MISCELLANEOUS
Prefabricated Vaults

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1. SCOPE

This specification covers prefabricated, reinforced concrete vaults which are used to house regulator stations and other pipeline facilities. The vaults with hinged lids are suitable for installation in areas subjected to incidental vehicular traffic. The vaults with manhole covers are suitable for installation in all areas of vehicular traffic.

2. APPLICABLE DOCUMENTS

2.1 American Society of Mechanical Engineers (ASME) B-31.8, "Gas Transmission and Distribution Piping Systems."

2.2 ASTM International (ASTM) C-42, "Test Methods for Cement Testing."

2.3 ASTM International (ASTM) A-386, "Zinc Coating of Assembled Steel Products."

2.4 American Association of State Highway Transportation Officials (AASHTO) H-20-44.

2.5 United States Department of Transportation (DOT), Code of Federal Regulations, Title 49, Part 192, "Transportation of Natural and Other Gas by Pipeline; Minimum Safety Standards."

NOTE: Unless otherwise specified, the editions of the above documents incorporated by DOT 49 CFR 192 are applicable. Documents not incorporated by DOT 49 CFR 192 will be the most recent edition.

3. TERMINOLOGY

3.1 General

3.1.1 "Southwest Gas," "Southwest" or "SWG" wherever used in this specification and other related documents will refer exclusively to Southwest Gas Corporation.

3.1.2 The terms "approved," "as approved," "satisfactory," "as directed," "or equal" or other similar terms wherever used in this specification and other related documents will mean "as determined by Southwest Gas," unless specifically stated otherwise.

3. TERMINOLOGY (Cont'd)

3.1.3 "Product Information Package" or "PIP" wherever used in this specification and other related documents will mean the required technical product information that a manufacturer must submit to SWG to determine if the product is suitable for use by SWG, unless specifically stated otherwise.

4. MATERIALS AND MANUFACTURING

4.1 Concrete used in the vaults will have a minimum compressive strength of 4,000 psi at 28 days in accordance with the testing requirements of ASTM C-42. Materials other than concrete for the vault must be approved.

4.2 The entire lid assembly of regulator vaults shall be made of steel, and shall be galvanized by the "hot dip" method in accordance with ASTM A-386. "Manhole" type vault lids may be of cast iron. No welding shall be performed on the cover assembly after it is galvanized. Covers other than steel or cast iron must be approved.

4.3 Each lid assembly shall be capable of being adjusted on the frame side. Recessing the lid into the frame so that it is flush with the frame sides to provide vehicular support is acceptable.

4.4 A positive-locking, manual-releasing, hinged safety latch shall be integrated into the lid to lock the lid in its fully-open position.

4.5 The vault lid is to have either a one-inch access hole for a stringer or a recessed handle to provide easy opening of the lid.

4.6 Stainless steel locking bolts or approved alternative locking device shall be provided to ensure that the vault lid is both tamper-proof and relatively free of vibrations and noise which may be caused by vehicular traffic. Tension-style washers are to be provided for locking bolts. The bolt heads shall be pentagon design.

4.7 Locking bolts, handles and any other fixtures incorporated into the lid top plate shall be recessed in order that the cover plate's horizontal plane remains flush.

4.8 Bolt-down holes on the lid shall be recessed for the bolt head to remain flush with the lid to prevent tripping hazards and minimize the area for debris to collect around the bolt head.

4. MATERIALS AND MANUFACTURING (Cont'd)

4.9 The vault and lid will be designed so that no debris and a minimum amount of water can enter from the top after installation.

4.10 The vaults and lids for general purposes will be designed and constructed for AASHTO H-20-44 loading. This type of loading requires a structural design and fabrication to handle incidental vehicular traffic. A load rating of 20,800 pounds may be approved for installations with incidental traffic load and where approved by the governing agency. Vaults installed where only pedestrian traffic is anticipated may be designed for 350 pounds per square foot loading.

