



State of Utah

JON M. HUNTSMAN, JR.  
Governor

GARY R. HERBERT  
Lieutenant Governor

Department of Administrative Services

KIMBERLY K. HOOD  
Executive Director

Division of Facilities Construction and Management

DAVID G. BUXTON  
Director

## ADDENDUM #5

Date: March 28, 2008

		<u>Contact</u>	<u>fax</u>
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	CSM Construction	D Noorda	801-280-2813
	Broderick / Henderson		801-225-4697
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	CK Construction	Ed Hall	801-732-8956
	Continental Eng. / Const.	Brian Bagnell	801-484-4040
	Clear Const, LLC	Jordan Boyer	801-606-7757

From: Vic Middleton, Project Manager, DFCM

Reference: Greendale Maintenance Station Replacement  
Utah Department of Transportation – Daggett County, Utah  
DFCM Project No. 07029900

Subject: **Addendum No. 5**

Pages	Addendum	2	pages
	Revised Project Schedule	1	page
	<u>Architect’s Addendum</u>	<u>62</u>	<u>pages</u>
	Total	65	pages

**Note: This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to Disqualification.**

1.1 **SCHEDULE CHANGES** – There are changes to the project schedule.

Addendum Deadline – **Wednesday, April 2, 2008 at 2:00 PM**

Bids and Bid Bonds Due – **Wednesday, April 9, 2008 at 3:00 PM**

Sub-Contractors Lists Due – **Thursday, April 10, 2008 at 3:00 PM**



**1.2 GENERAL – The 2008 Utah Legislature passed SB 220 entitled: "Cause of Action for Defective Construction." The Governor of the State of Utah has signed the bill. The bill becomes effective 60 days after the close of the 2008 Legislative General Session. While we contend that SB220 should only be potentially applicable to a contract issued after the effective date of said bill, this is to clarify that for purposes of this contract, regardless of the execution or effective dates of this contract, the status of Utah Law and remedies available to the State of Utah and DFCM, as it relates to any matter referred to or affected by said SB220, shall be the Utah law in effect at the time of the issuance of this Addendum..**



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

**Division of Facilities Construction and Management**

**DFCM**

**PROJECT SCHEDULE - REVISED  
PER ADDENDUM NO. 5 DATED MARCH 28, 2008**

<b>PROJECT NAME: GREENDALE MAINTENANCE STATION REPLACEMENT</b>				
<b>UTAH DEPARTMENT OF TRANSPORTATION – DAGGETT COUNTY, UTAH</b>				
<b>DFCM PROJECT # 07029900</b>				
<b>Event</b>	<b>Day</b>	<b>Date</b>	<b>Time</b>	<b>Place</b>
Bidding Documents Available	Tuesday	February 5, 2008	3:00 PM	DFCM 4110 State Office Bldg SLC, UT and the DFCM web site *
<b>Mandatory Pre-bid Site Meeting</b>	Wednesday	February 20, 2008	11:00 AM	Existing Greendale UDOT Shop Refer to directions in Notice to Contractors
Last Day to Submit Questions	Friday	March 14, 2008	2:00 PM	Vic Middleton – DFCM E-mail vmiddlet@utah.gov Fax 801-538-3267
<b>Addendum Deadline (exception for bid delays)</b>	<b>Wednesday</b>	<b>April 2, 2008</b>	<b>2:00 PM</b>	DFCM web site *
<b>Prime Contractors Turn In Bid and Bid Bond</b>	<b>Wednesday</b>	<b>April 9, 2008</b>	<b>3:00 PM</b>	<b>DFCM</b> <b>4110 State Office Bldg</b> <b>SLC, UT</b>
<b>Sub-contractor List Due</b>	<b>Thursday</b>	<b>April 10, 2008</b>	<b>3:00 PM</b>	<b>DFCM</b> <b>4110 State Office Bldg</b> <b>SLC, UT</b> <b>Fax 801-538-3677</b>
Substantial Completion Date	Friday	November 14, 2008		

\* NOTE: DFCM's web site address is <http://dfcm.utah.gov>



## addendum 5

DATE: March 27, 2008

DFCM Project No. 07029900  
Archiiplex Group Project No. 0708.01

### **ADDENDUM NO. 5 to the Contract Documents for the Construction of UDOT Maintenance Station #3437A, Greendale, Utah.**

The contents of this addendum supersede the information contained in the original Contract Documents and are hereby incorporated therein. Unless otherwise so stated, any changes herein offset only the specific drawings, words, or paragraphs mentioned, and the balance of the drawings and specifications remain in full force.

#### **A. DESCRIPTION OF ADDENDUM ITEMS:**

##### **1. Specifications:**

- a. Section 08710: See attached revised Hardware Schedule.
- b. Section 13100: See attached specification. Clarified the responsibilities for the General Contractor and the State of Utah. In brief, the General Contractor is responsible to provide a complete fuel island and system facility. The State of Utah will be responsible for the existing fuel tank removal. The State of Utah will provide the card reader equipment.
- c. Section 13125.1.4.F.2: Wall Assemblies R-Value Shall be R-19.
- d. Section 13125.2.3.4 Revise to read: Architectural wall panel, 36" wide, 24 Gauge minimum or thicker as necessary for structural loading requirements, with ribs at 12" o.c. with exposed fasteners at 12" o.c. horizontal or less as necessary for structural loadings. Metallic Building Company "PBR" wall panel or approved equal.

##### **2. Drawing Clarifications:**

- a. Sheet AD101:
  - i. Lead paint abatement is going to consist of removal and disposal of the wall and roof panels. It is the general contractor's responsibility for demolition of the steel frame, concrete and interior walls, etc.
- b. Sheet AE101:
  - i. Storage Area 102: Contractor to provide Adjustable, plastic laminate shelving, on 6" concrete pad, along west wall adjacent to grid 2A. See



attached Details A5 & B5/AE502.

c. Sheet AE701:

- i. A2/B2 Fuel Island Plan: Contractor to provide the fuel tank, the pumps and the conduits necessary for a completed project including those to the card reader. The only element to be provided separately by the fuel network is the card reader and associated monitoring/tracking device. The card reader will be installed inside a shelter provided by and constructed on the fuel island by the General Contractor. The monitoring device is to be installed inside the building, in the office area. See attached revise Fuel Island Plan.

d. Sheet E201:

- i. Delete the two L3 fixtures in the Storage Room and replace with one 8-ft fixture, L1 fed from the same circuit, A-7. Install the L1 at the same height as the lights in the repair garage.

**B. ATTACHMENTS:**

Specification Section 08710-1 – Hardware Schedule.

Specification Section 13100 – Fuel Island Requirements – Add# 5

Detail A2/AE701

Detail B2/AE702

Detail A5/AE502

Detail B5/AE502



## addendum 5

DATE: March 27, 2008

DFCM Project No. 07029900  
Archiiplex Group Project No. 0708.01

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Specification Section 08710-1 – Hardware Schedule.

Specification Section 13100 – Fuel Island Requirements – Add# 5

Detail A2/AE701

Detail B2/AE702

Detail A5/AE502

Detail B5/AE502

SECTION 08710 - DOOR HARDWARE –ADD.#5

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes items known commercially as finish or door hardware that are required for swing doors, except special types of unique hardware specified in the same sections as the door frames on which they are installed.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 6 Section "Interior Architectural Woodwork" for cabinet hardware.
  - 2. Division 8 Section "Standard Steel Doors and Frames" for silencers integral with hollow metal frames.
- C. Products furnished but not installed under this Section include:
  - 1. Cylinders for locks on entrance doors.
  - 2. Final replacement cores and keys to be installed by End User.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.
- B. Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
    - a. Type, style, function, size, and finish of each hardware item.
    - b. Name and manufacturer of each item.
    - c. Fastenings and other pertinent information.
    - d. Location of each hardware set cross referenced to indications on Drawings both on floor plans and in door and frame schedule.
    - e. Explanation of all abbreviations, symbols, and codes contained in schedule.
    - f. Mounting locations for hardware.
    - g. Door and frame sizes and materials.
    - h. Keying information.
  - 2. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other

information essential to the coordinated review of schedule.

3. Keying Schedule: Submit separate detailed schedule indicating clearly how the End User's final instructions on keying of locks has been fulfilled.

- D. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

#### 1.4 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single hardware supplier.

#### 1.5 PRODUCT HANDLING

- A. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- B. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).

#### 1.6 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for End User's continued adjustment, maintenance, and removal and replacement of door hardware.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Butts and Hinges:

- a. Hager Hinge Co.
- b. H. Soss & Company.
- c. Stanley Hardware, Div. Stanley Works.
- d. Mckinney
- e. Or, pre-approved equal.

2. Cylinders and Locks:

- a. Best Lock Corp.
- b. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
- c. Falcon Lock Co.
- d. Sargent Manufacturing Company.
- e. Schlage Lock, Div. Ingersoll-Rand Door Hardware Group.
- f. Yale Security Inc.
- g. Hagar
- h. Hadrian Metal Lockers
- i. Brad Steele & Associates

- j. Or, pre-approved equal.
- 3. Overhead Closers:
  - a. Dorma Door Controls International.
  - b. LCN, Div. Ingersoll-Rand Door Hardware Group.
  - c. Monarch Hardware & Mfg. Co., Div Newman Tonks, Inc.
  - d. Rixson-Firemark, Div. Yale Security Inc.
  - e. Sargent Manufacturing Company.
  - f. Russwin
  - g. Hagar
  - h. Or, pre-approved equal.
- 4. Door Trim Units (Kickplates):
  - a. Baldwin Hardware Corp.
  - b. Builders Brass Works Corp.
  - c. Hager Hinge Co.
  - d. H. B. Ives, A Harrow Company.
  - e. Triangle Brass Manufacturing Company (Trimco).
  - f. Quality
  - g. Or, pre-approved equal.
- 5. Door Stripping and Seals:
  - a. Hager Hinge Co.
  - b. National Guard Products, Inc.
  - c. Pemko Manufacturing Co., Inc.
  - d. Reese Enterprises, Inc.
  - e. Zero International, Inc.
  - f. Ultra
  - g. Or, pre-approved equal.
- 6. Thresholds:
  - a. Hager Hinge Co.
  - b. National Guard Products, Inc.
  - c. Pemko Manufacturing Co., Inc.
  - d. Reese Enterprises, Inc.
  - e. Zero International, Inc.
  - f. Ultra
  - g. Or, pre-approved equal.

## 2.2 SCHEDULED HARDWARE

- A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware are indicated in the "Hardware Schedule" at the end of this Section. Products are identified by using hardware designation numbers of the following:
  - 1. Manufacturer's Product Designations: The product designation and name of one manufacturer are listed for each hardware type required for the purpose of establishing minimum requirements. Provide either the product designated or, where more than one manufacturer is specified under the Article "Manufacturers" in Part 2 for each hardware type, the comparable product of one of the other manufacturers that complies with requirements.

### 2.3 MATERIALS AND FABRICATION

- A. Manufacturer's Name Plate: Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.
  - 1. Manufacturer's identification will be permitted on rim of lock cylinders only.
- B. Base Metals: Produce hardware units of basic metal and forming method indicated using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units for finish designations indicated.
- C. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- D. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
- E. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

### 2.4 HINGES, BUTTS, AND PIVOTS

- A. Templates: Provide only template-produced units.
- B. Screws: Provide Phillips flat-head screws complying with the following requirements:
  - 1. For metal doors and frames install machine screws into drilled and tapped holes.
  - 2. Finish screw heads to match surface of hinges or pivots.
- C. Hinge Pins: Non-removable pins.
  - 1. Tips: Flat button and matching plug, finished to match leaves.
- D. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90 inches or less in height and one additional hinge for each 30 inches of additional height.

### 2.5 LOCK CYLINDERS AND KEYING

- A. Review the keying system with the Owner and provide the type required (master, grandmaster or great-grandmaster), either new or integrated with Owner's existing system.
- B. Equip locks with cylinders for interchangeable-core pin tumbler inserts. Furnish only temporary inserts for the construction period, and remove these when directed. Final replacement cores and keys to be installed by End User.
- C. Metals: Construct lock cylinder parts from brass or bronze, stainless steel, or nickel silver.

- D. Comply with End User's instructions for masterkeying and, except as otherwise indicated, provide individual change key for each lock that is not designated to be keyed alike with a group of related locks.
  - 1. Permanently inscribe each key with number of lock that identifies cylinder manufacturer's key symbol, and notation, "DO NOT DUPLICATE."
- E. Key Material: Provide keys of nickel silver only.
- F. Key Quantity: Furnish 3 change keys for each lock, 5 master keys for each master system, and 5 grandmaster keys for each grandmaster system.
  - 1. Furnish one extra blank for each lock.
  - 2. Deliver keys to Owner.

## 2.6 KEY CONTROL SYSTEM

- A. Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150 percent of the number of locks required for the Project.
  - 1. Provide complete cross index system set up by key control manufacturer, and place keys on markers and hooks in the cabinet as determined by the final key schedule.
  - 2. Provide hinged-panel type cabinet for wall mounting.

## 2.7 LOCKS, LATCHES, AND BOLTS

- A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.
  - 1. Provide flat lip strikes for locks with 3-piece, antifriction latchbolts as recommended by manufacturer.
  - 2. Provide recess type top strikes for bolts locking into head frames, unless otherwise indicated.
  - 3. Provide dust-proof strikes for foot bolts, except where special threshold construction provides nonrecessed strike for bolt.
  - 4. Provide roller type strikes where recommended by manufacturer of the latch and lock units.
- B. Lock Throw: Provide 5/8-inch minimum throw of latch on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.
  - 1. Provide 1/2-inch minimum throw of latch for other bored and preassembled types of locks and 3/4-inch minimum throw of latch for mortise locks. Provide 1-inch minimum throw for all dead bolts.
- C. Exit Device Dogging: Equip the units with keyed dogging device to keep the latch bolt retracted, when engaged.
- D. Rabbeted Doors: Where rabbeted door stiles are indicated, provide special rabbeted front on lock and latch units and bolts.

## 2.8 CLOSERS AND DOOR CONTROL DEVICES

- A. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit depending on size of door, exposure to weather, and anticipated frequency of use.
  - 1. Provide parallel arms for all overhead closers, except as otherwise indicated.
  - 2. Provide metal enclosure plate.
  - 3. Color & finish of all exposed surfaces to match and to be selected by Architect from manufacturers standard colors.
- B. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1 provisions for door opening force and delayed action closing.
- C. Provide grey resilient parts for exposed bumpers.

## 2.9 DOOR TRIM UNITS

- A. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine screws or self-tapping screws.
- B. Fabricate protection plates not more than 1-1/2 inches less than door width on hinge side and not more than 1/2 inch less than door width on pull side by height indicated.
  - 1. Metal Plates: Stainless steel, 0.050 inch (U.S. 18 gage).

## 2.10 WEATHERSTRIPPING AND SEALS

- A. General: Provide continuous weatherstripping on exterior doors. Provide noncorrosive fasteners.
- B. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by manufacturer.
- C. Weatherstripping at Jambs and Heads: Provide bumper-type resilient insert and metal retainer strips, surface applied unless shown as mortised or semimortised, and of following metal, finish, and resilient bumper material:
  - 1. Extruded aluminum with clear anodized finish as selected from manufacturer's standard color range, 0.062-inch minimum thickness of main walls and flanges.
  - 2. Sponge neoprene conforming to MIL R 6130, Class II (Closed Cell).
    - a. Grade C (67 deg F to 170 deg F, low temperature).
- D. Weatherstripping at Door Bottoms: Provide threshold consisting of contact-type resilient insert and metal housing of design and size shown and of following metal, finish, and resilient seal strip:
  - 1. Extruded aluminum with clear anodized finish as selected from manufacturer's standard color range, 0.062-inch minimum thickness of main walls and flanges.
  - 2. Solid neoprene wiper or sweep seal complying with MIL R 6855, Class II, Grade 40.

## 2.11 THRESHOLDS

- A. General: Except as otherwise indicated, provide standard metal threshold unit of type and profile as shown or scheduled. Width of threshold shall match width of door frame.

- B. Exterior Hinged or Pivoted Doors: Provide units not less than 3 inches wide, formed to accommodate change in floor elevation where indicated, fabricated to accommodate door hardware and to fit door frames, and as follows:
  - 1. For out-swinging doors provide thermal barrier saddle type with black rigid vinyl between extrusions.

## 2.12 HARDWARE FINISHES

- A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets (or push-pull units if no latch or lock sets).
- B. Provide finishes that match those established by BHMA or, if none established, match the Architect's sample.
- C. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- D. Provide protective lacquer coating on all exposed hardware finishes of brass, bronze, and aluminum, except as otherwise indicated. The suffix "-NL" is used with standard finish designations to indicate "no lacquer."
- E. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
  - 1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers."
- F. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations

to the extent installation requirements are not otherwise indicated.

