



Cornwall County Council

Saltash Landing Stage Pontoons



July 2015

Prepared	Checked
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1. Introduction

Teignmouth Maritime Services Limited (TMS) were instructed to carry out an Ultrasonic Thickness (UT) and In Water Visual Survey of the Saltash Landing Stage Pontoons on behalf of Cornwall County Council (CCC). The inspection was completed on Thursday 25th June 2015.

2. Scope of Report

This report provides a detailed record of the systematic UT and close visual inspection in accordance with the method statement based on the requests from CCC.

A diagrammatic record of all findings is presented as an A3 printable attachment to this report (diagram 6.1), which records the location, extent and severity of any defects found, accompanied with written comments, and observations located within this report.

3. Description of Structure

The structure is a Docking Solutions designed, T shaped steel tube pontoon, with decking and appropriate furnishings secured on top to provide a landing stage for both commercial and private boat users. The main pontoon water frontage runs upstream/downstream (N/S) on the River Tamar below the Tamar Bridge. The main pontoon water frontage faces east, is 30 metres long, 3 metres wide by 1.2 meters deep (based on the steel tube measurements), and consists of two 30 metre long 1.2m diameter steel tubes. The shoreward section of the pontoon runs East/West and has four finger pontoons (two North and two South) attached to it, and supports the main public access link-span bridge to the landing stage. This pontoon is 20 metres long, 4 metres wide and 1.2 metres deep, and is similarly constructed of two 20 metre long 1.2m diameter steel tubes.

4. Inspection and maintenance history

Previous inspection and maintenance history of Saltash Landing Stage is known by the client, original installation was approximately 12 years ago.

5. Inspection Procedure

5.1 General Arrangements

The survey was carried out by an inspection diving team, on the 25th June 2015. Access to the structure was via the link-span bridge from the car park shore-side where dive control was established'. The weather during the inspection was sunny, with air temperature between 18 - 22 degrees Celsius and a light to moderate westerly wind.

Safety and Access Equipment

PPE, including helmets, gloves, safety boots, life jackets, high visibility clothing and dry suits
First Aid and Oxygen Kit
Ladders, Cutting Equipment and associated PPE
Associated surface supplied diving equipment

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Survey and Inspection Equipment

2m Measuring Rod
Tritex Ultrasonic thickness meter
Chipping Hammer
Scraper
Wire Brush

5.2 Detailed Inspection Procedure

The Saltash Landing Stage pontoons were visually inspected, accompanied with UT thickness measurements, and carried out by underwater surveyor (inspection diver), with the assistance of in water 'real time' video footage to assist the supervisor.

The structure was methodically surveyed, beginning from the downstream (southern) end of the 30m section working towards the upstream (northern) end. This included a visual survey and measurements of the round piles, pile guides and all sub – surface elements of the structure. 100% heavy marine growth was observed throughout the inspection, and consisted of heavy barnacle growth, mussels, thick seaweed and sea squirts. Due to this growth the areas surveyed were localised to areas cleaned to allow UT measurements and spiral weld checks every 2.5m along the steel tubes. The same method was repeated on the shorter 20m section which runs east/west from the shore supporting the link-span footbridge. Please refer to diagram 6.1 for detailed information and UT measurements.

5.3 Measurement and nomenclature

The measurements for ultrasonic thickness results are in millimetres.
All other measurements are in millimetres or are as per description.
Nomenclature is referenced and noted where abbreviated.
Nomenclature in the diagrammatic results can be found in the key.

6. Condition of Structural Elements

6.1 Diagrammatic Results, Observations and Comments of Saltash Landing Stage Pontoons are added as an attachment

Key to abbreviations – Diagram 6.1

GC – Good Condition
UW - Underwater
UT – Ultra Sonic Thickness Measurement
NR – No Reading – due to heavy corrosion on plate surface

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7. Summary of Inspection

1. It is unknown what the original steel tube thickness was on installation, but based on age and average rate of corrosion (based on previous experience from identical Docking Solutions Landing Pontoon structures) it is assumed original plate thickness to be 8mm. Whilst UT measurements appear very uniform throughout, these readings do not give us the integrity of the welds. It is these points which are areas of concern. (Marked in red on diagram 6.1) Please see photographs below. UT measurements cannot be taken on welds as the surfaces are too corroded and uneven. Further chipping/cleaning is not preferred as this may cause damage/remove sections of weld, potentially leading to flooding and sinking of steel tubes. The end capping welds of all steel tubes were of most concern, whilst some spiral welds also displayed similar corrosion characteristics.

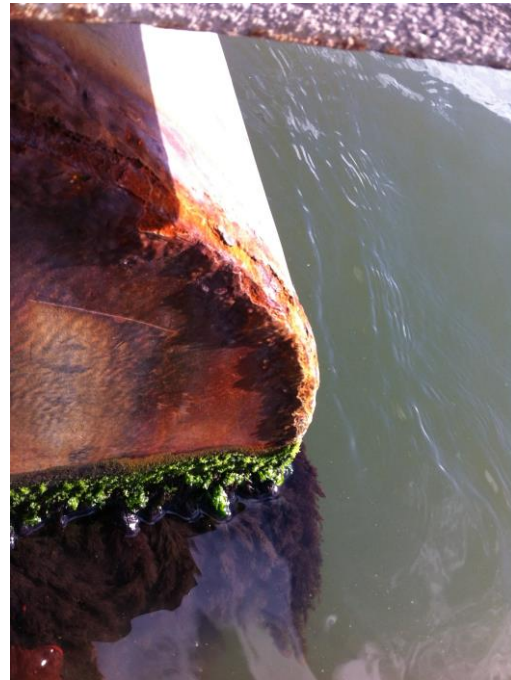


30m Pontoon Outer Tube North - Weld Pitting & Corrosion

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30m Pontoon Outer Tube North
Corrosion & pitting on end welds



30m pontoon – Outer Tube South - severe

2. Areas of flaky rust were removed, to reveal blackened (illustrating oxidation) pitted steel surfaces which were at times too uneven to allow UT measurements. At these points it must be assumed that the steel thickness is thinner than the uniform 6mm average. (see photograph below).



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3. The round piles are a uniform 16mm thickness and are driven into the seabed. Subsea condition visually appears to be better than above water, in good condition with 95% of coatings still remaining. Pile guides were serviceable and also satisfactory.
4. Connections between the tubes and decking also appeared visually satisfactory.
5. Connections between finger pontoons and main 20m pontoon appear suspect with on welded section broken (refer to diagram 6.1)
6. 100% heavy marine growth was observed throughout the inspection, and consisted of heavy barnacle growth, mussels, thick seaweed and sea squirts, so areas inspected were limited, but did reveal satisfactory coatings.
7. Two broken cleats were replaced with new (identical) on the upstream outer face of the 30m pontoon section.
8. Recommendation - Carry out full refurbishment of tube sections to extend working lifespan. (Clean, shot blast, weld repairs, marine coatings, cathodic protection system – TMS have recently carried out these same works for another Local Authority)

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