

GP 09-07-01	Accessories for Atmospheric Storage Tanks	March 2005
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Accessories for Atmospheric Storage Tanks

GP 09-07-01

Scope

- 1) [I] This Global Practice (GP) covers the design, size, quantity, and location of accessories for atmospheric fixed roof and floating roof storage tanks and open top storage tanks.
 - 2) [I] The requirements for refrigerated storage tanks and vessels are not covered by this Practice.
 - 3) [I] An asterisk (*) indicates that either a decision by the Owner's Engineer is required, that additional information is to be furnished by the Owner's Engineer, or that information for Owner's Engineer approval is to be supplied by Vendor or Contractor.
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1. Required References

[I] This Section lists Practice and Standards that are generically referenced and assumed to be a part of this document. Unless otherwise specified herein, use the latest edition.

1.1. Global Practices–ExxonMobil Engineering Practices

GP 04-02-01	Auxiliary Structures for Operation and Maintenance
GP 15-01-03	Instruments for Storage Tanks and Vessels

1.2. API–American Petroleum Institute

API RP 2003	Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents
API STD 650	Welded Steel Tanks for Oil Storage

1.3. ASSE–American Society of Safety Engineers

ASSE/SAFE A14.3	Safety Requirements for Fixed Ladders
ASSE/SAFE A1264.1	Safety Requirements for Workplace Floor and Wall Openings, Stairs, and Railings Systems

1.4. ASTM–American Society for Testing and Materials

ASTM A 123/A 123M	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153/A 153M	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

2. Additional Requirements

[I] The following Practices shall be used with this Practice as specified by Purchaser.

2.1. Global Practices–ExxonMobil Engineering Practices

GP 03-02-02	Foam Systems for Storage Tanks
GP 03-02-07	Manual Sampling Systems
GP 03-16-01	Flanged Joints, Gaskets, and Bolting

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GP 09-07-03	Vents for Fixed Roof Atmospheric Storage Tanks
GP 09-07-04	Internal Floating Roofs for Atmospheric Storage Tanks
GP 14-01-01	External Insulation
GP 17-05-01	Human Factors in Plant Design

3. Tank Connections

3.1. Location of Attachments

* [O], [R] Unless otherwise specified, location of principal connections and attachments for fixed roof tanks shall be per Figure 1. Location of shell nozzles and manholes for floating roof tanks shall be per Figure 2. The requirements for and location of other tank connections and appurtenances will be specified.

3.2. Roof and Shell Manholes

- 1) [M] The minimum number and size of shell and roof manholes shall be per Table 1.
- 2) [M] Manhole requirements for internal floating roofs are specified in [GP 09-07-04](#).

Table 1: Manhole Specifications

Nominal Tank Diameter		Number and Size of Manholes								
		Shell			Roof					
		All Tank Types			Fixed Roof Tanks			Floating Roof Tanks ^{(1) (2)}		
ft	m	Number	in.	mm	Number	in.	mm	Number	in.	mm
10–20	3–6	1	30	750	1	30	750	1	30	750
> 20–60	> 6–18	1 1	24 30	600 750	2	30	750	1	30	750
> 60–90	> 18–27	1 1	24 30	600 750	2	30	750	2	30	750
> 90	> 27	2 1	24 30	600 750	2	30	750	2	30	750

Notes:

(1)

In addition, floating roofs shall be provided with at least one 20 in. (500 mm) manhole for each pontoon compartment.

(2)

Where two deck manholes are required, they shall be located at diametrically opposite positions.

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3.3. Manual Gauging–Sampling for Fixed Roof Tanks

- 1) * [S], [O] Fixed roof tanks (with or without internal floating covers):
 - a) A manual gauging-sampling well per Figure 4 shall be used where the stored product, including intermediate storage, is specified as a "static accumulator." Gauge well shall be burr-free.
 - b) * [S] The top gauging-sampling well slot shall be above the design liquid level.
 - c) A gauging-sampling well is not required where the stored product will not be a "static accumulator." In such cases, a gauge hatch shall be installed on an 8 in. roof nozzle or roof manhole cover.
- 2) * [R] If a manhole or a separate roof connection is used for gauging-sampling purposes, it shall be located near a roof support.
- 3) [O] Gauging hatches shall be per the following:
 - a) The gauging hatch shall have a seal with corrosion resistant seats suitable for a pressure of 2 oz/in.² (0.86 kPa) or design pressure of tank, whichever is greater. A hinged foot-actuated self-closing cover shall be provided.
 - b) The gauging hatch shall be of 8 in. (200 mm) minimum diameter.
 - c) The cover shall weigh at least 6½ lb. (3 kg).
 - d) Larger hatches shall have the same minimum weight (mass) per unit area.

3.4. Water Drawoff Connections

- 1) * [O] Water drawoff connection. Tanks in hydrocarbon service shall be provided with a minimum of one 4 in. API Low Type water drawoff connection. Water drawoffs for tanks in other services (such as pitch, wax, hot oil) to be specified by the Owner's Engineer. Water drawoff sumps shall be provided as follows:
 - a) For tanks over 20 ft (6 m) in diameter, a water sump is required. The sump may be any shape provided it has a volume at least equal to the volume of sump specified in API STD 650. End of drawoff pipe shall be 4 in. (100 mm) above bottom of sump.
 - b) If "apex down" cone bottom is specified, a sump is not required. The drawoff line size shall be a minimum of 4 in., piped to the center of the tank, turned down, and terminated 4 in. above the lowest point of the bottom.
 - c) For tanks 20 ft or less in diameter, a sump is not required. The inlet end of the water drawoff pipe shall be 2 in. (50 mm) above the bottom, except in the case of "apex down" cone bottom tanks. In such cases, the end of the pipe shall be 4 in. above the bottom.
 - d) When flush type suction nozzles are used, the maximum size water drawoff connection shall be NPS 6 (150 mm).
- 2) * [O] Where freeze protection is required and product temperatures are less than 250°F (120°C), a double valve "Non Freezing" type water drain valve or a NPS 1½ recirculation line shall be provided from the water drawoff nozzle back to the tank.

3.5. Flush-Type Shell Connections

[O] Flush-type shell connections shall be provided with a flow guide box per Figure 5.

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