**3.2 ADJUSTING, CLEANING, AND DEMONSTRATING**

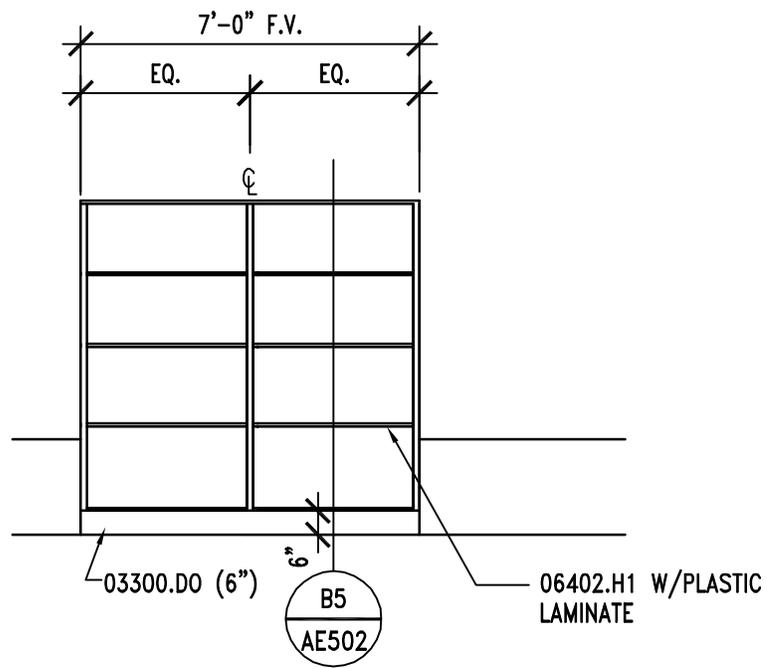
- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
  - 1. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Instruct End User's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.
- D. Six-Month Adjustment: Approximately six months after the date of Substantial Completion, the Installer, accompanied by representatives of the manufacturers of latchsets and locksets and of door control devices, and of other major hardware suppliers, shall return to the Project to perform the following work:
  - 1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
  - 2. Consult with and instruct End User's personnel in recommended additions to the maintenance procedures.
  - 3. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.
  - 4. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

**3.3 See Hardware Schedule, next page:**

**3.3 HARDWARE SCHEDULE**

- A. General: Provide hardware for each door to comply with requirements of Section "Door Hardware," hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.
1. Hardware sets indicate quantity, item, manufacturer and product designation, size and finish or color, as applicable.
  2. Provide hardware with US26D finish, unless indicated otherwise.
  3. Lockset Designs: Provide the lockset designs designated in the Hardware Schedule or, if by another manufacturer, one that matches those designated:
  4. Provide locks with interchangeable cores per requirements of this section.
- B. Hardware Set No. 1: Door D101A, D101G
- |         |              |         |                      |       |
|---------|--------------|---------|----------------------|-------|
| 1.5 pr. | Hinges       | Stanley | FBB199 4.5 x 4.5 NRP | US32D |
| 1       | Lock         | Yale    | AU 5407L             | US26D |
| 1       | Closer       | LCN     | 4041                 | ALUM  |
| 1       | Kickplate    | Quality | 8 x 1.5 LDW          | US32D |
| 1       | Stop         | Quality | 119ES                | US26D |
| 1       | Threshold    | Pemko   | 169A                 | ALUM  |
| 1       | Door Sweep   | Pemko   | 315CN                | ALUM  |
| 1 Set   | Weatherstrip | Pemko   | 303AV                | ALUM  |
- C. Hardware Set No. 2: Door D104A
- |         |           |         |                  |       |
|---------|-----------|---------|------------------|-------|
| 1.5 pr. | Hinges    | Stanley | FBB179 4.5 x 4.5 | US26D |
| 1       | Lock      | Yale    | AU5407L          | US26D |
| 1       | Stop      | Quality | 307              | US26D |
| 3       | Silencers |         |                  |       |
| 1       | Kickplate | Quality | 8 x 1.5 LDW      | US32D |
- D. Hardware Set No. 3: Door D103A.
- |         |           |         |                  |       |
|---------|-----------|---------|------------------|-------|
| 1.5 pr. | Hinges    | Stanley | FBB179 4.5 x 4.5 | US26D |
| 1       | Privacy   | Yale    | AU5404L          | US26D |
| 1       | Closer    | LCN     | 4041             | ALUM  |
| 1       | Kickplate | Quality | 8 x 1.5 LDW      | US32D |
| 1       | Stop      | Quality | 307              | US26D |
| 3       | Silencers |         |                  |       |
- F. Hardware Set No. 5: Door D101B, D101C, D101D, D101E & D102F  
All hardware by door supplier.

END OF SECTION 08710



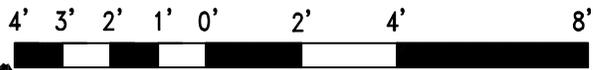
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# A5 | SHELVING ELEVATION

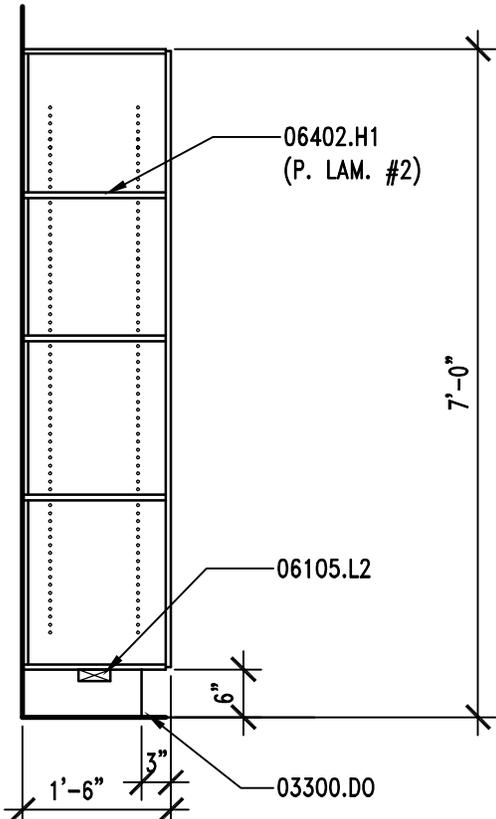
AE502

REF. AE101

SCALE: 1/4" = 1'-0"



3' 2



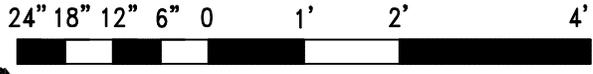
# B5 | SHELVING SECTION

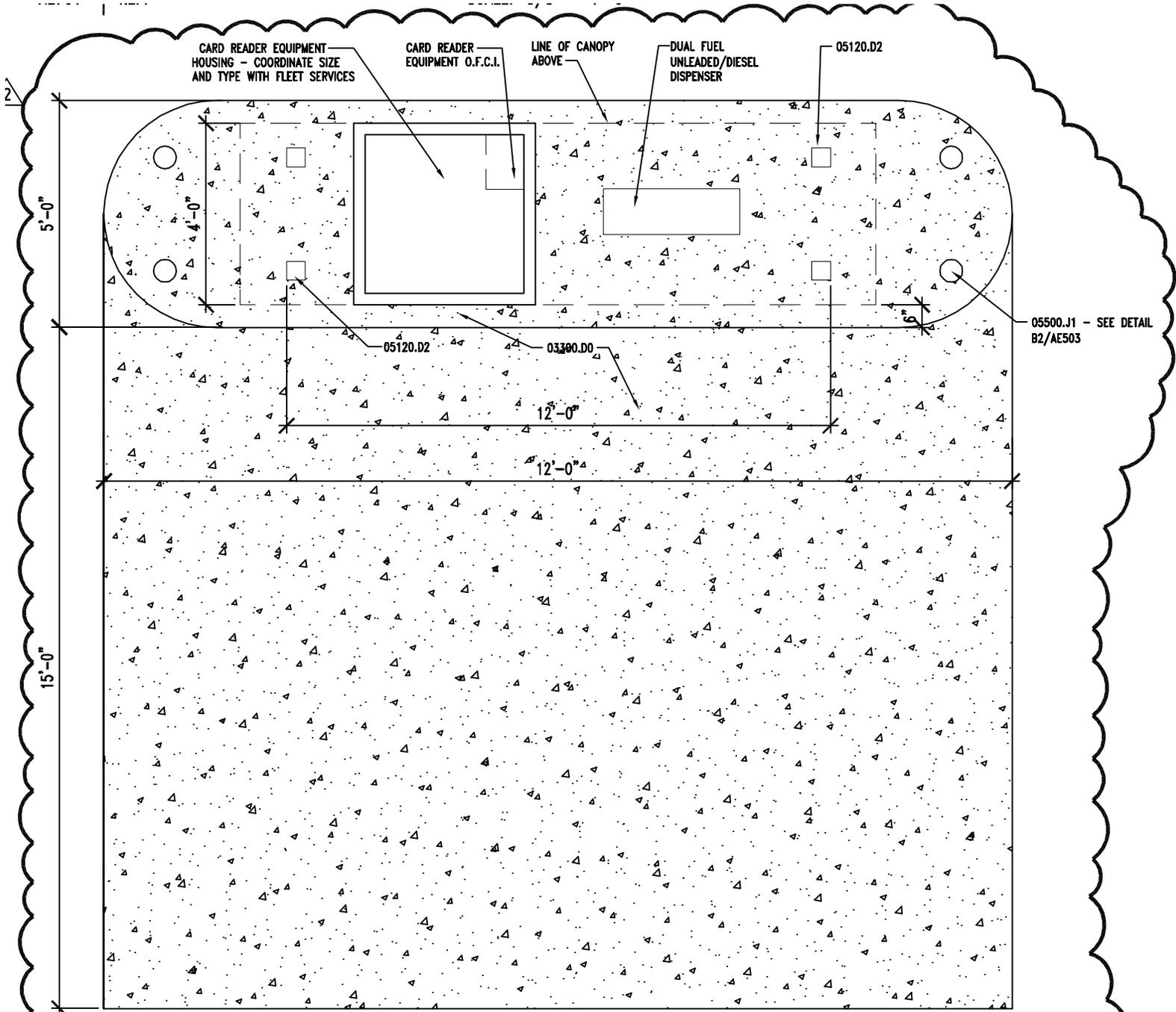
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AE502

REF. AE502

SCALE: 1/2" = 1'-0"



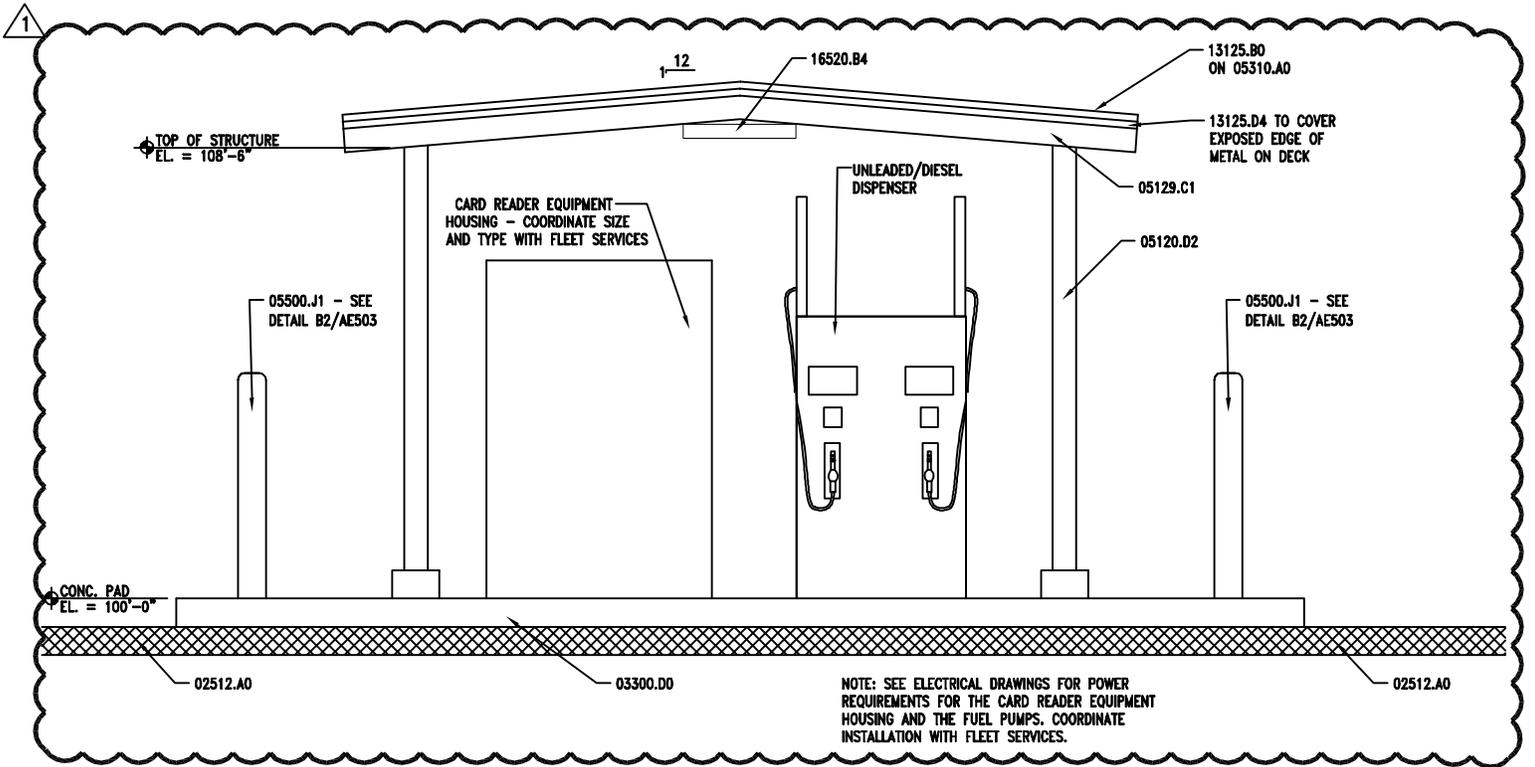


# A2 FUEL ISLAND PLAN



AE701 REF.

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



# B2 | FUEL ISLAND ELEVATION

AE701 | REF.

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

SECTION 13100 – FUEL ISLAND REQUIREMENTS – ADDENDUM NO. 5

PART I – GENERAL

1.1 PROJECT SUMMARY

- A. This Section includes the following:
- B.

1. The scope of this work is for the General Contractor to provide a completed installation of a new fueling facility and all of its required elements for a complete installation in accordance with the State of Utah Fleet Services requirements. For location see civil plans.
2. The existing fuel island overhead shed structure will be demolished by the General Contractor. Any existing fuel system components (such as the card reader) attached directly to the shed to be demolished will be carefully removed and stored for possible reuse by the State of Utah. Tank removal will be by others.
3. The General Contractor's work scope includes a completed installation some which will include the following:
  - a. A single split tank with capacity of 2,000 gallons unleaded fuel and 6,000 gallons diesel fuel. This tank to be a **Convault or equal UL 2085 fire protected Fuel Storage Tank**. All references to "Convault" within this specification are intended to be generic in nature only.
  - b. A single dispenser with a dual hose for delivery of two products providing high flow dispensing rate of 22 gallons per minute each. Hanging hardware will include: whip hoses, breakaways, swivels, nozzles and hose retractors;
  - c. Tank monitoring equipment with a dedicated circuit;
  - d. Submersible pumps and relays;
  - e. Emergency stop button located not less than twenty five feet (25') nor more than seventy five feet (75') from the fueling station equipment;
  - f. Card Reader housing to be located on fuel island;
  - g. Collision protection using bollards;
  - h. Fifteen foot wide concrete apron in front of fuel island.
4. These pages include general State of Utah installation guidelines for Fuel Island. These pages include equipment required and procedures to follow.

- B. Work by others:

1. Existing underground tank fueling system removal, including the dispenser, lines and nozzles will be the responsibility of the State of Utah.
2. The installation of the card reader unit including the fuel site controller will be the responsibility of the State of Utah. All of the related conduit and dedicated circuit electrical preparation is the responsibility of the General Contractor.

1.2 PERMITS AND APPROVALS

- A. All permits and approvals for the fueling facility are the responsibility of the General Contractor. The work is to be coordinated and approved by the State of Utah Fleet Services.
- B. All work on the fueling system must be performed by a licensed installer in accordance with the State of Utah requirements.

1.3 INSTALLATION MANUAL:  
The following pages include:

A. SCOPE

B. PERMITS AND APPROVALS

C. TANK SITE

D. FOUNDATIONS

E. TANK HANDLING

F. UNLOADING AND SETTING

G. GROUTING OF LEGS

H. ELECTRICAL

I. PIPING

J. DISPENSING APPLICATIONS

K. LIGHTNING PROTECTION INSTALLATION INSTRUCTIONS

**A. SCOPE**

1. These instructions apply to stationary, shop fabricated, aboveground, concrete encased steel tanks for the storage of stable, flammable and combustible liquids at normal atmospheric pressure. Because the tank installation is a specialized skill, it is assumed that those using these instructions will have knowledge of, and possess the skills and equipment necessary to install this type of aboveground storage tank properly and safely.
  - o **Important Note: Consult the Authorities Having Jurisdiction to insure compliance with local codes and regulations prior to carrying out any instructions given herein.**

## B. PERMITS AND APPROVALS

1. Because of the combustible and flammable nature of the hydrocarbon liquids in the Aboveground Storage Tanks (AST), they are subject to various codes, and regulations. The codes and regulations govern the fabrication, testing, shipment, installation, operation, and maintenance of the tanks. The codes and regulations may originate from local fire authorities (e.g. Fire Marshals), local building jurisdictions (e.g. city or county building officials), state laws and regulations (e.g. Air Resource Board), Federal agencies (e.g. Environmental Protection Agency) and regional and national codes (e.g. National Fire Protection Association (NFPA) or Uniform Fire Code (UFC).
2. Installation, operation and maintenance of the tanks must be carried in accordance with the applicable codes and regulations. These aboveground storage tanks are intended for installation in accordance with NFPA 30, 30A, and 31 and UFC Appendix II-F.
3. System installation starts with obtaining the required state and local permits.
4. Typical approval process and documents needed are shown in the **Table 1, Product Description**. Specific local or jurisdictional requirements may slightly differ for different locations, but the list is a good reference and a guide for your permit requirements.
5. State and local permit applications must be made with the current forms.
6. Zoning permits may also be required.

