



Republic of the Philippines
Department of Agriculture
Western Visayas
Iloilo City


ESTABLISHMENT OF THREE (3) UNITS RAIN SHELTER

ONE (1) UNIT AT ANTIQUE; ONE (1) UNIT AT CAP Z; AND ONE (1) UNIT AT
ILOILO


(HVCDP 2025)

TECHNICAL SPECIFICATIONS

Prepared by:


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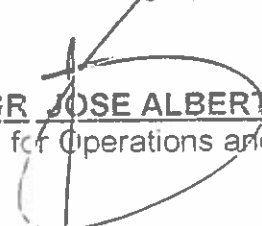
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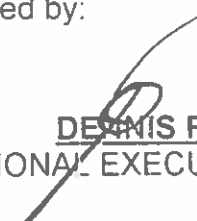
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I. OTHER GENERAL REQUIREMENTS

B.9. 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 GOAT HOUSE

| Description | No. of Unit |
|--------------------|-------------|
| 1. Welding Machine | 1 unit |

B.5. PROJECT SIGNBOARD & COA BILLBOARD

Commission on Audit (COA) Billboard printed of 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.

B.7 Construction Safety and Health

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.

II. EARTHWORKS

800.0 Site Clearing and Grubbing

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.

803.0 STRUCTURAL EXCAVATION

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

ITEM 103 – STRUCTURE EXCAVATION

103.1 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.

103.2 Construction Requirements

103.2.1 Clearing and Grubbing

Prior to starting excavation operations in any area, all necessary clearing and grubbing in that area shall have been performed in accordance with Item 800, Clearing and Grubbing

103.2.2 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.

103.2.3 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.

103.3 Method of Measurement

103.3.1 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

103.3.2 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 |
|-----------------|----------------------|---------------------|
| 803 (1) | Structure Excavation | Cubic Meter |

1707.LEVELING COURSE

(Refer to ITEM 200, Part C, Volume II (Blue Book))

ITEM 200 – AGGREGATE SUBBASE COURSE

200.1 Description

This item shall consist of furnishing, placing and compacting an aggregate subbase course on a prepared subgrade in accordance with this Specification and the lines, grades and cross-sections shown on the Plans, or as directed by the Engineer.

200.2 Material Requirements

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.

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 |

The fraction passing the 0.075 mm (No. 200) sieve shall not be greater than 0.66 (two thirds) of the fractions passing the 0.425 mm (No. 40) sieve.

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.

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.

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.

200.3 Construction Requirements

200.3.1 Preparation of Existing Surface.

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

*SUBTOPIC REFERENCES FOR ITEM 1707

Item 105 – SUBGRADE PREPARATION

105.3.3 Subgrade in Common Excavation

Unless otherwise specified, all materials below subgrade level in earth cuts to a depth 150 mm or other depth shown on the Plans or as directed by the Engineer shall be excavated. The material, if suitable, shall be set aside for future use or, if unsuitable, shall be disposed off in accordance with the requirements of Subsection 102.2.9.

Where material has been removed from below subgrade level, the resulting surface shall be compacted to a depth of 150 mm and in accordance with other requirements of Subsection 104.3.3.

All materials immediately below subgrade level in earth cuts to a depth of 150 mm, or to such greater depth as may be specified, shall be compacted in accordance with the requirements of Subsection 104.3.3.

200.3.2 Placing

The aggregate subbase 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.

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.

200.3.3 Spreading and Compacting

When uniformly mixed, the mixture shall be spread to the plan thickness, for compaction.

Where the required thickness is 150 mm or less, the material may be spread and compacted in one layer.

The moisture content of subbase material shall, if necessary, be adjusted prior to compaction by watering or by drying out, as required in order to obtain the required compaction.

Immediately following final spreading and smoothening, each layer shall be compacted to the full width by means of approved compaction equipment. Any irregularities or depressions that develop shall be corrected by loosening the material at these places and adding or removing material until surface is smooth and uniform.

If the layer of subbase material, or part thereof, does not conform to the required finish, the

Contractor shall, at his own expense, make the necessary corrections.

200.3.4 Tolerances

Aggregate subbase shall be spread uniformly and compacted according to the designed level and transverse slopes as shown on the Plans.

