

SCOPE OF WORKS

1. Mobilization
2. Staking and Lay out
3. Installation of temporary facilities
4. Excavation, backfilling, compaction and gravel bedding
5. Fabrication/Installation of steel reinforcing bars
6. Fabrication/Installation of scaffolding and forms
7. Pouring of concrete (column, foundation, wall footing, slabs on fill and beams)
8. Laying and plastering of CHB plain finish
9. Laying of floor tiles and vinyl base
10. Fabrication/Installation of steel doors and steel window frame with 1/4 thk clear glass
11. Construction of stage and concrete seating tiers
12. Installation of concrete louver blocks
13. Fabrication/Installation of steel truss, strut and accessories
14. Installation of rib type longspan roofing with double sided foam insulator and accessories
15. Installation of electrical line, electrical fixtures and accessories
16. Installation of 3-tonner Split type ACU's
17. Construction of drainage
18. Painting works
19. Clearing and cleaning

GOVERNMENT-FURNISHED EQUIPMENT, PROPERTY AND SERVICES/ CONTRACTOR-FURNISHED ITEMS

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GOVERNMENT-FURNISHED EQUIPMENT, PROPERTY AND SERVICES / CONTRACTOR-FURNISHED ITEMS

GOVERNMENT-FURNISHED EQUIPMENT, PROPERTY AND SERVICES

Doors and Windows:

a. Windows

2.30m x 1.20m Double hund clear glass window steel frame

b. Doors

D1; 1.80m x 2.10m Steel double door w/ steel frame

D2; 0.90m x 2.10m Steel door w/ steel frame

Door Closer

Door lockset

Door Hinges

Electrical Works:

2x40W Flou. Lamp w/ 2 ' x 4 ' lay in diffuser

2x40W Flou. Lamp w/ surface mounted diffuser

Exhaust Fan 2 ' wall mounted

Ceiling Fan 2 ' four bladed

Installation of A/C

3 Tonner Split Type Airconditioning unit

2.5 Tonner Split Type Airconditioning unit

Electric power and water required for this project shall be supplied. The Contractor is responsible for all connections and extensions to the work area.

The project shall be monitored and inspected by the Contracting Officer's Representative (COR) and/or his assigned project inspector upon whose approval the work will be accepted.

The COR shall designate the area where the Contractor can build a temporary storage and locker space which shall be kept clean, orderly and secure at all times. Contractor's personnel are not allowed to roam around the premises during work hours or stay after each day's work.

CONTRACTOR-FURNISHED ITEMS

MATERIALS

1. The Contractor shall provide all labor, materials and supplies to perform the services required in this contract. This is not comprehensive list and it does not relieve the Contractor from furnishing any other contractor-furnished materials required to perform the contract. Such items include but are not limited to other construction materials required for construction of temporary field office and storage area.

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2. The Contractor shall put up temporary barriers or yellow caution tapes to keep away people and/or vehicles from work site.
3. The Contractor shall submit sample board of all materials for approval of the COR. Materials and equipment incorporated in the work shall match the approved samples.

EQUIPMENT & TOOLS

1. The Contractor shall furnish all tools and special equipment to perform the work.
2. The Contractor shall be given a telephone line, to facilitate communication between the Contractor and the COR. All temporary connections to existing utility lines will be made by the Contractor. The Contractor shall be responsible for the telephone unit. The Contractor shall enforce strict utilities conservation practices.

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SPECIFICATIONS

A. EXCAVATION

EXISTING CONDITIONS

Verify existing condition of the structural and lot boundaries. Total demolition of existing structure (if any) within the proposed project site.

A.1 EXCAVATION

The Contractor shall make all necessary excavation for foundations to establish grades indicated on drawings without extra compensation including all other excavations required and necessary for the proper prosecution of the work.

1. Cut slope for permanent excavations shall not be steeper than 1-1/2 horizontal to one vertical, and slopes for permanent fills shall not be steeper than 2 horizontal to one vertical unless a substantiating data which justify steeper slopes are submitted.
2. Deviation from the foregoing limitations for slopes shall be permitted only upon presentation of a soil investigation report acceptable to the COR.
3. Trim the excavation to the required depth, lines and grades and other incidental excavations to level up the footing plus compacting and tamping which are included in the building Contract.
4. The materials to be excavated shall include: any rock, earth and other materials of any nature and description encountered in obtaining the indicated lines and grades.
5. If the required safe bearing power of the soil is not obtained at the excavation depth indicated on the drawings, the excavations shall be continued until such safe bearing power is reached.
6. Structural excavation shall be done to the required depth or as per plan and specification. Provide sufficient distance from wall and footings. No footing shall rest on fill.
7. Piers and walls shall be lengthened accordingly and likewise, the footings shall be revised to suit the new conditions for which the Contractor shall be paid at the unit price bid for concrete work.
8. No fill or other surcharge loads shall be placed adjacent to any building or structure unless such building or structure is capable of withstanding the additional loads caused by the fill or surcharges.
9. Footings or foundations which may be affected by the excavation shall be underpinned adequately, or otherwise protected against settlement and/or against lateral movement.

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10. Fills to be used to support the foundations shall be placed in accordance with accepted engineering practices. A soil investigation report and a report of satisfactory placement of fill, both, shall be acceptable to the COR.