## C. TANK SITE

1. Tank location and foundation to comply with the current edition of the Uniform Building Code, UBC, and all applicable local codes and ordinances. For sites subject to ground frost, the foundation slab design should be reviewed to take into consideration frost line requirements.
2. The tanks should be located a minimum of 1/3 the height of the vault (40 feet maximum) away from down slopes - greater than 3:1, and 1/2 the height of the vault (15 feet maximum) away from up slopes smaller than 3:1.
3. Tanks located in areas subject to flooding must be protected against floatation. Flood resistant tie-down brackets are available for all tank sizes to resist floatation during complete submergence.
4. Aboveground tanks should not be located over underground utilities or directly beneath overhead power and telephone lines.
5. The tank should be protected from vandalism and accidental damage in accordance with all the applicable codes.
6. Fire department vehicle access should be provided within 150 feet of any tank.
7. The venting of a tank to a remote location must include the use of a steel pipe equal to or greater in size than the vent outlet, and the methods of supporting such piping against displacement must comply with local codes. Provide the vent piping with a slope to ensure that all condensed vapors drain back to the tank.
8. Collision protection is recommended on the sides of the tank exposed to traffic. This is generally accomplished with pipe bollards. Always check state and local codes for specific requirements. **See Figure No. 5 below** for sample installation.
  - o **NOTE: The location of each ConVault® tank is stored in the central data bank. If the tank is to be relocated to a different location, ConVault® Inc. must be properly notified to update the data bank. The product limited warranty could be voided if ConVault® is not informed of tank relocation or if tank is not reinstalled in accordance with these installation instructions. It should be noted that ConVault® Warranty is conditional on installation of tanks in accordance with ConVault® Installation Instructions. Your**

attention is specifically drawn to the tank site selection and foundations requirements.

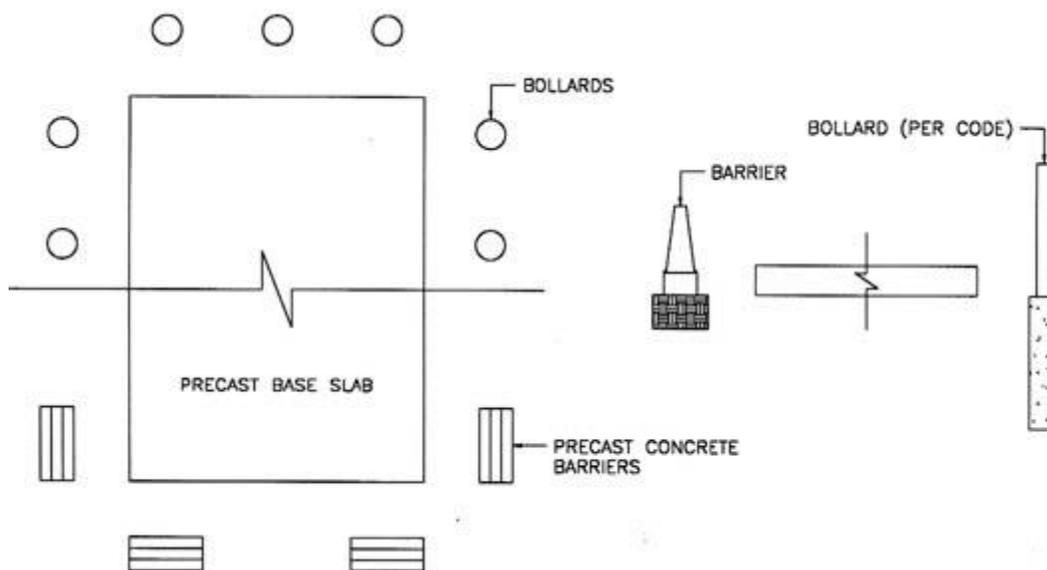
### SAMPLE BOLLARD INSTALLATION

Collision protection is recommended on sides of the tank exposed to traffic. This is generally accomplished with pipe bollards. Always check state and local codes. Sample installations are shown below:

Spacing from the tank should conform to code.

As an alternative to steel pipes, you may use precast concrete barriers. You can obtain the precast barriers from your ConVault® representative.

Figure No. 5



### D. FOUNDATIONS

1. Tank location and foundation must comply with the current edition of Uniform Building Code requirements and all the applicable local codes and ordinances.
2. An alternative to pouring the slab in the field is to purchase a precast slab from the manufacturer.
3. The foundation for the tank must be designed to support the tank plus the weight of the maximum amount of product the tank will be storing. The foundation design must also include provision for draining surface water away from the tank to minimize the risk of fuel accumulation under the tank from the overfill or spills.
4. Tanks located in areas subject to earthquake must be protected against seismic forces. Optional earthquake restraints are available. The restraints can be retrofitted to the slab should local requirements change. The restraints are mounted on the slab and are secured with anchor bolts directly into the slab. The tank feet rest in the restraints and do not require bolting directly to the tank.
5. The tank located in areas subject to hurricane must be provided with hurricane hold down

restraints.

6. The tank foundation is to sit on undisturbed earth or compacted fill, free of organic material.
7. The following minimum soil characteristics may be used if the ConVault tank is installed on a continuous solid slab which will uniformly distribute the weight of the tank and its contents to the soil:
  - o Bearing Capacity: minimum 1,000 but preferably 2,000 lb. per sq. ft.
  - o Total settlement: 1 inch maximum.
  - o Differential settlement: 1/2 inch maximum.
  - o Provide a minimum six inch (6") thick granular sub-grade, compacted and graded to a level uniform subsurface prior to the cast slab placement or pouring of the cast-in-place slab.
  - o A geological engineer should evaluate the effect of the water table and frost lines if such unusual conditions exist at the site.
  - o Soil surface under foundation should be flat within 1/16" per foot. Soil around foundation should be sloped away 1/8" per foot minimum for 5 feet.
  - o **NOTE: If Bearing pads are used under the tank legs instead of grouting, the tank foundation and slab should be designed to withstand concentrated loads under the bearing pads.**
  - o **NOTE: The above soil characteristics, foundation and slab design requirements may be revised by a qualified design engineer who would design the foundations and the slab on a site-specific basis.**
  - o **NOTE: Some Authorities Having Jurisdiction require uplift restraints for areas subject to flooding and hurricanes.**

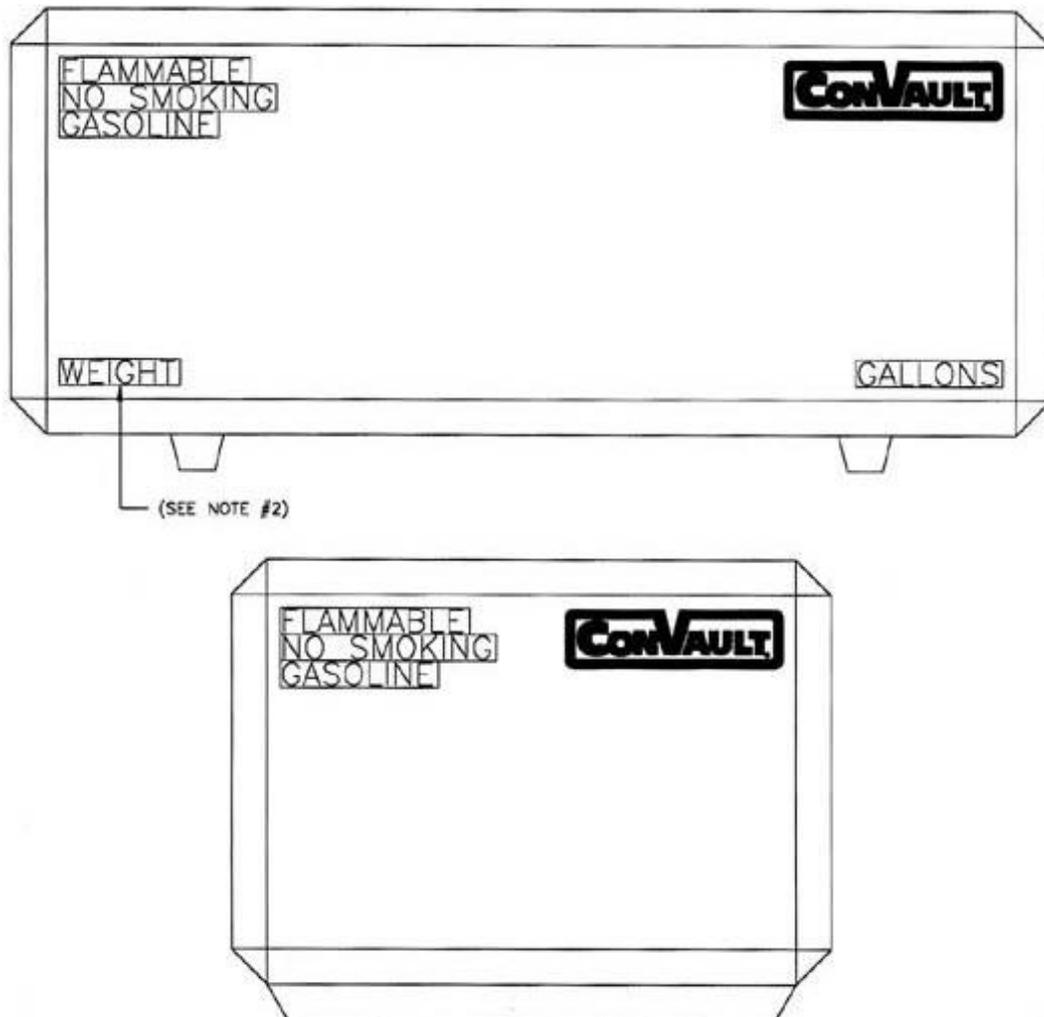
#### E. TANK HANDLING

1. DO NOT HANDLE OR INSTALL TANK WITHOUT HAVING KNOWLEDGE AND EXPERIENCE IN PROCEDURES INVOLVED WITH PROPER AND SAFE INSTALLATION OF AN ABOVEGROUND TANK USED FOR STORAGE OF STABLE, FLAMMABLE AND COMBUSTIBLE LIQUIDS. RELIANCE ON SKILLED AND PROFESSIONAL INSTALLERS IS AN IMPORTANT FACTOR IN AVOIDING DAMAGE TO TANK AND SYSTEM FAILURE.
2. Equipment required in the shipping and offloading of ConVault® aboveground storage tanks include lifting straps, nylon tie-down straps, crane, forklift, and carpet remnants strategically placed on the bevels to prevent the tie-down straps from scraping the paint loose while the tank is en-route.
3. Do not handle or move the ConVault unless it is empty. Under no circumstances should a tank containing petroleum product be moved.
  1. **Do not drop or drag the tank.**
4. If petroleum product has been introduced in the tank, **the tank must be emptied first, then may be relocated using the Department of Transportation Guidelines for transport of fuel containers.** Normally, to relocate a tank previously containing flammable liquids, the Authorities Having Jurisdiction require the tank to be cleaned and then moved according to the following guidelines:
  - o Remove the liquids from the tank.
  - o Rinse the tank three times with an approved cleaning agent.
  - o Allow sufficient time for vapors to escape from inside of the tank.
  - o Move the tank under the supervision of the Authorities Having Jurisdiction.

## F. UNLOADING AND SETTING

1. The unloading equipment and procedures are critical to setting the tank safely and without harming the people or damaging the tank.
2. **NOTE: The most important aspect of a job procedure is SAFETY. Please ensure that every step of this procedure is carried out with safety in mind, first.**
3. Tanks Weight and Dimensions.  
Please refer to Figures No. 2, 3 and 4 in **Product Description**. For actual tank weights and dimensions, please contact your ConVault distributor.
4. Equipment Required & Procedures
  - a. A crane or a forklift of sufficient capacity to safely lift and place the unit.
  - b. Slings minimum 20 feet long each and rated for the tank weight. The angles between the slings should be at least 50 degrees.
  - c. 4-way spreader.
  - d. Miscellaneous shackles, tag lines, and rigging tools.
  - e. Plan the required crane and rigging capacity to safely unload the tank.
  - f. Inspect the tank on the delivery truck prior to unloading. Report any damage in transit to the truck driver and note on the shipping ticket. If the tank is paint coated, it normally comes with two-1/2 pint, two-part touch up kits of paint. Please note that the touchup kit must be mixed prior to application.
  - g. Allow sufficient crane time for installing the load block and organizing the rigging.
  - h. During unloading and setting, allow one person in-charge to signal the crane operator. Keep people clear of the load and avoid being trapped between the load and building walls and equipment.
  - i. Make sure there is no overhead wiring to interfere with crane or boom operation. Provide sufficient room for cranes and boom trucks to off load.
  - j. Department of Transportation prohibits transportation of tanks with product and warning labels. Product and warning labels should be installed on site. If installed at the plant, they should be masked prior to shipment. Labels and decals must be placed on the tank in accordance with NFPA 709. **Figure No. 6** shows location of labels.

Figure No. 6



**NOTES:**

1. FOR BEST RESULTS, ATTACH AT 60-70 DEGREES F.
2. EMPTY WEIGHT
3. CONVAULT LOGO DECALS TO BE LOCATED IN UPPER RIGHT CORNER OF ALL SIDES (QTY 4).
4. NO SMOKING, FLAMMABLE AND "PRODUCT" TO BE LOCATED IN UPPER LEFT CORNER OF ALL SIDES (QTY 4).
5. CAPACITY DECALS TO BE LOCATED IN LOWER RIGHT CORNER OF LONG SIDES (QTY 2).
6. WEIGHT DECALS TO BE LOCATED IN LOWER LEFT CORNER OF LONG SIDES (QTY 2).
7. FILL, VENT, EMERGENCY VENT, LEAK DETECTOR TUBE, DO NOT DRILL..., CAUTION THIS TANK..., DECALS LOCATED ALONG UPPER BEVEL NEAR CORRESPONDING NIPPLE.
8. WARNING: DEATH MAY OCCUR..., DECAL TO BE LOCATED ON TOP OF TANK NEAR MANWAY IF APPLICABLE.

**G. GROUTING OF LEGS**

1. All tanks of 4,000 gallon and larger must be grouted with (non-shrink grout) or supported with alternative engineered pad interface.
2. We recommend to grout the legs of all tanks, which will provide a uniform load distribution on legs and foundations.

3. Neoprene pads may be used instead of grouting in accordance with the manufacturer's recommendations. **Also see Note under FOUNDATIONS.**

## H. ELECTRICAL

1. Electrical service and fuel piping to the pumps unit should be installed in accordance with the requirements of NEC and NFPA and local code requirements.
2. All electrical devices used with or located within twenty (20) feet of the ConVault® tank should conform to NFPA 70 Hazardous Locations. All electric conduits and wiring connected to the tank should be explosion proof and in strict accordance with NEC Class-1, Division 1 or other local standards whichever is stricter.
3. An emergency shutoff switch is required to be mounted in a location visible from the dispenser. The switch is normally mounted on a building wall or a post. The per code switch must be marked as an emergency shutoff switch.
4. **Electrical grounding** is required for flammable liquid fuel tanks. ConVault® tanks are provided with two grounding lugs welded to the nipples on tank top.
5. Pumps and all other equipment used in the hazardous area should be rated by UL or Factory Mutual, FM.

## I. PIPING

1. Piping on ConVault® tanks will mainly depend on dispensing method considered for your facilities. Several methods are suggested below. You should note that dispensing methods suggested here are schematic only and they are not detailed installation drawings. You should engage an engineer/designer to design the piping arrangement and make sure they are in accordance with the applicable codes, rules and regulations. Please also make sure you check with your Authorities Having Jurisdiction and find out which codes and regulations are applicable to your area.
2. The following illustrations are provided to show you several different dispensing methods and to help you understand how they operate.

## J. Dispensing Applications

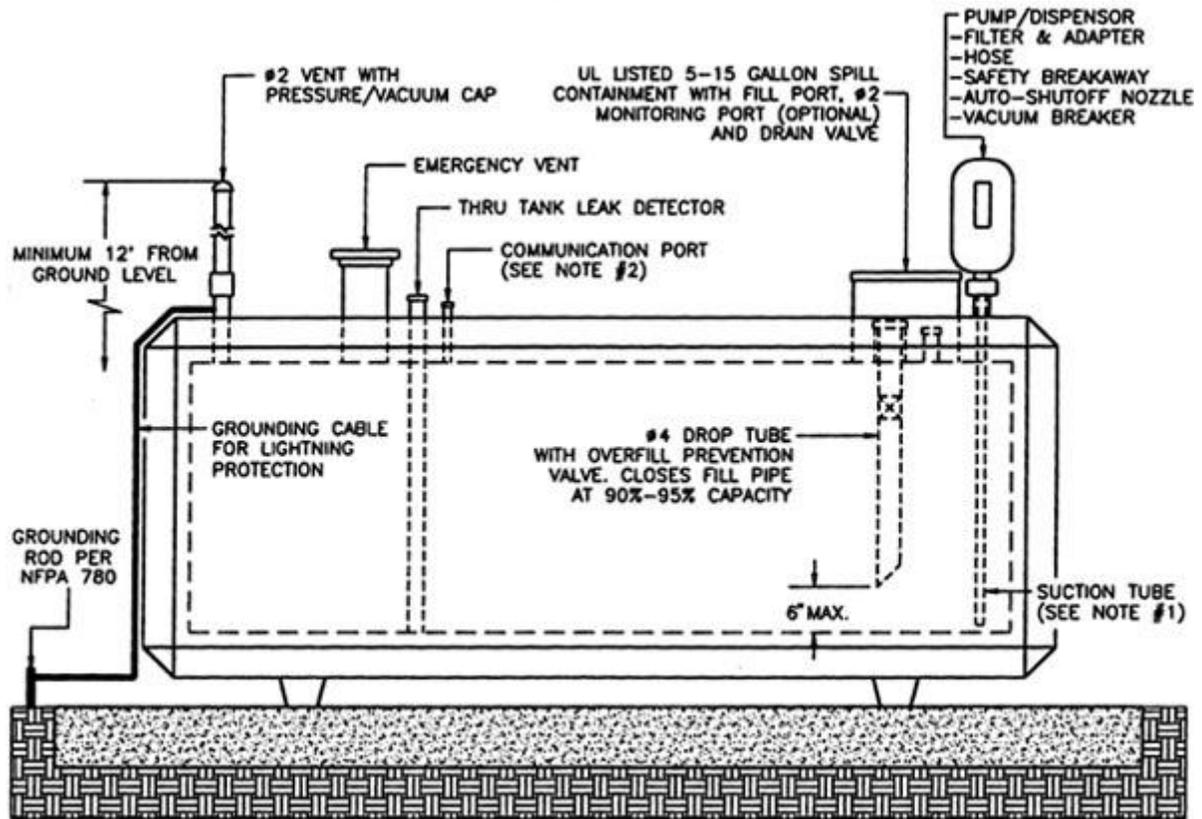
### On-Tank Suction-Type

Dispensing from the ConVault® tank system is most simply accommodated by a top of tank pump. This arrangement eliminates leaking valves and fittings. Our recommended dispensing configuration is shown in **Figure No. 7 below**. Diagram provided is for those sites, which serve the end-user's internal fleet/vehicles.

