



Office of the Civil and Sanitary Works Unit
Cagayan de Oro

Project Title **Propose Study Shed 2**
Location : USTP CDO Campus, C.M. Recto Avenue, Lapanan, Cagayan de Oro City
Owner : University of Science and Technology of Southern Philippines
Subject : **SPECIFICATIONS**

I. INTRODUCTION

The drawings and the Specification are complementary to each other. Drawings are graphic means of showing works to be done. They are particularly suited to showing where materials are located. Thus, drawing exists essentially to show sizes, location, and placement. Not all works, however, can be presented in the drawings. Generalized works are usually in statement form; hence the Contractor is strongly advised to read the specification carefully.

Specification on the other hand, is used to describe the materials, construction techniques, samples, shop drawings, guarantee, and the other contract requirements. Together, the Drawings and the Specification are used to inform the contractor. In cases where specified brand carries with it the manufacture's specifications, the manufacture's specification shall hold the precedence over this specification.

II. THE LANGUAGE OF THE SPECIFICATIONS:

The specifications are the abbreviated type and include incomplete sentences. The selection of sentence structure depends on the underlying principles of the specifications:

- a. That the technical specifications are only one part of the Contract Document.
- b. That the contract is between the Owner and the General Contractor; and
- c. That the General Contractor is the only party responsible for completing the work in accordance with the Contract Document

Therefore:

- A. Only the General Contractor is referred to in the specification so as not to violate the intent of the contract and so as not to undermine the proper chain of command.



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- B. Any reference to Specialty Trade Contractors in the technical Specifications is made only in so far a selection of specialty Trade Contractors is made through bidding. Once the Specialty Trade Contractions are selected and assigned to the General Contractor, the General Contractor assumes all responsibilities for the execution of the whole project in accordance with the Contract Documents. Therefore, in the contract between the Owner and the General Contractor, the Specialty Trade Contractor, the Specialty Trade Contractor is not referred to the entire Contract Document, the work "Contractor" referred to the General Contractor.
- C. The omission of the phrase "the contractor shall" is intentional because the whole specifications are directed to the Contractor. Omitted words or phrases shall be supplied by the interference in the same manner, as they are when a "note" occurs in the drawings.
- D. Where "as shown", "as intended", "as detailed", or words similar import are used, it shall be understood that the reference in the drawings accompanying the specifications is made unless otherwise stated.
- E. Where "as directed", "as required", "as permitted", "as authorized", "as approved", "as accepted", or other words similar import are used, it shall be understood that the direction, requirements, permission, authorization, approval, or acceptance of the Architect is intended unless otherwise stated.
- F. As used herein, "provide" shall be understood to mean "provide complete in place" that is "furnished and installed".

III. GENERAL REQUIREMENTS:

1. The contractor shall secure from the government agencies all necessary licenses and permits needed.
2. Cleanliness shall be maintained at all times within the job site and its immediate premises.
3. If errors or omissions appear in the drawings, specifications or other documents, these shall be referred to the designing architect.
4. The building site shall be filled up to the required grade.
5. All fills shall be in layers of 0.15m in thickness, each layer being thoroughly compacted by wetting and tamping.



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6. All applicable provisions of the different divisions of the specification for each work trade shall apply for all items cited in this summary.
7. Materials deemed necessary to complete the work but not specifically mentioned in the specification, working drawings, of in the Contract Document, shall be supplied and installed by the Contractor without extra cost to the Owner. Such material shall be of the highest quality available and install and applied in a workmanlike manner at prescribed or appropriate locations.
8. Materials specifically mentioned in this Summary shall be installed following efficient and sound Engineering and Construction practice, and especially as per Manufacture's application and installation specification, which shall govern over all works, alluded in this Specification.
9. The Contractor shall clean the site and dispose waste after the completion of the project.

IV. PREPARATION OF SITE:

1. The owner shall take out the building accurately and shall establish grades according to plans and specifications.
2. Basic batter board references as directed by the project engineer shall be erected at such places where they will not be disturbed during construction.

V. SPECIFICATION OUTLINE:

WORK ITEM	DESCRIPTION
1. Mobilization/Demobilization:	Mobilization shall cover all activities and related costs relating to the transport to the site of the Contractor's staff, equipment and operational supplies; the establishment of offices, buildings and other necessary general facilities for the Contractor 's operations at the site.



