

PROJECT : CONSTRUCTION OF TISSUE-CULTURE FACILITY
LOCATION : DA-PREC, SOAL, PANGASINAN

GENERAL SPECIFICATIONS

• GENERAL REQUIREMENTS (PERMITS & PROJECT BILLBOARD)

- The contractor shall be responsible for securing all necessary permits related to the project, which shall include but not limited to building permits, occupancy permit, etc.).
- All related documents shall be submitted to the End User.
- The contractor is responsible to secure and obtain information from the regulatory agencies in municipality for all and any other required permits not listed below. A copy of the required permits shall be submitted to the end user within 24 hours of obtaining such permits.
- Building Permit/s, including the demolition of the building, the foundation are the general contractor's responsibility.
- Electrical permit and plans (if required by Building Official), is the contractor's responsibility.
- Health department approval and septic connections, contractor's responsibility. Contractor is required to check with the department to obtain information on the required plans and permits, if any.
- The new billboard design layout and dimension shall be install on a standard billboard, measuring 1200mm x 2440mm (4' x 8') using 12mm (1/2 inch) thick marine plywood or tarpaulin posted on 5mm (3/16 inch) marine plywood.
- For each building project, the billboard shall be installed in front of the project site.

• SAFETY AND HEALTH

- Building premises shall have adequate fire, emergency or danger sign and safety instructions of standard colors and sizes visible at all times.
- Other visible signs that may be needed to direct the driver of motorized vehicle such as STOP, YIELD, and DO NOT ENTER, properly positioned within the compound of the establishment shall be used to increase safety especially during the night.
- Good housekeeping shall be maintained at all times through cleanliness of building, yards, machines, equipment, regular waste disposal, and orderly arrangement of processes, operations, storage and filing of materials.
- All buildings, permanent or temporary shall be structurally safe and sound to prevent their collapse.

CONSTRUCTION OF TISSUE-CULTURE FACILITY

DA-PREC, SOAL, PANGASINAN

- The contractor shall, at his own expense furnish his workers with protective equipment for the eyes, face, hands and feet, protective shields and barriers whenever necessary by reason of the hazardous nature of the process or environment, chemical or radiological or other mechanical irritants or hazards capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.
- Deduction for the loss or damage of personal protective equipment shall be governed by Article 114, Book III, Labor Code of the Philippines, and Section 14, Rule VIII, Book III, Omnibus Rules Implementing the Labor Code.
- At every construction site there shall be organized and maintained a Healthy and Safety Committee conforming with the rules of OSH.
- In the application of this Rule, the construction, steps and arrangement of materials used may vary provided that the strength of the structure is at least equal to that herein prescribed.
- Fire Protection equipment shall be provided in accordance with the requirements.

• MOBILIZATION & DEMOBILIZATION

- The work shall consist of the mobilization and demobilization of the Contractor's forces and equipment necessary for performing the work required under the contract.
- Mobilization shall include all activities and associated costs for transportation of Contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the Contractor's operations at the site; premiums paid for performance and payment bonds, including coinsurance and reinsurance agreements as applicable; and other items specified in Section 4 of this specification.
- Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site; including the disassembly, removal and site clean up of offices, buildings and other facilities assembled on the site specifically for this contract.
- This work includes mobilization and demobilization required by the contract at the time of award. If additional mobilization and demobilization activities and costs are required during the performance of the contract as a result of changed, deleted, or added items of work for which the Contractor is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the item or items of work changed or added.

• DEMOLITION WORKS

- Demolition of designated building structures.
- Removal of hollow items or items which could collapse.
- Submit for approval demolition schedule, including schedule and methods for capping utilities to be abandoned and maintaining existing utility service.
- Comply with governing codes and regulations. Use experienced workers.

CONSTRUCTION DE TISSER DE LA FACILITE

DA-PREC, SUAL, PANGASINAN

- Convene minimum two weeks prior to starting work of this section.
- Immediate areas of work will not be occupied during demolition.
- Do not damage building elements and improvements indicated to remain. Items of salvage value, not included on schedule of salvage items to be returned to Owner/ End User, shall be removed from structure. Storage or sale of items at project site is prohibited.

