INTRODUCTORY INFORMATION

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DIVISION 01 – GENERAL REQUIREMENTS

Section 01 11 13 – Work Covered by Contract Documents

1.1 GENERAL

.1 Bids shall be based on the materials and methods as outlined in the bid documents. If the contractor cannot meet the requirements, no bid shall be entered.

.2 Refer to the technical specifications and drawings sections for products, and technical requirements.

1.2 SCOPE OF WORK

.1 The work outlined herein is a general description. The specific requirements for the execution of the Work shall be as described in the bid documents.

1.3 PURPOSE OF WORK

.1 The purpose of this project is to complete abatement of existing plaster that is in poor condition within the ceilings of several rooms of the school and install a new 1-hr fire rated assembly.

.2 Refer to the drawings for rooms which are within the base bid scope of work, and which rooms are separate price items only.

1.4 BASE BID

.1 Mobilization

.1 Mobilize on site all plant, tools, equipment and labour required to carry out this Work.

.2 Bonds and Permits

.1 Provide specified bonds to the Owner following the contract award. Work must not commence without the submission of the Performance Bond, and the Material and Labour Bond.

.2 Obtain and pay for all Federal, Provincial and Municipal permits necessary for this work.

.3 The Contractor is required to obtain a hot work permit as part of the Work and submit to the Consultant and the Owner for review. Hot work permit shall meet or exceed the Owner's permit requirements. Permit shall be submitted and reviewed after contract award.

.4 For additional requirements, refer to the Information to Bidders document.

.3 General Requirements

.1 Provide all the necessary labour, plant, equipment, and materials necessary to conform to all requirements as specified in the Contract Documents. This includes, but is not limited access (interior and exterior as required to facilitate work), shoring, etc. Install all necessary fencing, hoarding, barriers and signage to protect staff, building elements, vehicular and pedestrian traffic in accordance with the Occupational Health and Safety Act. Include all necessary construction signage and coordination. Signage is to be properly lettered and visible. In addition to preventing injury, all work areas must be protected from damage due

to equipment. Include the manufacture and installation of all necessary material and performance of site mock-ups that will be required to the satisfaction of the Owner and Consultant.

.2 Make allowances as required to facilitate the Consultant's review of the work at all aspects of the Work.

.3 An Asbestos-Containing Smooth Plaster Condition Assessment Report is provided as part of this package. Carry out work in accordance with all recommendations.

.1 Removal of the existing plaster is required as part of this project. Complete all interior protection, removals, and disposal in accordance with recommendations in the report and in accordance with EACO and Ministry of Labour guidelines (Type 3 Asbestos Abatement Procedures as outlined in *Ontario Regulation 278/05)*.

.2 Assume loose plaster debris is present on the ceiling tile surfaces and removal of the existing suspended ceiling framing, tiles, light fixtures, and other M&E furnishings requires abatement.

.4 A general building designated substance survey (DSR) report is provided as part of this package. Carry out work in accordance with all recommendations.

.5 The Contractor is responsible for surveying all rooms prior to commencement of the work to record existing conditions and pre-existing damage and confirm the existing reflected ceiling plan layout for each room. Any sensitive equipment and/or electronic equipment will be removed by DDSB prior to the project. Any large non-moveable furnishings (cabinets, large desks, etc.) will remain in place.

.6 The Contractor is responsible for protecting all interior walls, windows, M&E furnishings, and floors as part of this project. Any damage caused to the interior finishes (floors, ceiling, walls, etc.) or equipment as a result of the construction work shall be repaired by the Contractor at no cost to DDSB.

.7 Contractor to co-ordinate with the Caretaker and DDSB trades to have any louvers and fresh air intakes in the vicinity of work and adjacent to work closed/turned off/switched to 100% recycled air mode. Contractor shall seal fresh air intakes and required windows within vicinity with Polyethylene and tape.

.4 Demobilization and Site Cleanup

.1 Demobilize all plant, tools, equipment and labour for this Work from site. Upon completion of Work, and immediately before the Consultant's final review for Total Performance of the work, all areas of the building affected by this Contract shall be thoroughly cleaned. Include the dismantling and removal of the scaffolding at the completion of the project. Remove all temporary protection, equipment, waste and surplus materials from site and leave in neat, tidy condition to the satisfaction of the Owner.