1. Fuel tank shall be located with set backs from building and property lines in accordance with state and local codes.
2. Dispensing shall be by a UL-Listed tank top pump equipped with :
  - a. vacuum breaker

- b. filter and adapter
  - c. UL-Listed fuel hose
  - d. safety breakaway valve
  - e. auto-shutoff nozzle
3. Consult local Authority Having Jurisdiction
  4. Fire extinguisher per code and cleanup kit should be provided at the site.

Figure No. 7



**NOTES:**

1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. COMMUNICATION PORT NOT NEEDED FOR DOUBLE WALL STEEL TANKS.
3. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

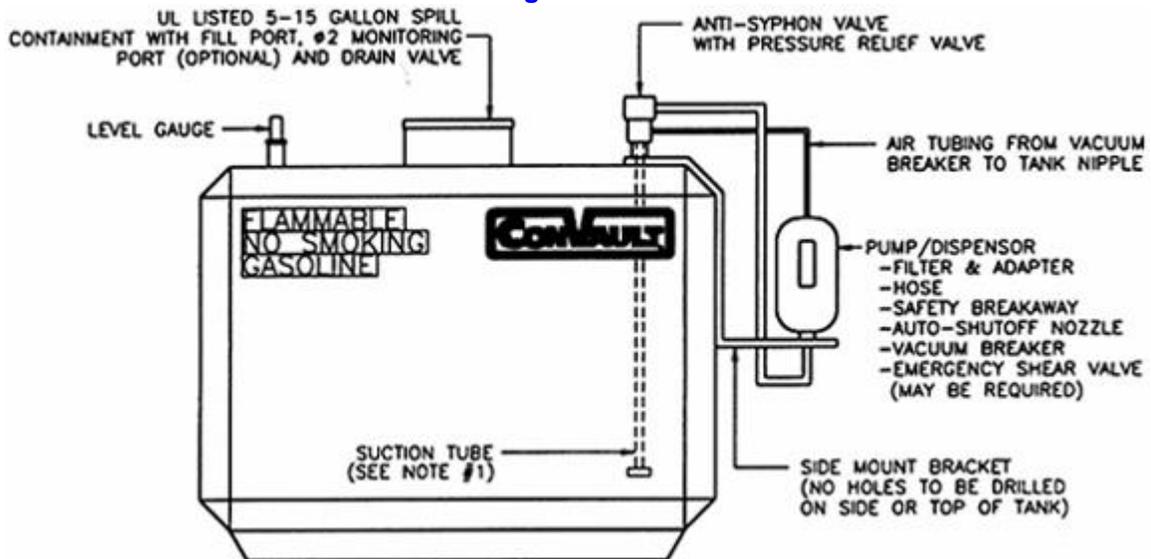
**Side Mount**

The diagram provided is recommended for the sites to dispense fuel to private user or for fleet vehicles.  
**See Figure No. 8 below.**

1. Fuel tank shall be located with setbacks from building and property lines in accordance with state and local codes.

2. Dispensing shall be by UL-Listed pump. The pump shall be equipped with the following:
  - a. Anti siphon valve with pressure relief or solenoid valve
  - b. Filter and adapter
  - c. UL-Listed fuel hose
  - d. safety breakaway valve
  - e. Auto shutoff nozzle
  - f. Emergency shear valve may be required
3. Consult local codes.
4. Fire extinguisher per code.
5. Cleanup kit should be provided at site.

Figure No. 8



**NOTES:**

1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

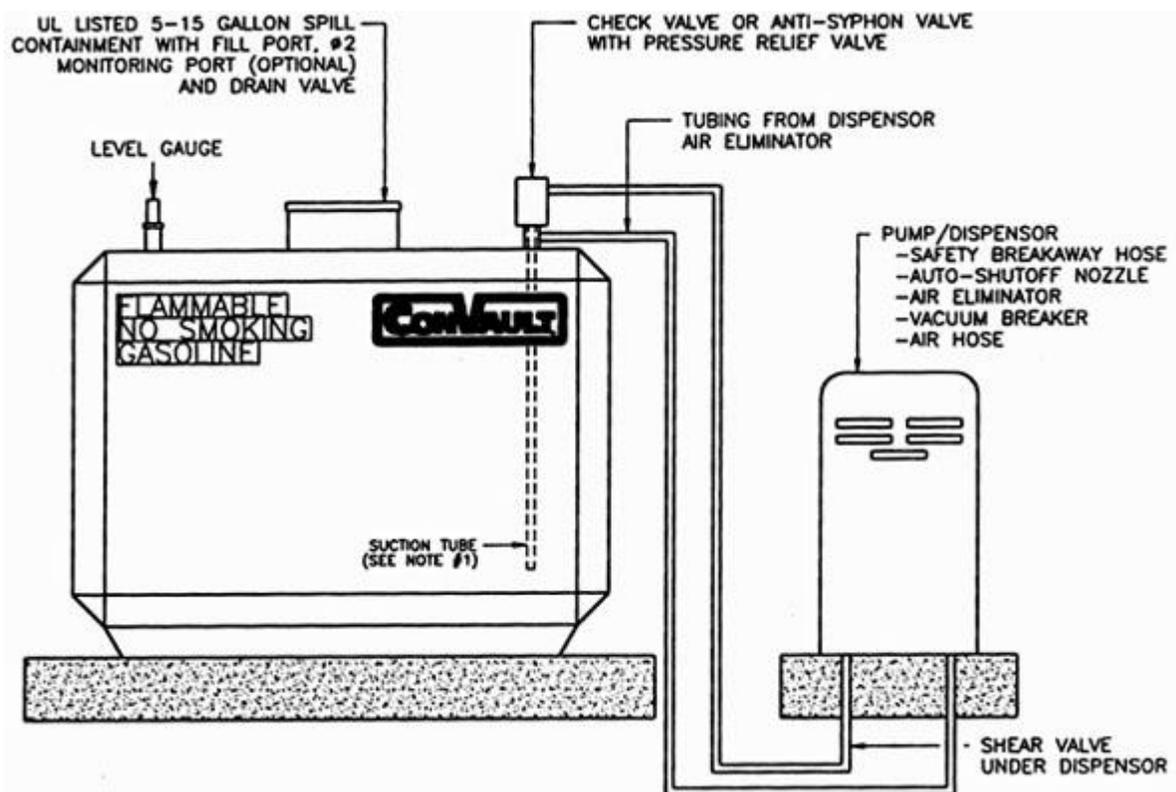
**Off-Tank Suction System**

The diagram provided is recommended for those sites authorized to either: dispense to motor vehicles for public use or fleet vehicles with high-speed dispensing accessories. See Figure No. 9 below.

1. Fuel tank shall be located with setbacks from buildings and property lines in accordance with state and local codes.

2. Dispensing shall be by an UL-Listed off-tank pump. The pump shall be equipped with:
  - a. Angle check valve or anti-siphon valve with pressure relief
  - b. Filter and adapter
  - c. UL-Listed fuel hose
  - d. Safety, breakaway valve
  - e. Auto-shutoff nozzle
  - f. Under pump emergency shear valve (if required by local code)
3. Install pressure/vacuum vent cap.
4. Install phase 1 and phase 2 recovery system (if required by the local codes).
5. Consult local codes.
6. Fire extinguisher per code, cleanup kit should be provided at the site.

Figure No. 9



**NOTES:**

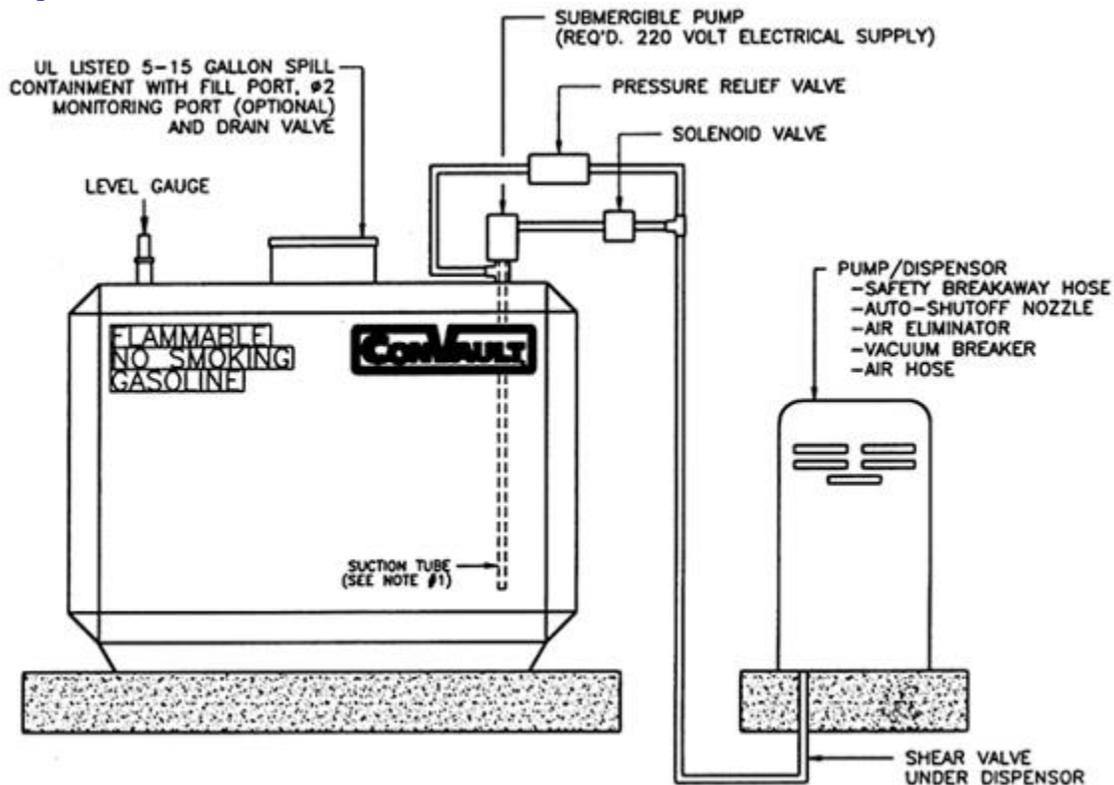
1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

### Submersible Pump

The diagram shown in **Figure No. 10 below** is recommended for those sites authorized to either: dispense to motor vehicles for public use or fleet vehicles with high-speed dispensing accessories.

1. Fuel tank shall be located with setbacks from buildings and property lines in accordance with the state, local, and fire codes.
2. Dispensing shall be by an UL-Listed submersible pump.
3. Solenoid valve with pressure relief valve.
4. Filter and adapter.
5. UL-Listed dispenser with:
  - a. Listed fuel hose
  - b. Safety, breakaway valve
  - c. Auto-shutoff nozzle
  - d. Emergency shear valve under dispensing pump may be required
6. Fire extinguisher per code, cleanup kit should be provided at the site.
7. Requires 220-Volt electric supply.
8. Consult local codes.

**Figure No. 10**



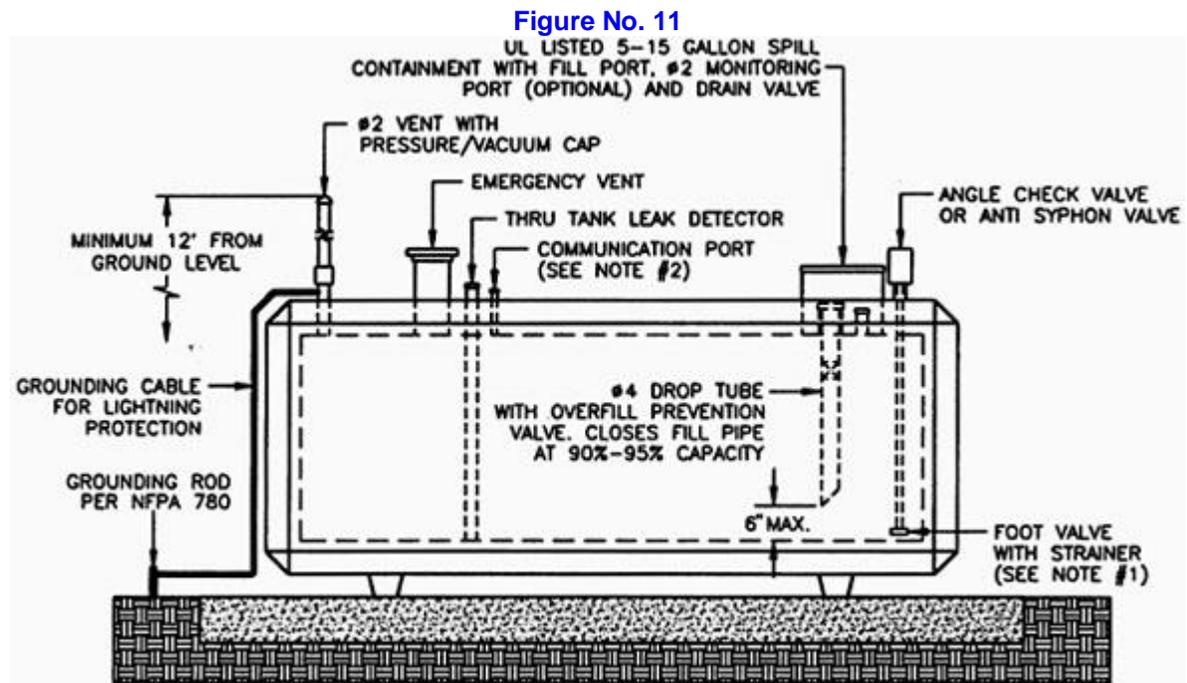
**NOTES:**

1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

**Generator Fuel Supply**

The diagrams shown in **Figure No. 11 and 12 below** are recommended for those sites utilizing a ConVault® AST to supply a generator, whether it is primary or standby in function.

1. Storage tank shall be located with setbacks from buildings and property lines in accordance with state and local codes.
2. Recommended piping shall include safety valves as follows:
  - a. Angle check valve with pressure relief or foot valve and strainer
  - b. Shutoff valve with fusible link on supply piping
  - c. Provide Anti Siphon Valve if the level of suction piping fall below the high level of fuel in the tank.
3. Consult local codes.
4. Fire extinguisher and spill cleanup kit should be provided at site.



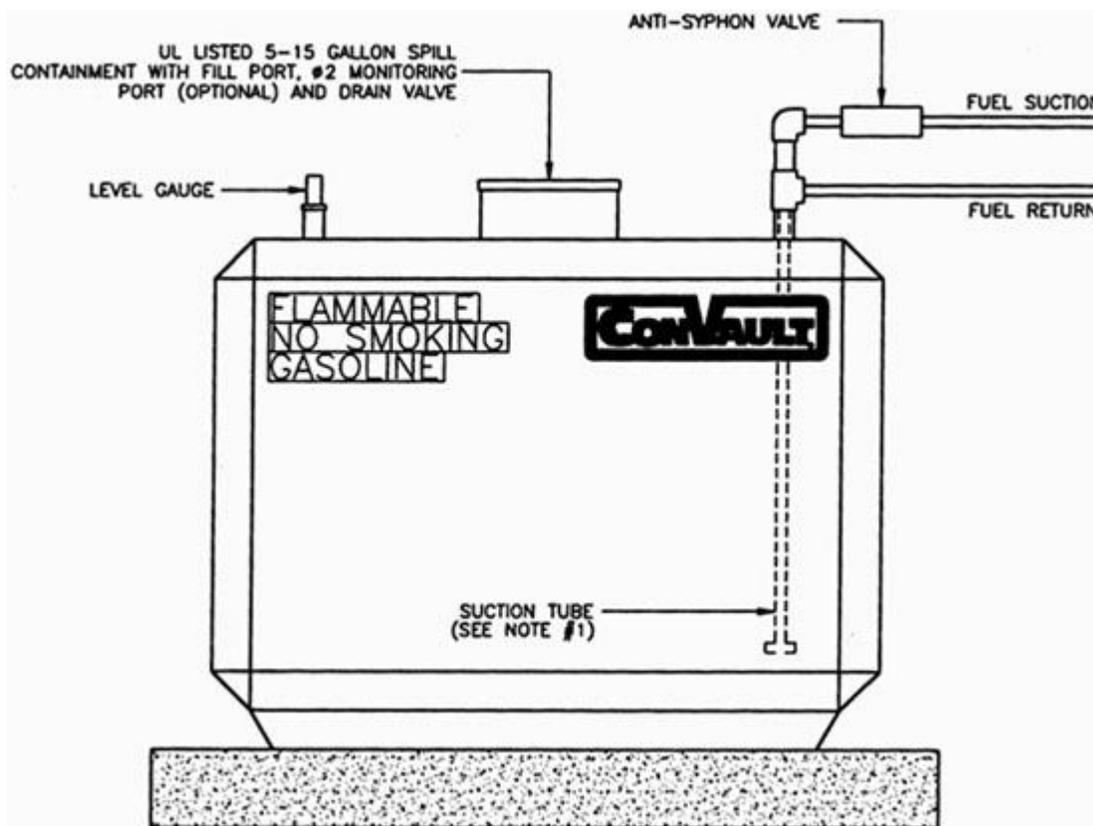
**NOTES:**

1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. COMMUNICATION PORT NOT NEEDED FOR DOUBLE WALL STEEL TANKS.
3. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

Figure No. 12

### Generator Fuel Supply

For directions and side view see Figure 11 above.