200.4 Method of Measurement

Aggregate Subbase Course will be measured by the cubic meter (m³). The quantity to be paid for shall be the design volume compacted in-place as shown on the Plans, and accepted in the completed course. No allowance will be given for materials placed outside the design limits shown on the cross-sections.

200.5 Basis of Payment

The accepted quantities, measured as prescribed in Section 200.4, shall be paid for at the contract unit price for Aggregate Subbase Course which price and payment shall be full compensation for furnishings and placing all 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 |
|-----------------|--------------------------|---------------------|
| 1707 | Aggregate Subbase Course | Cubic Meter |

III. CONCRETE WORKS

414. FORMWORKS

ITEM 414 FORM AND FALSEWORKS

414.1 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.

414.2 Material Requirements

414.2.1 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.

414.2.1.1 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.

414.2.2 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.

414.3 Construction Requirements

414.3.1 Design

Falsework and Formworks design and drawings shall be in accordance with Item 407 Concrete Structure subsection 407.3.9 and 407.3.12 respectively.

414.3.3 Falsework Construction

The falsework construction shall be in accordance whenever applicable, with Item 407 Concrete Structure subsection 407.3.10 Falsework Construction.

414.3.3.1 Falsework Foundations

All ground elevations at the proposed foundation location shall be verified before design. The edge of the footing shall not be located closer than 300 millimeters from the intersection of the bench and the top of the slope.

When falsework is supported by footings placed on paved, well-compacted slopes of berm fill, do not strut the falsework to columns unless the column is founded on rock or supported by piling. The spread footings to support the footing design load at the assumed bearing capacity of the soil shall be designed without exceeding anticipated settlements. Steel reinforcement shall be provided in concrete footings. Protect the foundation from adverse effects for the duration of its use.

414.3.6 Removal of Forms and Falsework

The removal of forms and falsework shall be in accordance whenever applicable with Item 407 Concrete Structure subsection 407.3.11 Removing falsework and subsection 407.3.14 Removal of forms and falsework.

414.3.6 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.

414.4 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.

414. 5 Basis of Payment

The accepted quantities measured as prescribed in subsection 414.4, shall be paid for at the Contract lump-sum price for Forms and Falsework which price and payment shall be full compensation for designing, constructing and removing forms and falsework, all materials and accessories needed and for furnishing all labor equipment tools and incidentals necessary to complete the item.

Payment will be made under:

| Pay Item Number | Description | Unit of Measurement |
|-----------------|-------------------|---------------------|
| 414 | Forms & Falsework | Square meter |

900(1). STRUCTURAL CONCRETE (CLASS A)

900.1 Description

This Item shall consist of furnishing, placing, and finishing concrete in buildings and related structures in accordance with this specification and conforming to the lines, grades, and dimensions shown on the plans.

900.2 Materials Requirements

900.2.1 Portland Cement

This shall conform to the requirement of ITEM 700, Volume II (BlueBook), and Hydraulic cement.

900.2.2 Concrete Aggregates

Concrete aggregate shall conform to the requirements of subsection 311.2.2 and 311.2.3 under Item 311 of Volume II, (Blue Book)

900.2.3 Water

Water used in mixing concrete shall conform to the requirement of subsection 311.2.4 under Item 311, Part E, of Volume II, (BlueBook).

900.2.4 Metal Reinforcement

Refer to Item No. 1046 of this Specification

900.2.5

900.2.6 Storage of Materials

(Refer to Item 311.2.10)

900.3 Construction Requirements

900.3.1 Concrete Quality

Class A concrete mix shall be used in all structural members and it shall be a mixture of part 1 cement, 2

parts fine aggregate, and parts coarse aggregate by volume, plus enough water to make the mixture into a pliable paste.

900.3.2 Sampling and Testing of Structural Concrete

As work progress, at least one (1) set of a sample consisting of three (3) concrete cylinder test specimens, 150 x 300 mm shall be taken from each class of concrete placed each day and each set to represent not more than 75 cu m of concrete.

900.3.3 Consistency

Concrete should be mixed thoroughly such that there is uniform distribution among the cement and aggregates.

900.3.4 Mixing and Delivery

Mixing and delivery shall conform to the requirements of Item 405. Structural Concrete.