.2 Restore all hard and soft landscaping to their pre-construction condition. Grass that is damaged shall be replaced with new sod. Pavement that is damaged shall be repaved with hot asphalt.

.5 Abatement of Smooth Plaster

.1 Refer to drawings for rooms that are within the base bid scope of work. Refer to Item 1.4.3 for pre-construction survey, existing reflected ceiling review, and interior protection requirements.

.2 **The Contractor is responsible for the disconnection and removal of all furnishings shown on the reflected ceiling plans in all rooms within the scope work (base bid and/or separate price), due to the suspected plaster debris above the ceiling tile level. The price for this work shall be carried within Base Bid. Refer to Item 1.4.3. Coordinate with the Owner.**

.3 Remove existing suspended ceiling tiles and framing system in order to obtain access for plaster removal. **Refer to Item 1.4.3 regarding plaster ceiling and debris on ceiling tiles, light fixtures, and M&E furnishings.**

.1 The existing suspended ceiling framing and tiles are not intended to be reinstated and are to be disposed of per *Ontario Regulation 278/05.*

.2 Existing light fixtures are to be disconnected, cleaned, and safely disposed of per *Ontario Regulation 278/05.*

.3 All other M&E furnishings are to be cleaned, and stored for reinstatement. Coordinate with the Owner.

.4 Remove all existing smooth plaster within ceiling space. Type 3 Asbestos Abatement Procedures as outlined in *Ontario Regulation 278/05*, are required and/or anticipated.

.1 Existing smooth plaster on the walls above the existing ceiling tile and grid system is included in the scope of work.

.5 Any existing HVAC and/or plumbing is to remain in place and is to be protected during the work. The Contractor is responsible for coordinating the disconnection or temporary support of existing conduits and/or other electrical furnishings (i.e. smoke detectors, alarms, speakers, ceiling mounted projectors, etc.). Protect where required.

.6 Refer to Appendix for base building structural drawings for structural floor plans.

.6 New Ceiling Installation

.1 Following smooth plaster abatement, install new drywall ceiling assembly on the underside of the floor structure above as Base Bid. Refer to drawings for typical assembly information. Refer to drawings and technical specification sections for detailed installation information.

.2 Refer to base building drawings provided for existing structural floor plans to indicate locations of joists and beams.

.3 Refer to alternative price items to submit alternate price to install new spray applied fire resistive material (spray applied fireproofing) in lieu of installation of new drywall ceiling. **Fire resistive material used in the alternate price item shall meet the requirements for UL Design BXUV.J704.**

.4 Install new suspended ceiling framing and acoustical ceiling tiles (ACT) to match existing reflected ceiling in each room.

.1 The owner will supply new light fixtures. Install new light fixtures and other electrical furnishings to generally match existing.

.2 Ensure any identified HVAC and/or plumbing is function (to match existing) prior to install of new ceiling assembly.

.7 Cash Allowances

.1 Mechanical & Electrical: This includes a contingency for mechanical and electrical system repairs not specified in the Contract Documents that are made necessary by the Work, due to conditions that were not visible upon, or reasonably inferable from an examination of the site as determined by the Consultant. Unexpected portions of this allowance will be deducted from the Contract Price. Increase in allowance beyond the stipulated amount shall be authorized by a Change Order.

.2 Environmental and Testing: Arrange and pay for a third-party testing company/consultant, acceptable to the Owner and Consultant, to perform testing specified herein and as directed by the Consultant. Examples of testing that may be requested include: pre-contamination inspection, air quality/clearance sampling and monitoring. Administer this allowance and do not arrange for testing beyond the stipulated amount without approval. No payment shall be made for costs incurred as a result of re-testing necessitated by work that has failed a previous test. Unexpended portions of the testing allowance will be deducted from the Contract Price. Increase in allowance beyond the stipulated amount shall be authorized by a Change Order.