**NOTES:**

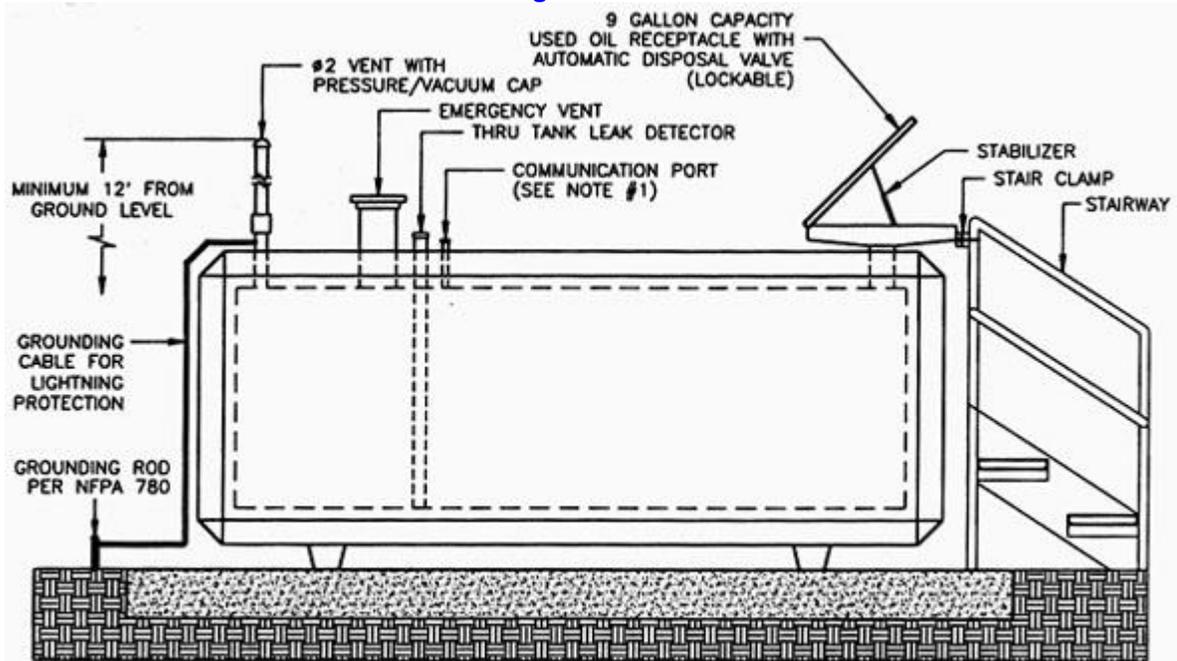
1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

### Used (Waste) Oil

The diagram provided is recommended for use with used oil storage and is not a requirement. Confirm with the local Authorities Having Jurisdiction and ensure that all pertinent operational requirements have been met in advance of installation. [See Figure No. 13 below](#)

ConVault® recommends the use of a used-oil receptacle, stair clamps, and a step-platform for manual pouring sites; where the tank is filled by a remote pump, an overfill prevention system should be utilized; ConVault® recommends the use of an audible alarm in conjunction with existing level indicator devices, as well as a solenoid valve in the fill pipe or shutoff switch to control the pump. Fire extinguisher and spill cleanup kit should be provided at the site.

Figure No. 13



**NOTES:**

1. COMMUNICATION PORT NOT NEEDED FOR DOUBLE WALL STEEL TANKS.
2. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

SECTION 08710 - DOOR HARDWARE –ADD.#5

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes items known commercially as finish or door hardware that are required for swing doors, except special types of unique hardware specified in the same sections as the door frames on which they are installed.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 6 Section "Interior Architectural Woodwork" for cabinet hardware.
  - 2. Division 8 Section "Standard Steel Doors and Frames" for silencers integral with hollow metal frames.
- C. Products furnished but not installed under this Section include:
  - 1. Cylinders for locks on entrance doors.
  - 2. Final replacement cores and keys to be installed by End User.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.
- B. Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
    - a. Type, style, function, size, and finish of each hardware item.
    - b. Name and manufacturer of each item.
    - c. Fastenings and other pertinent information.
    - d. Location of each hardware set cross referenced to indications on Drawings both on floor plans and in door and frame schedule.
    - e. Explanation of all abbreviations, symbols, and codes contained in schedule.
    - f. Mounting locations for hardware.
    - g. Door and frame sizes and materials.
    - h. Keying information.
  - 2. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other

information essential to the coordinated review of schedule.

3. Keying Schedule: Submit separate detailed schedule indicating clearly how the End User's final instructions on keying of locks has been fulfilled.

- D. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

#### 1.4 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single hardware supplier.

#### 1.5 PRODUCT HANDLING

- A. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- B. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).

#### 1.6 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for End User's continued adjustment, maintenance, and removal and replacement of door hardware.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Butts and Hinges:

- a. Hager Hinge Co.
- b. H. Soss & Company.
- c. Stanley Hardware, Div. Stanley Works.
- d. Mckinney
- e. Or, pre-approved equal.

2. Cylinders and Locks:

- a. Best Lock Corp.
- b. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
- c. Falcon Lock Co.
- d. Sargent Manufacturing Company.
- e. Schlage Lock, Div. Ingersoll-Rand Door Hardware Group.
- f. Yale Security Inc.
- g. Hagar
- h. Hadrian Metal Lockers
- i. Brad Steele & Associates

- j. Or, pre-approved equal.
- 3. Overhead Closers:
  - a. Dorma Door Controls International.
  - b. LCN, Div. Ingersoll-Rand Door Hardware Group.
  - c. Monarch Hardware & Mfg. Co., Div Newman Tonks, Inc.
  - d. Rixson-Firemark, Div. Yale Security Inc.
  - e. Sargent Manufacturing Company.
  - f. Russwin
  - g. Hagar
  - h. Or, pre-approved equal.
- 4. Door Trim Units (Kickplates):
  - a. Baldwin Hardware Corp.
  - b. Builders Brass Works Corp.
  - c. Hager Hinge Co.
  - d. H. B. Ives, A Harrow Company.
  - e. Triangle Brass Manufacturing Company (Trimco).
  - f. Quality
  - g. Or, pre-approved equal.
- 5. Door Stripping and Seals:
  - a. Hager Hinge Co.
  - b. National Guard Products, Inc.
  - c. Pemko Manufacturing Co., Inc.
  - d. Reese Enterprises, Inc.
  - e. Zero International, Inc.
  - f. Ultra
  - g. Or, pre-approved equal.
- 6. Thresholds:
  - a. Hager Hinge Co.
  - b. National Guard Products, Inc.
  - c. Pemko Manufacturing Co., Inc.
  - d. Reese Enterprises, Inc.
  - e. Zero International, Inc.
  - f. Ultra
  - g. Or, pre-approved equal.

## 2.2 SCHEDULED HARDWARE

- A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware are indicated in the "Hardware Schedule" at the end of this Section. Products are identified by using hardware designation numbers of the following:
  - 1. Manufacturer's Product Designations: The product designation and name of one manufacturer are listed for each hardware type required for the purpose of establishing minimum requirements. Provide either the product designated or, where more than one manufacturer is specified under the Article "Manufacturers" in Part 2 for each hardware type, the comparable product of one of the other manufacturers that complies with requirements.

### 2.3 MATERIALS AND FABRICATION

- A. Manufacturer's Name Plate: Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.
  - 1. Manufacturer's identification will be permitted on rim of lock cylinders only.
- B. Base Metals: Produce hardware units of basic metal and forming method indicated using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units for finish designations indicated.
- C. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- D. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
- E. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

### 2.4 HINGES, BUTTS, AND PIVOTS

- A. Templates: Provide only template-produced units.
- B. Screws: Provide Phillips flat-head screws complying with the following requirements:
  - 1. For metal doors and frames install machine screws into drilled and tapped holes.
  - 2. Finish screw heads to match surface of hinges or pivots.
- C. Hinge Pins: Non-removable pins.
  - 1. Tips: Flat button and matching plug, finished to match leaves.
- D. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90 inches or less in height and one additional hinge for each 30 inches of additional height.

### 2.5 LOCK CYLINDERS AND KEYING

- A. Review the keying system with the Owner and provide the type required (master, grandmaster or great-grandmaster), either new or integrated with Owner's existing system.
- B. Equip locks with cylinders for interchangeable-core pin tumbler inserts. Furnish only temporary inserts for the construction period, and remove these when directed. Final replacement cores and keys to be installed by End User.
- C. Metals: Construct lock cylinder parts from brass or bronze, stainless steel, or nickel silver.

- D. Comply with End User's instructions for masterkeying and, except as otherwise indicated, provide individual change key for each lock that is not designated to be keyed alike with a group of related locks.
  - 1. Permanently inscribe each key with number of lock that identifies cylinder manufacturer's key symbol, and notation, "DO NOT DUPLICATE."
- E. Key Material: Provide keys of nickel silver only.
- F. Key Quantity: Furnish 3 change keys for each lock, 5 master keys for each master system, and 5 grandmaster keys for each grandmaster system.
  - 1. Furnish one extra blank for each lock.
  - 2. Deliver keys to Owner.

## 2.6 KEY CONTROL SYSTEM

- A. Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150 percent of the number of locks required for the Project.
  - 1. Provide complete cross index system set up by key control manufacturer, and place keys on markers and hooks in the cabinet as determined by the final key schedule.
  - 2. Provide hinged-panel type cabinet for wall mounting.

## 2.7 LOCKS, LATCHES, AND BOLTS

- A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.
  - 1. Provide flat lip strikes for locks with 3-piece, antifriction latchbolts as recommended by manufacturer.
  - 2. Provide recess type top strikes for bolts locking into head frames, unless otherwise indicated.
  - 3. Provide dust-proof strikes for foot bolts, except where special threshold construction provides nonrecessed strike for bolt.
  - 4. Provide roller type strikes where recommended by manufacturer of the latch and lock units.
- B. Lock Throw: Provide 5/8-inch minimum throw of latch on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.
  - 1. Provide 1/2-inch minimum throw of latch for other bored and preassembled types of locks and 3/4-inch minimum throw of latch for mortise locks. Provide 1-inch minimum throw for all dead bolts.
- C. Exit Device Dogging: Equip the units with keyed dogging device to keep the latch bolt retracted, when engaged.
- D. Rabbeted Doors: Where rabbeted door stiles are indicated, provide special rabbeted front on lock and latch units and bolts.

## 2.8 CLOSERS AND DOOR CONTROL DEVICES

- A. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit depending on size of door, exposure to weather, and anticipated frequency of use.
  - 1. Provide parallel arms for all overhead closers, except as otherwise indicated.
  - 2. Provide metal enclosure plate.
  - 3. Color & finish of all exposed surfaces to match and to be selected by Architect from manufacturers standard colors.
- B. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1 provisions for door opening force and delayed action closing.
- C. Provide grey resilient parts for exposed bumpers.

## 2.9 DOOR TRIM UNITS

- A. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine screws or self-tapping screws.
- B. Fabricate protection plates not more than 1-1/2 inches less than door width on hinge side and not more than 1/2 inch less than door width on pull side by height indicated.
  - 1. Metal Plates: Stainless steel, 0.050 inch (U.S. 18 gage).

## 2.10 WEATHERSTRIPPING AND SEALS

- A. General: Provide continuous weatherstripping on exterior doors. Provide noncorrosive fasteners.
- B. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by manufacturer.
- C. Weatherstripping at Jambs and Heads: Provide bumper-type resilient insert and metal retainer strips, surface applied unless shown as mortised or semimortised, and of following metal, finish, and resilient bumper material:
  - 1. Extruded aluminum with clear anodized finish as selected from manufacturer's standard color range, 0.062-inch minimum thickness of main walls and flanges.
  - 2. Sponge neoprene conforming to MIL R 6130, Class II (Closed Cell).
    - a. Grade C (67 deg F to 170 deg F, low temperature).
- D. Weatherstripping at Door Bottoms: Provide threshold consisting of contact-type resilient insert and metal housing of design and size shown and of following metal, finish, and resilient seal strip:
  - 1. Extruded aluminum with clear anodized finish as selected from manufacturer's standard color range, 0.062-inch minimum thickness of main walls and flanges.
  - 2. Solid neoprene wiper or sweep seal complying with MIL R 6855, Class II, Grade 40.

## 2.11 THRESHOLDS

- A. General: Except as otherwise indicated, provide standard metal threshold unit of type and profile as shown or scheduled. Width of threshold shall match width of door frame.

- B. Exterior Hinged or Pivoted Doors: Provide units not less than 3 inches wide, formed to accommodate change in floor elevation where indicated, fabricated to accommodate door hardware and to fit door frames, and as follows:
  - 1. For out-swinging doors provide thermal barrier saddle type with black rigid vinyl between extrusions.

## 2.12 HARDWARE FINISHES

- A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets (or push-pull units if no latch or lock sets).
- B. Provide finishes that match those established by BHMA or, if none established, match the Architect's sample.
- C. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- D. Provide protective lacquer coating on all exposed hardware finishes of brass, bronze, and aluminum, except as otherwise indicated. The suffix "-NL" is used with standard finish designations to indicate "no lacquer."
- E. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
  - 1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers."
- F. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations

to the extent installation requirements are not otherwise indicated.

**3.2 ADJUSTING, CLEANING, AND DEMONSTRATING**

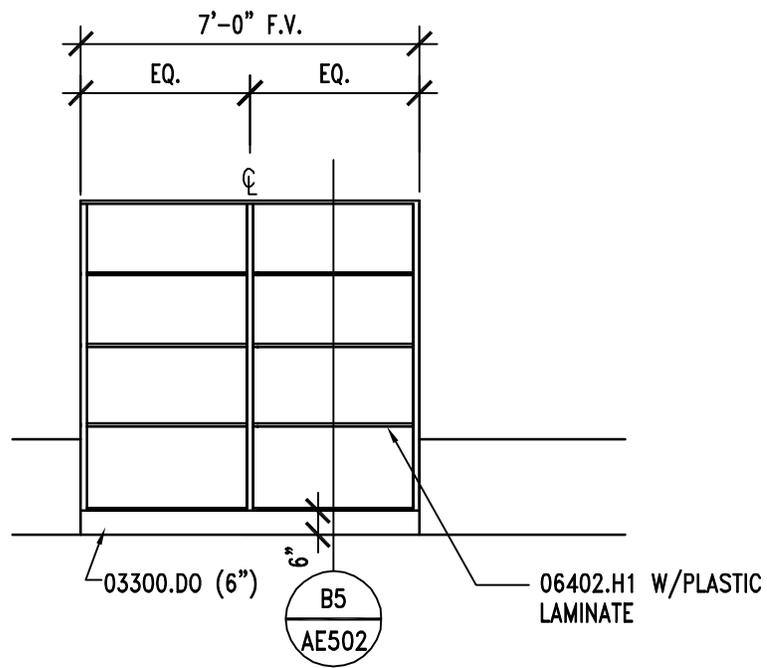
- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
  - 1. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Instruct End User's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.
- D. Six-Month Adjustment: Approximately six months after the date of Substantial Completion, the Installer, accompanied by representatives of the manufacturers of latchsets and locksets and of door control devices, and of other major hardware suppliers, shall return to the Project to perform the following work:
  - 1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
  - 2. Consult with and instruct End User's personnel in recommended additions to the maintenance procedures.
  - 3. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.
  - 4. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

**3.3 See Hardware Schedule, next page:**

**3.3 HARDWARE SCHEDULE**

- A. General: Provide hardware for each door to comply with requirements of Section "Door Hardware," hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.
1. Hardware sets indicate quantity, item, manufacturer and product designation, size and finish or color, as applicable.
  2. Provide hardware with US26D finish, unless indicated otherwise.
  3. Lockset Designs: Provide the lockset designs designated in the Hardware Schedule or, if by another manufacturer, one that matches those designated:
  4. Provide locks with interchangeable cores per requirements of this section.
- B. Hardware Set No. 1: Door D101A, D101G
- |         |              |         |                      |       |
|---------|--------------|---------|----------------------|-------|
| 1.5 pr. | Hinges       | Stanley | FBB199 4.5 x 4.5 NRP | US32D |
| 1       | Lock         | Yale    | AU 5407L             | US26D |
| 1       | Closer       | LCN     | 4041                 | ALUM  |
| 1       | Kickplate    | Quality | 8 x 1.5 LDW          | US32D |
| 1       | Stop         | Quality | 119ES                | US26D |
| 1       | Threshold    | Pemko   | 169A                 | ALUM  |
| 1       | Door Sweep   | Pemko   | 315CN                | ALUM  |
| 1 Set   | Weatherstrip | Pemko   | 303AV                | ALUM  |
- C. Hardware Set No. 2: Door D104A
- |         |           |         |                  |       |
|---------|-----------|---------|------------------|-------|
| 1.5 pr. | Hinges    | Stanley | FBB179 4.5 x 4.5 | US26D |
| 1       | Lock      | Yale    | AU5407L          | US26D |
| 1       | Stop      | Quality | 307              | US26D |
| 3       | Silencers |         |                  |       |
| 1       | Kickplate | Quality | 8 x 1.5 LDW      | US32D |
- D. Hardware Set No. 3: Door D103A.
- |         |           |         |                  |       |
|---------|-----------|---------|------------------|-------|
| 1.5 pr. | Hinges    | Stanley | FBB179 4.5 x 4.5 | US26D |
| 1       | Privacy   | Yale    | AU5404L          | US26D |
| 1       | Closer    | LCN     | 4041             | ALUM  |
| 1       | Kickplate | Quality | 8 x 1.5 LDW      | US32D |
| 1       | Stop      | Quality | 307              | US26D |
| 3       | Silencers |         |                  |       |
- F. Hardware Set No. 5: Door D101B, D101C, D101D, D101E & D102F  
All hardware by door supplier.

