Formwork

The material used for smooth form finish shall be plywood, tempered concrete-form-grade hardboard, metal, plastic, paper, or other acceptable materials capable of producing the desired finish for form-facing material. 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.

Falsework

The material to be used in the falsework construction shall be of the quantity and quality necessary to withstand the stresses imposed; it may be timber or steel or a combination of both. 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.

1. Shop drawings for forms and false works shall be submitted by the Contractor to the PMO approval before fabrication/ installation.
2. Submission of shop drawings to the PMO for evaluation/ approval shall be submitted 7 days before fabrication/ installation.
3. The Contractor shall submit a detailed calculation of scaffolds if it can withstand the imposed loads due to the self-weight of the structural element, construction loads, and impact loads.
4. Formworks shall be coated with non-staining mineral oil or non-staining form coating compound (form oil) in all contact surfaces with concrete before rebar installation and closure of forms.
5. Provide formworks with clean-out openings to permit inspection and removal of debris.
6. The Contractor shall remove debris before concrete casting.
7. Forms submerged in water shall be watertight.
8. Use ¾" thk. Phenolic Board – construction form.
9. Scaffoldings/ Staging and Steel Form Rental is included in this scope.
10. All forms and scaffolds used by the Contractor during construction, completion, or repair of the said project shall be turned over to the Administration after the construction except for the Personal Steel Forms and scaffolds (H-Frame).

X. Reinforcing Steel Bars

This item shall consist of furnishing, bending, fabricating, and placing of steel reinforcement of the type, size, shape, and grade required per standard specifications and in conformity with the requirements shown on the plans or as directed by the Engineer.

1. The Reinforcing Steel Bars shall conform to the latest specification of the ACI and the National Structural Code of the Philippines with a minimum grade equivalent to Grade 40 (276 MPa) unless otherwise specified or as directed by the Engineer.
2. Shop drawings/ Rebar cutting list shall be submitted by the Contractor for PMC approval before rebar fabrication and installation.
3. Submission of shop drawings/Rebar Cutting list for evaluation/ approval shall be submitted 7 days before rebar fabrication.
4. All cut off points of RSB in all tie beams, suspended beams, and girder must be observed as specified on plans and as per approved design and as per standard construction practices and methodology.

5. Reinforcing Steel bars shall undergo material testing for strength verification.
6. The Contractor shall submit to the TPC and PMC a mill certificate of reinforcing steel bars for yield strength verification and its content.
7. Steel bars shall not be coated with form oil.
8. Standard hooks, Splicing, and Development length shall be observed on site.
9. All Hooks for stirrup/lateral ties and main reinforcement shall be seismic hooks.
10. This scope includes all reinforcing bars required for reinforced concrete works including other items where it is necessary as per plan and specifications.

XI. Structural Concrete

This item shall consist of furnishing, placing, and finishing concrete in all structures except pavements per 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.

1. Structural concrete must attain a minimum compressive strength fc' = 21.0 MPa (3000 Psi) at 28 days and as per structural specification.
2. Use clean fine aggregates & crushed gravel (maximum 19mmØ) as per plan and structural specification for Structural members. The use of uncrushed gravel is prohibited.
3. Concrete pouring of columns shall be terminated anywhere within the upper thirds of the column clear height.
4. Proper concrete sampling and testing shall be done on-site as per specifications.
5. Proper concrete curing must be observed on site.
6. Lean concrete must be provided for column footings with a minimum thickness of 50mm.
7. Proper concrete pouring methodology shall be observed on-site to avoid the segregation of aggregates.
8. Structural Concrete shall attain its acceptable strength before Stripping/Dismantling of bottom forms.
9. This scope also includes the construction of foundation, column footings, columns, reinforced concrete walls, and other items necessary as per plan and specifications.

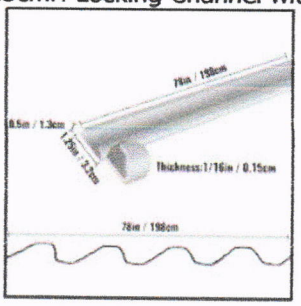
PART C. ARCHITECTURAL FINISHES & OTHER CIVIL WORKS

XII. Greenhouse Framing (Incl. Nursery Cover)

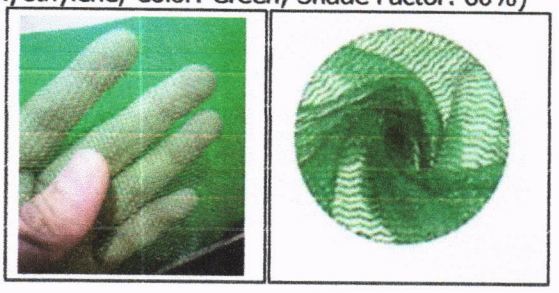
This Item shall consist provision of greenhouse framing including nursery cover, materials, labor tools, and equipment required in undertaking the proper installation as shown on the plans in accordance with this specification listed below.

1. Structural framing covered with green shade net
    - 100mmØ Sch.40 Steel Pipe
    - 75mmØ Sch.40 Steel Pipe
    - 50mmØ Sch.40 Steel Pipe
    - 12mm thk. Steel Plate

- 0.15cm thk - 3.2cmW x 1.3cmH Locking Channel with Wiggle Wire



- UV Resistant Premium Garden Shade/ Nursery Cover
(Material: Polyethylene; Color: Green; Shade Factor: 80%)



2. For all assembly and fabrication works, the cut ends shall be true and accurately jointed, free of burrs and rough edges. Cut-out recesses, mortising, grinding operation for hardware shall be accurately made and properly reinforced when necessary.
3. Screws, nuts, washers, bolts, rivets and other miscellaneous fastening devices shall be made of non-corrosive materials such as aluminum, stainless steel, etc.
4. No welding works shall be done on areas coated with paint.
5. Shop drawings shall be submitted by the Contractor for PMO approval before fabrication and installation.
6. Submission of shop drawings for evaluation/approval shall be submitted seven (7) days before fabrication and installation.
7. All materials for metal works to be used shall be brand new. Usage of scrap and tarnishing metals is strictly prohibited. The Contractor shall promptly remove and replace any scrap, old, and used materials installed on site.
8. The steel bars and other metallic structural materials shall be coated with red oxide primer (two coats) before installation or after welding works.
9. Workmanship and finish shall be per the best general practice. Portions of the work exposed to view shall be finished neatly. Shearing, flame-cutting, and chipping shall be done carefully and accurately.
10. Only welder with training certificate such as TESDA or other training related in welding works are allowed to do the welding works.

XIII. Painting Works (Metal Surface)

This Item shall consist of furnishing all paint materials, and other related products, labor, tools, equipment and plant required in undertaking the proper application of painting and related works indicated on the Plans and in accordance with this Specification.

a. The Contractor prior to commencement of the painting, and related work shall examine the surfaces to be applied in order not to jeopardize the quality and appearances of the painting varnishing and related works.
b. Voids, cracks, nick etc. will be repaired with proper patching material and finished flushed with surrounding surfaces.