



Republic of the Philippines
Department of Agriculture
Western Visayas
Iloilo City

Construction of Garage and Farm Machinery Shed

DA-ROS Guimaras, Jordan, Guimaras

(NLP 2025)

TECHNICAL SPECIFICATIONS

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1. MOBILIZATION/DEMOBILIZATION

The Contractor shall mobilize and move into the Project Site the required construction equipment needed for the successful completion of the Contract Work.

Demobilization shall include dismantling and removal from the site of Contractor's, materials, and equipment. The time of demobilization shall also include cleanup of the site after completion of the Contract Work.

MINIMUM EQUIPMENT REQUIREMENT FOR IMPROVEMENT OF PERIMETER AND DIVISIONAL FENCE

Description	No. of Unit
1. Welding Machine	1 unit

2. Occupational Safety and Health Program

For general construction work, basic PPEs shall be provided including safety helmet, safety gloves, and safety shoes. Special PPEs shall be provided to workers in addition to or in lieu of the corresponding basic PPE as the work or activity requires.

3. PROJECT SIGNBOARD & COA BILLBOARD

Commission on Audit (COA) Billboard printed on white tarpaulin, 8 ft x 8 ft dimension; resolution 70 DPI, Font: Helvetica; Font Size: Main information – 3 inches; Sub. Information – 1 inches; and Font color: Black.

Department of Agriculture (DA) Billboard shall be on standard billboard measuring 1.2m x 2.4m (4ft x 8ft) using ½ inch plywood or Tarpaulin posted on 3/16-inch plywood. Billboard shall be installed in front of project site.

4. Site Clearing and Layout

Description

This item shall consist of clearing, grubbing, removing and disposing all vegetation and debris as designated in the Contract, except those objects that are designated to remain in place or are to be removed in consonance with other provisions of this Specification. The work shall also include the preservation from injury or defacement of all objects designated to remain.

5. EXCAVATION AND BACKFILLING WORK

(Refer to Item 103, Part C of Volume II (Blue Book))

Description

This item shall consist of the necessary excavation for the foundation of the structure.

It shall also include the furnishing and placing of approved foundation fill material to replace unsuitable material encountered below the foundation elevation of structures. No allowance will be made for the classification of different types of material encountered.

103.1 Construction Requirements

Excavation

(1) General, all structures. The Contractor shall notify the Engineer sufficiently in advance of the beginning of any excavation so that cross-sectional elevations and measurements may be taken on the undisturbed ground. The natural ground adjacent to the structure shall not be disturbed without the permission of the Engineer.

Trenches or foundation pits for structures or structure footings shall be excavated to the lines and grades or elevations shown on the Plans or as staked by the Engineer. They shall be of sufficient size to permit the placing of structures or structure footings of the full width and length shown. The elevations of the bottoms of footings, as shown on the Plans, shall be considered as approximate only and the Engineer may order, in writing, such changes in dimensions or elevations of footings as may be deemed necessary, to secure a satisfactory foundation.

Boulders, logs, and other objectionable materials encountered in excavation shall be removed. After each excavation is completed, the Contractor shall notify the Engineer to that effect and no footing shall be placed until the Engineer has approved the depth of excavation and the character of the foundation material.

Utilization of Excavated Materials

All excavated materials, so far as suitable, shall be utilized as backfill or embankment. The surplus materials shall be disposed off in such manner as not to obstruct the stream or otherwise impair the efficiency or appearance of the structure. No excavated materials shall be deposited at any time so as to endanger the partly finished structure.

Method of Measurement

Structure Excavation

The volume of excavation to be paid for will be the number of cubic meters measured in original position of material acceptably excavated in conformity with the Plans or as directed by the Engineer

Basis of Payment

The accepted quantities, measured as prescribed in Section 103.3, shall be paid for at the contract unit price for each of the particular pay items listed below that is included in the Bill of Quantities. The payment shall constitute full compensation for the removal and disposal of excavated materials including all labor, equipment, tools and incidentals necessary to complete the work prescribed in this item.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
5	Structure Excavation	Cubic Meter

Backfilling

Backfills are compacted up to 15% of the fill volume

6. FORMWORKS

Description

This item shall consist of designing, constructing, and removing forms and falsework to temporarily support concrete, girders and other structural elements until the structure is completed to the point it can support itself.

