

SCOPE

- I 1.1 This practice covers the design and construction of gangway systems for ship/shore access at marine facilities.
- I 1.2 **An asterisk (*)** indicates that a decision by the purchaser is required, or that additional information must be furnished by the purchaser.

SUMMARY OF ADDITIONAL REQUIREMENTS

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

TABLE 1

PRACTICES	
IP 4-1-3	Design Loads for Structures
IP 19-1-1	Paint and Protective Coatings
IP 20-1-1	Inspection of Equipment and Materials
IP 20-1-2	Administrative Procedures for Obtaining Exxon Engineering Inspection
STANDARD	
ASCE Standard	
ASCE-7	Minimum Design Loads for Buildings and other Structures

- I * 2.2 The Vendor shall comply with any **local rules or regulations** specified by the purchaser.

VENDOR DOCUMENTATION

- I * 3.1 **The bidder's proposal** shall include the following information:
 - a. Total equipment list (within vendor's scope of supply), with description of each item.
 - b. Materials of construction including specifications and grades.
 - c. Description of the operating control system and the requirements of the local power / electrical supply.
 - d. Maximum foundation loads.
 - e. General arrangement drawing showing gangway in stored position and various positions within operating envelope.
 - f. Detailed component and gangway member drawings.
 - g. Description of any modifications required to the existing dock structure in order to mount gangway system.
 - h. Price list for spare parts and list of recommended spares and special maintenance tools for first two years of service.
 - i. A schedule of documentation submission for approval by the Owner's Engineer prior to contract award.
 - j. A list of exceptions to this practice, including detailed explanations of reasons for the exceptions and proposed alternatives. If there are no exceptions, a statement to this effect shall be included.
 - k. A list of all sub-contractors and a description of work that they will be performing.
 - l. Inspection Plan covering materials, fabrication and testing quality control and assurance for all components.
- I * 3.2 **After contract award**, the vendor shall submit the following for review by the Purchaser's Engineer:
 - a. Final assembly drawings.
 - b. Hydraulic/electrical system schematics.
 - c. Detailed welding procedures for all proposed welded components.
 - d. Complete design calculations for stored and connected positions:
 - 1. Gangway member loads and ratio of actual loads to allowable loads.
 - 2. Loads in maneuvering system components and ratio of actual loads to allowable loads.
 - 3. Maximum foundation loads.
 - e. Material selection details.
 - f. Operating envelope.



IP 4-4-2		Marine Shore-Based Gangway	
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(This practice is appropriate for attachment to Inquiry or Purchase Document)

MATERIALS

- C 4.1 Gangways may be constructed in steel, aluminum, or a combination of steel and aluminum.
- M 4.2 Where steel and aluminum is used in combination, provisions shall be provided at the interface of the two materials to avoid the potential for "galvanic" corrosion.
- M 4.3 Exposed steel shall be coated in accordance with [IP 19-1-1](#), Service Category II (Marine Atmosphere).

DESIGN

- I * 5.1 The Owner shall specify the following minimum design information:
 - a. Type of gangway (i.e. conventional, platform-mounted, carriage-mounted, column-mounted, or tower mounted).
 - b. Maximum and minimum "Vessel Size" (DWT or M³ and Length Overall).
 - c. Detailed drawings of berth structure showing proposed location of gangway.
 - d. Elevation drawing of berth structure showing deck elevation and lowest low water elevation.
 - e. Design operating envelope referenced to berth deck elevation or lowest low water elevation.
 - f. Design wind speed (gangway in stored position) in terms of 3 second gust speed, at 33 ft (10 m) elevation.
 - g. Earthquake seismic coefficient.
 - h. Area electrical classification.
 - i. Control system safety and material requirements.
 - j. Requirements for shop performance testing (if any).
- O 5.2 The **gangway system** shall be capable of accommodating the full range of specified design vessels at all locations within the design operating envelope.
- O,S * 5.3 All **gangways shall be designed** to the following general design criteria:
 - a. Unless otherwise specified, the gangway maximum operating wind speed (connected and maneuvering modes) shall be taken as 68 mph (30 m/sec) 3 second gust, at 33 ft (10 m) elevation.
 - b. Minimum walkway width of 2 ft (0.6 m) for gangways less than 13 ft (4 m) in length and 3.2 ft (1 m) for gangways 13 ft (4 m) or longer in length.
 - c. Continuous handrail height of 3.9 ft (1.2 m), including the "step-down" from the gangway walkway to the vessel deck (if provided). "Mid-rails" shall be provided on all gangways.
 - d. The gangway shall be designed to store behind the deflected fender face.
 - e. Gangways shall not be designed for angles of inclination greater than 35 degrees unless "self-leveling" steps are provided.
- O,R * 5.4 All gangways shall be designed in accordance with [IP 4-1-3](#) for the following load conditions and calculation procedures:
 - a. **Gangway self-weight**, including an ice build-up of 1 inch (ice specific gravity = 0.80) for gangways to be installed at locations that experience ambient temperatures below freezing.
 - b. **Gangway walkways** shall be designed for a minimum operating load of 50 psf (2.4 kN/m²).
 - c. Gangway **handrails** shall be designed for a minimum operating load of 50 pounds/linear-foot (0.73 kN/linear-meter)
 - d. **Wind loads** associated with the specified wind speeds (design and operating) shall be assumed to act perpendicular to the side of the gangway and shall be calculated from wind pressure based on the procedures defined in [IP 4-1-3](#) and [ASCE-7](#).
 - e. Unless otherwise specified, the **ASCE-7 Terrain Exposure** shall be taken as Category "D" for all locations exposed to wind flowing over open water (excluding shorelines in hurricane prone regions) for a distance of at least 1 mile (1.61 km). Wind pressure variation with height shall be based on the following formula:

$$P_z = 0.696 P_{33} Z^{0.2} \geq 0.86 P_{33}$$

where: P_{33} = Wind pressure at 33 ft above lowest low water, psf

Z = height above lowest low water, ft

P_z = wind pressure at Z ft above lowest low water, psf



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