A.2 INSPECTION

No pouring of concrete shall be done by the Contractor unless the bearing surfaces have been inspected and approved by the Contracting Officer's Representative (COR), and the authority to proceed has been received by the Contractor.

B. DRAINAGE SYSTEM AT THE SITE

The Contractor shall provide, construct and maintain for the duration of the work, drainage system of the site approved and or as directed by the COR.

1. The Contractor shall protect and maintain all conduits, drains, sewer pipes and other utility services that are to remain on the property or in the building, or in the site, where required for the proper execution of the work.
2. Dewatering. Remove accumulated water from excavation area before backfilling or pouring of concrete.
3. The Contractor shall notify all corporation, companies, individuals or other authorities concerned with the above conduits, drains, water and sewer pipes, running to the property of the site, and protect, relocate, remove, cap or discontinue all pipes, sewer, and other utility services, which interfere with the excavation in accordance with instruction and requirements of the above notified parties.

C. FILLING AND GRADING

1. All excavation shall be back-filled immediately as work permits after concrete walls and piers have attained full design strength and or as the COR directs.
2. After the forms have been removed from the footings, walls and piers, the material taken from the excavations (free from waste and objection matter) shall be used for backfilling around them.
3. The filling material shall be made in layers not to exceed 15 centimeters and thoroughly tamped before the next fill is placed. Excess excavated materials shall be placed and spread on the immediate premises as directed by the COR, provided however, that the Contractor shall not be required to remove such materials more than 50 meters from the building line.
4. Open tile drains around the building if any, shall be covered with crushed rock or gravel for a depth of 30cm and the same shall be graded from coarse to fine.

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5. Open tile drains under floor slab (where so indicated on drawings) shall be covered with broken stones or gravel up to the bottom of the slab.
6. In spaces where slabs rest on the ground, or on earth-fill as specified in paragraph 2, shall be labeled accurately graded with 10 cm thick of gravel and sand and tamped thoroughly before concrete pouring is done.
7. All exterior grades shall be formed in accordance with the drawings and specifications, taking into account the requirements for landscaping work, if any, and giving due allowances for the top soil depth.
8. The Contractor shall grade the area included within clearing lines as defined in "Clearing" under the General Conditions and all such grading work shall be included in the building Contract without additional cost.

D. TERMITE CONTROL/POISOINING

SCOPE OF WORK

This item shall consist of furnishing all materials and labor, and applying the termite control chemicals, including the use of equipment and tools in performing such operation in accordance with these Specifications.

D.1 MATERIAL REQUIREMENTS

Termite control chemicals or toxicants shall be able immediately exterminate termites or create barriers to discourage entry of subterranean termites into the building areas.

Type – I Liquid Termite Concentrate

This type of toxicant shall be specified for drenching soil beneath foundations of the proposed buildings. The concentrate shall be diluted with water in the proportion of 1 liter of concentrate material to 65 liters of water or as specified by the manufacturer.

Type – II Liquid Termicide Ready Mixed Solution

This type of toxicants which comes in ready mixed solution shall be used as wood preservative by drenching wood surfaces to the point of run-off.

Type – III Powder Termicide

This type of toxicant shall be applied to visible or suspected subterranean termite mounds and tunnels where termites are exterminated through Trophallaxes or exchange method or nourishment between termites while greeting each other upon meeting.

D.2 CONSTRUCTION REQUIREMENTS

Before any termite control work is started, thorough examination shall be undertaken by the Contractor so that the appropriate method for soil poisoning can be applied. The Contractor shall coordinate with other related trades through the COR to avoid delay that may arise during the different phases of application of the termite control chemicals.

1. When powder termiticide is to be applied to eradicate subterranean termites, careful application and precaution shall be given considering that this toxicant is fatal to animal and human lives.
2. Soil Poisoning. Apply as per instruction labeled on the product.
 - a. Applicator. Use experienced personnel on the project.
 - b. Guarantee Provisions:
Soil poisoning treatment shall prevent subterranean termites from attacking the building or its contents for a period of one (1) year from substantial completion. If subterranean termite activity exists in or under the building, the Contractor/Owner shall treat soil using methods acceptable to the project.
 - c. Products:
The termite Control Applicator shall perform treatment with 2% chlordane solution with chemical rates and amount as specified below. No work shall be covered until approved by the COR.
 - d. Execution:
Apply an over-all treatment under entire building slab, and moving strips adjacent to the building. Treat sidewalks or other such paved areas abutting the building for a distance not less than three (3) feet from the building. Apply along each side of foundation walls and at penetrations through slabs such as pipes, ducts, etc. apply at application rate of four (4) gallons to ten (10) linear feet around the perimeter of the building.
3. At the time soil poisoning is to be applied, the soil to be treated shall be in friable condition with low moisture content so as to allow uniform distribution of the toxicant agents. Toxicants shall be applied at least twelve (12) hours prior to placement of concrete which shall be in contact with treated materials.
4. Treatment of the soil on the exterior sides of the foundation walls, grade beams and similar structures shall be done prior to final grading and planting or landscaping work to avoid disturbance of the toxicant barriers by such operations.

E. PLAIN AND REINFORCED CONCRETE

SCOPE OF WORK

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This Item shall consist of furnishing, placing and finishing concrete in buildings and related structures, flood control and drainage, and water supply structures in accordance with this Specifications and conforming to the lines, grades and dimensions shown on the Plans.