1.5 UNIT PRICES

.1 Submit a unit price ($/EA) to complete full abatement and ceiling replacement with new drywall ceiling, for a room of total floor square footage of 500 square feet.

.2 Submit a unit price ($/EA) to complete full abatement and ceiling replacement with new spray applied fire resistive material (spray fireproofing), for a room of total floor square footage of 500 square feet.

1.6 ALTERNATIVE PRICES

.1 In lieu of new drywall ceiling assembly, supply and install new spray applied fire proofing on the underside of existing floor structure in all rooms within base bid scope of work (Rooms 113, 115, 117, 118A, 118B, 118C, 119).

.2 In lieu of new drywall ceiling assembly, supply and install new spray applied fire proofing on the underside of existing floor structure in all rooms within separate price scope of work (Rooms 112A, 11B, 137 – Stairwell).

.3 In lieu of new drywall ceiling assembly, supply and install new spray applied fire proofing on the underside of existing floor structure at Room 119 only.

.4 In lieu of new drywall ceiling assembly, supply and install new spray applied fire proofing on the underside of existing floor structure at Room 115 only.

1.7 SEPARATE PRICES

.1 Add to the scope of work abatement and ceiling replacement at Room 112A. Refer to Item 1.4 for description of scope of work.

.2 Add to the scope of work abatement and ceiling replacement at Room 111B. Refer to Item 1.4 for description of scope of work.

.3 Add to the scope of work abatement and ceiling replacement at Room 1137. Refer to Item 1.4 for description of scope of work.

END OF SECTION 01 11 13

DIVISION 01 – GENERAL REQUIREMENTS

Section 01 35 23 – Health and Safety

1.1 SECTION INCLUDES

.1 Safety requirements and adherence.

1.2 RELATED SECTIONS

.1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 SAFETY PLAN

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Consultant or Owner may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.4 RESPONSIBILITY

.1 The Prime Contractor according the Act, is responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 For purposes of the installation, the roofing installer shall act as the Constructor (as that role is defined in the health and safety legislation of Ontario, and as such is fully responsible for directing and controlling all roofing installation work and the safety of the work on the jobsite.

.3 As Constructor/Prime Contractor, the roofing installer shall be fully and solely responsible for ensuring that all applicable occupational health and safety laws, regulations, rules, and orders are complied with in the course of the installation. Entry of manufacturer personnel to ensure quality installation in accordance with the manufacturer's specifications and to perform warranty inspections shall not be for purposes of monitoring safety of the work at the job site.

.4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

.5 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of the Province of Ontario. Advise Consultant verbally and in writing.

1.5 SUBMITTALS

.1 Submit site-specific Health and Safety Plan: Within seven (7) days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of site specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operation.

.2 Submit copies of reports or directions issued by Federal or Provincial health and safety inspectors.

.3 Submit copies of incident and accident reports.

.4 Submit Material Safety Data Sheets (MSDS) to Consultant.

.5 Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within ten (10) days after receipt of plan. Revise plan as appropriate and resubmit plan to Consultant within seven (7) days after receipt of comments from Consultant.

.6 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.7 Medical Surveillance: Where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Consultant.

.8 On-site Contingency and Emergency Response Plan: Address standard operating procedures to be implemented during emergency situations.

1.6 SAFETY ACTIVITIES

.1 Perform site specific safety hazard assessment related to project.

.2 Schedule and administer Health and Safety meeting with Consultant prior to commencement of Work.

1.7 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of the Province of Ontario and in consultation with Consultant.

1.8 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant.

.2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.

.3 The Owner may stop the Work if non-compliance of health and safety regulations is not corrected.

1.9 WORK STOPPAGE

.1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

1.10 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

.2 Burning rubbish and construction waste materials is not permitted on site.

1.11 VEHICLE MOVEMENTS

.1 A flagman must be present to direct vehicular and pedestrian traffic at all times when a construction vehicle is operating both within and beyond the limits of the Contractor's compound.

END OF SECTION 01 35 23

DIVISION 01 – GENERAL REQUIREMENTS

Section 01 35 26 – Environment Protection

1.1 SECTION INCLUDES

.1 Site fires.

.2 Disposal of wastes.