• EARTHWORKS

EXCAVATION

- Stumps remaining from clearing operations shall be cut flush or removed as directed by the Owner. All stump holes shall be filled and the area rough graded. All debris shall be disposed of as specified in Paragraph 4 of Specification CAR-SH-CH-3 "Clearing and Grubbing." Burying of debris shall not be permitted within 1000ft of the area grubbed.
- During the course of all excavation work located in areas beyond the clearing and grubbing lines shown on the drawings, extreme care shall be exercised by the Contractor to preserve and avoid damage to trees, shrubs and all other vegetation which does not directly hamper work progress. The Contractor's plans for the dimensions and routes of required access roads shall be subject to the approval of the End-user.
- Adequate barricades shall be erected and maintained around excavations where required for safety.
- Unclassified excavation shall consist of the removal, storage and/or disposal of all materials required to be removed such as topsoil, clay, sand, gravel, rock fragments, boulders, soft and disintegrated rock or any other material that can be effectively removed.
- It is likely that fissures, cracks, joints, cavities, overhangs, or other irregularities in the rock surface may be encountered that will require excavation in excess of the foundation lines and grade initially shown on the drawings or specified. The right is reserved by the Owner to vary the depth, width and length of excavation and to increase or decrease the slopes of the excavations for the purpose of obtaining the most stable or economical foundation or the most desirable final result. The right is also reserved by the End-user to require that the additional excavation be performed after excavation has been commenced or has been completed to the lines and/or grades shown on the drawings, previously specified, ordered, or staked on the ground.

BACKFILL

- Backfill material around masonry structures shall not be placed until released by the End-user after consideration of curing and strength requirements for the concrete.
- Care shall be taken to place backfill symmetrically, and in uniform layers, to prevent harmful eccentric loading on a structure or foundation.
- Unless otherwise specified or directed by the End-user, heavy hauling or compacting equipment shall be permitted no closer than three feet to any structure or foundation during backfilling. In all areas closer than three feet, or where workspace is limited,

CONSTRUCTION OF TISSUE CULTURE FACILITY

DA-PREC, SUAL, PANGASINAN

portable equipment such as vibratory plates, rammers, or pneumatic tampers shall be used. The equipment and procedures used shall be subject to the approval of the Owner.

GRAVEL FILL

- All such unsuitable materials shall be removed from the site and spread uniformly over the areas adjacent to the project site, or otherwise disposed of as maybe directed by the Architect or Engineer in charge of the construction.

• RSB WORKS

- All reinforcement shall be placed in accordance with plans furnished by the Engineer. In case of any doubt or ambiguity in placing of steel, the Contractor shall consult the Engineer whose decision shall be final in such cases.
- All reinforcing steel bars used shall be new and free from rust, oil, defects, grease or links. All loose rust or scale, adhering materials and all oil or either materials which tend to destroy bond between the concrete and the reinforcement shall be removed before placing the steel and before concreting begins.
- Metal reinforcement shall be accurately placed and adequately secured by concrete or metal chair spacers. The minimum distance between the parallel bars shall be one and one-half times the diameter for round bars and twice the side dimensions for square bars. In no case shall the clear distance between bars shall be less one or more than one and one-third times the minimum size of the coarse aggregates. Where bars are used in two or more layers, the bars in the upper layers at distance of not less than one inch.
- All steel reinforcing bars shall be accurately placed and secured against displacement by tying them together at each bar intersection with Gauge No. 16 galvanized iron wire.
- All main reinforcing steel used in the structure shall conform to ASTM Grade 40 (Intermediate Grade) with yield strength of 40 ksi (276 MPa).
- All temperature bars shall conform to ASTM Grade 30 Structural Grade with minimum yield strength of 30 ksi (207 MPa).
- Always apply red oxide for the exposed RSB to eliminate from rusting.

