



Republic of the Philippines  
**DEPARTMENT OF AGRICULTURE**  
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## SCOPE OF WORK AND SPECIFICATIONS

**PROJECT NAME:** Concreting/Improvement of Catuday DD canal lining  
**LOCATION:** Brgy. Catuday, Bolinao, Pangasinan  
**PROJECT DESCRIPTION:** Construction of 518.00 meters concrete canal lining.  
**AMOUNT:** PHP. 3,464,929.90

### GENERAL PROVISIONS

The contractor/implementer of the project shall verify all dimensions and conditions of the site and shall notify the DA Project Engineer for any discrepancies between actual conditions and information shown in the drawing before proceeding with the work.

The structural drawings and specifications represent the general framework of the structure. They do not indicate methods of construction, unless so stated, the contractor/implementer shall provide all necessary measures to protect the structure, the contractor/ implementer's obligation to notify the DA Project Engineer of any conditions that may endanger the stability or cause distress in the structure during phases of construction.

This set of specifications shall govern the methods of construction and kinds of materials to be used for the proposed Project shown on the accompanying plans and detailed drawings.

All parts of the construction shall be finished with first class workmanship to the fullest talent and meaning of plans and the specifications, and to the satisfaction of the Department of Agriculture through its Project Engineer. Any defective material or poor workmanship should be replaced or improved by the contractor without additional cost to the owner.

All other materials specifically indicated and illustrated on plans shall be taken as part of this specification regardless whether or not written and such other materials shall be approved by the owner before they are set in place.

### DESCRIPTION

#### I. MOBILIZATION AND DEMOBILIZATION

- The work consists of the mobilization and demobilization of the contractor's personnel, equipment and construction supplies to the site necessary for performing the work required under the contract.
- All roads, culverts, sidewalks, structures, etc. Shall be protected from damages by the equipment.
- Access roads shall be as shown on the drawings. If alternate routes are obtained by the contractor, they must be approved by the municipal engineer or the inspector before use.

## **II. PROVISION OF CONSTRUCTION SAFETY AND HEALTH PROGRAM**

### **A. FISRT AID KIT**

1. The first aid kit shall contain the following
  - a) Plasters in variety of different sizes and shapes
  - b) Small, medium and large sterile gauze dressings
  - c) At least 2 sterile eye dressings
  - d) Triangular bandages
  - e) Crepe rolled bandages
  - f) Safety pins, tweezers, scissors and sticky tape
  - g) Alcohol free cleansing wipes
  - h) Skin rash cream such as hydrocortisone or calendula
  - i) Antiseptic cream
  - j) Painkillers
  - k) Cough medicine
  - l) Distilled water for wound cleansing
  - m) Eyewash or eyebath.
2. The contractor shall have at least one first aid practitioner (first aider) with certification.

### **B. SAFETY DEVICES**

1. The contractor shall provide PPE for its workforce.
2. The contractor shall provide safety devices like barricades, warning signs, fire blankets and high visibility caution tapes.
3. The Contractor shall provide a full time safety practitioner (Safety Officer) to ensure the safety of its work force.
4. The Contractor should comply with the latest Occupational Safety and Health Standards by the Department of Labor and Employment.
5. Any work done beyond the height of 3m, the worker should wear a full body harness suspended on a solid anchor and to a life line.

## **III. CONSTRUCTION OF TEMPORARY FACILITY**

- The contractor shall install/construct temporary facilities to expeditiously execute the work and shall remove them from the site when no longer required.
- The contractor shall obtain temporary and maintain in good condition a supply of potable water for construction use.
- The contractor shall install temporary electric services with sufficient capacity to supply proper current for various types of construction tools, motors, welding machines, pumps, testing, and other work required.

## **IV. CLEARING AND GRUBBING**

- The work under this Section shall include clearing, grubbing and disposal, in a manner approved by DA-RFO I, of all vegetation, trees, stumps, roots, brush, rubbish and all objectionable or undesirable matters within the entire dam site, construction camp site borrow areas, road surfacing materials sources, stockpile areas and elsewhere as may be directed by the Project Engineer; all in accordance with Drawings and this Specifications or as directed by the Project Engineer.

## **V. EARTHWORKS**

- The work under this Section shall include clearing removal, hauling and disposal of all excavated materials tamping and trimming of foundation bed required for the construction of irrigation canal.