.3 Drainage.

.4 Site cleaning and plant protection.

.5 Work adjacent to waterways.

.6 Pollution control.

1.2 RELATED SECTIONS

.1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 FIRES

.1 Fires and burning of rubbish on site not permitted.

.2 Provide supervision, attendance and fire protection measures as directed.

1.4 DRAINAGE

.1 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

.2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.5 ASBESTOS CONTENT

.1 Refer to General Condition Section, Asbestos Management Plan and Owner's instructions.

1.6 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this contract.

.2 Control emissions from equipment and plant to local authorities' emission requirements.

.3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

END OF SECTION 01 35 26

DIVISION 01 – GENERAL REQUIREMENTS

Section 01 52 00 – Construction Facilities

1.1 SECTION INCLUDES

.1 Construction aids.

.2 Office and sheds.

.3 Parking.

.4 Project identification.

1.2 RELATED SECTIONS

.1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REFERENCES

.1 CAN/CSA-Z321- 96: Signs and Symbols for the Occupational Environment.

.2 Ontario Regulation 213/91 – Construction Projects.

1.4 INSTALLATION AND REMOVAL

.1 Provide construction facilities in accordance with O. Reg. 213/91 – Construction Projects.

.2 Provide construction facilities in order to execute work expeditiously.

.3 Remove from site all such work after use.

1.5 SCAFFOLDING

.1 Provide and maintain scaffolding and pedestrian protection as required to complete the project in a safe manner.

1.6 HOISTING

.1 Provide, operate and maintain hoists or cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.

.2 Hoists or cranes shall be operated by qualified operator.

.3 Provide protective coverings for finish surfaces of cars and entrances.

1.7 USE OF THE WORK

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with Products.

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.8 CONSTRUCTION PARKING

.1 Parking will be permitted on site per owner instructions.

.2 Provide and maintain adequate access to project site.

.3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

.4 Clean runways where used by Contractor's equipment.

1.9 SECURITY

.1 Provide and pay for responsible security personnel as required to guard site and contents of site after working hours and during holidays.

1.10 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

1.11 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take such precautions as required by local health authorities.

.3 Keep sanitary facilities clean and fully stocked with the necessary supplies at all times.

END OF SECTION 01 52 00

DIVISION 01 – GENERAL REQUIREMENTS

Section 01 61 00 – Product Requirements

1.1 SECTION INCLUDES

.1 Product quality, availability, storage, handling, protection, and transportation.

.2 Manufacturer's instructions.

.3 Quality of Work, coordination and fastenings.

.4 Existing facilities.

1.2 RELATED SECTIONS

.1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 TERMINOLOGY

.1 New: Produced from new materials.

.2 Renewed: Produced or rejuvenated from an existing material to like-new condition to serve a new or existing service.

.3 Defective: A condition determined exclusively by the Consultant.

1.4 PRODUCT QUALITY

.1 Products, materials, equipment, parts or assemblies (referred to as Products) incorporated in Work: New or renewed, not damaged or defective, of best quality (compatible with specification requirements) for purpose intended. If requested, provide evidence as to type, source and quality of Products provided.

.2 Defective Products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective Products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of Products, decision rests strictly with Consultant.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on Products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.5 AVAILABILITY

.1 Immediately upon signing Contract, review Product delivery requirements and anticipate foreseeable supply delays for any items.

.2 If delays in supply of Products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.3 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves

right to substitute more readily available Products of similar character, at no increase in Contract Price or Contract Time.

1.6 STORAGE AND PROTECTION

.1 Store and protect Products in accordance with manufacturers' written instructions.

.2 Store with seals and labels intact and legible.

.3 Store sensitive Products in weather tight, climate controlled, enclosures in an environment favourable to Product.

.4 For exterior storage of fabricated Products, place on sloped supports above ground.

.5 Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.

.6 Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

.7 Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

.8 Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.7 TRANSPORTATION AND HANDLING

.1 Transport and handle Products in accordance with manufacturer's written instructions.

.2 Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.

.3 Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.8 MANUFACTURER'S WRITTEN INSTRUCTIONS

.1 Unless otherwise indicated in the specifications, install or erect Products in accordance with manufacturer's written instructions. Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.