• FORM WORKS & SCAFFOLDINGS

- Provide forms that will produce correctly aligned concrete. Column forms shall be checked for plumpness before concrete is deposited. Hand holes shall be provided in column forms at lowest points of pour lifts to render this space accessible for cleaning.
- Joints in forms shall be horizontal or vertical. Lumber once used in forms shall be nailed withdrawn and surfaces to be in contact with concrete shall be thoroughly wetted with water in advance of pouring. Woods to be used shall be kiln dried and treated with anti-termite chemical. And all lumber surfaces in contact with concrete and masonry shall receive one brush of bituminous paint.
- Immediately after the removal of the form, all projecting wires and bolts and other devices used for holding forms shall be cut off at least one-half centimetre beneath the finished surfaces. All holes and defects shall be thoroughly wetted and then painted up solid with

cement putty mortar of the same proportions as the mortar used in the body of the work. All parts protruding beyond the surfacing shall be treated in such manner as to effectively remove all the lines and marks impressed by the form works.

- Forms shall be removed in a manner which will prevent damage to the concrete and shall not be removed until the concrete has attained sufficient strength to support its own weight and any loads that may be placed on it. Side forms of beams and girders may be removed earlier than the bottom forms but additional posts or shoring must be placed under the beams or girders until they have obtained their strength. Forms shall not be removed until approval of the Design Engineer. Any repair of surface imperfections shall be performed at once and airing shall be started as soon as the surface is sufficiently hard to permit it without further damage.

- **CONCRETE WORKS (CLASS A)**

- **Materials**

Fine aggregates shall be clean, well graded, hard, natural sand or manufactured sand or a combination of both. The maximum size of the aggregates shall not be larger than one-fifth ($1/5$) of the narrowest dimension between forms and not larger than three-fourths ($3/4$) of the minimum clear spacing between reinforcing bars, and in no case larger than two inches in diameter. Coarse aggregates shall be hard, durable, uncoated gravel, crushed gravel, free from any deleterious materials like alkali, loam, silt and any organic matter.

Water used in making the concrete mass shall reasonably clean, potable, and free from injurious amount of oils, acids, alkali organic materials and other deleterious substances.

- **Mixing Concrete**

No hand mixing shall be allowed except in cases of emergency such as mixer breakdown during pouring operations and shall stop at the first allowed construction joint. All concrete shall be machine-mixed for at least one and one-half minutes after all materials, including water, are in the mixing drum.

The mixer shall be of approved size and type which will ensure a uniform distribution of materials throughout the mass. It shall be equipped with a device for accurately measuring and controlling the amount of water in each batch.

The first batch of concrete materials placed in the mixer shall contain a sufficient excess of cement, sand and water to coat inside of the drum without reducing the cement content of the mix to be discharged.

- **Specified Compressive Strength**

Class	Psi	MPa
AA	4,000	27.57
A	3,000	20.68
B	2,500	17.23
C	2,000	13.78

- Class AA: For septic tanks and other work as indicated.
- Class A: For slabs, beams, and wall above grade, columns and for all reinforced work not otherwise indicated or specified.

- Class B: For slabs on grade, and the beams, footings and for such concrete work as indicated or specified. (Not indicated in the plan).
- Class C: For all concrete not reinforce except as otherwise indicated or specified. (Not indicated in the plan).

○ Conveying and Placing of Concrete

Concrete shall be conveyed from mixer to form as rapidly as practicable. There will be no vertical drop greater than 1.50 meters except where suitable equipment is provided to prevent segregation and where specifically authorized by the Architect and or the Structural Engineer or Project Engineer.

Concrete shall be worked readily into the corners and angles of the forms and around all reinforcements and embedded items without permitting materials to segregate. Concrete shall be deposited as close as possible to its final position so that flow within the mass does not exceed two meters and consequently segregation is reduced to a minimum near forms or embedded items, or elsewhere is directed, the discharge shall be so controlled that the concrete may be effectively connected into horizontal layers not exceeding 30 centimeters in depth within the maximum lateral movement specified.