4.11 The top assembly outer frame and the top of the lid plate on the regulator vault shall have a matching horizontal plane when the lid is in its closed position. A deviation from this plane of more than 1/4" will not be accepted.

4.12 Four heavy-duty adjusting bolts, one at each corner of the lid outer frame, shall be designed into the lid assembly for final grade adjustments on the regulator vaults. The bolts are to be accessible from the inside of the lid at all times, and shall provide an adjustment between 2-3/4" and 4".

4.13 Boxes and extensions will be available to allow a variety of specified vault depth specifications.

4.14 When specified "knockouts" will be provided in the dimensions and locations specified.

5. PERFORMANCE REQUIREMENTS

5.1 All welding on the lid assembly shall be done in a professional manner that provides optimum strength to the structure. Welds shall be cleaned of all slag and dross prior to the galvanizing of the assembly.

5.2 The lid assembly shall perform as designed to prevent outside materials (i.e., rock, dirt, debris, etc.) from entering the vault interior. The lid will also perform as designed to minimize the amount of surface water that enters through the top of the vault. No protrusions will be allowed that present a tripping hazard.

5. PERFORMANCE REQUIREMENTS (Cont'd)

5.3 The lid hinges on the regulator vaults are to be readily accessible for lubrication and maintenance. If lubrication is necessary for maintenance, an 1/8-inch "pin type" grease fitting is to be provided.

5.4 Vault lid assembly, box and extensions designed by the manufacturer to be compatible will fit together as a single unit without field modification.

5.5 Vaults will be free of cracks and other structural deficiencies upon delivery.

6. DIMENSIONS AND TOLERANCES

6.1 Dimensions shall be in accordance with Appendix A of this specification.

6.2 Dimensions other than those in Appendix A may be specified for specific purposes.

6.3 Tolerances will be sufficient to allow interchanging of lid assemblies, boxes and extensions from the same manufacturer.

7. INSPECTION

7.1 Successful review of the Product Information Package (PIP), as well as any future reference by SWG to the seller's part number or internal code number in any future contract or purchase, will mean only that no conflict with the specification was found, and will not relieve the seller from meeting all the requirements of this specification.

7.2 SWG retains the option to inspect the manufacture and testing of any and all materials, products or systems referenced in this specification that are sold to SWG.

7.3 SWG will make appropriate inspections and tests of any and all materials, products or systems supplied to this specification. SWG will have the right, at their option, to reject any material which fails to conform to this specification. Any such rejection may take place at the manufacturer's facility; the supplier's warehouse or any subsequent delivery location, before or after SWG assumes possession. Notice of the rejection will be made promptly to the supplier by SWG. The defective product will be replaced or returned for credit at the manufacturer's expense.

7. INSPECTION (Cont'd)

7.4 Any changes in the manufacturing of previously approved materials, products or systems described in this material specification for sale to SWG, must be approved by SWG's Engineering Staff. **Failure to obtain SWG's approval may be cause for rejection and disqualification as an approved supplier.**

8. CERTIFICATION

The manufacturer's or supplier's certification will be furnished to SWG. This certification shall state that samples representing each lot have been manufactured, tested and inspected in accordance with this specification and that all requirements have been met. When requested or specified in the purchase order or contract, a report of test results will be provided.

Upon the request of Southwest, the certification of an independent third party indicating conformance to the specification may be considered at Southwest's expense.

9. SAFETY DATA SHEETS

In accordance with law, the seller will supply Safety Data Sheets for all applicable items supplied under this specification to the following:

1) The Receiving Location
2) Engineering Staff
3) Southwest Gas Corporation
Corporate Safety
Mail Station LVA-120
P.O. Box 98510
Las Vegas, NV 89193-8510

10. PRODUCT MARKING

The following will be marked on the vault:

- Manufacturer's name
- Product description
- Lot number or equivalent

11. PACKAGING AND PACKAGE MARKING

All products covered in this specification will be packaged in a manner to prevent damage during transportation and storage.

