ADDENDUM #01 for DNS-2021-0042 Maersk Wharves and Boardwalk Design-Build Request for Proposals
Sponsored by:
Develop Nova Scotia Department

Changes:

1) Appendix F – Pilot Wharf Assessment (Draft): Grammatical changes and formatting were completed. Replace with the revised Appendix F – Pilot Wharf Assessment (Draft) attached below.

In accordance with Section C.7 of Appendix C – Submission Pricing Form, Proponents are deemed to have read and taken into account all addenda issued by Develop Nova Scotia.

For further information prospective Proponents should contact Tim Jordan, Project Manager at tim.jordan@developns.ca.
APPENDIX F – Draft Pilot Wharf Assessment and Recommended Repairs
APPENDIX F - PILOT WHARF ASSESSMENT AND RECOMMENDED REPAIRS WORK

Assessment of Pilot Wharf

Develop Nova Scotia

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Draft Report – Rev. 1

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Prepared By:
Matt Fennell, P.Eng.

Reviewed By:
Normand Landry, P.Eng.

EXP Services Inc.
90 Lovett Lake Court
Halifax, NS B3S 0H6
t: +1.902.453.5555

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Legal Notification

This report was prepared by EXP Services Inc. for Develop Nova Scotia. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. The report, which specifically includes Appendices A to D, is based on observations and information collected during the Structural Condition Assessment conducted by EXP Services Inc. It is based solely on the condition of the structure encountered at the times of the site visit completed on May 21, 2020, and on the report from Connors Diving (dated May 27, 2020) as reported herein.

The assessment of structural conditions and possible hazards at the site has been made using the results of visual analyses of the structure. The site conditions between and beyond these locations have been inferred based on conditions observed at adjacent or related locations. Additional study, including intrusive investigation, can reduce the inherent uncertainties associated with this type of study. However, it is never possible, even with exhaustive review, to dismiss the possibility that structural problems or potentially hazardous situations on parts of the site may remain undetected. If new information is discovered in future work, including destructive testing or other studies, EXP should be requested to re-evaluate the conclusions of this report and to provide amendments as required.

The services performed as described in this report were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.
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1 Overview

1.1 Introduction

Develop Nova Scotia contacted EXP Services Inc. (EXP) to provide engineering services to complete an inspection of the wharf structure located east of 1601 Lower Water Street on the Halifax Waterfront, Nova Scotia. The age of the structure is unknown.

Develop Nova Scotia requested a detailed inspection be completed and documented in a report, complete with photographs taken during the site inspection to record the current condition of the wharf. The scope of work was also to include the following components:

- Description of the Wharf Facilities
- Wharf Inspection (above-water and under water portions)
- Develop Class D cost estimates for recommended structural and safety related upgrades and repairs.
  - Immediate Repairs (Covering a life span of 0-5yrs)
  - Program of repairs to facilitate a 25 Year Life Span.

The inspection was completed by Matt Fennell, P.Eng. and Jonathan Durling on May 21, 2020. The in-water inspection was completed by Chris Dupuis and crew from Connors Diving Services Ltd.

The wharf structure was visually reviewed to assess the present condition and look for specific instances of:

- deterioration, failure or absence of structural/non-structural timbers;
- deterioration, failure or absence of piles, pile caps, cross-bracing, wales; and
- any other relevant deterioration or safety concerns.

The effects of sea level rise and climate change on the wharf have not been assessed as part of this report.

1.1.1 History

The subject wharf, located on the Halifax Waterfront, is primarily utilized by pedestrians on the boardwalk and by pilot boats used to guide ships and large boats in and around Halifax Harbour. The main wharf structure is a straight pier and is approximately 8 metres wide by 40 metres long.

1.2 Reference Materials

1.2.1 Survey Drawing

A survey drawing dated July 06, 2018 prepared by Servant, Dunbrack, McKenzie & MacDonald Ltd. has been provided to EXP by Develop Nova Scotia for use in this assessment. The drawing is included in Appendix C.

2 Observations

2.1 General Construction

2.1.1 Description and Type of Construction

The Pilot Wharf is a straight pier structure which extends out from the Halifax waterfront approximately 40 metres and is approximately 8 metres wide. The wharf structure consists of a timber deck, timber stringers, timber pile caps and timber piles, complete with timber fenders and bracing. A plan of the wharf substructure and deck complete with inspection notes is provided in Appendix B. Photographs referenced in the following sections can be found in Appendix A.
2.2 Support Structure and Foundation

2.2.1 Timber Piles

The wharf is supported on 350 +/- mm diameter creosoted timber piles.

