

2.4 Analysis type

The deck structure has been analyzed using the linear static analysis method. The fundamental assumptions for employing linear static analysis are as follows:

The material behavior is linear, and stress is directly proportional to strain according to Hooke's law. The applied loads on the structure are static and constant. The relationship between applied loads and structural displacements is linear (Figure 1).

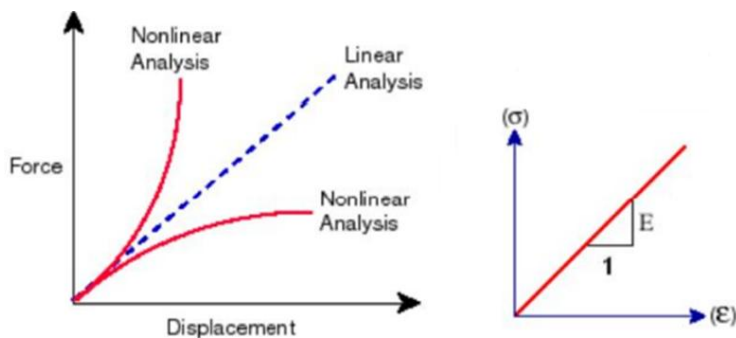


Figure 1 Assumptions of linear static analysis

2.5 Coordinate system

A right-handed Cartesian coordinate system was adopted for structural modeling and analysis. The longitudinal direction was defined as the X-axis and taken as positive toward the bow, the transverse direction was defined as the Y-axis and taken as positive toward port, and the vertical direction was defined as the Z-axis and taken as positive upward toward the deck (Table 3). The origin of the coordinate system was located at the intersection of the ship centerline (CL) and the baseline (BL) (Figure 2).

Table 3 Coordinate system (KR for Steel Ships, Part 3, Annex 3-2, Page 139)

| Axis | Direction | Positive orientation |
|------|--------------|--------------------------|
| X | Longitudinal | Forward (toward the bow) |
| Y | Transverse | Port (toward the left) |
| Z | Vertical | Deck (upwards) |

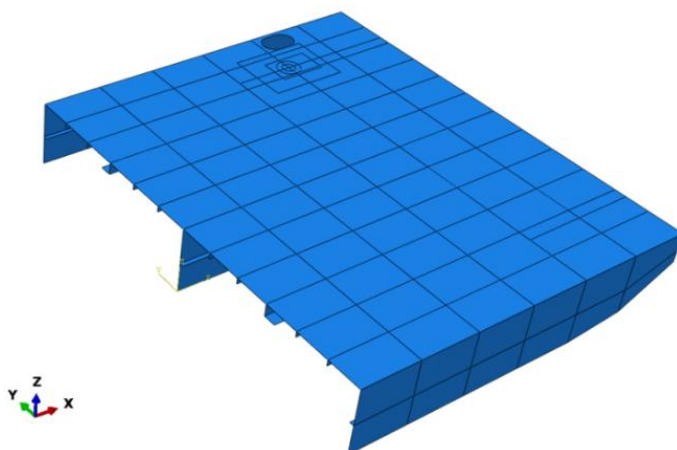


Figure 2 Assumptions of linear static analysis

2.6 Geometric properties of the model

The structural model extends from aft bulkhead 12 to the forecastle region, covering three compartments. The modeled deck region has dimensions of 6 000 mm in the longitudinal direction, 7 200 mm in the transverse direction over the full ship breadth, and 1 100 mm in the vertical direction below the deck (Figure 3).