12. STOCK CLASSIFICATION DESCRIPTION

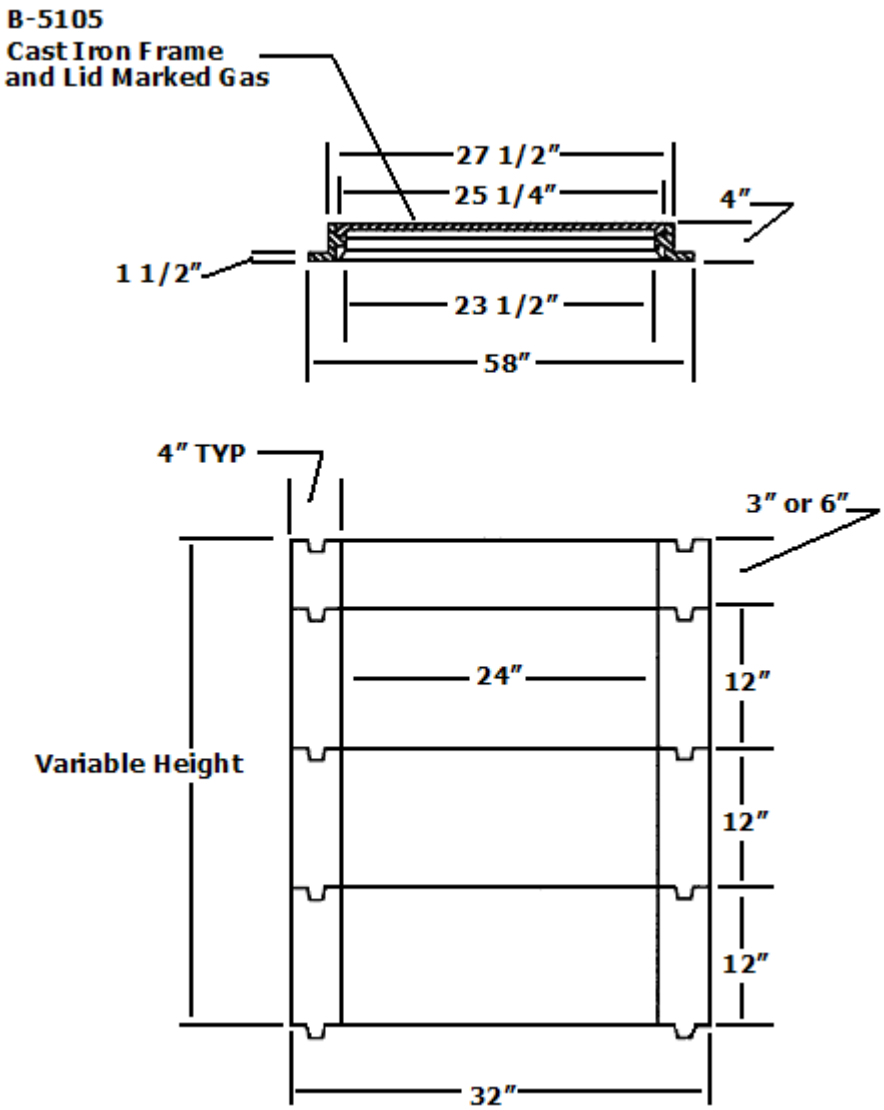
VAULT, GALVANIZED COVER, (MANUFACTURER NAME), H-20 LOADING, (SIZE),

VAULT, (BOTTOM, EXTENSION [RISER]), (MANUFACTURER NAME), (ANY SPECIAL REQUIREMENTS SUCH AS "WITH KNOCKOUTS"), (SIZE).

VAULT, MANHOLE TYPE, _____ (TOP, BOTTOM OR EXTENSION), _____ (SIZE) DIAMETER, H-20-44 LOAD CARRYING, _____ (ANY SPECIAL REQUIREMENTS).

