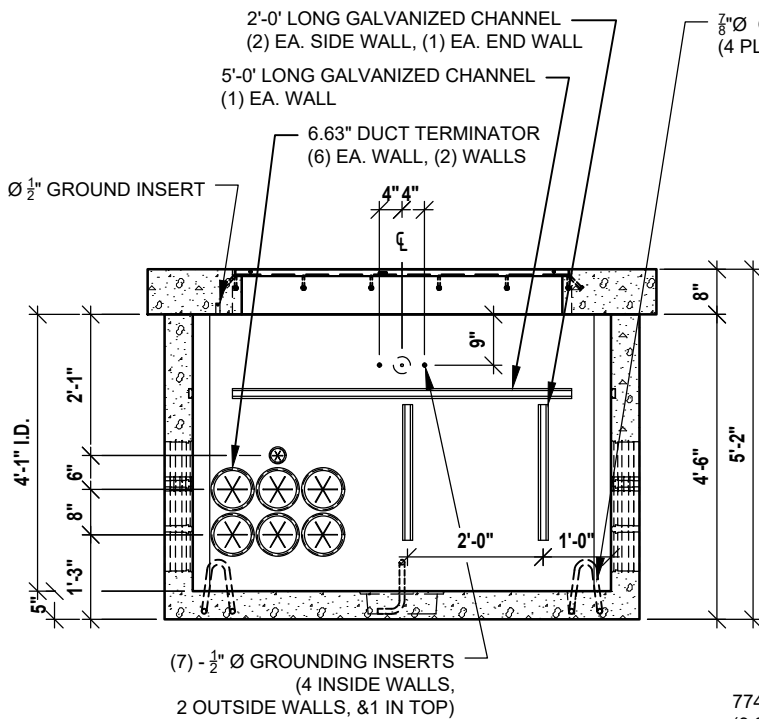
NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG631 11-01-13

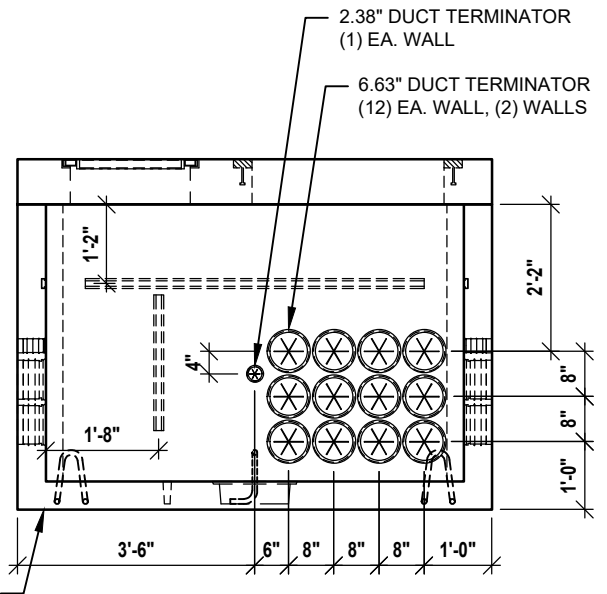
PACIFIC CORP 774 SWGEAR #7992787



PLAN VIEW
SCALE: 3/8" = 1'-0"



SECTION VIEW
SCALE: 3/8" = 1'-0"

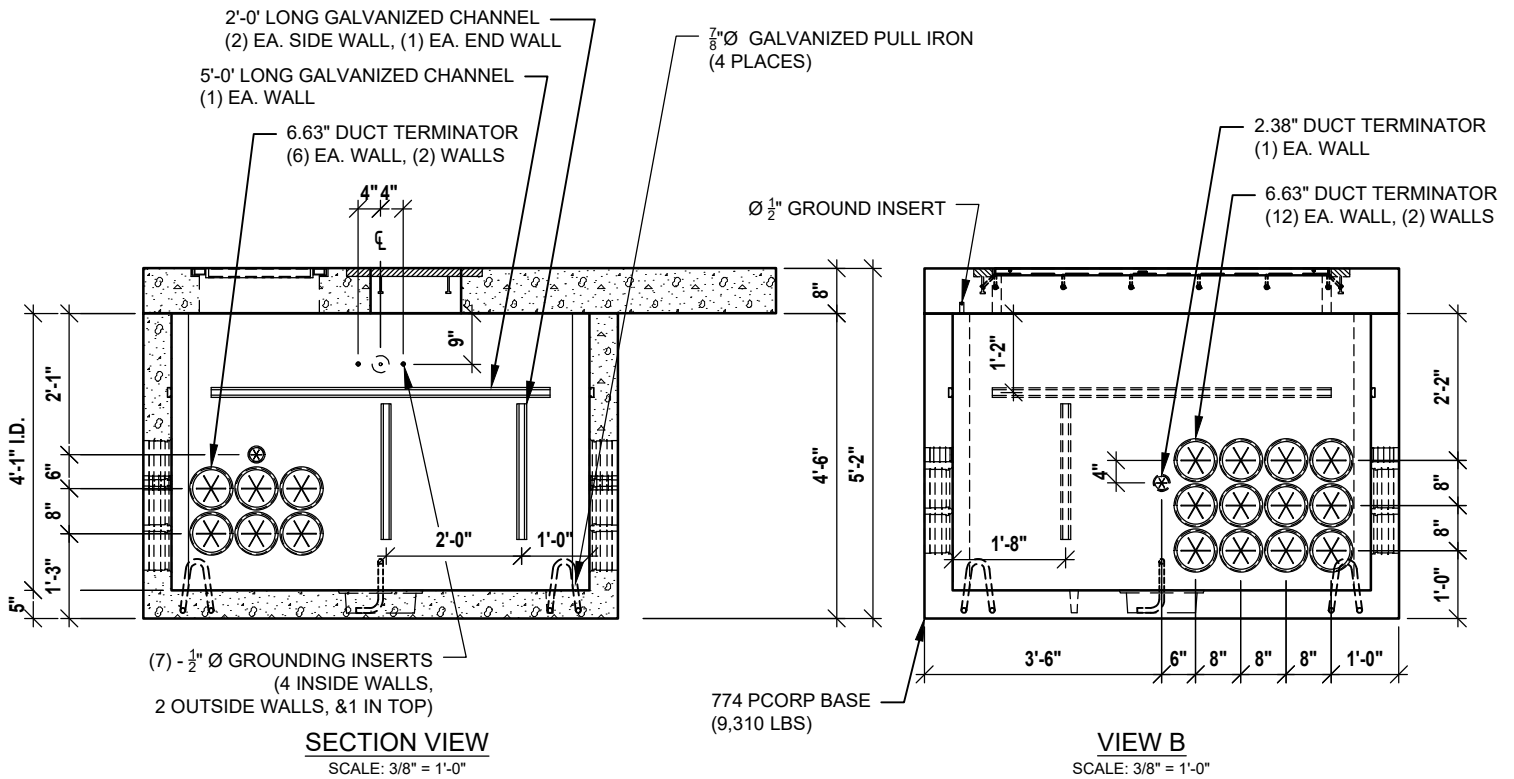
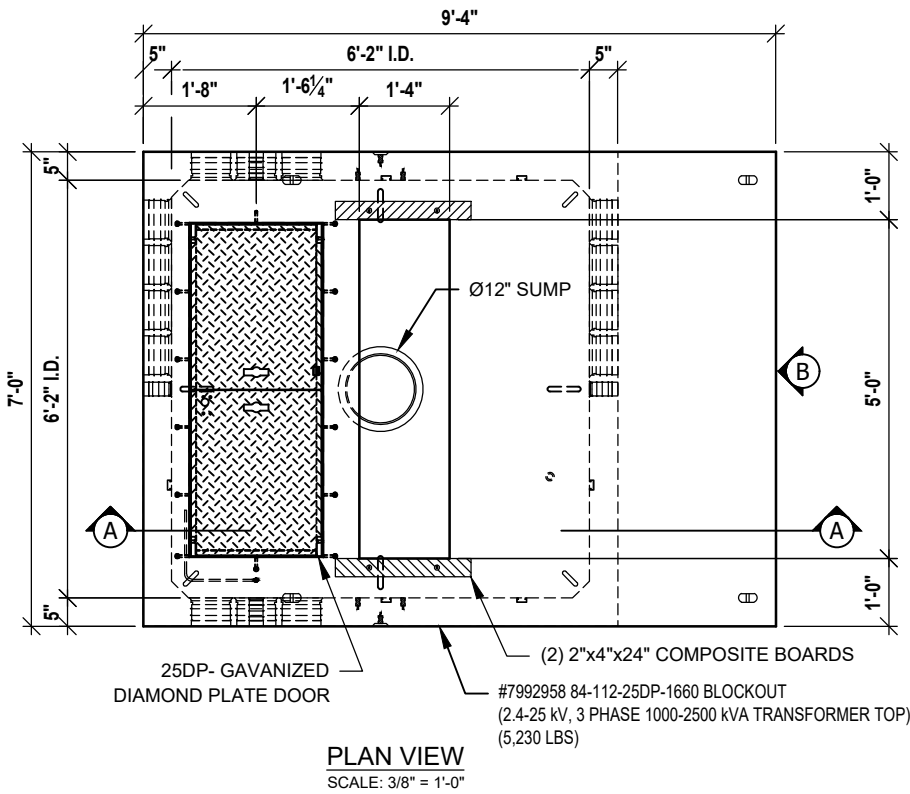


VIEW B
SCALE: 3/8" = 1'-0"

NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG641 04-03-13

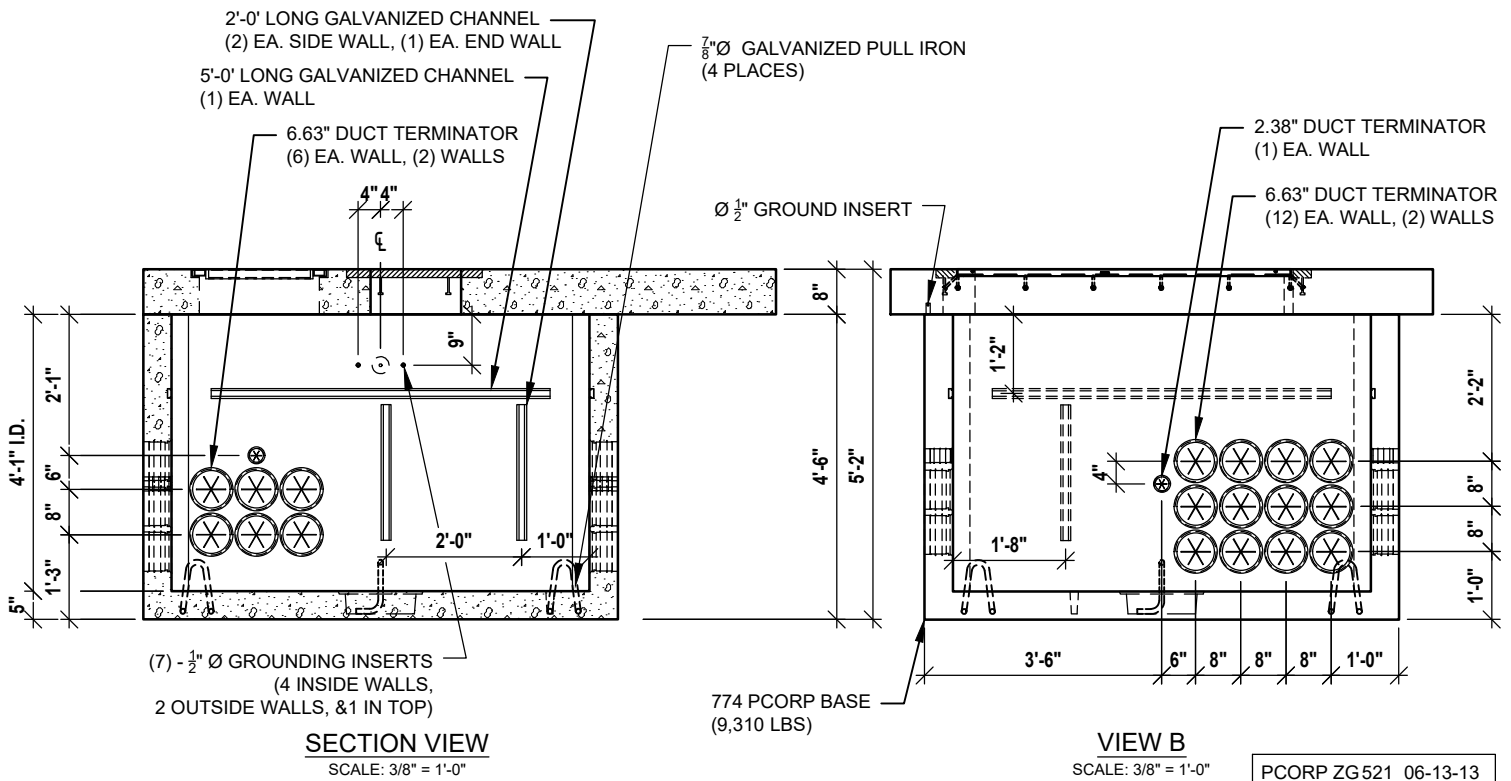
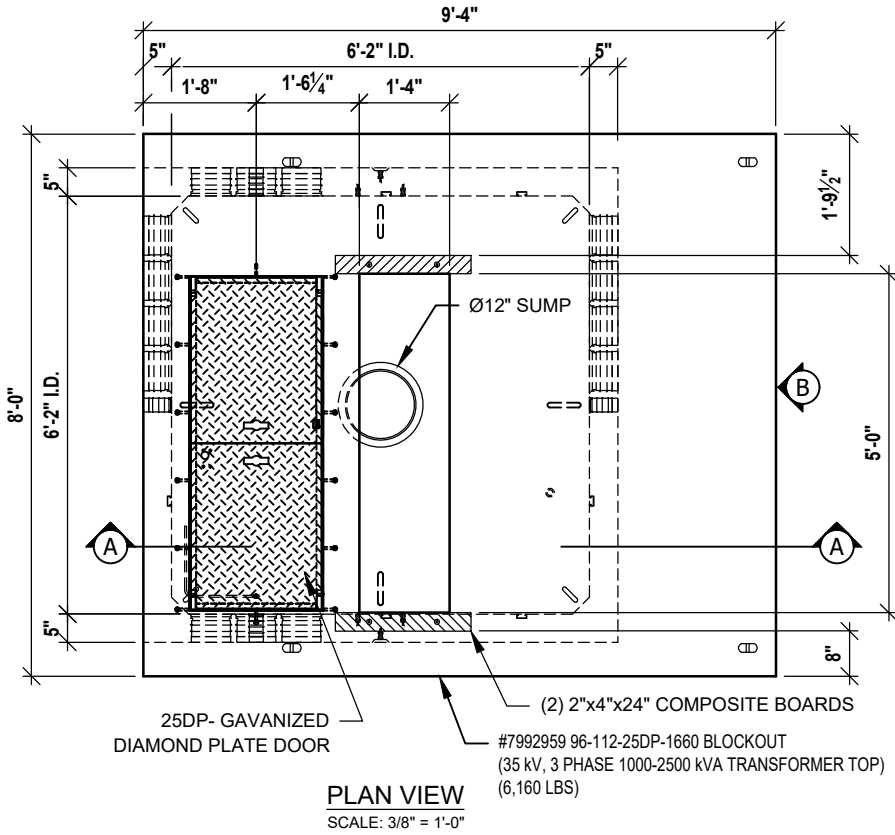
PACIFIC CORP 774 TRANS #7992958



NOTES:
 1. WEIGHTS LISTED ARE APPROXIMATE.

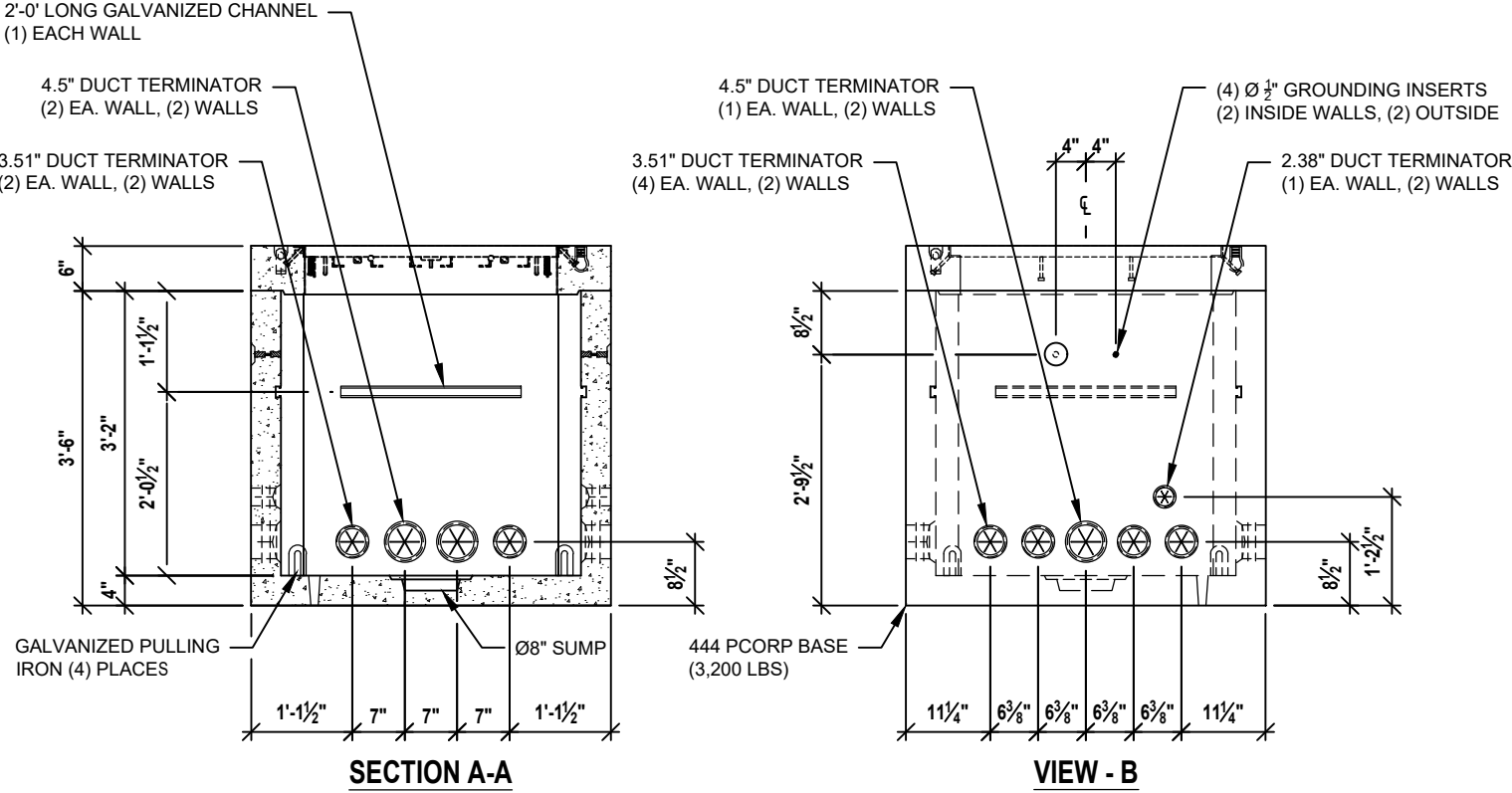
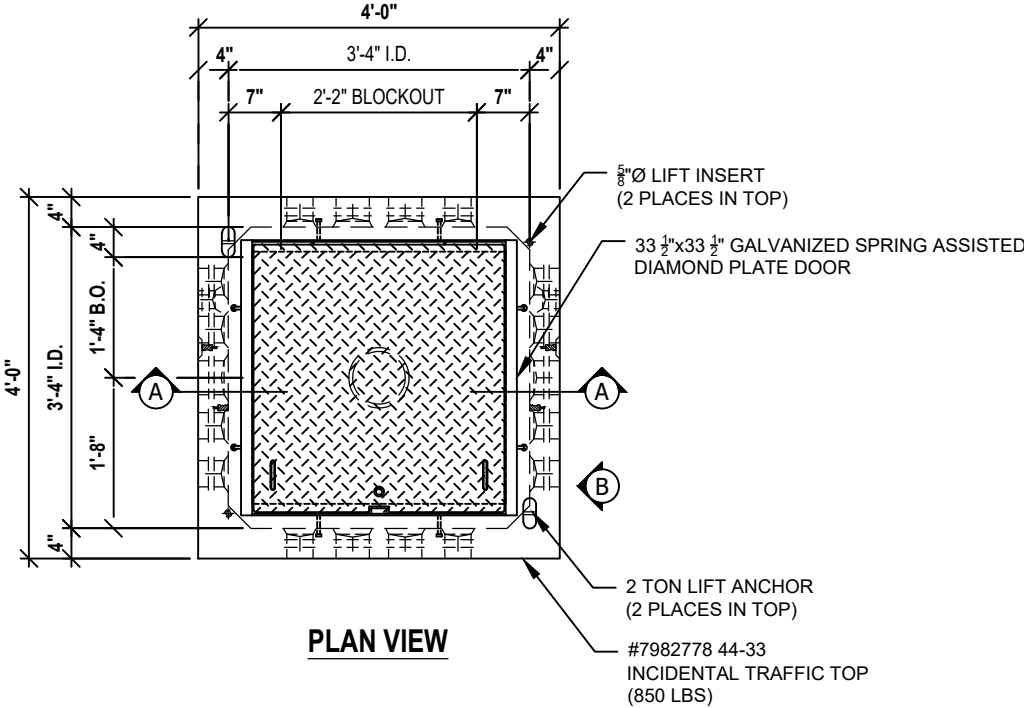
PCORP ZG521 06-13-13
 PCORP ZG641 04-03-13

PACIFIC CORP 774 TRANS #7992959



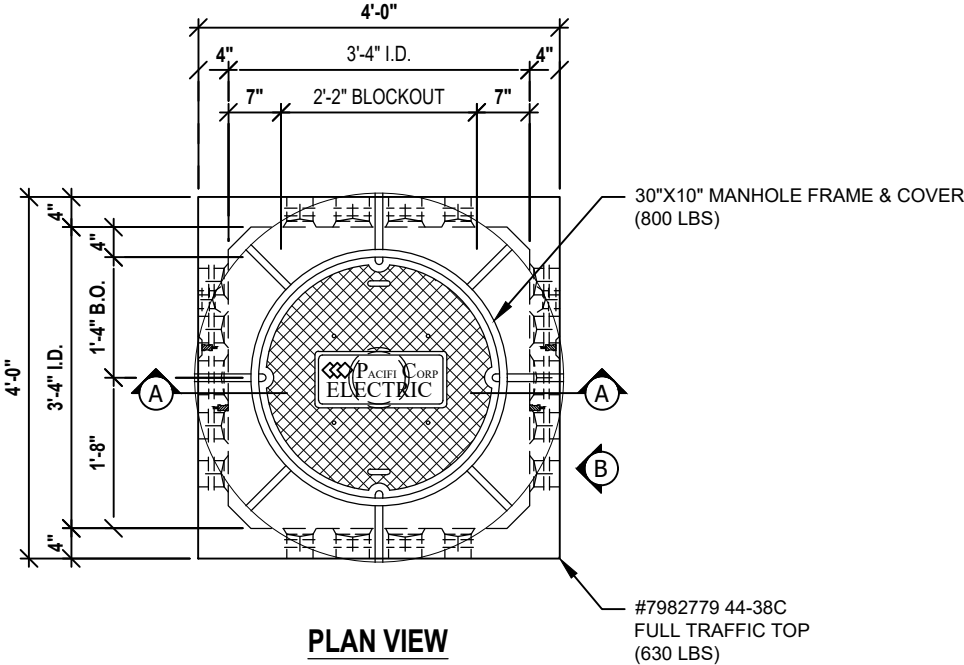
NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG521 06-13-13
PCORP ZG641 04-03-13



NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG501 12-20-17

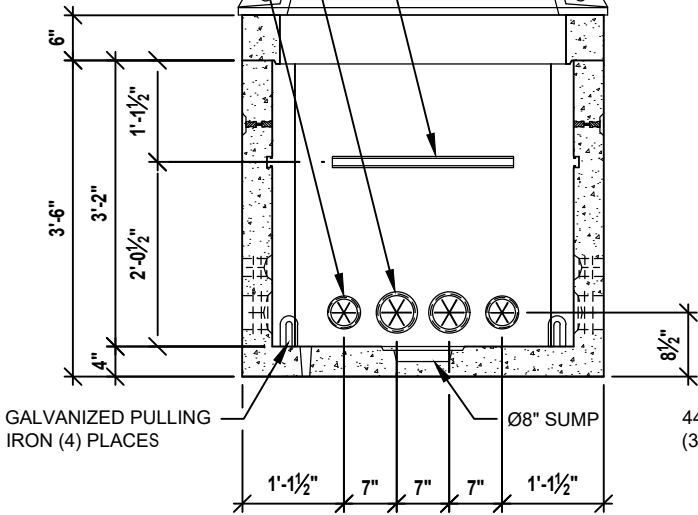


PLAN VIEW

2'-0' LONG GALVANIZED CHANNEL
(1) EACH WALL

4.5" DUCT TERMINATOR
(2) EA. WALL, (2) WALLS

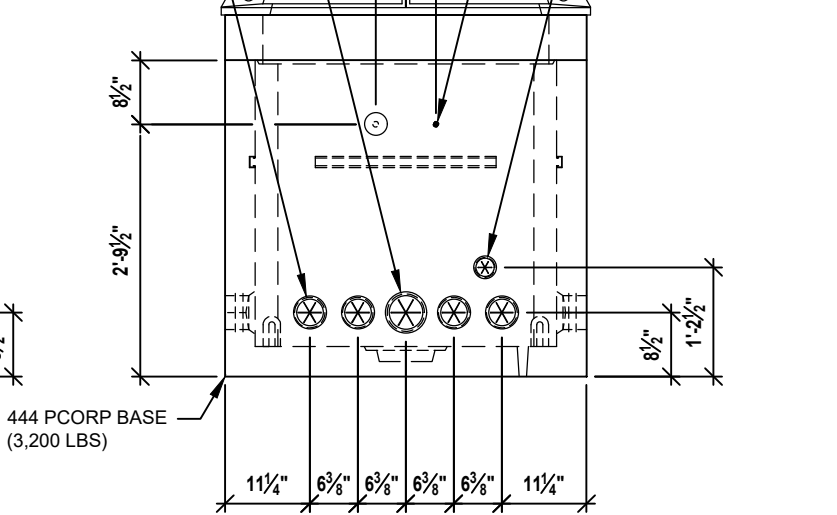
3.51" DUCT TERMINATOR
(2) EA. WALL, (2) WALLS



SECTION A-A

4.5" DUCT TERMINATOR
(1) EA. WALL, (2) WALLS

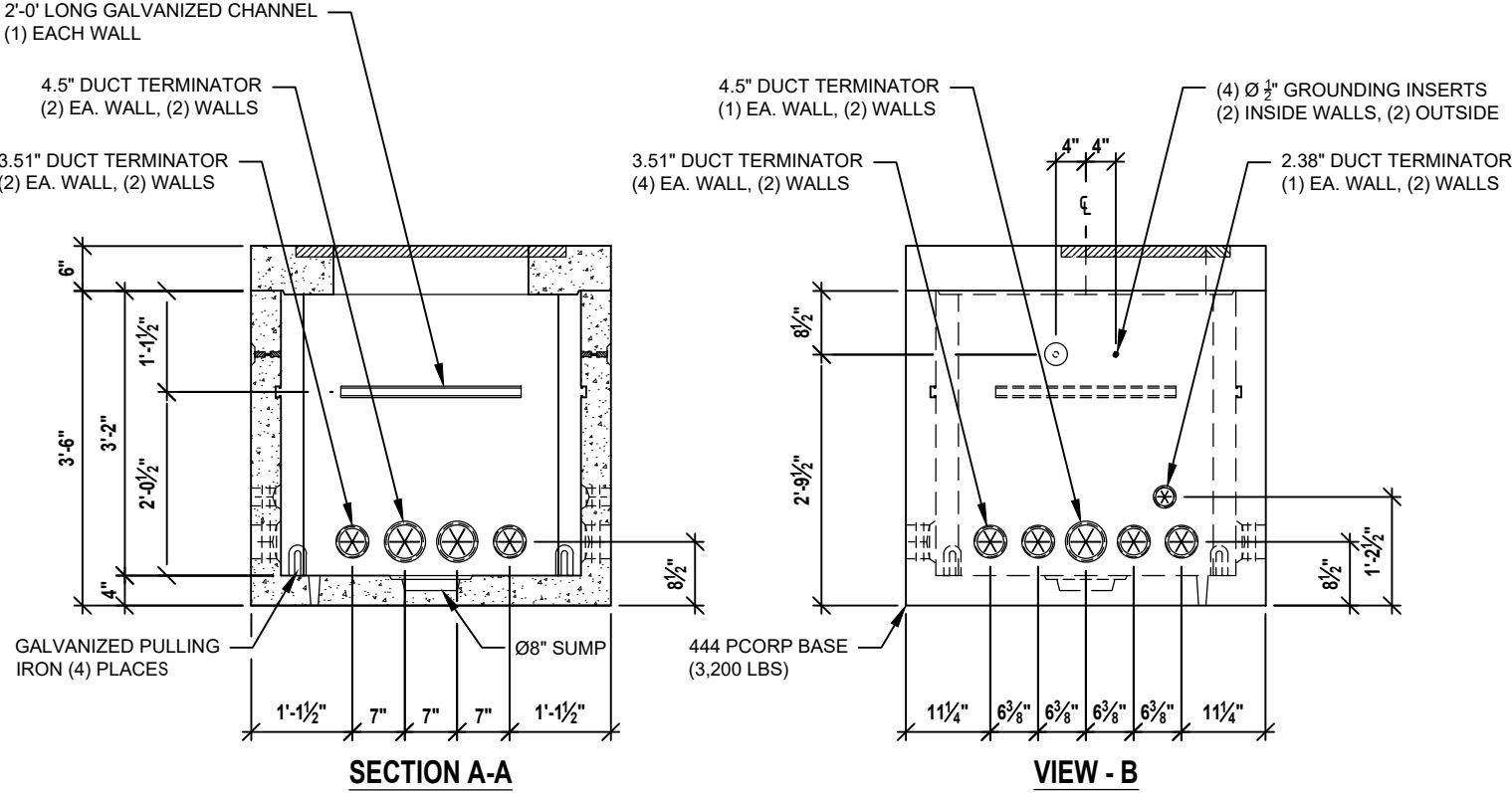
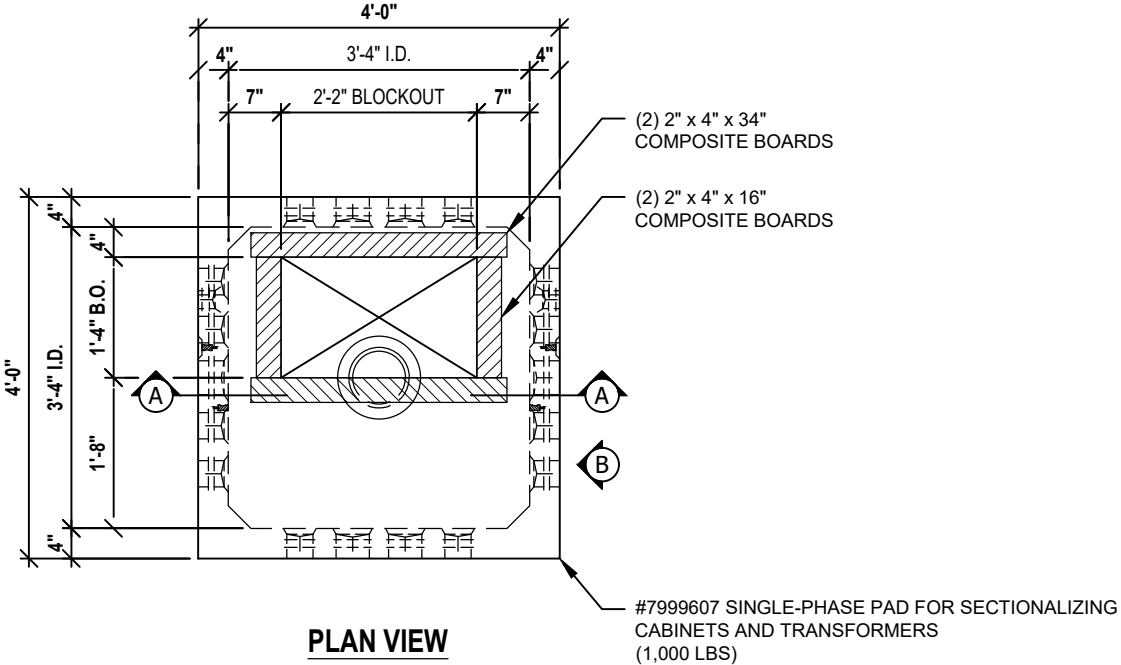
3.51" DUCT TERMINATOR
(4) EA. WALL, (2) WALLS



VIEW - B

NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

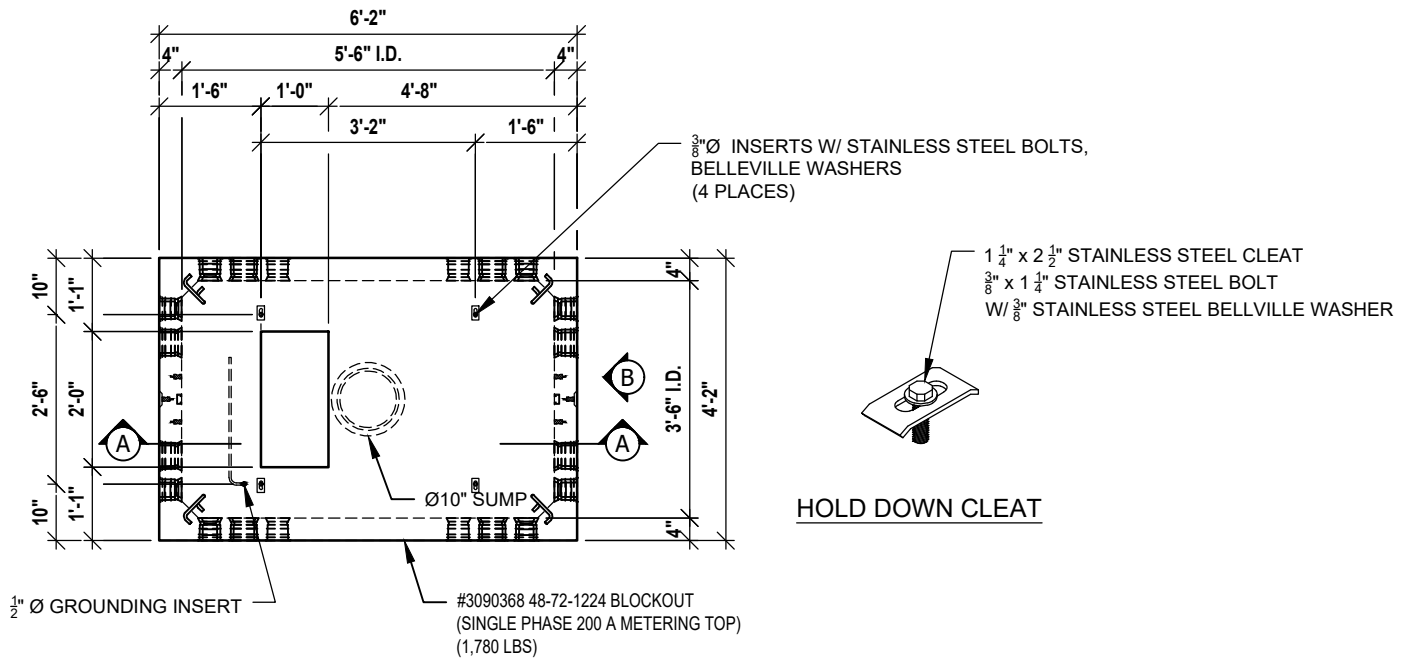
PCORP ZG501 06-13-13



NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

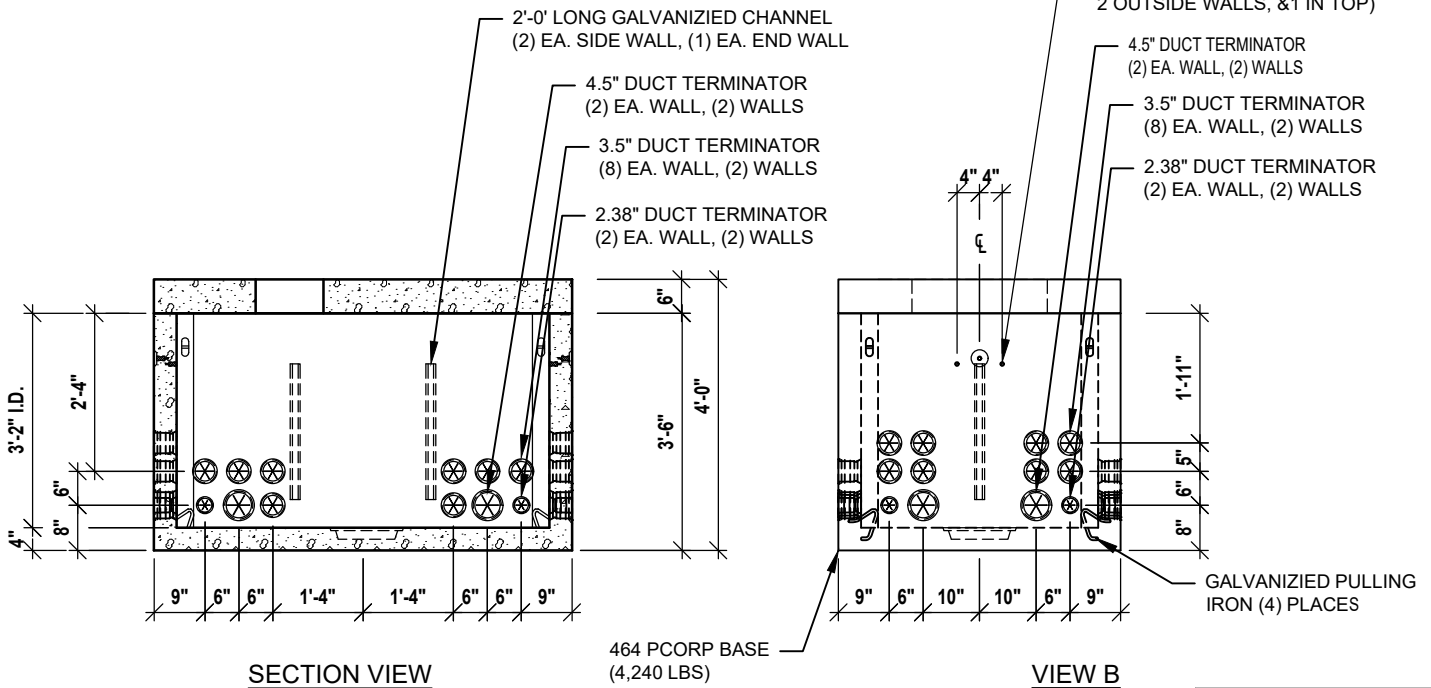
PCORP ZG501 06-13-13

PACIFIC CORP 464 METER #3090368



PLAN VIEW

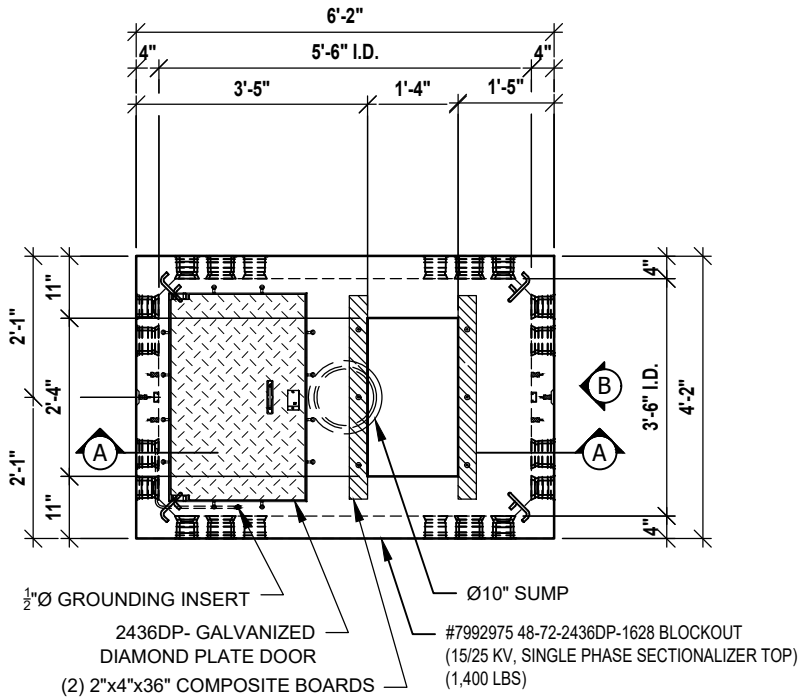
SCALE: 3/8" = 1'-0"



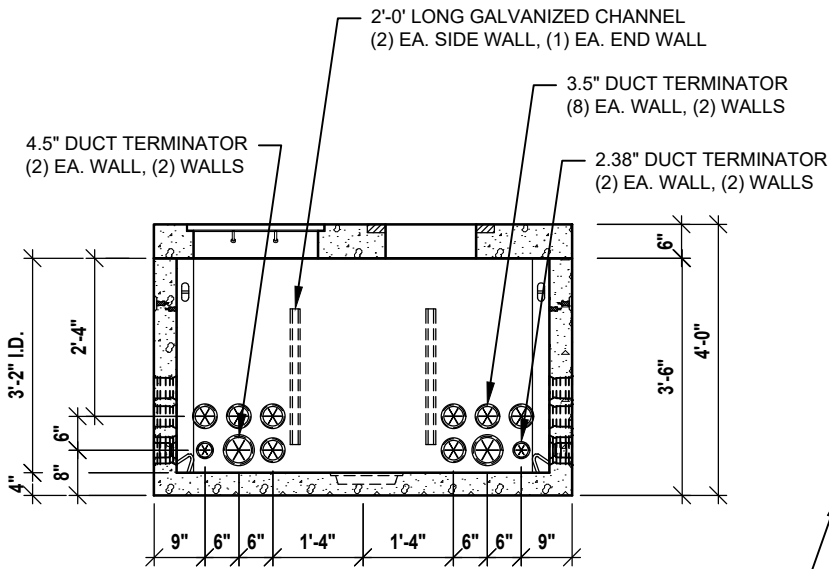
NOTES:
 1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG571 12-16-11
PCORP ZG616 05-19-15

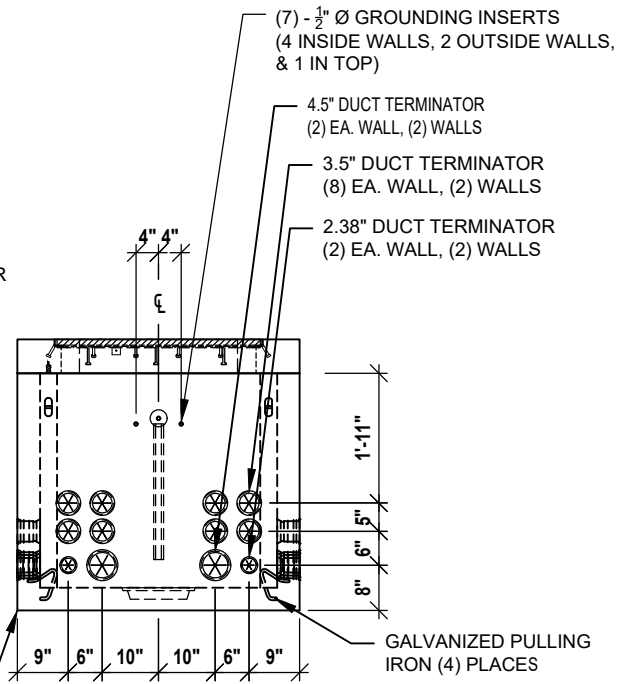
PACIFIC CORP 464 SECT #7992975



PLAN VIEW
SCALE: 3/8" = 1'-0"



SECTION VIEW
SCALE: 3/8" = 1'-0"



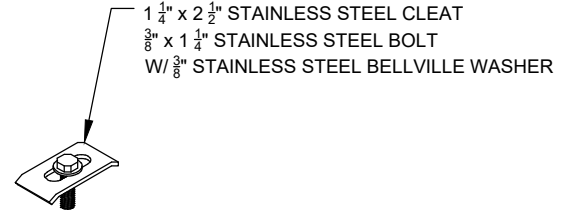
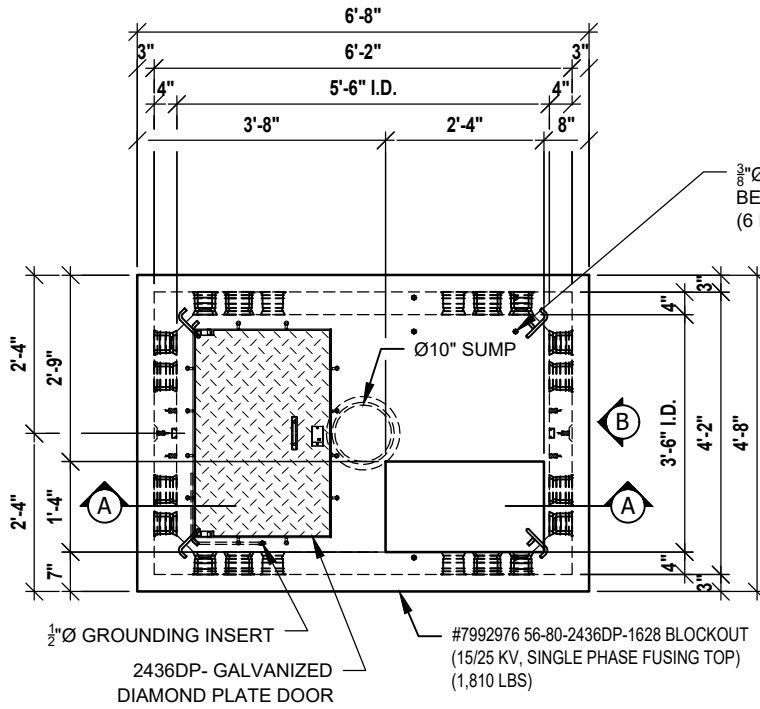
VIEW B
SCALE: 3/8" = 1'-0"

464 PCORP BASE
(4,240 LBS)

NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

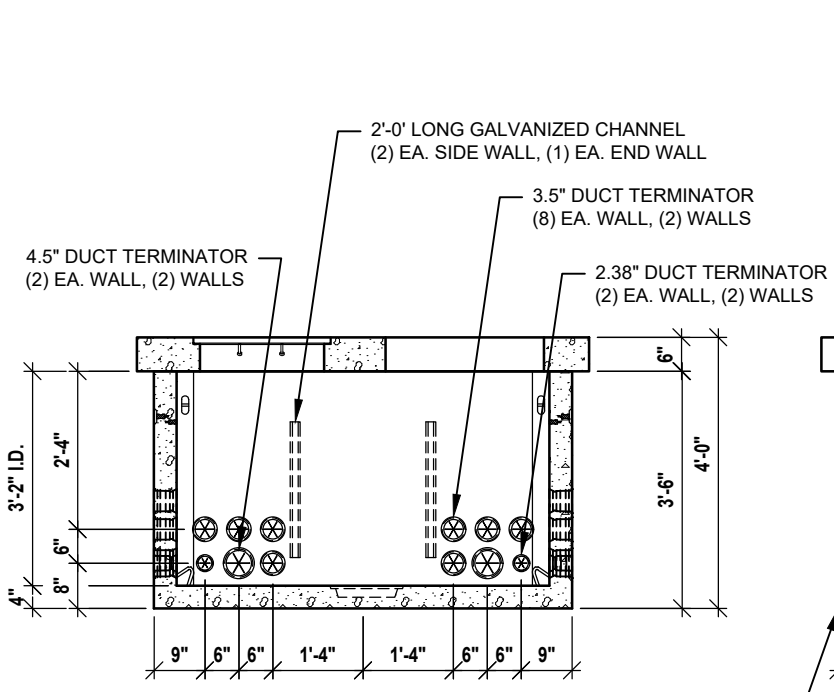
PCORP ZG616 05-19-15

PACIFIC CORP 464 FUSE #7992976

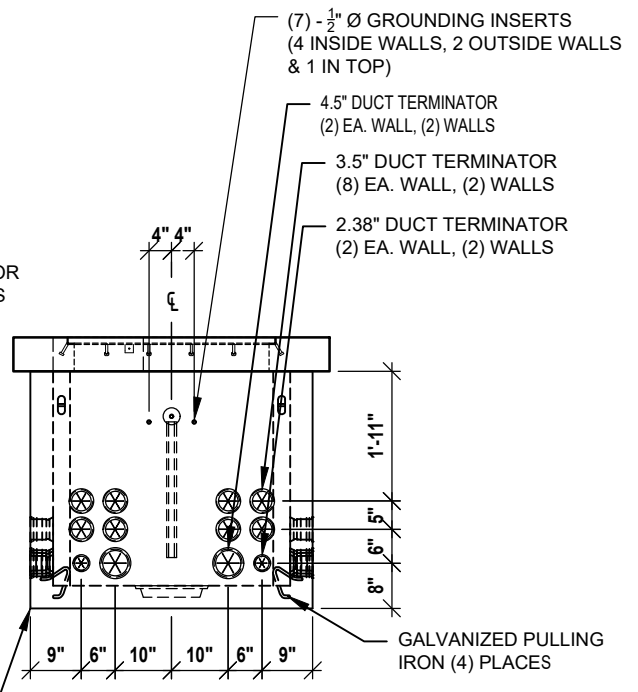


HOLD DOWN CLEAT

PLAN VIEW
SCALE: 3/8" = 1'-0"



SECTION VIEW
SCALE: 3/8" = 1'-0"

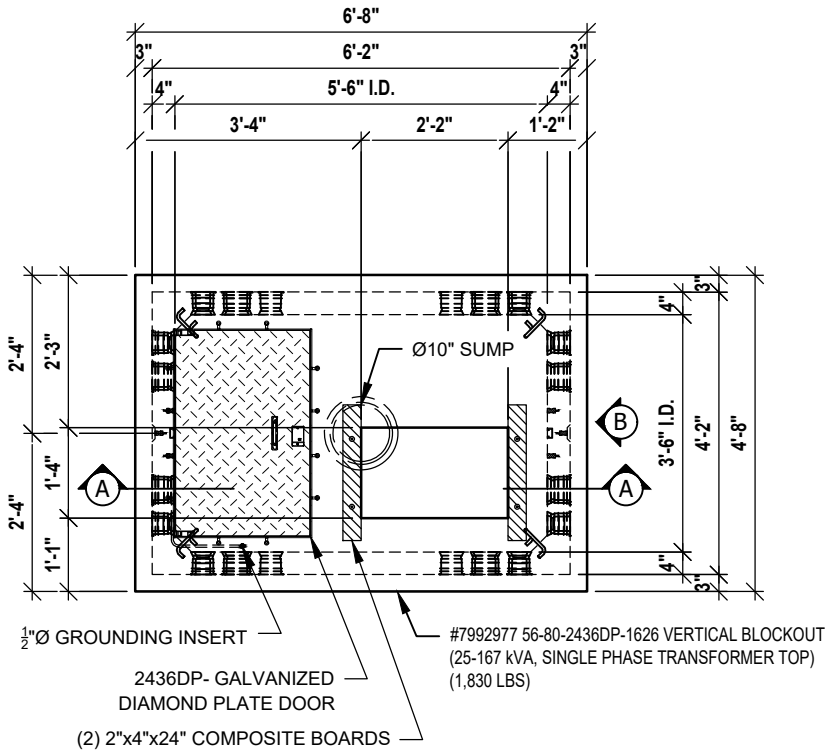


VIEW B
SCALE: 3/8" = 1'-0"