- The contractor shall make all necessary excavation for foundations to grade indicated on the drawings. Work that is excavated to a greater extent than required by the drawings and specifications and which is within the bearing area of walls, footings, or floor slabs shall be filled structural specifications. The structure foundation shall be staked out accurately, after which, approval by the Architect/Engineer shall be secured before any excavation work is done. The Contractor shall secure the surrounding properties from all forms of damage and destruction caused by the excavation.
- No foundation shall rest on fill. All excavation shall be done with the proper allowances for floor slabs, forms and centers. Bottom of foundation shall be approximately level, clean and clear of loose materials and lower sections true to size. All roots, stumps, organic materials and weathered rocks shall be removed and the cavities cleaned and filled with well-compacted sand and gravel.
- Soil bearing capacities of foundation shall be as specified by the Structural engineer. Should the soil at the proposed level of footing bases be found not capable of resisting said pressure, the Architect or the Structural engineer or Project Engineer, shall be notified and they shall revise foundation details as required.
- Upon completion of foundation no steel reinforcement shall be installed and concrete shall be poured until the contractor has approved the soil for each individual footing. Further supervisions for any indication of weak soil conditions before placing steel reinforcements and concrete.
- After concrete for foundations is hard enough to withstand pressure resulting from fills, the materials removed from excavations shall be used for backfill around them. Backfill and fills shall be placed in layers not exceeding 150mm in thickness, and each layer shall be thoroughly compacted by wetting, tamping and rolling.

#### Gravel Fill

1. Aggregate for subbase shall consist of hard, durable particles or fragments of crushed stone, crushed slag, or crushed or natural gravel and filler of natural or crushed sand or other finely divided mineral matter. The composite material shall be free from vegetable matter and lumps or balls of clay, and shall be of such nature that it can be compacted readily to form a firm, stable subbase.
2. The subbase material shall conform to Table 200.1, Grading Requirements

Table 200.1 – Grading Requirements

Sieve Designation		Mass Percent Passing
Standard, mm	Alternate US Standard	
50	2"	100
25	1"	55 – 85
9.5	3/8"	40 – 75
0.075	No. 200	0 – 12

3. The fraction passing the 0.075 mm (No. 200) sieve shall not be greater than.
4. 0.66 (two thirds) of the fraction passing the 0.425 mm (No. 40) sieve.
5. The fraction passing the 0.425 mm (No. 40) sieve shall have a liquid limit not greater than 35 and plasticity index not greater than 12 as determined by AASHTO T 89 and T 90, respectively.
6. The coarse portion, retained on a 2.00 mm (No. 10) sieve, shall have a mass percent of wear not exceeding 50 by the Los Angeles Abrasion Tests as determined by AASHTO T 96.
7. The material shall have a soaked CBR value of not less than 25% as determined by AASHTO T 193. The CBR value shall be obtained at the maximum dry density and determined by AASHTO T 180, Method D.

8. Surface Preparation. The existing surface shall be graded and finished as provided under Item 105, Subgrade Preparation, before placing the subbase material.

9. Placing

- a) The aggregate sub-base material shall be placed at a uniform mixture on a prepared subgrade in a quantity which will provide the required compacted thickness. When more than one layer is required, each layer shall be shaped and compacted before the succeeding layer is placed.
- b) The placing of material shall begin at the point designated by the Engineer. Placing shall be from vehicles especially equipped to distribute the material in a continuous uniform layer or windrow. The layer or windrow shall be of such size that when spread and compacted the finished layer be in reasonably close conformity to the nominal thickness shown on the Plans.
- c) When hauling is done over previously placed material, hauling equipment shall be dispersed uniformly over the entire surface of the previously constructed layer, to minimize rutting or uneven compaction.

**VI. RSB WORKS**

- All reinforcement shall be placed in accordance with plans furnished by the Engineer. In case of any doubt or ambiguity in placing of steel, the Contractor shall consult the Engineer whose decision shall be final in such cases.
- Steel reinforcing bars to be used for this project shall consist of standard deformed structural bars meeting ASTM specifications. All reinforcement shall be placed in accordance with plans furnished by the Engineer.
- All reinforcing steel bars used shall be new and free from rust, oil, defects, grease or links. All loose rust or scale, adhering materials and all oil or either materials which tend to destroy bond between the concrete and the reinforcement shall be removed before placing the steel and before concreting begins.
- The steel reinforcements for concrete shall be formed accurately according to the sizes of footings, inlet works, pump house and sump, etc., where they are to be used. They shall be tied together at each bar intersection with Gauge No. 16 G.I. wire or by welding.
- All main reinforcing steel used in the structure shall conform to ASTM Grade 40 (Intermediate Grade) with yield strength of 40 ksi (276 MPa).
- All temperature bars shall conform to ASTM Grade 30 Structural Grade with minimum yield strength of 30 ksi (207 MPa).
- Always apply red oxide for the exposed RSB to eliminate rusting.
- All hooks shall be in accordance with all standard hooks and anchorages specified in ACI 318-83 Building Code.