900.4 Concrete Surface Finishing: General

This shall be in accordance with Item 407. Concrete Structures.

900.5 Curing Concrete (See subsection 407)

900.6 Method of Measurement

The quantity of concrete to be paid shall be the quantity shown in the Bid Schedule, unless changes in design are made in which case the quantity shown in the Bid Schedule will be adjusted by the amount of the change for the purpose of payment.

900.7 Basis of Payment

The accepted quantities of structural concrete completed in place will be paid for at the contract unit price for cubic meter as indicated on the Bid Schedule.

| Pay Item and Description | Unit of measurement |
|--------------------------|---------------------|
| Structural Concrete | Cubic Meter |

Such prices and payment shall be full compensation for furnishing all materials, including metal, and rock backing; for all form and false work; for mixing, placing, furnishing, and curing the concrete; and for all labor, materials, equipment, tools and incidentals necessary to complete the item, except that reinforcing steel shall be paid for at the contract unit price per kilogram.

*SUBTOPIC REFERENCES FOR ITEM 900

ITEM 700 (Part I of Volume II (Blue Book))

ITEM 700 – HYDRAULIC CEMENT

700.1 Portland Cement and Masonry Cement

Cement shall conform to the requirements of the following cited Specifications for the type specified or permitted.

| Type | Specifications |
|-----------------|--|
| Portland Cement | AASHTO M 85 (ASTM C 150) Blended Cement AASHTO M 150-74 (ASTM C 91) |

Unless otherwise permitted by the Engineer, the product of only one mill of any one brand and type of Portland cement shall be used on the project.

The Contractor shall provide suitable means of storing and protecting the cement against dampness. The cement which, for any reason, has become partially set or which contains lumps of caked cement will be rejected. Cement salvaged from discarded or used bags shall not be used.

ITEM 311.2.4 - WATER

Water to be used for mixing concrete shall be clean and free from injurious amounts of oil, acids, salt, alkalis, and other organic materials.

ITEM 405 – STRUCTURAL CONCRETE

405.1 Description

405.1.1 Scope

This Item shall consist of furnishing, bending, placing, and finishing concrete in all structures except pavements in accordance with this Specification and conforming to the lines, grades, and dimensions shown on the Plans. Concrete shall consist of a mixture of Portland cement, fine aggregate, coarse aggregate, admixture when specified, and water mixed in the proportions specified or approved by the Engineer.

405.1.2 Classes and Uses of Concrete

Five classes of concrete are provided for in this Item, namely: A, B. Each class shall be used in that part of the structure as called for on the Plans.

The classes of concrete will generally be used as follows:

Class A – All structural members. The important parts of the structure included are slabs, beams, columns, and reinforced footings

405.2 Material Requirements

405.2.1 Portland Cement

It shall conform to all the requirements of ITEM 700.

405.2.2 Fine Aggregate

It shall conform to all the requirements of Subsection 311.2.2.

405.2.3 Coarse Aggregate

It shall conform all the requirements of Subsection 311.2.3 except that gradation shall conform to Table 405.1.

Table 405.1 – Grading Requirements for Coarse Aggregate

| Sieve | Designation | Mass Percent Passing | | | | |
|-------------|-----------------------|----------------------|----------|----------|----------|------------|
| | | Class A | Class B | Class C | Class P | Class Seal |
| Standard Mm | Alternate US Standard | | | | | |
| 63 | 2-1/2" | | 100 | | | |
| 50 | 2" | 100 | 95 – 100 | | | |
| 37.5 | 1-1/2" | 95 – 100 | - | | | 100 |
| 25 | 1" | - | 35 – 70 | | 100 | 95 – 100 |
| 19.0 | 3/4" | 35 – 70 | - | 100 | 95 – 100 | - |
| 12.5 | 1/2" | - | 10 – 30 | 90 – 100 | - | 25 – 60 |
| 9.5 | 3/8" | 10 – 30 | - | 40 – 70 | 20 – 55 | - |
| 4.75 | No.4 | 0 - 5 | 0 - 5 | 0 – 15* | 0 – 10* | 0 – 10* |

* The measured cement content shall be within plus (+) or minus (-) 2 mass percent of the design cement content.

