TERMS OF REFERENCE
“ANNEX B”

SITE DEVELOPMENT
(Design and Build for the PSHS System Training and Administration Center)

PERFORMANCE SPECIFICATION

The General Contractor/Design-Builder shall perform all works called for in the plans, specifications and instructions for the construction of the Site Development of Philippine Science High School System Training and Administration Center Phase 1 in Agham Road, Quezon City.

GENERAL NOTES:

1. Bidders are required to declare the choice of brand, make, source, manufacturer, installer or specialty trade contractors to be used.

2. Samples of all materials and finishes and latest catalogue of paving materials, stones and boulders; plants, roofing, electrical fixtures and accessories; lighting fixtures, plumbing materials and fittings; receptacles, etc., and finishing hardware specified herein shall be submitted to the Architect for verification and approval before purchase and installation.

3. Equipment, materials, fixtures, hardware, finishes, paints, fabricated works, etc. that are specified by brand names, manufacturers or fabricators, shall be followed strictly by the contractor as to size, capacity, sections, manner of preparation, installation and other conditions related to the use of the materials in the building.

4. All goods and materials to be incorporated in the Works should be new, unused, of the most recent or current models, and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.

5. The Contractor shall submit full sized or scaled details, samples (pavers and pre-cast unit, stones and boulders; planting material, metals for fabrication, etc) as noted herein. The Contractor shall certify that the materials and system of fabrication and installation are within the provisions of the fire code, building ordinances and other safety regulations including the capacity to withstand wind pressure and fire and water tightness.

6. A guarantee shall be provided by the manufacturer or fabricator, and the general contractor shall be responsible should the material and installation fall short of the expected performance. Both parties shall replace the damaged material at their own expense. This guarantee shall be within a period of one (1) year after acceptance of the project by the Owner.

Omission (from the drawings or specifications) or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such omitted or
misdescribed details of the work. These shall be performed as if fully and correctly set forth and described in the drawings and specifications.

DIVISION 1: GENERAL REQUIREMENTS

1. It is the declared and acknowledged intention and meaning to provide and secure the Site Development of Philippine Science High School System Training and Administration Center Phase 1 in Quezon City, complete and ready for use.

2. The project calls for construction of site development and landscaping within the PSHS System Training and Administration Center at Agham Road, Quezon City with an approximate total area of 1,200 sqm. The work includes, but not limited to the following:
   a. The Design-Builder shall provide all labor, materials, plants, tools and equipment for the proper construction, site development and landscaping of PSHS-STAC grounds.
   b. Provide temporary facilities in designated area only.
   c. Layout of driveway, parking area, and path walk; excavation for footings and foundation; backfilling and earth fill of desired contour of landscape, compaction of soil and grading for driveways and parking space.
   d. Supply and installation of pre-cast concrete units.
   e. Supply and installation of trees, plants, shrubs, and ground covers as indicated on landscape plans.
   f. Supply and installation of landscape features like stones, rocks, boulders, potteries, and water feature elements.
   g. Supply and fabrication of reinforcing steel bars for reinforced concrete elements.
   h. Supply, mixing and placement of concrete in accordance to the design mix and specified manner of pouring and curing.
   i. Supply and fabrication of steel post, trusses, roofing and roofing accessories.
   j. Supply and installation of storm drainage system including gutters, drains, catch basins, piping, etc. as indicated on plans.
   k. Supply and installation of power and lighting system including fixtures, outlets, switches, wiring, conduits, devices, etc. as indicated on plans.

DIVISION 2: SITE WORK

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<thead>
<tr>
<th>02 100</th>
<th>Site Preparation</th>
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<tbody>
<tr>
<td>Remove and relocate growth and vegetation at the site. Preparation includes stripping of sod. Provide temporary facilities for contractor in designated area only. Board-up/Enclosed construction area that are off-limits to all students and school personnel. The contractor is responsible for safety of workers,</td>
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</table>
Terms of Reference for the project:
SITE DEVELOPMENT (Design and Build for the PSHS System Training and Administration Center)
Annex B