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Demobilization shall include all operations and costs related to the transport from the site of staff, equipment and materials not needed or protected by the contract, including the demolition, relocation and clean-up of offices, buildings and other facilities assembled expressly for the purposes of this contract.

2. Demolition Works

Prior to any structural demolitions taking place, the contractor must identify the location to be demolished of as per drawing. Any found damages that are not included to the demolition must be repair at the expense of the contractor. Specified material must be restored to its original position as per approved drawing. The implementing unit should be informed prior to any repair.

Specify the materials/equipment to be used during the activity. Wear safety gears during the activity. All the workers, site supervisors and engineers are briefed with the potential hazards and process of demolitions.

All debris must dispose to the specified disposal area and the workmanship of repair must be acceptable as per approved by the implementing unit assigned.

3. Earthworks

3.1 Excavation

Specify the position to be excavated in accordance with the accepted drawing. The contractor shall notify the USTP Engineer prior to any excavation and shall specify if existing laid pipes or any lines are under the land. Remove the soil and rocks and position them in the area specified. As per the drawing, holes are excavated to the appropriate depth at the bottom of the concrete base.

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Using suitable tools or equipment during the operation. To ensure the cleanliness of the area after the execution of the operation, practice safety measures and housekeeping.

3.2 Backfilling Works

Backfilling shall be carried out by using suitable material approved by the Engineer and shall be compacted in layers not exceeding 150mm in depth. Surplus excavated material shall be disposed of by the Contractor as directed by the Engineer.

4. Reinforcement Works:

This item shall consist of the furnishing, bending, assemble and installation of reinforcement steel of the type, scale, shape and grade required in accordance with this Specification and in accordance with the specifications set out in the Plans or as directed by the Engineer.

Steel reinforcement shall be stored on platforms, skids or other supports above the surface of the ground and shall be secured, to the degree possible, from mechanical injury and surface corrosion caused by exposure to rust-producing conditions. Reinforcement must be free from dirt, detrimental rust, loose scale, paint, grease, oil or other foreign materials when put in the workplace. Reinforcement shall be free from flaws such as cracks and laminations that are injurious. Rejection would not be caused by corrosion, surface seams, surface defects or mill scale, provided that the minimum dimensions, cross-sectional area and tensile properties of a brushed hand wire specimen satisfy the physical specifications.

5. Formworks

: Concrete forms shall be mortar-tight, true to the dimensions, lines and grades of the structure and with the sufficient strength, rigidity, shape and surface smoothness



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as to leave the finished works true to the dimensions shown on the Plans or required by the Engineer and with the surface finish as specified.

The inside surfaces of forms shall be cleaned of all dirt, mortar and foreign material. Forms which will later be removed shall be thoroughly coated with form oil prior to use. The form oil shall be of commercial quality form oil or other approved coating which will permit the ready release of the forms and will not discolor the concrete.

Concrete shall not be deposited in the forms until all work in connection with constructing the forms has been completed, all materials required for the unit to be poured, and the Engineer has inspected and approved said forms and materials. Such work shall include the removal of all dirt, chips, sawdust and other foreign material from the forms.

The rate of depositing concrete in forms shall be such to prevent bulging of the forms or form panels in excess of the deflections permitted by the Specification.

Forms for all concrete surfaces which will not be completely enclosed or hidden below the permanent ground surface shall conform to the requirements herein for forms for exposed surfaces. Interior surfaces of underground drainage structures shall be completely enclosed surfaces.

Formwork for concrete placed under water shall be watertight. When lumber is used, this shall be planed, tongued and grooved.

6. Concrete Works:

Concrete materials shall be proportioned according to the specifications for each concrete class as defined in Table 405.2, using the method of absolute volume as outlined in Norm 211.1 of the American Concrete Institute (ACI). "Recommended practice for the application of standard and heavyweight concrete proportions". Other methods of proportioning can be used with the prior approval of the engineer in the mix design. The mixture must be either engineered or approved by an engineer. A new mix design may involve a change in the source of materials during the progress of work.