STANDARD SPECIFICATIONS AND CODES

The work covered by this Section unless otherwise specified or detailed, shall be governed by the Building Code requirements (ACI 318), Standard Code for ARC and Gas Welding Society. The latest edition of all standards Specifications or Codes will be used.

E.1 MATERIAL REQUIREMENT

Portland Cement

- a. Portland Cement shall conform to the to the requirements of ASTM C-150 Type for normal Portland cement; Type III for High Early Strength Portland Cement.
- b. Cement shall be standard commercial brand in 40 kilograms.

Fine Aggregates

Sand shall be clean, hard, coarse river sand or crushed sand free from injurious amount of clay loam and vegetable matter and shall conform to ASTM C-33 or C-330.

Coarse Aggregate

Gravel shall be river run gravel or broken stones. The maximum size shall be 1/5 of the nearest dimension between sides of forms of concrete or $\frac{3}{4}$ of the minimum clear spacing between reinforcing bars, or between re-bars and forms whichever is smaller.

Mixing Water

Water used in mixing concrete shall be clean and free from injurious amount of oils, acids, alkali, organic materials or other deleterious substances.

E.2 STORAGE OF MATERIALS

1. Cement and aggregates shall be stored in such a manner as to prevent deterioration or the intrusion of foreign matter.
2. Cement shall be stored, immediately upon arrival on the site of the work, in substantial waterproof bodegas, with floor raised from the ground sufficiently high to be free from dampness. Aggregates shall be stored in such a manner to avoid the inclusion of foreign matter.

E.3 PROPORTIONING OF CONCRETE

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1. The Contractor shall employ at his own expense, an approved testing, laboratory which shall design the mix for each type of concrete required by the Specifications and drawings to obtain strength as determined by test cylinder at least 15 % higher than required. Strength requirements shall be noted on the drawings.
2. The adequacy of the mix design shall be verified by a test on a minimum of 6 cylinders, 3 tested at 7 days; 3 at 28 days, in accordance with ASTM C-192 and G-39 and by slump test in accordance with ASTM C-143.
3. The testing laboratory shall submit 5 copies of the mix design and the test results to the COR for approval before any concrete is placed.
4. If at any time during construction, the concrete resulting from the approved mix design proves to be unsatisfactory for the reason such as too much water, lack of sufficient plasticity to prevent segregation, honeycomb, etc. or insufficient strength, the Contractor shall immediately notify the testing laboratory and the COR.
5. The laboratory shall modify the design, the subject, subject to approval by the COR until a satisfactory concrete is obtained.
6. Stone concrete – Minimum compressive cylinder strength of concrete f_c' at 28 days area as follows:
 - a. f_c' 27.58 Mpa for suspended beam, slab and columns.
 - b. f_c' 20.68 Mpa for footings and walls.
7. The Water Content shall not exceed 28 liters per 40 kilograms per bag cement, and the slump test shall not exceed 10 cm. in all cases unless otherwise changed by the COR.

E.4 MIXING CONCRETE

The mixing and measuring equipment shall be approved by the COR. Unless otherwise authorized, concrete shall be machine- mixed at the site or by ready- mixed concrete.

E.5 READY MIXED

1. All ready- mixed concrete shall conform with the requirements of ASTM C-94, placed in forms within one hour after adding water or not more than ½ hours if a retarder is used. It shall be kept constantly agitated during the transit period.
2. Pouring of concrete shall not be stated until after the forms and reinforcement for the whole unit are properly laid and installed, cleaned, inspected and approved.
3. Construction joints shall be rough-in and clean thoroughly before any pouring starts. Wet and slush surface with cement mortar.

E.6 HANDLING AND PLACING OF CONCRETE

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1. Immediately after the concrete is mixed, it shall be conveyed by approved push cart or buggies to designated locations and carefully deposited in such manner as to prevent the separation of ingredient or displacement of the reinforcement.
2. Keep temporary runways built in such a manner that runway supports will not bear reinforcement of fresh concrete. Conveying or hauling of concrete by the use of long inclined chutes or pipes shall not be permitted.
3. Dumping of concrete into carts or buggies with a free fall of more than one (1) meter will not be permitted. Hardened splashes or accumulation of concrete on formed or reinforcements shall be removed before the work continues.
4. When placing operations would involve dropping of concrete of more than 1.50 meters high, it shall be deposited through a sheet metal or other approved conveyors.
5. As for practicability, the conveyors shall be kept full of concrete during the placing and their lower ends shall be kept buried in the newly placed concrete.
6. After the initial set of concrete, the forms shall be jarred, and no strain shall be placed on the ends of the projecting reinforcing bars. Foundations shall be free from water during concreting and construction joints shall be determined by the COR.
7. Concrete in columns shall be placed in one continuous pouring operation and allowed to be set 12 hours before caps are placed. Likewise, concrete in beams and slabs in superstructure shall be poured in one operation.

E.7 CURING AND PROTECTION

1. All concrete work shall be protected from drying out after removal of forms by covering with waterproof paper, polyethelene sheeting, burlap, with a coating of approved membrane curing compound having a moisture retention equal to 90% based on ATM C-309 and C- 156, applied in accordance with the manufactures instruction for use.
2. Wet burlap as often as required to keep concrete wet throughout each day for a period of at least 7 days where Normal Portland cement is used and 3 days where high early strength cement is used.