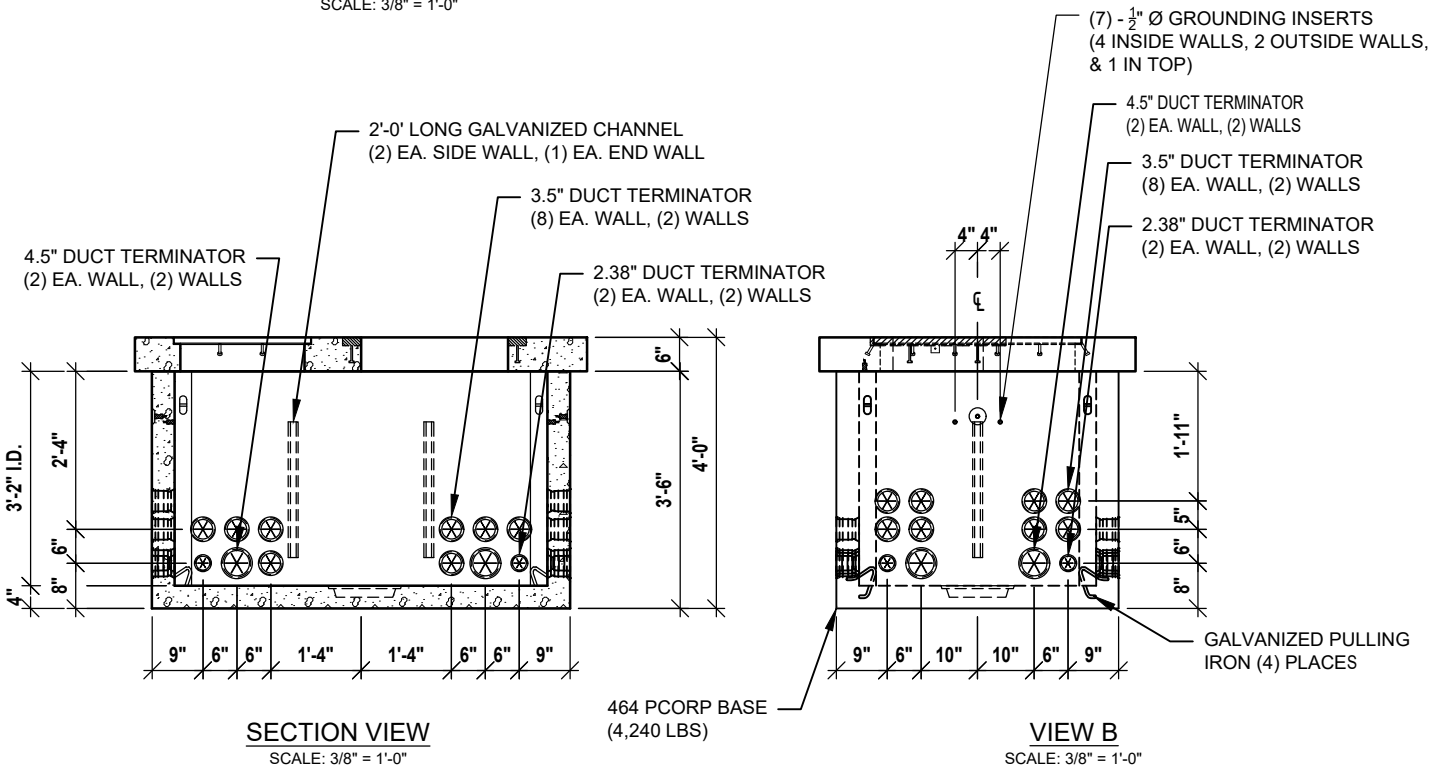
NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG541 07-07-10
PCORP ZG616 05-19-15

PACIFIC CORP 464 TRANS #7992977



PLAN VIEW
SCALE: 3/8" = 1'-0"



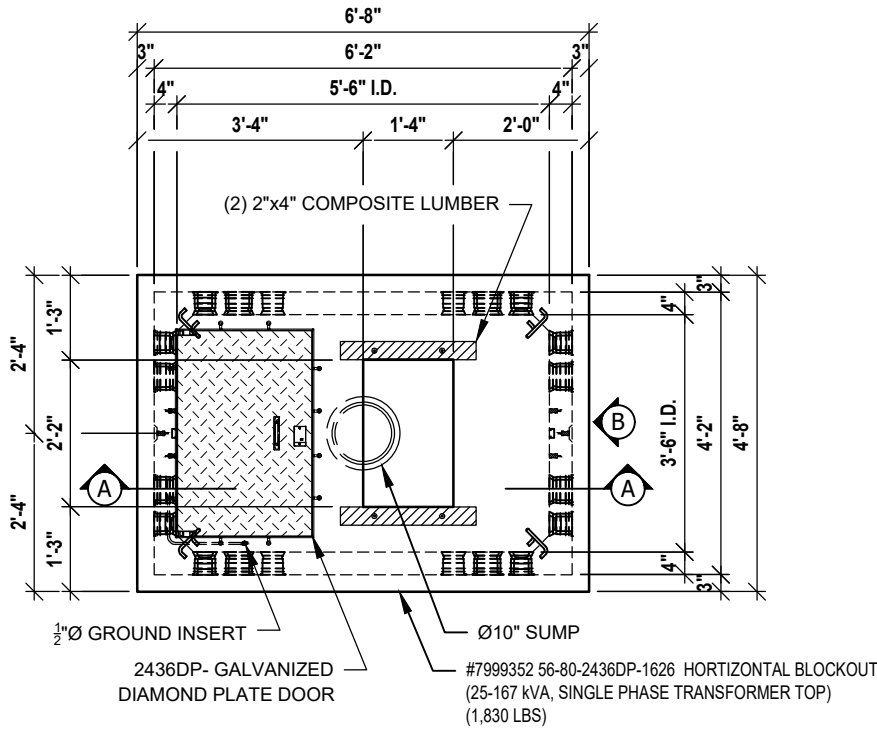
SECTION VIEW
SCALE: 3/8" = 1'-0"

VIEW B
SCALE: 3/8" = 1'-0"

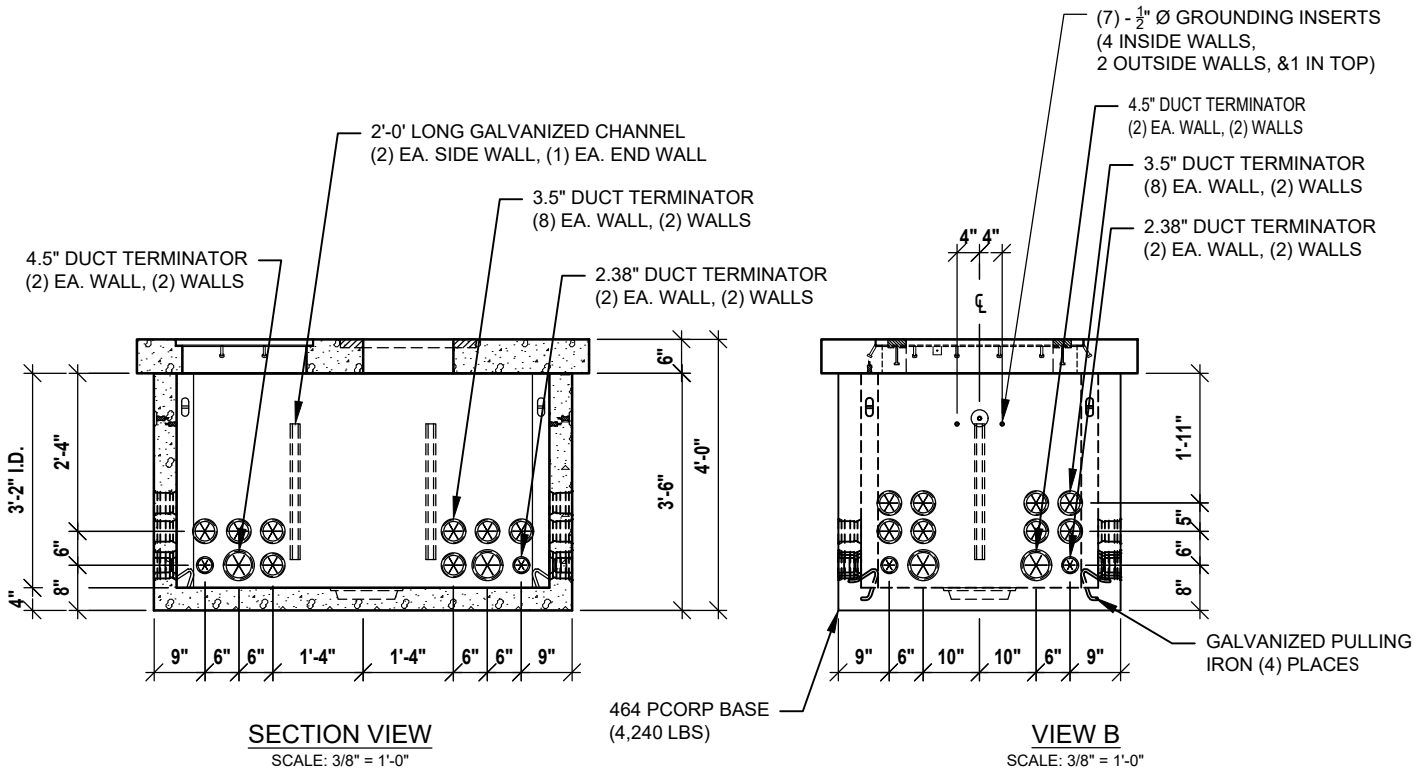
NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG616 05-19-15

PACIFIC CORP 464 TRANS #7999352



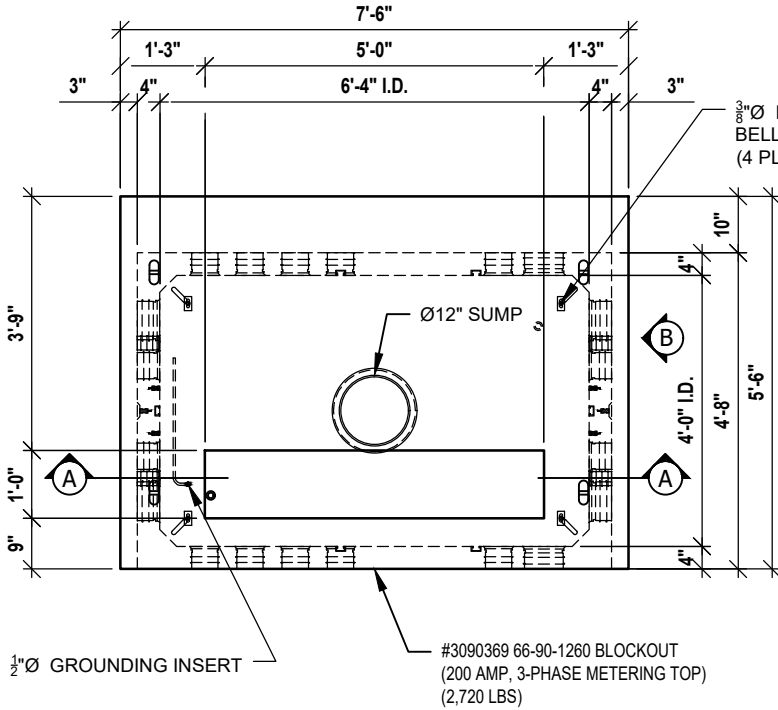
PLAN VIEW
SCALE: 3/8" = 1'-0"



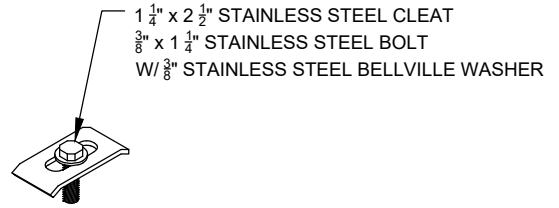
NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG616 05-19-15

PACIFIC CORP 575 METER #3090369

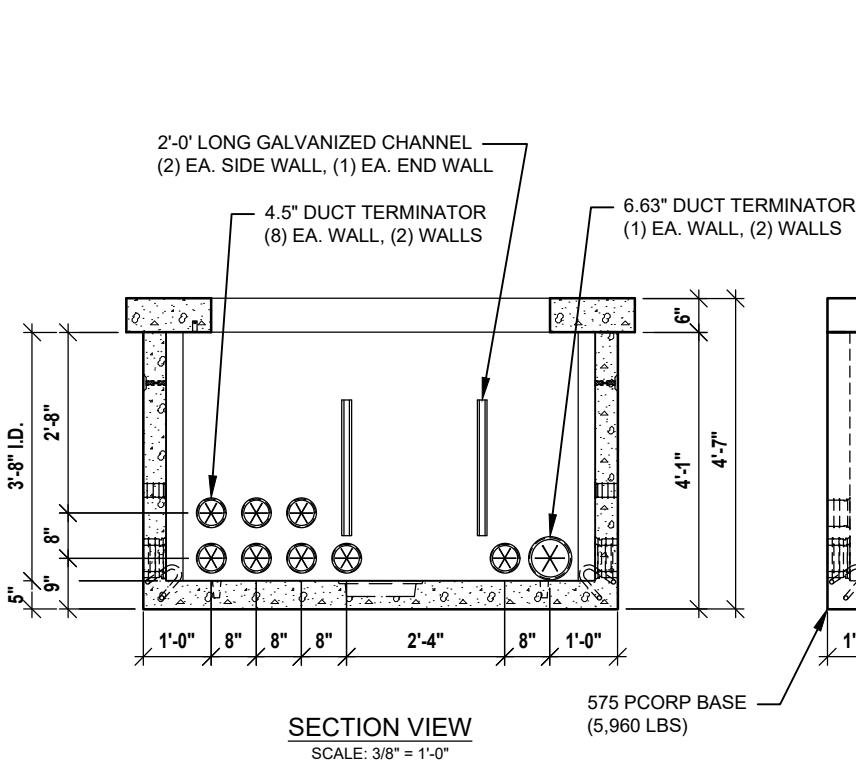


1/2" Ø INSERTS W/ STAINLESS STEEL BOLTS, BELLEVILLE WASHERS (4 PLACES)

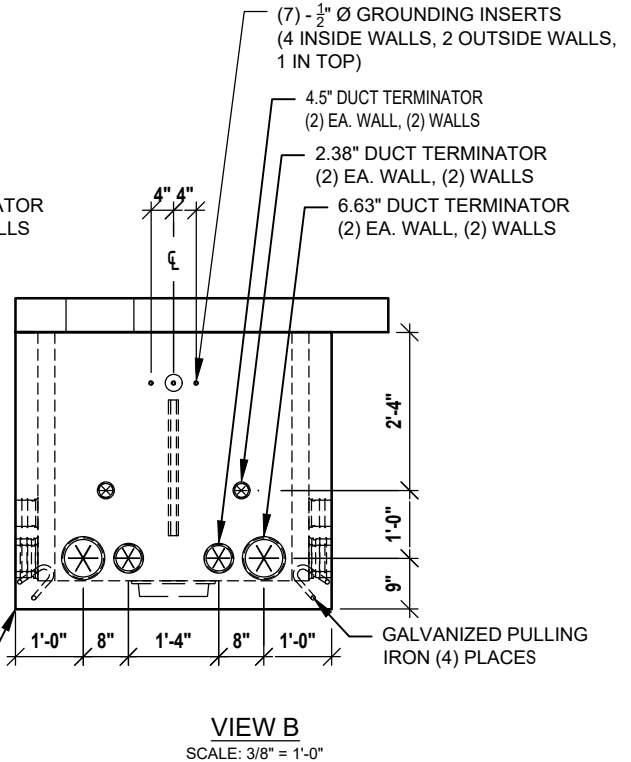


HOLD DOWN CLEAT

PLAN VIEW
SCALE: 3/8" = 1'-0"



SECTION VIEW
SCALE: 3/8" = 1'-0"

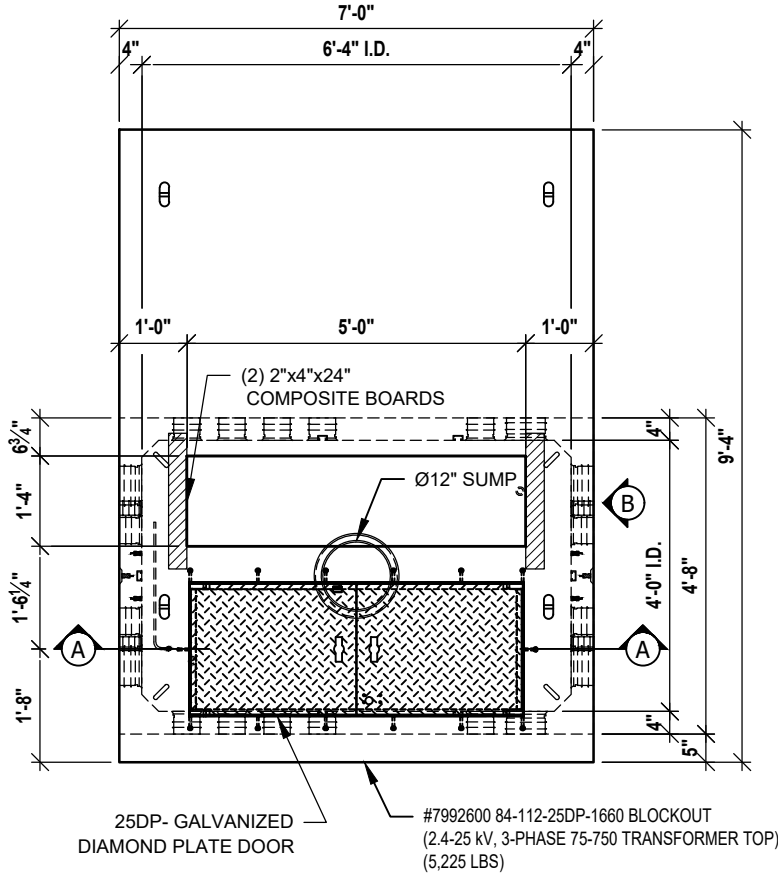


VIEW B
SCALE: 3/8" = 1'-0"

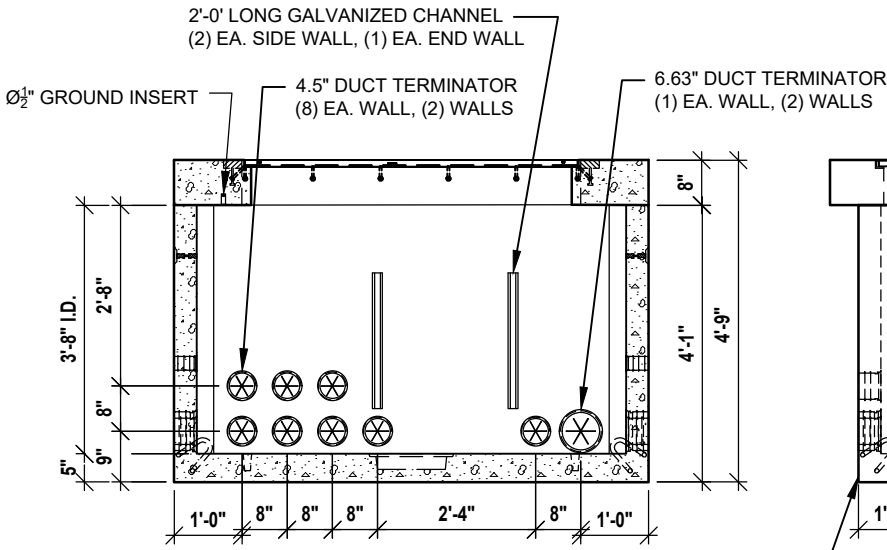
NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG571 12-16-11
PCORP ZG621 06-13-13

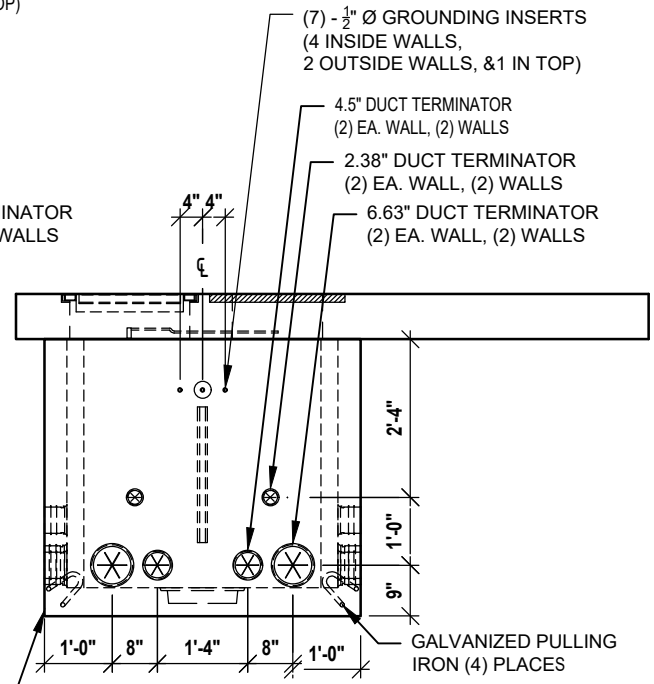
PACIFIC CORP 575 TRANS #7992600



PLAN VIEW
SCALE: 3/8" = 1'-0"



SECTION VIEW
SCALE: 3/8" = 1'-0"

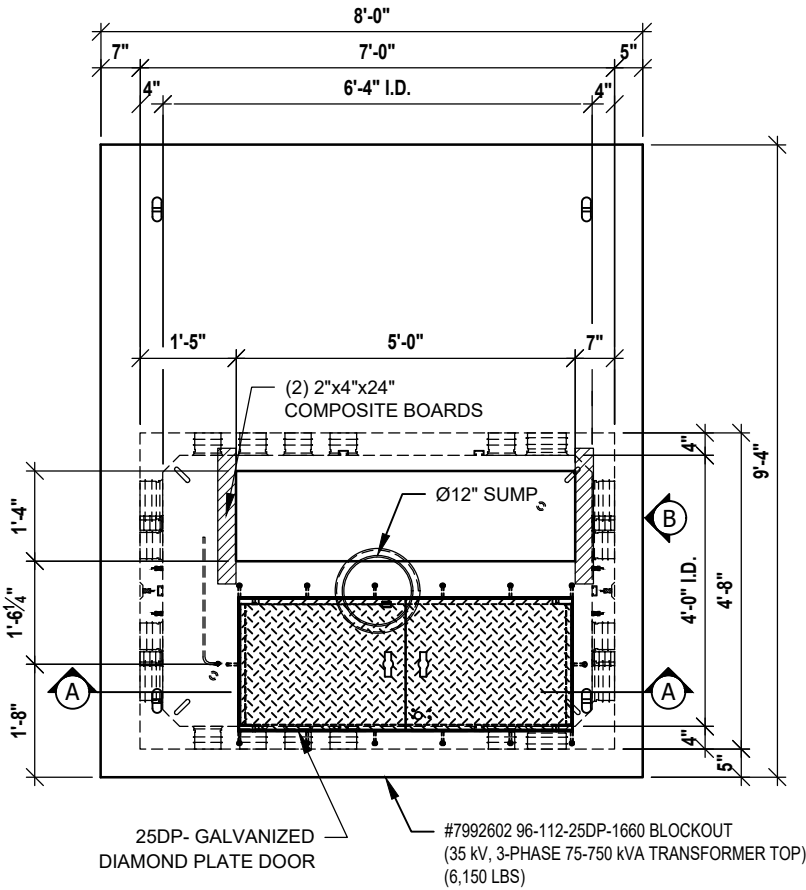


VIEW B
SCALE: 3/8" = 1'-0"

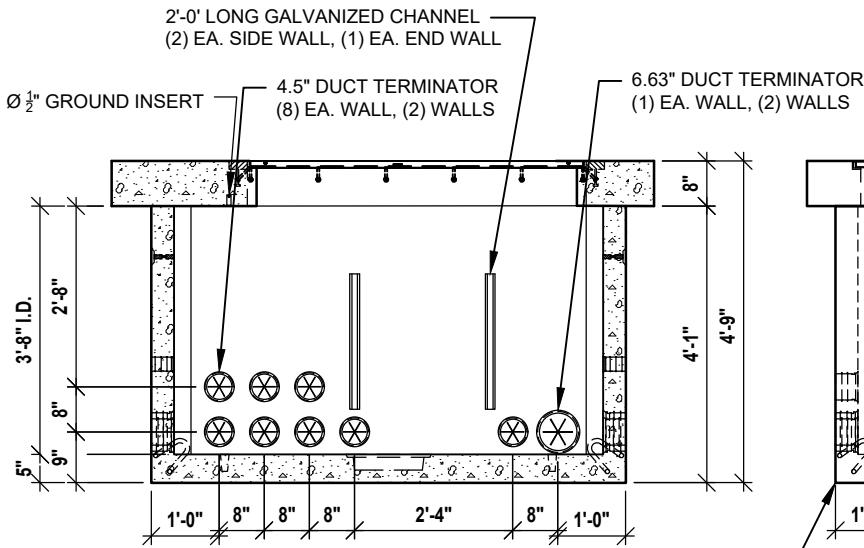
NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG521 06-13-13
PCORP ZG621 06-13-13

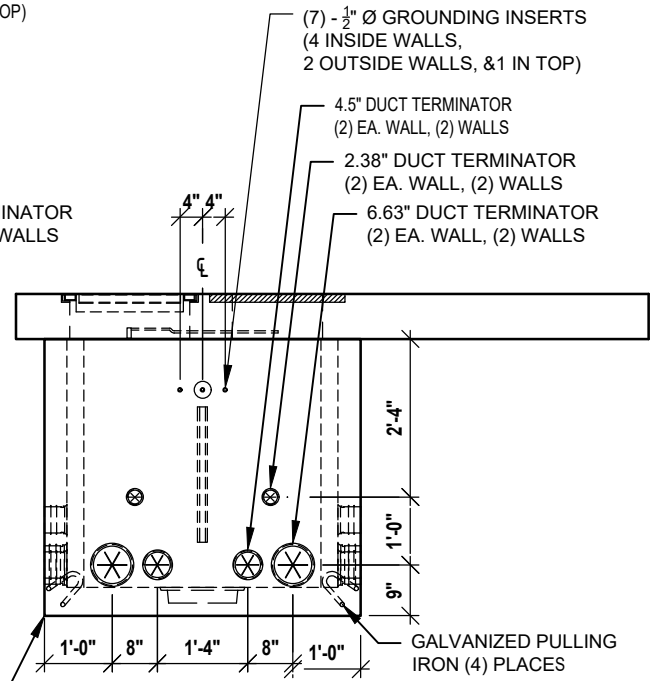
PACIFIC CORP 575 TRANS #7992602



PLAN VIEW
SCALE: 3/8" = 1'-0"



SECTION VIEW
SCALE: 3/8" = 1'-0"

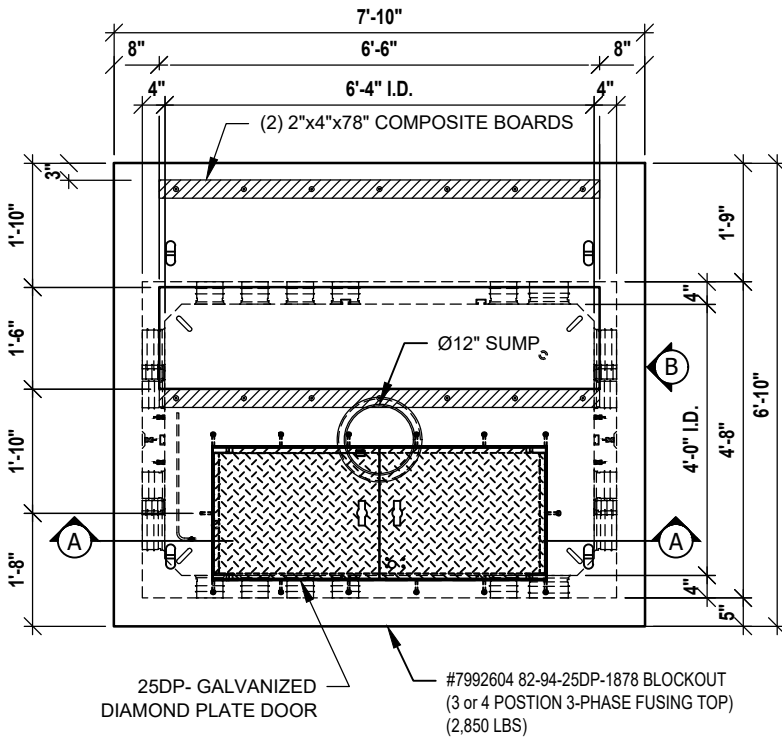


VIEW B
SCALE: 3/8" = 1'-0"

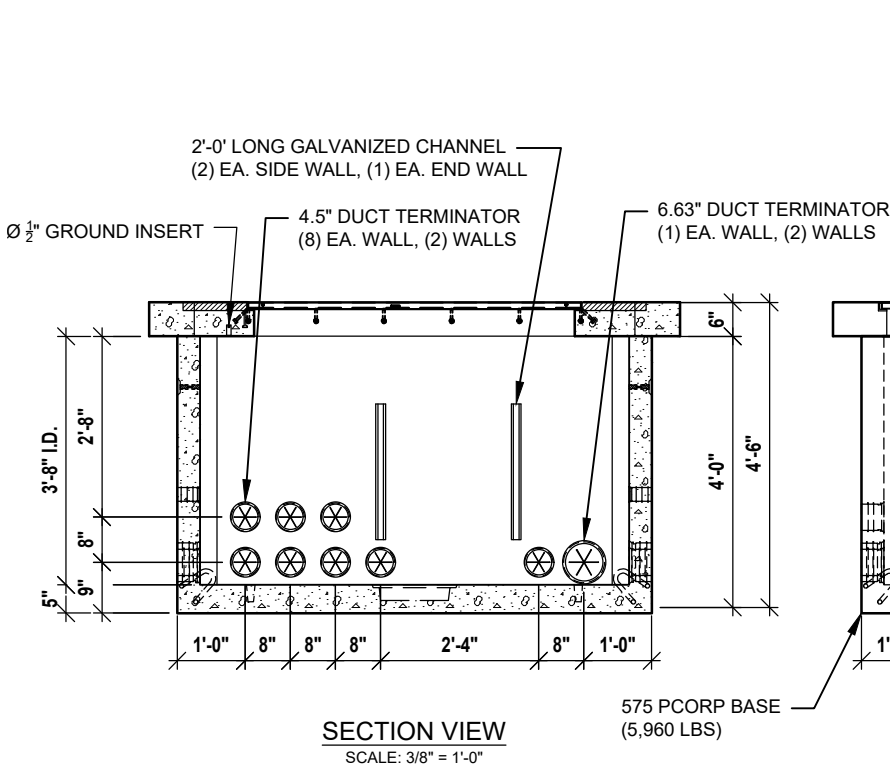
NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG521 06-13-13
PCORP ZG621 06-13-13

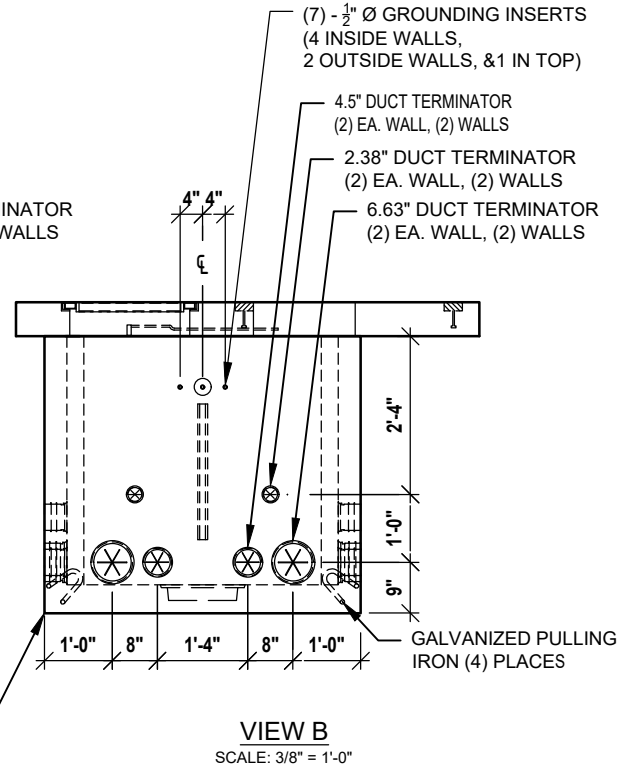
PACIFIC CORP 575 FUSE #7992604



PLAN VIEW
SCALE: 3/8" = 1'-0"



SECTION VIEW
SCALE: 3/8" = 1'-0"

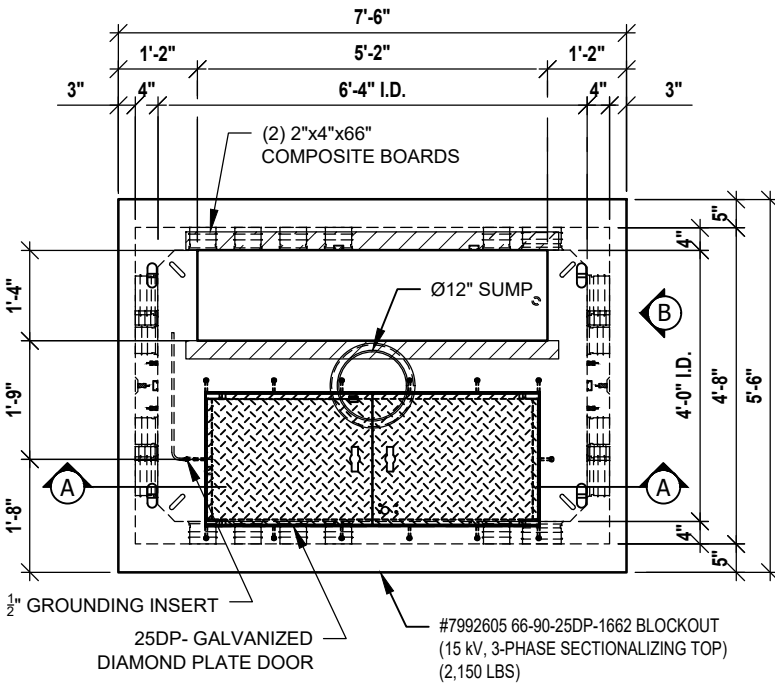


VIEW B
SCALE: 3/8" = 1'-0"

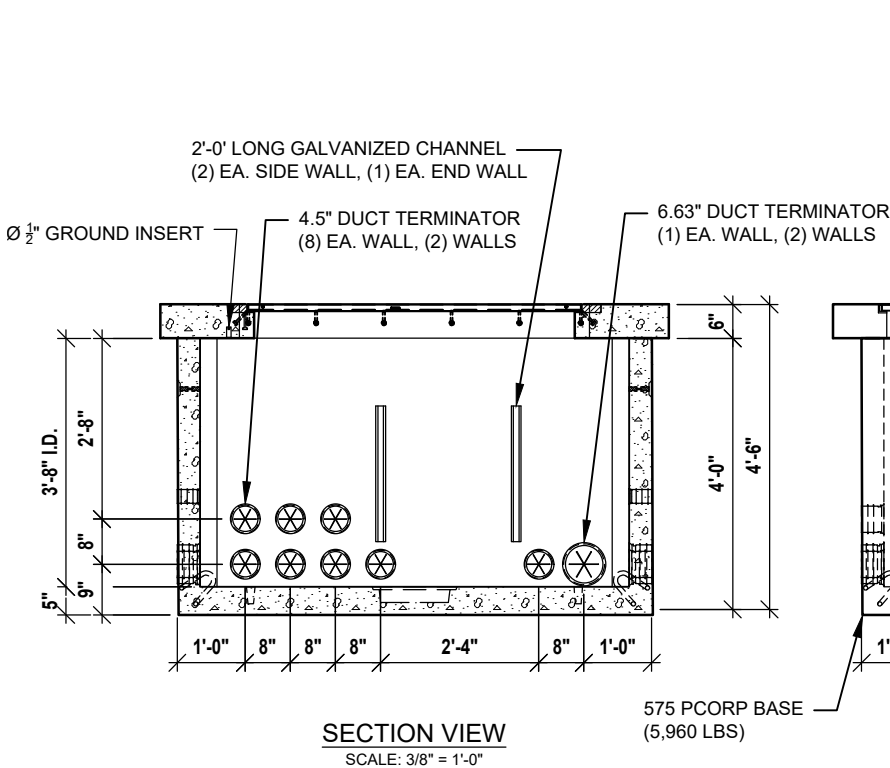
NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG551 05-08-12
PCORP ZG621 06-13-13

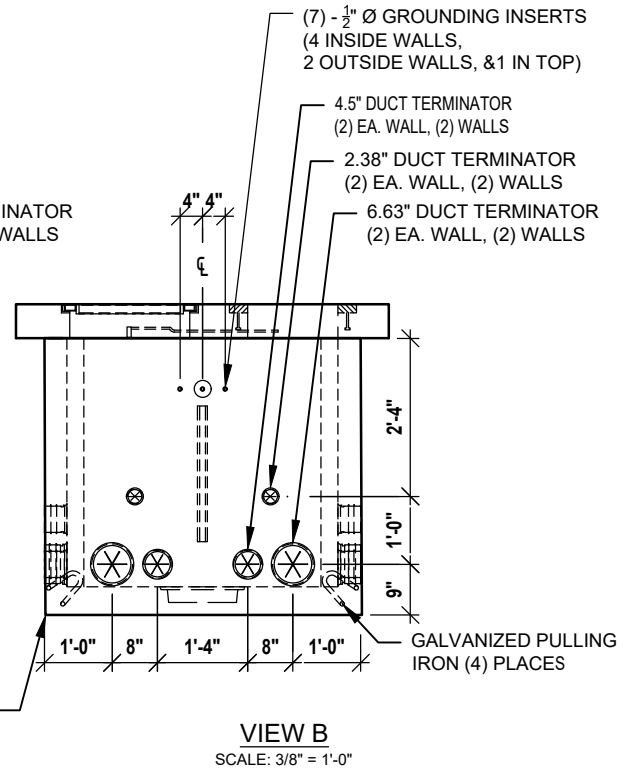
PACIFIC CORP 575 SECT #7992605



PLAN VIEW
SCALE: 3/8" = 1'-0"



SECTION VIEW
SCALE: 3/8" = 1'-0"

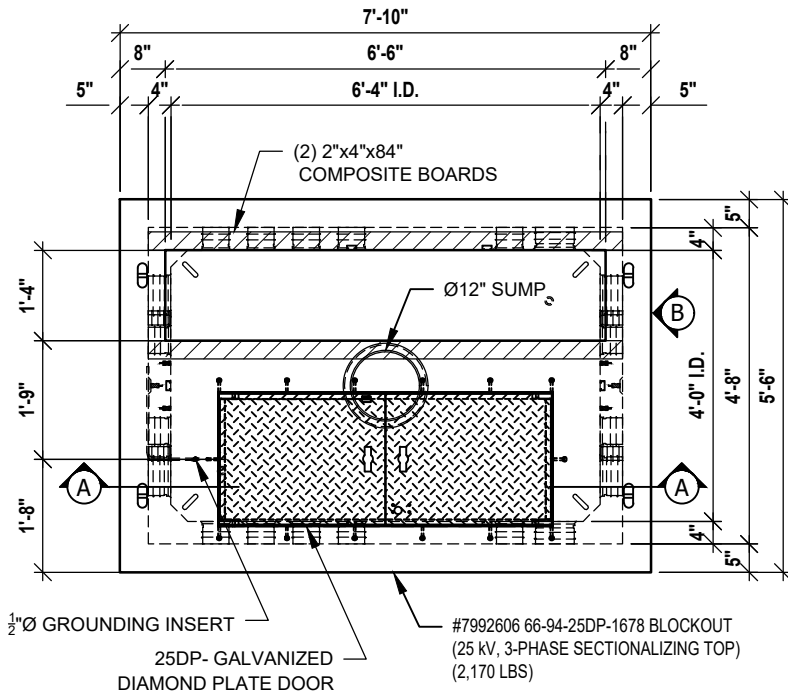


VIEW B
SCALE: 3/8" = 1'-0"

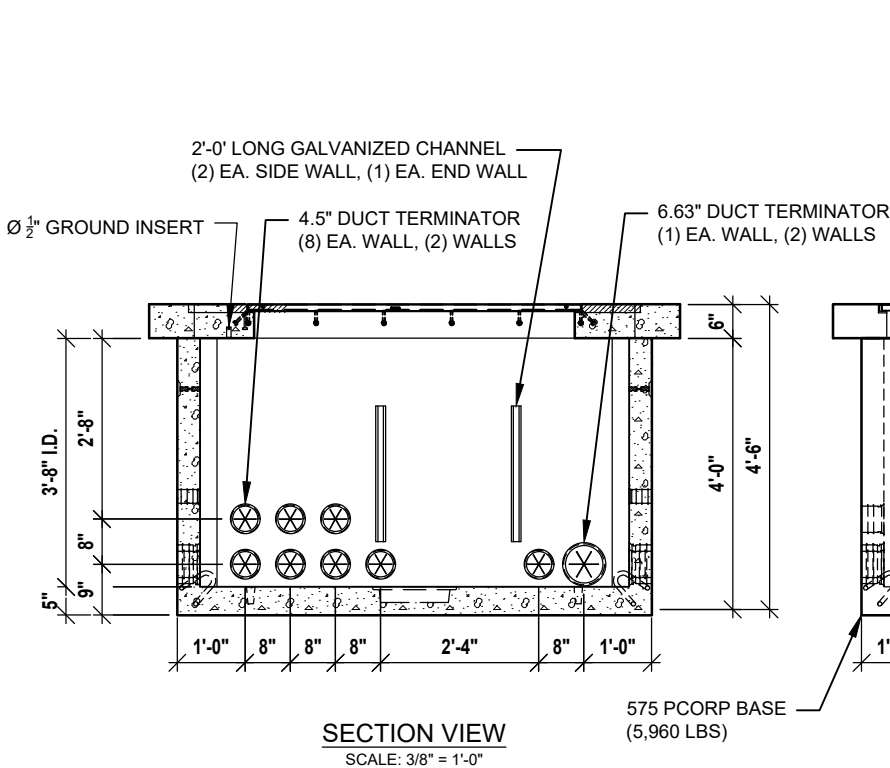
NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG621 06-13-13

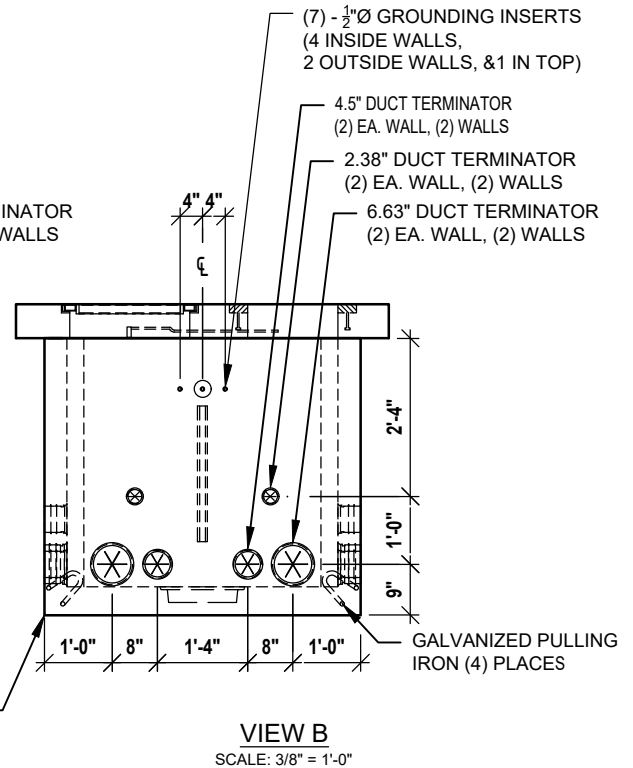
PACIFIC CORP 575 SECT #7992606



PLAN VIEW
SCALE: 3/8" = 1'-0"



SECTION VIEW
SCALE: 3/8" = 1'-0"

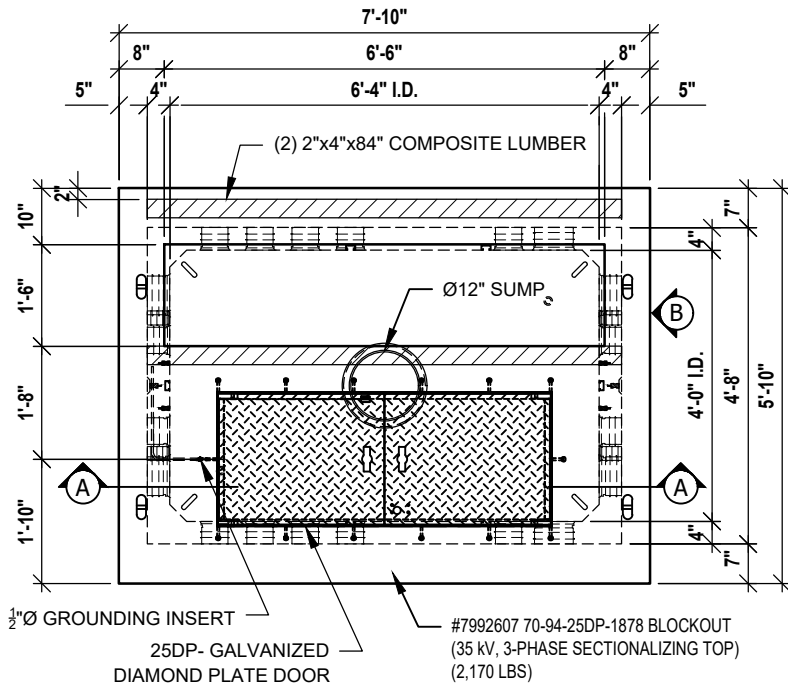


VIEW B
SCALE: 3/8" = 1'-0"

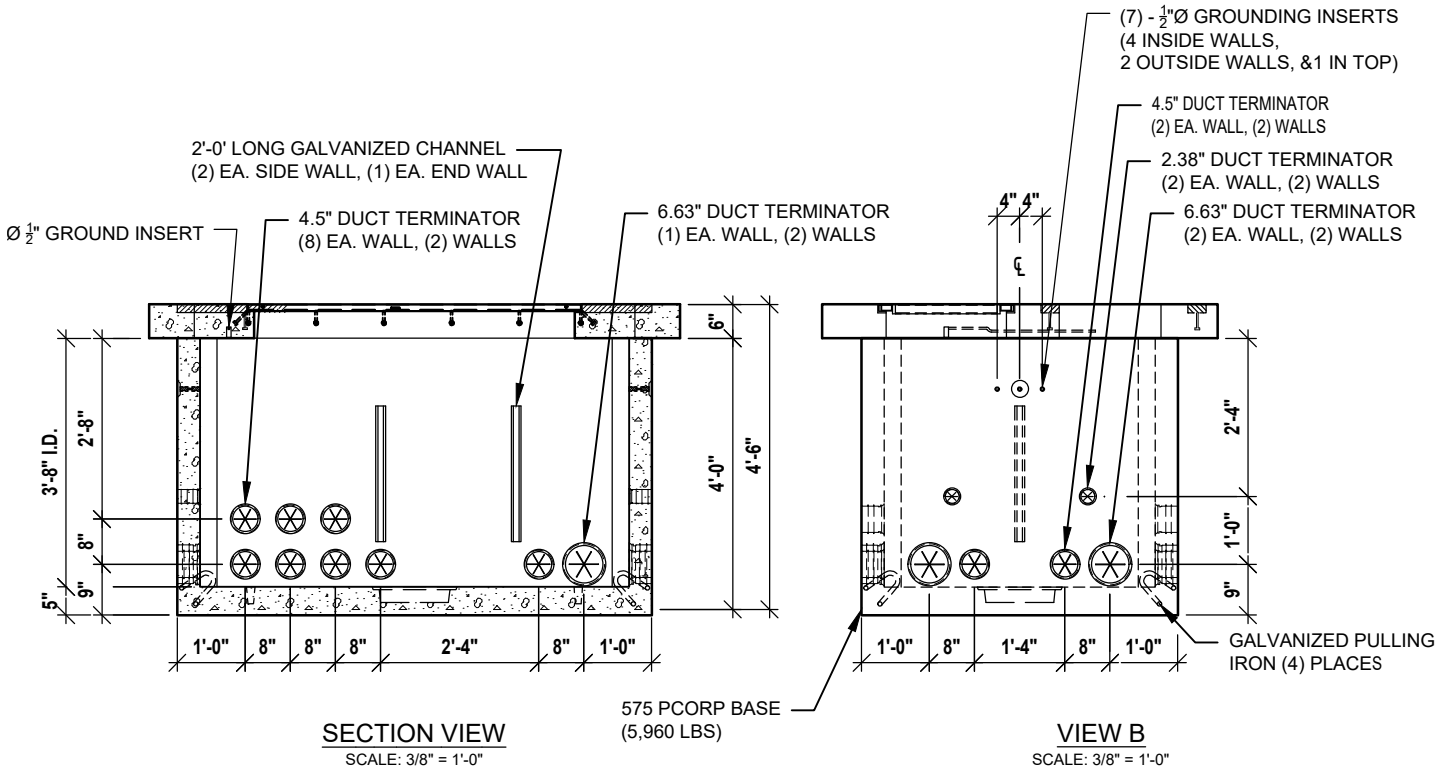
NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG621 06-13-13

PACIFIC CORP 575 SECT #7992607



PLAN VIEW
SCALE: 3/8" = 1'-0"



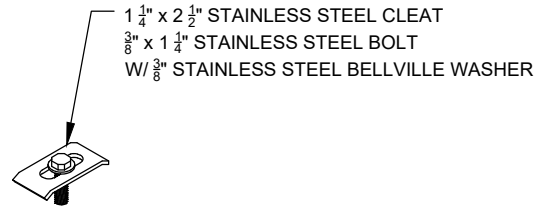
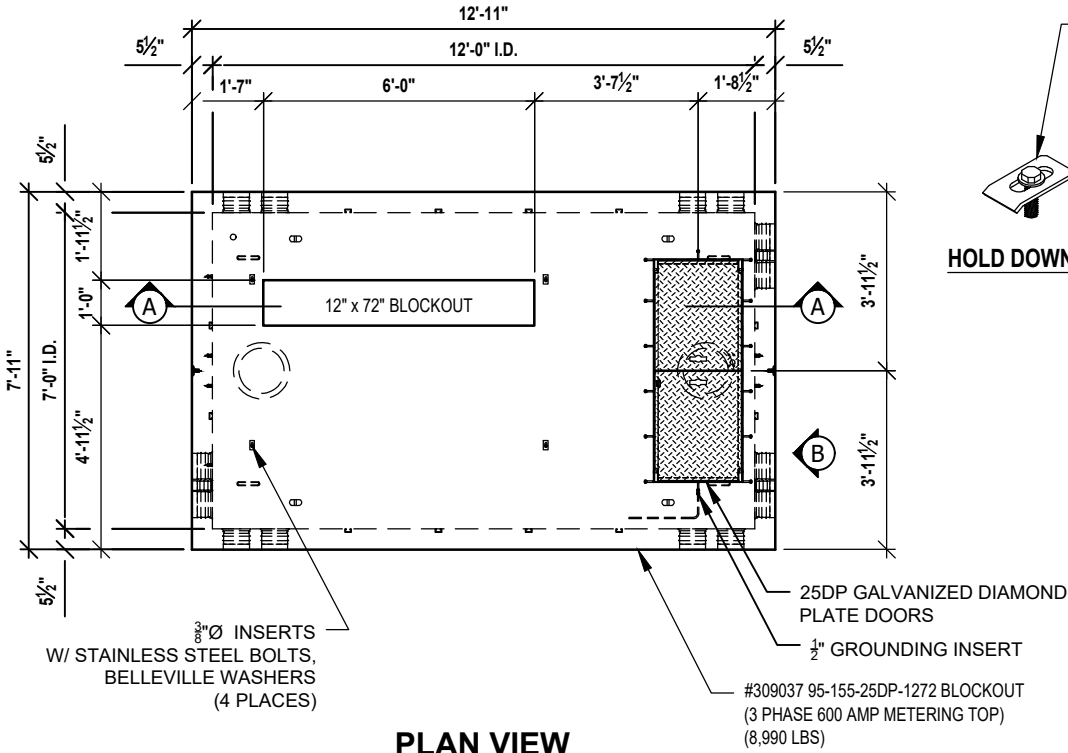
SECTION VIEW
SCALE: 3/8" = 1'-0"

VIEW B
SCALE: 3/8" = 1'-0"

NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

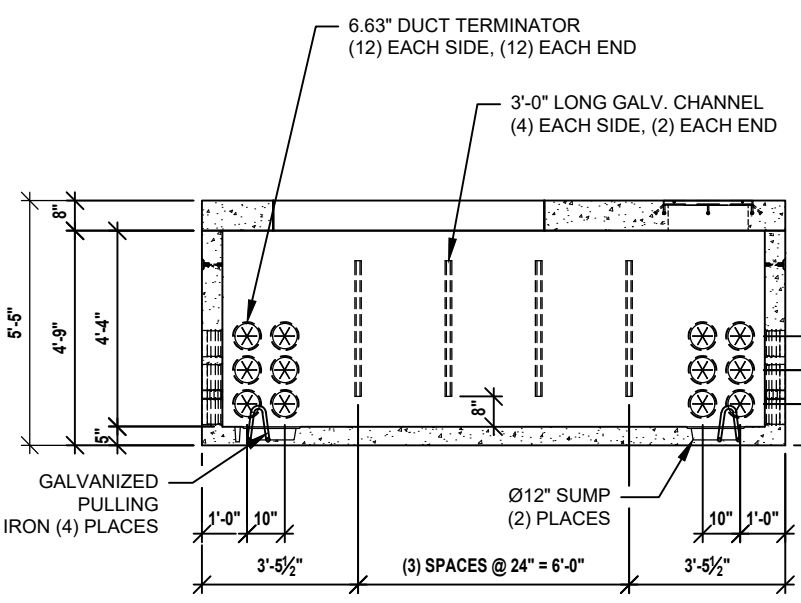
PCORP ZG621 06-13-13

PACIFIC CORP 712 METER #3090370

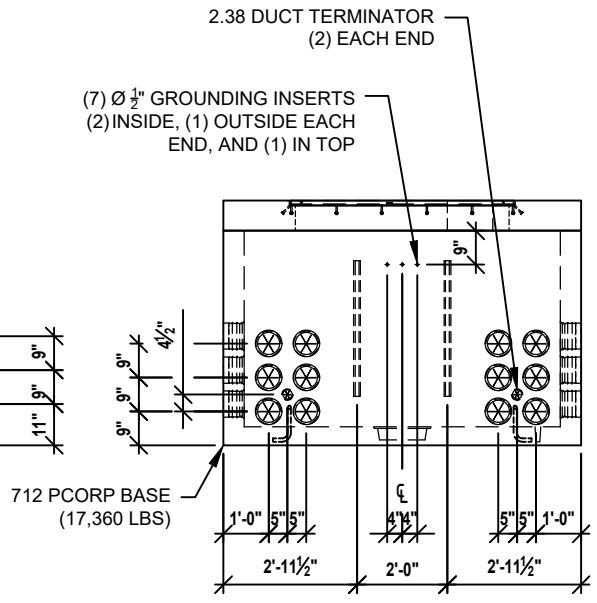


HOLD DOWN CLEAT

PLAN VIEW



SECTION A-A



VIEW - B

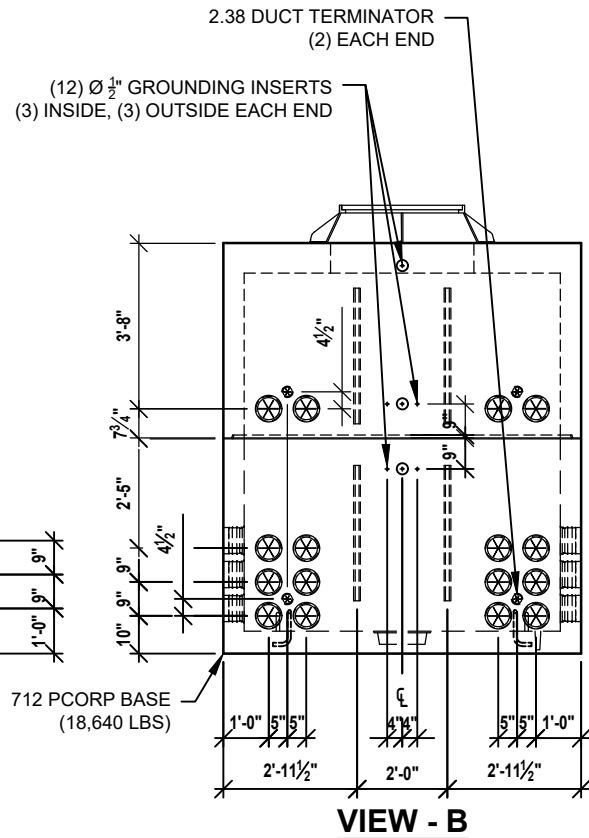
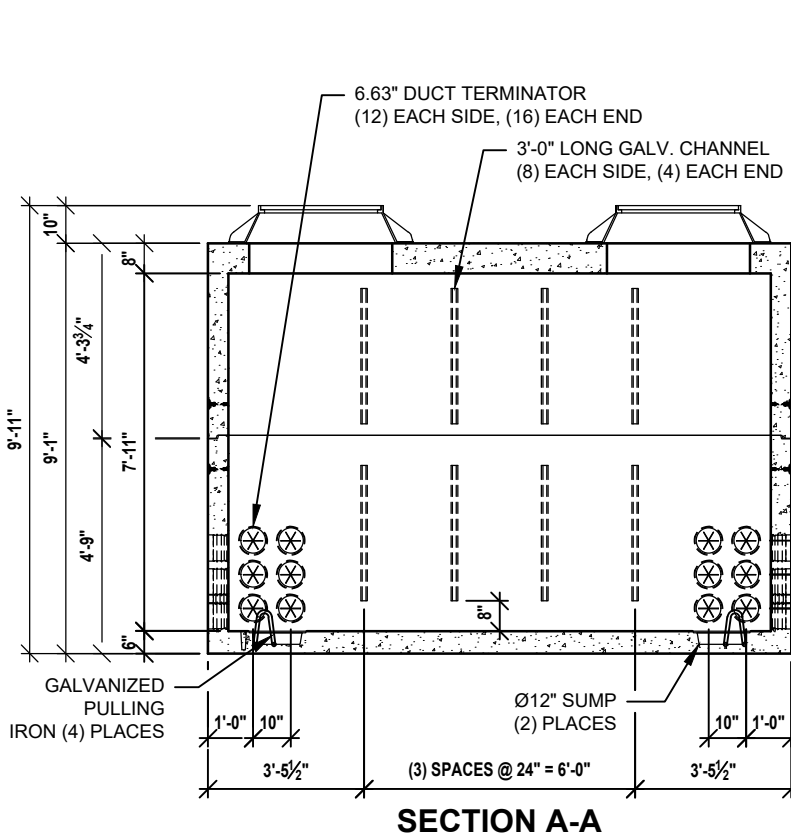
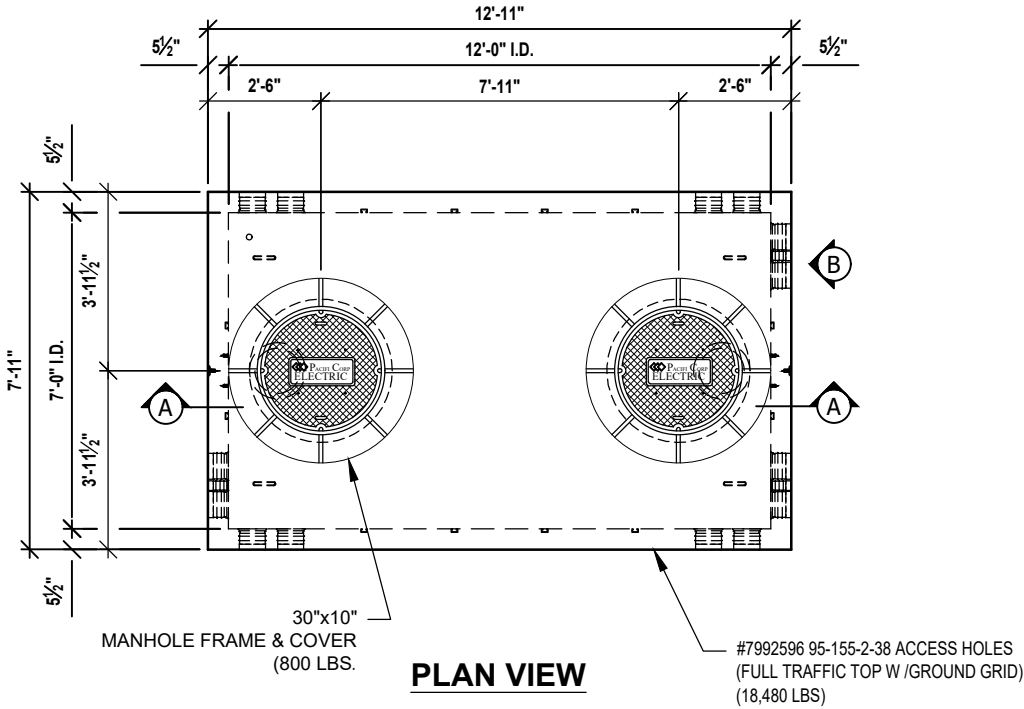
NOTES:
 1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG571 12-16-11
PCORP ZG711 07-13-12



Phone: (360) 335-8400 Fax: (360) 335-8402
 Email: sales@cppwa.com
 Web: www.columbiaprecastproducts.com
 Section: PacifiCorp Pg: 25 Date: 2022

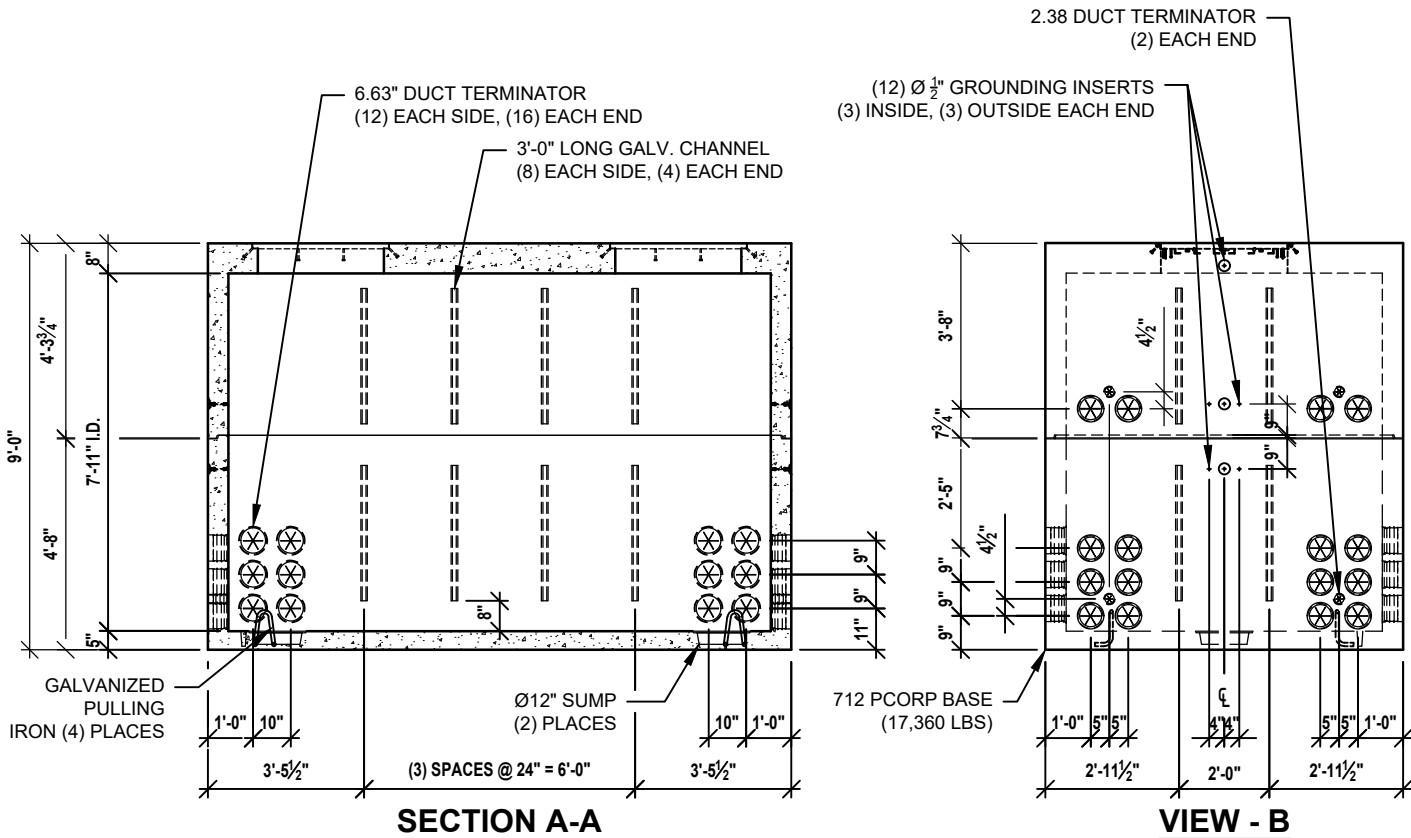
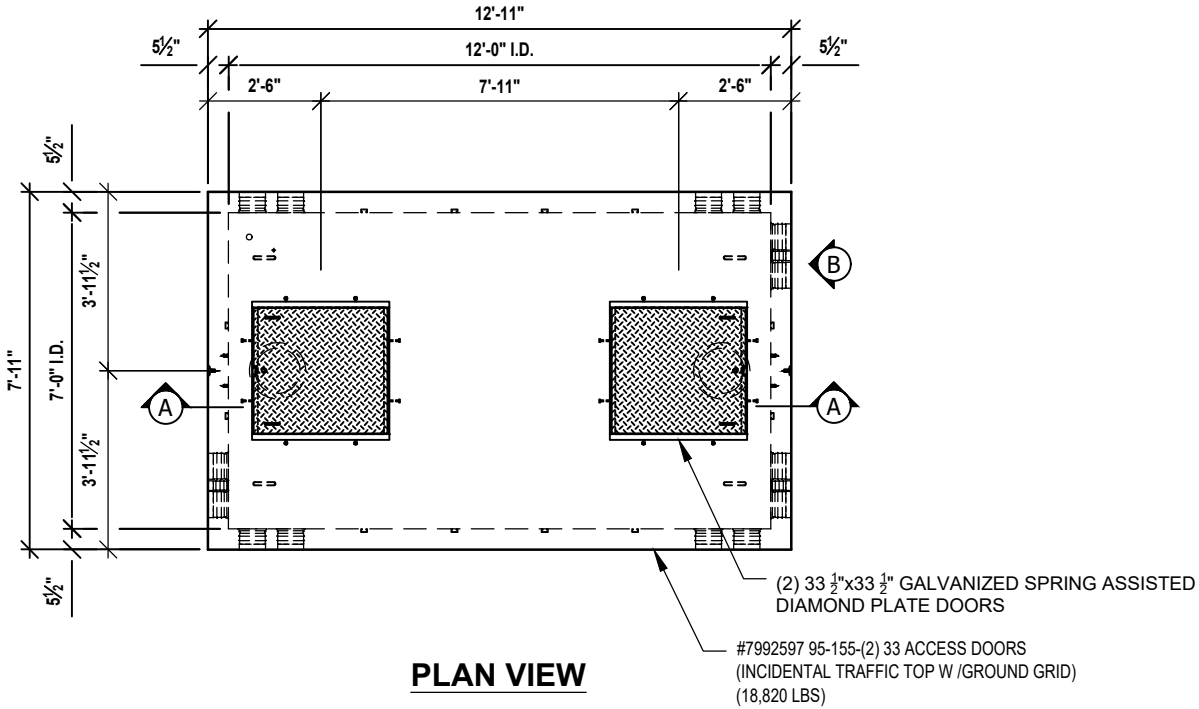
PACIFIC CORP 712 FULL TRAFFIC #7992596



NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG701 05-08-12
PCORP ZG562 06-14-12

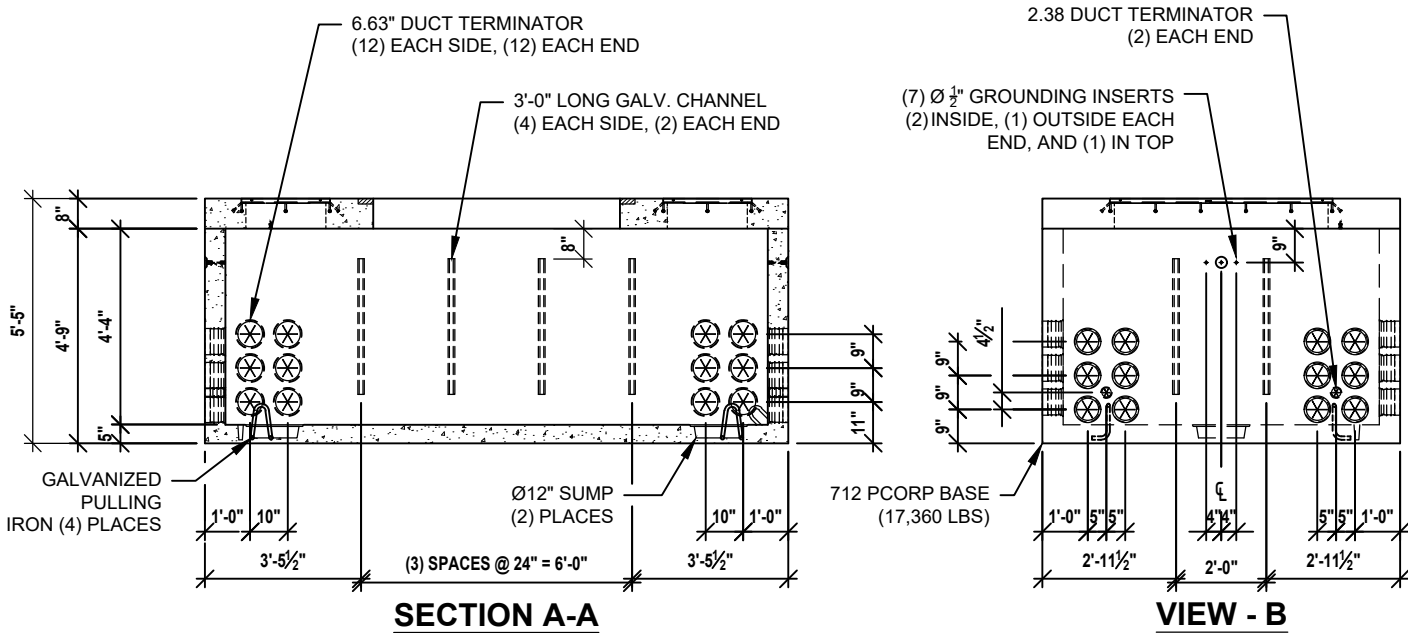
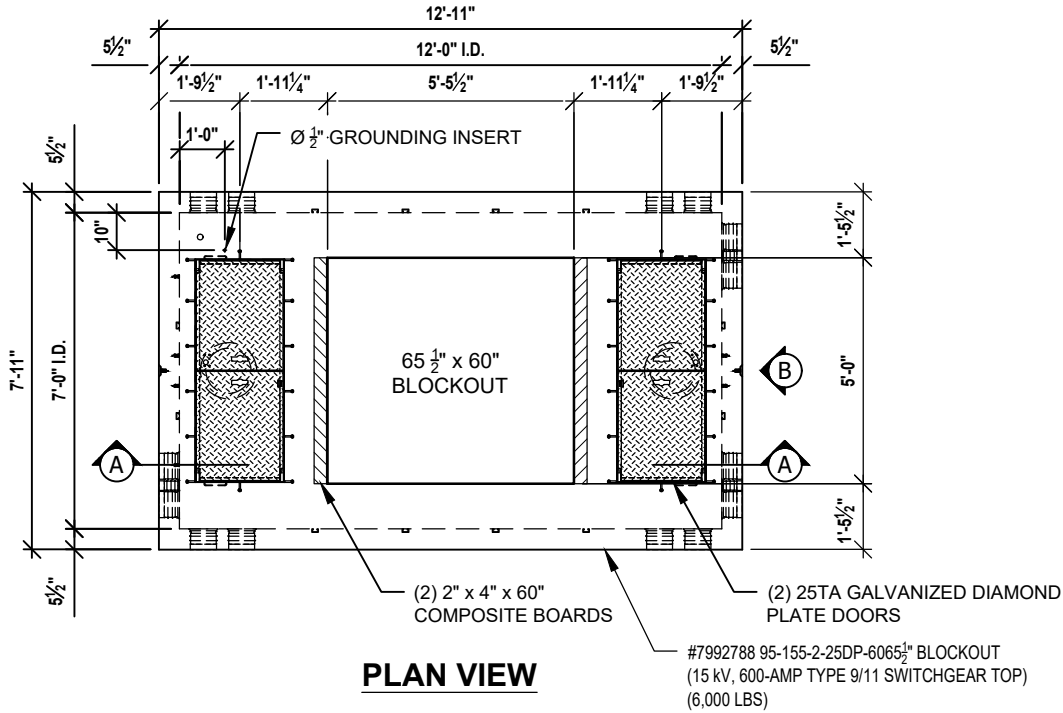
PACIFIC CORP 712 INCIDENTAL TRAFFIC #7992597



NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG701 05-08-12
PCORP ZG562 06-14-12

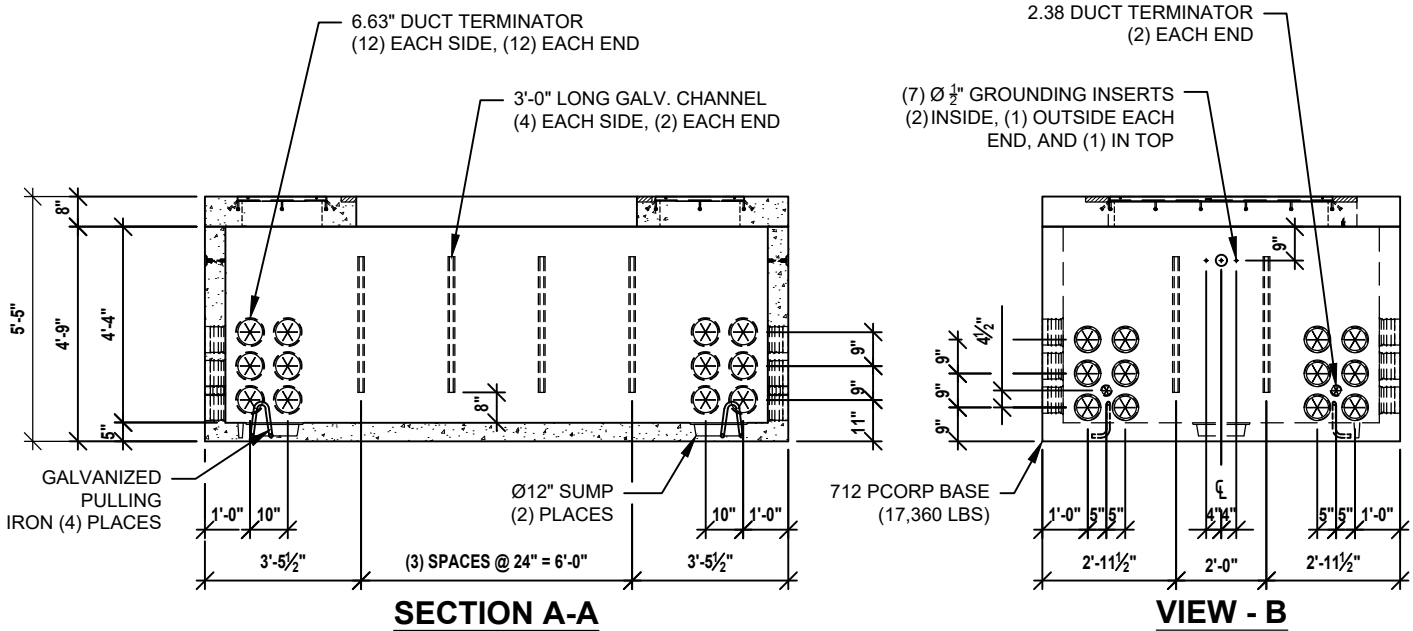
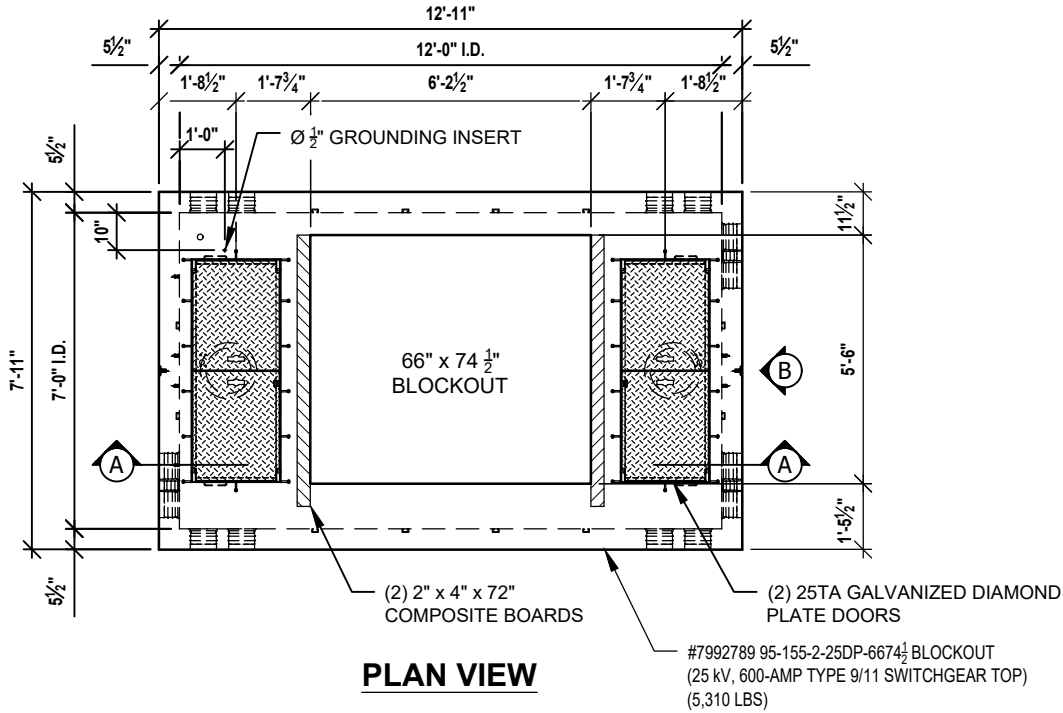
PACIFIC CORP 712 SWGEAR #7992788



NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG 562 06-14-12

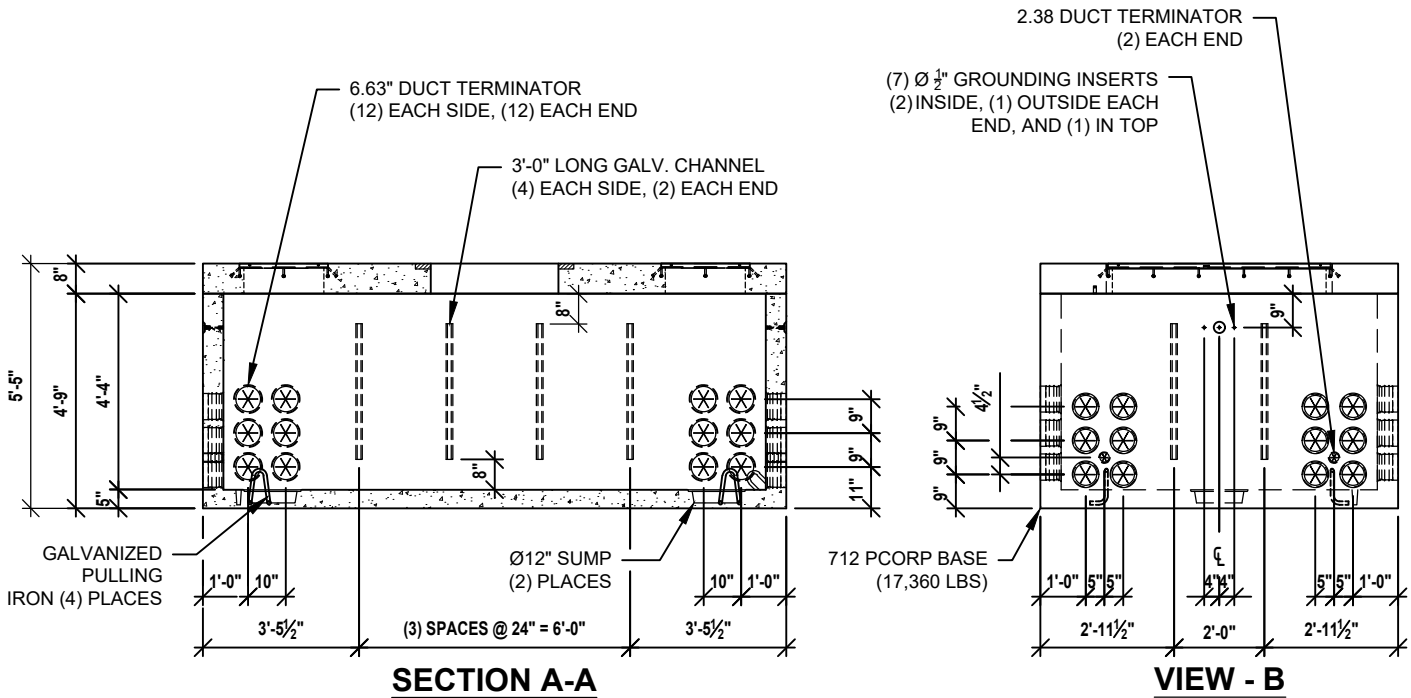
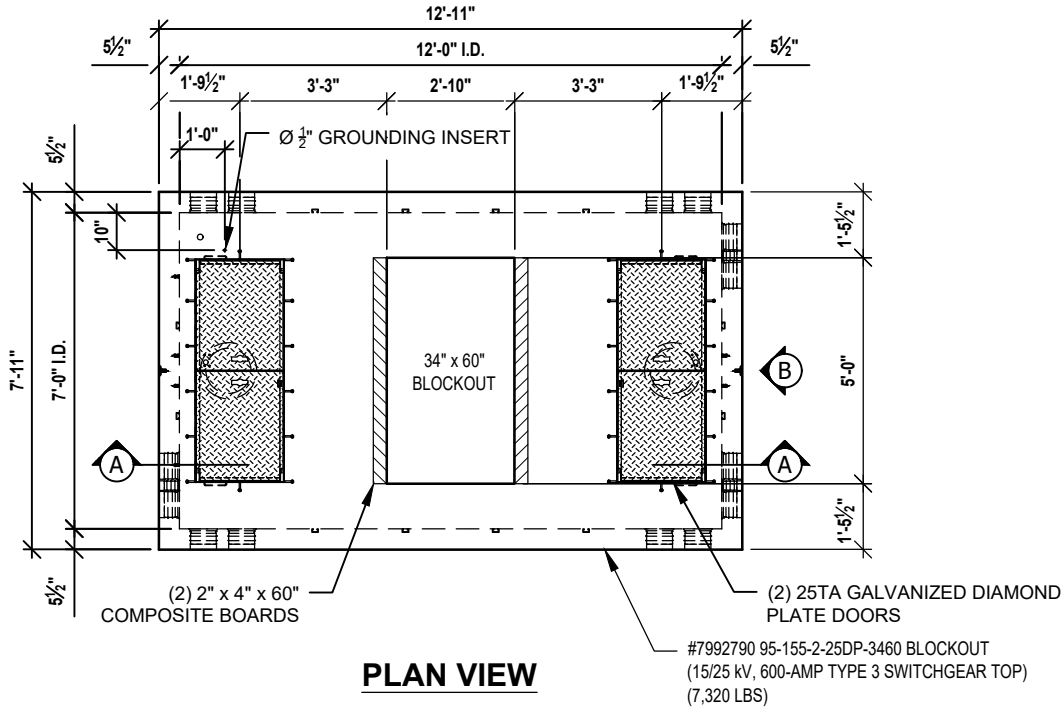
PACIFIC CORP 712 SWGEAR #7992789



NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG 562 06-14-12

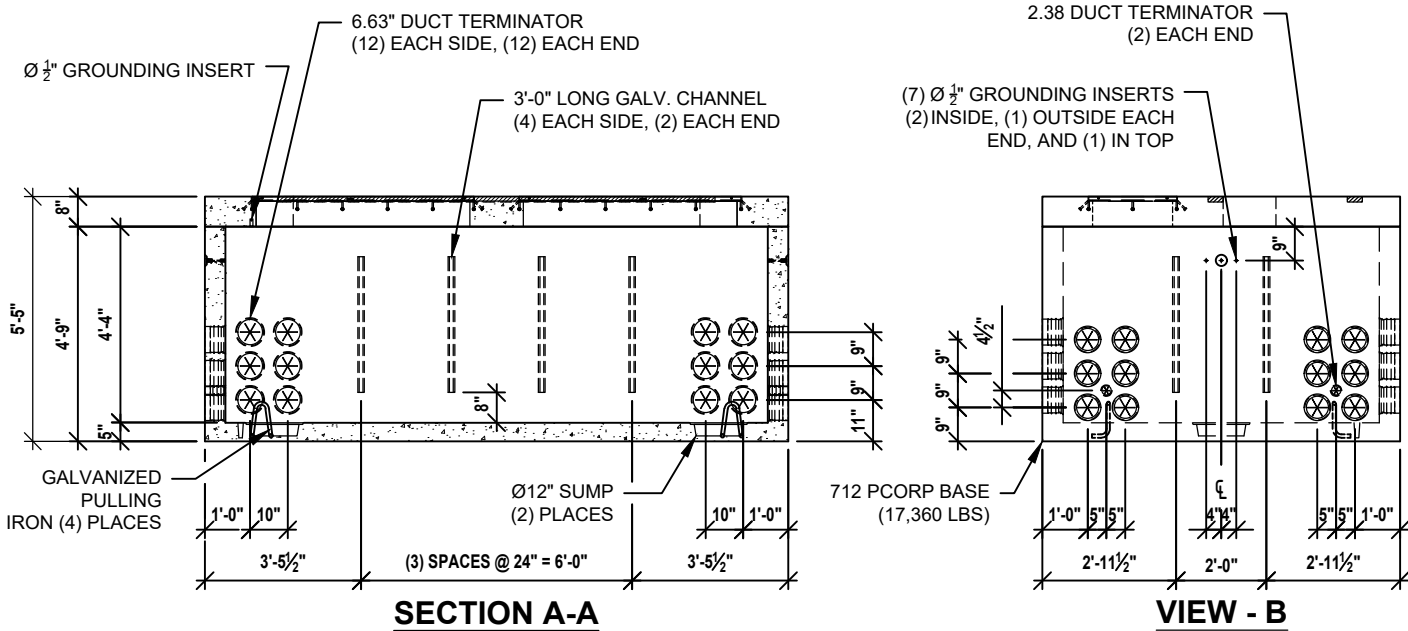
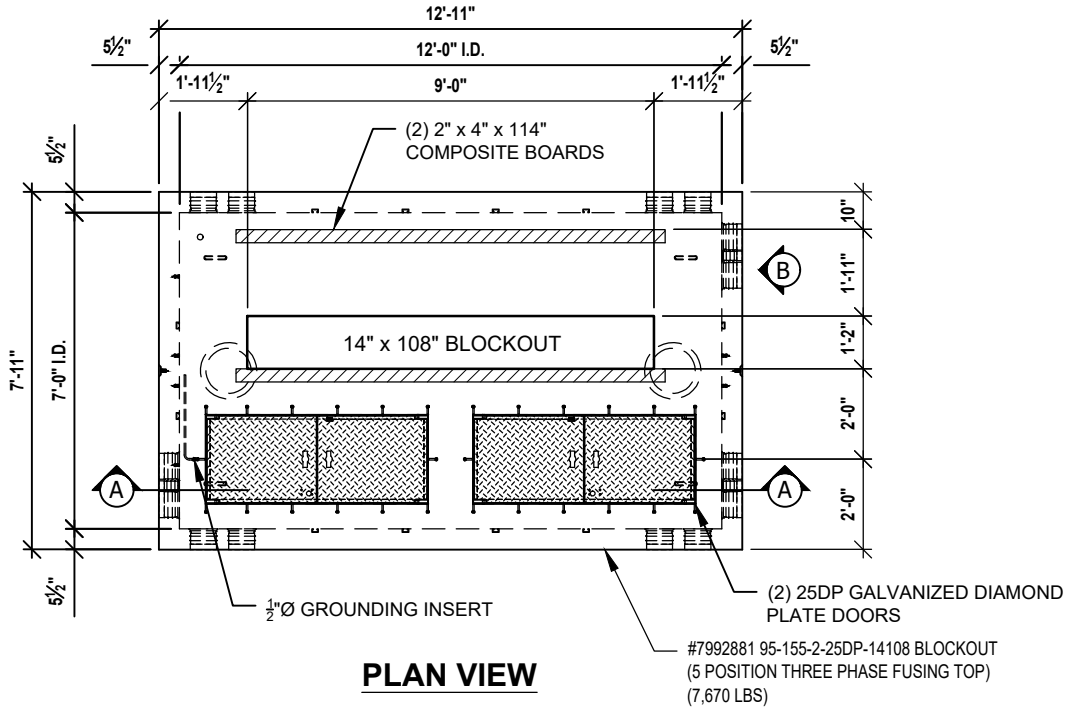
PACIFIC CORP 712 SWGEAR #7992790



NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG 562 06-14-12

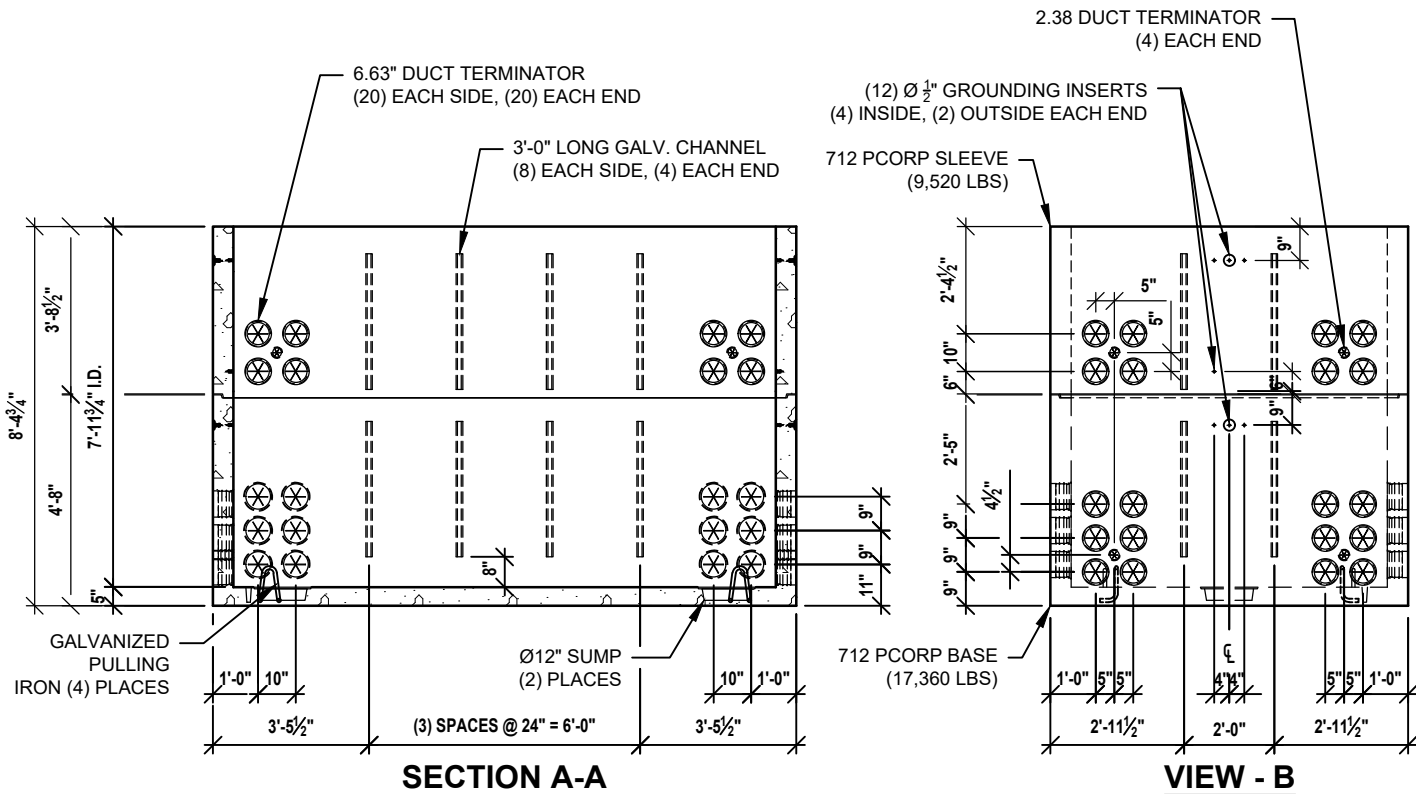
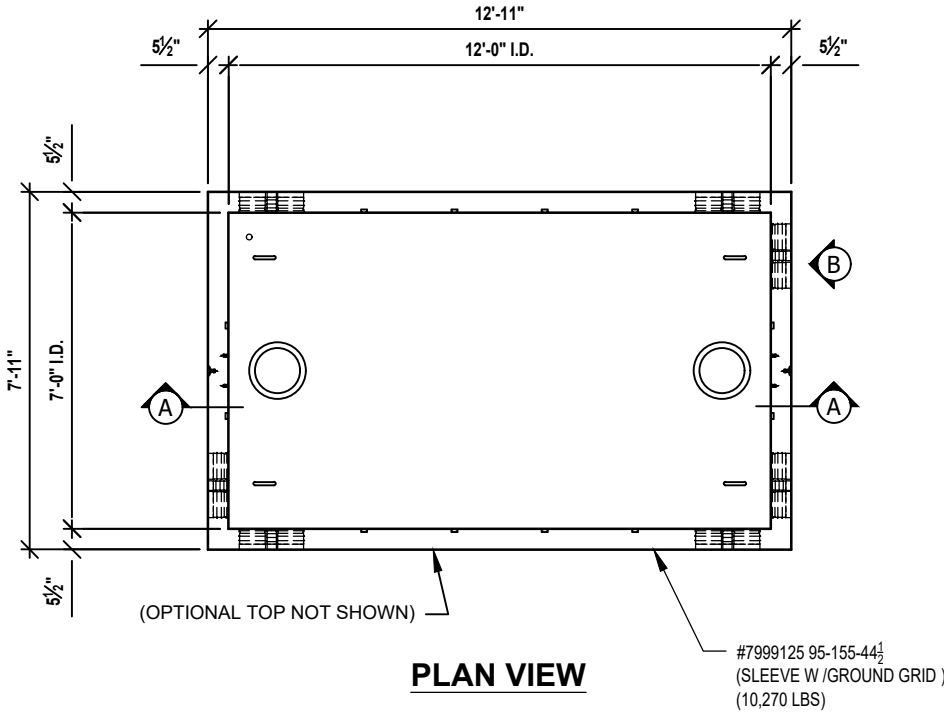
PACIFIC CORP 712 FUSE #7992881



NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG551 05-08-12
PCORP ZG711 07-13-12

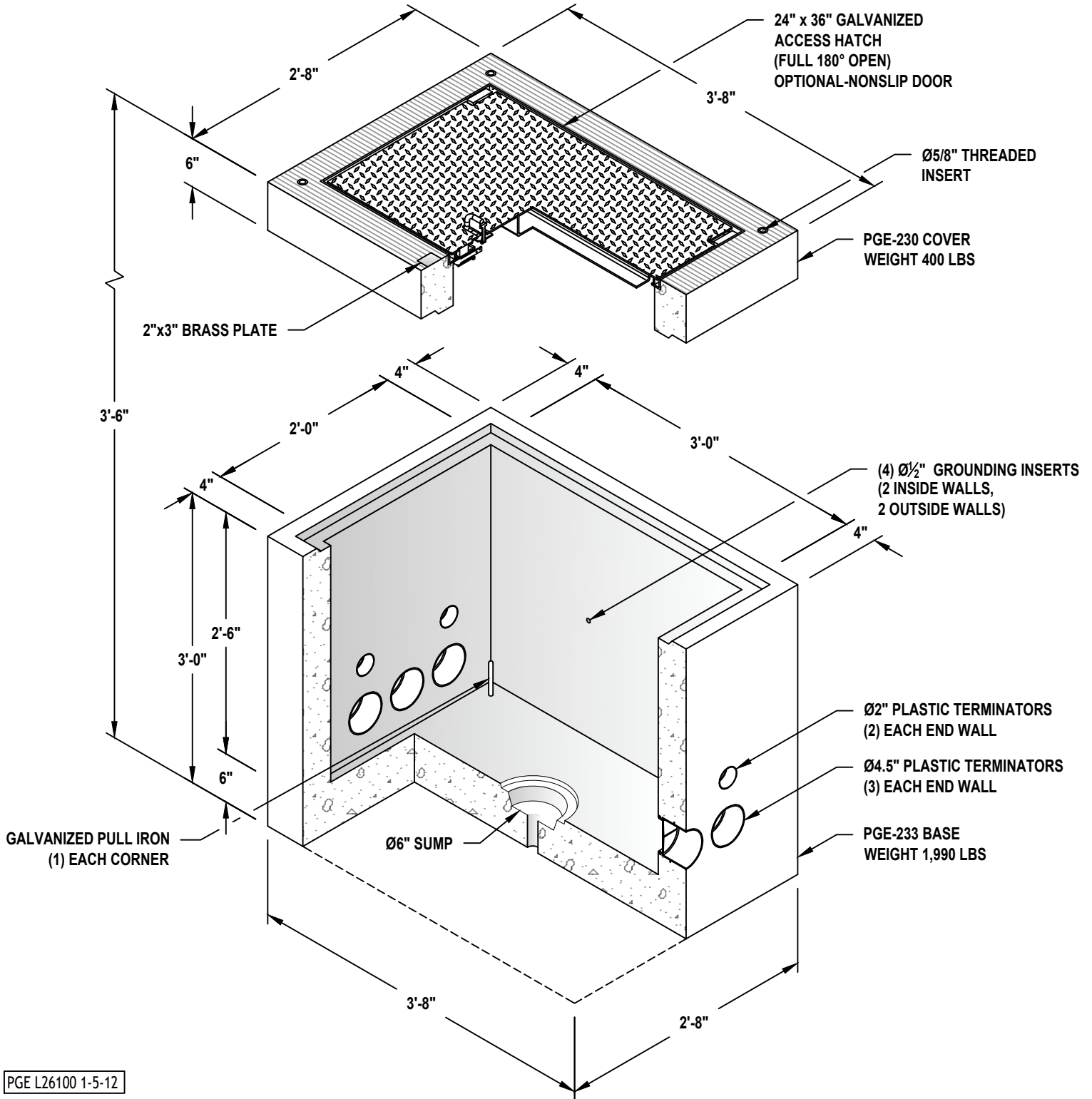
PACIFIC CORP 712 SLEEVE #7999125



NOTES:
1. WEIGHTS LISTED ARE APPROXIMATE.