Forms for all reinforced concrete shall be adequately supported and braced or tied together to maintain the correct positions of poured concrete. Wooden forms shall be constructed sufficiently tight to prevent the bulging of concrete members upon pouring or leaking/drainage of water during curing.

The forms shall not be removed until the concrete has attained sufficient strength to support its own weight and any temporary loads placed on it.

Material Requirements

Formwork

The materials used for smooth form finish shall be 1/2" x 4ft x 8 ft plywood capable of producing the desired finish for form-facing materials. Form-facing materials with raised grain, torn surfaces, worn edges, patches, dents, or other defects that will impair the texture of concrete surfaces shall not be permitted. No form-facing material shall be specified for rough form finish.

Formwork accessories

Formwork accessories that are partially or wholly embedded in concrete, including ties and hangers, shall be commercially manufactured. The use of non-fabricated wire form ties shall not be permitted. Where indicated in the Contract, use form ties with integral water barrier plates in walls.

Falsework

The materials to be used in the falsework construction shall be of the quantity and quality necessary to withstand the stresses imposed; it shall be of lumber. The workmanship shall be of such quality that the falsework will support the loads imposed on it without excessive settlement or take-up beyond as shown on the falsework drawings.

Acceptance

Forms and falsework (including design, construction, and removal) shall be evaluated and approved by the Engineer. When the falsework installation is complete and before concrete placement or removal begins, the falsework shall be inspected by the Engineer.

Method of Measurement

Whenever the Bill of Quantities does not contain an item for form and falsework, the work will not be paid directly but will be considered as a subsidiary obligation of the contractor under other Contract items.

7. REINFORCED CONCRETE

A. GENERAL

Unless otherwise specified herein, concrete work shall conform to the requirements of the ACI Building Code. Full Cooperation shall be given other grades to install embedded items. Provisions shall be made for setting items not placed, embedded items shall be made for setting items not placed in the forms. Before concrete is placed, embedded items shall have been inspected and tested for concrete aggregates and other materials shall have been done.

B. MATERIALS:

CEMENT for the concrete shall conform to the requirements of specification for Portland cement (ASTM C-150)

WATER used in mixing concrete shall be clear and free from other injurious amounts of Oils, acids Alkaline, organic materials or substances that may be deleterious to concrete or steel.

REINFORCING BARS shall conform to the requirements of ASTM standard specifications for Billet Steel Bars for concrete reinforcement (a15-625) and to specification for requirements for deformed steel.

1. Unless otherwise noted in plans, the yield strength of reinforcing bars shall be:

A. Footings, footing beams and girders----- $f_y=275\text{MPa}$ (40,000 psi)

B. Columns and shear walls----- $f_y=275\text{MPa}$ (40,000 psi)

C. Beams and girder----- $f_y=275\text{MPa}$ (40,000 psi)

D. Non-load bearing wall partitions, bedded slabs, floor & roof slabs, Parapets, catch basin, side walk, canopy, plants----- $f_y=230\text{MPa}$ (33400 psi)

2. All reinforcing bars size 10mm or larger shall be deformed in accordance with the aslm a-706 Bars smaller than 10mm may be plain.

3. Splices shall be securely wired together & shall lap or extend in accordance w/ table b (table of lap splice & anchorage length) unless otherwise shown on drawings, splices shall be Staggered whenever possible.

All dowels for anchorage of vertical and horizontal reinforcements for CHB walls and anchor bolts including structural frames, drains and all other materials in contact with concrete construction shall practically be place secured in position when concrete is placed.

Refer to drawing for Reinforcing Bars

C. PROPORTIONING AND MIXING:

Proportions of all materials entering into the concrete shall be as follows:

	Cement	Sand	Gravel
Class A 3000 psi	1	2	4
Class B	1 2 ^{1/2}	5	
Class C	1	3	6

MIXING - concrete shall be machine mixed. Mixing shall begin within 30 minutes after cement has been added to the aggregates. Manual mixing is allowed in the absence of concrete mixer.