E.8 METAL REINFORCEMENT

STEEL BARS

1. Reinforcing steel bars shall conform to **ASTM Specifications A-615(Std Specs for Def & Plain Carbon Steel Bars)**. All mild steel for columns, shear wall, footings and footing beams shall be high grade deformed bars. $F_y = 413.7 \text{ Mpa}$
2. For 10mm bars use intermediate grade deformed bars $F_y = 275.8 \text{ Mpa}$

3. If reinforcing bars are to be welded, these specifications shall be supplemented by requirements assuring satisfaction weldability.
4. Bar and rod mats for concrete reinforcement shall conform to ASTM Specifications A-184 and Wires for concrete reinforcement shall conform to ASTM A-82 Specifications
5. Welded wire fabric for concrete reinforcement shall conform to ASTM A-185 except that the weld shear strength requirement shall be extended to include a wire size differential up to and including six gauges.
6. Wire and strand shall conform to **ASTM A-416(Specs for Steel Strand uncoated)**. Structural steel shall conform to **ASTM A-26(Specs for Steel Pipes)** and steel pipe for composite column to ASTM Specification A-377.
7. Provide bar supports and other accessories necessary to hold the reinforcing bars in the proper positions while concrete is being placed. Bar supports which come in contact with forms for concrete exposed to view in the finished structure shall be galvanized or stainless subject to approval.

PLACING OF REINFORCEMENT

1. All reinforcement shall be placed according to approved drawings. The contractor shall provide sufficient bar support, ties, anchors and other accessories to hold all bars securely in place.
2. Unless detailed on drawings, all stirrups shall be held in place by spacers. Reinforcing steel shall be cleaned of oil, grease, scale, rust or other coatings which will impair bond.
3. All welded splices shall be done by certified welders having welders certificate and shall be submitted and approved by the COR before any welding works shall be started.

STORAGE OF MATERIALS

Reinforcing steel bars shall be stored on supports above the ground level properly covered with roof or plastic materials for protection from different effect of moisture and the considerable delay in use.

F. CONCRETE MASONRY

SCOPE OF WORK

The work covered by this item shall include the following:

1. Furnishing of all necessary materials, tools, equipment, labor, and appliances necessary to complete the execution of the concrete masonry work as shown on the drawings and herein specified.

2. Arranging for adequate bracing, forming and shoring required in conjunction with and in the course of constructing the concrete masonry although not provided for under other sections.
3. Furnishing of all reinforcing steel for concrete masonry work and their placement including those not provided for under other sections but necessary for proper prosecution of the work.
4. Arranging for the necessary storage space and protection for materials at the job site.
5. Providing assistance and facilities for all inspections by the COR as required in the course of execution of the work.
6. Arranging for furnishing test specimens and samples of materials as may be required.

F.1 MATERIAL REQUIREMENTS

The following materials to be used under this section of the specifications shall conform with the concrete masonry standards as indicated.

1. Cement to conform with **ASTM C-150.(Std specs for Portland)**
2. Sand or fine aggregate shall be clear, sharp and well graded and free from injurious amount of dust, lumps, shale, alkali, surface coatings and organic matter.
3. Solid load bearing masonry units shall be Class A units conforming with **ASTM C-145 (Specs for Solid Load Bearing)**. All load bearing masonry units shall have a minimum compressive strength of not less than 5.5Mpa (800 psi) based on 5 individual units when tested in accordance with the methods set forth in **ASTM C-140-70 (Std Method of Sampling & Testing Masonry Use)** or as tested by the Bureau of Research and Standard, DPWH.
4. Masonry units shall have been cured for nor less than 14 days if steam-cured, or 28 days if air-cured when placed in the structure.

F.2 CONCRETE HOLLOW BLOCKS

1. For walls and partitions shown on the detailed drawings requiring concrete hollow blocks, the Contractor either uses concrete or ceramic hollow blocks upon approval of the COR.
2. The load bearing of hollow blocks shall have a minimum compressive strength of 6.89 Mpa (1000psi) computed from the average of five (5) units based on the average gross area, and a minimum of 5.41 Mpa (800 psi) for the individual unit respectively, all based on gross area.
3. Non-load bearing with cells filled with mortar. Use 400 psi rated CHB.
4. All masonry work shall be laid true to line, level, plumb and neat in accordance with the plans.
5. Units shall be cut accurately to fit all plumbing ducts, opening electrical works tec, and all holes shall be neatly patched.

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6. No construction support shall be attached to the wall except where specifically permitted by the COR.
7. Masonry unit shall be sound, dry, clean and free from cracks when placed in the structure.
8. Proper masonry units shall be used to provide for all window, doors, bond beams, lintels, plasters etc., with a minimum of unit cutting.
9. Where masonry units cutting is necessary, all cuts shall be neat and true to line.

Visual Inspection

All units shall be sound and free from cracks or other defects that would interfere with the proper placing of the unit or impair the strength or permanence of the construction.

Testing

Units shall be tested in accordance with the standard method of testing Masonry units of the American Society of Testing Materials ASTM designation C-140 and or by the Bureau of Materials and Quality Control, DPWH. No blocks shall be used unless results of tests are known and duly approved by the COR.

Reinforcement

Reinforcement shall be done in accordance with the structural plans as to size, spacing and other requirements.

F.3 REINFORCING STEEL

1. The minimum requirements for deformed steel bars shall conform to **ASTM A-305. (Specs for Std minimum requirements for deformed steel bars)**
2. Wire reinforcement shall also conform with ASTM A-82.
3. Reinforcement shall be clean and free from loose, rust, scales and any coatings that will reduce bond.