.2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant may establish course of action.

.3 Improper installation or erection of Products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.9 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site any workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.10 COORDINATION

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.11 CONCEALMENT

.1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation, inform Consultant if there is interference. Install as directed by Consultant.

1.12 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.13 FASTENERS

.1 Provide metal fasteners and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive stainless steel fasteners and anchors for securing exterior work.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fasteners which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.14 FASTENERS - EQUIPMENT

.1 Use fasteners of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use Type 304 or 316 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.15 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of any part of the Project.

.2 Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated, without written approval of Consultant.

END OF SECTION 01 61 00

DIVISION 01 – GENERAL REQUIREMENTS

Section 01 62 00 – Product Exchange Procedures

1.1 SECTION INCLUDES

.1 Substitutions.

.2 Alternatives.

.3 Separate prices.

1.2 RELATED SECTIONS

.4 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 SUBSTITUTIONS

.1 Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.

.2 Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.

.3 Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

.4 A request constitutes a representation that the Bidder:

.1 Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.

.2 Will provide the same warranty for the Substitution as for the specified Product.

.3 Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.

.4 Waives claims for additional costs or time extension which may subsequently become apparent.

.5 Will reimburse Owner for review or redesign services associated with re-approval by authorities.

.5 Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

.6 Substitution Submittal Procedure:

.1 Submit three (3) copies of request for Substitution for consideration. Limit each request to one (1) proposed Substitution.

.2 Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.

.3 Submit the above mentioned information a minimum of ten days prior to the tender closing time.

.4 The Consultant and/or Owner will notify Contractor in writing of decision to accept or reject request.

1.4 ALTERNATIVES

.1 Accepted Alternatives will be identified in Owner-Contractor Agreement.

.2 Submit alternatives identifying the effect on adjacent or related components.

.3 Alternatives quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted alternatives will be identified in the Owner-Contractor Agreement.

.4 Coordinate related work and modify surrounding work to integrate the Work of each alternative.

1.5 SEPARATE PRICES

.1 Separate Price items do NOT replace or substitute items already in the Bid Documents. Accepted Separate Prices will be:

.1 Identified in the Construction Agreement as an increase to the Bid Price; or

.2 In a subsequent Change Order.

.2 Submit Separate Prices to identify items that may be added to the Contract, at the Owner's option. Include in the quoted Separate Price, overhead and profit, the effect on adjacent or related components already in the Work described in the Bid Documents.

.3 Coordinate related Work and modify surrounding Work to integrate the work of each Separate Price.

.4 Schedule of Separate Prices: Refer to Bid Form or Supplementary Bid Information Form.

END OF SECTION 01 62 00

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

Section 07 81 00 – Applied Fireproofing

1. GENERAL

1.1 RELATED SECTIONS

.1 Section 09 21 16 – Gypsum Board.

1.2 WORK INCLUDED

.1 Provide all labor, materials, equipment and services necessary for, and incidental to, the complete and proper installation of all sprayed fire protection and related work as shown on the drawings or where specified herein, and in accordance with all applicable requirements of the Contract Documents.

.2 The material and installation shall conform to the applicable building code requirements of all authorities having jurisdiction.

1.3 REFERENCES

.1 ASTM E84 – Surface Burning Characteristics of Building Materials

.2 ASTM E119 – Fire Tests of Building Construction and Materials

.3 ASTM E605 – Thickness and Density of Sprayed Fire-Resistive Materials Applied to Structural Members

.4 ASTM 736 – Cohesive/Adhesive of Sprayed Fire-Resistive Materials Applied to Structural Members

.5 ASTM 759 – Effect of Deflection of Sprayed Fire-Resistive Materials Applied to Structural Members

.6 ASTM 760 – Effect of Impact on Bonding of Sprayed Fire-Resistive Materials Applied to Structural Members

.7 ASTM 761 – Compressive Strength of Sprayed Fire-Resistive Materials Applied to Structural Members

.8 ASTM E859 – Air Erosion of Sprayed Fire Resistive Materials Applied to Structural Members

.9 ASTM E937 – Corrosion of Steel by Sprayed Fire-Resistive Materials Applied to Structural Members

.10 CAN/ULC-S101 – Standard Methods of Fire Tests of Building Construction and Materials

.11 CAN/ULC-S102 – Steiner Tunnel Test

.12 CAN4-S114 Standard Test Method for Determination of Noncombustibility in Building Materials

.13 Underwriters Laboratories (UL) Fire Resistance Directory.