405.2.4 Water

It shall conform to the requirements of Subsection 311.2.4

405.2.5 Reinforcing Steel

It shall conform to the requirements of Item 710, Reinforcing Steel and Wire Rope.

405.2.11 Storage of Cement and Aggregates

Storage of cement and aggregates shall conform to all the requirements of Subsection 311.2.10.

405.3.2 Consistency

(Refer to Item 900.3.5)

405.3.4 Mixing and Delivery

Concrete should be mixed at the site of construction. The mixing of concrete shall be in accordance with the appropriate requirements of AASHTO M 157.

For batch mixing at the site of construction, a batch mixer of an approved type shall be used. Mixer having a rated capacity of less than a one-bag batch shall not be used. The volume of concrete mixed per batch shall not exceed the mixer's nominal capacity as shown on the manufacturer's standard rating plate on the mixer except that an overload up to 10 percent above the mixer's nominal capacity may be permitted, provided concrete test data for strength, segregation, and uniform consistency are satisfactory and provided no spillage of the concrete takes place. The batch shall be so charged into the drum that a portion of the water shall enter in advance of the cement and aggregates. The flow of water shall be uniform and all water shall be in the drum by the end of the first 15 seconds of the mixing period. Mixing time shall be measured from the time all materials, except water, are in the drum. Mixing time shall not be less than 60 seconds. If timing starts, the instant the skip reaches its maximum raised position, 4 seconds shall be added to the specified mixing time. Mixing time ends when the discharge chute opens.

The mixer shall be operated at the drum speed as shown on the manufacturer's nameplate on the mixer. Any concrete mixed less than the specified time shall be discarded and disposed off by the Contractor at his own expense.

The timing device on stationary mixers shall be equipped with a bell or other suitable warning device adjusted to give a clearly audible signal each time the lock is released. In case of failure of the timing device, the Contractor will be permitted to continue operations while it is being repaired, provided he furnishes an approved timepiece equipped with minute and second hands. If the timing device is not placed in good working order within 24 hours, further use of the mixer will be prohibited until repairs are made. Re-tempering concrete will not be permitted.

ITEM 407- CONCRETE STRUCTURES

407.1 Description

This Item shall consist of the general description of the materials, equipment, workmanship and construction requirements of dimensions and details shown on the Plans and in accordance with the Specifications for piles, reinforcing steel, structural steel, structural concrete and other items which constitute the completed structure. The class of concrete to be used in the structure or part of the structure shall be as specified in Item 405, Structural Concrete.

407.2 Material Requirements

1. Concrete and Concrete Ingredients

Concrete and concrete materials shall conform to the requirements in Item 405, Structural Concrete. Unless otherwise shown on the Plans or specified in Special Provisions, concrete shall be of Class A.

2. Reinforcing Steel

Reinforcing steel shall conform to the requirements in Item 404, Reinforcing Steel.

3. Structural Steel

Structural steel shall conform to the requirements of corresponding materials in Item 403, Metal Structures.

407.2.1 Proportioning and Strength of Structural Concrete

(Refer to Item 900.3.2)

407.2.2 Sampling and Testing

(Refer to Item 900.3.2)

407.3 Construction and Requirements

407.3.1 Handling and Placing Concrete: General

Concrete shall not be placed until forms and reinforcing steel have been checked and approved by the Engineer.

If lean concrete is required in the Plan or as directed by the Engineer prior to placing of reinforcing steel bar, the lean concrete should have a minimum compressive strength of 13.8 MPa (2,000 psi).

In preparation for the placing of concrete all sawdust, chips and other construction debris and extraneous matter shall be removed from inside the formwork, struts, stays and braces, serving temporarily to hold the forms in correct shape and alignment, pending the placing of concrete at their locations. shall be removed when the concrete placing has reached an elevation rendering their service unnecessary. These temporary members shall be entirely removed from the forms and not buried in the concrete.

No concrete shall be used which does not reach its final position in the forms within the time stipulated under "Time of Hauling and Placing Mixed Concrete".

Concrete shall be placed to avoid segregation of the materials and the displacement of the reinforcement. The use of long troughs, chutes, and pipes for conveying concrete to the forms shall be permitted only on written authorization of the Engineer. The Engineer shall reject the use of the equipment for concrete transportation that will allow segregation, loss of fine materials, or in any other way will have a deteriorating effect on the concrete quality.

