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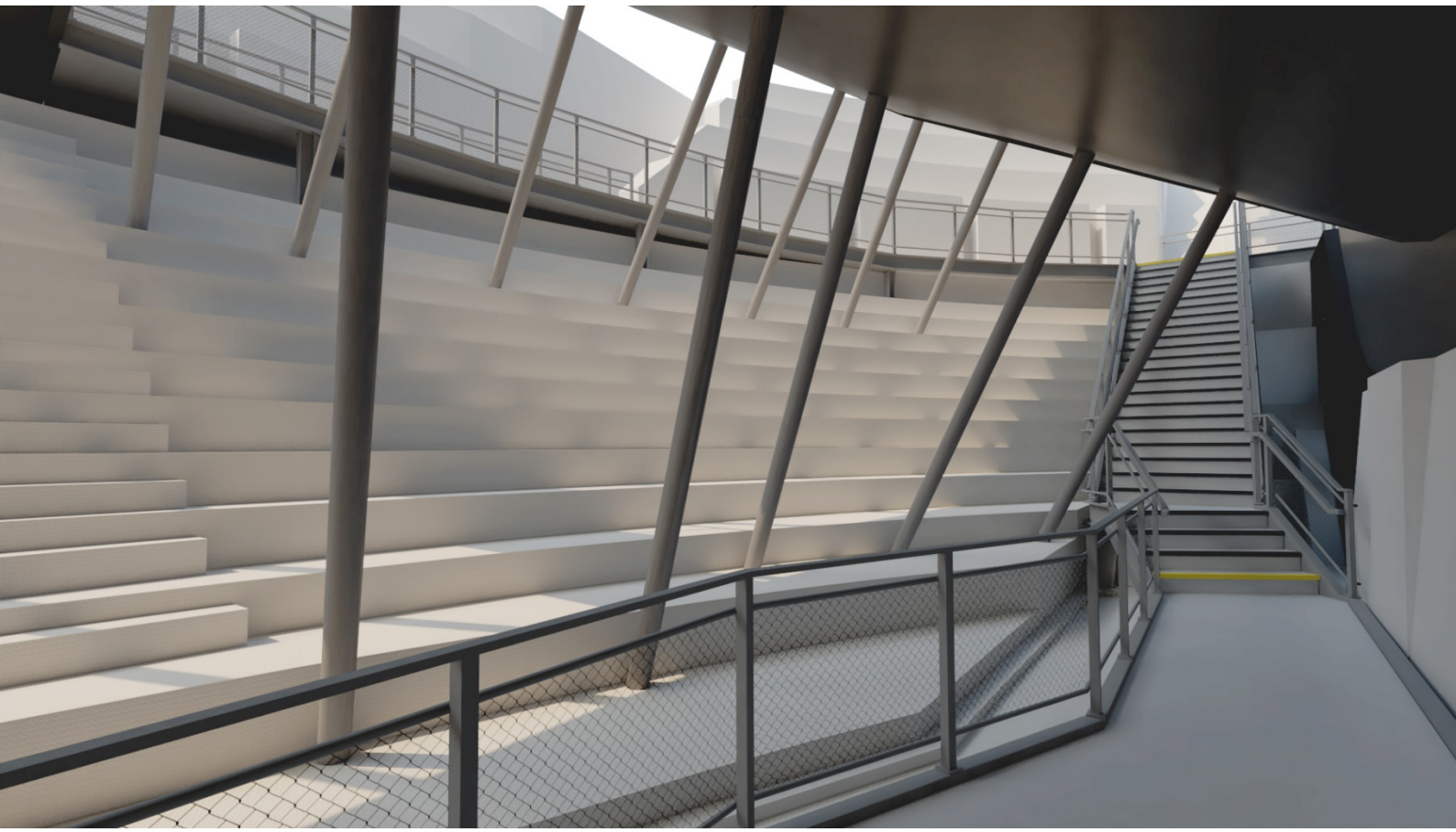

HMS Victory – Dry Dock Access
Specification & Design Intent

October 2019

THE NATIONAL MUSEUM ROYAL NAVY

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1. Introduction

1.1. Purpose of Document

This document describes the proposals for the new walkway structures within Dry Dock No.2 to provide access for members of the public to view the dock and the hull of HMS Victory. It supports the drawings issued as part of the tender. The steelwork incl. sizes, connections/fixings, balustrade and the lighting scheme are to be developed by the appointed contractor.

1.2. Site

No. 2 Dock forms part of the Portsmouth Dockyard Scheduled Ancient Monument (NHLE no.1001852). The dock is also part of the group of Docks 1 to 6 (consecutive), Grade I Listed (NHLE no.1272267). No.2 Dock houses HMS Victory, which is an asset equivalent to one of Scheduled Monument status, that is 'incapable of being designated by virtue of being outside the scope of the Ancient Monuments and Archaeological Areas Act 1979 because of their physical nature' (NPPG paragraph 040, 06/03/2014) and is the only surviving first rate ship of the line, giving it exceptional significance.