END OF SECTION 08710

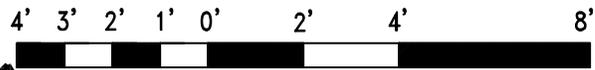


# A5 | SHELVING ELEVATION

AE502

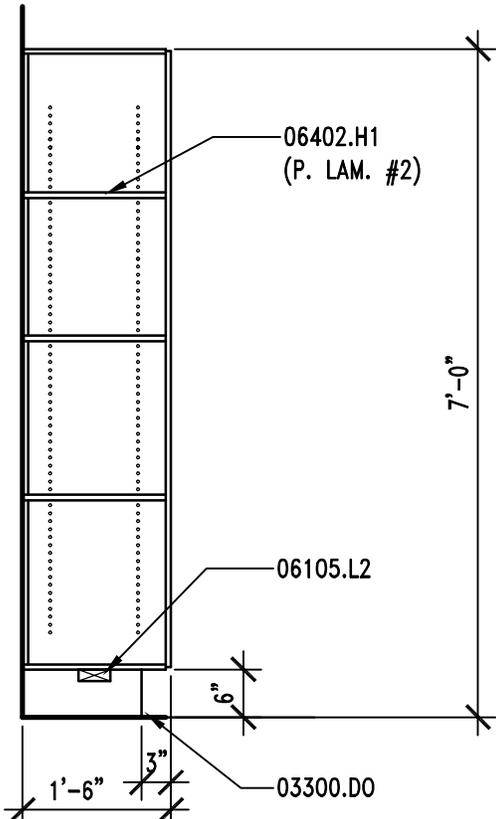
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3' 2



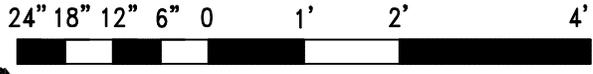
# B5 | SHELVING SECTION

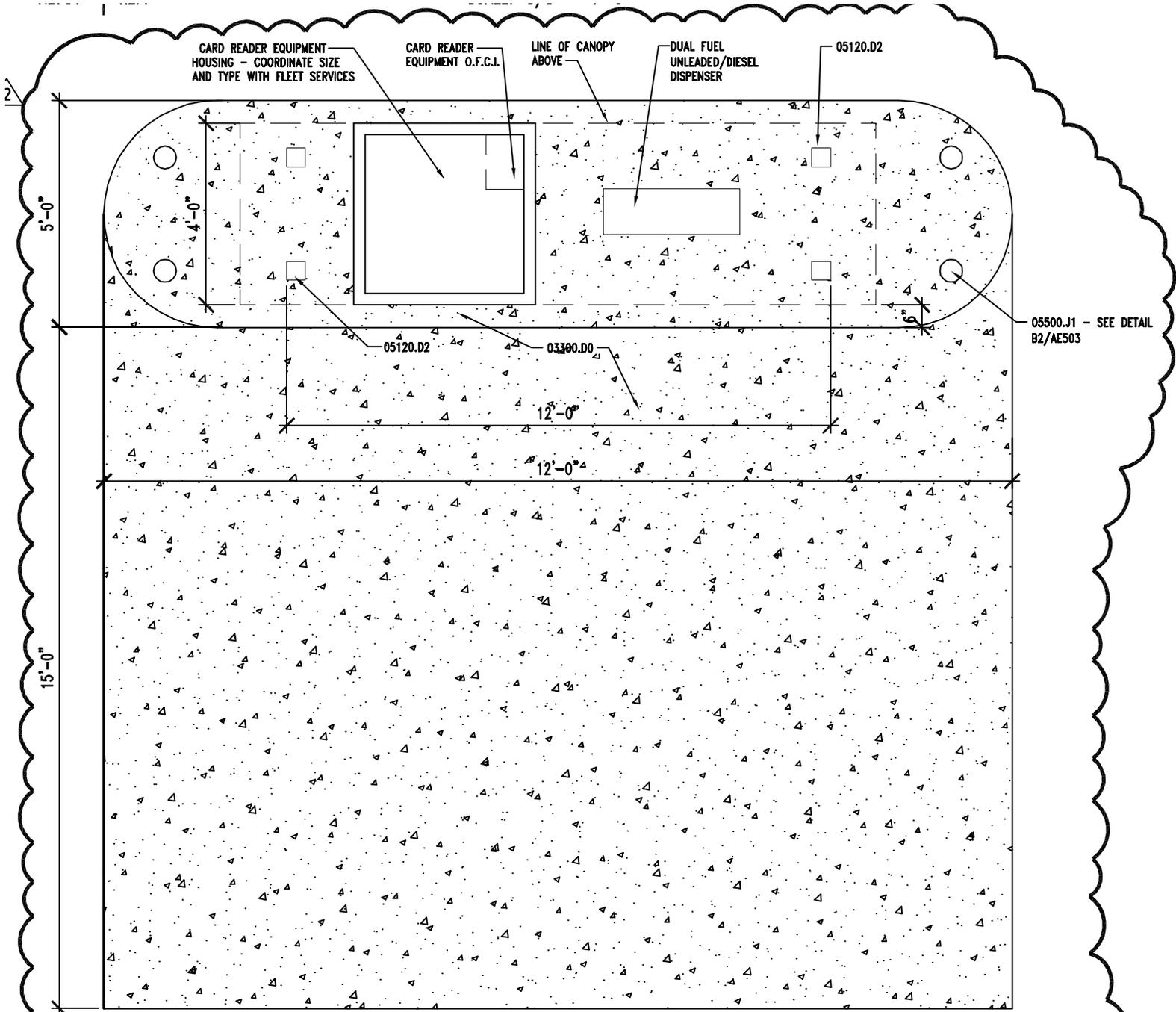
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AE502

REF. AE502

SCALE: 1/2" = 1'-0"



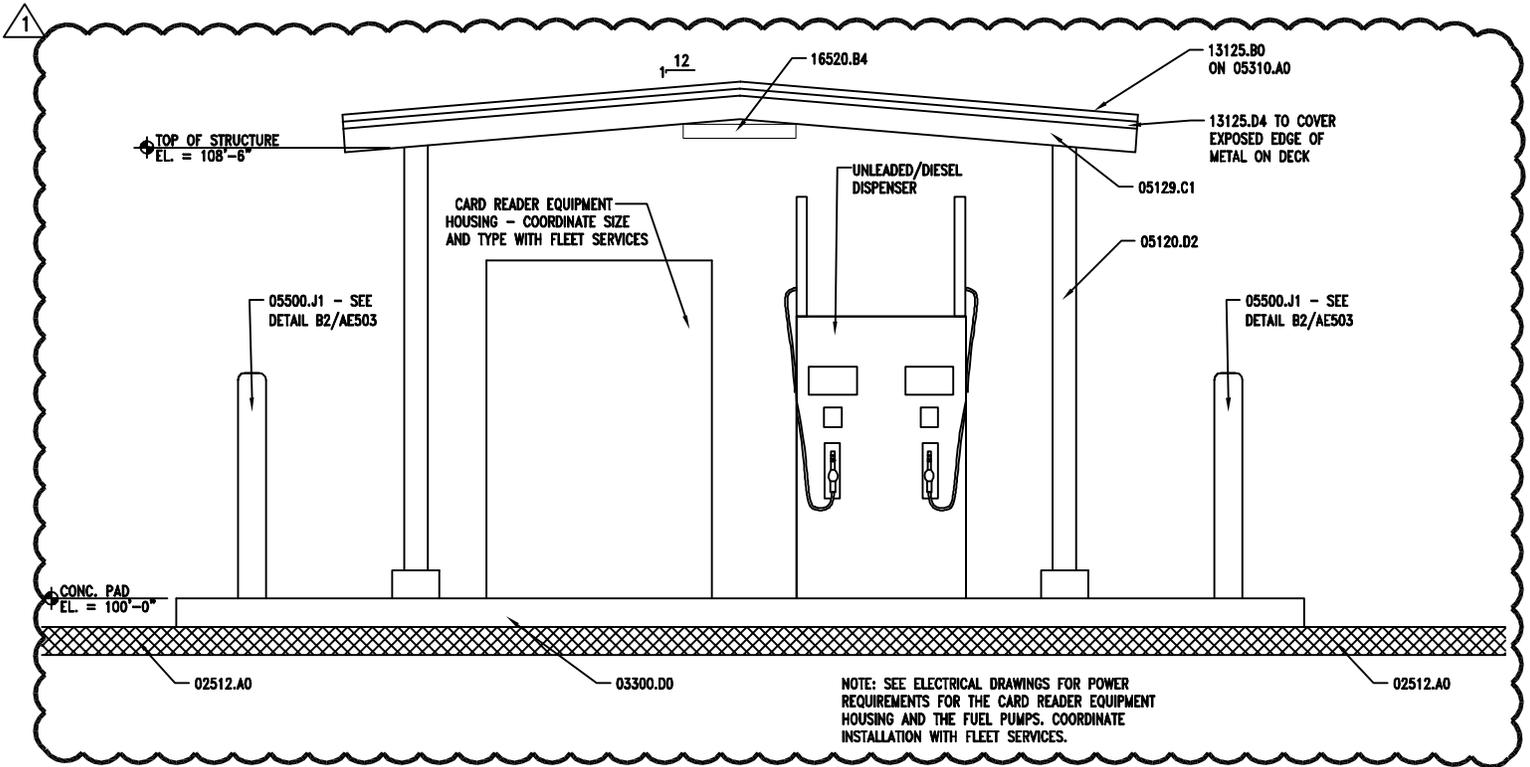


# A2 FUEL ISLAND PLAN



AE701 REF.

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



# B2 | FUEL ISLAND ELEVATION

AE701 | REF.

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

SECTION 13100 – FUEL ISLAND REQUIREMENTS – ADDENDUM NO. 5

PART I – GENERAL

1.1 PROJECT SUMMARY

A. This Section includes the following:

B.

1. The scope of this work is for the General Contractor to provide a completed installation of a new fueling facility and all of its required elements for a complete installation in accordance with the State of Utah Fleet Services requirements. For location see civil plans.
2. The existing fuel island overhead shed structure will be demolished by the General Contractor. Any existing fuel system components (such as the card reader) attached directly to the shed to be demolished will be carefully removed and stored for possible reuse by the State of Utah. Tank removal will be by others.
3. The General Contractor's work scope includes a completed installation some which will include the following:
  - a. A single split tank with capacity of 2,000 gallons unleaded fuel and 6,000 gallons diesel fuel. This tank to be a **Convault or equal UL 2085 fire protected Fuel Storage Tank**. All references to "Convault" within this specification are intended to be generic in nature only.
  - b. A single dispenser with a dual hose for delivery of two products providing high flow dispensing rate of 22 gallons per minute each. Hanging hardware will include: whip hoses, breakaways, swivels, nozzles and hose retractors;
  - c. Tank monitoring equipment with a dedicated circuit;
  - d. Submersible pumps and relays;
  - e. Emergency stop button located not less than twenty five feet (25') nor more than seventy five feet (75') from the fueling station equipment;
  - f. Card Reader housing to be located on fuel island;
  - g. Collision protection using bollards;
  - h. Fifteen foot wide concrete apron in front of fuel island.
4. These pages include general State of Utah installation guidelines for Fuel Island. These pages include equipment required and procedures to follow.

B. Work by others:

1. Existing underground tank fueling system removal, including the dispenser, lines and nozzles will be the responsibility of the State of Utah.
2. The installation of the card reader unit including the fuel site controller will be the responsibility of the State of Utah. All of the related conduit and dedicated circuit electrical preparation is the responsibility of the General Contractor.

1.2 PERMITS AND APPROVALS

A. All permits and approvals for the fueling facility are the responsibility of the General Contractor. The work is to be coordinated and approved by the State of Utah Fleet Services.

B. All work on the fueling system must be performed by a licensed installer in accordance with the State of Utah requirements.

1.3 INSTALLATION MANUAL:  
The following pages include:

A. SCOPE

B. PERMITS AND APPROVALS

C. TANK SITE

D. FOUNDATIONS

E. TANK HANDLING

F. UNLOADING AND SETTING

G. GROUTING OF LEGS

H. ELECTRICAL

I. PIPING

J. DISPENSING APPLICATIONS

K. LIGHTNING PROTECTION INSTALLATION INSTRUCTIONS

**A. SCOPE**

1. These instructions apply to stationary, shop fabricated, aboveground, concrete encased steel tanks for the storage of stable, flammable and combustible liquids at normal atmospheric pressure. Because the tank installation is a specialized skill, it is assumed that those using these instructions will have knowledge of, and possess the skills and equipment necessary to install this type of aboveground storage tank properly and safely.
  - o **Important Note: Consult the Authorities Having Jurisdiction to insure compliance with local codes and regulations prior to carrying out any instructions given herein.**

## B. PERMITS AND APPROVALS

1. Because of the combustible and flammable nature of the hydrocarbon liquids in the Aboveground Storage Tanks (AST), they are subject to various codes, and regulations. The codes and regulations govern the fabrication, testing, shipment, installation, operation, and maintenance of the tanks. The codes and regulations may originate from local fire authorities (e.g. Fire Marshals), local building jurisdictions (e.g. city or county building officials), state laws and regulations (e.g. Air Resource Board), Federal agencies (e.g. Environmental Protection Agency) and regional and national codes (e.g. National Fire Protection Association (NFPA) or Uniform Fire Code (UFC).
2. Installation, operation and maintenance of the tanks must be carried in accordance with the applicable codes and regulations. These aboveground storage tanks are intended for installation in accordance with NFPA 30, 30A, and 31 and UFC Appendix II-F.
3. System installation starts with obtaining the required state and local permits.
4. Typical approval process and documents needed are shown in the **Table 1, Product Description**. Specific local or jurisdictional requirements may slightly differ for different locations, but the list is a good reference and a guide for your permit requirements.
5. State and local permit applications must be made with the current forms.
6. Zoning permits may also be required.

## C. TANK SITE

1. Tank location and foundation to comply with the current edition of the Uniform Building Code, UBC, and all applicable local codes and ordinances. For sites subject to ground frost, the foundation slab design should be reviewed to take into consideration frost line requirements.
2. The tanks should be located a minimum of 1/3 the height of the vault (40 feet maximum) away from down slopes - greater than 3:1, and 1/2 the height of the vault (15 feet maximum) away from up slopes smaller than 3:1.
3. Tanks located in areas subject to flooding must be protected against floatation. Flood resistant tie-down brackets are available for all tank sizes to resist floatation during complete submergence.
4. Aboveground tanks should not be located over underground utilities or directly beneath overhead power and telephone lines.
5. The tank should be protected from vandalism and accidental damage in accordance with all the applicable codes.
6. Fire department vehicle access should be provided within 150 feet of any tank.
7. The venting of a tank to a remote location must include the use of a steel pipe equal to or greater in size than the vent outlet, and the methods of supporting such piping against displacement must comply with local codes. Provide the vent piping with a slope to ensure that all condensed vapors drain back to the tank.
8. Collision protection is recommended on the sides of the tank exposed to traffic. This is generally accomplished with pipe bollards. Always check state and local codes for specific requirements. **See Figure No. 5 below** for sample installation.
  - o **NOTE: The location of each ConVault® tank is stored in the central data bank. If the tank is to be relocated to a different location, ConVault® Inc. must be properly notified to update the data bank. The product limited warranty could be voided if ConVault® is not informed of tank relocation or if tank is not reinstalled in accordance with these installation instructions. It should be noted that ConVault® Warranty is conditional on installation of tanks in accordance with ConVault® Installation Instructions. Your**

attention is specifically drawn to the tank site selection and foundations requirements.

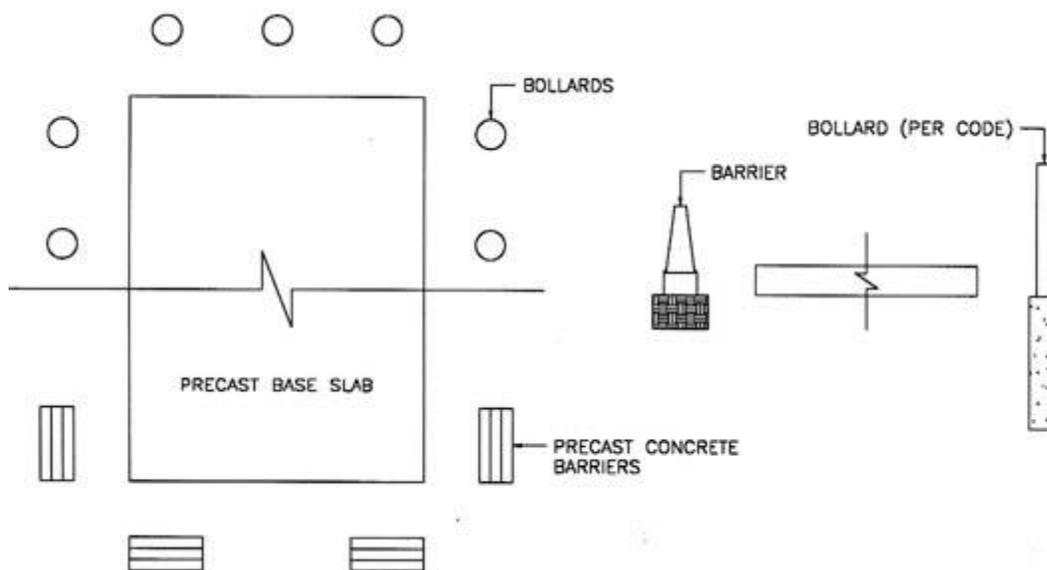
### SAMPLE BOLLARD INSTALLATION

Collision protection is recommended on sides of the tank exposed to traffic. This is generally accomplished with pipe bollards. Always check state and local codes. Sample installations are shown below:

Spacing from the tank should conform to code.

As an alternative to steel pipes, you may use precast concrete barriers. You can obtain the precast barriers from your ConVault® representative.