The concrete shall be placed as nearly as possible to its final position and the use of vibrators for moving of the mass of fresh concrete shall not be permitted.

407.3.2 Compaction of Concrete

The concrete should be compacted and its forms should be tapped as it is deposited to its final position, to prevent formation of voids in the concrete member which will weaken the building. The compaction shall be done by hand compaction through rodding. By poking with 2m long, 16 mm diameter rod at sharp corners and edges. The thickness of layers for rodding should be 15 to 20 cm.

407.3.8 Curing Concrete

All newly placed concrete shall be cured in accordance with this Specification.

ITEM 311.2.2 FINE AGGREGATE

It shall consist of natural sand, stone screenings or other inert materials with similar characteristics, or combinations thereof, having hard, strong and durable particles. Fine aggregate from different sources of supply shall not be mixed or stored in the same pile nor used alternately in the same class of concrete without the approval of the Engineer.

It shall not contain more than three (3) mass percent of material passing the 0.075 mm (No. 200 sieve) by washing nor more than one (1) mass percent each of clay lumps or shale. The use of beach sand will not be allowed without the approval of the Engineer.

The fine aggregate shall be free from injurious amounts of organic impurities. If subjected to the colorimetric test for organic impurities and color darker than the standard is produced, it shall be rejected. However, when tested for the effect of organic impurities of strength of mortar by AASHTO T 71, the fine aggregate may be used if the relative strength at 7 and 28 days is not less than 95 mass percent.

The fine aggregate shall be well-graded from coarse to fine and shall conform to Table 311.1

Table 311.1 – Grading Requirements for Fine Aggregate

| Sieve Designation | Mass Percent Passing |
|--------------------|----------------------|
| 9.5 mm (3/8 in) | 100 |
| 4.75 mm (No. 4) | 95 – 100 |
| 2.36 mm (No. 8) | - |
| 1.18 mm (No. 16) | 45 – 80 |
| 0.600 mm (No. 30) | - |
| 0.300 mm (No. 50) | 5 – 30 |
| 0.150 mm (No. 100) | 0 – 10 |

ITEM 311.2.3 COARSE AGGREGATE

It shall conform all the requirements of Subsection 311.2.3 except that gradation shall conform to Table 405.1.

Only one grading specification shall be used from any one source.

ITEM 311.2.10 STORAGE OF CEMENT & AGGREGATE

All cement shall be stored, immediately upon delivery at the Site, in a weatherproof building which will protect the cement from dampness. The floor shall be raised from the ground. The buildings shall be placed in locations approved by the Engineer. Provisions for storage shall be ample, and the shipments of cement as received shall be separately stored in such a manner as to allow the earliest deliveries to be used first and to provide easy access for identification and inspection of each shipment. Storage buildings shall have the capacity for storage of a sufficient quantity of cement to allow sampling at least twelve (12) days before the cement is to be used. Bulk cement, if used, shall be transferred to elevated air-tight and weatherproof bins. Stored cement shall meet the test requirements at any time after storage when the Engineer orders a retest. At the time of use, all cement shall be free-flowing and free of lumps.

The handling and storing of concrete aggregates shall be such as to prevent segregation or the inclusion of foreign materials. The Engineer may require that aggregates be stored on separate platforms at satisfactory locations.

In order to secure greater uniformity of concrete mix, the Engineer may require that the coarse aggregate be separated into two or more sizes. Different sizes of aggregate shall be stored in separate bins or in separate stockpiles sufficiently removed from each other to prevent the material at the edges of the piles from becoming intermixed.

IV. ROOFING WORKS

1013.0 ROOFING WORKS

1013.1 Description

This Item shall consist of furnishing all equipment, tools, materials, and labor required to properly perform and complete the installation of polyethylene plastic as roofing materials, together with related accessories specified on the plans all in conformity with Specifications.

1013.2 Material Requirements

The following are the material requirements of the roofing design:

1. Roofing -- Shall be clear UV treated polyethylene (PE) plastic, 200 microns thickness.
2. Gutter - Shall be made of G.I plane sheet gauge 26.