PCORP ZG 715 07-13-12
PCORP ZG 562 06-14-12

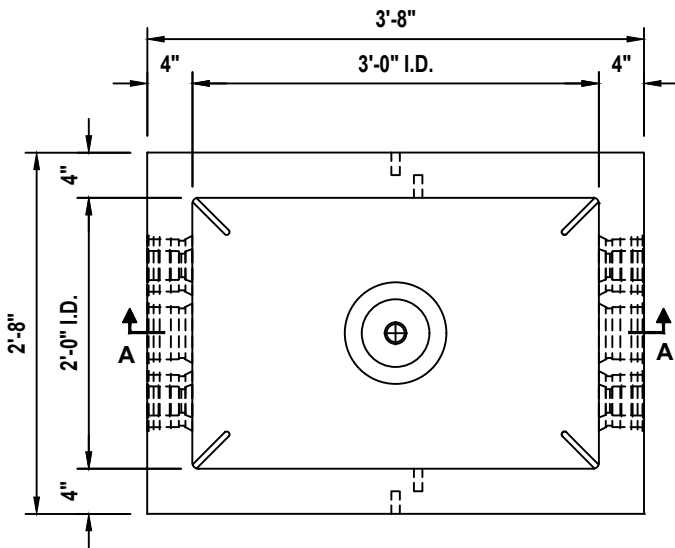
PGE - 233 VAULT



PGE L26100 1-5-12
32 x 44 x 42 (233-PGE)

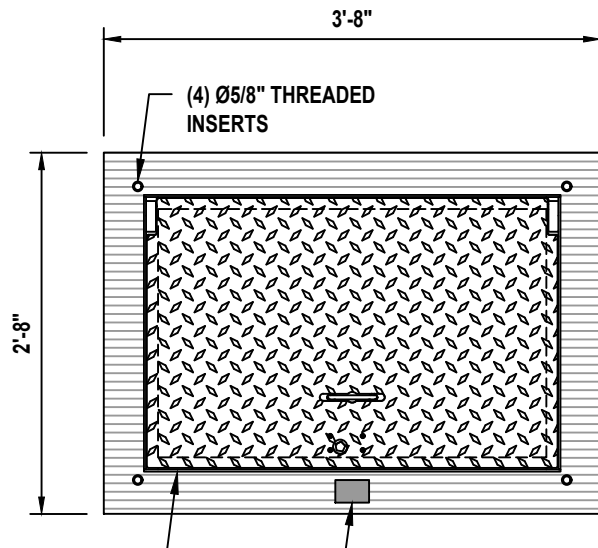
SHEET 1 OF 2

PGE - 233 VAULT

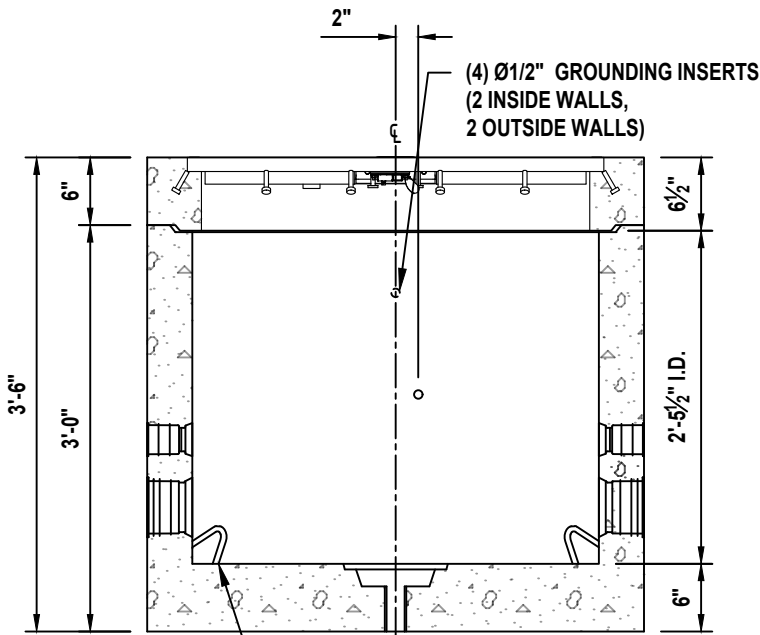


PLAN VIEW
TOP NOT SHOWN,
SEE TOP PLAN

24" x 36" GALVANIZED
ACCESS HATCH
WITH LOCKING LATCH

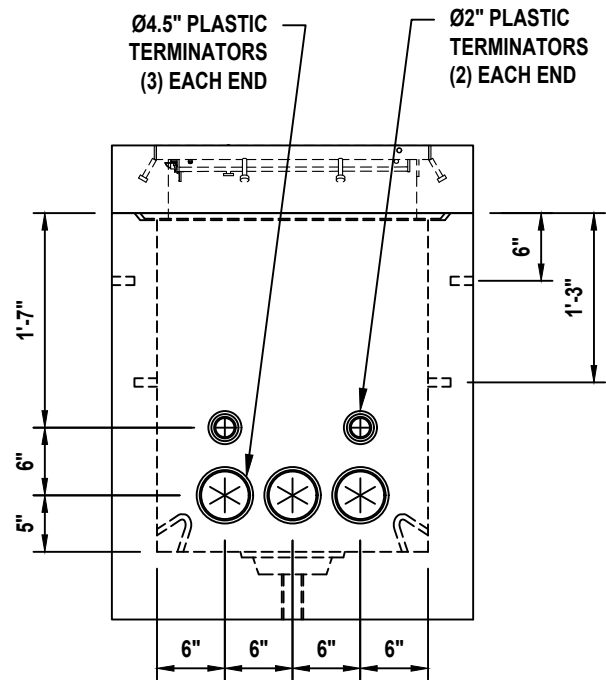


TOP PLAN



SECTION A-A

GALVANIZED PULL
IRON (1) EACH
CORNER



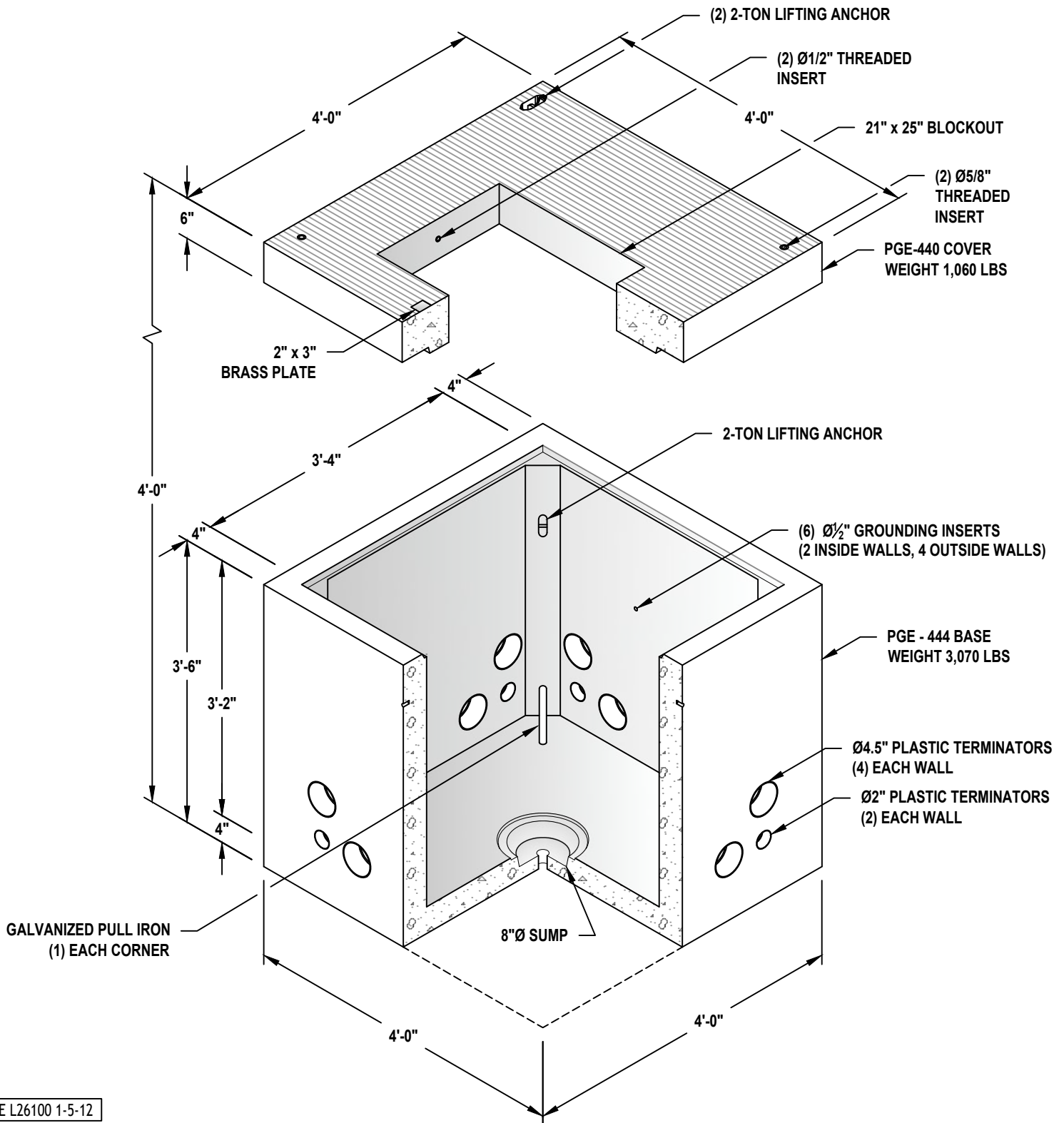
END VIEW

PGE L26100 1-5-12

32 x 44 x 42 (233-PGE)

SHEET 2 OF 2

PGE - 444 VAULT

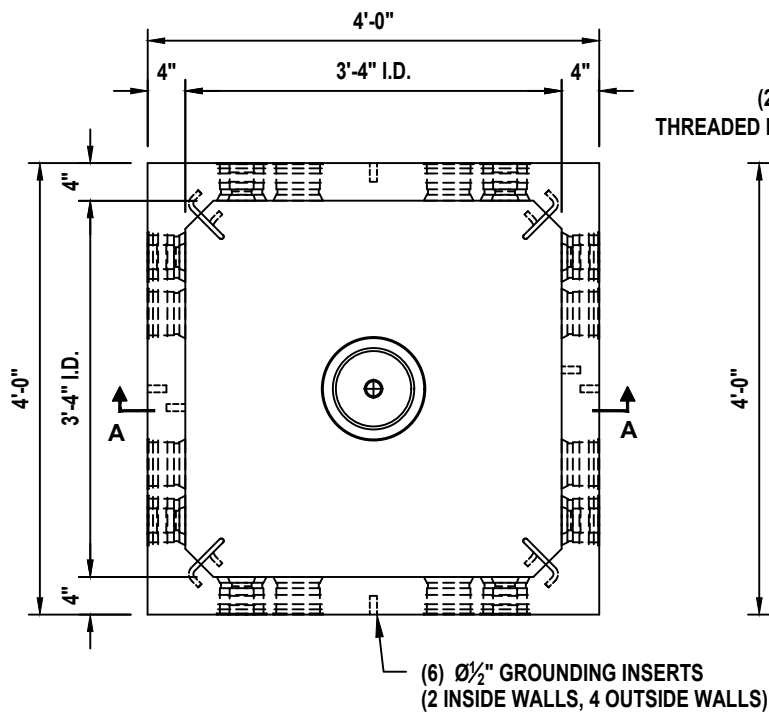


PGE L26100 1-5-12

48 x 48 x 48 (444-PGE)

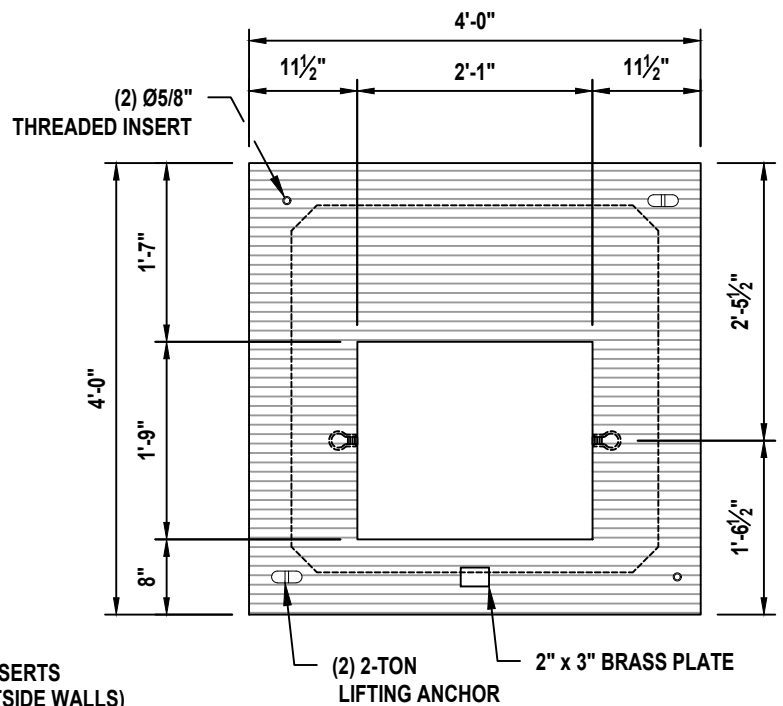
SHEET 1 OF 2

PGE - 444 VAULT

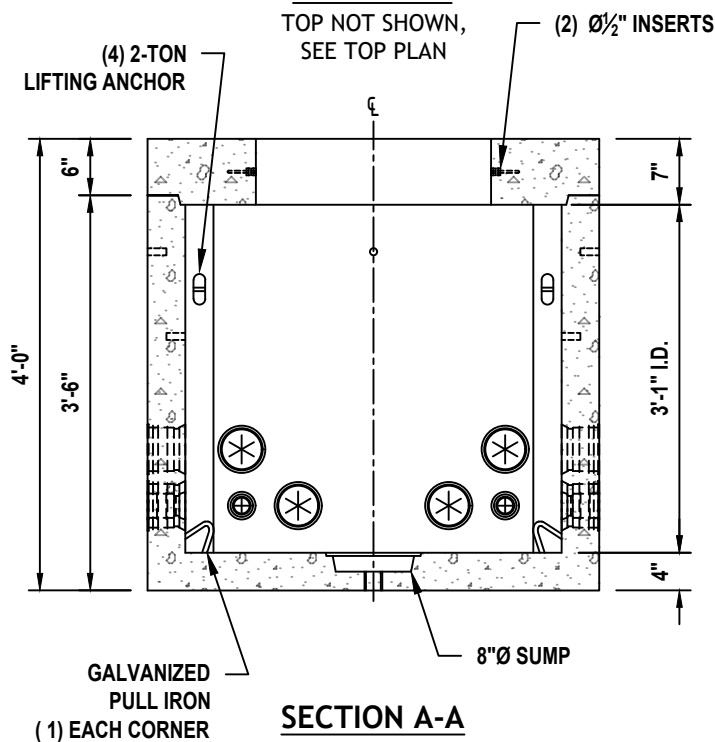


PLAN VIEW

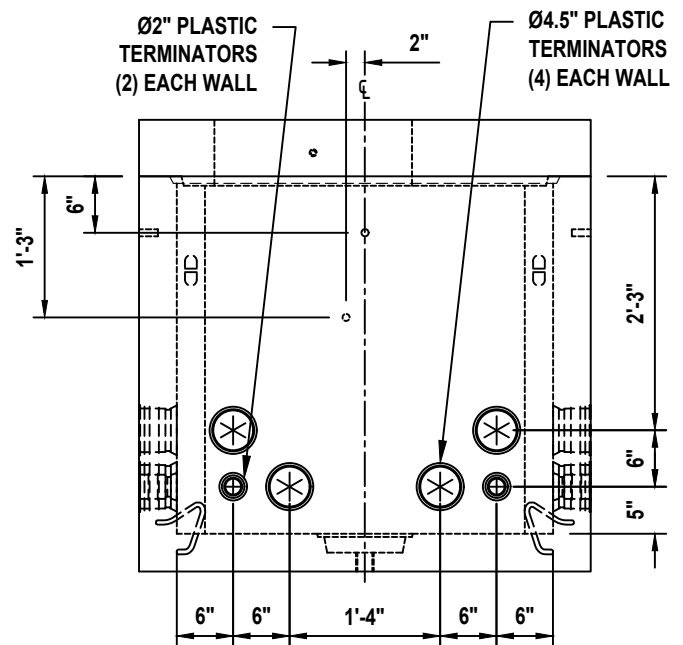
TOP NOT SHOWN,
SEE TOP PLAN



TOP PLAN



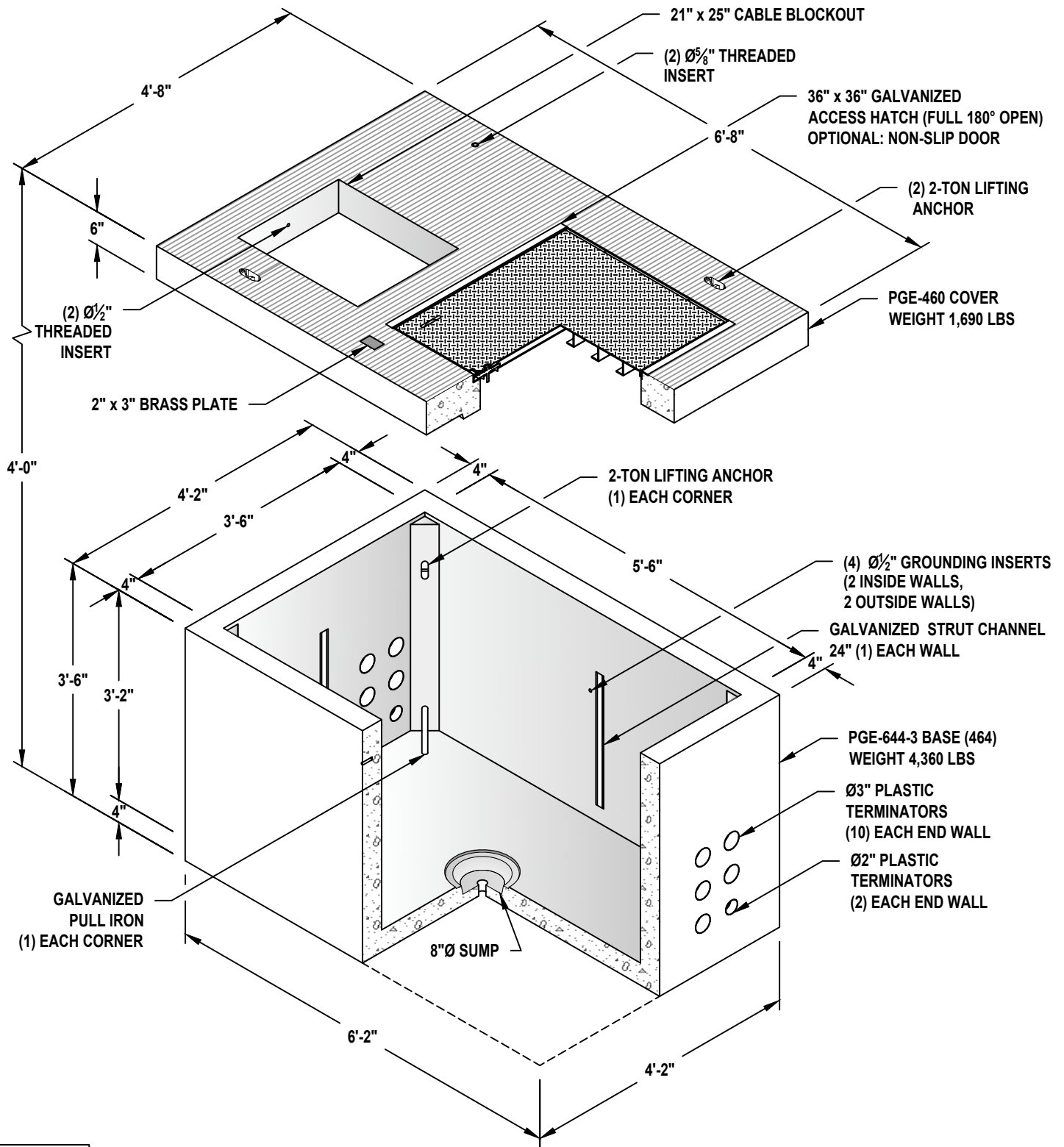
SECTION A-A



END VIEW

PGE L26100 1-5-12

PGE - 464-3 VAULT (644)

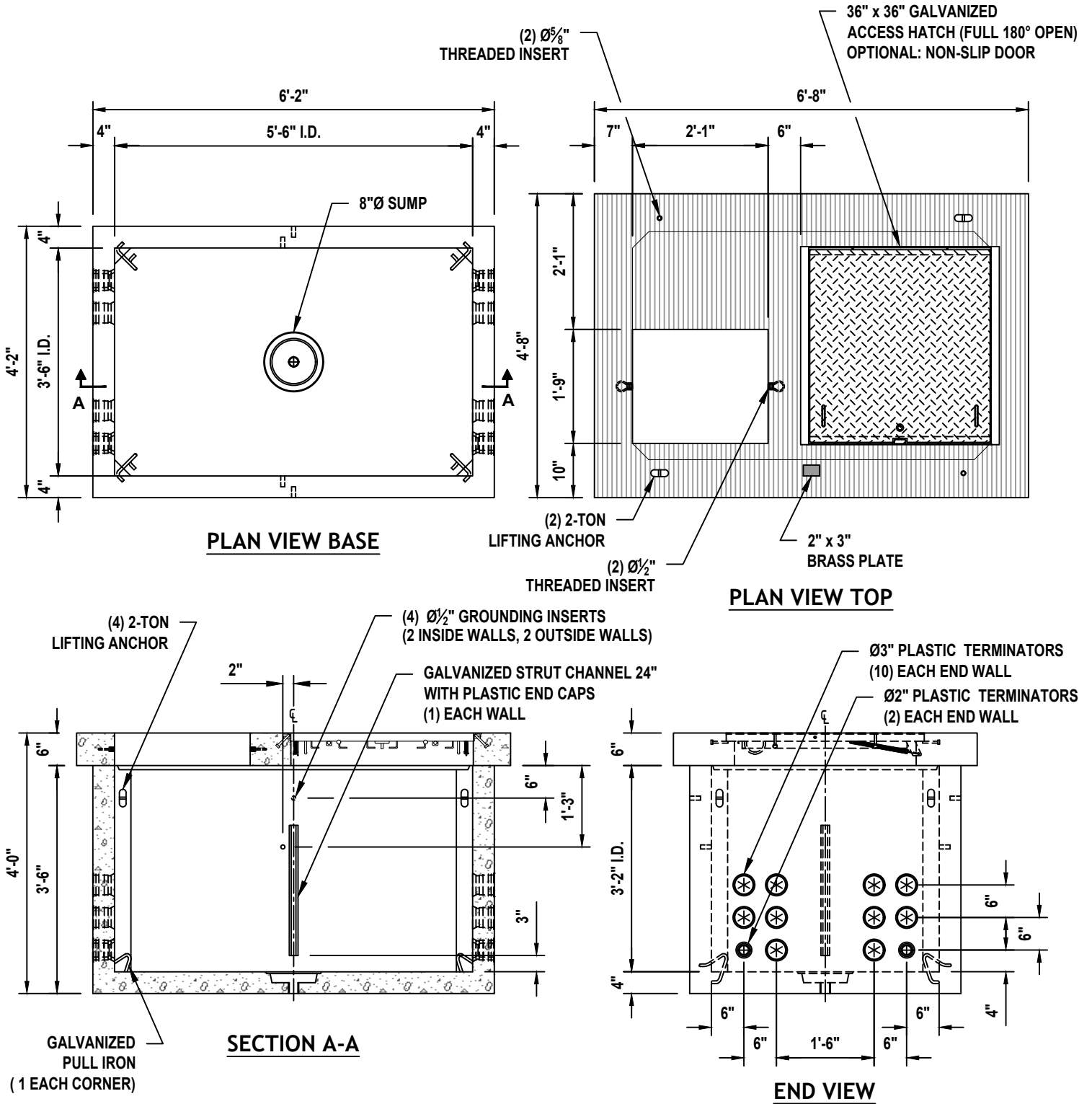


PGE L26100 1-5-12

50 x 74 x 48 (644-3-PGE)

SHEET 1 OF 2

PGE - 464-3 VAULT (644)

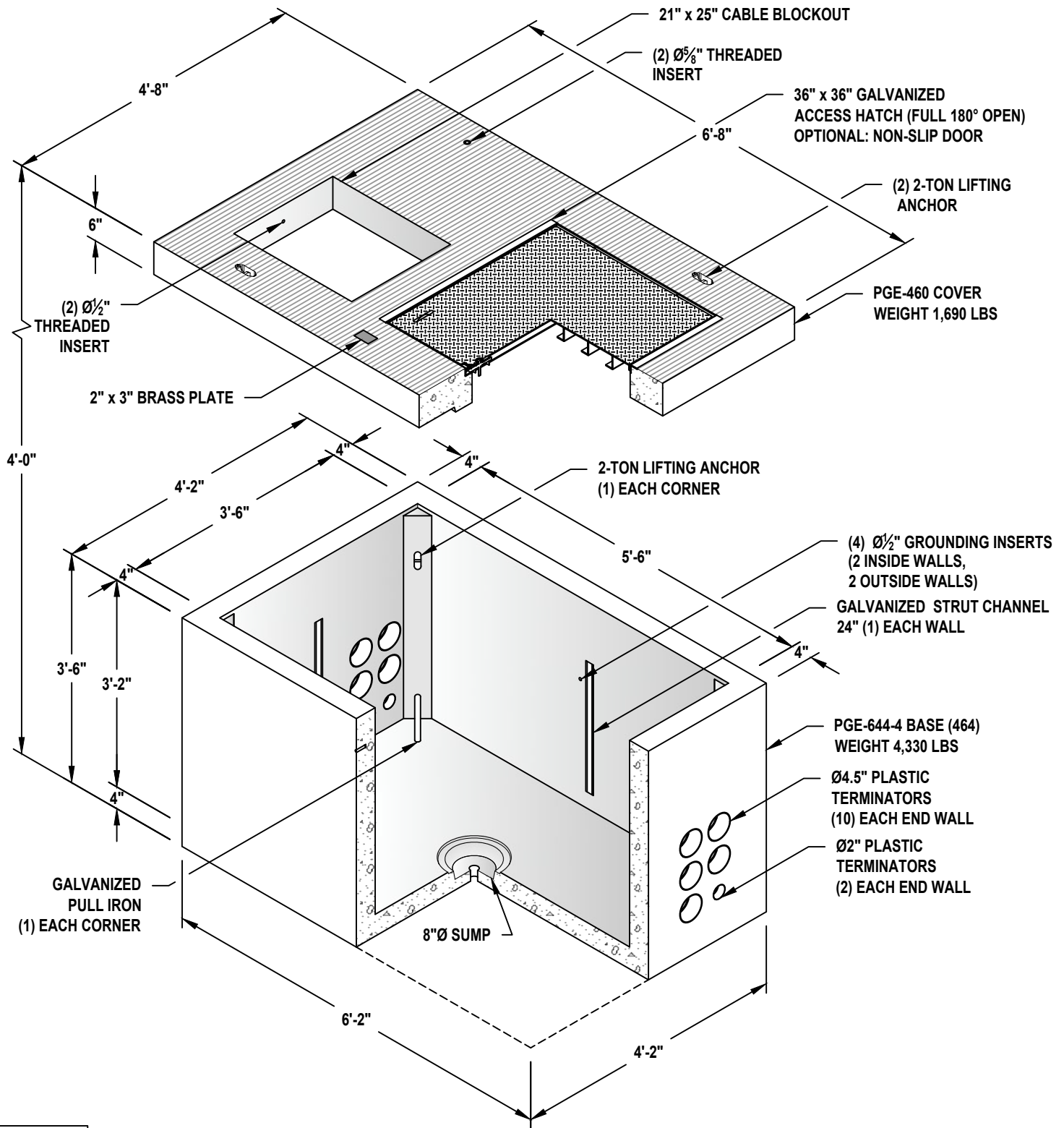


PGE L26100 1-5-12

50 x 74 x 48 (644-3-PGE)

SHEET 2 OF 2

PGE - 464-4 VAULT (644)

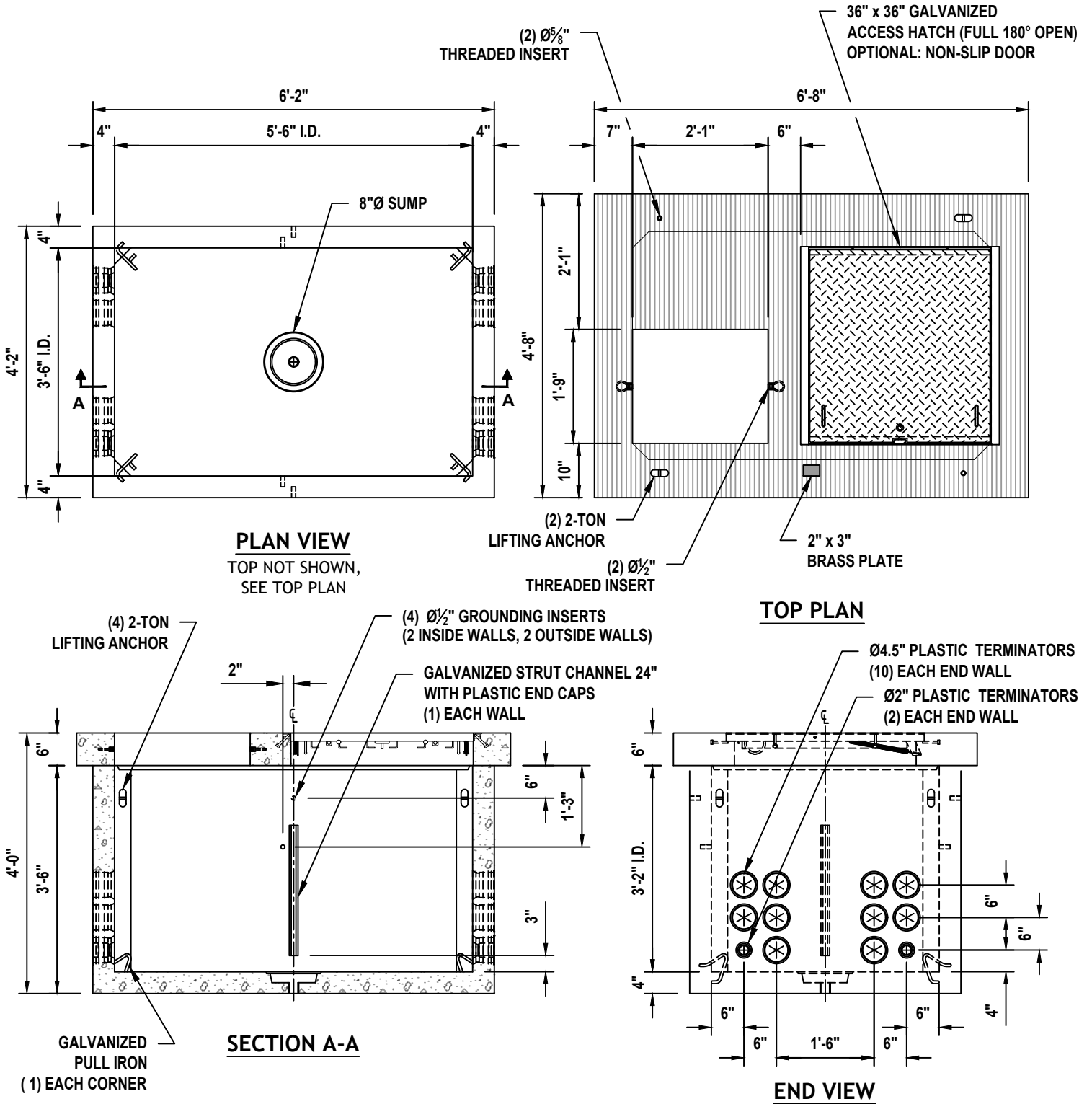


PGE L26100 1-5-12

48 x 72 x 48 (644-4-PGE)

SHEET 1 OF 2

PGE - 464-4 VAULT (644)

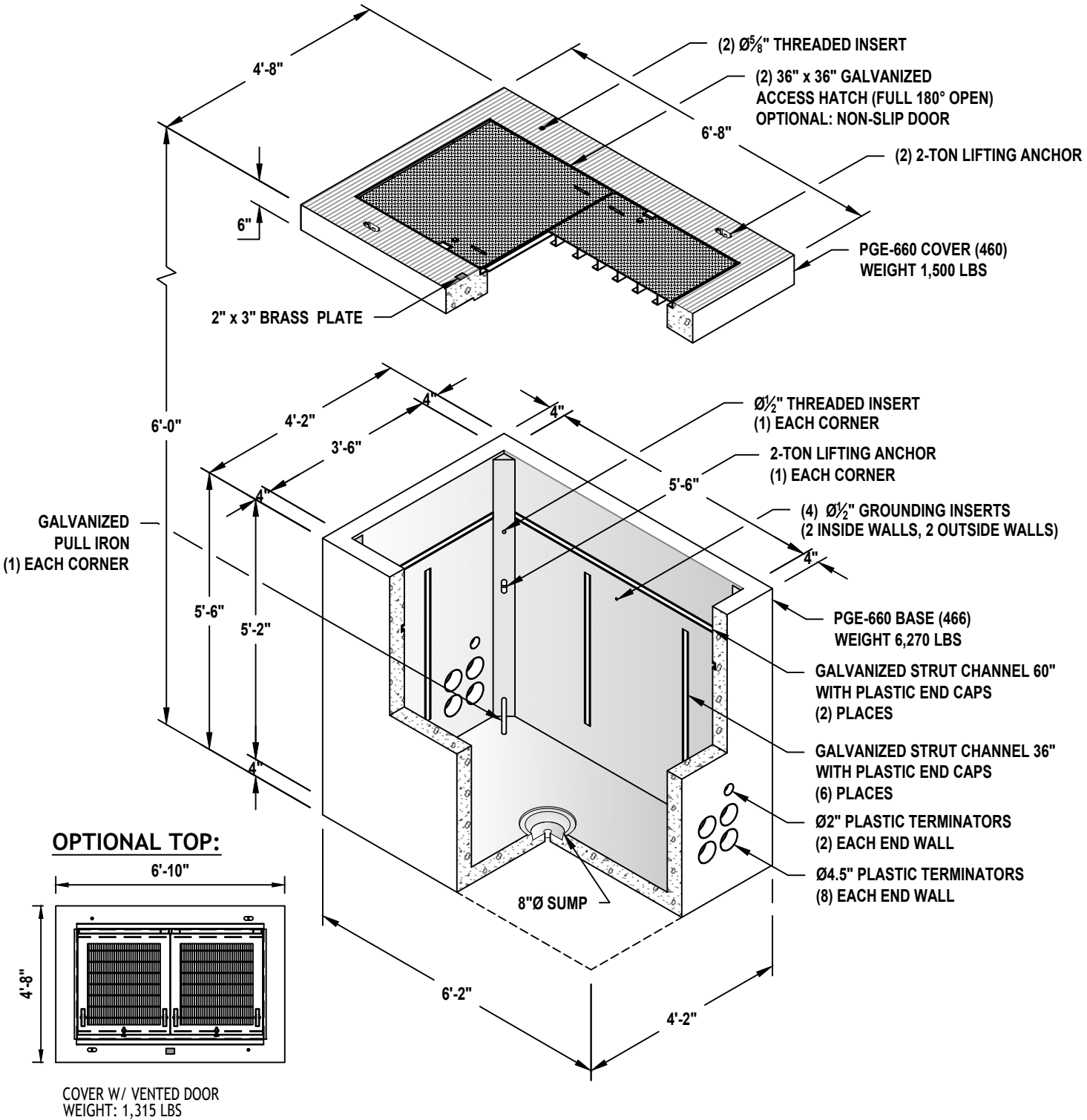


PGE L26100 1-5-12

48 x 72 x 48 (644-4-PGE)

SHEET 2 OF 2

PGE - 466 VAULT (660)

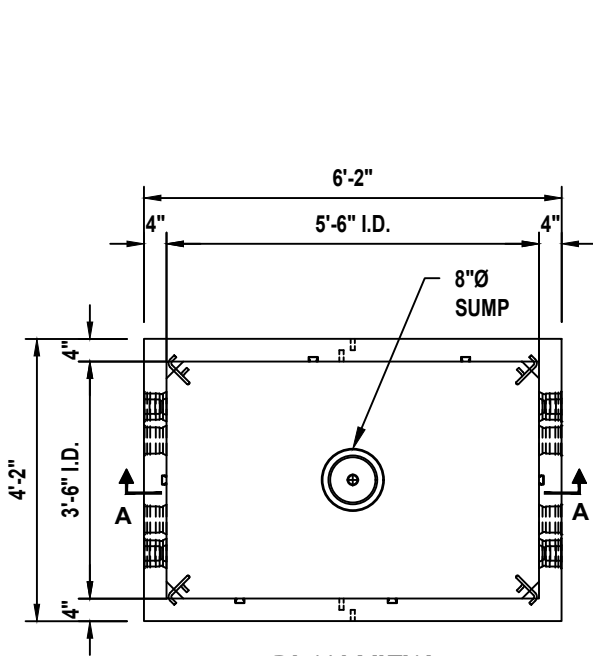


PGE L26100 1-5-12

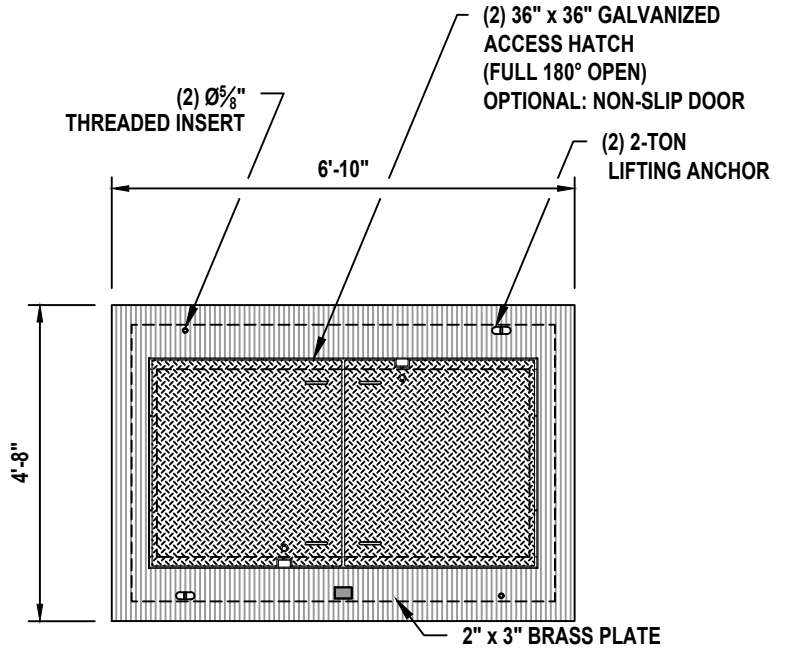
48 x 72 x 66 (660-PGE)

SHEET 1 OF 2

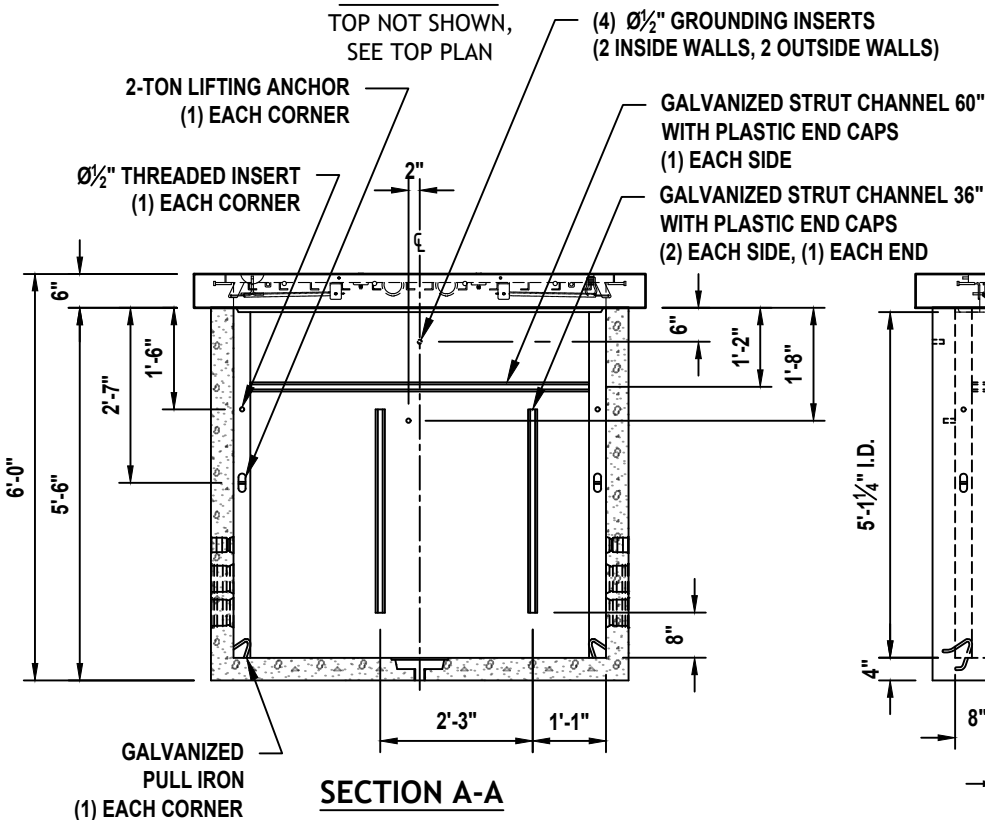
PGE - 466 VAULT (660)



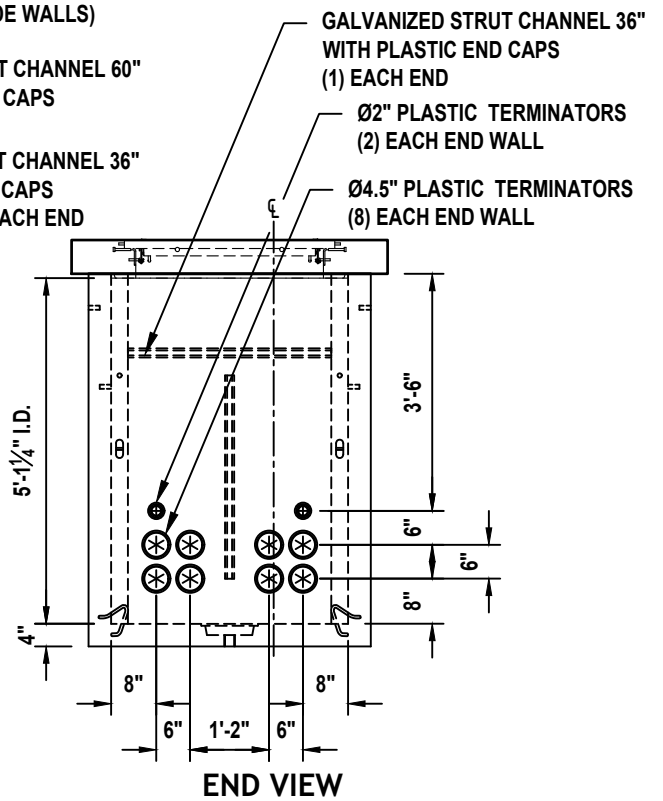
PLAN VIEW



TOP PLAN



SECTION A-A



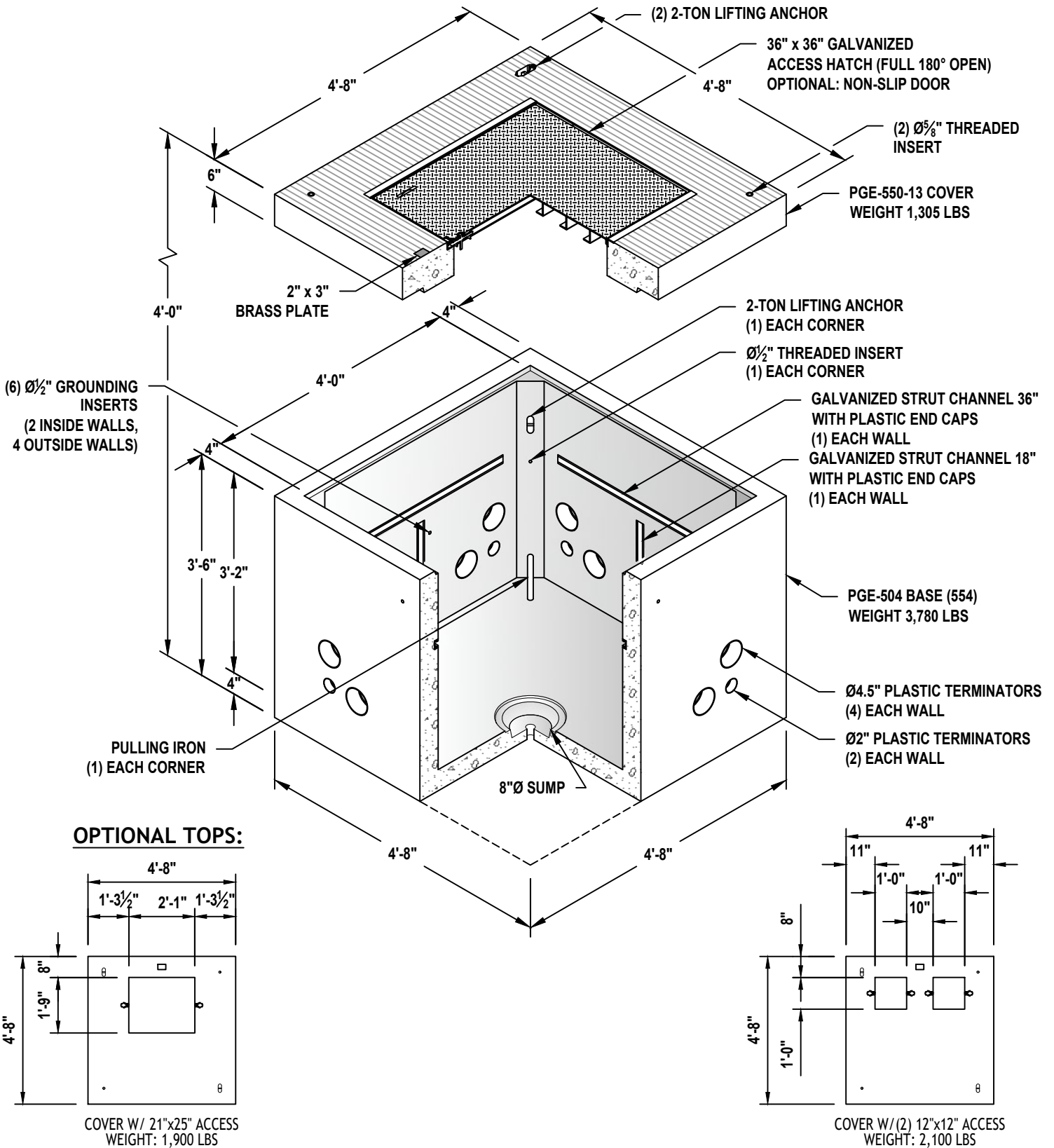
END VIEW

PGE L26100 1-5-12

48 x 72 x 66 (466-PGE)

SHEET 2 OF 2

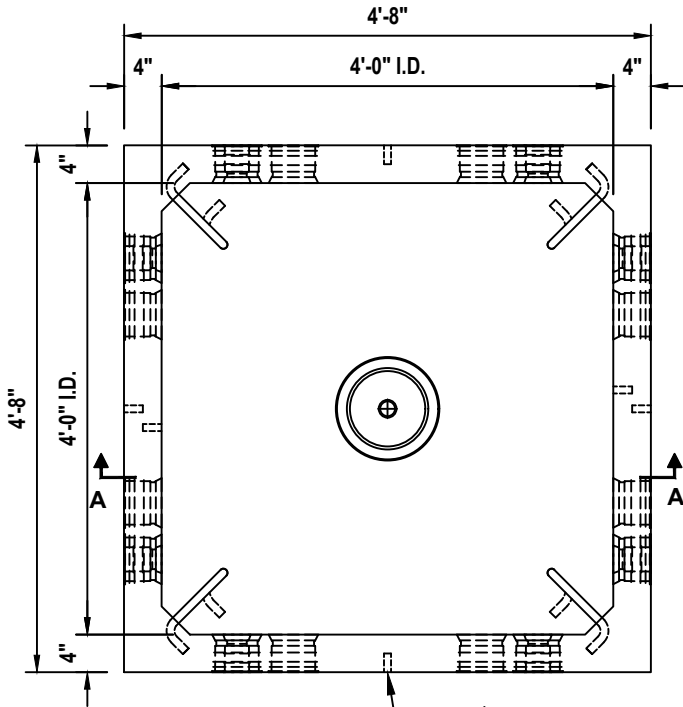
PGE - 554 Vault (504)



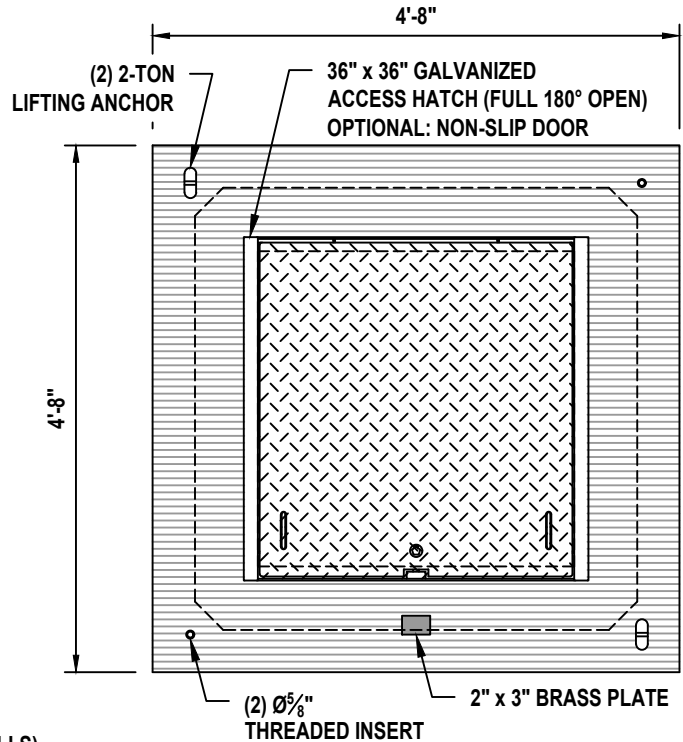
PGE L26100 1-5-12 56 x 56 x 42 (554-PGE)

SHEET 1 OF 2

PGE - 554 Vault (504)



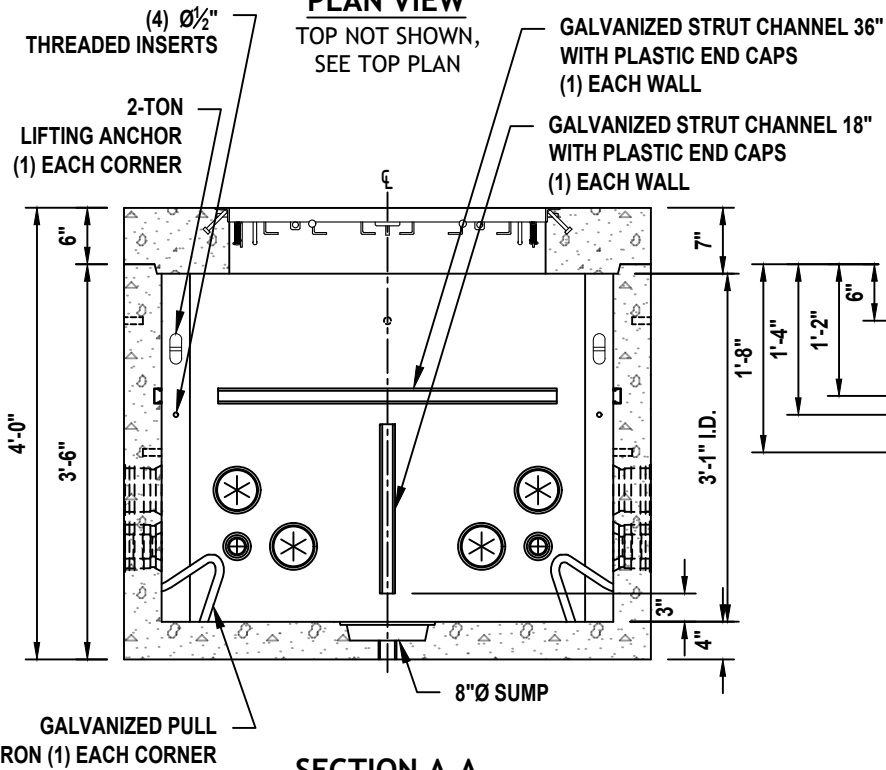
(6) $\varnothing\frac{1}{2}$ " GROUNDING INSERTS
(2 INSIDE WALLS, 4 OUTSIDE WALLS)



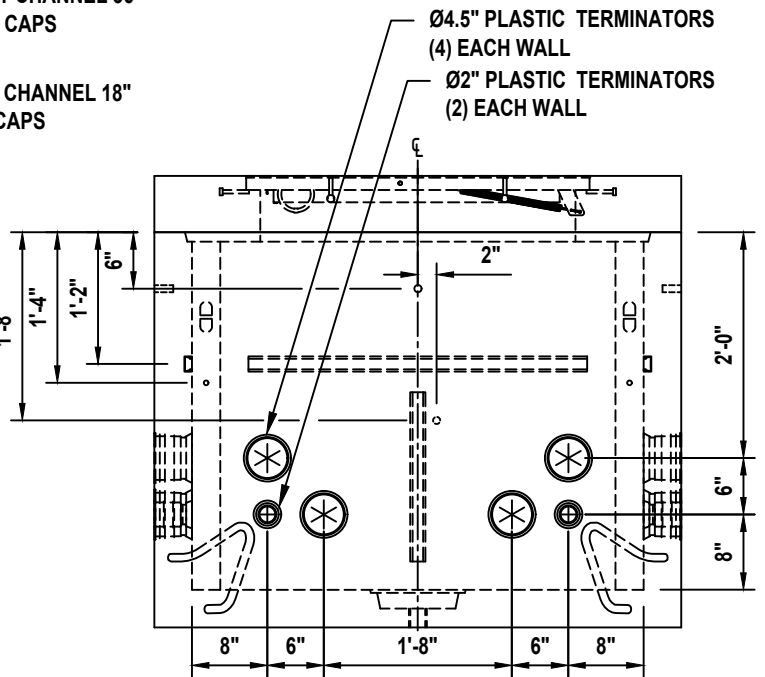
PLAN VIEW

TOP NOT SHOWN,
SEE TOP PLAN

TOP PLAN



SECTION A-A



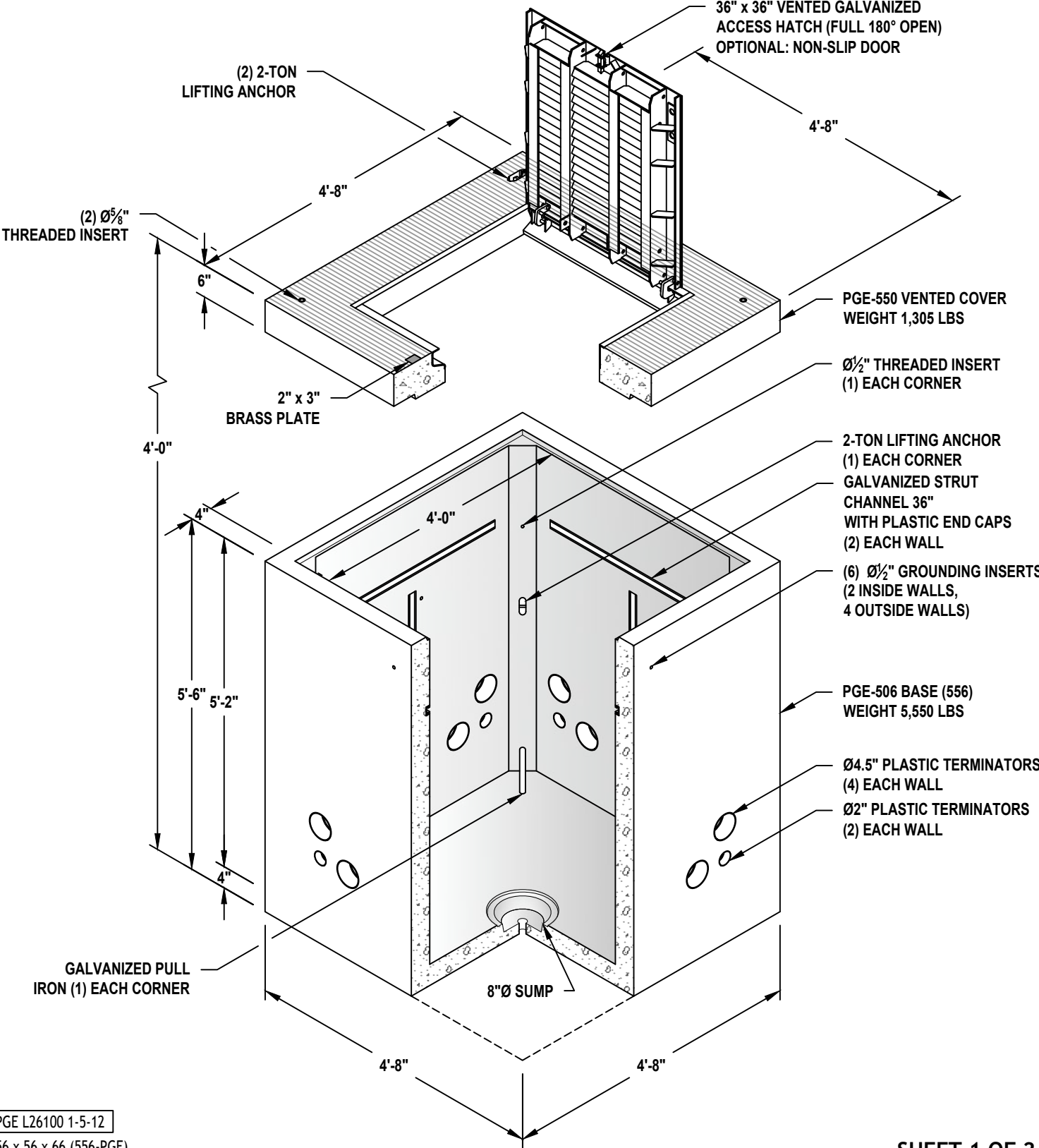
END VIEW

PGE L26100 1-5-12

56 x 56 x 42 (554-PGE)