1.3. Project

The project will provide access to the dock for the first time for the visiting public allowing them to appreciate its architecture and also previously unseen views of the bow, hull, keel and rudder of HMS Victory.

The scheme has been developed in consultation with Historic England, and an application for Scheduled Monument Consent has been submitted.

1.4. Surveys

There is a topographic and point cloud survey (including the layout of the new propping scheme) of the site available to the contractor. The contractor will be required to undertake any further surveys required, in particular to identify suitable joint locations for fixings.

2. Design proposals

The design provides a walkway leading from the port hold visitor exit which then continues along following the curve of the broad altar to a viewing area at the landing of the dock forward stairs to appreciate views of the bow of the vessel. The broad altar walkway is the total width of the top two steps of the broad altar, approximately 1480mm wide, to allow the width for two flows of visitors.

From the landing a new staircase, replacing the existing one, will take visitors down to the dock bottom. The new stairs will be the full width of the ramp including the upstands. The bottom four treads are set at an angle to ensure head room under a prop in this location.

The walkway continues along the dock bottom, towards the rudder, where it rises to an area to create a viewing platform so visitors can clearly see the rudder. Visitors will then return along the same route and exit the dock via the port hold exit and stone flight of stairs and out. This provides continuation of the existing visitor route and does not require separate ticketing or staff to main a separate entry of exit point. The proposals keep all interventions to the dock on the port side only, leaving the starboard side untouched, for full appreciation of its appearance.

The design is for a steel structure that sits within the dock this is fully reversible meaning it can be removed at any time without having impacted on the fabric of the dock.

3. Components

3.1. Structural Steelwork

The drawings only indicate the size and profile of the proposed steelwork structure . The contractor is to complete the design of the new steelwork structure to the following requirements and provide design and fabrication drawings prior to construction for comment.

Loadings

The steelwork will be designed for 7.5KN/m2 uniform distributed load and 4.5KN point loading.

Profile

The steelwork to the edge of the walkway and staircase will be formed of channels, sized to suit the loadings outlined above.

Fixings

There are to be the minimum number of fixings required and all fixings are to be made into joints in the stonework only. The contractor is required to undertake a survey of the dock to determine fixing locations as part of the design of the steelwork.
At all points where the steelwork interfaces with the fabric of the dock (stonework, concrete, timber) rubber gaskets/pads sized to suit will be installed between the steelwork and the dock to prevent damage to the stonework.

Reversibility

The structure will be designed and installed so that it is fully removable and therefore reversible, to return the dock to its current state in the future.

Finish

All structural steelwork is to be galvanised to BS EN 1461:2009

Broad Altar Walkway Structure

The broad altar walkway is to be a self-supporting structure, with the steelwork sitting directly on the broad altar and supported on steel pedestal feet on the first step. The walkway will be constructed so that sections can be removed to allow for future repair to the dock stonework below the structure.

The broad altar walkway needs to abut the existing hold exit brow to create a level surface to the new walkway. As part of this the balustrade of the existing port hold exit brow will have to be altered to allow access to the adjoining walkway. The existing exit brow needs to remain removable, to allow load testing that occurs regularly.

The broad altar walkway ramps down from the existing exit brow and then follows the gentle slope of the dock stonework below. The structure should be constructed of maximum 2500mm sections creating a chamfer that suits the curved profile of the dock

Staircase Structure

The new staircase will be the whole width of the ramp including the upstands. The pitch of the stair will follow the pitch of the ramp. The stair steelwork will be fixed into joints within the ramp stonework or reuse existing fixing holes from the previous stair. The bottom four steps dog-leg to starboard, in order to avoid a prop and achieve the required head-height

Dock Bottom Walkway Structure

The dock bottom structure will sit onto the concrete dock bottom and requires no extra pedestal feet although packers will be required to suit the existing falls of the concrete. If fixings are required, these can be made into the concrete. Within the dock bottom there are timbers set into the concrete, these should not be fixed into or damaged in any way.

Rudder Viewing Area Structure

The rudder viewing area will be supported off a number of steel pedestal feet, as required. The platform should be constructed so that sections can be removed to allow for future repair to the dock stonework below the structure.

3.2. Walkway Surface

The proposed specification for the walkway surface is:

Supplier: Elefant Gratings
Product: Type 05 Planks in Carbon Steel Grade S235JRG2 (240 Yield)

Finish - Hot Dipped Galvanised to BS EN 1461:2009

Or similar approved.

These are to be supported off the structural steelwork. In some areas the planks will need to be made to suit the curve of the steelwork.

3.3. Staircase and Steps

The new staircase will replace the existing steel staircase which is to be removed. The new staircase will be the whole width of the ramp including the upstands.

The proposed specification for the stair treads to both the new staircase and steps is:

Supplier: Elefant Gratings
Product: Type 0-M Bespoke Stair Treads
Finish - Hot Dipped Galvanised to BS EN 1461:2009
Loading – In accordance with BS EN 1991-1-1:2002
Accessories – Riser plates and removable nosings with colours to achieve at least 40 points colour difference.

Or similar approved.