Concrete pouring shall take place prior to the USTP Engineer 's approval. Structural concrete construction is used for the slab and the footing. As a minimum compressive strength, the concrete class mixture shall be 3000 psi; with the requisite reinforcing bars, as indicated in the structural design.

Table 405.2 - Composition and Strength of Concrete for Use in Structures

Class Of Concrete	Minimum Cement Content Per m ³ kg (bag ^{**})	Maximum Water/ Cement Ratio kg/kg	Consistency Range in Slump mm (inch)	Designated Size of Coarse Aggregate Square Opening Std. mm	Minimum Compressive Strength of 150x300mm Concrete Cylinder Specimen at 28 days, MN/m ² (psi)
A	360 (9 bags)	0.53	50 – 100 (2 – 4)	37.5 – 4.75 (1-1/2" – No. 4)	20.7 (3000)
B	320 (8 bags)	0.58	50 – 100 (2 – 4)	50 – 4.75 (2" – No. 4)	16.5 (2400)
C	380 (9.5 bags)	0.55	50 – 100 (2 – 4)	12.5 – 4.75 (1/2" – No. 4)	20.7 (3000)
P	440 (11 bags)	0.49	100 max. (4 max.)	19.0 – 4.75 (3/4" – No. 4)	37.7 (5000)
Seal	380 (9.5 bags)	0.58	100 – 200 (4 - 8)	25 – 4.75 (1" – No. 4)	20.7 (3000)

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

** Based on 40 kg/bag



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7. Scaffolding Works

Each scaffold and scaffold component must support without failure its own weight and at least four times the maximum intended load applied or transmitted to it. A qualified person must design the scaffolds, which are loaded in accordance with that design. Scaffolds and scaffold components must not be loaded in excess of their maximum intended loads or rated capacities, whichever is less. Each platform must be planked and decked as fully as possible with the space between the platform and uprights not more than 1 inch (2.5 centimeters) wide. The space must not exceed 9 inches (24.1 centimeters) when side brackets or odd-shaped structures result in a wider opening between the platform and the uprights. To ensure adequate protection, install guardrails along all open sides and ends before releasing the scaffold for use by employees, other than the erection and dismantling crews. The structural members, poles, legs, posts, frames, and uprights, must be plumb and braced to prevent swaying and displacement.

All suspension scaffolds must be tied or otherwise secured to prevent them from swaying, as determined by a competent person.

8. Steel Works:

Make sure that there is space and proper access for the distribution of steel materials by truck. A definite plan for the handling of steel must be implemented for safety purposes prior to unloading the materials. For each delivery of materials to the site, the USTP engineer must be told. In order to ensure its consistency, the certificate must be given to the mill. The type, scale, shape and grade



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required must be inspected by the USTP engineer prior to its acceptance and use.

Proper equipment must be used upon unloading for safety reasons. At the moment of lifting service, the safety engineer must be present. In order to mitigate injury, the lifting of nylon or cloth belts with sufficient SWL shall be used to unload the materials. Be sure to hook belts to the component with the correct number of points and location so that the component load itself does not damage or break the coating /discolor in particular.

The USTP Engineer shall visually inspect all materials obtained at the site for any damage following unloading. If practicable, any harm shall be immediately removed in order to prevent any delay in erection.

Welding works are carried out during the operation by a professional worker. Make sure the relation is firm and secure. In order to preserve the quality of the job, Welder must know basic welding techniques.

The other components used must be in line with the approved plans. The materials used for the use shall be painted accordingly, see Painting works. Practice safety measures during the operation and use the appropriate tools / machine. Housekeeping is a must to preserve the cleanliness of the region of concern.

8.1 Steel Column Works:

Prior to any operation, the contractor must alert the USTP Engineer. To ensure the quality, the USTP Engineer must check the specification and standard of the material. Right placement, as per the authorized design, of the steel column to be used. For welding works, in doing the operation, refer

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to steel works as a reference. The materials used for the use shall be painted accordingly, see Painting works.

8.2 Steel Roof Framing Works: In the store, the field connections of the main members of the trusses, bends, plate girders and rigid frames shall be assembled with the milled ends of the compression members in full bearing, and their sub-size holes shall be reamed to the required size during assembly of the connections.