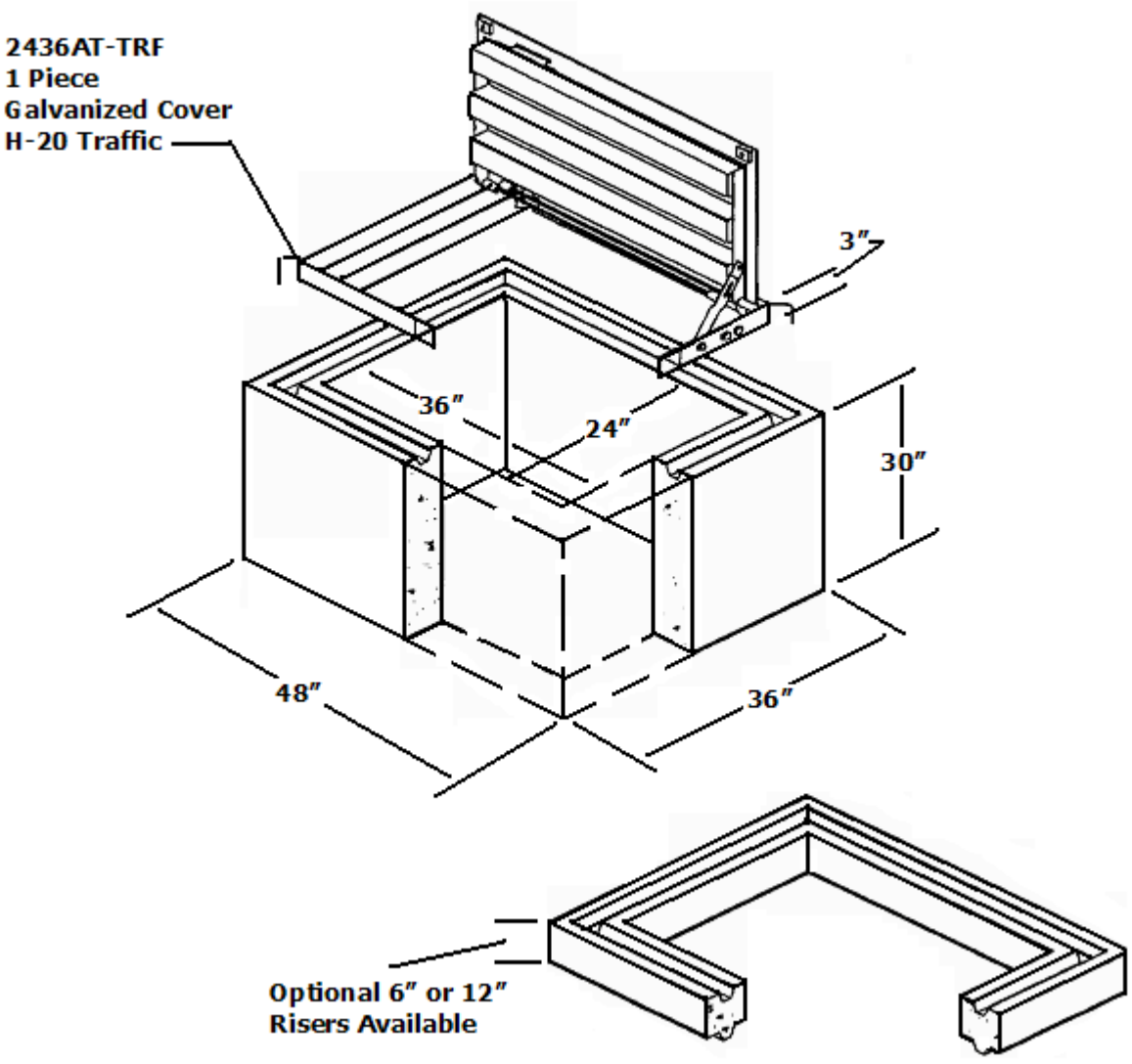
APPENDIX A

24" DIAMETER VAULT