SHEET 2 OF 2

PGE - 556 VAULT (506)

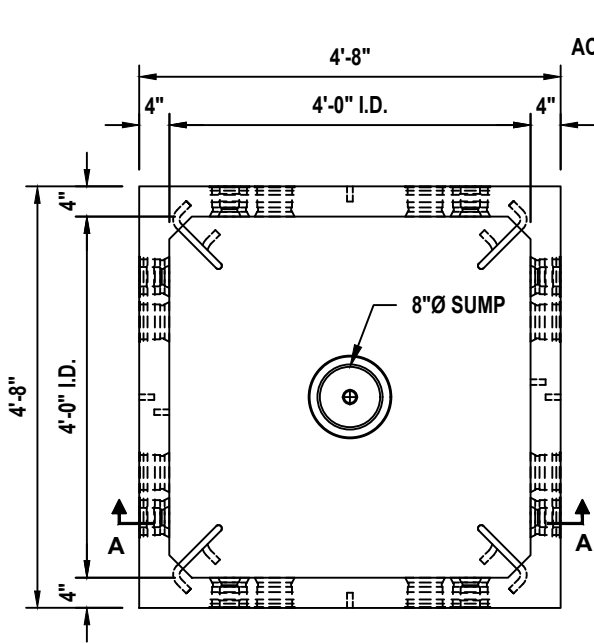


PGE L26100 1-5-12

56 x 56 x 66 (556-PGE)

SHEET 1 OF 2

PGE - 556 VAULT (506)

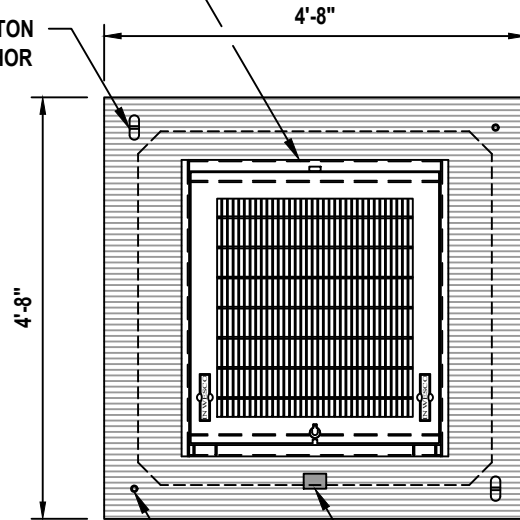


PLAN VIEW

TOP NOT SHOWN,
SEE TOP PLAN

36" x 36" VENTED GALVANIZED
ACCESS HATCH (FULL 180° OPEN)
OPTIONAL: NON-SLIP DOOR

(2) 2-TON
LIFTING ANCHOR

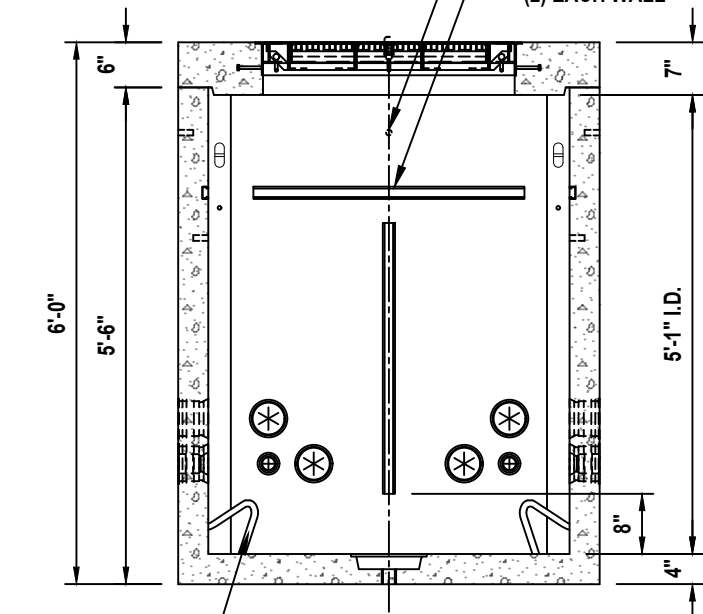


TOP PLAN

2" x 3" BRASS PLATE

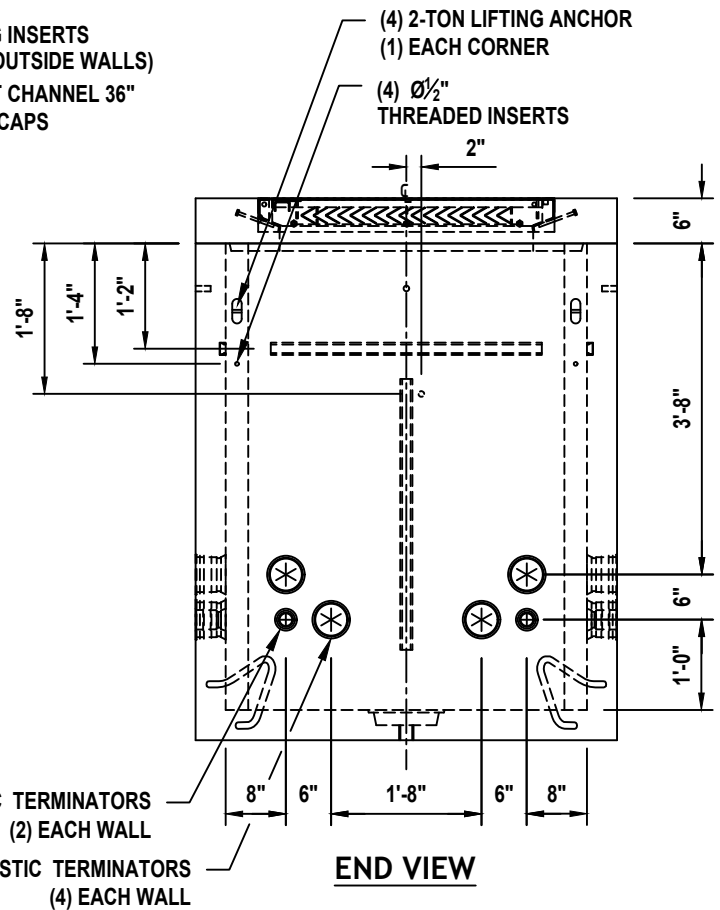
(2) $\varnothing 5/8"$
THREADED INSERT

(6) $\varnothing 1/2"$ GROUNDING INSERTS
(2 INSIDE WALLS, 4 OUTSIDE WALLS)
GALVANIZED STRUT CHANNEL 36"
WITH PLASTIC END CAPS
(2) EACH WALL



SECTION A-A

GALVANIZED
PULL IRON
(1) EACH CORNER



END VIEW

$\varnothing 2"$ PLASTIC TERMINATORS
(2) EACH WALL

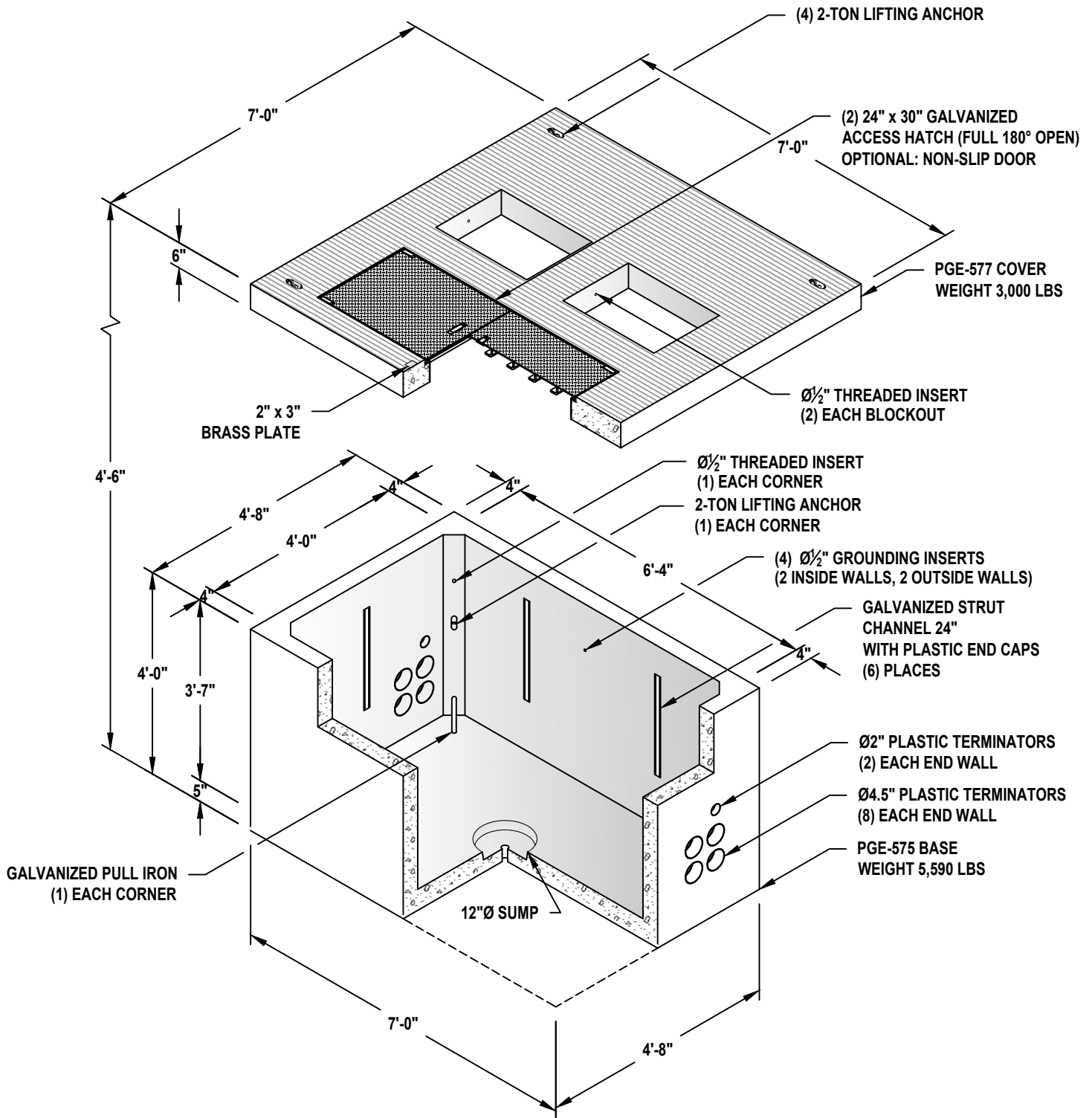
$\varnothing 4.5"$ PLASTIC TERMINATORS
(4) EACH WALL

PGE L26100 1-5-12

56 x 56 x 66 (556-PGE)

SHEET 2 OF 2

PGE - 575 VAULT

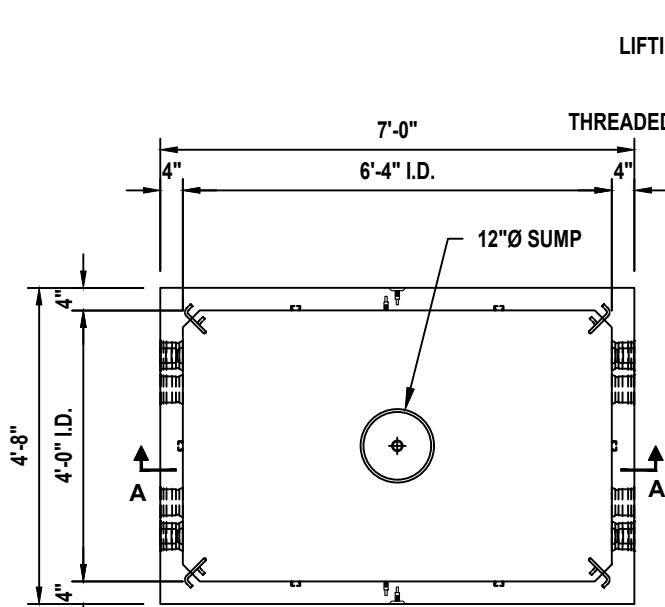


PGE L26100 1-5-12

56 x 84 x 54 (575-PGE)

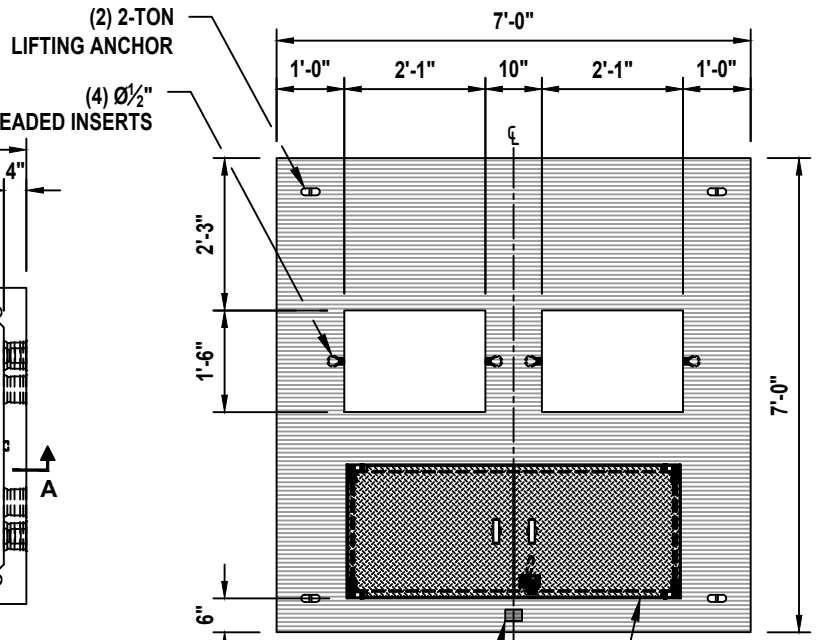
SHEET 1 OF 2

PGE - 575 VAULT

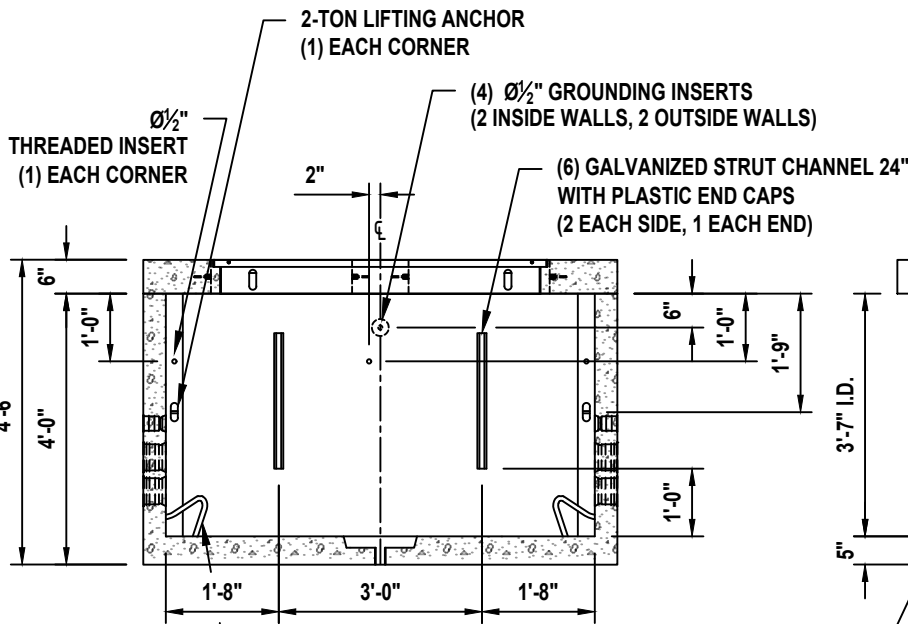


PLAN VIEW

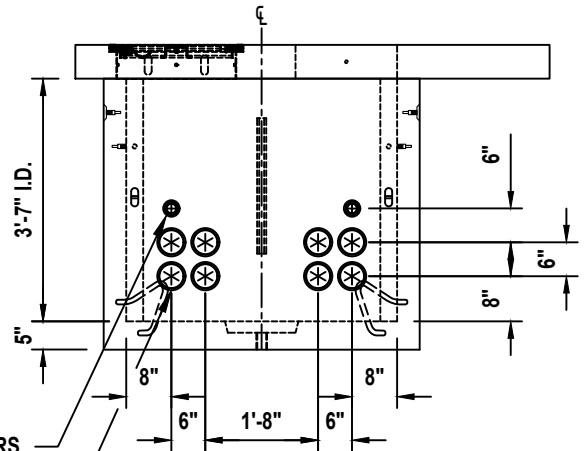
TOP NOT SHOWN,
SEE TOP PLAN



TOP PLAN



SECTION A-A



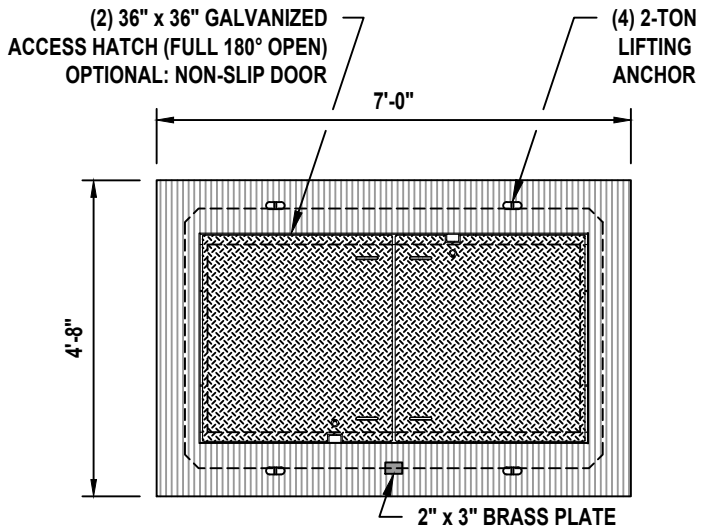
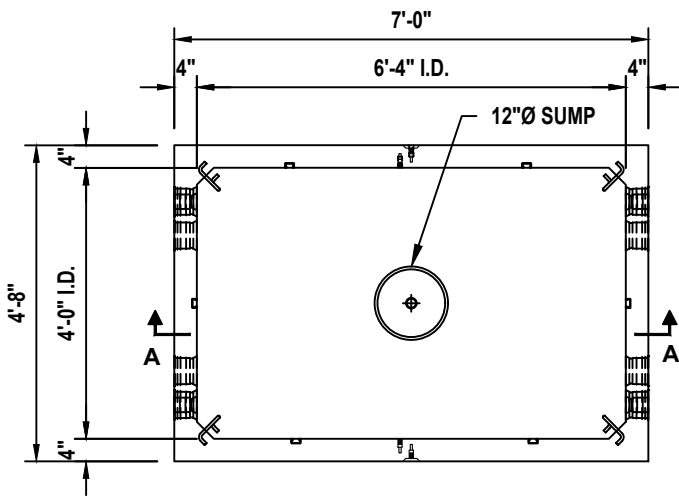
END VIEW

PGE L26100 1-5-12

56 x 84 x 54 (575-PGE)

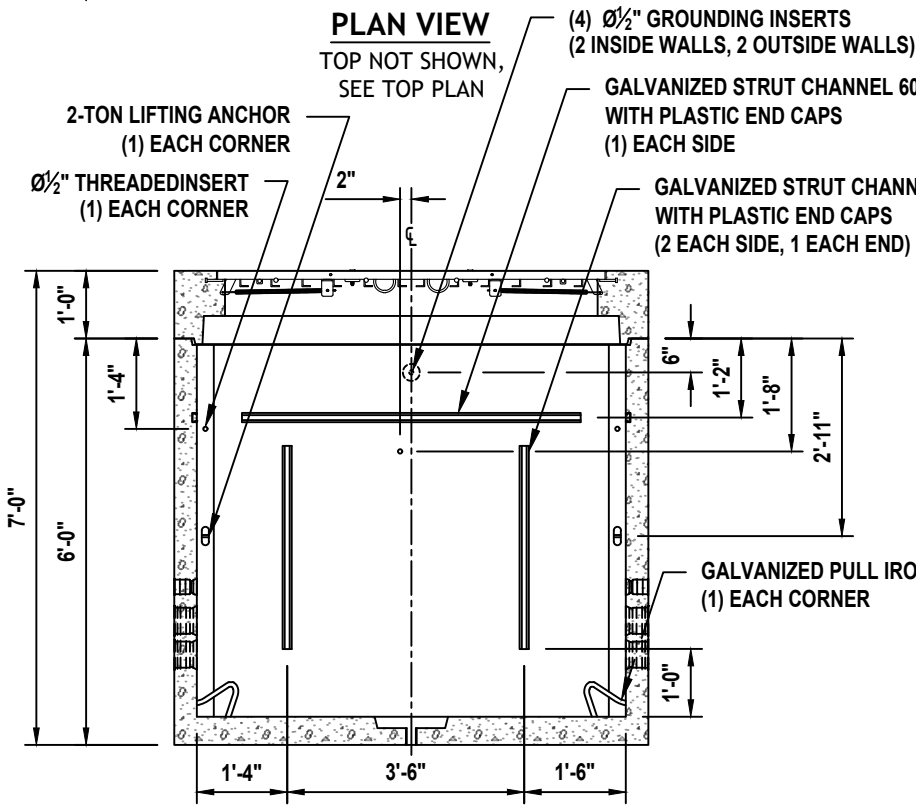
SHEET 2 OF 2

PGE - 577 VAULT

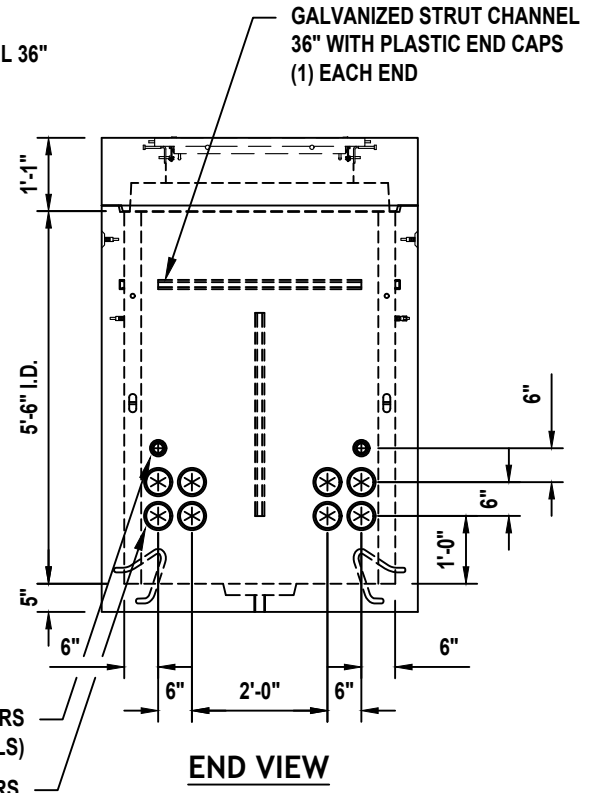


PLAN VIEW
TOP NOT SHOWN,
SEE TOP PLAN

TOP PLAN



SECTION A-A



END VIEW

PGE L26100 1-5-12

56 x 84 x 84 (577-PGE)

SHEET 2 OF 2



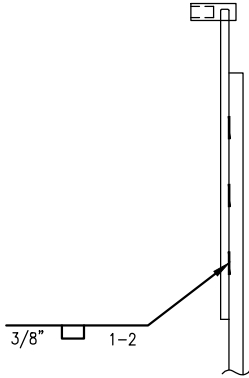
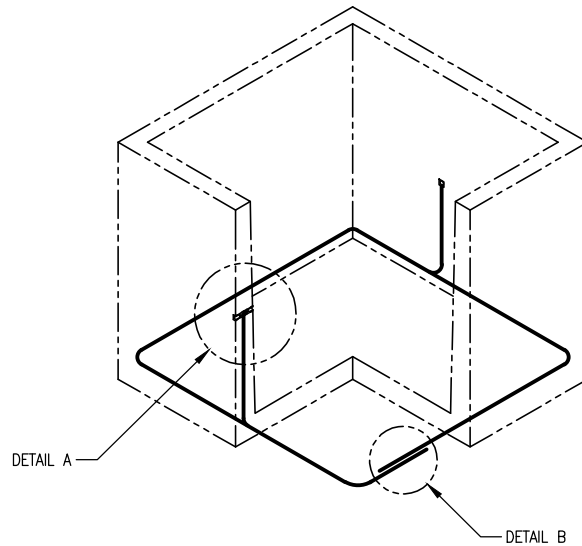
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Email: sales@cppwa.com

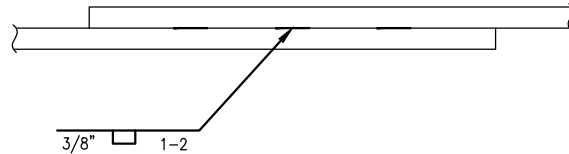
Web: www.columbiaprecastproducts.com

Section: PGE Vaults Pg: 9B Date: 2022

PGE - TYPICAL REBAR GROUND DESIGN



DETAIL A



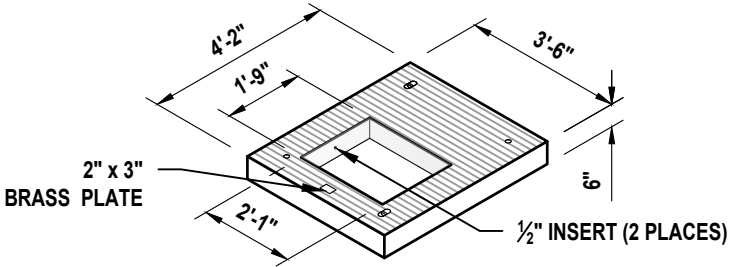
DETAIL B - SPLICE

NOTE:

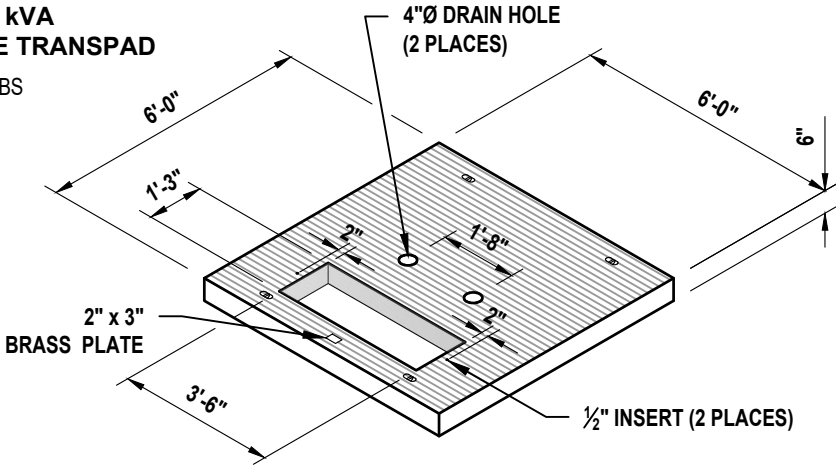
1. REBAR GROUNDING DESIGN INCORPORATED INTO ALL VAULTS AS SHOWN (AS NEEDED).
2. REBAR GROUNDING UNIT TO UTILIZE DRILLED AND TAPPED BRASS STOCK.
3. GROUNDING UNIT WELDED TO A REBAR ROD NO LESS THAN 20 FEET LONG CONTINUOUS.
4. REBAR ROD MAY BE ASSEMBLED WITH SPLICES IN ANY LOCATION AS SHOWN IN DETAIL B.

PGE L26100 1-5-12

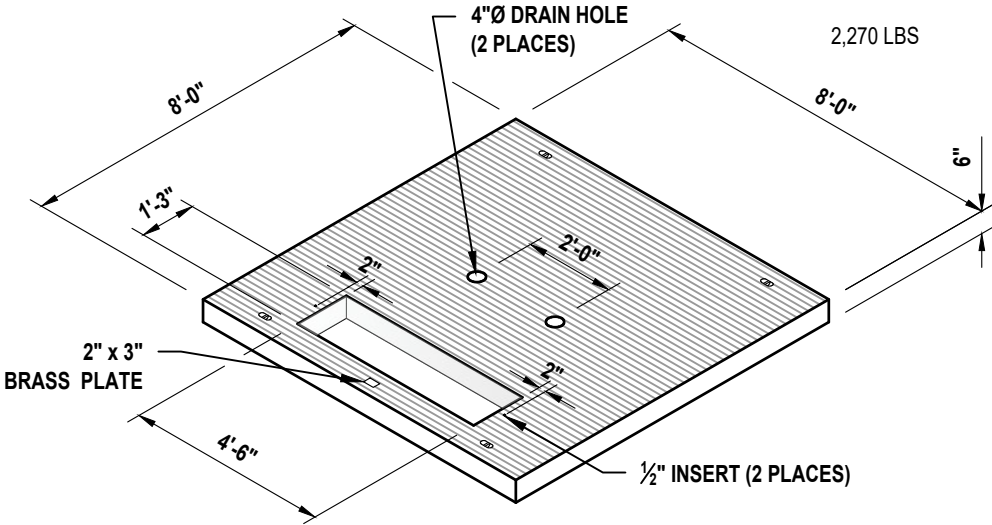
PGE - TRANSFORMER PADS



TRANSFORMER PADMOUNT - SINGLE PHASE
 25 - 75 kVA
 4250-2125-PGE TRANSPAD
 820 LBS

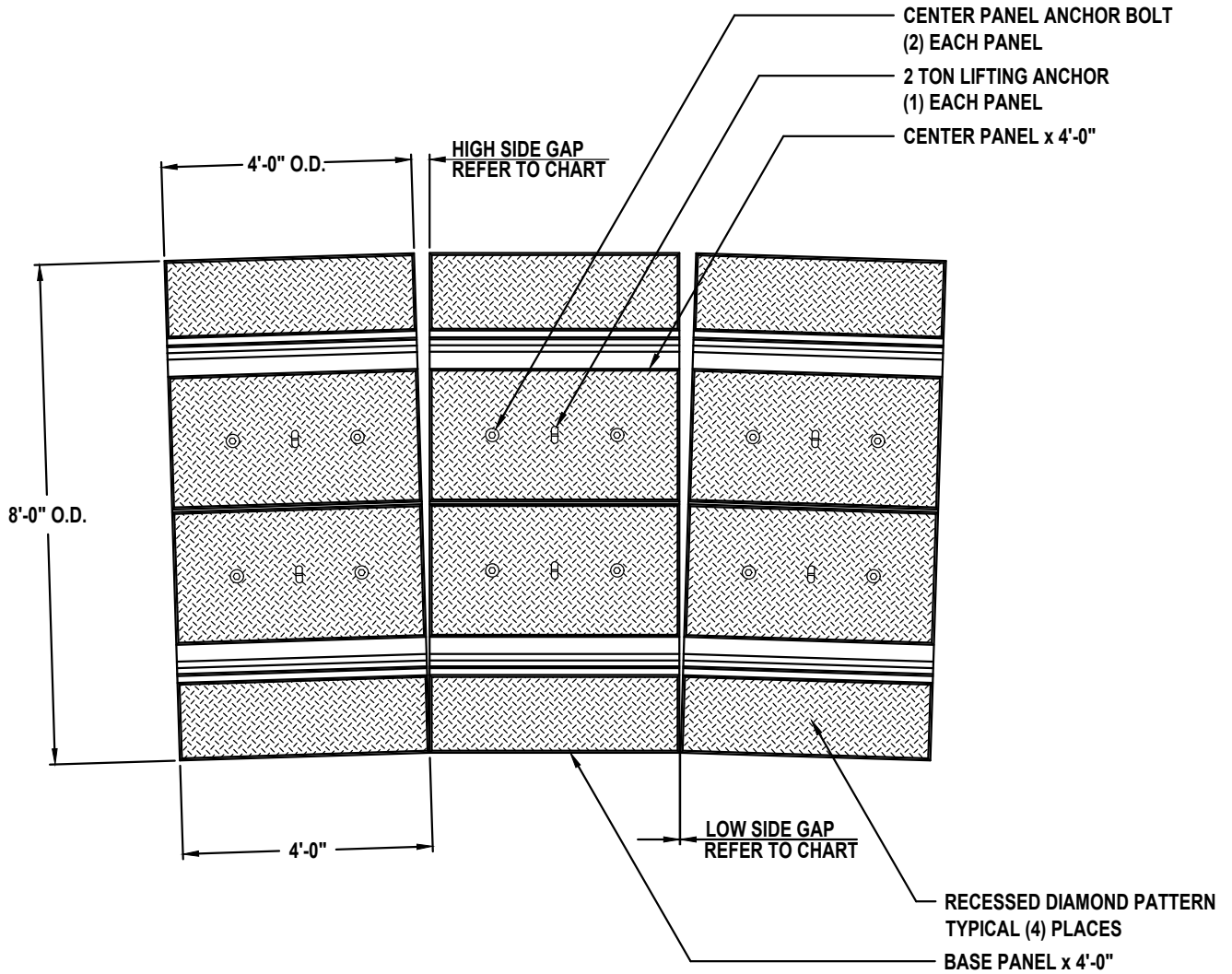


TRANSFORMER PADMOUNT - THREE PHASE
 75 - 300 kVA
 7272-1542-PGE TRANSPAD
 2,270 LBS



TRANSFORMER PADMOUNT - THREE PHASE
 500 - 1500 kVA
 9696-1554- PGE TRANSPAD
 4,370 LBS

PREMIER® CURVED ALIGNMENTS - 4'-0" DIVERGED UNITS

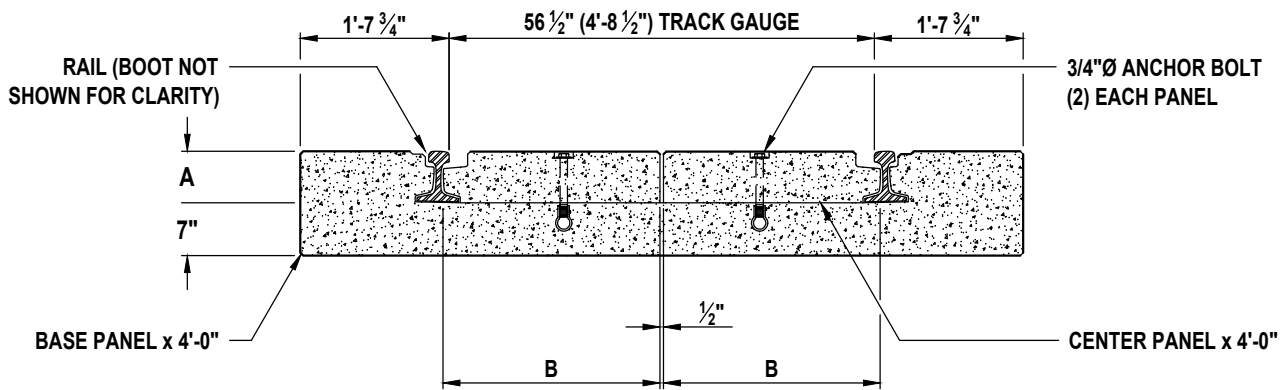
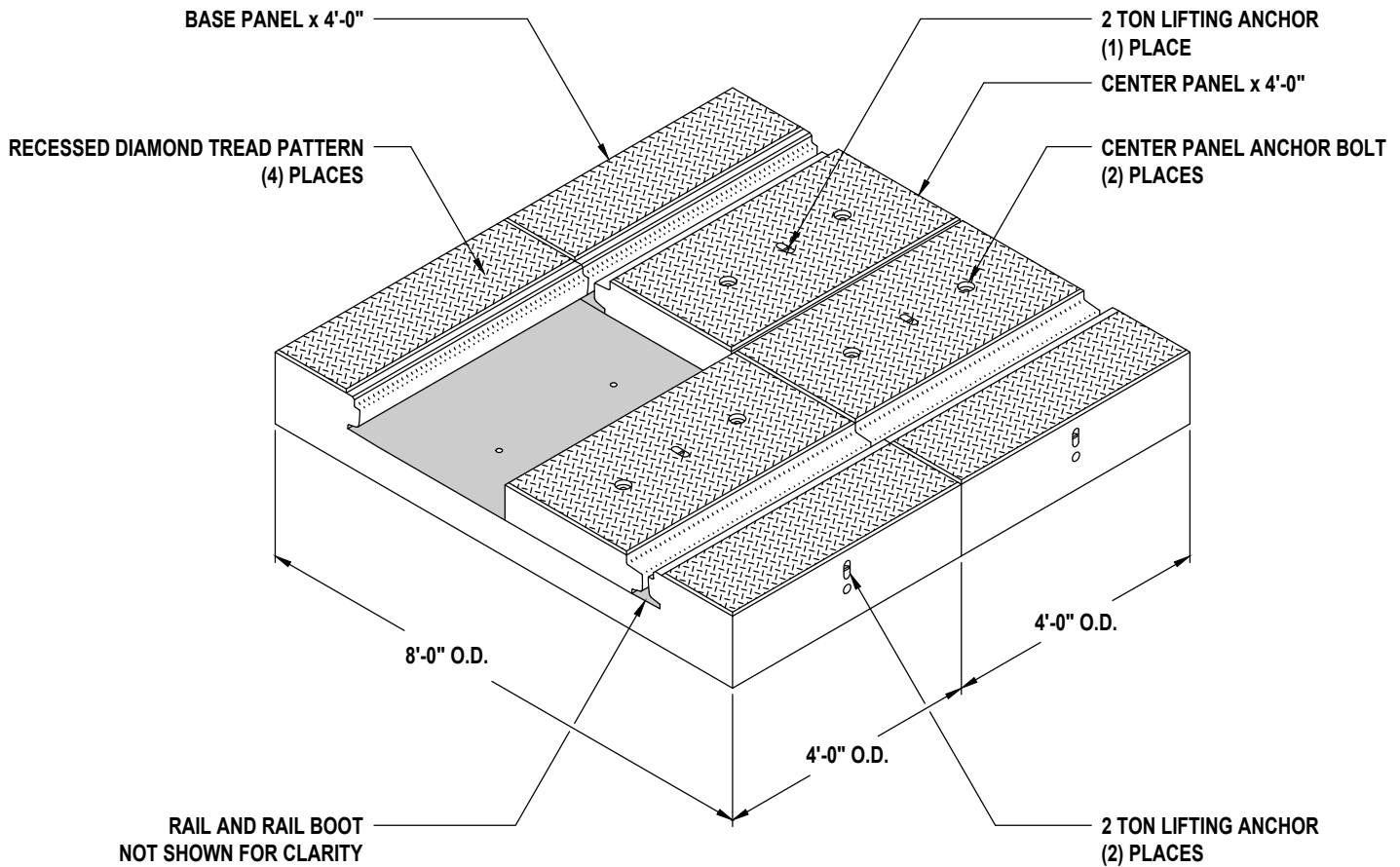


4'-0" DIVERGED UNITS

NOTES:

1. PREMIER UNITS MAY BE LAID WITH 1/2 INCH DIVERGENCE.
2. TAPERED SECTIONS MAY BE USED TO REDUCE DIVERGENCE.
3. TAPER SHORTENS ONE SIDE OF 4'-0" SECTION BY 1 INCH.

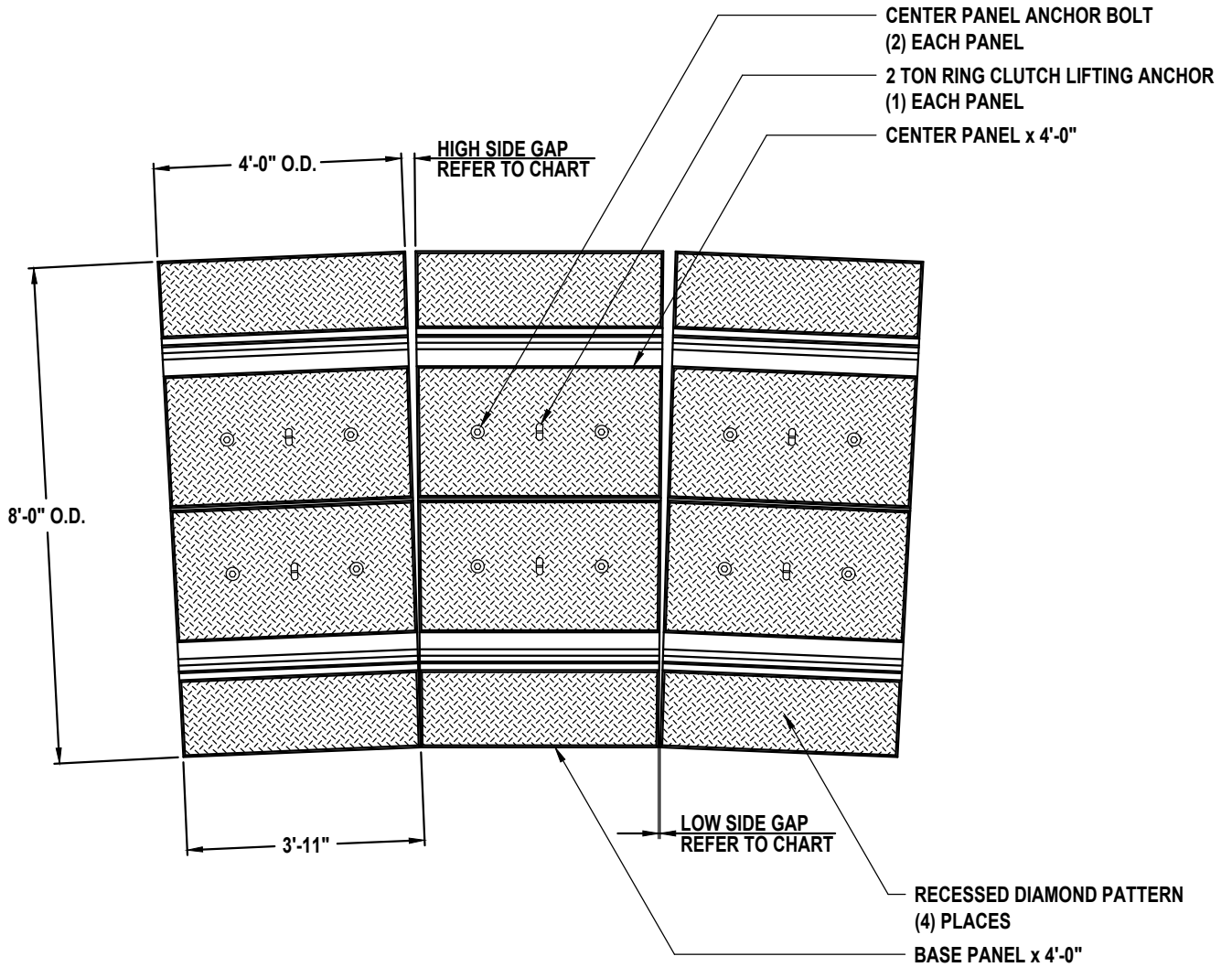
PREMIER® - 4'-0" MODULE



SECTION VIEW

CENTER PANEL GEOMETRY:	A	B
100 RB POUND RAIL	5 3/4"	2'-4 5/8"
100 RE/105 DUDLEY RAIL	6"	2'-4 5/8"
112/115 POUND RAIL	6 13/16"	2'-4 3/4"
132/136 POUND RAIL	7 5/16"	2'-5"

PREMIER® CURVED ALIGNMENTS - 4'-0" TAPERED UNITS

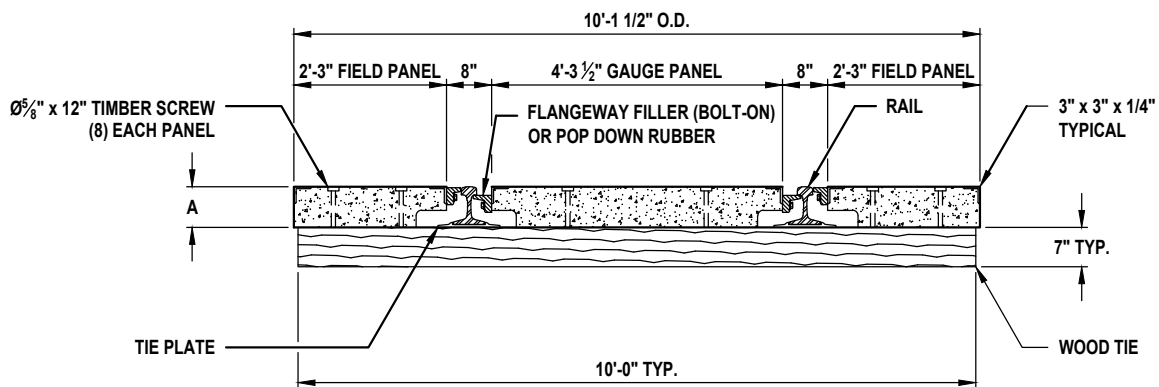
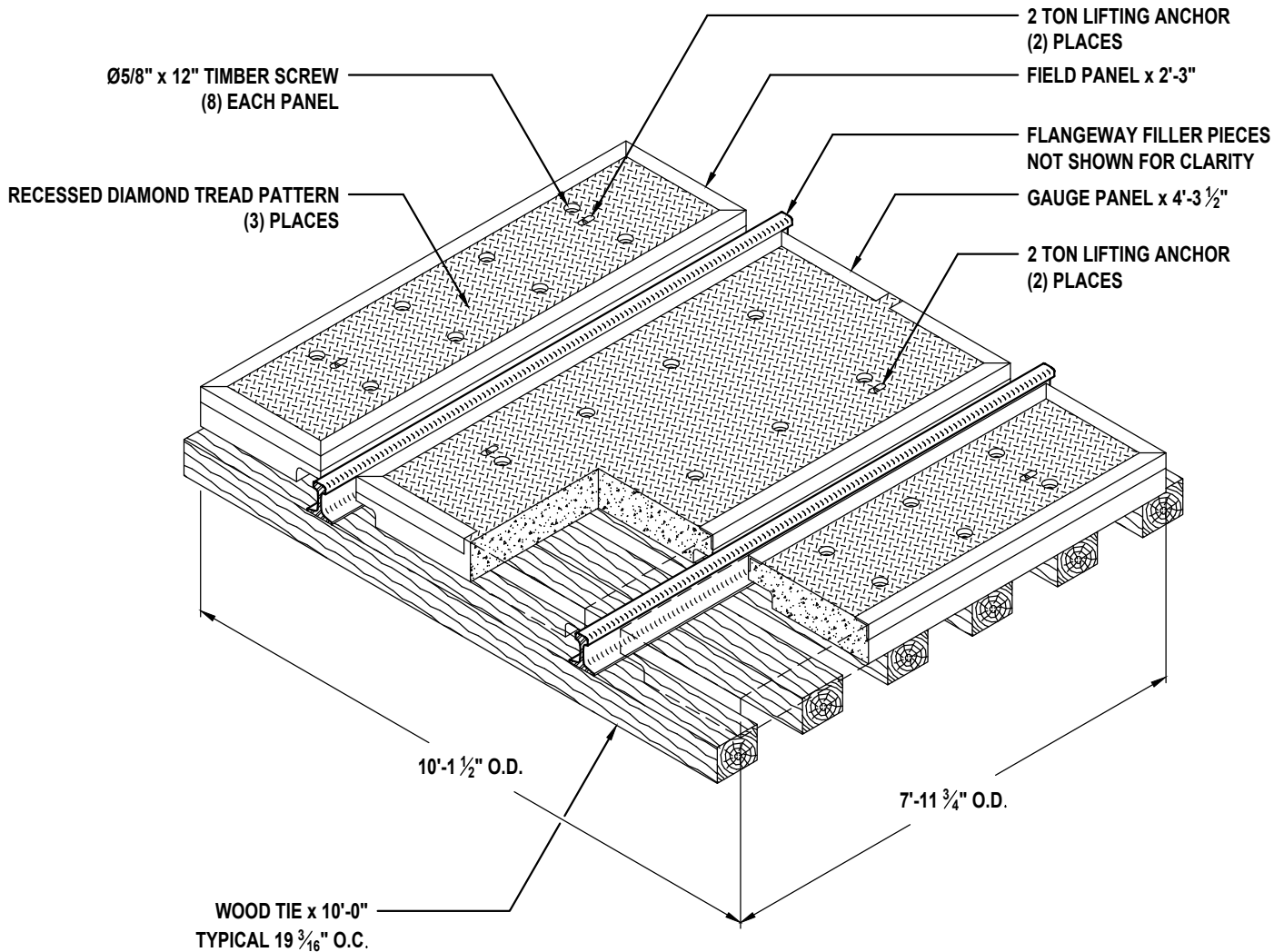


4'-0" TAPERED UNITS

NOTES:

1. PREMIER UNITS MAY BE LAID WITH 1/2 INCH DIVERGENCE.
2. TAPERED SECTIONS MAY BE USED TO REDUCE DIVERGENCE.
3. TAPER SHORTENS ONE SIDE OF 4'-0" SECTION BY 1 INCH.

