Section VI. Specifications

September 10, 2019

SIMPLIFIED TECHNICAL SPECIFICATIONS

F O R : REPAIR OF RC SLAB, RC CURB AND RC BEAM AT RC PIER, Port of Kolambugan, Lanao del Norte

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I. Scope of Work:

The items of work included in this particular repair works includes installation of scaffoldings, demolition, chipping, extraction and disposal of concrete and rebars, installation of reinforcing bars and pouring concrete. These activities are for the repair of crack/ damaged rc slab, rc curb, rc perimeter beam and rc beam at rc pier of the port.

II. Materials:

a) Portland Cement Type 1 – Cement shall be of any brand of Portland Cement conforming to the Standard Specifications for Portland Cement.

b) Coarse Aggregates – Coarse aggregates shall be washed, well-graded hard pieces of gravel, crushed gravel or rock conforming to the requirements of ASTM C33 Standard Specifications for Concrete Aggregates.

c) Fine Aggregates – Fine aggregates shall be washed sand, stone screenings or other materials of same characteristics, or any combination thereof composed of clean, hard, strong uncoated grains and free from injurious amounts of dust, lumps of clay, shale, alkalai and other organic matter. It shall conform to the Standard Specification for concrete aggregates. Beach sand shall not be used unless approved by the Engineer.

d) Admixtures – Unless otherwise required by field conditions, admixtures may be subject to the expressed approval of the Engineer.

e) Reinforcing bars – Sizes of reinforcing bars shall be as called for in the working drawings. Plain and deformed bars shall also conform to the Standard Specifications for Billet Bars.

III. Designed Strengths of Concrete

Concrete for this particular purpose shall develop a minimum 28-day compressive strength of 5,000 psi, unless otherwise indicated in the drawing. Thirty days before the start of the concrete works, the Contractor shall submit a design mix and the corresponding test result made on the sample thereof. Sampling and testing shall be in accordance with ASTM standard procedures for sampling and testing for particular design strength.

IV. Concrete Proportioning, Consistency and Mixing:

Proportioning of concrete and aggregates shall be as such to produce a concrete mixture which will readily work into the corners and angles of forms and around the reinforcing bars and for excess water to collect at the surface of the pavement. The combined aggregates shall be of such composition of sizes that when separated on No, 4 US Standard Sieve, the weight of the aggregates passing thru the sieve (fine sand) shall not be less than fifty (50) percent of the total. Use concrete mix 1:1/2:2 with cement factor of 15 for Iligan sourced aggregates. For other sources of aggregates, prepare a trial concrete mix to produce a 5,000 psi concrete for the concrete slab and beam.

No hand mixing shall be allowed except in case of emergency during pouring operations which shall stop only at the first allowed construction joint.

All concrete to be used shall be machine-mixed at the site. Each batch shall be mixed at the mixer's design speed for at least 11/2 minutes after all the concrete materials are

simultaneously placed in the mixer. All mixed contents for the first batch shall be thoroughly removed before any succeeding batch is placed. The mixer shall be provided with a device for accurately measuring and controlling the amount of water used in each batch and for automatic recording the number of revolutions of the mixer which is between 14 to 16 rpm.

Hand mixing will be allowed only in case of mixer breakdown, in which case it shall stop as soon as pouring for that particular section is completed, or at construction joints. Re-tempering or re-mixing of partially hardened concrete with the addition of water will not be permitted.

Concrete shall be placed in the presence of the ESD Manager or his authorized representative, only after the forms, rebars and other spaces to receive the concrete have been inspected and approved by him. Placement of concrete shall also have a practicable rate to prevent cold joints. Green joints shall be vibrated vertically at uniformly spaced points and levels to such durations and intensity to compact the concrete thoroughly which shall be discontinued the moment segregation of materials is noticed. Placement and deposition of concrete shall be in such a way to avoid segregation of aggregates.

IV. Execution of the Project:

Prior to the start of the project, the contractor is required to coordinate with the Engineering Services Division Manager or his authorized representative for the conduct of a pre-construction survey for the actual coverage, measurements, scope of work included and items for retrieval (if any) on the project.

The first activity to be undertaken by the contractor before the start of the project is to mark all concrete affected/damaged area included in this particular repair works. This activity can be accomplished accurately and would be an instrument for an effective work plan of activities demolition shall star with precautionary measure of installation of barricade with proper markings, chipping and demolition of rc slab, curb and beam affected shall commence to until the desired high thickness is attain and shall be conducted before installation of rebars and before pouring of concrete shall be thoroughly checked to avoid failure of the concrete pouring activities. After pouring of concrete, provide measures for the curing of the concrete for 14 calendar days from the start of the concrete setting time.

All concrete mixing and proportioning shall be as specified and the contractor shall be required to submit a design mix for concrete of 5,000 psi for the rc slab. The contractor is likewise required to have concrete cylindrical samples, to be tested for its compressive strength after 14 and 28 days and to submit the results of testing as may be required by the implementing agency.

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