.14 Underwriters Laboratories of Canada (ULC) List of Equipment and Materials

.15 IBC International Building Code Chapter 17 Structural Tests and Special Inspections, Section 1705 Special Inspections.

.16 AWCI Publication: Technical Manual 12-A Standard Practice for the Testing and Inspection of Field Applied Sprayed Fire-Resistive Materials; and Annotated Guide.

1.4 SUBMITTALS

.1 Manufacturer's Data: Submit Manufacturer's specification, including certification as may be required to show material compliance with Contract Documents.

.2 Test data: independent laboratory test results shall be submitted for all specified performance criteria.

1.5 QUALITY ASSURANCE

.1 Work Shall be performed by a firm with expertise in the installation of fire protection or similar materials. This firm shall be recognized or otherwise approved by the spray-applied fire resistive material manufacturer.

.2 Before proceeding with the fire protection work, approval of the proposed material thicknesses and densities shall be obtained from the consultant and other applicable authorities having jurisdiction.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials to the project in manufacturer's unopened packages, fully identified as to trade name, type and other identifying data. Packaging shall bear the UL labels for fire hazard and fire resistance classification.

.2 Store materials above ground, in a dry location, protected from the weather. Damaged packages found unsuitable for use should be rejected and removed from the project.

1.7 PROJECT CONDITIONS

.1 When the prevailing outdoor temperature at the building is less than 4°C (40 °F), a minimum substrate and ambient temperature of 4°C (40 °F) shall be maintained prior to, during and a minimum of 24 hours after application of sprayed-applied fire resistive material. If necessary for job progress, General Contractor shall provide enclosures and heat to maintain proper temperatures and humidity levels.

.2 General Contractor shall provide ventilation to allow proper drying of the sprayed fire protection during and subsequent to its application.

.3 Ventilation must not be less than 4 complete air exchanges per hour until the material is dry. When spraying in enclosed areas such as basements, stairwells, shafts, and small rooms, additional air exchanges may be necessary.

1.8 SEQUENCING/SCHEDULING

.1 All fire protection work on a floor shall be completed before proceeding to the next floor.

.2 The Contractor shall cooperate in the coordination and scheduling of fire protection work to avoid delays in job progress.

2. PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

.1 Carboline/Southwest Fireproofing Products

.2 CAFCO/ISOLATEK International

2.2 MATERIALS

.1 Acceptable Products:

.1 Southwest Type 5GP by Carboline

.2 CAFCO BLAZE-SHIELD II (UL/ULC designation: ISOLATEK Type II) by ISOLATEK International

.2 Primer: apply primer as recommended by manufacturer and in accordance with NFCA Bulletin No. 1002

.1 A/D Type TC-55 by Carboline (min 4 wet mils or as recommended by manufacturer)

.2 CAFCO BOND-SEAL / ISOLATEK Type EBS by ISOLATEK International

.3 Materials shall be applied to conform to the drawings, specifications and following test criteria:

.1 Deflection: When tested in accordance with ASTM E759, the material shall not crack or delaminate when the non-concrete topped galvanized deck to which it is applied is subjected to a one time vertical centerload resulting in a downward deflection of 1/120th of the span.

.2 Bond impact: When tested in accordance with ASTM E760, the material shall not crack or delaminate when the non-concrete topped galvanized deck to which it is applied.

.3 Cohesive/Adhesion (Bond Strength): When tested in accordance with ASTM E736, the material applied over uncoated or galvanized steel shall have an average bond strength of 150 psf (7.2 kPa)

.4 Air Erosion: When tested in accordance with ASTM E859, the material shall not be subject to losses from the finished application greater than 0.025 grams per sq. ft. (0.27 grams per square meter).