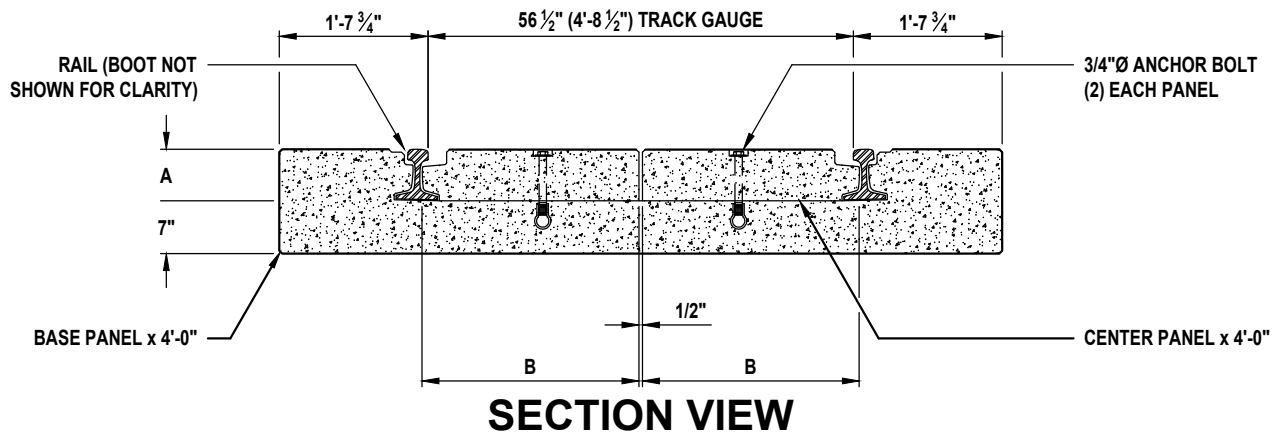
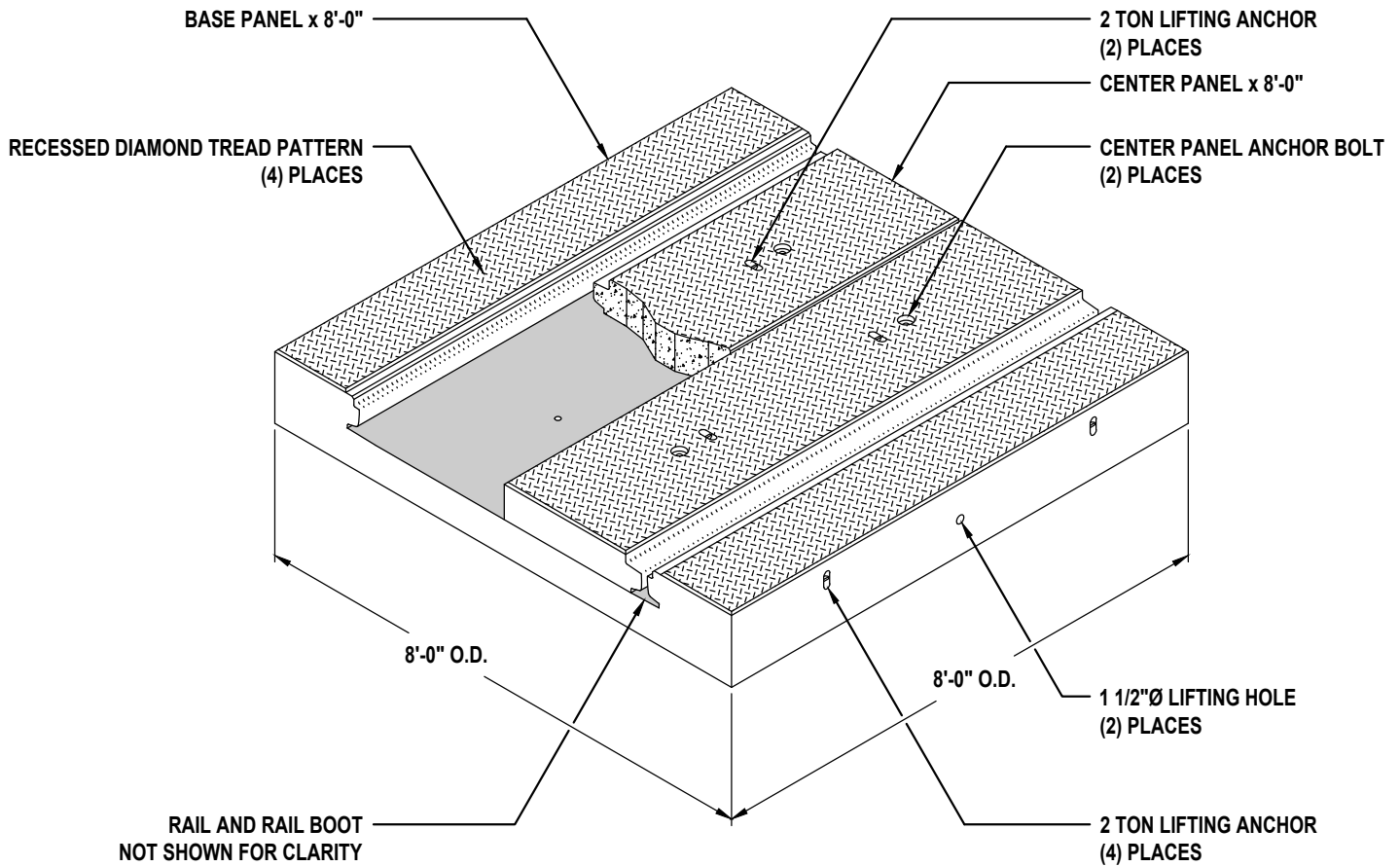
PREMIER® - 8'-0" CLAD PANEL



SECTION VIEW

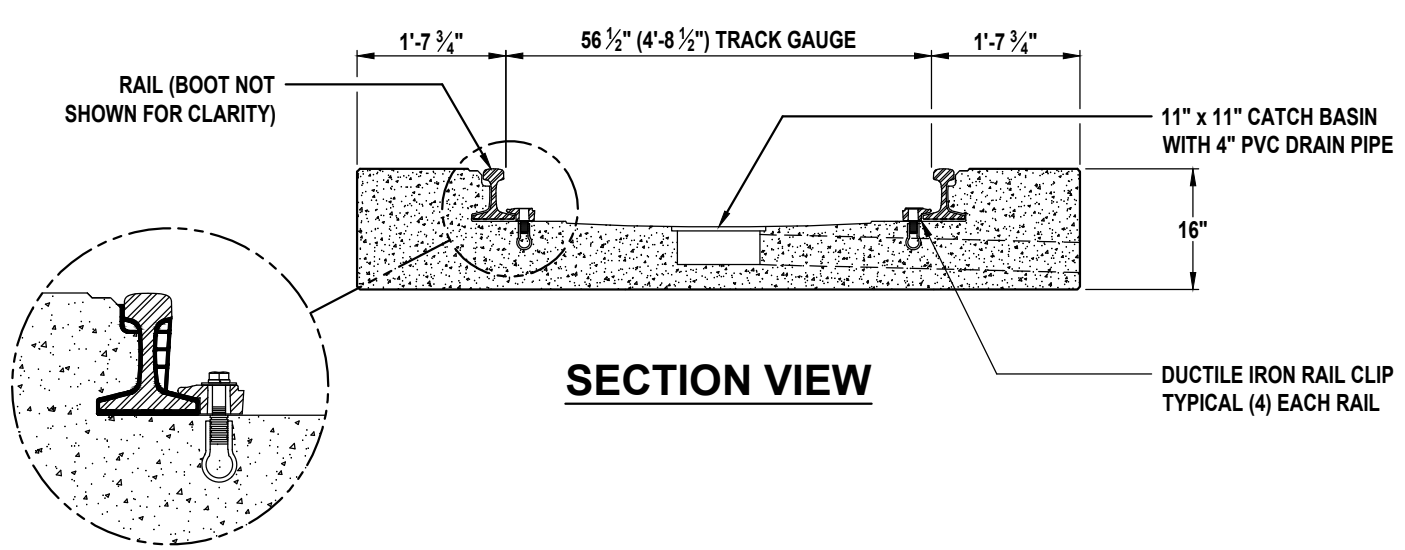
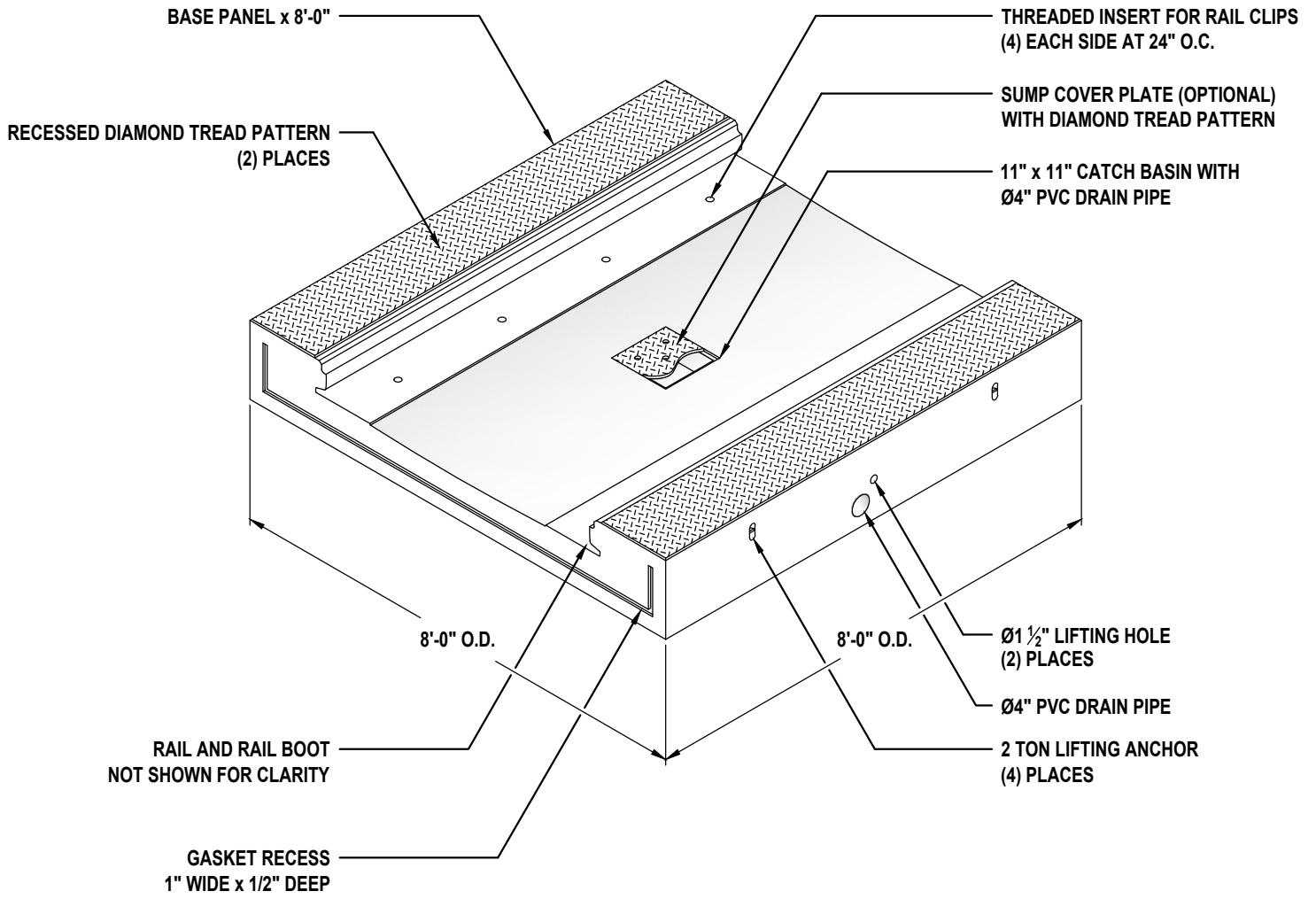
PANEL GEOMETRY:	RAIL	A
112/115 POUND RAIL	6 ¹³ / ₁₆ "	7 ³ / ₁₆ "
132/136 POUND RAIL	7 ³ / ₁₆ "	7 ¹¹ / ₁₆ "

PREMIER® - 8'-0" MODULE

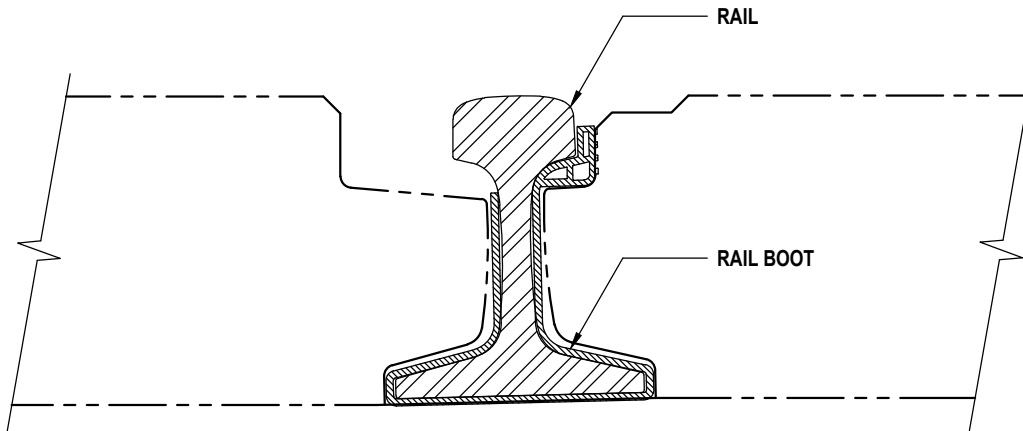


CENTER PANEL GEOMETRY:	A	B
100 RB POUND RAIL	5 3/4"	2'-4 5/8"
100 RE/105 DUDLEY RAIL	6"	2'-4 5/8"
112/115 POUND RAIL	6 13/16"	2'-4 3/4"
132/136 POUND RAIL	7 5/16"	2'-5"

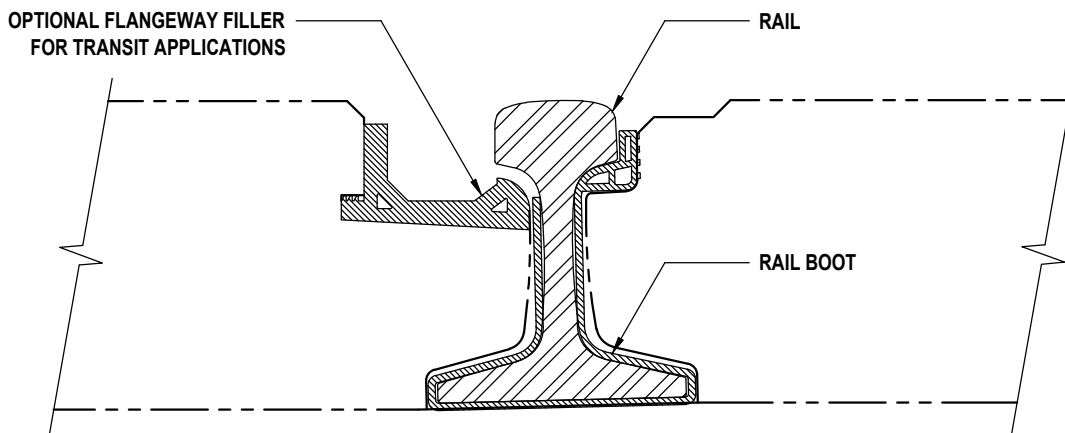
PREMIER® - 8'-0" QUAD "C" MODULE



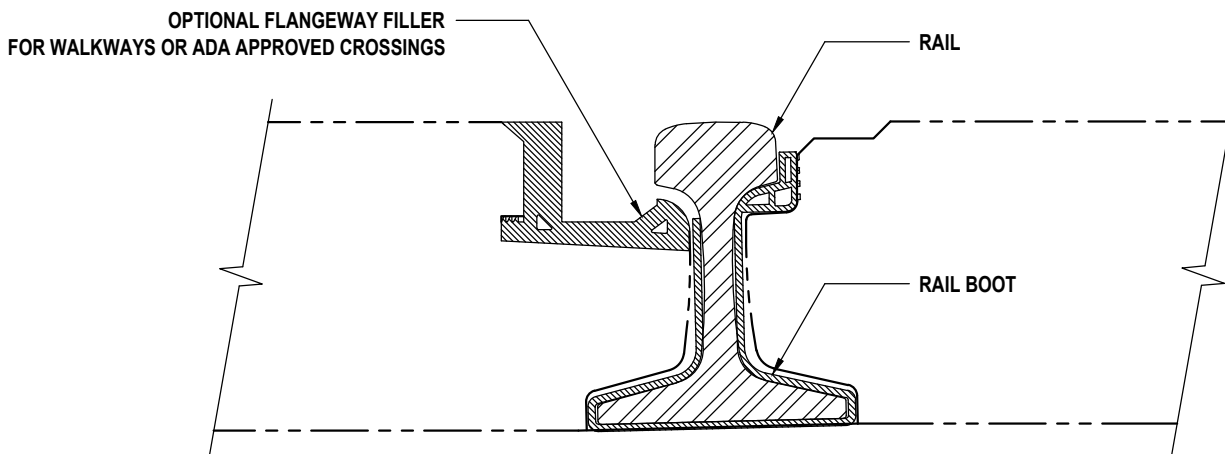
PREMIER® - BOOT & OPTIONAL FILLER



RAIL WITH STANDARD BOOT



RAIL WITH BOOT & FLANGEWAY FILLER

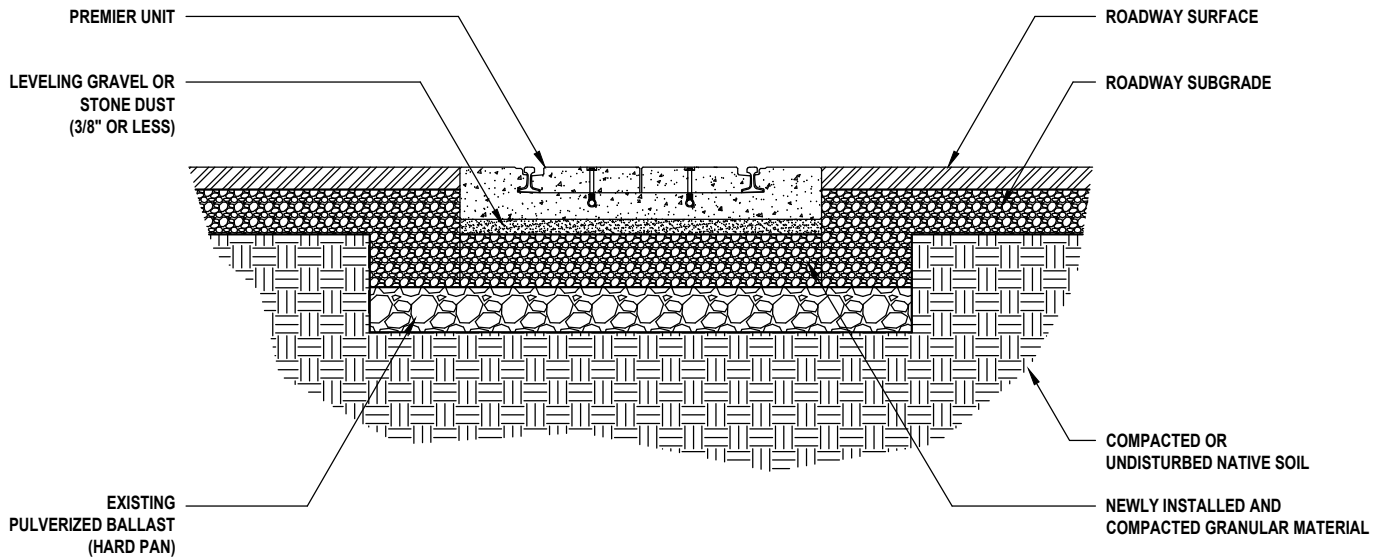


RAIL WITH BOOT & WALKWAY FILLER

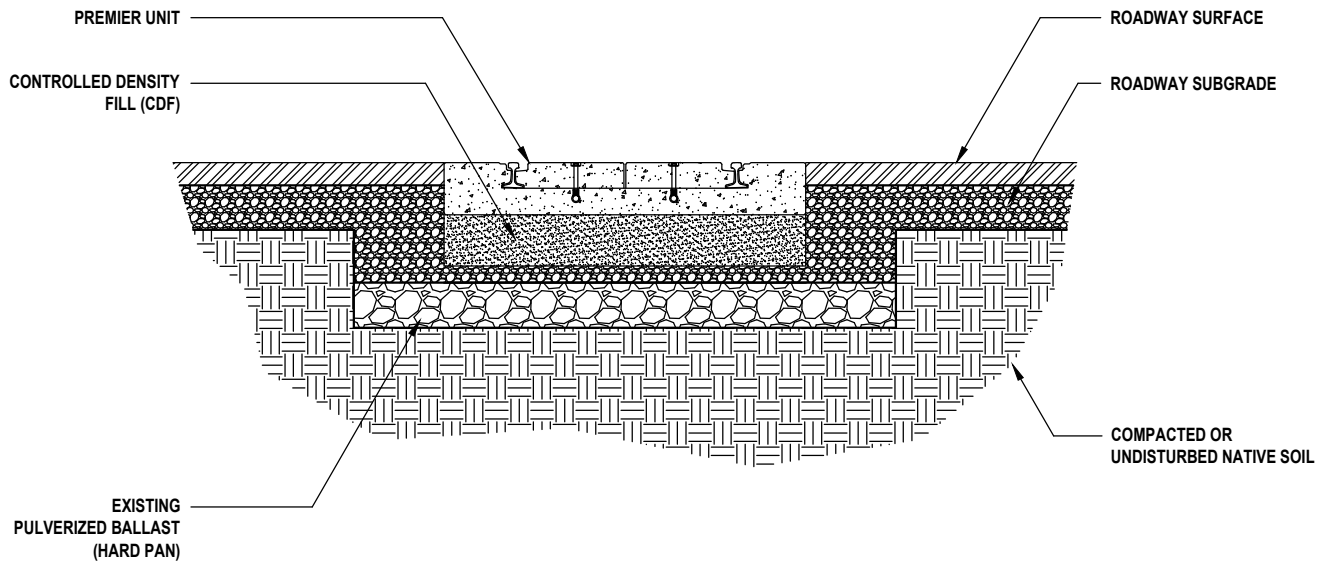
PREMIER® - CURVE DATA CHART

CURVE (degrees)	CURVE RADIUS (ft.)	SYMMETRICAL MODULE				48" TAPERED TO 47" MODULE			
		LOW SIDE GAP (in.)		HIGH SIDE GAP (in.)		LOW SIDE GAP (in.)		HIGH SIDE GAP (in.)	
1°	5729.7'	0.250"	1/4"	0.327"	5/16"	-	-	-	-
2°	2864.9'	0.250"	1/4"	0.395"	3/8"	-	-	-	-
3°	1910.1'	0.250"	1/4"	0.462"	7/16"	-	-	-	-
4°	1432.7'	0.250"	1/4"	0.530"	1/2"	-	-	-	-
5°	1146.3'	0.250"	1/4"	0.564"	9/16"	-	-	-	-
6°	955.4'	0.250"	1/4"	0.597"	9/16"	-	-	-	-
6°	881.9'	0.250"	1/4"	0.631"	5/8"	0.859"	7/8"	0.250"	1/4"
7°	819.0'	0.250"	1/4"	0.665"	11/16"	0.792"	13/16"	0.250"	1/4"
7°	764.5'	0.250"	1/4"	0.699"	11/16"	0.724"	3/4"	0.250"	1/4"
8°	716.8'	0.250"	1/4"	0.733"	3/4"	0.690"	11/16"	0.250"	1/4"
8°	674.7'	0.250"	1/4"	0.767"	3/4"	0.657"	5/8"	0.250"	1/4"
9°	637.3'	0.250"	1/4"	0.801"	13/16"	0.624"	5/8"	0.250"	1/4"
9°	603.8'	0.250"	1/4"	0.835"	13/16"	0.591"	9/16"	0.250"	1/4"
10°	537.7'	0.250"	1/4"	0.869"	7/8"	0.568"	9/16"	0.250"	1/4"
10°	546.4'	0.250"	1/4"	0.903"	7/8"	0.525"	1/2"	0.250"	1/4"
11°	521.7'	0.250"	1/4"	0.937"	15/16"	0.492"	1/2"	0.250"	1/4"
11°	499.1'	0.250"	1/4"	0.971"	1"	0.459"	7/16"	0.250"	1/4"
12°	478.3'	0.250"	1/4"	1.005"	1"	0.426"	7/16"	0.250"	1/4"
12°	459.3'	-	-	-	-	0.393"	3/8"	0.250"	1/4"
13°	441.7'	-	-	-	-	0.360"	3/8"	0.250"	1/4"
13°	425.4'	-	-	-	-	0.327"	3/8"	0.250"	1/4"
14°	410.3'	-	-	-	-	0.294"	5/16"	0.250"	1/4"
14°	396.2'	-	-	-	-	0.261"	5/16"	0.250"	1/4"
15°	383.1'	-	-	-	-	0.250"	1/4"	0.250"	1/4"
16°	359.3'	-	-	-	-	0.250"	1/4"	0.327"	5/16"
17°	338.3'	-	-	-	-	0.250"	1/4"	0.386"	3/8"
18°	319.6'	-	-	-	-	0.250"	1/4"	0.453"	7/16"
19°	302.9'	-	-	-	-	0.250"	1/4"	0.519"	1/2"
20°	287.9'	-	-	-	-	0.250"	1/4"	0.586"	9/16"
21°	274.4'	-	-	-	-	0.250"	1/4"	0.653"	5/8"
22°	262.0'	-	-	-	-	0.250"	1/4"	0.719"	11/16"
23°	250.8'	-	-	-	-	0.250"	1/4"	0.786"	3/4"
24°	240.5'	-	-	-	-	0.250"	1/4"	0.852"	7/8"
25°	231.0'	-	-	-	-	0.250"	1/4"	0.919"	15/16"
26°	222.3'	-	-	-	-	0.250"	1/4"	0.985"	1"
27°	214.2'	-	-	-	-	0.250"	1/4"	1.051"	1 1/16"
28°	206.7'	-	-	-	-	0.250"	1/4"	1.118"	1 1/8"
29°	199.7'	-	-	-	-	0.250"	1/4"	1.184"	1 3/16"
30°	193.2'	-	-	-	-	0.250"	1/4"	1.250"	1 1/4"
31°	187.1'	-	-	-	-	0.250"	1/4"	1.317"	1 5/16"
32°	181.4'	-	-	-	-	0.250"	1/4"	1.382"	1 3/8"
33°	176.0'	-	-	-	-	0.250"	1/4"	1.448"	1 1/2"
34°	171.0'	-	-	-	-	0.250"	1/4"	1.514"	1 5/8"
35°	166.3'	-	-	-	-	0.250"	1/4"	1.580"	1 3/4"

PREMIER® - INSTALLATION SECTIONS



GRANULAR MATERIAL INSTALLATION



CONTROLLED DENSITY FILL INSTALLATION

GENERAL NOTES:

1. The following notes shall apply unless noted otherwise on the plans or specifications. In the case of conflict with the plans or specifications, the more restrictive requirements shall apply.

REFERENCE SPECIFICATIONS:

1. Highway Live Loading: AASHTO LRFD Bridge Design Specifications, Section 3.6. Standard Design Capacity is HS20.
2. Rail Live Load and General Design: AREMA Manual for Railway Engineering. Standard Design Capacity is Cooper E80.

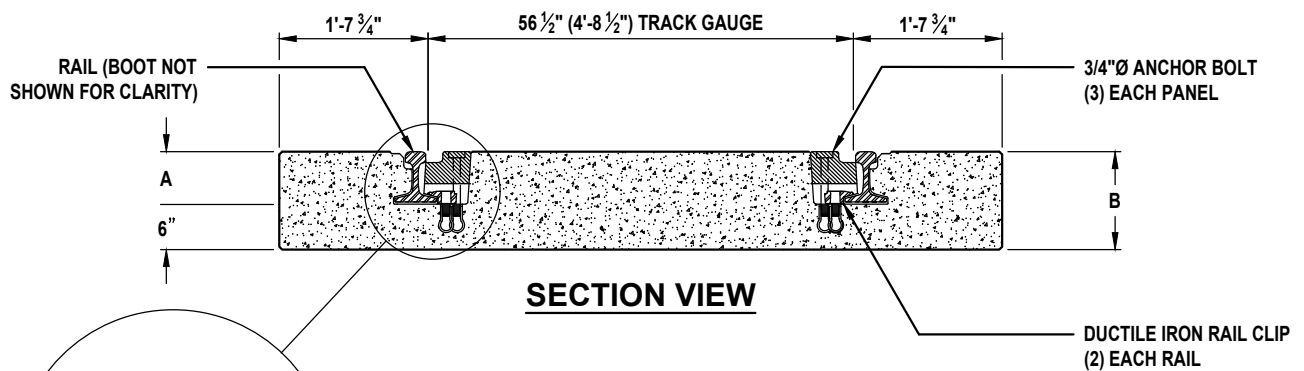
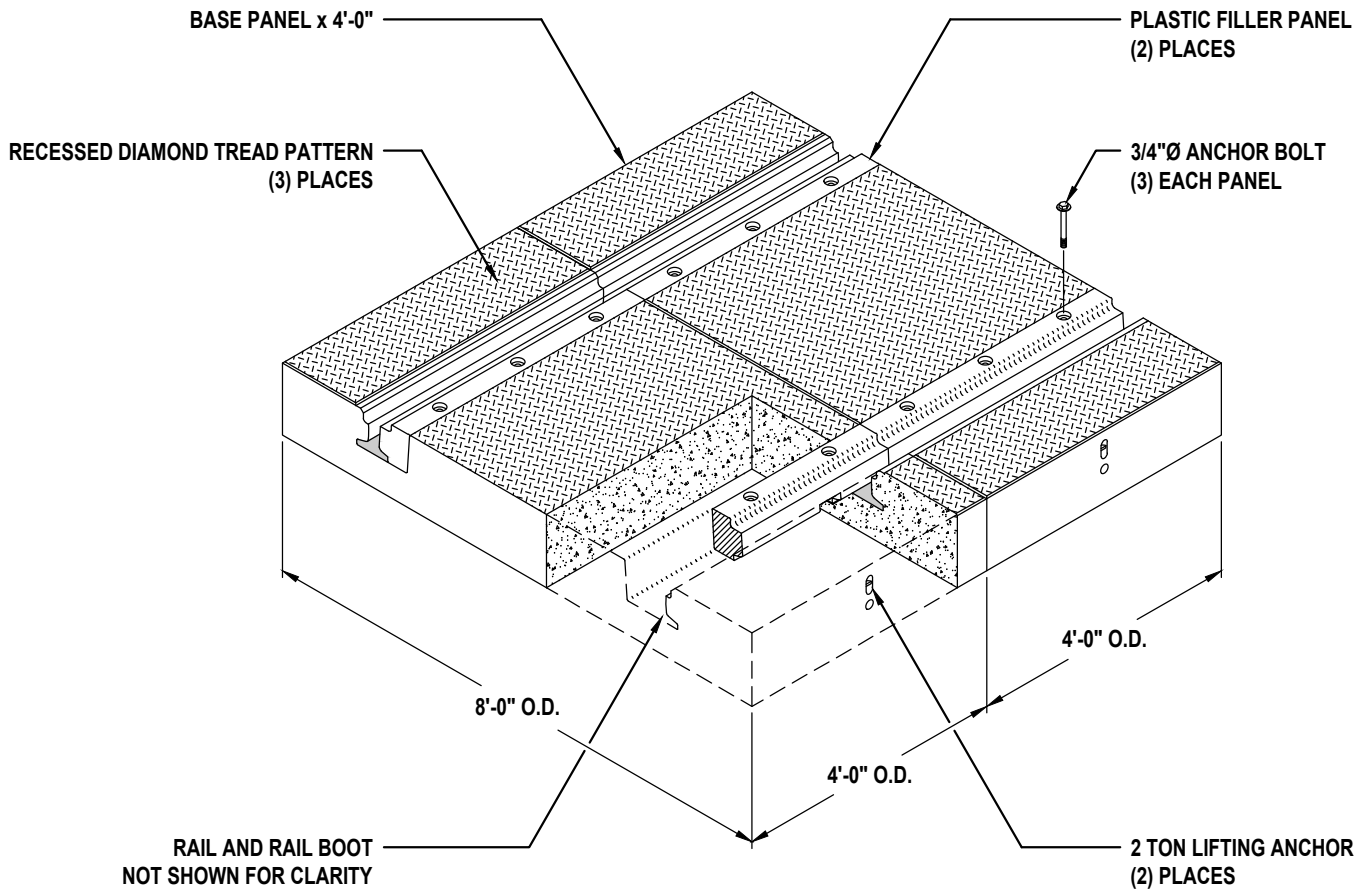
MATERIALS:

1. Aggregate conforms to ASTM C33.
2. Portland cement conforms to ASTM C150.
3. Fly Ash conforms to ASTM C618.
4. Minimum compressive strength (at 28 days) 7000 psi. Unless greater strength is required by project specifications.
5. All bar reinforcing steel conforms to ASTM A706 Grade 60.
6. Welded Wire Fabric conforms to ASTM A497, 65 KSI.
7. Admixtures conform to ASTM C494.
8. Air entraining admixtures conform to ASTM C260.

INSTALLATION:

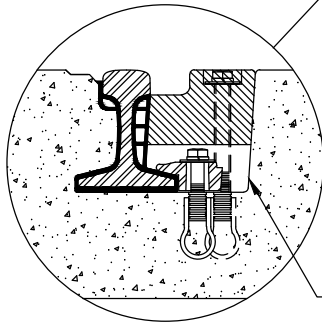
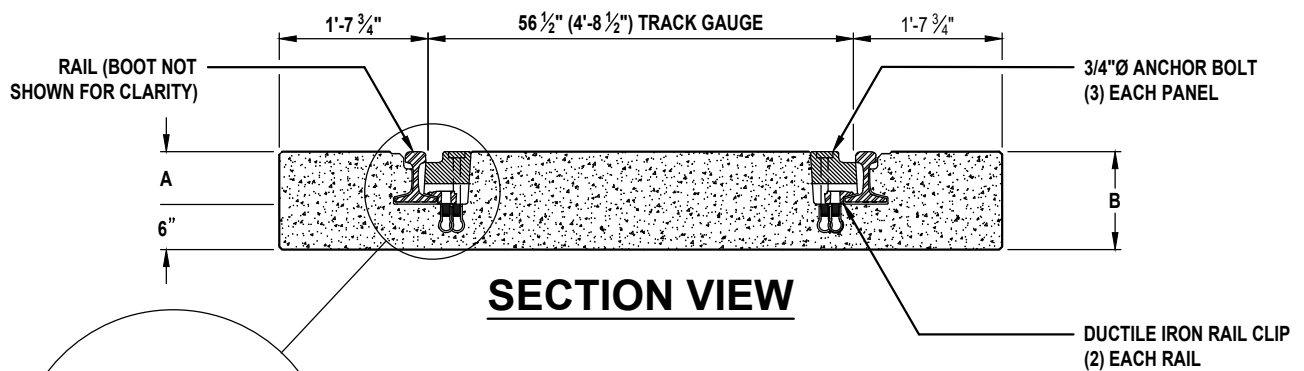
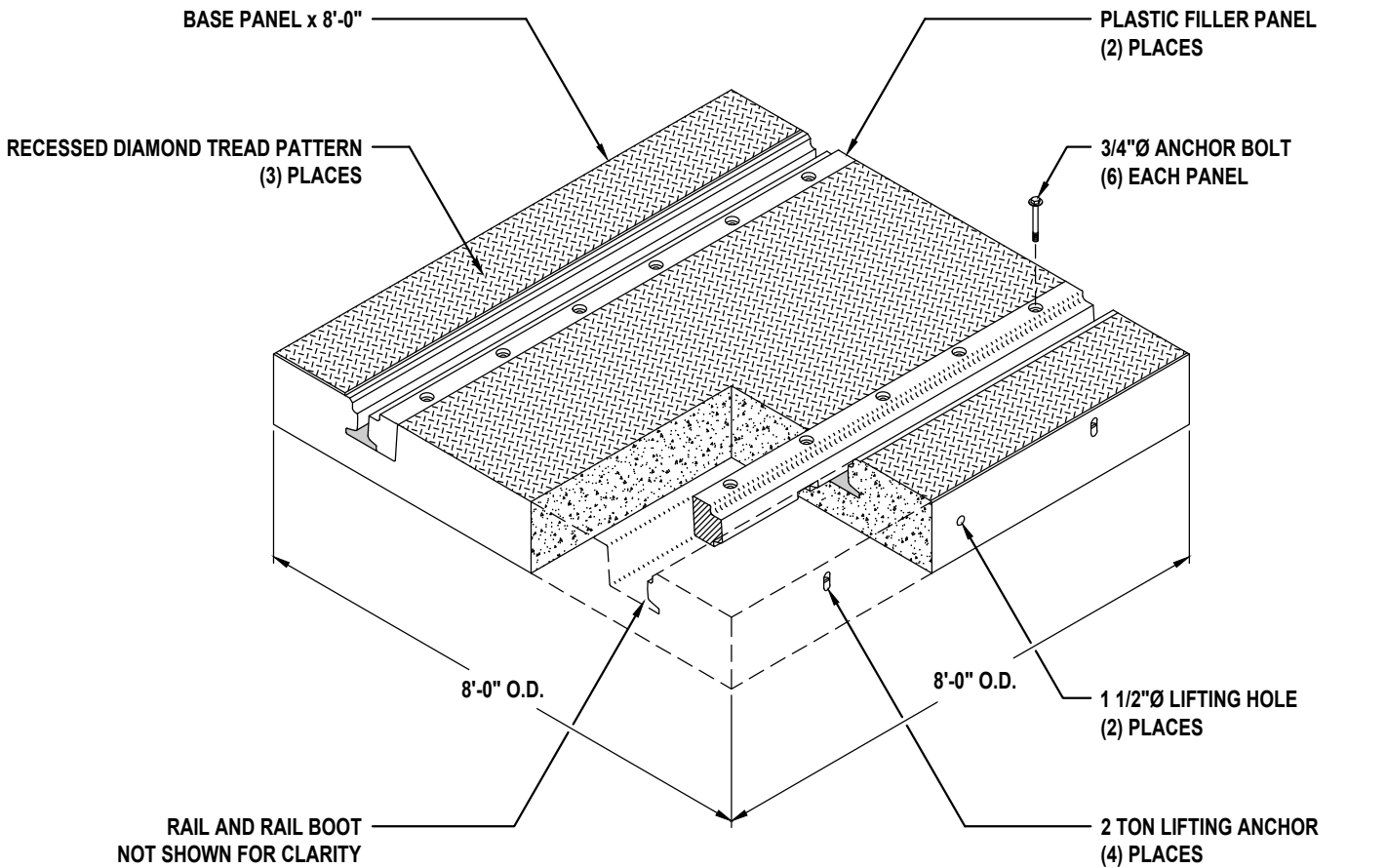
1. Prior to dismantling the track assembly, stake out the alignment for the new crossing with offsets located every four track feet.
2. Remove existing track assembly including all rail, hardware, and ties.
3. Inspect for proper drainage and deficient subgrade. Remove any deficient subgrade material. The overall excavation should be at least 10 feet wide to accommodate the new construction.
4. Prepare the new subgrade with clean granular material or a controlled low strength material (CLSM or Flowable Fill). The top 6 inches of the subgrade is formed and screeded level. Granular material is placed in four inch lifts to finished top of subgrade. This material is compacted to 95% proctor density. Screenshot of subgrade to level. The subgrade is compacted again which will typically create a 3/4 inch gap to the top of subgrade. Compact 3/8 inch minus crushed stone (screenings) to top of subgrade. The subgrade is now complete for the granular subgrade option. If using CLSM, place the CLSM to the top of the leveling form. Screenshot the CLSM and allow to cure. For this option, the subgrade is complete.
5. Establish the centerline of the existing track. Mark the centerline at the bottom of the Premier® module. For a curved alignment, use offsets from centerline at 4 foot increments. Reference curve data chart for proper module spacing.
6. When placing modules for tangent track use 1/4 inch shims between modules. When placing modules on a curved alignment, refer to the curve data chart. Gaps are required between modules to prevent spalling. Make note at this time if beveled ends are used in the crossing.
7. Remove both center panels together and stack outside the immediate working area. Clean threaded inserts of fallen debris and protect the inserts to prevent debris from filling the insert during installation. Pull rail into position by pulling the rail from the middle of the existing track and through the middle of the modules. This ensures that a mishandled rail does not chip the exposed portion of the module.
8. After the rail is in position, lift it high enough to install the rubber boot. Unroll the boot and position the boot under the rail. Unfold the boot. Apply the rail boot continuously from one end of the rail to the other. Applying the boot from more than one location will create a bubble between the boot and the rail. Make sure the high side edge of the rubber boot is toward the field side of the rail.
9. Apply lubrication (Module Rail Slick) to the rail seat of the module.
10. Place the rail snug into the rail seat. Place track jacks end to end and jack the rail into the rail seat. Use two sets of track jacks at 4 to 8 foot intervals and leapfrog the jacks as you install the center panels. On extreme degree curves, leapfrog the track jacks in 4 foot intervals.
11. Install the center panels simultaneously and align the holes for the anchor bolts.
12. Install the anchor bolts by hand first, and then tighten them to 125 lbs. per foot maximum. **DO NOT OVER TIGHTEN.**
13. At the ends of the crossing, cut the rail boot flush and install two rail anchors per rail at each end of the module.
14. Inform the contractor placing the asphalt that roller equipment will damage the Premier® modules.

PREMIER® PLUS - 4'-0" MODULE



PANEL GEOMETRY:	A	B
112/115 POUND RAIL	6 13/16"	12 13/16"
132/136 POUND RAIL	7 5/16"	13 5/16"

PREMIER® PLUS - 8'-0" MODULE



PANEL GEOMETRY:	A	B
112/115 POUND RAIL	6 13/16"	12 13/16"
132/136 POUND RAIL	7 5/16"	13 5/16"

REBAR DIMENSIONAL DATA CHART

REBAR - DIMENSIONAL DATA										
BAR SIZE	DIAMETER (in.)	AREA (in ² .)	WEIGHT (lbs./ft.)	AREA - SQ. IN. PER FT. OF WIDTH FOR VARIOUS SPACINGS CENTER TO CENTER SPACING						
				2"	3"	4"	6"	8"	10"	16"
#3	0.375	0.11	0.376	0.66	0.44	0.33	0.22	0.17	0.13	0.08
#4	0.500	0.20	0.668	1.20	0.80	0.60	0.40	0.30	0.24	0.15
#5	0.625	0.31	1.043	1.86	1.24	0.93	0.62	0.47	0.37	0.23
#6	0.750	0.44	1.502	2.64	1.76	1.32	0.88	0.66	0.53	0.33
#7	0.875	0.60	2.044	3.60	2.40	1.80	1.20	0.90	0.72	0.45
#8	1.000	0.79	2.670	4.74	3.16	2.37	1.58	1.19	0.95	0.59
#9	1.128	1.00	3.400	6.00	4.00	3.00	2.00	1.50	1.20	0.75
#10	1.270	1.27	4.300	7.62	5.08	3.81	2.54	1.91	1.52	0.95
#11	1.410	1.56	5.310	9.36	6.24	4.68	3.12	2.34	1.87	1.17
#14	1.693	2.25	7.650	13.5	9.00	6.75	4.50	3.38	2.70	1.69
#18	2.257	4.00	13.60	24.0	16.0	12.0	8.00	6.00	4.80	3.00

NOTES:

1. Bar size designations are based on the number of 1/8 inches included in the nominal diameter.
2. The nominal diameter of a deformed bar is equivalent to the diameter of a plain bar having the same weight as the deformed bar.



Phone: (360) 335-8400 Fax: (360) 335-8402

Email: sales@cppwa.com

Web: www.columbiaprecastproducts.com

Section: Reference Information Pg: 2 Date: 2019

REFERENCE INFO

<u>Page:</u>	<u>Description:</u>
1	- <u>WELDED WIRE MESH CHART</u>
2	- <u>REBAR CHART</u>
3	- <u>STANDARD HOLE DIAMETER TABLE</u>
4	- <u>REFERENCE SPECIFICATIONS</u>
5	- <u>REFERENCE SPECIFICATIONS (continued)</u>
6	- <u>TERMS AND CONDITIONS</u>

WELDED WIRE MESH CHART

WELDED WIRE MESH - DIMENSIONAL DATA										
WIRE SIZE NUMBER		NOMINAL DIAMETER (in.)	NOMINAL WEIGHT (lbs./lin.ft.)	AREA - SQ. IN. PER FT. OF WIDTH FOR VARIOUS SPACINGS CENTER TO CENTER SPACING						
SMOOTH	DEFORMED			2"	3"	4"	6"	8"	10"	12"
W1.4	-	0.135	0.049	0.084	0.056	0.042	0.028	0.021	0.017	0.014
W1.5	-	0.138	0.051	0.090	0.060	0.045	0.030	0.022	0.018	0.015
W2	-	0.159	0.068	0.120	0.080	0.060	0.040	0.030	0.024	0.020
W2.1	-	0.162	0.070	0.126	0.084	0.063	0.042	0.031	0.025	0.021
W2.5	-	0.178	0.085	0.150	0.100	0.075	0.050	0.037	0.030	0.025
W2.9	-	0.192	0.098	0.174	0.116	0.087	0.058	0.043	0.035	0.029
W3	-	0.195	0.102	0.180	0.120	0.090	0.060	0.045	0.036	0.030
W3.5	-	0.211	0.119	0.210	0.140	0.105	0.070	0.052	0.042	0.035
W4	D4	0.225	0.136	0.240	0.160	0.120	0.080	0.060	0.048	0.040
W4.5	-	0.240	0.153	0.270	0.180	0.135	0.090	0.067	0.054	0.045
W5	D5	0.252	0.170	0.300	0.200	0.150	0.100	0.075	0.060	0.050
W5.5	-	0.264	0.187	0.330	0.220	0.165	0.110	0.082	0.066	0.055
W6	D6	0.276	0.204	0.360	0.240	0.180	0.120	0.090	0.072	0.060
W6.5	-	0.288	0.221	0.390	0.280	0.195	0.130	0.097	0.078	0.065
W7	D7	0.298	0.238	0.420	0.280	0.210	0.140	0.105	0.084	0.070
W7.5	-	0.309	0.255	0.450	0.300	0.225	0.150	0.112	0.090	0.075
W8	D8	0.319	0.272	0.480	0.320	0.240	0.160	0.120	0.096	0.080
W8.5	-	0.329	0.289	0.510	0.340	0.255	0.170	0.127	0.102	0.085
W9	D9	0.338	0.306	0.540	0.360	0.270	0.180	0.135	0.108	0.090
W9.5	-	0.348	0.323	0.570	0.380	0.285	0.190	0.142	0.114	0.095
W10	D10	0.356	0.340	0.600	0.400	0.300	0.200	0.150	0.120	0.100
W10.5	-	0.366	0.357	0.630	0.420	0.315	0.210	0.157	0.126	0.105
W11	D11	0.374	0.374	0.660	0.440	0.330	0.220	0.165	0.132	0.110
W12	D12	0.390	0.408	0.720	0.480	0.360	0.240	0.180	0.144	0.120
W14	D14	0.422	0.476	0.840	0.560	0.420	0.280	0.210	0.168	0.140
W16	D16	0.451	0.544	0.960	0.640	0.480	0.320	0.240	0.192	0.160
W18	D18	0.478	0.612	1.080	0.720	0.540	0.360	0.270	0.216	0.180
W20	D20	0.504	0.680	1.200	0.800	0.600	0.400	0.300	0.240	0.200
W22	D22	0.529	0.748	1.320	0.880	0.660	0.440	0.330	0.264	0.220
W24	D24	0.553	0.816	1.440	0.960	0.720	0.480	0.360	0.288	0.240
W26	D26	0.575	0.934	1.560	1.040	0.780	0.520	0.390	0.312	0.260
W28	D28	0.597	0.952	1.680	1.120	0.840	0.560	0.420	0.336	0.280
W30	D30	0.618	1.020	1.800	1.200	0.900	0.600	0.450	0.360	0.300
W31	D31	0.628	1.054	1.860	1.240	0.930	0.620	0.465	0.372	0.310

REBAR DIMENSIONAL DATA CHART

REBAR - DIMENSIONAL DATA										
BAR SIZE	DIAMETER (in.)	AREA (in ² .)	WEIGHT (lbs./ft.)	AREA - SQ. IN. PER FT. OF WIDTH FOR VARIOUS SPACINGS CENTER TO CENTER SPACING						
				2"	3"	4"	6"	8"	10"	16"
#3	0.375	0.11	0.376	0.66	0.44	0.33	0.22	0.17	0.13	0.08
#4	0.500	0.20	0.668	1.20	0.80	0.60	0.40	0.30	0.24	0.15
#5	0.625	0.31	1.043	1.86	1.24	0.93	0.62	0.47	0.37	0.23
#6	0.750	0.44	1.502	2.64	1.76	1.32	0.88	0.66	0.53	0.33
#7	0.875	0.60	2.044	3.60	2.40	1.80	1.20	0.90	0.72	0.45
#8	1.000	0.79	2.670	4.74	3.16	2.37	1.58	1.19	0.95	0.59
#9	1.128	1.00	3.400	6.00	4.00	3.00	2.00	1.50	1.20	0.75
#10	1.270	1.27	4.300	7.62	5.08	3.81	2.54	1.91	1.52	0.95
#11	1.410	1.56	5.310	9.36	6.24	4.68	3.12	2.34	1.87	1.17
#14	1.693	2.25	7.650	13.5	9.00	6.75	4.50	3.38	2.70	1.69
#18	2.257	4.00	13.60	24.0	16.0	12.0	8.00	6.00	4.80	3.00

NOTES:

1. Bar size designations are based on the number of 1/8 inches included in the nominal diameter.
2. The nominal diameter of a deformed bar is equivalent to the diameter of a plain bar having the same weight as the deformed bar.



Phone: (360) 335-8400 Fax: (360) 335-8402

Email: sales@cppwa.com

Web: www.columbiaprecastproducts.com

Section: Reference Information Pg: 2 Date: 2019

STANDARD HOLE DIAMETER TABLE

- STANDARD HOLE DIAMETERS -					
PIPE SIZE (NOMINAL I.D.) (in.)	<u>PIPE TYPES</u>				
	D.I.P. (in.)	CLAY (in.)	P.V.C. (in.)	R.C.P. (in.)	C.M.P. (in.)
4"	7"	7"	7"	-	-
6"	12"	12"	12"	-	12"
8"	12"	12"	12"	-	12"
10"	16"	16"	16"	-	16"
12"	16"	16"	16"	21"	18"
14"	20"	-	-	-	-
15"	-	-	20"	24"	21"
16"	20"	26"	-	-	-
18"	24"	27"	24"	30"	24"
20"	24"	29"	-	-	-
21"	-	-	26"	-	28"
24"	28"	34"	28"	36"	30"
30"	36"	40"	36"	42"	36"
36"	42"	47"	42"	48"	42"
42"	-	56"	49"	60"	48"
48"	-	61"	55"	66"	54"
54"	-	-	-	72"	60"
60"	-	-	-	78"	66"
66"	-	-	-	84"	72"
72"	-	-	-	92"	78"
78"	-	-	-	96"	84"
84"	-	-	-	108"	92"
90"	-	-	-	113"	-
96"	-	-	-	120"	108"

NOTES:

1. A dash (-) in the table signifies that the pipe is not manufactured or else not readily available in a particular material.
2. Values given in the table are those that would normally be used in our plant. However, the blank out diameter can be varied as required.

REFERENCE SPECIFICATIONS

Specifications Applicable to Concrete Pipe and Associated Precast Concrete Products:

- ASTM A82 / AASHTO M32 – STANDARD SPECIFICATION FOR STEEL WIRE, PLAIN, FOR CONCRETE REINFORCEMENT.
- ASTM A185 / AASHTO M55 – STANDARD SPECIFICATION FOR STEEL WELDED WIRE REINFORCEMENT, PLAIN, FOR CONCRETE.
- ASTM A496 / AASHTO M225 – STANDARD SPECIFICATION FOR STEEL WIRE, DEFORMED, FOR CONCRETE REINFORCEMENT.
- ASTM A497 / AASHTO M221 – STANDARD SPECIFICATION FOR STEEL WELDED WIRE REINFORCEMENT, DEFORMED, FOR CONCRETE.
- ASTM A615 / AASHTO M31 – STANDARD SPECIFICATION FOR DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT.
- ASTM A706 / AASHTO M31 – STANDARD SPECIFICATION FOR LOW-ALLOY STEEL DEFORMED AND PLAIN BARS FOR CONCRETE REINFORCEMENT.
- ASTM C150 / AASHTO M85 – STANDARD SPECIFICATION FOR PORTLAND CEMENT.
- ASTM C33 / AASHTO M6/M80 – STANDARD SPECIFICATION FOR CONCRETE AGGREGATES.
- ASTM C260 / AASHTO M154 – SPECIFICATION FOR AIR-ENTRAINING ADMIXTURES FOR CONCRETE.
- ASTM C494 / AASHTO M194 – STANDARD SPECIFICATION FOR CHEMICAL ADMIXTURES FOR CONCRETE.
- ASTM C618 / AASHTO M295 – SPECIFICATION FOR COAL FLY ASH AND RAW OR CALCINED NATURAL POZZOLAN FOR USE AS A MINERAL ADMIXTURE IN CONCRETE.
- ASTM C989 / AASHTO M302 – SPECIFICATION FOR GROUND GRANULATED BLAST-FURNACE SLAG FOR USE IN CONCRETE AND MORTARS.
- ASTM C1017 – SPECIFICATION FOR CHEMICAL ADMIXTURES FOR USE IN PRODUCING FLOWING CONCRETE.
- ASTM C1240 / AASHTO M840 – SPECIFICATION FOR USE OF SILICA FUME AS A MINERAL ADMIXTURE IN HYDRAULIC-CEMENT CONCRETE, MORTAR, AND GROUT.
- ASTM C14 / AASHTO M86 – STANDARD SPECIFICATION FOR CONCRETE SEWER, STORM DRAIN, AND CULVERT PIPE.
- ASTM C76 / AASHTO M170 – REINFORCED CONCRETE CULVERT, STORM DRAIN AND SEWER PIPE.
- ASTM C361 – REINFORCED CONCRETE LOW HEAD PRESSURE PIPE.
- ASTM C433 / AASHTO M198 – JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING RUBBER GASKETS.
- ASTM C478 / AASHTO M199 – PRECAST REINFORCED CONCRETE MANHOLE SECTIONS.
- ASTM C497 – TEST METHODS FOR CONCRETE PIPE, MANHOLE SECTIONS OR TILE.
- ASTM C822 – TERMINOLOGY RELATING TO CONCRETE PIPE AND RELATED PRODUCTS.
- ASTM C655 / AASHTO M242 – REINFORCED CONCRETE D-LOAD CULVERT, STORM DRAIN AND SEWER PIPE.
- ASTM C825 – STANDARD SPECIFICATION FOR PRECAST CONCRETE BARRIERS.