Figure No. 5



### D. FOUNDATIONS

1. Tank location and foundation must comply with the current edition of Uniform Building Code requirements and all the applicable local codes and ordinances.
2. An alternative to pouring the slab in the field is to purchase a precast slab from the manufacturer.
3. The foundation for the tank must be designed to support the tank plus the weight of the maximum amount of product the tank will be storing. The foundation design must also include provision for draining surface water away from the tank to minimize the risk of fuel accumulation under the tank from the overfill or spills.
4. Tanks located in areas subject to earthquake must be protected against seismic forces. Optional earthquake restraints are available. The restraints can be retrofitted to the slab should local requirements change. The restraints are mounted on the slab and are secured with anchor bolts directly into the slab. The tank feet rest in the restraints and do not require bolting directly to the tank.
5. The tank located in areas subject to hurricane must be provided with hurricane hold down

restraints.

6. The tank foundation is to sit on undisturbed earth or compacted fill, free of organic material.
7. The following minimum soil characteristics may be used if the ConVault tank is installed on a continuous solid slab which will uniformly distribute the weight of the tank and its contents to the soil:
  - o Bearing Capacity: minimum 1,000 but preferably 2,000 lb. per sq. ft.
  - o Total settlement: 1 inch maximum.
  - o Differential settlement: 1/2 inch maximum.
  - o Provide a minimum six inch (6") thick granular sub-grade, compacted and graded to a level uniform subsurface prior to the cast slab placement or pouring of the cast-in-place slab.
  - o A geological engineer should evaluate the effect of the water table and frost lines if such unusual conditions exist at the site.
  - o Soil surface under foundation should be flat within 1/16" per foot. Soil around foundation should be sloped away 1/8" per foot minimum for 5 feet.
  - o **NOTE: If Bearing pads are used under the tank legs instead of grouting, the tank foundation and slab should be designed to withstand concentrated loads under the bearing pads.**
  - o **NOTE: The above soil characteristics, foundation and slab design requirements may be revised by a qualified design engineer who would design the foundations and the slab on a site-specific basis.**
  - o **NOTE: Some Authorities Having Jurisdiction require uplift restraints for areas subject to flooding and hurricanes.**

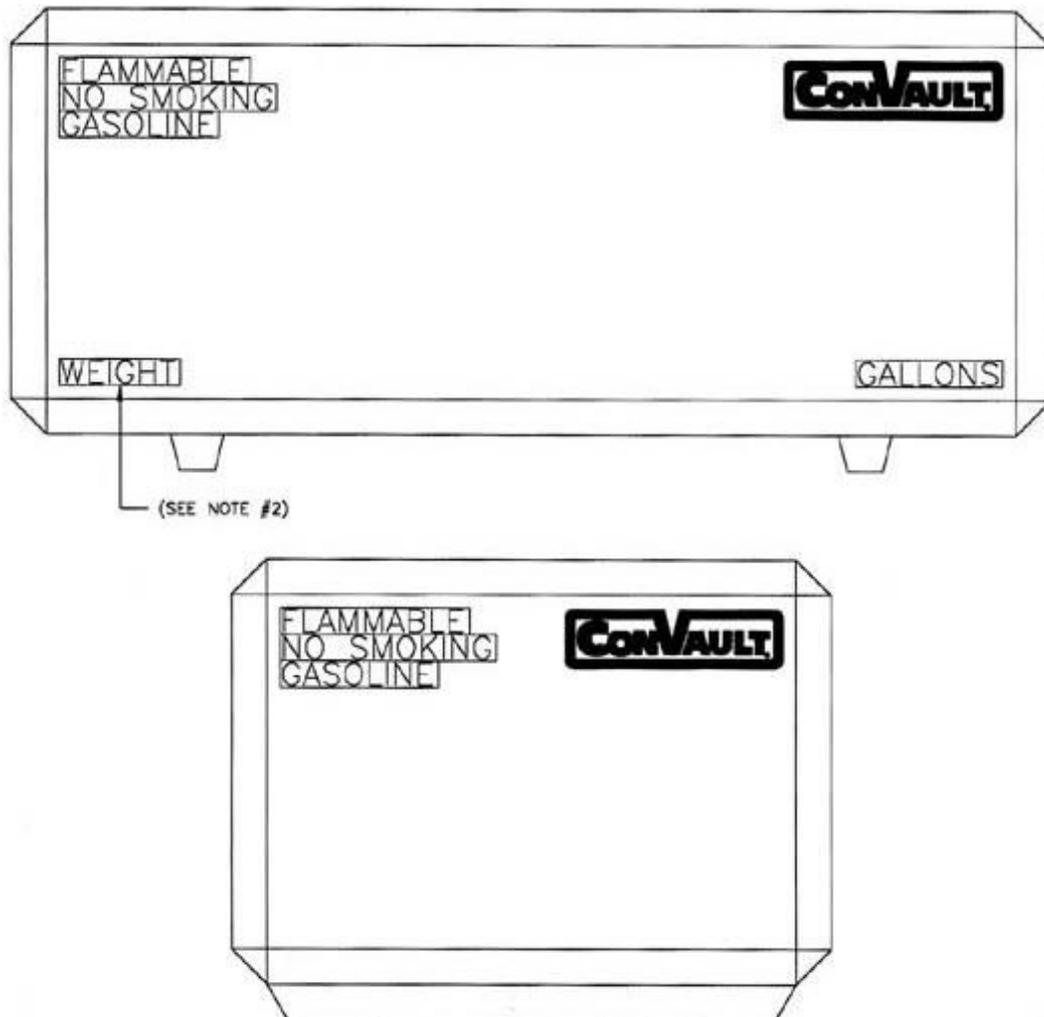
#### E. TANK HANDLING

1. DO NOT HANDLE OR INSTALL TANK WITHOUT HAVING KNOWLEDGE AND EXPERIENCE IN PROCEDURES INVOLVED WITH PROPER AND SAFE INSTALLATION OF AN ABOVEGROUND TANK USED FOR STORAGE OF STABLE, FLAMMABLE AND COMBUSTIBLE LIQUIDS. RELIANCE ON SKILLED AND PROFESSIONAL INSTALLERS IS AN IMPORTANT FACTOR IN AVOIDING DAMAGE TO TANK AND SYSTEM FAILURE.
2. Equipment required in the shipping and offloading of ConVault® aboveground storage tanks include lifting straps, nylon tie-down straps, crane, forklift, and carpet remnants strategically placed on the bevels to prevent the tie-down straps from scraping the paint loose while the tank is en-route.
3. Do not handle or move the ConVault unless it is empty. Under no circumstances should a tank containing petroleum product be moved.
  1. **Do not drop or drag the tank.**
4. If petroleum product has been introduced in the tank, **the tank must be emptied first, then may be relocated using the Department of Transportation Guidelines for transport of fuel containers.** Normally, to relocate a tank previously containing flammable liquids, the Authorities Having Jurisdiction require the tank to be cleaned and then moved according to the following guidelines:
  - o Remove the liquids from the tank.
  - o Rinse the tank three times with an approved cleaning agent.
  - o Allow sufficient time for vapors to escape from inside of the tank.
  - o Move the tank under the supervision of the Authorities Having Jurisdiction.

## F. UNLOADING AND SETTING

1. The unloading equipment and procedures are critical to setting the tank safely and without harming the people or damaging the tank.
2. **NOTE: The most important aspect of a job procedure is SAFETY. Please ensure that every step of this procedure is carried out with safety in mind, first.**
3. Tanks Weight and Dimensions.  
Please refer to Figures No. 2, 3 and 4 in **Product Description**. For actual tank weights and dimensions, please contact your ConVault distributor.
4. Equipment Required & Procedures
  - a. A crane or a forklift of sufficient capacity to safely lift and place the unit.
  - b. Slings minimum 20 feet long each and rated for the tank weight. The angles between the slings should be at least 50 degrees.
  - c. 4-way spreader.
  - d. Miscellaneous shackles, tag lines, and rigging tools.
  - e. Plan the required crane and rigging capacity to safely unload the tank.
  - f. Inspect the tank on the delivery truck prior to unloading. Report any damage in transit to the truck driver and note on the shipping ticket. If the tank is paint coated, it normally comes with two-1/2 pint, two-part touch up kits of paint. Please note that the touchup kit must be mixed prior to application.
  - g. Allow sufficient crane time for installing the load block and organizing the rigging.
  - h. During unloading and setting, allow one person in-charge to signal the crane operator. Keep people clear of the load and avoid being trapped between the load and building walls and equipment.
  - i. Make sure there is no overhead wiring to interfere with crane or boom operation. Provide sufficient room for cranes and boom trucks to off load.
  - j. Department of Transportation prohibits transportation of tanks with product and warning labels. Product and warning labels should be installed on site. If installed at the plant, they should be masked prior to shipment. Labels and decals must be placed on the tank in accordance with NFPA 709. **Figure No. 6** shows location of labels.

Figure No. 6



**NOTES:**

1. FOR BEST RESULTS, ATTACH AT 60-70 DEGREES F.
2. EMPTY WEIGHT
3. CONVAULT LOGO DECALS TO BE LOCATED IN UPPER RIGHT CORNER OF ALL SIDES (QTY 4).
4. NO SMOKING, FLAMMABLE AND "PRODUCT" TO BE LOCATED IN UPPER LEFT CORNER OF ALL SIDES (QTY 4).
5. CAPACITY DECALS TO BE LOCATED IN LOWER RIGHT CORNER OF LONG SIDES (QTY 2).
6. WEIGHT DECALS TO BE LOCATED IN LOWER LEFT CORNER OF LONG SIDES (QTY 2).
7. FILL, VENT, EMERGENCY VENT, LEAK DETECTOR TUBE, DO NOT DRILL..., CAUTION THIS TANK..., DECALS LOCATED ALONG UPPER BEVEL NEAR CORRESPONDING NIPPLE.
8. WARNING: DEATH MAY OCCUR..., DECAL TO BE LOCATED ON TOP OF TANK NEAR MANWAY IF APPLICABLE.

**G. GROUTING OF LEGS**

1. All tanks of 4,000 gallon and larger must be grouted with (non-shrink grout) or supported with alternative engineered pad interface.
2. We recommend to grout the legs of all tanks, which will provide a uniform load distribution on legs and foundations.

3. Neoprene pads may be used instead of grouting in accordance with the manufacturer's recommendations. **Also see Note under FOUNDATIONS.**

## H. ELECTRICAL

1. Electrical service and fuel piping to the pumps unit should be installed in accordance with the requirements of NEC and NFPA and local code requirements.
2. All electrical devices used with or located within twenty (20) feet of the ConVault® tank should conform to NFPA 70 Hazardous Locations. All electric conduits and wiring connected to the tank should be explosion proof and in strict accordance with NEC Class-1, Division 1 or other local standards whichever is stricter.
3. An emergency shutoff switch is required to be mounted in a location visible from the dispenser. The switch is normally mounted on a building wall or a post. The per code switch must be marked as an emergency shutoff switch.
4. **Electrical grounding** is required for flammable liquid fuel tanks. ConVault® tanks are provided with two grounding lugs welded to the nipples on tank top.
5. Pumps and all other equipment used in the hazardous area should be rated by UL or Factory Mutual, FM.

## I. PIPING

1. Piping on ConVault® tanks will mainly depend on dispensing method considered for your facilities. Several methods are suggested below. You should note that dispensing methods suggested here are schematic only and they are not detailed installation drawings. You should engage an engineer/designer to design the piping arrangement and make sure they are in accordance with the applicable codes, rules and regulations. Please also make sure you check with your Authorities Having Jurisdiction and find out which codes and regulations are applicable to your area.
2. The following illustrations are provided to show you several different dispensing methods and to help you understand how they operate.

## J. Dispensing Applications

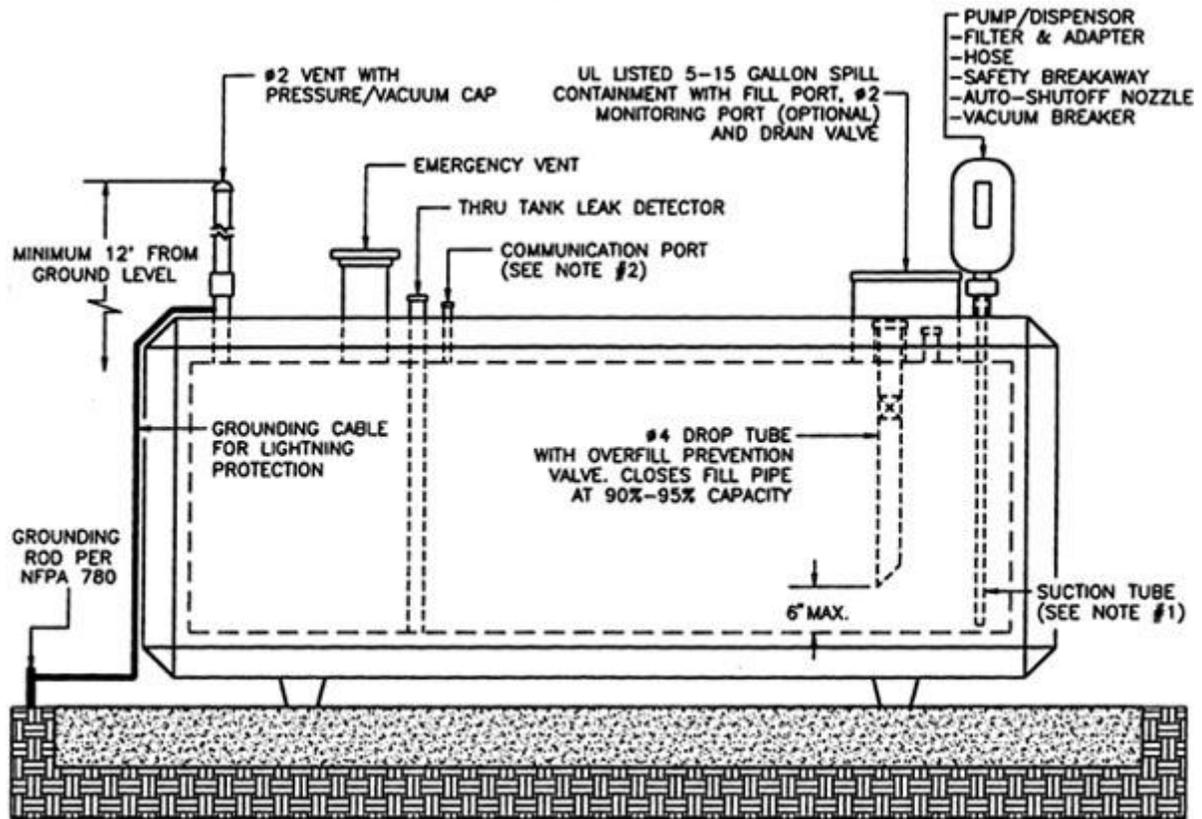
### On-Tank Suction-Type

Dispensing from the ConVault® tank system is most simply accommodated by a top of tank pump. This arrangement eliminates leaking valves and fittings. Our recommended dispensing configuration is shown in **Figure No. 7 below**. Diagram provided is for those sites, which serve the end-user's internal fleet/vehicles.

1. Fuel tank shall be located with set backs from building and property lines in accordance with state and local codes.
2. Dispensing shall be by a UL-Listed tank top pump equipped with :
  - a. vacuum breaker

- b. filter and adapter
  - c. UL-Listed fuel hose
  - d. safety breakaway valve
  - e. auto-shutoff nozzle
3. Consult local Authority Having Jurisdiction
  4. Fire extinguisher per code and cleanup kit should be provided at the site.

Figure No. 7



**NOTES:**

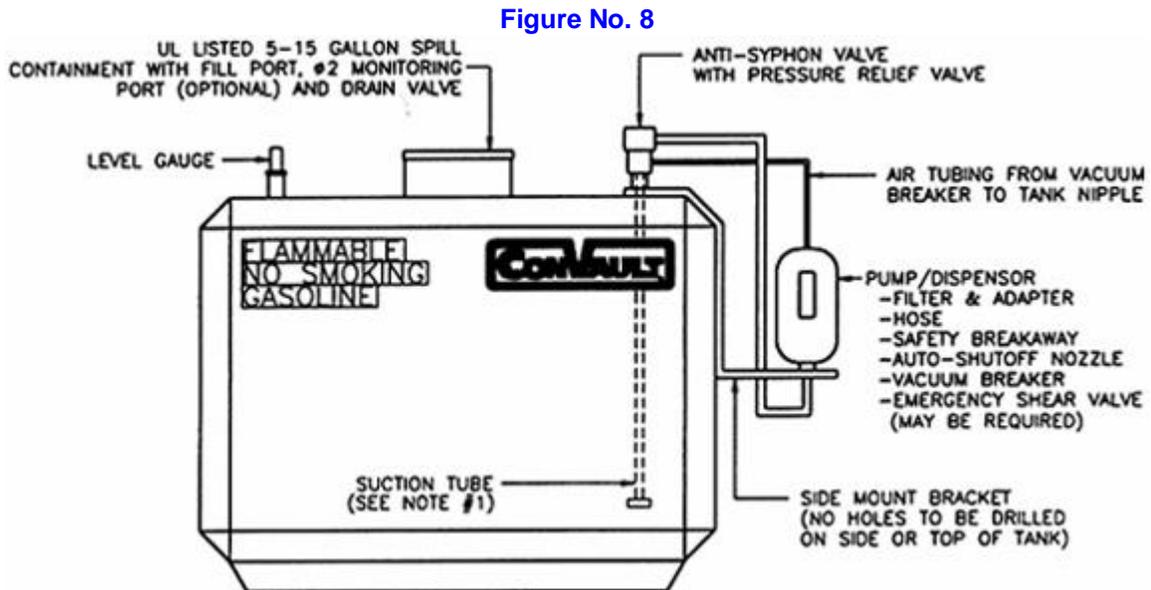
1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. COMMUNICATION PORT NOT NEEDED FOR DOUBLE WALL STEEL TANKS.
3. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

**Side Mount**

The diagram provided is recommended for the sites to dispense fuel to private user or for fleet vehicles.  
**See Figure No. 8 below.**

1. Fuel tank shall be located with setbacks from building and property lines in accordance with state and local codes.

2. Dispensing shall be by UL-Listed pump. The pump shall be equipped with the following:
  - a. Anti siphon valve with pressure relief or solenoid valve
  - b. Filter and adapter
  - c. UL-Listed fuel hose
  - d. safety breakaway valve
  - e. Auto shutoff nozzle
  - f. Emergency shear valve may be required
3. Consult local codes.
4. Fire extinguisher per code.
5. Cleanup kit should be provided at site.