.5 Compressive Strength: When tested in accordance with ASTM E761, the material shall not deform more than 10 percent when subjected to a crushing force of 1,400 psf (68.9 kPa).

.6 Corrosion Resistance: When tested in accordance with ASTM E937, the material shall not promote corrosion of steel.

.7 Noncombustibility: When tested in accordance with ASTM E136 or CAN4-S114, the material shall be noncombustible.

.8 Surface Burning Characteristics: When tested in accordance with ASTM E84 or CAN/ULC-S102, the material shall exhibit the following surface burning characteristics:

.1 Flame Spread……..0

.2 Smoke Development….0

.9 Density: When tested in accordance with ASTM E605, the material shall meet the minimum individual and average density values as listed in the appropriate UL/ULC design or as required by the authority having jurisdiction.

.10 The material shall have been tested and classified by Underwriters Laboratory (UL) or Underwriters Laboratories of Canada (ULC) in accordance with the procedures of UL 263 (ASTM E119) or CAN/ULC-S101.

.11 Spray-applied fire resistive materials shall be applied at the appropriate minimum thickness and density to achieve the following ratings:

1. Floor Assemblies… 1 hr.

2. Thickness: Min. 7/8" (or as required to achieve 1 hr assembly fire rating)

.12 Potable water shall be used for the application of spray-applied fire resistive materials.

.13 Spray-applied fire resistive materials shall contain no detectable asbestos. Material manufacturer shall provide certification of such upon request.

.4 Accessories

.1 Fire rated sealants: Hilti Flexible Firestop Sealant (CP 606), TREMstop® Fyre-Sil by Tremco, or approved equal.

3. EXECUTION

3.1 PREPARATION

.1 Follow manufacturer's application guidelines for preparation.

.2 All surfaces to receive spray-applied fire resistive material shall be free of oil, grease, loose mill scale, dirt, paints/primers or other foreign materials which would impair satisfactory bonding to the surface. Manufacturer shall be contacted for procedures on handling primed/painted steel. Any cleaning of surfaces to receive sprayed fire protection shall be the responsibility of the General Contractor or Steel Erector, as outlined in the structural steel or steel deck section.

.3 Clips, hangers, supports, sleeves and other attachment to the substrate are to be placed by others prior to the application of spray-applied fire resistive materials.

.4 The installation of ducts, piping, conduit or other suspended equipment shall not take place until the application of spray-applied fire resistive materials is complete in an area.

3.2 APPLICATION

.1 Equipment, mixing and application shall be in accordance with the manufacturer's written application instructions.

.2 The application of spray-applied fire resistive material shall not commence until certification has been by the General Contractor that surfaces to receive sprayed fire protection have been inspected by the applicator and are acceptable to receive spray-applied fire resistive materials.

.3 All unsuitable substrates must be identified and made known to the General Contractor and corrected prior to application of the spray-applied fire resistive material.

.4 Spray-applied fire resistive material shall not be applied to steel floor decks prior to the completion of all necessary work on that deck.

.5 Proper temperature and ventilation shall be maintained as specified 1.7.

.6 Provide masking, drop cloths or other suitable coverings to prevent overspray from coming in contact with surfaces not intended to be sprayed.

.7 Primer/adhesive shall be applied as per the appropriate UL/ULC fire resistance design and manufacturer's written recommendations.

3.3 REPAIRING AND CLEANING

.1 All patching of and repair to spray-applied fire resistive material, due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.

.2 After the completion of the work in this section, equipment shall be removed and all surfaces not to be sprayed shall be cleaned to the extent previously agreed to by the applicator and General Contractor.

3.4 INSPECTION AND TESTING

.1 The spray-applied fire resistive material shall be tested for thickness and density in accordance with the following procedures:

.1 ASTM E605 – Standard Test Method of Sprayed Fire-Resistive Materials Applied to Structural Members.

.2 AWCI Publication: Technical Manual 12-A Standard Practice for the Testing and Inspection of Field Applied Sprayed Fire-Resistive Materials; an Annotated Guide.