D. CURING

Class of Concrete-concrete shall have a 28-day strength of 3,000 psi, for all concrete work unless otherwise indicated in the plans. All concrete shall be moist cured through an approved method for a period of not less than 7 days or at least 3 days in case of high early-strength concrete, shall be protected from injuries and shall not be allowed to dry out for a period of 28 days. Curing starts as soon as the concrete has attained initial settings of sixty (60) min. The surface of the concrete shall be kept continuously wet by covering burlap Plastic or other approved materials thoroughly saturated with water.

Steel Works (Post, Girt, Roof Framing, Facia Framing & Roof Beam)

All works shall be performed and computed in accordance with generally accepted and modern practice of roof framing. Use materials as specified in the plan. All welding shall be done by approved, competent, experienced and fully qualified welders. Surfaces to be welded shall be smooth, uniform and free from fins, tears and other defects, which would adversely affect the quality of the weld. The contractor shall remove and replace or correct as instructed and welds found to be defective or deficient. The skilled welders shall also replace all methods found to produce inferior results with methods that will produce satisfactory work.

Welding, shearing, gas cutting, chipping and all other works involved in the fabrication of structural steel shall be done with accuracy and of the highest quality of workmanship within the allowable tolerance prescribe in the AISC Specifications.

All materials and accessories shall be free from rust or any other form of corrosion. Steel trusses shall be done in accordance with the plans and drawings, all plates, angle bars and C-Channel and other roof framing materials shall be pre-painted to installation and re-painted on welded joints. Roofing materials shall be multi-life pre-painted long span or its equivalent with similar design and quality sheets should be kept dry when stacked, store clear of the ground and under cover should sheets become wet, they must be dried and filled stacked to allow air circulation. Storage should be kept to a minimum; all sheets shall be installed in accordance to the manufacturer's specification and by persons specializing on the same.

9. ROOF CLADDING

Pre-Painted Metal Sheets, longspan and other bonded accessories

This item shall consist of furnishing all plant, equipment, tools, materials and labor required to perform and complete the high rib metal roofing, together with related accessories such as end wall flashing, parapet wall capping, rivets, soldering and downspout when called for on the Plans all in conformity with this Specifications

Roofing shall be Colored Roof – GA 28 Hi-Rib long span (color- OA Color). See plan for complete details. Sheets shall weigh not less than 4.14kg./m² and shall be marked or stamped showing the thickness, size, amount of zinc coating, brand and name of manufacturer. Test specimens shall stand being bent through 180 degrees flat on itself without fracture of the base metal and without flaking of the zinc coatings.

ROOFING ACCESSORIES

Strap Fasteners

Strap fasteners shall be 0.50mm thick by 2.5cm. wide and sufficiently long to bend up to the opposite face of the purlins with corners chipped off at the riveting ends.

Rivets and washers

- 1.0 Rivets and washers shall be galvanized mild iron and shall not be less than 5mm diameter and 10mm length.
- 2.0 Washers shall not be less than 1.5mm thick and 20mm in outside diameter and shall provide snug fit to the rivet.

Fabricated Metal Roof Accessories

- 1.0 End wall whenever required, shall be pre-fabricated and shall be of 0.5mm thick or as specified on the plan.
- 2.0 Bending of plain G.I. sheets for various accessories shall be done by machine press. Hand bending shall not be permitted.

Preparatory Work

- 1.0 Preparatory to the installation of the high rib G.I. roofing, purlins should have been placed and spaced properly to fit the length of roofing sheets to be installed.
- 2.0 The center line of the purlins at end laps shall be 15 cm. from the bottom line of end laps and intermediated purlins are placed equidistant with each other.
- 3.0 Ascertain that the top of the purlins should be at the same plane.