Note: Testing results of the tensile & comprehensive stress shall be submitted to the COR.

G. STRUCTURAL STEEL

SCOPE OF WORK

The scope of work under this section consists of furnishing of all materials, labor, tools, equipment and performance of all operations relative to the fabrication, delivery to site, erection and painting of structural steel trusses and purlins as shown on the Plans.

G.1 DESIGN CONDITIONS

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1. All structural steel work shall be in accordance with AISC Specification for the Design, Fabrication and Erection of Structural steel for buildings.
2. Materials and parts necessary to complete each item through such work which is not shown or specified shall be included, such as miscellaneous bolts, anchor, supports braces and connections etc.
3. Shop drawings as well as erection drawings shall be prepared and submitted by the Contractor to the COR for approval before any fabrication is made.

G.2 WELDING

1. Surfaces to be welded shall be free from loose side, rust, grease, paint and other foreign materials that will impair the soundness of the weld.
2. Note shall be made on the Plans and on the shop drawings of those joints or groups of joints in which it is especially important for the welding sequence and technique of welding to be controlled carefully, to minimize welding under restraints and to avoid undue distortion.
3. Welding of structural members in shop and on field, shall be done only by certified and experienced welder.
4. Weld length called on the Plans and on the shop drawings shall be the net effective length.

G.3 QUALITY CONTROL PROCEDURE

Fabricator's quality control procedures, materials and workmanship shall be subject to inspection by COR.

G.4 SHOP PAINTING

1. Steel works to be encased in concrete shall not be painted. All other steel works shall be given one coat of shop paint of red lead primer, applied thoroughly and evenly to dry surfaces, which have been cleaned, by brush, spray roller coating, floor coating or dipping at the selection of the Fabricator.
2. Steel work prior to painting and after inspection and approval shall be cleaned of loose mill scale, loose rust, weld slag or flux deposit, dirt and other foreign materials.

H. CARPENTRY AND JOINERY WORKS

SCOPE OF WORK

The work to be done under this Item consist of furnishing all required materials, fabricated woodwork, tools, equipment and labor and performing all operations necessary for the satisfactory

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completion of all carpentry and joinery works in strict accord with applicable drawings, details and these Specifications.

CONSTRUCTION REQUIREMENTS

A. Quality of Materials

All materials to be incorporated in the carpentry and joinery works shall be of approved quality as specified. Before using, all materials shall have been inspected and accepted by the COR.

B. Shop Drawings

Complete Shop Drawings with essential dimension and details of construction, as may be required by the COR in connection with carpentry and joinery work, shall be submitted for approval before proceeding with the work.

I. HARDWARE

SCOPE OF WORK

This Item shall consist of furnishing and installing all building hardware required to ensure rigidity of joints or connections of the different parts of the structure and equipment in a satisfactory operating condition parts of the structure such as doors, windows, cabinets, lockers, drawers and other similar operating parts as indicated on the plans and in accordance with this Specifications.

MATERIAL REQUIREMENTS

A. Rough Hardware

All rough hardware such as nails, screws, lag screws, bolts and other related fasteners required for carpentry work shall be first class quality and locally available.

B. Finishing Hardware

All finishing hardware consisting of locksets, latches, bolts and other devices, door closers, knobs, handles, hinges, and other similar hardware shall be first class quality available locally and conforming with the Specifications.

Note: All hardware to be to be purchased by the Contractor shall be submitted first to the COR for approval before ordering them.

J. ARCHITECTURAL FINISHES

1. **FLOORING** - Use unglazed granite floor tiles
See attached floor pattern and schedule of finishes.

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2. **WALL** - Exterior wall, interior wall, beams/plain cement plaster in paint finish.
Color of paint: verify with COR.
3. **CEILING** - Used light metal frames using metal furring channel and gypsum ceiling for ceiling boards.
(see ceiling finishes)
4. **PAINTING** - refer to COR for the approved color scheme.

K. ROOFING MATERIALS

SCOPE OF WORK

This Item shall consist of furnishing all pre-painted metal sheet materials, tools and equipment, plant including labor required in undertaking the proper installation complete as shown on the plans and in accordance with these specifications.

PRE PAINTED METAL SHEET

All repainted metal sheet and roofing accessories shall be oven baked painted true to profiles indicated on the plans.

Pre painted roofing sheets shall be fabricated from cold rolled galvanized iron sheets specially tempered steel for extra strength and durability.

1. Valleys, flashings, hip and ridge roll shall be fabricated from gauge 24(.6mm) thick cold rolled plain galvanized iron sheets specially tempered steel. Profile section shall be indicated on the plans.

ROOF DRAINAGE

This Item shall consist of furnishing all items, articles plant, equipment, labor, and materials and performing all methods necessary or required for the complete installation of all roof drains with strainers in accordance with all applicable drawings as shown on the approved plans and the provisions of this Specifications.

1. Performing all operations or methods necessary and required for the complete installation of all Roof Drains with strainers, including connections to downspout, in accordance with all applicable drawings and details and subject to the terms conditions of the contract.
2. Should there be any conflict between the sizes of roof drains and downspout, the size of the latter shall govern.
3. The size of any roof drain with strainer shall follow the diameter of the corresponding roof leader or downspout to be installed.