In placing concrete through reinforcement, care shall be taken that no segregation of the coarse aggregate occurs. On the bottom of beams and slabs, where the congestion of steel near the forms makes placing difficult, a layer of mortar of the same cement-sand ratios as used in concrete shall be first deposited to cover the surfaces.

○ Curing

Compressive strength of concrete at 28 days curing period shall attain 3000 psi (20.7 MPa) with well graded aggregates having a maximum size of 2 inches (50mm).

All plumbing and sanitary work for the building will be done in accordance with the provisions of the National Plumbing Code of the Philippines and such other regulations prescribed by the plumbing and sanitary regulations of the Municipality.

• MASONRY WORKS (Including Plastering)

- All hollow blocks are contemplated herein shall be of good quality and readily available in the locality.
- The cells of the concrete hollow blocks to be laid shall be filled with 1:3 cement mortars (1 part Portland cement and three parts sand, by volume). They shall be reinforces with 10mm diameter horizontal deformed bars every three blocks and 10mm diameter vertical bars deformed bars at 800mm O.C. Unless specified on the elevation drawing, the cement plaster mixture for masonry walls shall be 1:3 (1 part cement, and 3 parts sand, by volume).

Minimum Compressive Strength of Concrete Hollow Blocks is as follows:

Class A	900 psi
Class B	750 psi

- Held in place by horizontal and vertical reinforcing and interior surfaces of hollow blocks shall be thoroughly soaked with water before laying. Hold all units in storage for a period not less than 28 days (including curing period) and do not deliver prior to that time unless strength and other tests indicate compliance with specification.
- Mortar aggregates shall be natural river sand, clean and free from soluble salts and organic matter, graded from fine to coarse, compatible with the thickness of joints in which used. Mix mortar from three to five minutes in such quantities as are needed for immediate use. No re-tempering will be permitted if mortar stiffens because of premature setting. Discard such materials as well as those which have not been used within one hour after mixing.
- Lay units in common bond with uniform cauls and jointing. All concrete block jointing shall be of uniform thickness. Butter vertical and horizontal jointing full with mortar. Bond course and corners and intersections and tie to abutting walls. Do not lay cracked, broken or deface blocks. Cut edges shall be clean and sharp. The FIRST row of block shall be properly and thoroughly anchored to the concrete columns, walls of slabs. Course shall be laid straight and well plumbed.

PLASTERING

- Use Portland cement and Sand 20mm thick. Mixture is [1:3] and plastering of the exterior wall.

• TILE WORKS

- Tile work not is started until rough-in for plumbing and electrical work has been completed and treated. The work of all other trades in the area where the work is to be done shall be protected from damage on the workmanlike manner and as directed.
- The work shall not be started unless the rough-in for plumbing and electrical has been completed and tested.
- Manufactured materials shall be delivered in the manufacturer original unbroken package or containers that are leveled plainly with the manufacturer's names and brands container for tiles shall be grade-scaled. Materials shall be handled in a manner that will prevent the inclusion of foreign materials and damages by water or dampness.
- Tiles shall be ceramic standard grade. Colors specified shall be approved shade. All tile work shall include the matching trim units.
- Unglazed tiles shall have the same color throughout the body of the tile and the surface texture shall be uniform throughout. Glazed tiles shall have smooth ceramic finish. The finish shall have an impervious glossy texture and shall be either bright lustrous or dull matted as noted or as approved by the Architect.
- Plain colored tiles [whether glazed or unglazed] shall have as nearly one solid on each tiles as possible. Slight variations in color between tiles may be permitted only with approval of the Architect.
- Before tile for floor and walls are purchased samples of the same with their accessories shall be submitted to the Architect for the approval as quality and color or shade.