Accessories

1. C-channel plated layering panel shall be made of aluminum.
2. Zigzag lock shall be 2.3 mm minimum rod diameter.
3. Film band shall be made of Low Density Polyethylene (LDPE) and High Density Polyethylene (HDPE) with 12 mm minimum band width.
4. Filter shall be made of nylon with 0.25" x 0.25" mesh size, rivets shall not be less than 5 mm in diameter and 10 mm in length.
5. All bolts and nuts must be hot dipped.

V. STEEL WORKS

1047. G.I PIPES AND CONNECTORS

This work shall consist of steel members (GI PIPES) of the rain shelter, constructed in reasonably close conformity with the lines, grades, and dimensions shown on the Plans or established by the Engineer.

The work will include the furnishing, fabricating, hauling, erecting, and welding of structural metals called for in the Special Provision or shown on the Plans. Structural metals will include structural steel and welding, this work will also include any incidental metal construction not otherwise provided for, all in accordance with these Specifications, Plans, and Special Provisions.

403.1 Material Requirements

- i. Post -- shall be made of 2 inches galvanized iron pipe schedule 40.
- ii. Arc assembly -- arc and bottom member shall be made of 1 - 1/4 inches diameter galvanized iron pipes and 1 inch diameter galvanized iron pipe for web member both in schedule 20.
- iii. Purlins -- shall be made of 1 - 1/4 inches diameter galvanized iron pipes schedule 20.
- iv. Girt -- top and bottom chord shall be made of 1 - 1/4 inch diameter galvanized iron pipe and web member shall be made of 1 inch diameter galvanized iron pipe both in schedule 20.

403.3 Construction Requirements

403.3.1 Stock Material Control

Structural material, either plain or fabricated, shall be stored above the ground upon platforms, skids, or other supports. It shall be kept free from dirt, grease, or other foreign matter, and shall be protected as far as practicable from corrosion.

403.3.2 Fabrication

These Specifications apply to welded construction.

Workmanship and finish shall be in accordance with the best general practice. Portions of the work exposed to view shall be finished neatly.

Structural material, either plain or fabricated, shall be stored above the ground upon platforms, skids or other supports. It shall be kept free from dirt, grease, or other foreign matter, and shall be protected as far as practicable from corrosion.

Rolled material before being laid off or worked must be straight. If straightening is necessary, it shall be done by methods that will not injure the metal. Sharp kinks and bends will be cause for the rejection of the material.

Preparation of material shall be in accordance with AWS (American Welding Society) D 1.1, paragraph 3.2 as modified by AASHTO Standard Specification for Welding of Structural Steel Highway Bridges.

403.3.4 Finishing and Shaping

Finished members shall be true to line and free from twists, bends, and open joints.

1. Fabrication of Members

Unless otherwise shown on the Plans, steel plates for main members and splice plates for flanges and main tension members, not secondary members, shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses. Fabricated members shall be true to line and free from twists, bends, and open joints.

403.3.11 Welding

Welding shall be done in accordance with the best modern practice and the applicable requirements at AWS D1.1 except as modified by AASHTO "Standard Specifications for Welding of Structural Steel Highway Bridges".

403.3.17 Assembling Steel

The parts shall be accurately assembled as shown on the working drawings and any match marks shall be followed. The material shall be carefully handled so that no parts will be bent, broken, or otherwise damaged. Hammering which will injure or distort the members shall not be done. Bearing surfaces and surfaces to be in permanent contact shall be cleaned before the members are assembled.

403.4 Method of Measurement

403.4.1 Unit Basis

The quantity of structural steel to be paid for shall be the number of kilos complete in place and accepted. For the purpose of measurement for payment components fabricated from metals listed in (1) below, such as welds metal, will be considered as structural steel.

Other Items

The quantities of other Contract Items which enter into the completed and accepted structure shall be measured for payment in the manner prescribed for the Items involved.

403.5.4 Basis of Payment

The quantities of all other Contract Items which enter into the completed and accepted structure shall be paid for at the contract unit prices for the several Pay Items as prescribed for the Items involved.

Payment will be made under:

| Pay Item Number | Description | Unit of Measurement |
|-----------------|---|---------------------|
| 1047 | STEEL WORKS (G.I. Pipes and connectors) | kilogram |

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