

SCOPE

- I 1.1 This practice covers the use, design, and layout of auxiliary structures and facilities provided for access and maintenance of plant equipment. The requirements for stacks, chimneys and flares are not covered by this practice.
- I 1.2 An asterisk (*) indicates that additional information from the Owner, or approval by the owner is required.

SUMMARY OF ADDITIONAL REQUIREMENTS

- I ↗ 2.1 **Table 1** lists the standards and practices which shall be used with this practice.

TABLE 1

PRACTICES	
IP 4-1-3	Structural Design Loads
IP 14-3-1	Fireproofing
IP 19-1-1	Paint and Protective Coatings
STANDARDS	
ANSI Standards (American Society of Safety Engineers)	
A14.3	Safety Requirements for Fixed Ladders
A1264.1	Safety Requirements for Workplace Floor and Wall Openings, Stairs, and Railing Systems

- I 2.2 **The design and layout of platforms, and stairway or ladder access**, serving equipment or facilities, **not specifically covered by other practices** shall meet the requirements given herein.
- R,M 2.3 **All structural steel members** referenced in this practice shall be coated or hot dipped galvanized per **IP 19-1-1**. Hot dip galvanizing is preferred.

PLATFORMS

- O,M 3.1 **Platforms shall be provided to the extent indicated below** unless the equipment or facilities described are accessible from grade or from other permanent platforms. Access to these platforms shall be by permanently installed ladders or stairs unless otherwise specified.

EQUIPMENT OR FACILITY	SPECIFIC REQUIREMENTS
a. Service and Inspection Openings	All which are located with the bottom of the opening more than 10 ft (3 m) above grade.
b. Instrumentation and Controls, including associated manifolds and take-off connections	- All which require operator attention or which are otherwise observed, adjusted, or serviced, during plant operation. - Access to instrument take-off valves by permanent ladder is acceptable.
c. Control Valves, Pressure Relief Devices, Motor Actuated Valves (electric, pneumatic, or hydraulic operated), Lubricated Valves	All which are not located at grade elevation.
d. Emergency Isolation Valves (EBV)	- All which are not located at grade elevation. - Permanent ladders shall be provided, as required, for direct access from grade.
e. Other Operating Valves, Sample Outlet Valves	Individual or grouped (for convenience of operation) and which are not provided with chain operators or extensions.
f. Machinery	- All machinery mounted on elevated foundations or not otherwise accessible for operation and maintenance from grade or floor level. - Floor grating shall be provided between adjacent cylinders of multi-cylinder compressors.
g. Vertical Shell and Tube Exchangers	For maintenance access to covers, channels or bonnets, where the flanges of such components are more than 12 ft (3.7 m) above grade.
h. Separators, Basins (or Tanks)	For operation of sluice gates, plugs, or similar control components.

- M 3.2 **Platform size** shall be governed by the following:
- a. **Minimum clear platform width** shall be 2 ft 6 in. (750 mm) except for the services listed below:

SERVICE	MINIMUM CLEAR WIDTH	
	ft (in.)	mm
In front of equipment for servicing trays	3 ft	900
At each end of the shell and tube units for servicing bonnet, channel, and tube bundle	3 ft	900
Connecting walkways between platforms	2 ft	600
(except around elevated machinery)	2 ft 6 in.	750
Around safety valves for maintenance	3 ft 6 in.	1050

- * b. **Clear length and width of platforms** dedicated to special operation and maintenance tasks will be specified. (Such facilities include: instrument maintenance, blanking of tower nozzle connections, removal and testing of pressure relief devices, servicing corrosion probes or retractable water sprays.)
- * c. The space on platforms used for **permanent or temporary storage of containers** of catalyst, chemicals and similar materials will be specified.
- * d. Platforms around compressors and other large machinery shall provide space for **placement of rotors and similar components**.
- e. **When welding terminal boxes are located on platforms in process unit structures**, space shall be available on the platform (served by the welding box) sufficient to accommodate one welding machine.
- O 3.3 Platforms servicing equipment manholes shall be not more than 3 ft 6 in. (1050 mm) below the manhole centerline.
- O 3.4 **The minimum headroom over platforms and walkways** shall be 6 ft 9 in. (2050 mm). Headroom shall be measured to the lowest point of overhead structural framing (including fireproofing), piping (including insulation), or equivalent.
- S 3.5 Unless otherwise approved by the Owner's Engineer, **platforms for structures** located within a 40 ft (12m) horizontal radius of high fire potential equipment, as defined in **IP 14-3-1**, or located above equipment handling flammable gases above their autoignition temperature or above 600°F (316°C), whichever is lower, shall be as follows:
- a. **Steel structures and equipment platforms**: floorplate
- b. **Concrete structures**: concrete or floorplate
- c. **All compressor platforms**: grating
- R 3.6 **Drainage** shall be provided by one hole, 1/2 in. (13 mm) diameter, for approximately every 15 sq ft (1.5 m²) of steel floor plate. Holes shall be located at low spots, and shall be drilled after erection. Where practical, drainage holes shall not be located directly above ladders and plate stair treads, nor shall they be located over water-sensitive equipment.
- R 3.7 Platform floor plate shall have a raised pattern and a 1/4 in. (6 mm) nominal thickness.
- I * 3.8 **The use of a rolling stair/platform** in lieu of permanent structures, for access to equipment near grade shall be approved by the Owner's Engineer.
- R * 3.9 **The use of operating and service platforms interconnecting two or more equipment items** (such as elevated towers) or facilities shall be approved by the Owner's Engineer. Such platforms shall be designed for differential movement of the two or more equipment items.
- I * 3.10 **The final number and arrangement of platforms**, including access and exit locations, shall be reviewed by the Owner's Engineer.
- R 3.11 **Platforms attached to vessels** or similar equipment shall be designed to accommodate thermal expansion.

STAIRWAYS AND LADDERS

- S 4.1 **A means of escape** in addition to the usual access shall be provided from platforms where the travel to an access exceeds 50 ft (15 m).
- S 4.2 **Stairways** shall have a maximum vertical continuous flight of 12 ft (3.7 m), unless otherwise approved.
- M * 4.3 **Where ladders are the only means of access**, they shall provide for side-step access to platforms unless through ladder type is approved by the Owner's Engineer.