CONSTRUCTION OF TISSUE CULTURE FACILITY

DA-PREC, SUAL, PANGASINAN

- Wall and wainscot tiles shall cover walls and partition to nominal height as indicated on the drawings. Finish of wall and wainscot tile shall be in uniform for any one room or unit.
- Trimmers such as stop tile, window trims, door trims, coves, miters, plinths and other special complete and acceptable installation. Coves, quarter-round, miters and returns may be integral with the wall tile. Wall finish shall extend into edges of openings, unless otherwise indicated.
- Tile wainscot on walls shall have glazed tile capping complete with interior and exterior corner caps. Provide glazed tile moulding at intersections of floor and wall tiles.
- Floor under tile is included as part of the work under **"CONCRETE CONSTRUCTION"**. It shall be reinforced with shrinkage reinforcement and struck-off to a true, even surface one inch below the finish floor level.
- A scratch coat back for wall tile shall consist of one part Portland cement, $\frac{1}{4}$ part lime putty and 3 parts sand by volume.
- The buttering mortar for setting wall tile and mortar setting bed for floor tiles shall consist of 1 part Portland cement, $\frac{1}{4}$ part lime putty and 3 parts sand volume. Dusting the mortar bed with cement as the floor tiles are laid will be permitted only to take up excess water and to give better adhesion. The proportions actually used shall be those that will produce the best results under the prevailing conditions.
- No tile is set on surface unless other work as shown or specified to be embedded in the tile shall have been installed and approved.
- Glazed wall tile shall be thoroughly soaked in clean water before being set.
- Tiles shall be firmly secured in place. Joints shall be well filled; lines kept straight and true, and finish surfaces brought to a true place. The complete work shall be free from loose, cracked or broken tile. Tile shall be laid out on floors in a manner such that no tile less than $\frac{1}{2}$ sizes shall occur on the borders.
- Wall filled tiles shall be set with horizontal and vertical straight line joints, except as indicated otherwise in the drawings. Setting beds of floor tiles shall be thick enough to bring the tops of the tiles to the finish slopes be worked to a true and even plain, either leveled or sloped to drain as required. For areas or more than 100 square feet, screed strips shall be set as temporary guides to secure these results. As large a floor as can be covered with the tile before the mortar has reached its initial set shall be placed in one operation. When more setting mortar has been spread that it can be thus covered it must be cut to a clean, beveled edge close to the tile and removed. Under no circumstances shall be tempered mortar be used. Tiles on floor of more than 100 square feet areas shall be laid to straight edge at regular intervals.
- The provision of all vinyl tiles and all materials indicated, specified or necessary for complete and finish installation is included. Floor covering work shall not be started until the work of the trades, including painting is substantially completed. Adequate ventilation shall be provided to remove moisture and fumes from the area.
- Manufacturer's materials shall be delivered to the job site in the manufacturer's original unopened containers, with the brand and name clearly marked thereon. All materials

shall be carefully handle and shall be stored in their original containers. Containers shall not be opened until approved.

- Floor covering shall be provided in colors as selected from manufacturer's standard colors. The colors and pattern of tile shall be uniformly distributed throughout the thickness of the tile.
- Concrete or plywood sub-floor that is to receive floor covering shall be even and true without depressions by rubbing or grinding evenly before application. If minor floor depressions are still to be corrected, use fillers to level concrete. Sub-floors shall be clean, thorough dry, smooth, firm and sound; and they shall be free from springiness, oil, dirt, curing compounds, and other deleterious materials. Sub-floors shall be swept and damp mopped, when necessary to remove dust and soil; and shall be scrubbed with a strong detergent solution, thoroughly rinsed, and spot primed, when necessary to remove oil or grease stains. All ridges shall be ground smooth and small holes and all cracks less than 1.59mm shall be filled with an approved plastic material. Large holes or depressions shall be filled with mastic type underlay, and steel trowelled on to a smooth surface. All cracks 1.59mm or wide shall be cut out and filled with non-shrinking cement mortar. Chalky or dusty surfaces shall be primed with an approved primer, recommended by the floor covering manufacturer.
- Floor coverings and accessories shall be applied in accordance with the approved installation procedure. Work shall be performed by workers thoroughly experienced in the installation of such coverings. Adhesives shall be the type specified or the type application, subject to approval. Adhesives shall be applied in accordance with the adhesive manufacturer's printed directions, unless specified or directed otherwise. Floor covering shall be applied in the patterns indicated or selected, starting at the center of the room or area, and working towards the edges or borders. Tile lines and joints shall be kept square, symmetrical, tight, and even; and each floor shall be in true, level plane except where indicated, as sloped. Border width shall vary as necessary to maintain full sized tiles in the field, but no border tile shall be less one-half tile size.
- Floor covering shall be cut to and fitted around all permanent fixture, built-in furniture and cabinets, pipes and outlets. Border shall be cut, fitted and scribed to walls and partitions after field covering have been applied.
- Surfaces to receive the tile shall be clean, free of dust, dirt, oil, grease, and other deleterious substances, floor tile operation in spaces receiving a wall tile installation has been completed.
- All tiles and moldings shall be set with tile adhesive. They shall be thoroughly soaked in water before they are laid in place. All joints between tiles and moldings shall be filled with tile grout and then carefully wiped. Verify color of tile grout before application. Verify color of ceramic tiles before application.