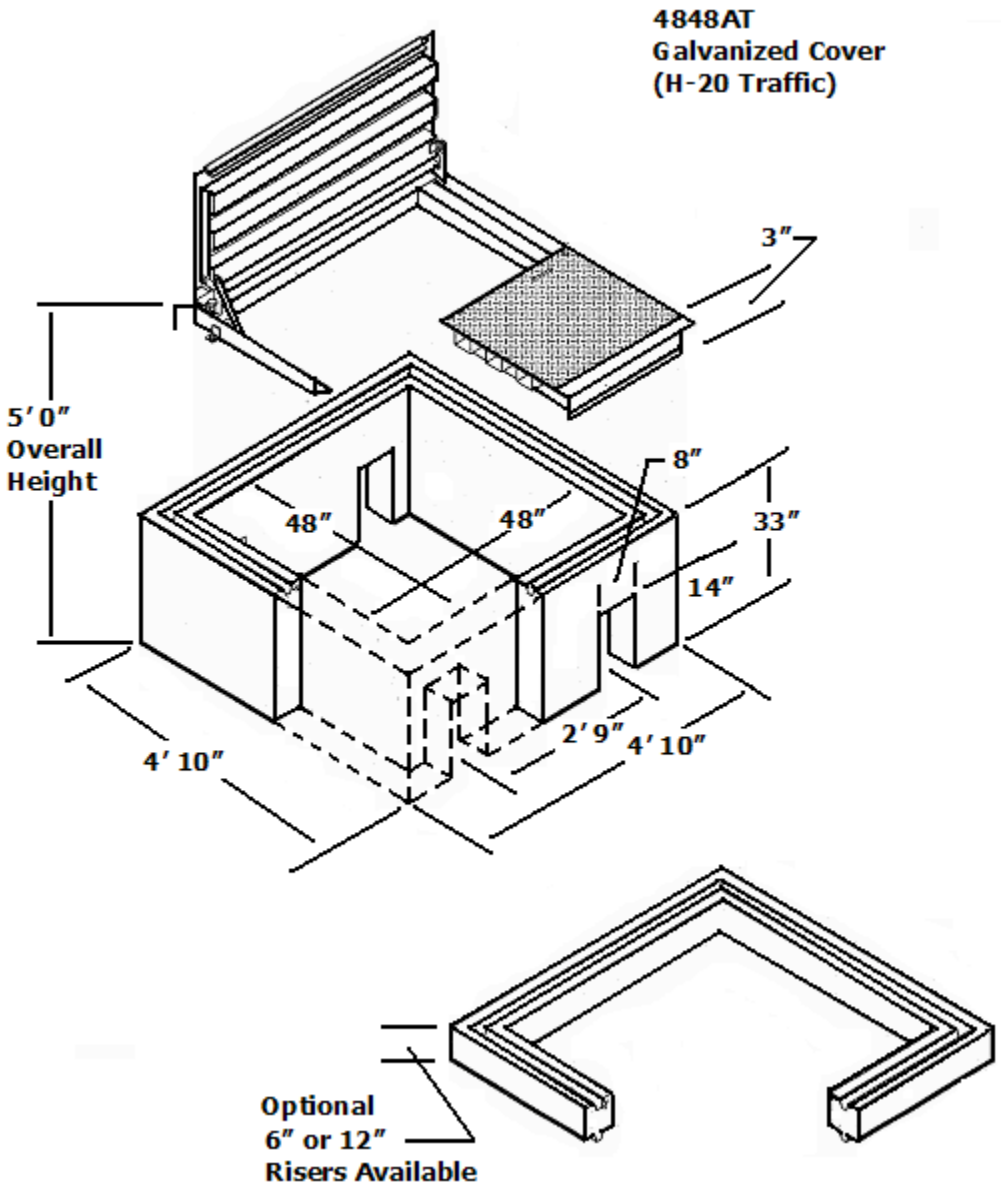


APPENDIX A
(Cont'd)

