CADANGAN KERJA-KERJA PENINGKATAN/ MENAIKTARAF PELABUHAN PERIKANAN LKIM KUALA KEDAH, KEDAH DARULAMAN

Oleh: MOHAMAD ZAIN BIN HASHIM dan UDA DIN SAAD (LMSB)

INTRODUCTION

The upgrade work was done on the need for this jetty which has been damaged and eroded due to the effects of sea water and the effects of tremors and shocks by the landing of fishing boats. This work is regulated by the Kota Setar District PWD which needs to be completed within 96 weeks. The scope of work involved is as follows; Site clearing works, Jetty repair works, Demolished works, Architectural works, Civil and structure works.

WORKS AT THE LANDING JETTY

The fish landing jetty is a major structure in need of immediate repairs and upgrades that will be used by fishing boats. The main scope of work at this jetty are as followed; Concrete repair works, Bollard system and Pile repairs.

CONCRETE REPAIR WORKS

STEP 1. - Removal of Damaged

The areas of damaged concrete to be broken out is identified as having one or combination of the following:

i) Rust stained concrete
ii) Cracked and delaminated concrete and
iii) Spalled concrete with or without exposed corroded reinforcement.

The concrete to be broken out will be marked out by the LMSB. The breakout area shall be entered into record sheet in duplicate and signed by the engineer. The original shall be kept by the Engineer and the duplicate by the LMSB and shall be used as a record for the purpose of measuring the work. Breakout work shall not proceed until approval of the Engineer is obtained.

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The perimeter of the repair shall be delineated by cutting at 90 degrees to the surface with grinding disk so as to avoid featheredges. The depth of cut shall be 10mm. Care shall be taken to ensure that no steel reinforcement is cut. The LMSB shall inform the Engineer immediately when and reinforcement is cut and the Engineer shall issue instructions for the LMSB to repair the reinforcement. Cut back concrete to remove unsound concrete as specified. Breaking out shall continue to expose the full circumference of the steel and to a depth of at least 20 mm behind the existing main bars. The depth or breakout on the edge of any repair area shall be minimum of 50 mm and featheredges will not be accepted. The Perimeter for the area to be repaired should be cut using suitable tool. Location of detective concrete to be repaired must be checked and agreed by the S.O prior repair.

Concrete within marked out areas shall be removed using light mechanical breakers or hammer and chisel, cutting to expose the reinforcement and a sound concrete substrate, to the satisfaction of the Engineer. Cut back concrete to remove unsound concrete as specified. Breaking out shall continue to expose the full circumference of the steel and to a depth of at least 20 mm behind the existing main bars. The depth or breakout on the edge of any repair area shall be minimum of 50mm and feather edges will not be accepted. The Perimeter for the area to be repaired should be cut using suitable tool. Location of detective concrete to be repaired must be checked and agreed by the S.O prior repair Where the breakout indicates that the exposed reinforcement further corroded or the surrounding concrete is not sound, the Engineer shall be informed and an enlarged area agreed to the satisfaction of the Engineer.

The LMSB shall mark out the enlarged breakout area for the Engineer's approval. Upon approval, the additional breakout area shall be entered into record sheets in duplicate and signed by the engineer. The original shall keep by the Engineer and the duplicate by the LMSB and shall be used as a record for the purpose of measuring the work. Breakout work shall not proceed until approval of the Engineer is obtained.

The LMSB shall at all time during the hacking, grooving and drilling works exercise due care against damaging and steel reinforcement. Where a reinforcement bar has been cut of damaged, the LMSB shall notify the Engineer who shall decide the manner in which the reinforcement shall be repaired.

For area where the concrete reinstatement will be by formwork grouting, the removal shall be in such that the remaining concrete surface does not form shape that can trap air during grouting.

STEP 2 – Steel Reinforcement Surface Preparation

All exposed steel reinforcement surfaces shall be thoroughly cleaned to remove all rust, oil, scale or any other deleterious matter by wirebrush to the satisfaction of the Engineer. After cleaning, the LMSB shall inspect the condition of the reinforcement by measuring the diameter of each reinforcing bar.

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STEP 3 - Additional or Replacement Steel Reinforcement

The LMSB shall report to the Engineer any reinforcement, which has lost 10% or more of its cross-sectional area as a result of corrosion. Additional or replacement reinforcement shall be as instructed by the Engineer. The total area of reinforcement shall not be less than 10% the losses in the cross-sectional area of original reinforcement. The additional reinforcement shall be installed with minimum lap length of 30 diameters of the existing reinforcement or at shorter length with suitable welding. The LMSB shall submit to the Engineer the record on the location, length and number of additional steel reinforcement bars. The LMSB shall obtain the Engineer's approval of the steel reinforcement prior to proceeding with repair.

STEP 4 – Concrete Surface Preparation

Smooth off form concrete surfaces shall be roughened by mechanical scrabbling, to the Engineer's satisfaction to provide a good adhesion surface for application of the repair mortar. All concrete surface that are to receive repair mortar shall be prepared by mechanical scrabbling to remove loose concrete, rust stains, surface laitance, organic contaminants (e.g. moss, algae growth, etc) and the other contaminants. Care shall be taken to ensure that vibration from the method of the preparation does not cause further damages to the existing concrete.

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STEP 5 - Reinforcement Primer

The reinforcing steel shall be in a dry, clean condition before application of the primer. Existing and new reinforcement must be coated by Nitoprime Zincrich Primer. At least 2 coats of primer must be applied to the reinforcement.