**NOTES:**

1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

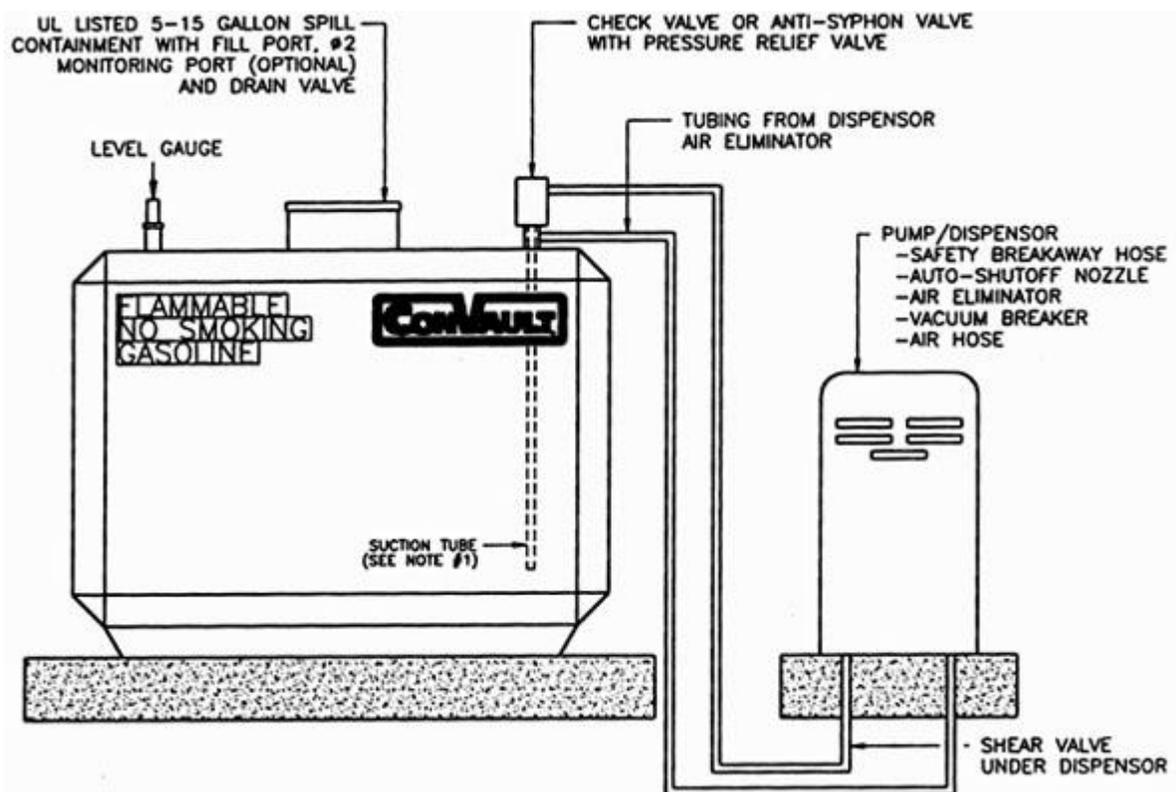
**Off-Tank Suction System**

The diagram provided is recommended for those sites authorized to either: dispense to motor vehicles for public use or fleet vehicles with high-speed dispensing accessories. [See Figure No. 9 below.](#)

1. Fuel tank shall be located with setbacks from buildings and property lines in accordance with state and local codes.

2. Dispensing shall be by an UL-Listed off-tank pump. The pump shall be equipped with:
  - a. Angle check valve or anti-siphon valve with pressure relief
  - b. Filter and adapter
  - c. UL-Listed fuel hose
  - d. Safety, breakaway valve
  - e. Auto-shutoff nozzle
  - f. Under pump emergency shear valve (if required by local code)
3. Install pressure/vacuum vent cap.
4. Install phase 1 and phase 2 recovery system (if required by the local codes).
5. Consult local codes.
6. Fire extinguisher per code, cleanup kit should be provided at the site.

Figure No. 9



**NOTES:**

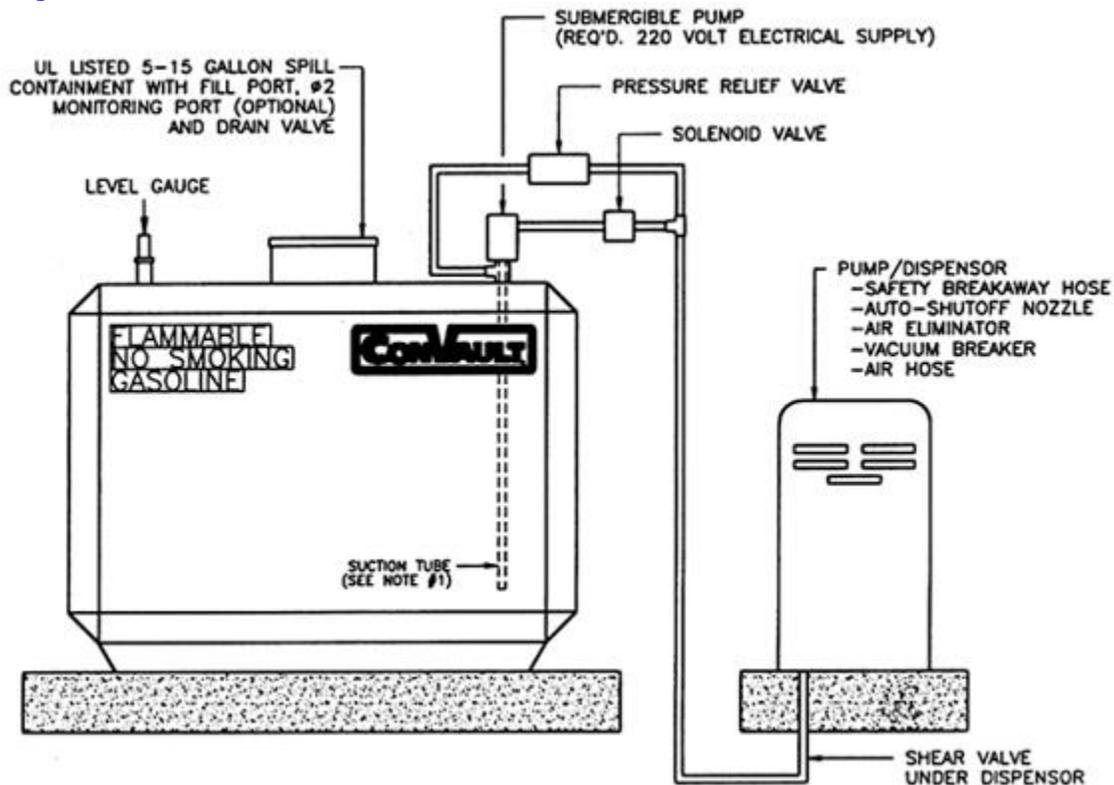
1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

### Submersible Pump

The diagram shown in **Figure No. 10 below** is recommended for those sites authorized to either: dispense to motor vehicles for public use or fleet vehicles with high-speed dispensing accessories.

1. Fuel tank shall be located with setbacks from buildings and property lines in accordance with the state, local, and fire codes.
2. Dispensing shall be by an UL-Listed submersible pump.
3. Solenoid valve with pressure relief valve.
4. Filter and adapter.
5. UL-Listed dispenser with:
  - a. Listed fuel hose
  - b. Safety, breakaway valve
  - c. Auto-shutoff nozzle
  - d. Emergency sheer valve under dispensing pump may be required
6. Fire extinguisher per code, cleanup kit should be provided at the site.
7. Requires 220-Volt electric supply.
8. Consult local codes.

**Figure No. 10**



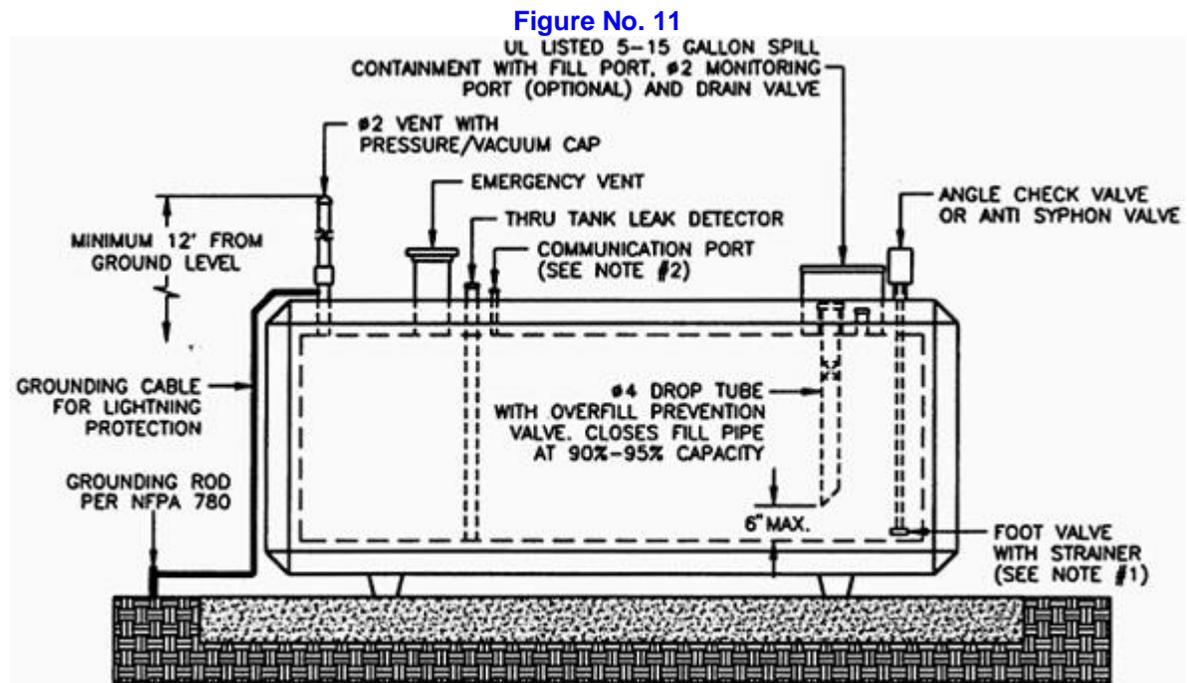
**NOTES:**

1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

**Generator Fuel Supply**

The diagrams shown in **Figure No. 11 and 12 below** are recommended for those sites utilizing a ConVault® AST to supply a generator, whether it is primary or standby in function.

1. Storage tank shall be located with setbacks from buildings and property lines in accordance with state and local codes.
2. Recommended piping shall include safety valves as follows:
  - a. Angle check valve with pressure relief or foot valve and strainer
  - b. Shutoff valve with fusible link on supply piping
  - c. Provide Anti Siphon Valve if the level of suction piping fall below the high level of fuel in the tank.
3. Consult local codes.
4. Fire extinguisher and spill cleanup kit should be provided at site.



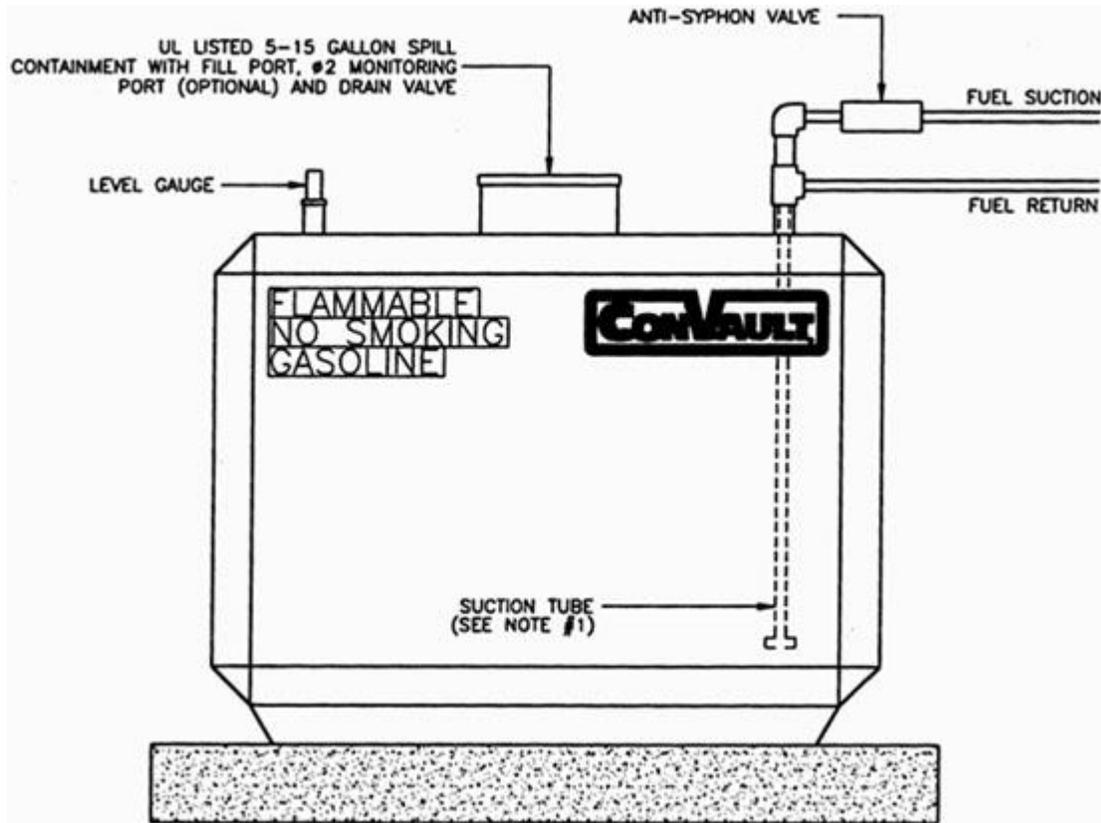
**NOTES:**

1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. COMMUNICATION PORT NOT NEEDED FOR DOUBLE WALL STEEL TANKS.
3. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

**Figure No. 12**

**Generator Fuel Supply**

For directions and side view see Figure 11 above.



**NOTES:**

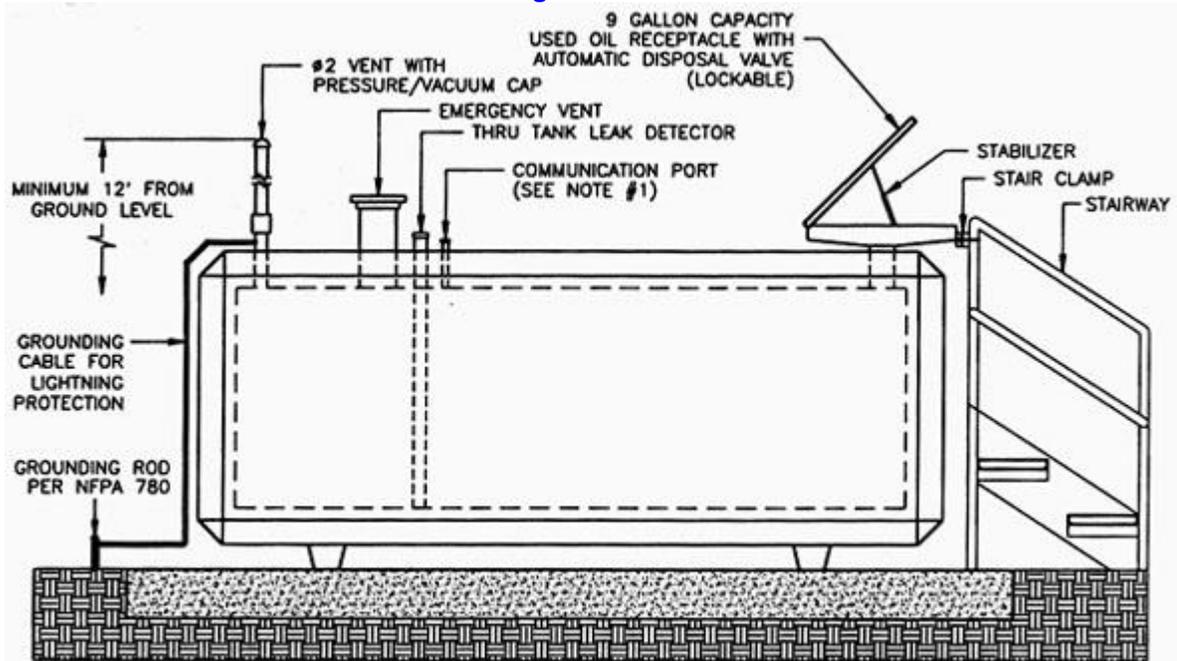
1. BOTTOM OF FOOT VALVE/STRAINER TO BE 1" FROM BOTTOM OF STEEL TANK.
2. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).

**Used (Waste) Oil**

The diagram provided is recommended for use with used oil storage and is not a requirement. Confirm with the local Authorities Having Jurisdiction and ensure that all pertinent operational requirements have been met in advance of installation. [See Figure No. 13 below](#)

ConVault® recommends the use of a used-oil receptacle, stair clamps, and a step-platform for manual pouring sites; where the tank is filled by a remote pump, an overfill prevention system should be utilized; ConVault® recommends the use of an audible alarm in conjunction with existing level indicator devices, as well as a solenoid valve in the fill pipe or shutoff switch to control the pump. Fire extinguisher and spill cleanup kit should be provided at the site.

Figure No. 13



**NOTES:**

1. COMMUNICATION PORT NOT NEEDED FOR DOUBLE WALL STEEL TANKS.
2. STAIRWAY ASSEMBLY TO FILL PORT (OPTIONAL).