REGULATOR VAULT
24" × 36"



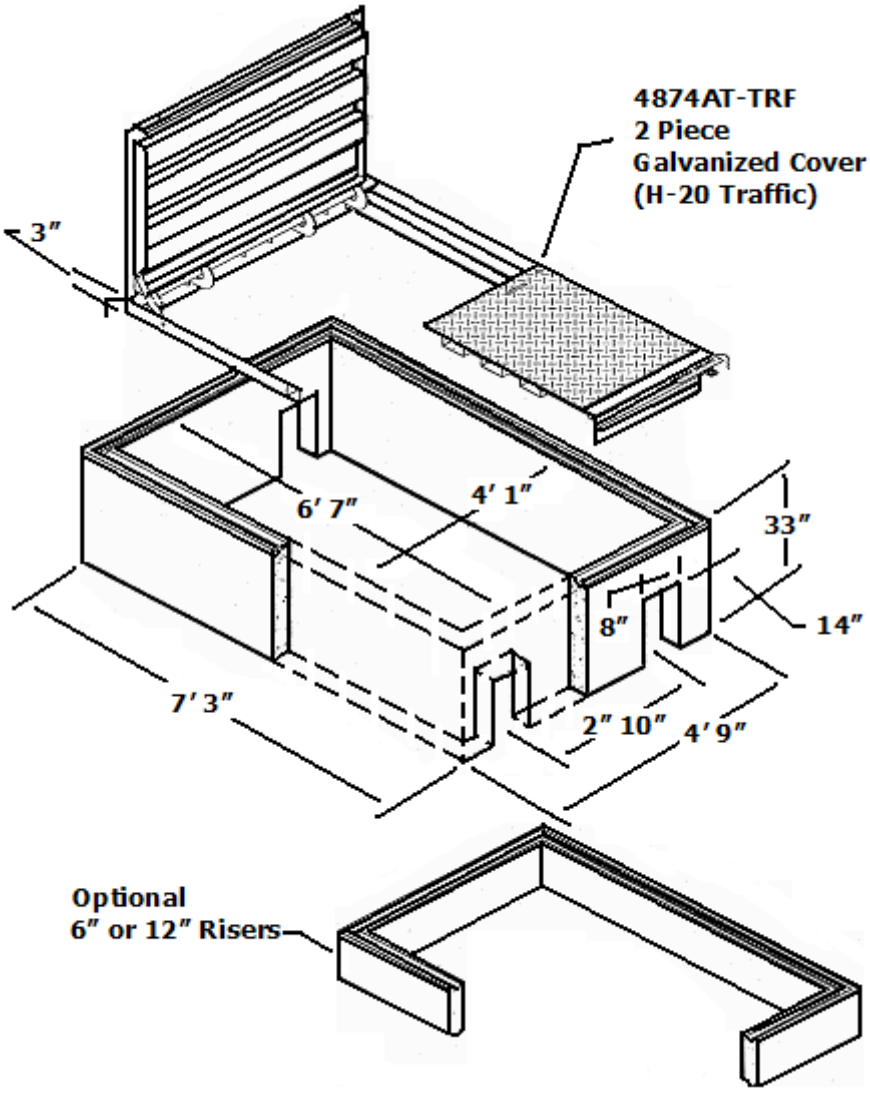
APPENDIX A
(Cont'd)
REGULATOR VAULT
48" × 48"



APPENDIX A
(Cont'd)

KNOCKOUTS, OPENINGS, HARDWARE, ETC. PER SOUTHWEST GAS SPECIFICATIONS.

REGULATOR VAULT
49" × 78"



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APPENDIX A
(Cont')
REGULATOR VAULT
54" × 102"