The new staircase and rudder viewing area steps will both have handrails installed that comply with Part M of the building Regulations. The handrails will be stainless steel, circular profile, fixed to the balustrade posts with stainless streel brackets. A separation gasket will be installed between the handrail bracket and the balustrade post.

A secondary galvanised steel rail will be installed to the keel side if the new staircase to prevent visitors reaching over and touching the bow.

3.4. Balustrade

The balustrade is detailed on DWG 601. It consists of galvanised square section posts at approximately 1200mm centres fixed down to steelwork structure with countersunk fixings, with a galvanised top rail bolted to the posts with countersunk fixings. A 30mm stainless steel tube is fixed to the posts at top and bottom with a stainless-steel bracket and rubber packer. Between the two tubes is a stainless-steel cable mesh infill connected to the tubes with a stainless-steel connecting rope. The contractor is to provide fabrication drawings prior to construction for comment.

3.5. Removable Stanchions

Centrally down the dock bottom walkway there will be a series of drop-in removable stanchion posts that can have rope clipped between to form a two-way visitor flow. These are detailed on DWG 324.

3.6. Handrails to existing steps

The port aft stairs are to become a means of escape in the event of an emergency. To facilitate this they are to have handrails fitted. The lower section handrail is to be supported on posts that are welded to flat bar base that is formed to the shape of the dock, and fixed into joints with countersunk fixings, and secured further with 2no.

backstays, also fixed into joints. There should be a rubber strip between the flat bar base and the stonework.

The upper staircase has a new handrail fixed to the existing dock wall using handrail brackets, again fixed into joints, with a single post at the top that should be fixed down into the resin bound gravel not the stonework.

The contractor is to provide fabrication drawings prior to construction for comment.

3.7. Lighting and Containment

The scheme includes lighting proposals for the walkway, including the specification for fittings. The contractor is to design all cabling and containment, establish the nearest distribution board, and determine if there is sufficient spare ways and capacity.

There is to be 5 No. new emergency bulkhead fittings mounted to the broad altar walkway and staircase, which are fed by cable clipped to the steelwork structure as shown on DWG 601.

There is to be 6 No. new emergency bulkhead fittings mounted on the keel wall, to match the existing fittings.

A further black emergency floodlight to be mounted on the dock wall, fixed into joints, on the port aft stairs.

The new staircase is to have LED strip tape in an aluminium channel fixed to stringers on both sides to provide light to steps.

3.8. Fabric Removal and Repairs

A series of railings are to be removed at the landing on the part aft stairs. These are to be carefully cut out without damaging the stonework. Following the removal, the stonework should be made good with lime mortar. To the following specification:

MORTAR REPAIRS

PREPARATION FOR MORTAR REPAIRS

- Repair area: Scribe straight horizontal and vertical lines with edges parallel to joints. Where repair area abuts joints, maintain existing joint widths and do not bridge joints.
- Decayed masonry: Cut back carefully to a depth of not less than 20 mm and to a sound background. Where the depth of removal exceeds 50 mm seek instructions.
- Precautions: Do not weaken the masonry by removing excessive material. Do not damage adjacent masonry.
- Top and vertical edges of repair area: Undercut.

MORTAR REPAIRS TO STONEWORK

- Reinforcement: Not required .
- Mortar:

  Mix: 1:2.5 NHL5 hydraulic lime: sand St Astier or similar approved. Add stone dust to match surrounding stone colour and texture .

Sand source/ type: Sharp, well graded. Sand samples required, proportion of sand to stone dust determined by site trials .

APPLYING MORTAR

- Background: Clean thoroughly to remove all dust and debris and dampen to control suction.
- Building up: In layers to specified thickness. Apply firmly and ensure good adhesion with no voids. Form a mechanical key to undercoats by combing or scratching to produce evenly spaced lines.
- Applying coats: Allow each layer to achieve an initial set before applying subsequent coats. Prevent each layer from drying out too rapidly by covering immediately with plastics sheeting and/ or dampening intermittently with clean water.
- Finishing mortar coat: Form accurately to required planes/ profiles and flush with adjacent masonry.
- Protection: Protect completed mortar repairs from adverse weather until they have fully set.

FLOAT FINISH TO MORTAR REPAIRS

- Finish: Use a wood float and/ or a felt faced float to give an even overall texture. Do not use steel floats.

STORAGE OF LIME:SAND MORTAR MATERIALS

- Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free draining bases.
- Nonhydraulic lime:sand mortar: Store on clean bases or in clean containers that allow free drainage.
- Prevent drying out or wetting and protect from frost.
- Bagged hydrated hydraulic lime: Store off the ground in dry conditions.

MAKING LIME:SAND MORTARS GENERALLY

- Batching: By volume. Use clean and accurate gauge boxes or buckets.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
- Contamination: Prevent intermixing with other materials, including cement.

SITE PREPARED NON-HYDRAULIC LIME:SAND MORTARS

- Mixing: Mix materials thoroughly by compressing, beating and chopping. Do not add water.
- Equipment: Roller pan mixer or submit proposals.
- Maturation period before use (maximum): Seek instructions.