Installation of Rib G.I. Sheet

- 1.0 Provide an end lap of 25cm. minimum length. Each sheet shall be fastened temporarily by 1.63mm diameter by 2.5 cm. long galvanized flat-head nails at valleys of corrugations covered by side or end laps.
- 2.0 Succeeding upper rows of High Rib G.I. sheets shall be installed in the same manner until the entire roof area is covered.
- 3.0 End wall flashings when required, shall be installed after fastening the roofing sheets with heavy duty sealant, rivets or with G.I. roofing nails and washers
- 4.0 Rivets shall be provided with a galvanized mild iron washer below and one lead and one galvanized washer above the steel.
- 5.0 Rivets shall be sufficiently long to permit forming a hemispherical head. Riveting shall be done such that the lead washer shall be compressed to provide a water tight fit around the rivet.

Installation of Roofing Accessories

End wall flashing shall lap at least 25 cm and fastened tightly with rivets and any fasteners with heavy duty sealant to avoid water leakage.

10. MASONRY WORKS

CHB (Including Reinforcing Steel)

A. Materials:

1. Concrete Hollow Blocks shall have a minimum face thickness of 1" (0.25) nominal size shall be 100 x 200 x 400. and have minimum compressive strength shall be as follows:
Class "A" - 900 psi
Class "B" - 750 psi
2. Wall Reinforcement shall be 10mmØ Deformed Bars.
3. Sand shall be river sand, clean, hard and free from loam, silt or other impurities.
4. Cement shall be standard Portland Cement, ASTM C- 150 - 88 Type (1) One.
5. Mortar - Mix Mortar from 3 to 5 minutes in such quantities as needed for immediate use, retempering will not be permitted if mortar stiffens because of premature setting.

Proportioning: Cement mortar shall be one (1) part Portland cement and two (2) parts sand by volume but not more than one (1) part Portland cement and three (3) parts sand by volume.

11. PLASTERING WORKS

PLASTERING: Clean and evenly wet surfaces. Apply scratch coat with sufficient force to form good keys. Cross scratch coat upon attaining its initial set; keep damp. Apply brown coat after scratch coat has set at least 24 hours after scratch coat application. Lightly scratch brown coat; keep moist for 2 days; allow to dry out. Do not apply finish until brown coat has seasoned for 7 days. Just before applying coat, wet brown coat again. Float finish coat to true even surface; trowel in manner that will force sand particles down into plaster, with final growing, leave surfaces barnished smooth, free from rough areas, trowel marks, checks, other blemishes. Keep finish coat moist for at least 2 days; thereafter protect after rapid drying after properly, thoroughly cured.

12. PAINTING

A. GENERAL:

1. All works shall be done under the direct supervision of experienced painter and in accordance with the standard surfaced preparation and specified color scheme by the Engineer in-Charge/ End User.

B. MATERIALS

1. All paint materials shall meet the requirements of paint materials under classification class "A", use Davles or Boyesen (Cementitious Waterproofing System for all Concrete Surface)
2. All paint shall be recommended by the manufacturer for the use intended and shall be delivered to the jobsite in original containers with seals unbroken and labels intact.

3. Storage and Protection:

The resident Engineer shall designate a place for the storage of paint materials whenever it may be necessary to change this designated storage place, the contractor shall promptly move to the new location. The Storage space shall be adequately protected from damage and paint. Paint shall be covered at all times safeguards taken to prevent fire.

C. PREPARATION:

Concrete Walls

Apply first with concrete Neutralizer (if necessary) and clean with soap and water.

1st coating Acrylic Concrete Primer and Sealer Paint

2nd coating - Cementitious Waterproofing

All structural steel must be painted with 2 coats of epoxy primer with catalyst.

All works shall be done in workmanlike manner by a skilled painter. Painter shall thoroughly stirred so as to keep the pigments spread evenly when the paint is being applied to the surface. All coats shall thoroughly dry first before application of the succeeding coat. Painting of walls include inside and outside of the building.

References:

- 1) DPWH - Standard Specifications for Public Works Structures Volume III (Buildings, Ports and Harbors, Flood Control and Drainage Structures and Water Supply Systems)
- 2) DPWH - Standard Specifications for Public Works and Highways Volume II (Highways, Bridges and Air