**VII. FORMS WORKS**

- Provide forms that will produce correctly aligned concrete. Column forms shall be checked for plumpness before concrete is deposited. Hand holes shall be provided in column forms at lowest points of pour lifts to render this space accessible for cleaning.
- Joints in forms shall be horizontal or vertical. Lumber once used in forms shall be nailed withdrawn and surfaces to be in contact with concrete shall be thoroughly wetted with water in advance of pouring. Woods to be used shall be kiln dried and treated with anti-termite chemical. And all lumber surfaces in contact with concrete and masonry shall receive one brush of bituminous paint.
- Immediately after the removal of the form, all projecting wires and bolts and other devices used for holding forms shall be cut off at least one-half centimeter beneath the finished surfaces. All holes and defects shall be thoroughly wetted and then painted up solid with cement putty mortar of the same proportions as the mortar used in the body of



- the work. All parts protruding beyond the surfacing shall be treated in such manner as to effectively remove all the lines and marks impressed by the form works.
- Forms shall be removed in a manner which will prevent damage to the concrete and shall not be removed until the concrete has attained sufficient strength to support its own weight and any loads that may be placed on it. Side forms of beams and girders may be removed earlier than the bottom forms but additional posts or shoring must be placed under the beams or girders until they have attained their strength. Forms shall not be removed until approval of the Design Engineer. Any repair of surface imperfections shall be performed at once and airing shall be started as soon as the surface is sufficiently hard to permit it without further damage.

**VIII. CONCRETE WORKS**

- This section covers all the materials as cement, aggregates, water, admixtures and proportioning, mixing, transporting, placing, finishing, curing and protecting of concrete, including supplies, equipment, tools and all other incidentals necessary for concrete works.
- All the applicable provisions of the latest revision of the ACI Building Code (ACI- 318 -85) and American Society for Testing Materials (ASTM) shall govern in all cases not specifically provided for herein.
- All cement requirements of concrete works for the contract shall contractor-furnished. The cement shall conform to the requirements of the standard specification of Portland Cement (ASTM: C150 Type 1).
- Fine aggregates shall be clean, well-graded, hard, natural sand or manufactured sand or a combination of both. The minimum size of the aggregates shall not be larger than one-fifth (1/5) of the narrowest dimension between forms and not larger than three-fourths (3/4) of the minimum clear spacing between reinforcing bars, and in no case larger than two inches in diameter. Coarse aggregates shall be hard, durable, uncoated gravel, crushed gravel, free from any deleterious materials like alkali, loam, silt and any organic matter.
- Water used in making the concrete mass shall reasonably clean, potable, and free from injurious amount of oils, acids, alkali organic materials and other deleterious substances.
- Class A mixture shall be used for inlet works, pump house, sump, foundation and for all reinforced work not otherwise indicated or specified.

**Mixing of concrete**

- All concrete shall be machine-mixed for at least one and one-half minutes after all materials, including water, are in the mixing drum.
- The mixer shall be approved size and type which will ensure a uniform distribution of materials throughout the mass. It shall be equipped with a device for accurately measuring and controlling the amount of water in each batch.
- The first batch of concrete materials placed in the mixer shall contain a sufficient excess of cement, sand and water to coat inside of the drum without reducing the cement content of the mix to be discharged.


**Specified Compressive Strength**

Class	Psi	MPa
AA	4,000	27.57
A	3,000	20.68
B	2,500	17.23
C	2,000	13.78

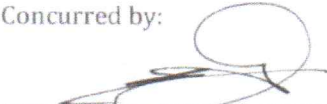
<ul style="list-style-type: none"><li>• Class AA: For septic tanks and other work as indicated.</li><li>• Class A: For slabs, beams, and wall above grade, columns and for all reinforced work not otherwise indicated or specified.</li><li>• Class B: For slabs on grade, and the beams, footings and for such concrete work as indicated or specified. (Not indicated in the plan).</li><li>• Class C: For all concrete not reinforce except as otherwise indicated or specified. (Not indicated in the plan).</li></ul> <p><b>Conveying and Placing of Concrete</b></p> <ul style="list-style-type: none"><li>• Concrete shall be conveyed from mixer to form as rapidly as practicable. There will be no vertical drop greater than 1.50 meters except where suitable equipment is provided to prevent segregation and where specifically authorized by the Architect and or the Structural Engineer.</li><li>• Concrete shall be worked readily into the corners and angles of the forms and around all reinforcements and embedded items without permitting materials to segregate. Concrete shall be deposited as close as possible to its final position so that flow within the mass does not exceed two meters and consequently segregation is reduced to a minimum near forms or embedded items, or elsewhere is directed, the discharge shall be so controlled that the concrete may be effectively connected into horizontal layers not exceeding 30 centimeters in depth within the maximum lateral movement specified.</li></ul> <p><b>Curing</b></p> <ul style="list-style-type: none"><li>• Compressive strength of concrete at 28 days curing period shall attain 3000 psi (20.7 MPa) with well graded aggregates having a maximum size of 2 inches (50mm).</li></ul>
<p><b>IX. PROJECT MARKER</b></p> <ul style="list-style-type: none"><li>• Installation of the project marker shall be constructed as shown on the detailed plans. Synthetic enamels paint shall be used for the project details letterings and logo.</li></ul>

The above specifications are intended for the Concreting/Improvement of Catuday DD canal lining at Brgy. Catuday, Bolinao, Pangasinan.

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