<table>
<thead>
<tr>
<th>02 200</th>
<th>Earthwork</th>
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<tbody>
<tr>
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<td>Grading and Excavation: Grade and excavate to lines, grades, and elevation as listed on scope and as specified in plans.</td>
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<td>Subgrade Preparation: Compaction of subgrade shall be at least 98% of standard Proctor density as specified in ASTM D 698 for pedestrian areas and ASTM D 1557 for vehicular areas. Provide graded slopes as required for driveways, parking area, walks, etc.</td>
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<td>Borrow Materials – selected, approved materials meeting the definition of pitrun sand and gravel.</td>
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<td>Backfill Materials – free of stones larger than 50mm, roots, and in-organic materials.</td>
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<tr>
<th>02 480</th>
<th>Landscaping</th>
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<tbody>
<tr>
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<td>Furnish materials and equipment, plants, trees, topiary, shrubs and other facilities, and perform labor required to complete top soiling, sodding and springing, landscaping, lawns.</td>
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<tr>
<th>02 500</th>
<th>Paving and Surfacing</th>
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<td>Concrete paving blocks shall be free from defects that would interfere in the interlocking property or impair the strength or performance of the units, individually or as a whole. It shall conform to ASTM C 936M, Standard Specification for Interlocking Concrete Paving Units.</td>
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<td>A thickness of 60mm shall be given to concrete paving blocks laid along and over pedestrian areas and driveways while 80 mm for areas under constant vehicular traffic.</td>
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<td>Bedding sand shall be clean, washed natural or manufactured sand which conforms to ASTMC 33M, Standard Specification for Concrete Aggregates. The sand shall be spread evenly over the base course and screeded to a nominal 25mm thickness, not exceeding 40 mm thickness. After the sand is screeded, it shall not be disturbed.</td>
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<td>Joint sand shall conform to ASTM C 144, Standard Specification for Aggregate for Masonry Mortar.</td>
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<td>Edge restraints are a key part of interlocking concrete paving blocks. By providing lateral resistance to loads, they maintain continuity and interlock among the paving blocks. For pedestrian areas and driveways, edge restraints shall be steel, aluminum, timber, troweled (hidden) concrete curb or plastic edging specifically designed for concrete paving blocks. Formed or precast concrete restraints are required for streets, parking lots and roads.</td>
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</table>

students and school personnel. The contractor is responsible of any damage that may occur during construction. Security of materials within the construction site shall be the responsibility.
DIVISION 3: CONCRETE

| 03 100 Concrete Formwork | Provide forms, shoring, and scaffolding for concrete placement. Set forms mortar-tight and true to line and grade. Chamfer above grade exposed joints, edges, and external corners of concrete 18mm (3/4”) unless otherwise indicated. Prevent concrete damage during form removal. After placing concrete, forms shall remain in place for the minimum time periods.  
    a. Use ½” thick x 4’ x 8’ form plywood, phenolic boards for all concrete work exposed to view.  
    b. Use 2” x 3” and 2” x 4” form lumber. |

| 03 200 Concrete Reinforcement | Provide bars, wire fabric, wire ties, supports, and other devices necessary to install and secure reinforcement. Reinforcement shall not contain rust, scale, oil, grease, clay, and foreign substances that would reduce the bond. The following shall apply:  
    a. All structural works shall be executed in accordance with the National Structural Code for Buildings (NSCB). The document ACI-317-83 for reinforced concrete supplements the NSCB.  
    b. Material strength as indicated on plans.  
       Concrete fc’ = 3,000 psi  
       Steel Rebars fy’ = 40,000 psi  
    c. Use 10mm, 12mm, 16mm diameter rebars as indicated in plans.  
    d. Use Gauge 16 GI tie wires.  
       Refer to Structural Plans and General Condition Notes to confirm above values. |

| 03 300 Cast-In-Place Concrete | The work includes the provision of cast-in-place concrete. The following specifications shall be followed:  
    a. 20.68 MPa (3000 psi) for conventional concrete of all footings and pedestal  
    b. 17.22 MPa (2500 psi) for slab on fill and curbs and gutters.  
    c. Aggregates  
       1) Gravel – well graded, clean, hard particles of gravel or crushed rocks 38 mm (1-½”) maximum for slab and 20 mm (¾”) maximum for columns and beams.  
       2) Sand – clean, washed sand.  
       Cement – use Portland cement |

DIVISION 4: MASONRY

| 04 200 Mortar and Grout Mixes | Mortar and Grout mixes shall comply but not limited to the following reference standards:  
    A. Portland Cement: ASTM C-150, Type  
    B. Aggregate for mortar: ASTM C-144  
    C. Aggregate for grout: ASTM C-404 |
D. Mortar for unit masonry units: ASTM C-270

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<th>Stones</th>
<th>04 400</th>
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<td>Stone varieties proposed for use on project, include data on physical properties required by referenced ASTM standards. Submit manufacturer’s product data for each type of masonry accessory required. Stone samples for verification: Sets for each color, grade, finish, and variety of stone required. Include 2 or more samples in each set showing the full range of variation expected characteristics. The architect shall make provisions to ensure that the contractor does not proceed with installation until unsatisfactory field conditions have been corrected. The architect shall ensure that the contractor coordinates with installers of other work about specific requirements for the placement of reinforcement, anchors, ties, flashing, and other similar items to be built into stone masonry veneer.</td>
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DIVISION 5: METALS