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L. DOORS AND WINDOWS

SCOPE OF WORK

This Item shall consist of furnishing and installing all fabricated steel doors and frames equipped with fixing accessories and locking devices in accordance with the Plans and or shop drawings and as herein specified.

L.II-1 MATERIAL REQUIREMENTS

1. All door cladding plates or panels shall be formed from gauge 20 cold-rolled, quality steel. Frames shall be formed from gauge 16 cold-rolled steel. The materials shall conform with the specification requirements of ASTM – A505.
2. Window frames and panel members shall be fabricated from extruded aluminum sections true to details with clean, straight, sharply defined profiles and free from defects impairing strength, durability and appearance.
3. Extruded aluminum sections shall conform to the specifications requirements of ASTM B-211.
4. Windows. Double hung clear glass window (see window schedule).

L.II-2 CONSTRUCTION REQUIREMENTS

Fabrication

1. **Doors**
 - Corner joints of frames shall be mitered and welded conforming to the manufacturer's standard manual for metal doors.
 - Joints shall be securely locked in placed during erection and the alignment of adjoining members shall be maintained.
 - All bolted connections shall be provided with locks.
2. **Windows**
 - Corner of frame and ventilator shall be mitered and electrically butt welded with exposed welds ground smooth.

Installation

Aluminum glass window fully equipped with fixing accessories and locking devices and installed in place and accepted to the satisfaction of the COR. Steel door, frames and louvers shall be set plumb and true to line in openings. The joints between the window frame and masonry shall be carefully caulked. Contact between windows or doors and adjacent steel including mullions shall be sealed with mastic furnished and applied by the Contractor.

M. PLUMBING AND SANITARY WORKS

SCOPE OF WORK

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The work includes new plumbing system and related work. The work also include providing roughing-in and making final plumbing connections to equipment furnished provide each system complete and ready for operation. Plumbing system including fixtures, equipment, materials, installation, and workmanship shall be in accordance with the plumbing Code, except as modified herein. Plumbing system shall include all water and sanitary piping buried and above ground.

A. Roof Drains, Overflow Pipes and Steel Grating

1. The Contractor shall provide fit and or install necessary drains with strainers where shown on the Plans.
2. Each drain with strainer shall fit the size of the corresponding downspout or roof leader over which it is to be installed and in conformity with the following schedule.
 - a. Downspout when encased in concrete, unless otherwise shown on the Plans shall be polyvinyl chloride (PVC), whether indicated or specified requirement as herein described.

N. ELECTRICAL WORKS

SCOPE OF WORK

The work under this Division consist of furnishing all materials, equipment tools, labor and all other services necessary to complete and make ready for operation the Electrical Power and Lighting System described below and or indicated in the Electrical Plans in accordance with the latest edition of the Philippine Electrical Code, National Electrical Code and this Specifications and General Conditions of the Contract.

N.1 WORK INCLUDED

The work shall include the following furnishing and installation, each complete and in proper operation condition, unless otherwise stated in these specifications:

- a. Outdoor 50KVA distribution transformer if local electric utility company will not supply the transformer or its equivalent as determined and required by the local electric utility company,

Service entrance 230V AC, 1-phase, 2 wires, 60 Hz including conduits, conductors, current transformer for metering device, kilowatt-hour meter and all items required as per local utility power company policies, rules and regulations;
- b. Panel boards at various locations including circuit breakers/low voltage switchgears and all its accessories as indicated in the electrical riser diagram;
- c. Feeder and branch circuit conductors with necessary conduits approved type of fittings and devices as indicated on the electrical plans;
- d. All types of utilization devices, outlets and wall switches with proper cover plates;

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- e. All lighting fixtures, wiring devices and necessary wiring of the building;
- f. Telephone, ACU and cable outlets including conduits, service entrance conductors as indicated on the plans; and
- g. All other items as stated, specified and as shown in these specifications and plans.
- h. Complete conduit system, boxes and faceplates, telephone terminal cabinet blocks including the cable of telephone and intercom system and telephone service entrance cable,
- i. Complete grounding system and lightning protection,
- j. Perform terminations for all electrical system and complete testing,
- k. Application of electric power service connection including preparation of all necessary plans, forms and related documents, payment of government fees and charges, and coordination with the local electric utility company and other authorities or persons involved in the procedure.
- l. Preparation of As-Built: plans and drawings,
- m. If anything has been omitted in any item of work or materials, usually furnished which are necessary for the completion of the Electrical Work as outlined herein before, then such items must be and are hereby included in this Division of the work.

N.2 CODES, INSPECTIONS, PERMITS & FEES

- a. The work under this contract is to be installed according to the requirements of the latest edition of the Philippine Electrical Code (PEC), National Electrical Code (NEC), Underwriters Laboratories, Inc (UL), National Electrical Manufacturer's Association (NEMA), United States Electrical Standards, and the rules and regulations of the United States Authorities.
- b. All permit and electrical fees required of this work shall be obtained by and at the expense of the contractor. The Contractor shall furnish the COR the final certificates of Electrical Inspection and approval from the proper government authorities after completion of the work. The contractor shall prepare all as-built plans and all forms and documents required by the approving authorities.
- c. Electrical Service Application including drawings for this work shall be obtained by and at the expense of the contractor. The contractor shall comply with all the requirements of the utility companies with regards to the service applications.