• STEEL WORKS

- The fabrication and erection shall be done to conform to AISC Specification and TOTAL Steel System Technical Manual Pre-Engineered Buildings. The Contractor generally has to make or provide shop drawings, which are to be used in actual construction. These shop or working drawings are to be approved by the Architect / Engineer before implementation. The approval of any shop or working drawings, shall not in any way deemed to release the Contractor from full responsibility for complete and accurate

performance of the work in accordance with the Contract Drawings and Specifications; neither shall such approval release the Contractor from any liability placed upon him in the Contract.

- This specification shall only apply to members specifically designated on the design drawing as "architecturally exposed structural steel" which shall be fabricated and handled and erected as directed in this specifications, and except as noted in conformity with the American Institute of Steel Construction Specification for the design. Fabrication and erection of Structural Steel for Buildings. All fabrication tolerance of the code of the standard practice.
- Materials shall be the same as specified for Structural Steel by AISC Specification.
- Overall profile dimensions of built-up members shall be adequate to provide for the accumulated permissible overrun of the component parts.
- Fabrication shall be performed with special care and necessary straightening to maintain the condition of the material as described above.
- Shop details, shall show clearly the required fabrication tolerances. Erection plans and/or anchor bolt plans shall show the required tolerances for setting embedded items.
- All copes, miters and butt cuts in surfaces exposed to view shall be made with uniform gaps of 1/8" if shown by the Architect to be open joints, or in uniform contact if shown without gap.
- Where the fit-up of adjacent members is such that permissible tolerances specified in Sections 2b and 2c may result in unsightly joint, the Architect shall specify on the design plans tolerances required. This tolerances shall be maintained by special attention in detailing the joint, or if necessary by refined fabrication techniques.
- Faces of welds exposed to view shall have as welded surfaces that are reasonably smooth and uniform. No finishing or grinding shall be required except where clearances or fit of other items may so necessitate, or as specifically required by design drawings.
- Butt and plug welds exposed to view shall have as welded surfaces that are reasonably smooth and uniform and shall not project more 1/6" above the surfaces joined. No finishing or grinding shall be required except where clearances or fit of other items may so necessitate, or as specially required by design drawings.
- After inspection and approval and before leaving the shop, all steel works shall be cleaned by hand wire brushing, or by other means, erected by fabricator, or loose mill scale, loose rust, accessible weld slag on flux deposit, dirt and other foreign matter. Oil and grease deposits shall be removed by solvent.
- After cleaning all steel works shall be given one coat of shop paint applied thoroughly and evenly to dry surfaces, by rush, spray, roller coating, flow coating or dripping, at the selection of the fabricator.
- Surfaces within two inches of any field weld location shall be free of materials that would prevent proper welding or produce objectionable fumes while welding is being done. If shop painted surfaces to be welded shall be wire brushed in the field before welding to reduce the paint film to a minimum.

- The erection shall use special care in unloading, handling and erecting the steel to avoid bending, twisting or otherwise distorting the steel members. The erector shall handle the material in such a way as to minimize the damage to shop coat paint.
- The erector plans and executes the erection in such a way that the close fit and meets appearance of the joints and the structure as a whole will not be impaired.
- If temporary braces or erection clips re-employed, care shall be taken to avoid any unsightliness upon removal. Tacks welds shall be ground smooth and holes shall be filled with weld metal or body solder and smoothed by grinding or filling.