The components shall be precisely assembled as shown on the working drawings and shall be accompanied by any match marks. The material must be carefully processed in such a way that no pieces are bent, broken or otherwise harmed. There shall not be hammering which will hurt or distort the members. The bearing surfaces and surfaces which are in permanent contact must be washed before assembling the members.

Structural members shall, where indicated in the plans, be joined by welding. The welds shall be of the specified size and form and shall be made by the operators concerned. Welding shall not be conducted when surfaces falling on the surfaces to be welded are damp from condensation or rain; nor during periods of high winds unless the welding operator and the work are adequately covered. The materials used for the use shall be painted accordingly, see Painting works.



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8.3 Steel Bench 1, 2,

Steel Grating:

As shown in the approved plans, the steel that is used as a bench involves proper cutting and joining. Using suitable tools / machines in the operation.

The products used for steel benching are B.I. The USTP Engineer must check the Rectangular Hollow Tube, and the correct size of the material. For welding works, in doing the operation, refer to steel works as a reference. The materials used for the use shall be painted accordingly, see Painting works.

9. Roofing Works:

Gauge #26 Galvanized Colored Rib Type Roofing and Prefabricated Galvanized Steel Gutter materials shall be used as per approved drawings. Ensure that the materials use shall be checked by USTP Architect and Engineer prior to use.

10. Plumbing Works

All fixtures shall be completely new, free from defects, function efficiently and shall be cleaned, with trims polished and ready for use before acceptance.

All fixtures shall be provided with individual shut-off valves for cold water supplies so that any fixture maybe separately controlled without affecting other fixtures supplied with the same distribution line.

Water running test shall be conducted for all fixtures in order to insure soundness, leakage- free and quiet operation.

11. Painting Works:

All painting systems should first be approved by the architect and should comply with manufacturing requirements for all the surfaces necessary for the product.



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All paint products shall comply with the requirements of the Uniform Specifications of the Supplies Standardization Committee and shall be supplied in original containers, with intact labels and unbroken seals on site.

Clean extraneous materials such as dust and dirt on the floor. Scrape-off loosely using a brush, broom, chisel, scraper, sandpaper, or other means of removal to stick to old paint film and rust.

Welcoat Paints, Boysen or its licensed counterpart are all paints to be used. The Architect shall specify the paint. Precautionary measures shall be provided for the safety of the students, and USTP personnel within the perimeter during the construction. Warning signs must be visible and available at any time. Keep the area clean and practice good housekeeping.

12. Electrical Work

All work hereunder shall comply with the latest Philippine Electrical Code, the rules and regulations of the Electrical Ordinances of Cagayan de Oro City, the rules and regulations other governing authorities and with Republic Act No. 184 as applied or enforced in Cagayan de Oro City, Misamis Oriental.

Upon completion of work as described herein six (6) copies if the "As Built" plans for future reference and maintenance purposes, shall be submitted.

ALL TEMPORARY POWER REQUIREMENTS SHALL BE Issued BY THE ELECTRICAL CONTRACTOR DURING THE CONSTRUCTION SHALL. This includes temporary lighting facilities; power may be needed for power tools. In the case of civil overtime works that may entail power changes or



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alignments, Foreman shall inform the overtime workers of the civil works to the electrical contractor.

121 Wires

All electrical wiring shall be Philflex Columbia or approved equivalent.

12.2 Lighting Fixtures/Receptacles:

Lightings shall be Osram, Philips, Toshiba, G.E, Eurolux or approved equivalent. Lighting fixtures are as indicated in the plan. Receptacles & wall plates shall be of approved quality as specified in the plan.

12.3 Control Devices

All control devices shall be Panasonic, Toshiba, Bticino wide series or approved equivalent. Color shall be white

14. Electronics Works

Electronics materials and accessories must be in accordance with given specification in the plan. Other accessories must be added if necessary to the work item. USTP Electronic Engineer must check the materials before using it at the jobsite.

USTP Engineer must check the proper installation of the items; it must be placed as per approved drawing. The work item must be done by a technical person. The work item must be checked regularly to assure quality works. Observe proper housekeeping and follow safety measures provided by the institution.

15. Site Clearing:

Site must be cleaned and proper housekeeping must be observed on the construction area prior the turnover of the project.



University of Science and Technology of Southern Philippines

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