N.3 MATERIALS & METHODS

N.3.1 Wires & Cables

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- a. All wires shall be copper, soft-drawn and shall be of at least 98% conductivity or higher. It shall be smooth and true and of cylindrical form and shall be within 1% of the actual size called for.
- b. All wires shall comply within the requirements of the Underwriters Laboratories and as they apply to the particular usage.
- c. Wires and cables for lighting and power systems shall be plastic insulated for 600 Volts working pressure, type "THHN/THWN" unless otherwise noted on plans or specified below.
- d. All wires shall be stranded copper.
- e. For lighting and power system, no wire smaller than 3.5 mm² shall be used except for control leads and otherwise noted.
- f. All wires and cables shall be as manufactured by Phelps Dodge, Columbia, American Wire and Cable, Far East Wire and Cable Sycwyn or Approved Equivalent.

N.3.2 Conduits

- a. Conduits for interior systems shall be standard Intermediate Metallic Conduit (IMC) for electrical purpose, heavy walled or approved equivalent.
- b. Service entrance conduit shall be Intermediate Metallic Conduit (IMC).
- c. No conduit shall be used in any system smaller than 12.7mm (1/2 inch) diameter electric trade size nor shall have more than four (90) degree bends in any one run and where necessary, pull boxes shall be provided as directed.
- d. No wire shall be pulled into any conduit until the conduit system is complete in all details; in the case of concealed work until all rough plastering or masonry has been completed and in the case of exposed work until the conduit work has been completed in every detail.
- e. The ends of all conduits shall be tightly plugged to exclude plaster, dust and moisture while in progress of construction. All conduits shall be reamed to remove all burrs.
- f. All pipes and fittings on exposed work shall be secured by means of metal clips, which shall be held in place by means of machine screws. When running over concrete surfaces, the screws shall be held in place by means of expansion sleeves. All pipes on exposed work shall be run at right angles to and parallel with the surrounding walls and shall conform to the form of the ceiling. No diagonal runs shall be allowed and all bends and offsets shall be avoided as much as possible. Where necessary conduit fittings shall be used. Piping in all cases, it shall be run perfectly straight and true, satisfactory to the COR. Conduits shall be supported at 1.5M intervals maximum, or per PEC requirements.
- g. Intermediate metallic conduits installed outside building in contact with the soil shall be coated with asphalt paint and wrapped with asphalt/rubber tape. An additional cost of asphalt paint shall be applied over the asphalt/rubber tape.

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N.3.3 Junction & Pull Boxes

- a. All outlets of whatever kind, for all systems, there shall be provided a suitable fitting, which shall be either a box or other device especially designed to receive the type of fitting to be mounted thereon;
- b. The Contractor shall consult the COR as to the nature of the various fittings to be used before installing the outlet fittings, and shall conform strictly in the use of fittings, to the nature of the appliance to be mounted on them so that the work, when completed will be of finished design.
- c. All outlets on concealed conduit work provide galvanized pressed steel outlet boxes of standard make. These boxes shall be in all cases standard and where such boxes are not available on the market special boxes shall be secured by the Contractor at his own expense. In general, outlet boxes shall be at least 104mm x 53mm deep and #16 minimum gauges.
- d. Junction and pull boxes, of Code gauge steel, galvanized shall be provided as indicated or as required for facilitating the pulling of wires and cables. Pull boxes in finished places shall be located and installed with the permission and to the satisfaction of both COR.
- e. All junction and pull boxes on exposed conduit work shall be provided with hubs for threaded pipe entry and covers provided with neoprene gaskets.

N.3.4 Wall Switches

- a. Wall switches shall be rated at 15 amperes, 230 volts AC. Switches shall be of the quiet type, spring operated. The type of switch shall be tumbler operation and the color, plating and appearance of wall plates shall be as selected by the COR. Appropriate samples shall be submitted prior to the purchases of wall switches and faceplates. Switches shall be as manufactured by G.E., Bryant, Rubbel, National Electrical Products, H & H, or approved equal manufactured by US.

N.3.5 Wall Receptacles / Convenience Outlets

- a. Receptacle outlets, in general, shall be for flush mounting, duplex type rated at 15 ampere, 230 volts parallel slots grounding type unless otherwise indicated on drawings. Type and color or receptacle outlet and plates shall be as selected by the COR. Appropriate samples of outlets and plates shall be submitted prior to purchase of devices. Receptacles shall be manufactured by G.E., Bryant, Rubbel or approved equal manufactured by US.

N.3.6 Plates

- a. All switches and receptacle plates shall be of stainless satin finish or as directed by the COR.

N.3.7 Panels & Cabinets

- a. Standard panels and cabinets, as far as possible, shall be used and assembled on job. All panels shall be of dead front construction, furnish with trims for flush or surface mounting as

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required. Cabinets shall be of Code gauge steel with gutters at least 4-inch wide and wider if necessary. The trim for all panels shall be finished in industrial gray enamel over a coat of rust inhibitor;

- b. Panels and cabinets shall be as manufactured by Westinghouse, Square D, G.E. Power Box or approved equivalent. Manufacturer's shop drawings shall be submitted before manufacturing.
- c. Power panel & breakers shall be Westinghouse, G.E., Square D or approved equivalent manufactured by US with two-pole circuit breakers of sizes voltage rating and interrupting capacity as called for on plans and bolt-on type, center main.
- d. Power Panel's main bus work shall be rated in amperes equal to or exceed over-current protective device immediately ahead of it. All bus works shall be properly secured to withstand available short circuit forces at the location.