REFERENCE SPECIFICATIONS CONTINUED

Specifications Applicable to Concrete Pipe and Associated Precast Concrete Products:

- ASTM C857 – STANDARD PRACTICE FOR MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES.
- ASTM C858 – STANDARD SPECIFICATION FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES.
- ASTM C877 – STANDARD SPECIFICATION FOR EXTERNAL SEALING BANDS FOR CONCRETE PIPE, MANHOLES, AND PRECAST BOX SECTIONS.
- ASTM C890 – PRACTICE FOR MINIMUM STRUCTURAL DESIGN LOADING FOR MONOLITHIC OR SECTIONAL PRECAST CONCRETE WATER AND WASTEWATER STRUCTURES.
- ASTM C891 – STANDARD PRACTICE FOR INSTALLATION OF UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES.
- ASTM C913 – STANDARD SPECIFICATION FOR PRECAST CONCRETE WATER AND WASTEWATER STRUCTURES.
- ASTM C923 – RESILIENT CONNECTORS BETWEEN REINFORCED CONCRETE MANHOLE STRUCTURES AND PIPES.
- ASTM C924 – PRACTICE FOR TESTING CONCRETE PIPE SEWER LINES BY LOW-PRESSURE AIR TEST METHOD.
- ASTM C969 – PRACTICE FOR INFILTRATION AND EXFILTRATION ACCEPTANCE TESTING OF INSTALLED PRECAST CONCRETE PIPE SEWER LINES.
- ASTM C990 – SPECIFICATIONS FOR JOINTS FOR CONCRETE PIPE, MANHOLES AND PRECAST BOX SECTIONS USING PREFORMED FLEXIBLE JOINT SEALANTS.
- ASTM C1103 – PRACTICE FOR JOINT ACCEPTANCE TESTING OF INSTALLED PRECAST CONCRETE PIPE SEWER LINES.
- ASTM C1116/C1116M – STANDARD SPECIFICATION FOR FIBER-REINFORCED CONCRETE.
- ASTM C1131 – PRACTICE FOR LEAST COST (LIFE CYCLE) ANALYSIS OF CONCRETE CULVERT, STORM SEWER AND SANITARY SEWER SYSTEMS.
- ASTM C1214 – PRACTICE FOR TESTING CONCRETE PIPE SEWER LINES BY NEGATIVE AIR PRESSURE (VACUUM) METHOD.
- ASTM C1227 – STANDARD SPECIFICATION FOR PRECAST CONCRETE SEPTIC TANKS.
- ASTM C1244 – TEST METHOD FOR CONCRETE SEWER MANHOLES BY THE NEGATIVE AIR PRESSURE (VACUUM) METHOD.
- ASTM C1417 – SPECIFICATIONS FOR MANUFACTURE OF REINFORCED CONCRETE SEWER, STORM DRAIN AND CULVERT PIPE FOR DIRECT DESIGN.
- ASTM C1433 – SPECIFICATION FOR PRECAST REINFORCED CONCRETE BOX SECTIONS FOR CULVERTS, STORM DRAINS, AND SEWERS.
THIS SPECIFICATION PREVIOUSLY EXISTED AS:
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 - ASTM C850 / AASHTO M273 – BOX SECTIONS WITH LESS THAN 2 FEET OF COVER.
- ASTM C1479 – STANDARD PRACTICE FOR INSTALLATION OF PRECAST CONCRETE SEWER, STORM DRAIN, AND CULVERT PIPE USING STANDARD INSTALLATIONS.
- ASTM C1504 – STANDARD SPECIFICATION FOR MANUFACTURE OF PRECAST REINFORCED CONCRETE THREE-SIDED STRUCTURES FOR CULVERTS, STORM DRAINS, AND SEWERS.
- ASTM C1577 – STANDARD SPECIFICATION FOR PRECAST REINFORCED CONCRETE MONOLITHIC BOX SECTIONS FOR CULVERTS, STORM DRAINS, AND SEWERS DESIGNED ACCORDING TO AASHTO LRFD.
- AASHTO M198 – JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING FLEXIBLE WATERTIGHT GASKETS.
- AASHTO BRIDGE DESIGN SPECIFICATIONS.
- AWWA C302 – REINFORCED CONCRETE PRESSURE PIPE, NON-CYLINDER TYPE FOR WATER AND OTHER LIQUIDS.
- U.S. BUREAU OF RECLAMATION – STANDARD SPECIFICATIONS FOR REINFORCED CONCRETE PRESSURE PIPE.

TERMS AND CONDITIONS

1. TERMS OF PAYMENTS:

Unless otherwise stated our terms of payment are net 30th prox.; after which a service charge will be made on all non-deferred balances computed at the rate of 1-1/2% per month, 18% per annum, applied to the then outstanding balance. All payments received from our customers shall in the discretion of Columbia Precast Products, LLC. first be applied to service charges, disallowed discounts, non-lien or unbonded jobs and then to the oldest invoice.

Payment is based on the seller's status as a manufacturer and/or supplier of the materials which are subject matter of this document. Seller's terms and conditions of payment will not be subordinated to any retention or other provisions of the project specifications, contract or other documents which set forth the terms and conditions under which the buyer will be paid for his performance of this or any projects on which the materials shall be installed.

2. CREDIT:

This document when signed by buyer and by authorized representative of seller shall constitute a firm contract between the parties hereto subject to credit approval which however is to be assumed unless buyer is advised to the contrary by seller.

3. PAST DUE ACCOUNTS:

If suit is instituted to collect any amount not paid, buyer agrees to pay such sum as shall be set by a court of competent jurisdiction as and for seller's reasonable attorney's fees, including fees on appeal. If buyer becomes insolvent or is in default hereunder or under any other contract between the parties hereto, seller, at its option, may defer delivery hereunder until the default is cured, or may treat the fault as a repudiation by buyer of this order in its entirety, resell the goods and hold buyer liable for such damages as seller may incur, including consequential and incidental damages.

4. TAXES:

Unless otherwise stated, prices do not include any city, county, state, federal or other taxes imposed on the product or service sold under this document. All such taxes now or hereafter in effect shall be added to the price and shall be paid by the buyer.

5. TITLE:

Title to the product shall pass to the buyer upon delivery at the destination specified by the buyer and agreed to by the seller.

6. SHIPPING INSTRUCTION:

Product shipping instructions must be agreed upon between buyer and seller not less than forty-eight (48) hours before shipments are to be made, otherwise seller cannot be responsible for delivery of product at the time requested by buyer.

7. ASSIGNMENT:

Buyer shall not assign this document, or any interest therein without the written consent of the seller.

8. DELAYS:

Seller shall be excused for delays in the performance, in whole or in part, of any contract made on the basis of this proposal, resulting from: fire or flood; strike or other differences with employees; war; riot; embargo; delays, losses, or damages in transportation; shortages of fuel or labor or materials; acts of civil or military authorities, or any other causes beyond the reasonable control of the seller. In case of the happening of any such delay seller shall have such additional time within which to perform as may be reasonably necessary under the circumstances and shall have the right to apportion its production among its customers in such manner as it may consider to be equitable.

9. WARRANTY DISCLAIMER:

Seller makes no warranty of any kind express or implied except that the quality of materials and workmanship shall conform to seller's standard manufacturing practice unless seller has specifically agreed that the materials and workmanship shall conform to the requirements of the specifications as set forth in the contract documents provided by buyer.

10. LIMITATIONS OF REMEDIES:

The buyer's sole and exclusive remedy with respect to accepted products shall be limited to the repair or replacement of any defective products by the seller at the F.O.B. point at which the products were sold. This obligation of the seller shall terminate one (1) year after the delivery of the products to the buyer. Seller shall in no event be liable to the buyer for any special, direct or indirect to consequential damages incident to any defective workmanship or non-conformity with the applicable specifications of the products delivered any buyer's remedies with respect thereto shall be limited exclusively as herein provided.

11. CLAIMS:

The seller will not recognize any claims or backcharges originated by the buyer arising out of this contract unless the claims are made in writing within one week from the time of occurrence, giving full details. Claims not presented within such time limit shall be deemed to have been waived by the buyer. The seller shall be given reasonable time and access to investigate the merits of such claims or backcharges.

12. DELIVERY:

Unless otherwise provided herein, the prices include delivery F.O.B. jobsite, trucks with maximum loads. F.O.B. jobsite means truck delivery as close to jobsite as is practicable, or to closest accessible storage area furnished free of charge to seller for motor truck and trailer operating under its own power with maximum load. Buyer agrees to have an authorized representative at the designated delivery points to guide delivery equipment, attend to unloading of merchandise, and sign delivery tickets. Items which cannot be rolled off truck or trailer shall be unloaded by mechanical equipment at buyer's expense. Delivery equipment shall not be pulled or pushed by any other power equipment nor shall buyer cause same to be done. Buyer shall provide and maintain suitable access, including access roads, to jobsite, closest accessible point or designated storage area. Standby time in excess of one (1) hour from the time of arrival of trucks at designated point of delivery will be charged to the account of the buyer.

13. RESTRICTED USE:

Buyer shall not, without the written consent of the seller, use any of the product which is the subject of this contract for any purpose except that herein mentioned, or remove any of the product from the jobsite until the purchase price for all of the product has been fully paid.

14. BUYER'S SPECIFICATIONS:

Seller assumes no responsibility for the adequacy or performance of engineering, design, or specifications furnished by buyer.

15. NOTICE OF COMPLETION:

Seller may at its option give the buyer written notice of the completion of the work herein specified by depositing same in the United States Mail properly stamped and addressed to buyer at his last known address. If no written exception to said notice of completion or as to any part of the work performed hereunder received by seller within ten (10) days after the mailing or service of said notice of completion, said work shall be deemed to have been completed and accepted in accordance with the terms hereof.

16. RETURN OF MATERIALS:

Products shall not be returned by the buyer without prior acceptance by the seller. The amount of credit, if any, shall be determined after inspection of the products by the seller.

17. CHANGES:

Any changes, corrections or deviations required by buyer after buyer's acceptance of seller's written proposal shall be agreed upon by seller and buyer as to any additional costs or savings to be effected by such changes, corrections or deviations. In the event an agreement cannot be effected and the work is suspended or canceled, buyer shall pay seller for all expenses incurred by seller up to the time of suspension or cancellation.

18. WAIVER OF BREACH:

Waiver by seller or buyer of any breach of these provisions shall not be considered a waiver of any other breach.

19. LIMIT OF ACCEPTANCE:

Acceptance of your order is expressly made conditional on your assent to the terms and conditions stated herein. Terms and conditions in your acceptance in addition to or not identical with the terms and conditions of the offer will not become a part of this contract.

REFERENCE INFO

<u>Page:</u>	<u>Description:</u>
1	- <u>WELDED WIRE MESH CHART</u>
2	- <u>REBAR CHART</u>
3	- <u>STANDARD HOLE DIAMETER TABLE</u>
4	- <u>REFERENCE SPECIFICATIONS</u>
5	- <u>REFERENCE SPECIFICATIONS (continued)</u>
6	- <u>TERMS AND CONDITIONS</u>

REFERENCE SPECIFICATIONS CONTINUED

Specifications Applicable to Concrete Pipe and Associated Precast Concrete Products:

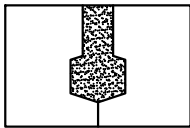
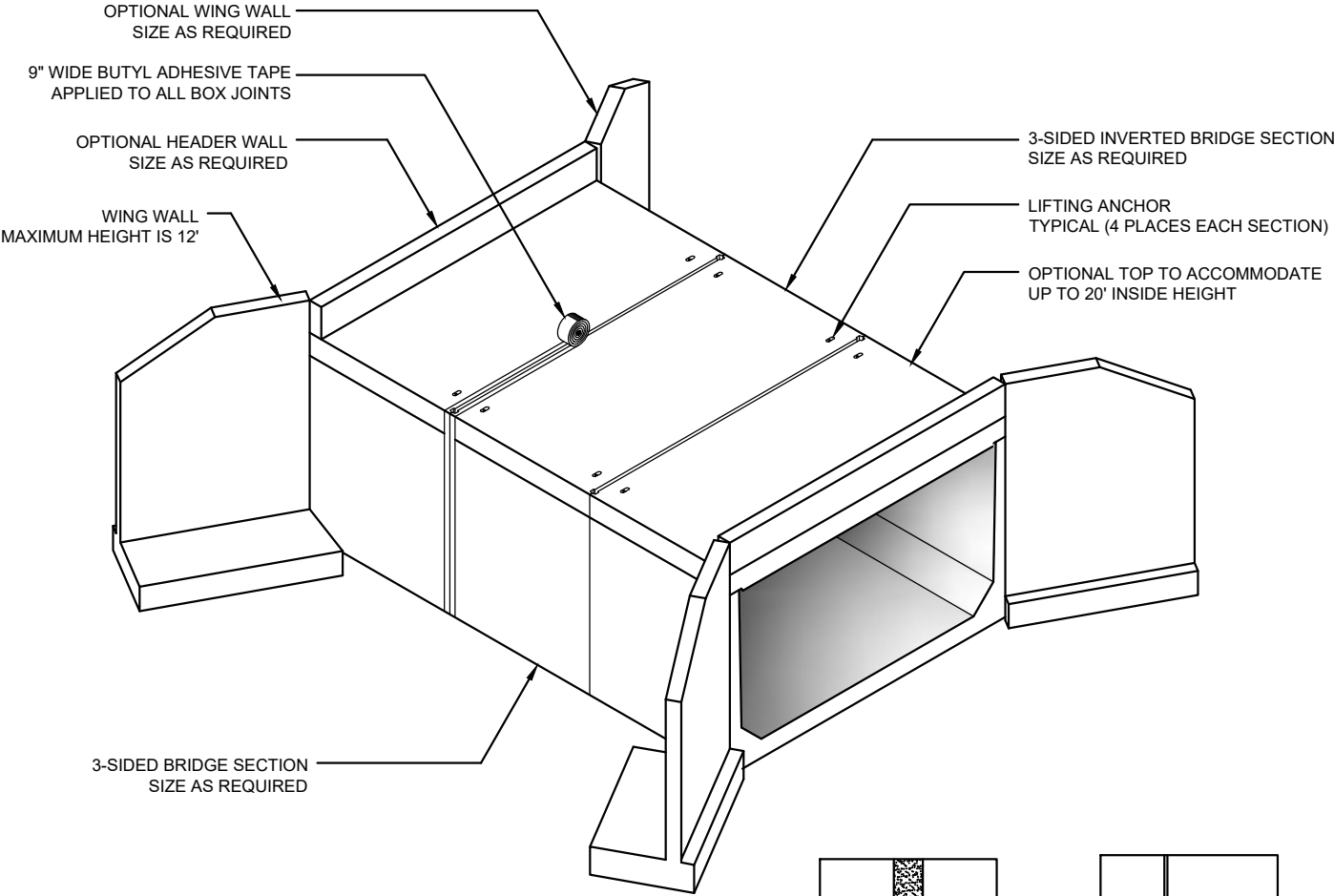
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- ASTM C1227 – STANDARD SPECIFICATION FOR PRECAST CONCRETE SEPTIC TANKS.
- ASTM C1244 – TEST METHOD FOR CONCRETE SEWER MANHOLES BY THE NEGATIVE AIR PRESSURE (VACUUM) METHOD.
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- ASTM C1577 – STANDARD SPECIFICATION FOR PRECAST REINFORCED CONCRETE MONOLITHIC BOX SECTIONS FOR CULVERTS, STORM DRAINS, AND SEWERS DESIGNED ACCORDING TO AASHTO LRFD.
- AASHTO M198 – JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING FLEXIBLE WATERTIGHT GASKETS.
- AASHTO BRIDGE DESIGN SPECIFICATIONS.
- AWWA C302 – REINFORCED CONCRETE PRESSURE PIPE, NON-CYLINDER TYPE FOR WATER AND OTHER LIQUIDS.
- U.S. BUREAU OF RECLAMATION – STANDARD SPECIFICATIONS FOR REINFORCED CONCRETE PRESSURE PIPE.

REFERENCE SPECIFICATIONS

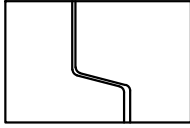
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- ASTM C497 – TEST METHODS FOR CONCRETE PIPE, MANHOLE SECTIONS OR TILE.
- ASTM C822 – TERMINOLOGY RELATING TO CONCRETE PIPE AND RELATED PRODUCTS.
- ASTM C655 / AASHTO M242 – REINFORCED CONCRETE D-LOAD CULVERT, STORM DRAIN AND SEWER PIPE.
- ASTM C825 – STANDARD SPECIFICATION FOR PRECAST CONCRETE BARRIERS.

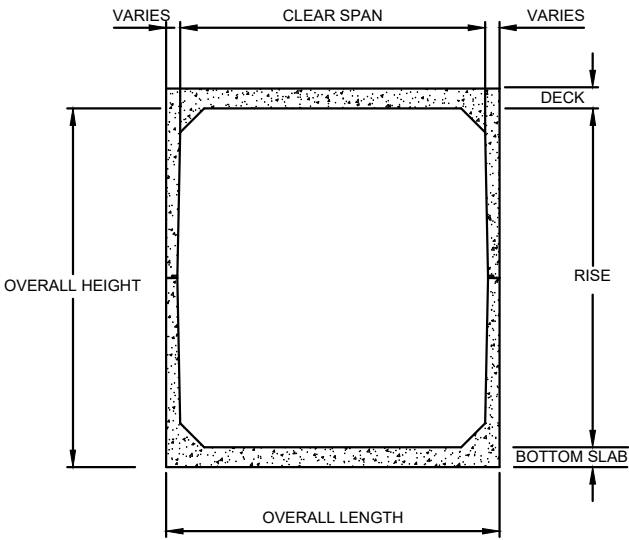
SPLIT BOX CULVERT



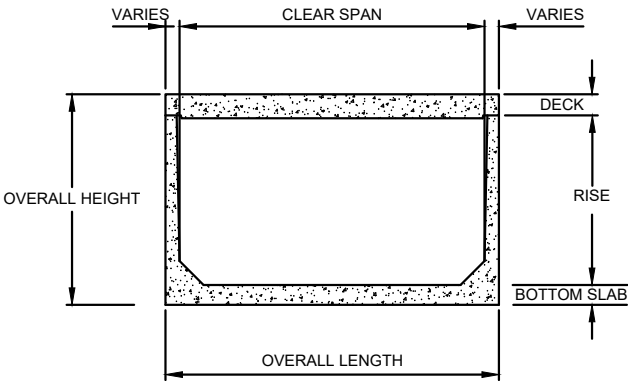
GROUT JOINT



SHIPLAP JOINT



SECTION VIEW



SECTION VIEW

- NOTES:**
1. WHERE REQUIRED USE NON-SHRINK GROUT CONFORMING TO ASTM C1107.
 2. EACH BRIDGE JOINT SHALL BE WRAPPED WITH 9" WIDE BUTYL ADHESIVE TAPE.

STANDARD HOLE DIAMETER TABLE

- STANDARD HOLE DIAMETERS -					
PIPE SIZE (NOMINAL I.D.) (in.)	<u>PIPE TYPES</u>				
	D.I.P. (in.)	CLAY (in.)	P.V.C. (in.)	R.C.P. (in.)	C.M.P. (in.)
4"	7"	7"	7"	-	-
6"	12"	12"	12"	-	12"
8"	12"	12"	12"	-	12"
10"	16"	16"	16"	-	16"
12"	16"	16"	16"	21"	18"
14"	20"	-	-	-	-
15"	-	-	20"	24"	21"
16"	20"	26"	-	-	-
18"	24"	27"	24"	30"	24"
20"	24"	29"	-	-	-
21"	-	-	26"	-	28"
24"	28"	34"	28"	36"	30"
30"	36"	40"	36"	42"	36"
36"	42"	47"	42"	48"	42"
42"	-	56"	49"	60"	48"
48"	-	61"	55"	66"	54"
54"	-	-	-	72"	60"
60"	-	-	-	78"	66"
66"	-	-	-	84"	72"
72"	-	-	-	92"	78"
78"	-	-	-	96"	84"
84"	-	-	-	108"	92"
90"	-	-	-	113"	-
96"	-	-	-	120"	108"

NOTES:

1. A dash (-) in the table signifies that the pipe is not manufactured or else not readily available in a particular material.
2. Values given in the table are those that would normally be used in our plant. However, the blank out diameter can be varied as required.

TERMS AND CONDITIONS

1. TERMS OF PAYMENTS:

Unless otherwise stated our terms of payment are net 30th prox.; after which a service charge will be made on all non-deferred balances computed at the rate of 1-1/2% per month, 18% per annum, applied to the then outstanding balance. All payments received from our customers shall in the discretion of Columbia Precast Products, LLC. first be applied to service charges, disallowed discounts, non-lien or unbonded jobs and then to the oldest invoice.

Payment is based on the seller's status as a manufacturer and/or supplier of the materials which are subject matter of this document. Seller's terms and conditions of payment will not be subordinated to any retention or other provisions of the project specifications, contract or other documents which set forth the terms and conditions under which the buyer will be paid for his performance of this or any projects on which the materials shall be installed.

2. CREDIT:

This document when signed by buyer and by authorized representative of seller shall constitute a firm contract between the parties hereto subject to credit approval which however is to be assumed unless buyer is advised to the contrary by seller.

3. PAST DUE ACCOUNTS:

If suit is instituted to collect any amount not paid, buyer agrees to pay such sum as shall be set by a court of competent jurisdiction as and for seller's reasonable attorney's fees, including fees on appeal. If buyer becomes insolvent or is in default hereunder or under any other contract between the parties hereto, seller, at its option, may defer delivery hereunder until the default is cured, or may treat the fault as a repudiation by buyer of this order in its entirety, resell the goods and hold buyer liable for such damages as seller may incur, including consequential and incidental damages.

4. TAXES:

Unless otherwise stated, prices do not include any city, county, state, federal or other taxes imposed on the product or service sold under this document. All such taxes now or hereafter in effect shall be added to the price and shall be paid by the buyer.

5. TITLE:

Title to the product shall pass to the buyer upon delivery at the destination specified by the buyer and agreed to by the seller.

6. SHIPPING INSTRUCTION:

Product shipping instructions must be agreed upon between buyer and seller not less than forty-eight (48) hours before shipments are to be made, otherwise seller cannot be responsible for delivery of product at the time requested by buyer.

7. ASSIGNMENT:

Buyer shall not assign this document, or any interest therein without the written consent of the seller.

8. DELAYS:

Seller shall be excused for delays in the performance, in whole or in part, of any contract made on the basis of this proposal, resulting from: fire or flood; strike or other differences with employees; war; riot; embargo; delays, losses, or damages in transportation; shortages of fuel or labor or materials; acts of civil or military authorities, or any other causes beyond the reasonable control of the seller. In case of the happening of any such delay seller shall have such additional time within which to perform as may be reasonably necessary under the circumstances and shall have the right to apportion its production among its customers in such manner as it may consider to be equitable.

9. WARRANTY DISCLAIMER:

Seller makes no warranty of any kind express or implied except that the quality of materials and workmanship shall conform to seller's standard manufacturing practice unless seller has specifically agreed that the materials and workmanship shall conform to the requirements of the specifications as set forth in the contract documents provided by buyer.

10. LIMITATIONS OF REMEDIES:

The buyer's sole and exclusive remedy with respect to accepted products shall be limited to the repair or replacement of any defective products by the seller at the F.O.B. point at which the products were sold. This obligation of the seller shall terminate one (1) year after the delivery of the products to the buyer. Seller shall in no event be liable to the buyer for any special, direct or indirect to consequential damages incident to any defective workmanship or non-conformity with the applicable specifications of the products delivered any buyer's remedies with respect thereto shall be limited exclusively as herein provided.

11. CLAIMS:

The seller will not recognize any claims or backcharges originated by the buyer arising out of this contract unless the claims are made in writing within one week from the time of occurrence, giving full details. Claims not presented within such time limit shall be deemed to have been waived by the buyer. The seller shall be given reasonable time and access to investigate the merits of such claims or backcharges.

12. DELIVERY:

Unless otherwise provided herein, the prices include delivery F.O.B. jobsite, trucks with maximum loads. F.O.B. jobsite means truck delivery as close to jobsite as is practicable, or to closest accessible storage area furnished free of charge to seller for motor truck and trailer operating under its own power with maximum load. Buyer agrees to have an authorized representative at the designated delivery points to guide delivery equipment, attend to unloading of merchandise, and sign delivery tickets. Items which cannot be rolled off truck or trailer shall be unloaded by mechanical equipment at buyer's expense. Delivery equipment shall not be pulled or pushed by any other power equipment nor shall buyer cause same to be done. Buyer shall provide and maintain suitable access, including access roads, to jobsite, closest accessible point or designated storage area. Standby time in excess of one (1) hour from the time of arrival of trucks at designated point of delivery will be charged to the account of the buyer.

13. RESTRICTED USE:

Buyer shall not, without the written consent of the seller, use any of the product which is the subject of this contract for any purpose except that herein mentioned, or remove any of the product from the jobsite until the purchase price for all of the product has been fully paid.

14. BUYER'S SPECIFICATIONS:

Seller assumes no responsibility for the adequacy or performance of engineering, design, or specifications furnished by buyer.

15. NOTICE OF COMPLETION:

Seller may at its option give the buyer written notice of the completion of the work herein specified by depositing same in the United States Mail properly stamped and addressed to buyer at his last known address. If no written exception to said notice of completion or as to any part of the work performed hereunder received by seller within ten (10) days after the mailing or service of said notice of completion, said work shall be deemed to have been completed and accepted in accordance with the terms hereof.

16. RETURN OF MATERIALS:

Products shall not be returned by the buyer without prior acceptance by the seller. The amount of credit, if any, shall be determined after inspection of the products by the seller.

17. CHANGES:

Any changes, corrections or deviations required by buyer after buyer's acceptance of seller's written proposal shall be agreed upon by seller and buyer as to any additional costs or savings to be effected by such changes, corrections or deviations. In the event an agreement cannot be effected and the work is suspended or canceled, buyer shall pay seller for all expenses incurred by seller up to the time of suspension or cancellation.

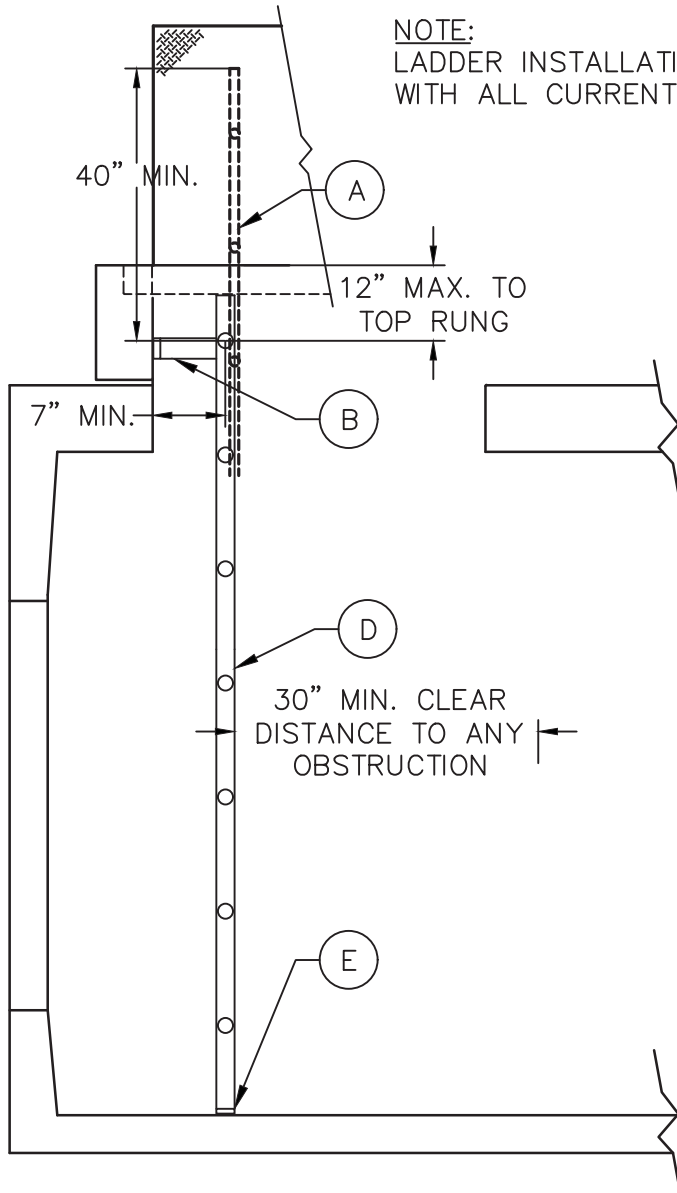
18. WAIVER OF BREACH:

Waiver by seller or buyer of any breach of these provisions shall not be considered a waiver of any other breach.

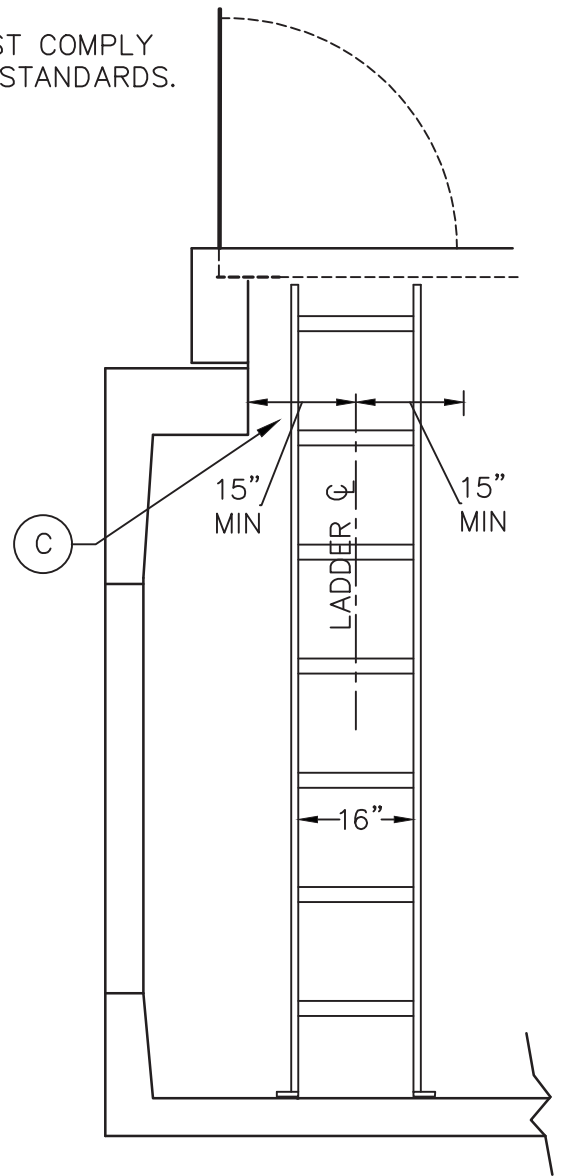
19. LIMIT OF ACCEPTANCE:

Acceptance of your order is expressly made conditional on your assent to the terms and conditions stated herein. Terms and conditions in your acceptance in addition to or not identical with the terms and conditions of the offer will not become a part of this contract.

NOTE:
LADDER INSTALLATION MUST COMPLY
WITH ALL CURRENT OSHA STANDARDS.



SIDE VIEW



FRONT VIEW

KEYNOTES:

- A. LADDER EXTENSION SHALL BE ALUMINUM AND EXTEND 40" ABOVE THE TOP RUNG OF THE LADDER.
- B. ATTACH LADDER SUPPORT TO INSIDE FACE OF VAULT COVER OPENING WITH STAINLESS STEEL HARDWARE AS SHOWN. C OF RUNG MUST BE SET 7" FROM FACE OF SURFACE BEHIND RUNG. LADDER SHALL BE ON THE SIDE ADJACENT TO THE DOOR HINGE.
- C. PROVIDE 15" MINIMUM LATERAL CLEARANCE ON EACH SIDE OF LADDER C .
- D. LADDER SHALL MEET THE REQUIREMENTS OF OSHA AND SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
- E. LADDER SHALL BE ATTACHED TO FLOOR OF VAULT WITH STAINLESS STEEL HARDWARE PER THE MANUFACTURERS RECOMMENDATIONS.

Tualatin Valley Water District

1850 SW 170th Ave. Beaverton, OR 97003
(503) 848-3000 www.tvwd.org

DESIGNED: KLS

APPROVED: NWA

SCALE: NONE

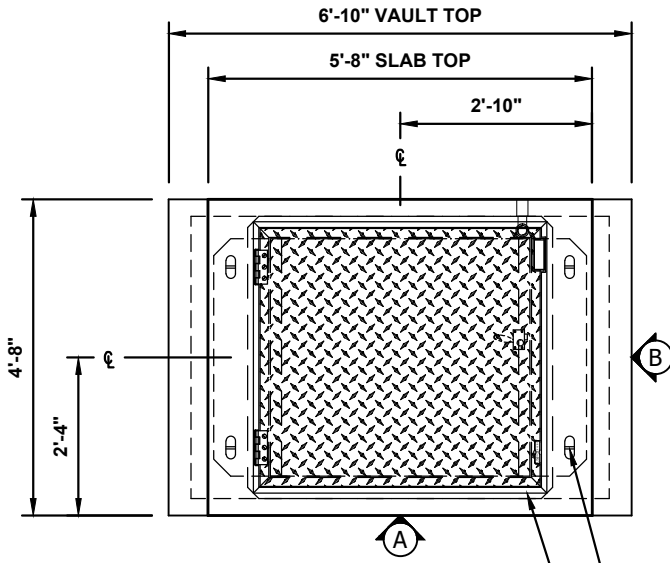
VAULT LADDER
INSTALLATION

DATE: 3/1/2018

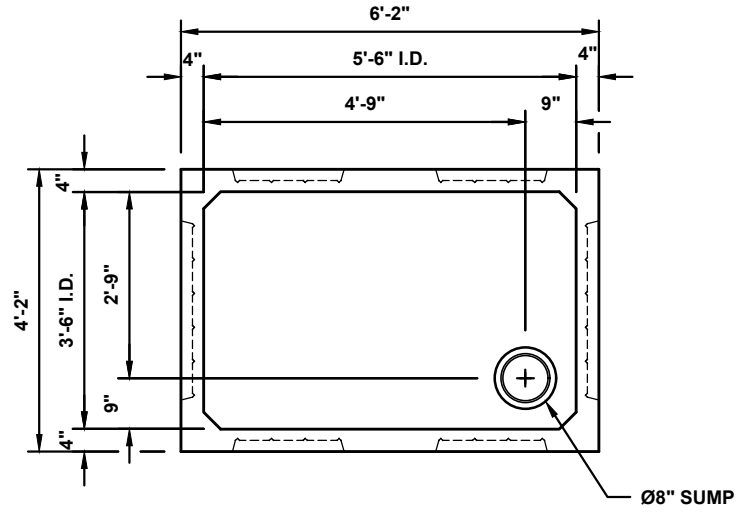
DETAIL

701

TVWD - 466 DCV/DCDV VAULT

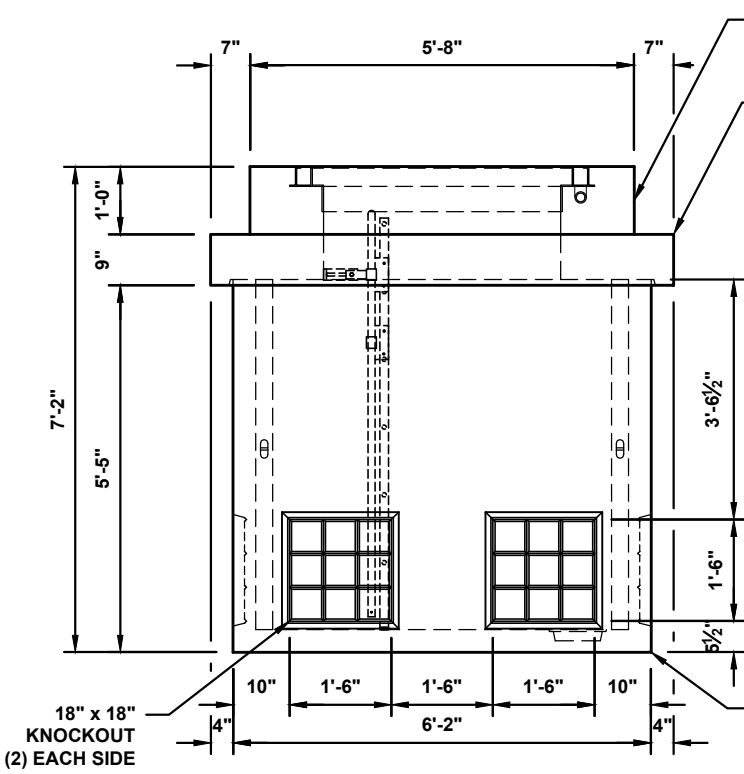


PLAN VIEW - TOP

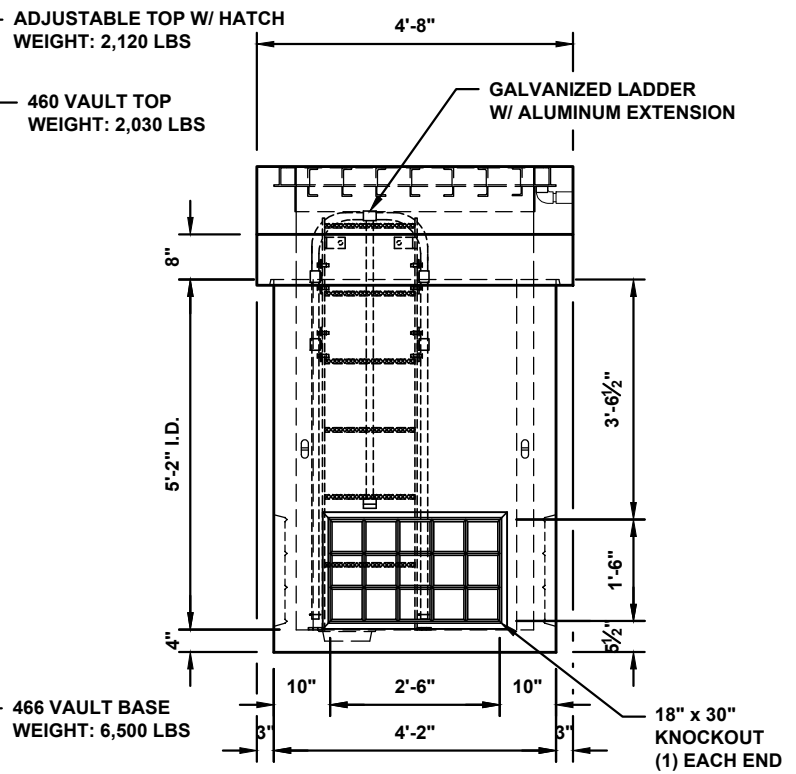


PLAN VIEW - BASE

2 TON LIFT ANCHOR
(4) EACH, TOPS & BASE
USF-THS 42" x 42" ALUMINUM HATCH
DRAINS TO DAYLIGHT



VIEW - A

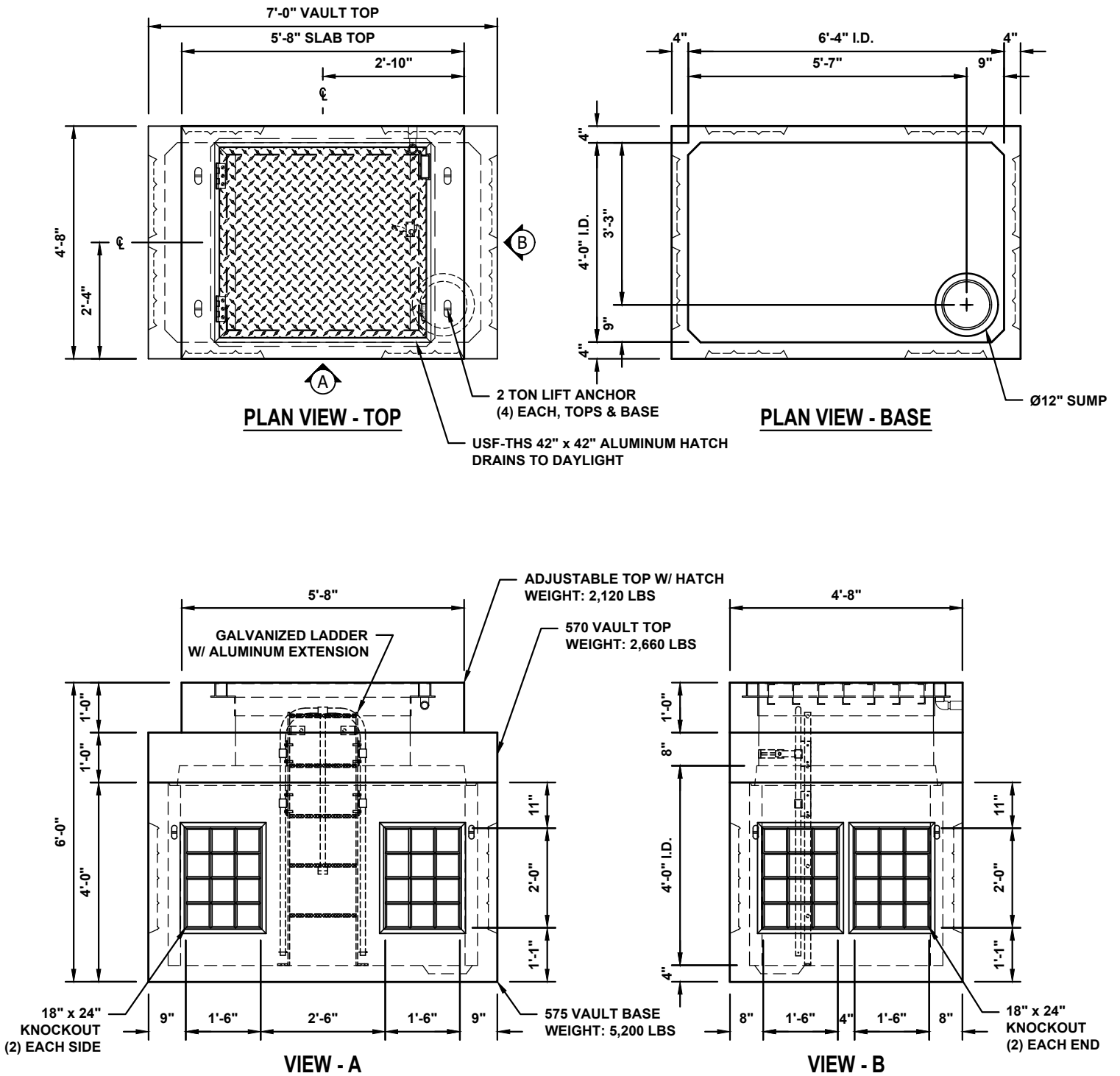


VIEW - B

NOTES:

1. INTERNAL PLUMBING/HARDWARE PROVIDED AND INSTALLED BY OTHERS.
2. REFER TO MANUFACTURERS DRAWING(S) FOR HATCH DETAILS.
3. CRYSTALSEAL COATING APPLIED TO EXTERIOR SURFACES.
4. WEIGHTS LISTED ARE APPROXIMATE.

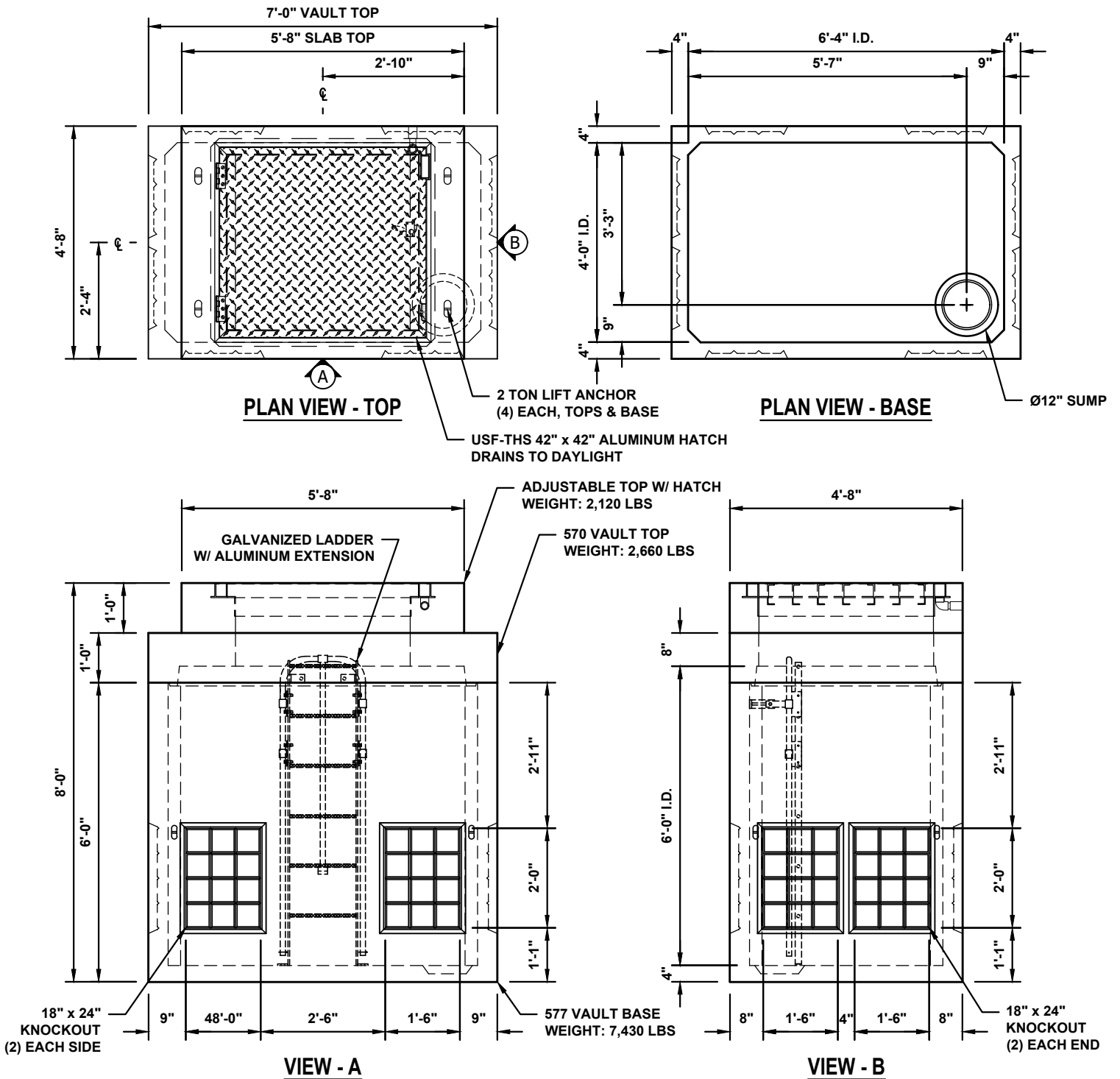
TVWD - 575 DCDV VAULT



NOTES:

1. INTERNAL PLUMBING/HARDWARE PROVIDED AND INSTALLED BY OTHERS.
2. REFER TO MANUFACTURERS DRAWING(S) FOR HATCH DETAILS.
3. CRYSTALSEAL COATING APPLIED TO EXTERIOR SURFACES.
4. WEIGHTS LISTED ARE APPROXIMATE.

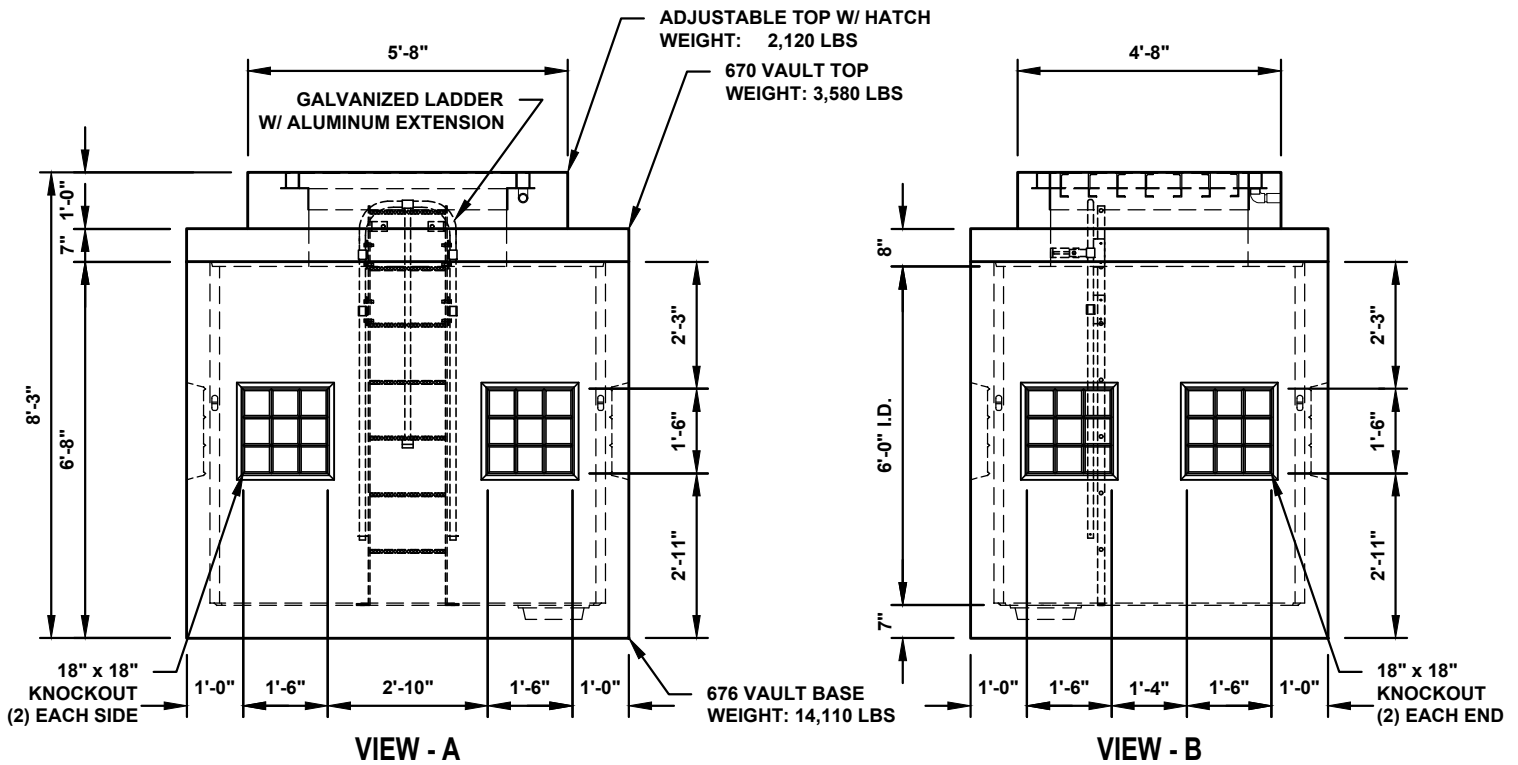
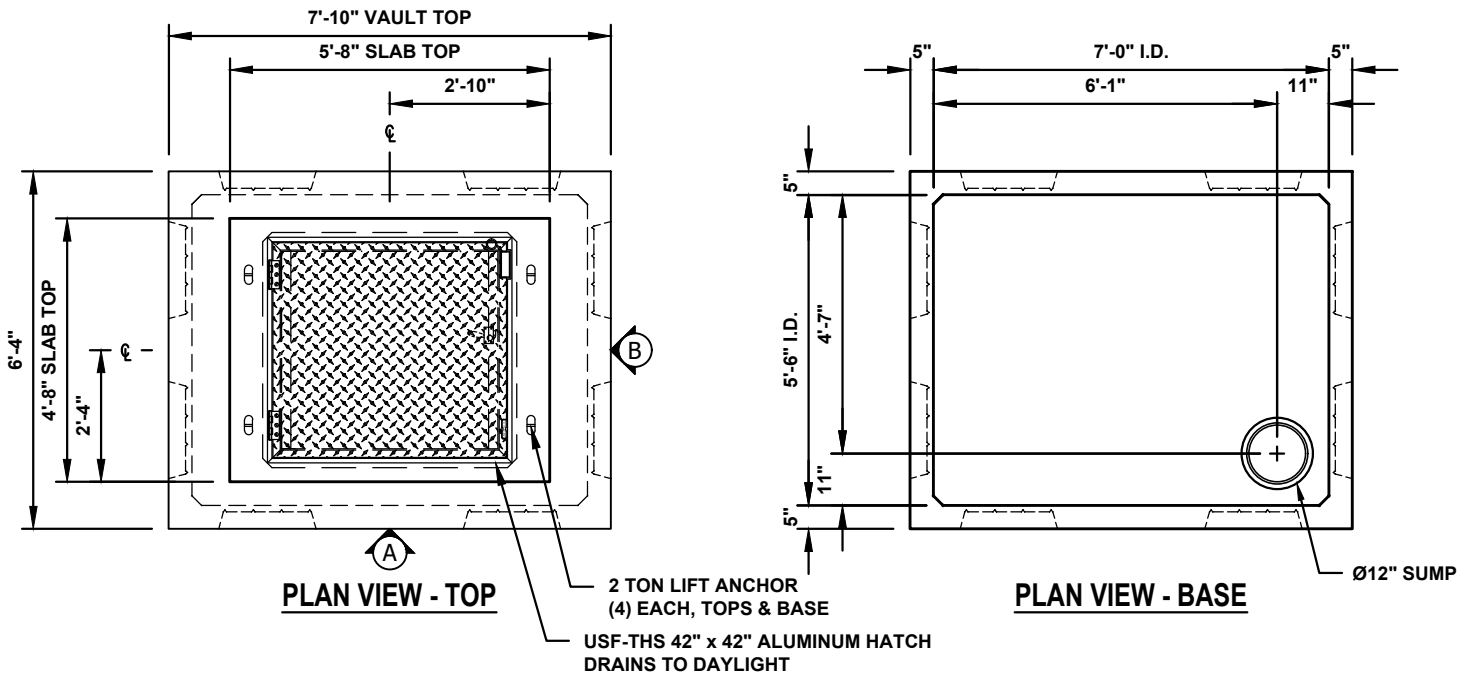
TVWD - 577 DCV/DCDV VAULT



NOTES:

1. INTERNAL PLUMBING/HARDWARE PROVIDED AND INSTALLED BY OTHERS.
2. REFER TO MANUFACTURERS DRAWING(S) FOR HATCH DETAILS.
3. CRYSTALSEAL COATING APPLIED TO EXTERIOR SURFACES.
4. WEIGHTS LISTED ARE APPROXIMATE.