Overall, the timber piles were found to be in good condition (with a few exceptions, as outlined in the appendices), with marine growth covering approximately 40% of the pile surface area, both above and below water level.

The wharf consists of twelve pile bents, with each pile bents generally consisting of four vertical/bearing piles spaced at 1.2 m on centre, and four battered piles; two at each end of each bent. Pile bents are spaced at approximately 3.6 m on centre.

Conditions and status of the above-water portions of piles can be seen in the attached EXP Wharf Plan Drawing in Appendix B. For piles below-water, refer to Appendix D – Connors Diving Report.

2.2.2 Timber Pile Caps

Pile caps consist of 300 mm square incised, preservative-treated (or creosoted) timbers. Several pile caps appear to be in relatively new condition and are likely not part of the original construction of the wharf, while others are older and are in poor condition. The exposed ends of several of the pile caps are deteriorated and splitting.

2.3 Decking System

2.3.1 Timber Deck

The decking system consists of 75 mm thick incised, preservative-treated timber deck boards.

Rotted and loose deck boards were observed in six locations, but generally the deck is in excellent condition.

The decking system appears relatively new and does not appear to be part of the original construction of the wharf.

2.3.2 Stringers

The stringers consist of 150 mm wide x 300 mm deep incised, preservative-treated timbers.

All stringers were observed to be in excellent condition.

The stringers appear relatively new and do not appear to be part of the original construction of the wharf.

2.4 Operations

2.4.1 Wheel Guard

The wharf is enclosed by a 300 mm square preservative-treated timber wheel guard on wood chocks.

All wheel guards were observed to be in excellent condition.

The wheel guards appear relatively new and do not appear to be part of the original construction of the wharf.

2.4.2 Fenders

Fenders consist of older 300 mm diameter timbers and newer 300 mm square incised, preservative-treated fenders located around the perimeter of the wharf.

Generally, the newer fenders are in excellent condition and the older fenders are in poor condition. Extensive rot was observed in most older fenders around the water line.
2.4.3 Wales

There is a single row of wales on this wharf. All wales were observed to be in poor condition, and vary in composition, with 0-30% material remaining. On approximately one third of the wharf, the wales have deteriorated completely and are no longer attached to the wharf.

2.4.4 Braces

The majority of braces are covered heavily (80%+) with marine growth and appear to be in poor condition. Several braces were observed to have one or both ends completely detached from the wharf structure.

2.4.5 Mooring Cleats/Bollards

There are three metal cleats on this wharf, and all appear to be in good condition.

There are four wood bollards on this wharf, all of which appear to be in poor condition.

2.4.6 Electrical

One small obsolete/disconnected electrical box was found attached to a fender pile above the timber deck on the north side of the wharf. There is also one light standard on the north side of the wharf. The light standard post is in excellent condition but is attached to and old fender in fair condition.

3 Conclusions and Recommendations

3.1 Conclusions

3.1.1 General Condition

The wharf structure was found to be generally in good condition. Repairs to the structure will be needed to ensure continued use of the wharf. In particular, there are braces, fenders, and wales that are deteriorated to the point of being operationally ineffective and provide limited structural rigidity to the wharf. The timber deck and stringers appear to be in excellent condition, having been replaced recently. The piles and pile caps appear to be in good to poor condition. EXP’s opinion is that moderate investment to complete the recommended structural upgrades by a reputable marine contractor will ensure a minimum 25-year service life without the need for significant reconstruction of the existing wharf.

3.2 Recommendations

Structural repairs, operational upgrades and maintenance outlined in this report are recommended to ensure the wharf remains serviceable. We understand the purpose of a renovation project is to return the wharf to a serviceable condition that will allow it to remain in operation for at least 25 years.

Recommended structural repairs (based on sound engineering design with a minimum in-situ replacement by reputable marine contractor) include:

- Reinstatement of dislodged piles
- Replacement of severely deteriorated vertical and batter piles
- Replacement of poor pile caps
- Replacement of the entirety of the existing timber wales and severely deteriorated timber fenders.
- Replacement of detached/deteriorated timber braces. New properly designed fasteners should be provided.
- Replacement of deteriorated mooring bollards.
Appendix A – 
Wharf Inspection Photos

CLICK [HERE] TO ACCESS
Appendix B –
EXP Wharf Plan Drawing
Appendix C – SDMM Survey Drawing
Appendix D – Connors Diving Report

* SEE APPENDIX G
In APPENDICES