N.3.8 INDIVIDUAL BREAKERS AND SWITCHES

- a. Provide individual circuit breakers, safety switches, and disconnect switches where indicated on plans, voltage ratings shall be suitable in each case of service application.
- b. All protective devices shall meet NEMA, Underwriters Laboratories, Inc. and US Standard specifications.
- c. Circuit breakers shall consist of a quick-make, quick-break type entirely trip-free operating mechanism with contacts, interrupter, and thermal-magnetic trip unit for each pole, all enclosed in a molded-phenolic case. The thermal-magnetic trip units shall provide time-delayed overload protection and instantaneous short circuit protection, and shall operate a common trip bar which opens all poles in case of overload or short-circuit current in any one pole. Circuit breaker shall be trip indicating, with the tripped position or breaker handle midway between "ON" and "OFF" position.
- d. Circuit breakers rated above 100 amperes shall have interchangeable trip units.

N.3.9 LOCATION OF WIRING AND OUTLETS

- a. The Contractor shall coordinate his work with all parties involved so that exact locations may be obtained for all outlets, apparatus, appliances and wiring. Care should be exercised when running a common neutral that phase wires are of different phases so that the multi-circuit will be balanced around the neutral conductor.
- b. The location of outlets shown on diagrammatic wiring plans shall be considered as approximate and it shall be incumbent upon the Contractor, before installation of outlets/boxes, to study all pertinent drawings and obtain precise information from the architectural schedules, scale drawings, large scale and full size details of finished rooms, approved shop drawings of other parties involved or from the COR. It shall be understood that any outlet may be relocated a distance not exceeding 4.5M from the location shown on the drawings, if so directed by the COR. Contractor shall make any necessary adjustment of his work to fit conditions for recessed fixtures and for outlets occurring in glazed tile, block,

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terra cotta, marble, wood paneling, or other special finish materials, in order that all boxes may register flush with finish and shall be centered properly. In centering outlets, due allowance shall be made for overhead piping ducts, windows, and door trim variations in thickness of furring, plastering, etc., as erected, regardless of conditions which may be otherwise shown on small scale drawings. Outlets incorrectly located shall be properly relocated at the Contractor's expense. Local switches which are shown near doors shall be located at the strike side of the door as finally hang, regardless of swing shown on the drawings.

- c. The center line of wall, outlets, socket outlets, switches, telephone outlets, pilot lights, indicating lights, and fan outlets, shall be installed at heights above finished floor or as specified on the Architect's drawings. Where mounting heights are specified on the Electrical drawings, they shall be verified with Architect's drawings before installation. Where glazed tile, block, terra cotta occur, outlets shall be centered on the nearest joint to the height given.

N.4 INSPECTION AND TEST

The COR shall have access to all parts of the work at all times and shall be furnished such information and assistance by the contractor. All installation shall be subjected to test and any damage done during testing shall be borne by the contractor.

N.5 STANDARD OF WORKMANSHIP

The contractor shall execute all work in neat and workmanlike manner and shall do all necessary work whether it is clearly specified in this specification or shown in the drawing or not. Best practice in modern electrical installation shall be employed.

O. PAINTING WORKS

SCOPE OF WORKS

This Item shall consist of furnishing all paints, enamels varnishes and other products to be used including labor, tools and equipment required as shown on the Plans and in accordance with these Specifications. The color finish shall conform with the standard colors of blue and white in coordination with the COR.

O.1 CONSTRUCTION REQUIREMENT

The contractor prior to commencement of the work shall examine the surfaces to be applied with paints, enamels, varnishes, lacquers, sanding sealers and other related products in order not to jeopardize the quality and appearance of painting or finishing work.

In addition, the Contractor shall undertake the following:

1. Voids, cracks, and all other kinds of defects, shall be repaired with proper patching materials and finished flush with the surrounding surfaces.

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2. Marred or damaged shop coats on metal shall be spot primed with appropriate metal primer.
3. All hardware shall be protected or removed prior to painting and varnishing operations.
4. Upon completion of the work, all staging, scaffoldings and paint containers shall be removed and disposed.
5. Paint drips, oil, or stains on adjacent surfaces shall be removed and the entire job left clean and acceptable to the COR.

Note: Refer to the COR for the approved color scheme.

P. PROHIBITIONS

1. Smoking is strictly prohibited at the work site. A smoking area will be assigned.
2. Contractor's personnel are to use only proper toilet facilities. Urinating on walls, plants, trees, grass and other areas is strictly prohibited. Violator/s shall be permanently removed from the compound. Contractor shall provide commercial portable toilet.

Q. SECURITY

1. Contractor's personnel must stay within the working site and not wander around the adjacent areas not covered under this scope of work.
2. Contractor's workers are prohibited to stay inside the work area after each day's work.

R. CLEANING TASKS

The contractor shall continuously, during the progress of the work, remove and dispose of dirt and debris and keep work area clean, neat and orderly and in such order as to prevent safety hazards. Debris shall be collected and removed from the job-site daily.

Domestic rubbish containers on the premises shall not be utilized by the Contractor for storage or disposal of construction rubbish.

NOTE: All additional activities which is not indicated or specified on the plan but related to the scope of works to complete the project shall be done by the Contractor without any additional cost to the U.S. Government.