• TINSMITHRY WORKS

- The work includes furnishing all materials and performing all operations to provide metal color roofing and bended sheet metal items as required providing a watertight installation. Surfaces to which roofing is to be applied shall be thoroughly clean and dry and free from any defect that might affect the application.
- Specific installation details shall be in accordance with recognized sheet metal installation practice.
- Aluminum coated long span roofing, Ribtype Ga 24.
- Except as specified herein, all materials shall be installed in accordance with the manufacturer's printed erection instruction.
- Flashing shall be done according to standard procedures in securing non-leakage and or capillary action of water through joints and laps.
- The roofing shall be pre painted with roof guard. All design and brand of roofing is specified by the end user.

• CEILING WORKS

- Framing is not required for ceilings attached to structural members, except for framing openings as specified. Furring as hereinafter specified shall be attached directly to structural members.
- Steel channels or steel studs shall be provided where steel furring is indicated for screw attachment of fitem board.
- Hat - shaped furring members shall be spaces 0.40m on centers and securely attached across suspended runner channels or structural framing members with wire clips or double-strand of 1.0mm tie wire saddle-tied at each crossing. End of wire tire shall receive three full twists. Furring shall be spliced with 0.20m nested laps securely tied near each end lap, with two loops of 1.0mm tire wire. Splices shall be staggered. Furring channels shall be located within 50mm of walls. Where wallboards abut dissimilar wall materials, perimeter of ceilings shall be finished with an edge bead trim strip applied to wall and accurately aligned with the finished ceiling. Wallboard edges adjoining walls shall be laid on the horizontal leg of the trim strip against a continuous bead of approved type sealant.

- Ceiling Runners - Shall be accurately aligned and securely attached to floors and structural ceilings or roof deck except where partition ceiling runners are applied directly to finished material of continuous ceilings. Attachment shall be by expansion shields, machine bolts or other approved method, at not more than 0.60m on centers and to furred ceilings by wallboard screws at each furring member. Furring will be provided at ceiling runners oriented parallel to the direction of furring members. Runners shall extend beyond open-end partitions for 3.0m.
- Shall be applied on ceilings and walls indicated and specified on the room finish schedule and shall include furred beams, columns, soffits and other appurtenances prepared for gypsum
- The ceilings and walls of area indicated shall be constructed of fire-retardant gypsum board.
- For non-load bearing walls and partitions is included in this section. Gypsum board shall be screw applied to steel members.
- For ceilings and walls as well as ceiling framing system are included in this section. Gypsum board shall be screw applied to steel members.
- Gypsum board delivered before use shall store within completely enclosed structure off the ground and completely enclosed within a weather tight covering. Gypsum shall dry, free of warpage and with bundling tape intact immediately before use, completely enclosed within a weather tight covering.

• PAINTING WORKS

- Furnish all labor, materials, equipment, plant and other facilities to complete all painting and varnishing as shown and hereafter as specified.
- The contractor shall examine the Specifications for the various other trades and shall thoroughly familiarize himself with all of the items and surfaces of work to be included.
- All work included under this Division shall be subject to the General Conditions accompanying these specifications. The Contractor and Sub-contractor for the type of job in this Division are enjoined to strictly follow the provision thereto.
- This work include interior and exterior painting and varnishing and finishing of all items as required to produce a finished painting job throughout all of the areas affected by work under this contract, except items which are specifically excluded. Complete color scheme for the painting and varnishing of the building [exterior and interior] shall be furnished by the Architect to the Contractor. Color schemes and varnish samples required by these Specifications and/or by the Architect shall be submitted by the Contractor for approval at his expense.
- All exposed work shall be protected while the building is being painted or varnished. The floors, steps and all other surfaces not to be painted shall be well protected during painting with sufficient covers. Any stain, dirt, smear, etc. shall be removed by the Contractor to the satisfaction of the Architect.