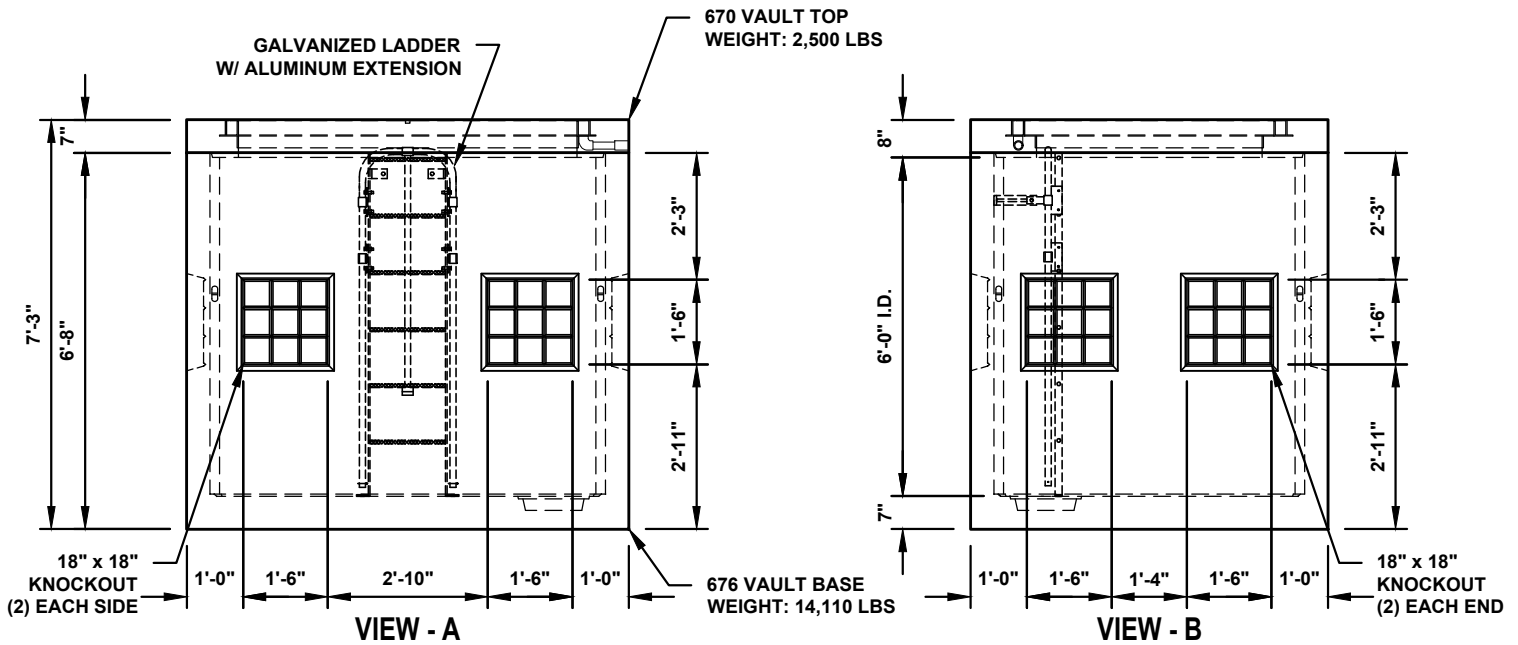
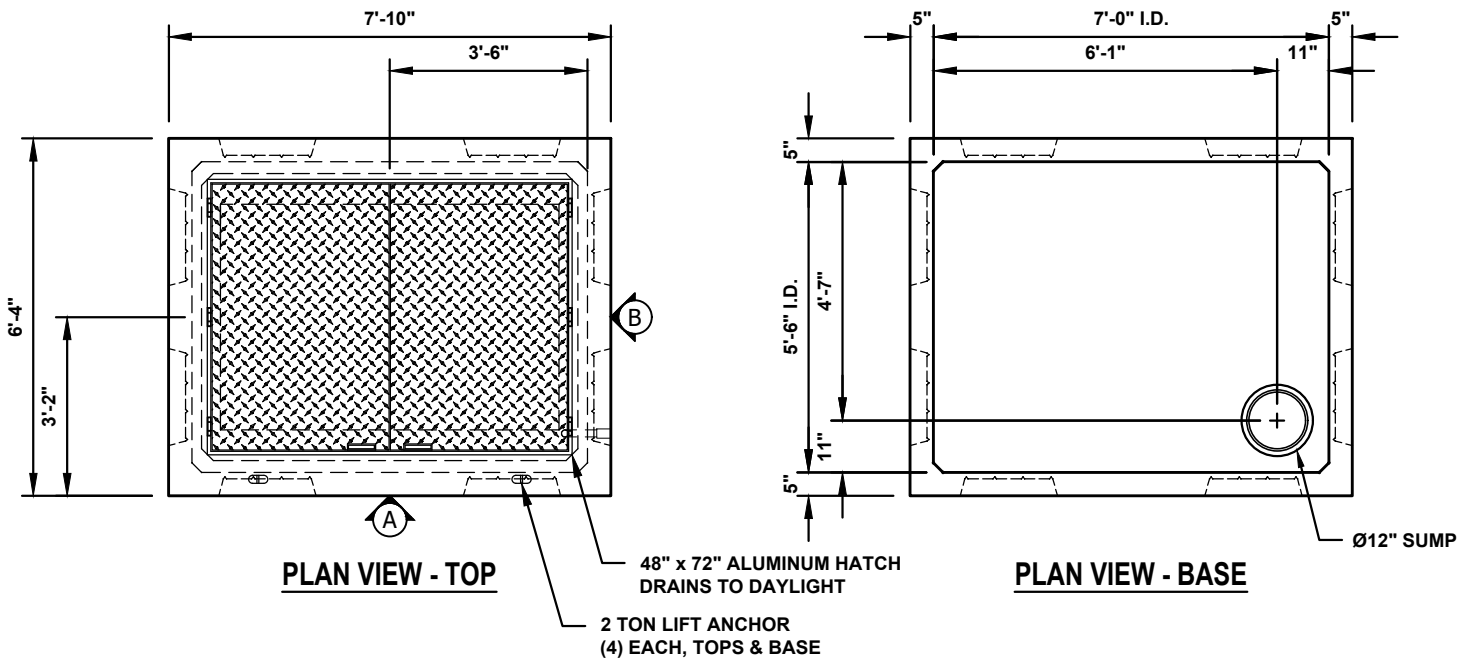
TVWD - 676 DCV/DCDV



NOTES:

1. INTERNAL PLUMBING/HARDWARE PROVIDED AND INSTALLED BY OTHERS.
2. REFER TO MANUFACTURERS DRAWING(S) FOR HATCH DETAILS.
3. CRYSTALSEAL COATING APPLIED TO EXTERIOR SURFACES.
4. WEIGHTS LISTED ARE APPROXIMATE.

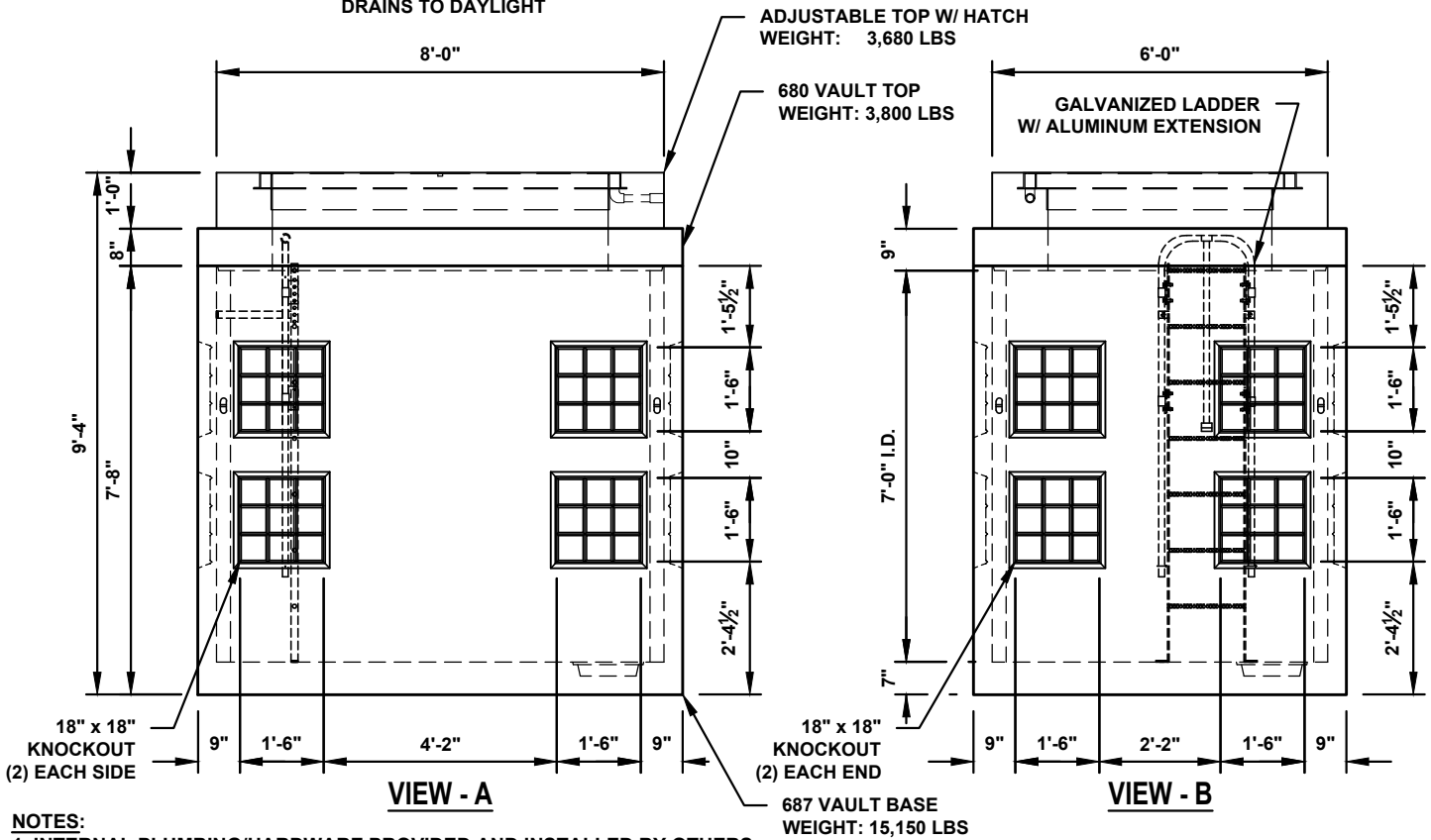
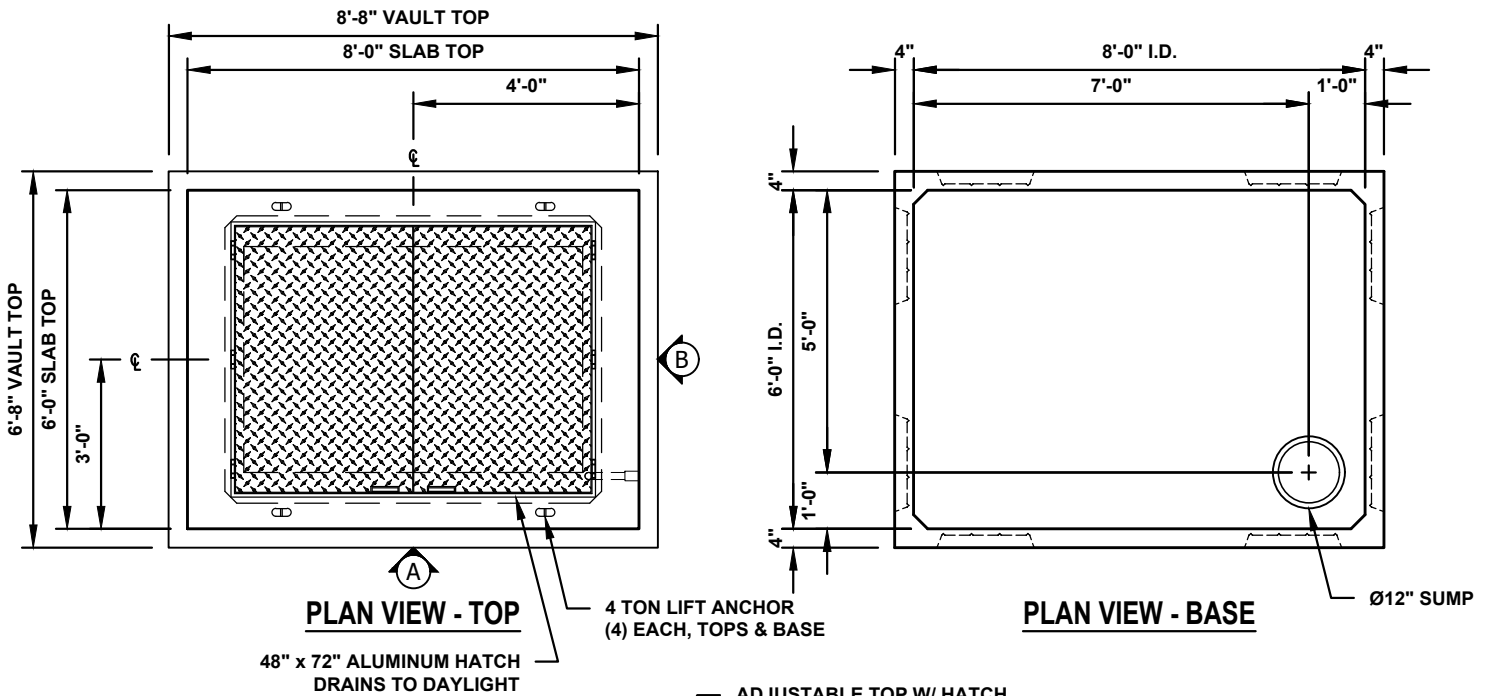
TVWD - 676 METER VAULT



NOTES:

1. INTERNAL PLUMBING/HARDWARE PROVIDED AND INSTALLED BY OTHERS.
2. REFER TO MANUFACTURERS DRAWING(S) FOR HATCH DETAILS.
3. CRYSTALSEAL COATING APPLIED TO EXTERIOR SURFACES.
4. WEIGHTS LISTED ARE APPROXIMATE.

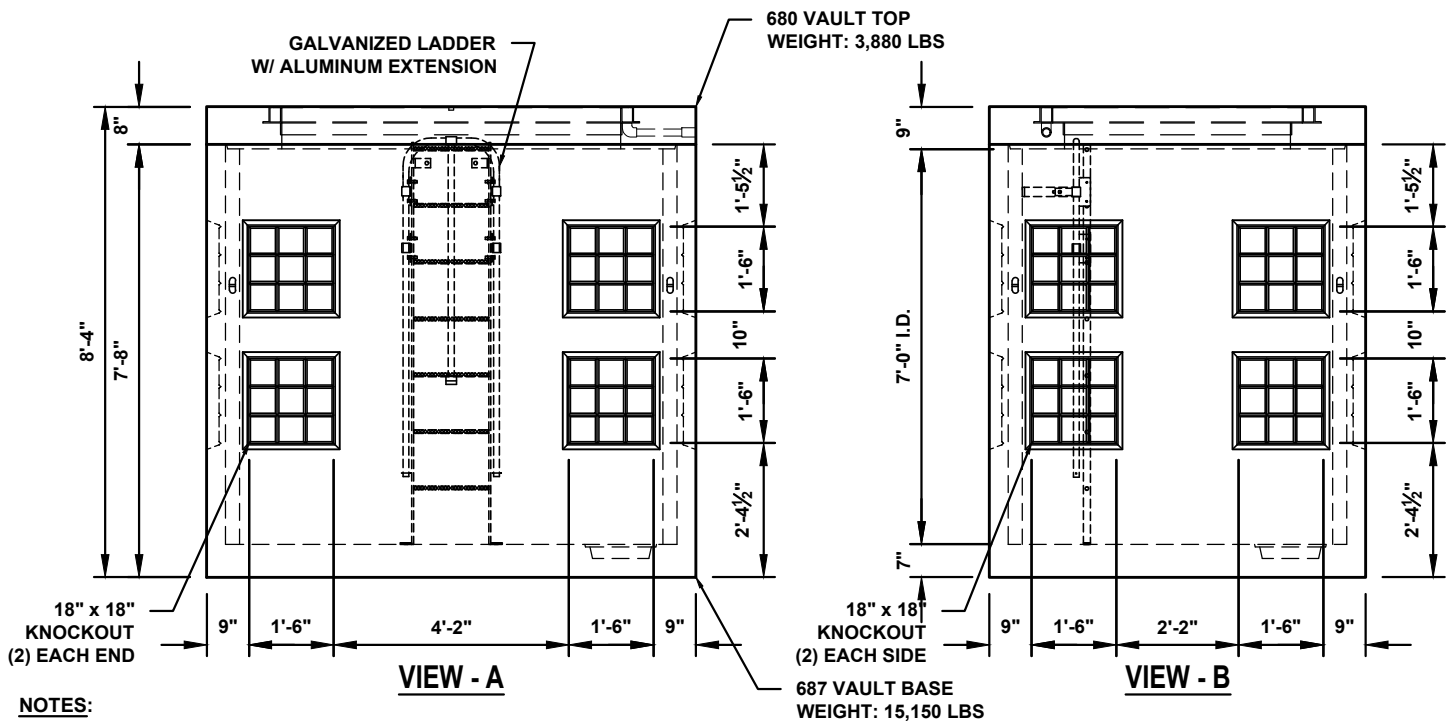
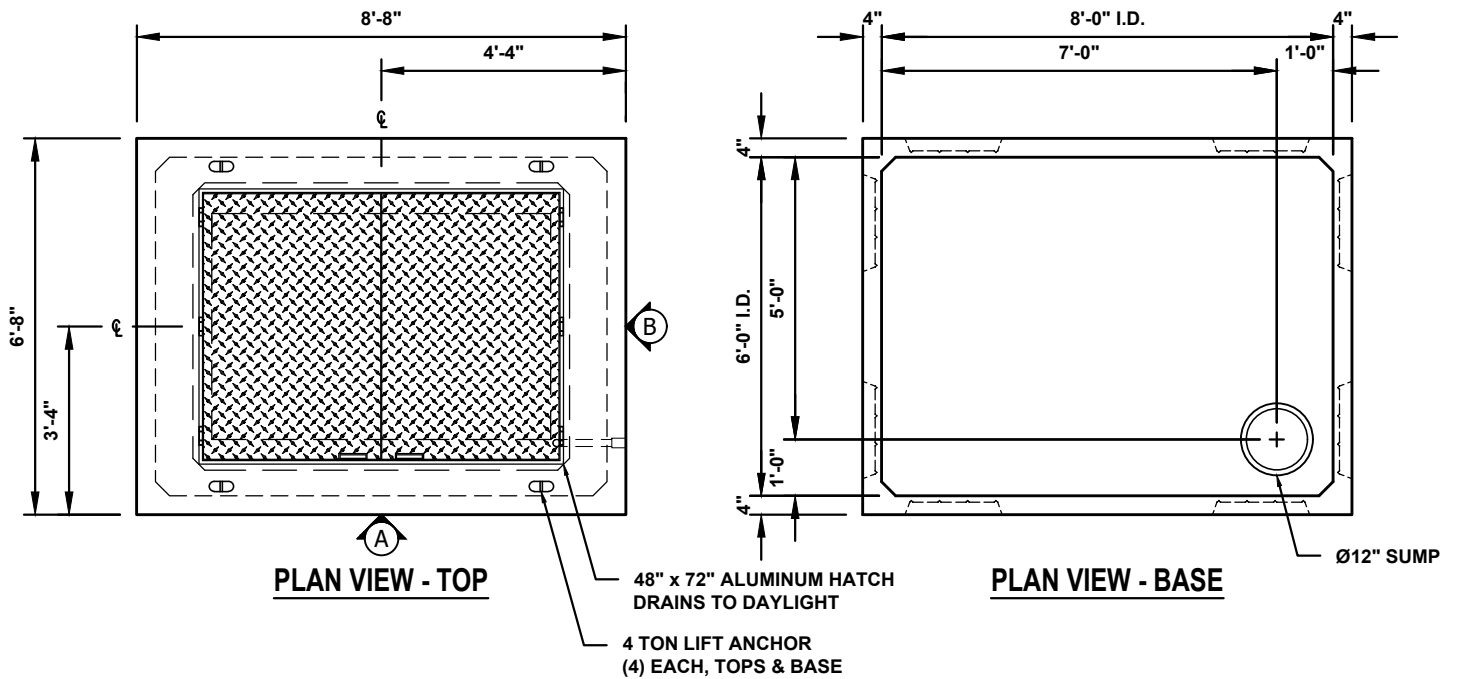
TVWD - 687 DCV/DCDV VAULT



NOTES:

1. INTERNAL PLUMBING/HARDWARE PROVIDED AND INSTALLED BY OTHERS.
2. REFER TO MANUFACTURERS DRAWING(S) FOR HATCH DETAILS.
3. CRYSTALSEAL COATING APPLIED TO EXTERIOR SURFACES.
4. WEIGHTS LISTED ARE APPROXIMATE.

TVWD - 687 METER VAULT



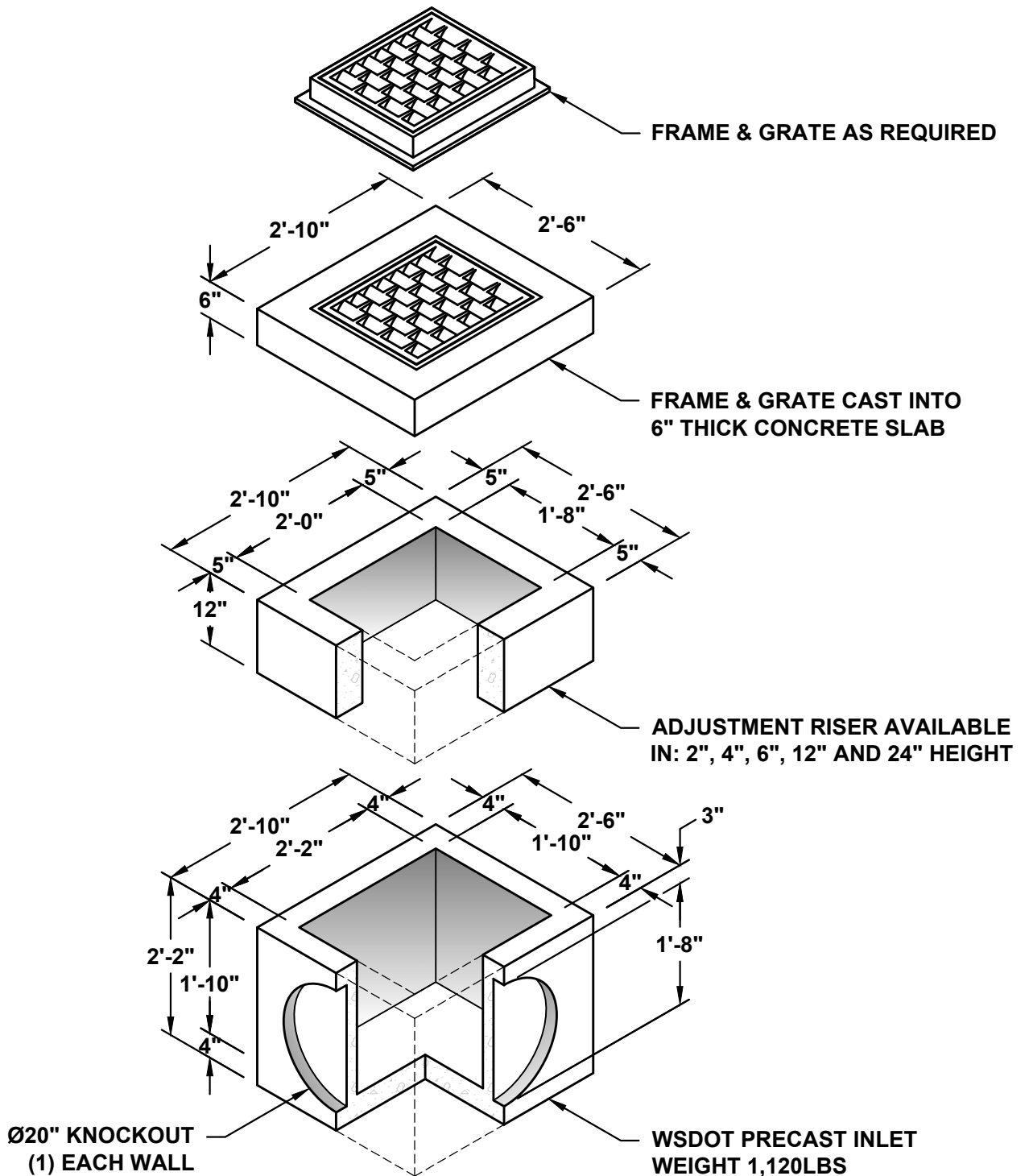
NOTES:

1. INTERNAL PLUMBING/HARDWARE PROVIDED AND INSTALLED BY OTHERS.
2. REFER TO MANUFACTURERS DRAWING(S) FOR HATCH DETAILS.
3. CRYSTALSEAL COATING APPLIED TO EXTERIOR SURFACES.
4. WEIGHTS LISTED ARE APPROXIMATE.

WELDED WIRE MESH CHART

WELDED WIRE MESH - DIMENSIONAL DATA										
WIRE SIZE NUMBER		NOMINAL DIAMETER (in.)	NOMINAL WEIGHT (lbs./lin.ft.)	AREA - SQ. IN. PER FT. OF WIDTH FOR VARIOUS SPACINGS CENTER TO CENTER SPACING						
SMOOTH	DEFORMED			2"	3"	4"	6"	8"	10"	12"
W1.4	-	0.135	0.049	0.084	0.056	0.042	0.028	0.021	0.017	0.014
W1.5	-	0.138	0.051	0.090	0.060	0.045	0.030	0.022	0.018	0.015
W2	-	0.159	0.068	0.120	0.080	0.060	0.040	0.030	0.024	0.020
W2.1	-	0.162	0.070	0.126	0.084	0.063	0.042	0.031	0.025	0.021
W2.5	-	0.178	0.085	0.150	0.100	0.075	0.050	0.037	0.030	0.025
W2.9	-	0.192	0.098	0.174	0.116	0.087	0.058	0.043	0.035	0.029
W3	-	0.195	0.102	0.180	0.120	0.090	0.060	0.045	0.036	0.030
W3.5	-	0.211	0.119	0.210	0.140	0.105	0.070	0.052	0.042	0.035
W4	D4	0.225	0.136	0.240	0.160	0.120	0.080	0.060	0.048	0.040
W4.5	-	0.240	0.153	0.270	0.180	0.135	0.090	0.067	0.054	0.045
W5	D5	0.252	0.170	0.300	0.200	0.150	0.100	0.075	0.060	0.050
W5.5	-	0.264	0.187	0.330	0.220	0.165	0.110	0.082	0.066	0.055
W6	D6	0.276	0.204	0.360	0.240	0.180	0.120	0.090	0.072	0.060
W6.5	-	0.288	0.221	0.390	0.280	0.195	0.130	0.097	0.078	0.065
W7	D7	0.298	0.238	0.420	0.280	0.210	0.140	0.105	0.084	0.070
W7.5	-	0.309	0.255	0.450	0.300	0.225	0.150	0.112	0.090	0.075
W8	D8	0.319	0.272	0.480	0.320	0.240	0.160	0.120	0.096	0.080
W8.5	-	0.329	0.289	0.510	0.340	0.255	0.170	0.127	0.102	0.085
W9	D9	0.338	0.306	0.540	0.360	0.270	0.180	0.135	0.108	0.090
W9.5	-	0.348	0.323	0.570	0.380	0.285	0.190	0.142	0.114	0.095
W10	D10	0.356	0.340	0.600	0.400	0.300	0.200	0.150	0.120	0.100
W10.5	-	0.366	0.357	0.630	0.420	0.315	0.210	0.157	0.126	0.105
W11	D11	0.374	0.374	0.660	0.440	0.330	0.220	0.165	0.132	0.110
W12	D12	0.390	0.408	0.720	0.480	0.360	0.240	0.180	0.144	0.120
W14	D14	0.422	0.476	0.840	0.560	0.420	0.280	0.210	0.168	0.140
W16	D16	0.451	0.544	0.960	0.640	0.480	0.320	0.240	0.192	0.160
W18	D18	0.478	0.612	1.080	0.720	0.540	0.360	0.270	0.216	0.180
W20	D20	0.504	0.680	1.200	0.800	0.600	0.400	0.300	0.240	0.200
W22	D22	0.529	0.748	1.320	0.880	0.660	0.440	0.330	0.264	0.220
W24	D24	0.553	0.816	1.440	0.960	0.720	0.480	0.360	0.288	0.240
W26	D26	0.575	0.934	1.560	1.040	0.780	0.520	0.390	0.312	0.260
W28	D28	0.597	0.952	1.680	1.120	0.840	0.560	0.420	0.336	0.280
W30	D30	0.618	1.020	1.800	1.200	0.900	0.600	0.450	0.360	0.300
W31	D31	0.628	1.054	1.860	1.240	0.930	0.620	0.465	0.372	0.310

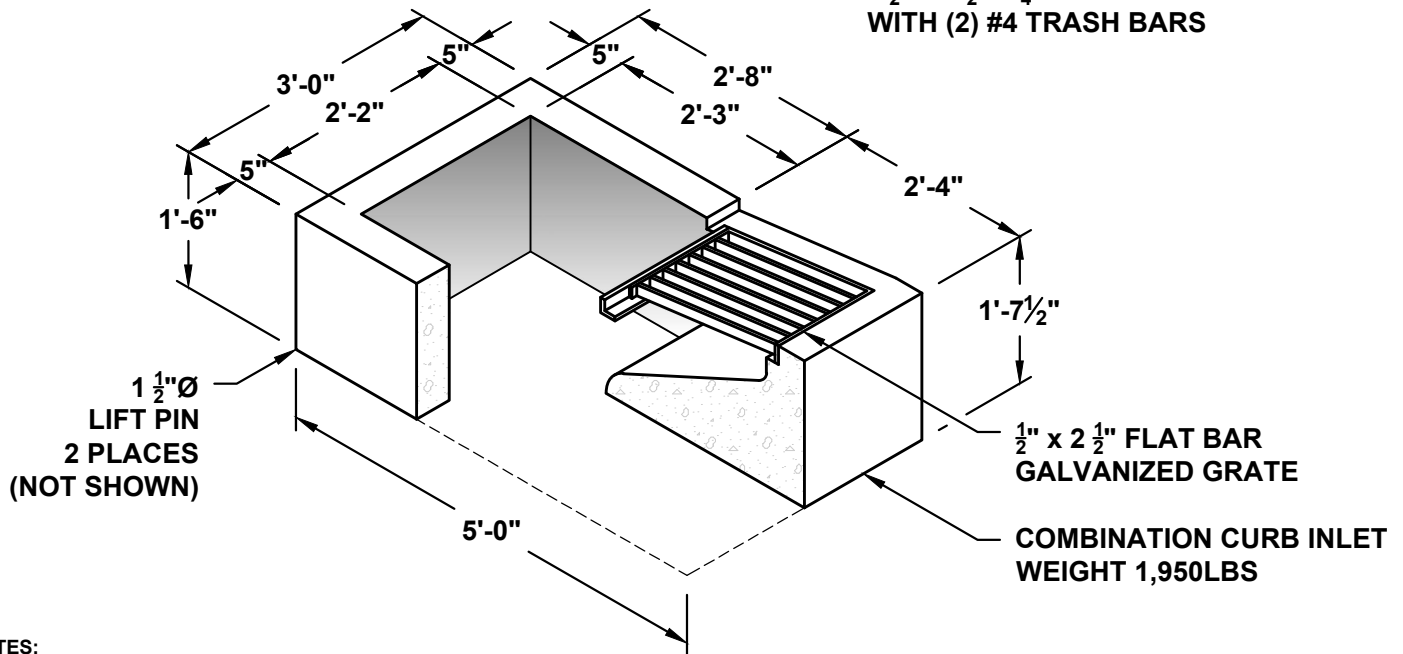
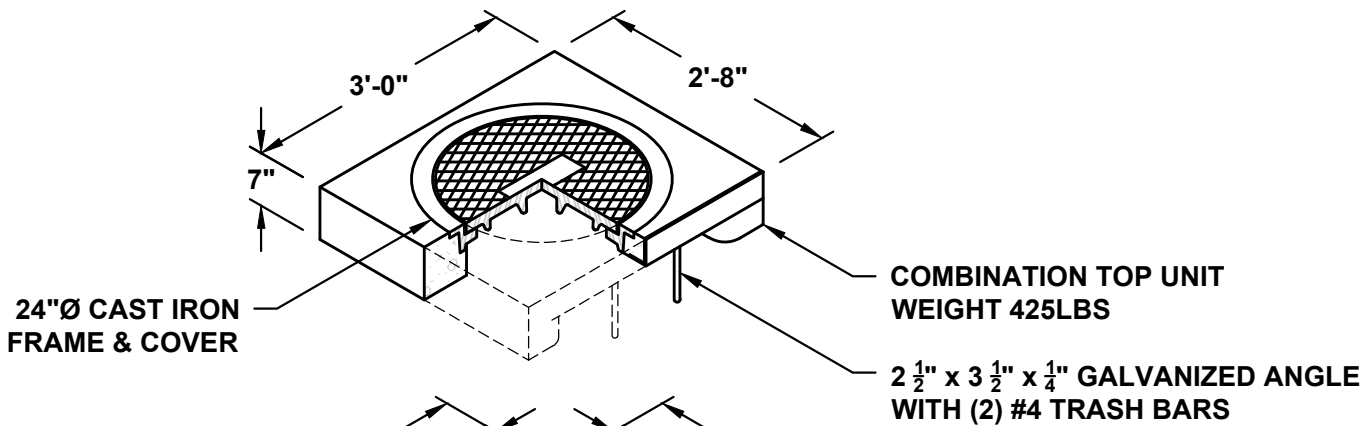
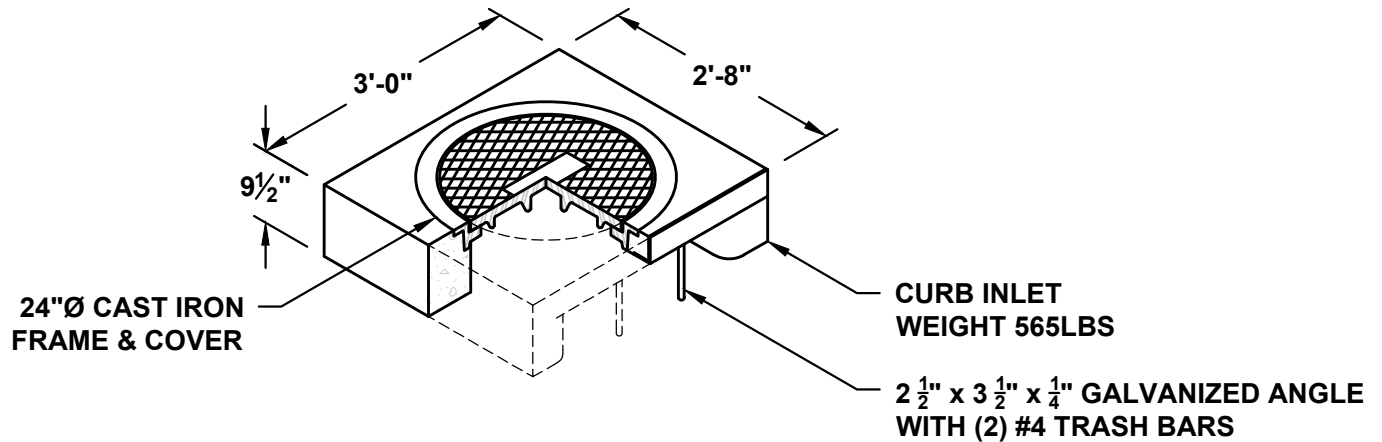
W.S.D.O.T. - TYPE 1 INLET



NOTES:

1. MEETS OR EXCEEDS WSDOT STANDARD PLAN B-5.20-02.
2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

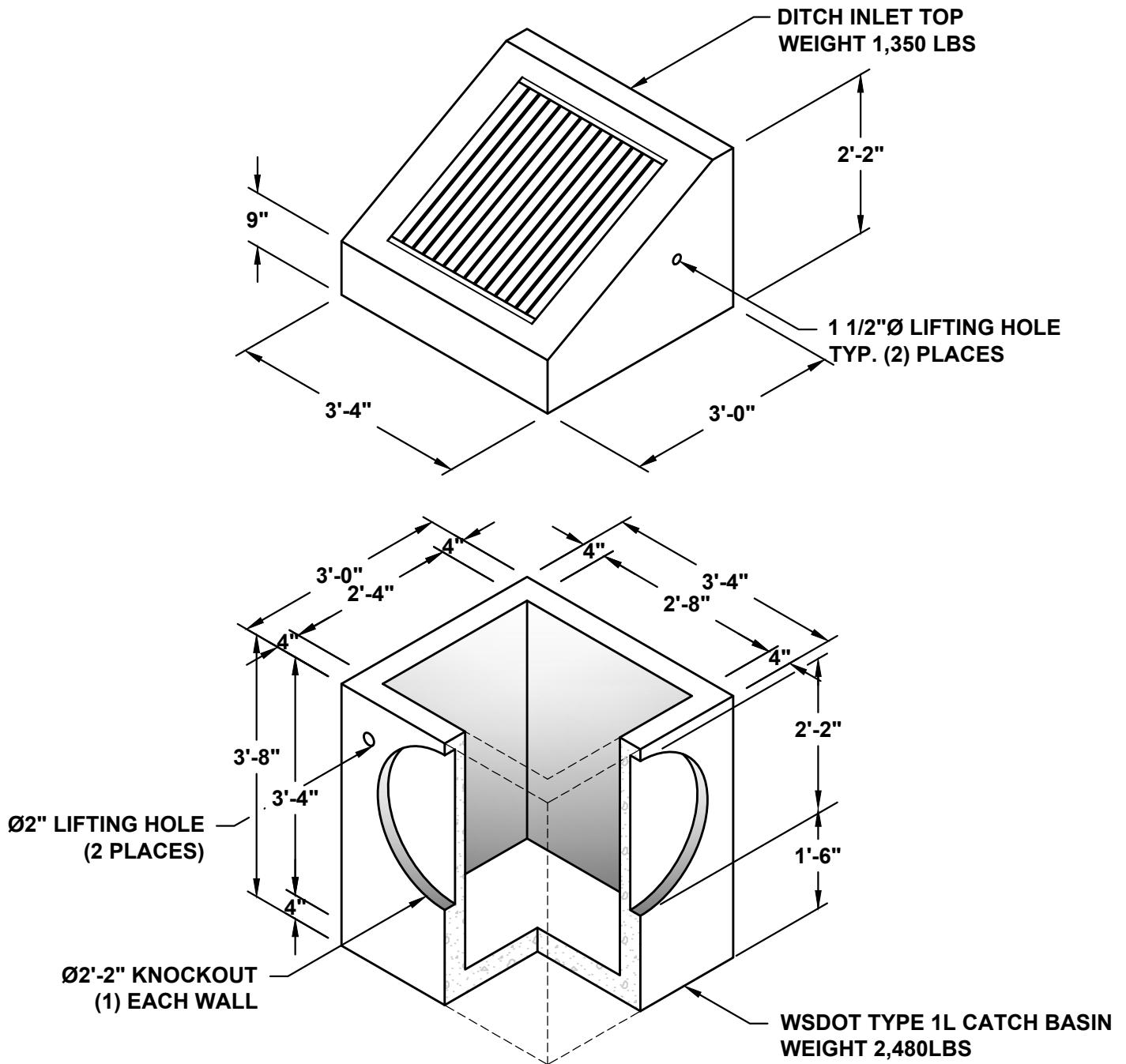
TYPE 1 CATCH BASIN - OPTIONAL CURB INLETS



NOTES:

1. MEETS OR EXCEEDS CLARK COUNTY STANDARD DETAIL D3.0.
2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

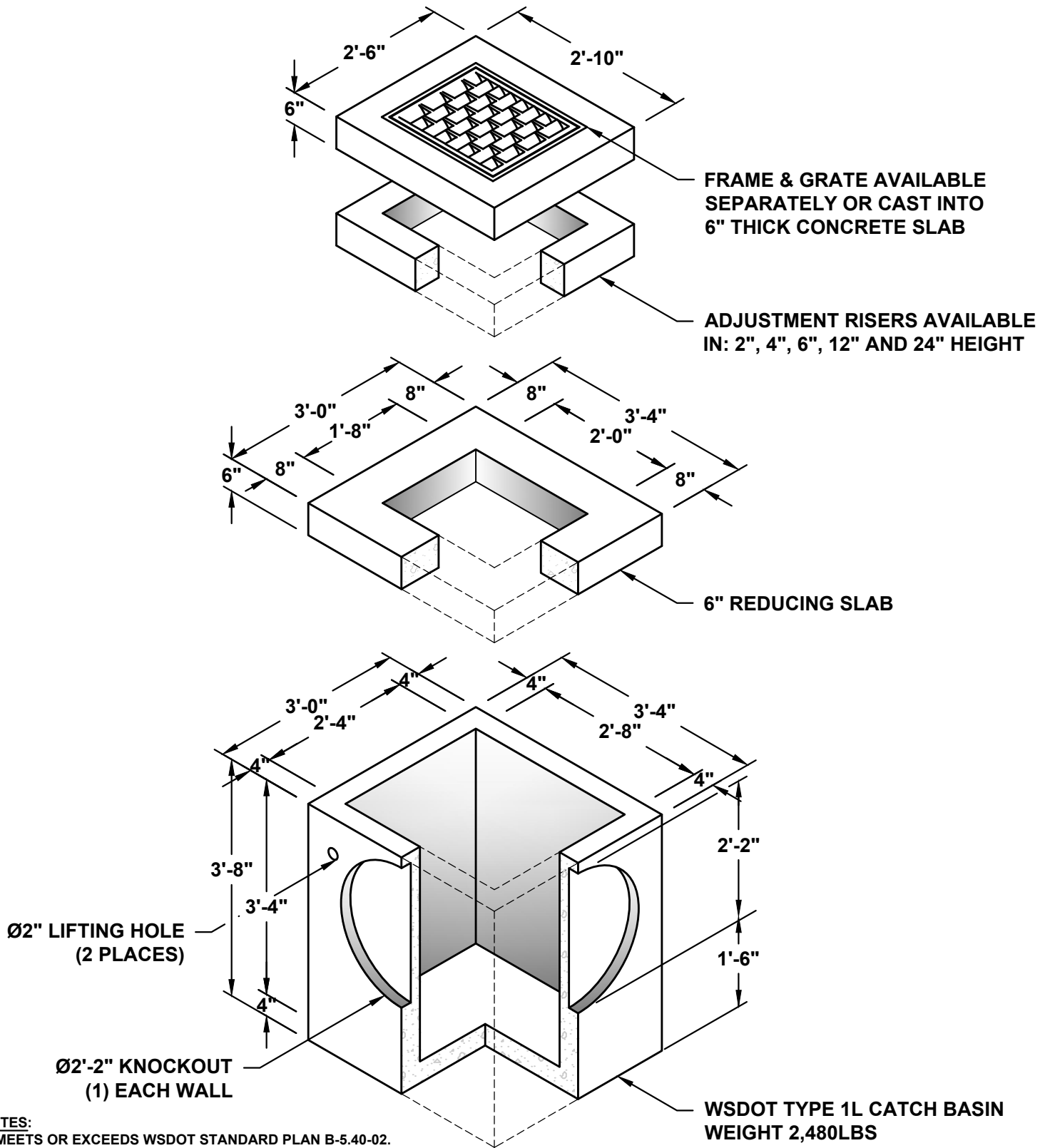
W.S.D.O.T. - TYPE 1L DITCH INLET TOP



NOTES:

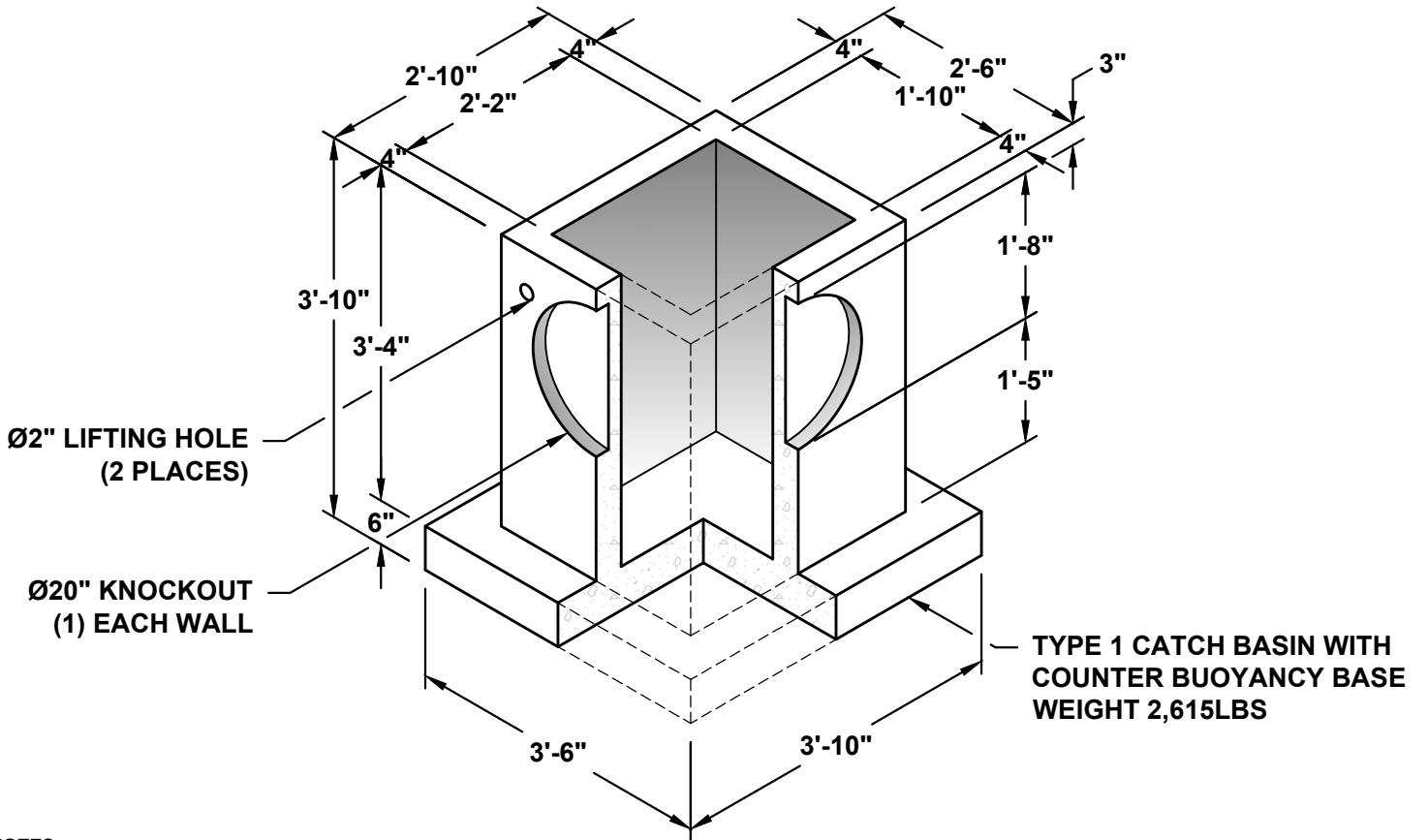
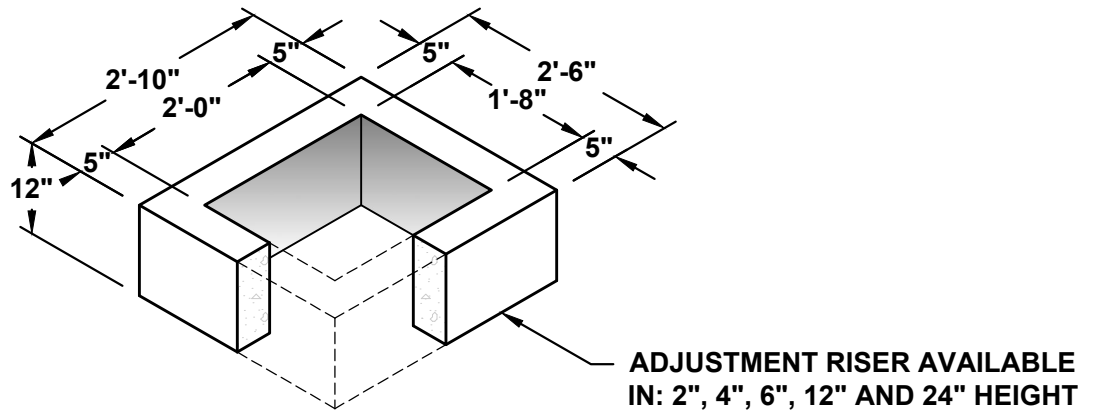
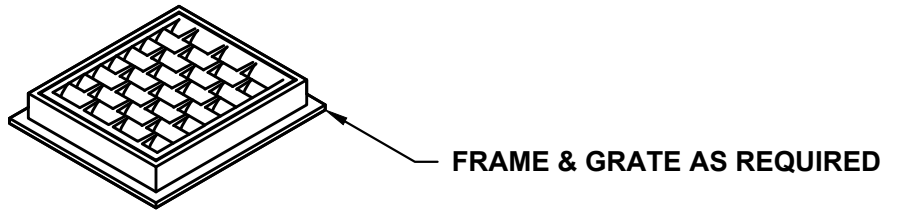
1. MEETS OR EXCEEDS WSDOT STANDARD PLAN B-5.40-02.
2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

W.S.D.O.T. - TYPE 1L CATCH BASIN



NOTES:
 1. MEETS OR EXCEEDS WSDOT STANDARD PLAN B-5.40-02.
 2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.

Type 1 Catch Basin with Counter Buoyancy Base



- NOTES:**
 1. MEETS OR EXCEEDS WSDOT STANDARD PLAN B-5.20-02.
 2. ALL DIMENSIONS SUBJECT TO ALLOWABLE TOLERANCES.