

7.9.4 Ladder

7.9.4.1 Scope

This section defines the minimum requirements for manufacturing and installation of the safety ladders to be provided for the works.

7.9.4.2 Materials

Steel

- Structural Steel EN 10025 (minimum grade S275N) Hot dip galvanised to ISO1461
- Anchors & bolts Stainless steel grade A70 in accordance with ISO 3506

Contact between dissimilar metals such as galvanised steel members and aluminium surfaces or between galvanised and un-galvanised steel members shall be prevented by means of insulating washers and grommets of neoprene or equivalent. Washers shall be also used in order to avoid damage to paint.

7.9.4.3 Corrosion protection

Galvanising thickness to suit the design life of the steel elements as per Protective Coatings Specification

7.9.4.4 General requirements

Safety ladders shall be installed along the berth and approach trestle for tug facility with centre to centre distances between each other in accordance with BS 6349-2: 2010.

Ladders shall be provided for escape or recovery. The ladders shall be recessed as shown on the drawings. A handgrip of the same length of the rung shall be fixed in the recess on top of the berth.

The bottom rung shall be at least 1 m below the Lowest Astronomical Tide (LAT).

Execution class

The execution class for ladders shall be EXC2.

Contractor's documentation

General:

The Contractor's documentation for the material supply, fabrication including testing and certification, handling, transport and erection of all structural steel elements, shall be in accordance with the requirements of EN 1090-2 Execution of steel structures and aluminium structures Part 2 - Technical requirements for the execution of steel structures.

Quality Documentation:

The Contractor shall provide quality documentation for the execution of the works which conforms to the requirements of EN1090-2 Clause 4.2.1.

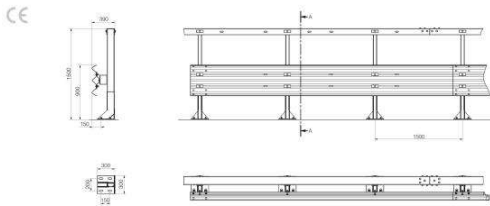
7.9.5 Vehicle restraint barriers

Vehicle restraint barriers are SafeStar 441b or equivalent with containment level H4 or similar equivalent according to the local standard. Product information for this barrier type and for the cast-in HD bolt anchorage are included below. Contractor will be responsible for developing detailed design for approval of the Engineer.

Typical details of the barriers are presented here.

Saf3Star 441b

H4b · W4 · B


TECHNICAL SPECIFICATIONS

Normalised working width (m)	1.30
Class of normalised working width	W4
Normalised dynamic deflection (m)	1.00
Construction width (m)	0.39
Construction height (m)	1.50
Distance between posts (m)	1.50
Tested system foundation / installation	anchored
Test length (m)	72.0

7.9.6 Life Buoys

Life buoys shall be provided at positions in accordance with recognised safety guidelines. Each life buoy shall be minimum 24" diameter/1.3kg specification, supplied and fitted with an encapsulated safety line. The life buoys and safety lines shall be fully UK MSA approved and shall comply with BS EN 14144. Each life buoy and safety line shall be mounted in a proprietary sturdy cabinet complying with BS EN 14145 of fluorescent orange colour and appropriately marked. The cabinets shall be mounted flat and fixed to the quay/dolphins at the positions agreed with the Engineer.

7.9.7 Handrailing and Standards

The Contractor shall be responsible for the detail design of handrailing in accordance with the Employer's Requirements.

The handrailing shall be fixed true to line and the standards set plumb. As appropriate handrailing shall be securely fixed either on a mortar bed to the structural concrete or grouted into the structural concrete or welded/bolted to a structural frame.

7.9.8 Fixing Metalwork to Concrete

Bolts, cast-in sockets, frames etc. to be fixed in situ to concrete shall be set accurately in the shuttering or hung from special supports in their correct positions. They shall be firmly fixed so that they cannot be