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<tr>
<th>05 500</th>
<th>Metal fabrication</th>
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<tr>
<td></td>
<td>Metal work shall be well formed to shape and size, with sharp lines, angles and true curves. All work shall be fabricated to allow for expansion and contraction of materials. Provide welding and bracing of adequate strength and durability, with tight, flush joints, dressed smooth and clean. Weld or rivet permanent connections. Metal materials and fabrication shall comply but not limited to the following reference standards:</td>
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<tr>
<td></td>
<td>A. Steel Plates, Shapes, and Bars: ASTM A36.</td>
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<td>B. Steel Tubing: Cold-formed, ASTM A500</td>
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<td>C. Galvanized Steel Sheet, Commercial Quality: ASTM A526</td>
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<td></td>
<td>D. Steel Pipe: ASTM A53, standard weight (schedule 40)</td>
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<td></td>
<td>E. Welding Rods and electrodes. AWS Specification</td>
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<td></td>
<td>F. Fasteners: Provide zinc coated fastener for exterior use. Select fasteners for the type, grade, and class required. Suspect/counterfeit bolts will not be accepted and will be replaced at contractor’s expense.</td>
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DIVISION 7: THERMAL AND MOISTURE PROTECTION
### 07 400 Metal Roofing

Panel to meet all specified design loads minimum thickness Ga. 24. Contractor shall submit profile sample for approval.

Metal Roofing shall comply but not limited to the following performance and reference standard: Galvanized Steel Sheet, G90, ASTM A653.

Fasteners for steel roof panels shall be zinc-coated steel, aluminum, corrosion resisting steel, or nylon-capped steel, type and size specified below, or as otherwise, approved for the applicable requirements.

Method of fastening and securing roof panel shall be approved by the Architect.

### 07 600 Flashings and Sheet Metal

Flashings and accessories shall be provided where indicated and as necessary to provide a weather tight installation.

### 07 900 Sealants

Surfaces shall be clean, dry to the touch, and free from dirt, moisture, grease, oil, wax, lacquer, paint, and other foreign matter that would tend to destroy or impair adhesion. Apply sealants in accordance with manufacturer’s instructions. Sealant shall be uniformly smooth and free of wrinkles. Upon completion of sealant application, remove remaining smears and stains and leave the work in a clean and neat condition.

### DIVISION 9: FINISHES

#### 09 900 Painting

Prior to surface preparation and coating applications, remove, mask, or otherwise protect, hardware, hardware accessories, machined surfaces, covers, plates, lighting fixtures, and other items not to be coated that are in contact with surfaces to be coated. Remove dirt, splinters, loose particles, grease, oil, and other substances deleterious to coating performance. Prepare each substrate as recommended by manufacturer. Verify all finish colors with the Architect.

- b. Use epoxy enamel paint finish for steel work.
- c. Submit color samples for approval.

### DIVISION 15: MECHANICAL AND PLUMBING
Terms of Reference for the project:
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Annex B

15 400 Plumbing Installation

Except as specified, the CONTRACTOR shall submit for the Architect's approval, a complete list of manufacturer's names of all equipment and materials he proposes to use.

The CONTRACTOR shall assume the cost of and the entire responsibility for any change in the work as shown on contract drawings which may be occasioned by approval of materials other than those specified.

Pipes and Fitting Schedule:

A. Cold Water Line – Polypropylene (PPR) Material PN16 as per manufacturer standard
B. Drainage – High Impact Polyvinyl Chloride or Reinforced Concrete pipe as per manufacturer standard
C. Area Drain Cover and Metal Grating – as per approval.
D. Area catch basin and junction boxes – reinforced concrete
E. Valves and Fittings – as per approved material.

DIVISION 16: ELECTRICAL

16 050 Basic Materials and Methods

a. Complete testing of all electrical system shall be conducted.
b. All wires unless noted on the drawings or in these specifications shall be installed in conduits. No conduits shall be smaller than 15 mm (1/2 inch) diameter trade size.
c. PVC conduit shall be non-metallic conduit schedule 40 or Intermediate Metallic Conduit as specified in Electrical plan.
d. All conductor wires and cables for lighting and power wiring shall be copper, softdrawn and annealed of 98% conductivity type TW or TWHN as called for in plans and shall be plastic insulated for 600V working pressures.
e. All wires 3.5 mm² (AWG#12) or larger shall be stranded.
f. Wires shall be of recent manufacture and in no case be more than six months old. Any conductor whose insulation show signs of deterioration within one year from final acceptance of work shall be replaced by this contractor at his own expense.
g. All pullboxes shall be gauge 16. Submit sample for approval.
h. Wall switches shall be specification grade flush type, single pole, 15 Amperes, 250 Volts or as required.
i. Receptacles shall be duplex grounding type, rated at 10 Amperes, 250 Volts.
j. Weatherproof receptacles shall be be duplex grounding type, rated at 10 Amperes, 250 Volts, and equipped with weatherproof cover plates.
k. Panelboard shall contain single brand of circuit breakers.
l. Electrical feeder lines shall be tapped from existing feeder lines at electrical room.
| 16 500 Lighting | Contractor shall submit catalogue, sample and mock-up of all lighting fixture for approval before installation. |

- END OF SECTION -