.3 IBC International Building Code Chapter 17 Structural tests and Special Instructions Section 1705 Special Inspections.

END OF SECTION 04 03 07

DIVISION 9 – FINISHES

Section 09 21 16 – Gypsum Board

1.0 General

1.1 SECTION INCLUDES

.1 Design, labour, Products, equipment, and services necessary for gypsum board Work.

1.2 REFERENCES

.1 ASTM A653/A653M, Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the Hot-Dip Process.

.2 ASTM C475, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.3 ASTM C645, Specification for Non-Load Bearing (Axial) Steel Studs, Runners (Tracks), and Rigid Furring Channels for Screw Application of Gypsum Board.

.4 ASTM 665, Mineral- fiber Blanket Thermal Insulation for light frame construction and manufactures housing.

.5 ASTM C754, Specification for Steel Framing Members to Receive Screw-Attached Gypsum Board.

.6 ASTM834, standard specifications for Latex Sealant.

.7 ASTM C840, Specification for Application and Finishing of Gypsum Board.

.8 ASTM C1002, Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases.

.9 ASTM C1396, Specification for Gypsum Board.

.10 ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.

.11 CGSB 19-GP-21M, Sealing and Bedding Compound, Acoustical.

1.3 DESIGN REQUIREMENTS

.1 Design ceiling suspension system in accordance with manufacturer's printed directions and ASTM C754.

.2 Design ceiling system for adequate support of electrical fixtures as required by the current bulletin of the Electrical Safety Authority.

.3 Design hanger anchor and entire suspension system static loading not to exceed 25% of their ultimate capacity including lighting fixture dead loads.

.4 Design suspension system to support weight of mechanical and electrical items such as air handling boots and lighting fixtures, and with adequate support to allow rotation/relocation of light fixtures.

.5 Design sub framing as necessary to accommodate, and to circumvent, conflicts and interferences where ducts or other equipment prevent the regular spacing of hangers.

.6 Design wall framing system and reinforce as necessary to accommodate and support items attached to and supported by wall framing system.

1.4 REGULATORY REQUIREMENTS

.1 Provide fire separations and fire protection exactly as specified in test design specification that validates the specified rating. Verify that work specified in other Sections, as a part of the entire assembly, meets applicable validating test design specification.

1.5 SUBMITTALS

.1 Product data:

.1 Submit copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:

.1 Performance criteria, compliance with appropriate reference standard, characteristics, and limitations.

.2 Product transportation, storage, handling, and installation requirements.

.2 Shop drawings: Submit shop drawings in accordance with the Conditions of the Contract indicating adjacent construction, elevations, sections and details, dimensions, thickness, finishes and relationship to adjacent construction, suspension system, curved suspension system, framing and blocking for supported items.

.3 Certifications: Submit written certification stating that suspended ceiling system is designed for adequate support of electrical fixtures as required by the current bulletin of the Electrical Safety Authority.

1.6 QUALITY ASSURANCE

.1 Qualifications: Execute the Work of this Section by skilled, qualified, and experienced workers trained in the installation of the Work of this Section.

.2 Retain a Professional Engineer, licensed in Province of Ontario, with experience in this type of work of comparable complexity and scope to perform the following services as part of the Work of this Section:

.1 Design of framing and connections to adjacent construction.

.2 Design of suspended gypsum board assemblies.

.3 Design of minimum 20-gauge metal studs, unless otherwise required to suit loading conditions.

.4 Review, stamp, and sign shop drawings.

.5 Conduct on-Site inspections and prepare and submit inspection reports to confirm work is carried as per shop drawings.

1.7 SITE CONDITIONS

.1 Do not begin Work of this Section until:

.1 Mechanical and electrical Work above the ceiling is complete.

.2 Substrate and ambient temperature is above 15°C.

.3 Relative humidity is below 80 %.

.4 Ventilation is adequate to remove excess moisture.

.2 Install temporary protection and facilities to maintain Product manufacturers', and above specification, environmental requirements 24 h before, during, and 24 h after installation.

2.0 Products

2.1 MATERIALS

.1 Steel framing: ASTM C754; ASTM A653/A653-M, Z275; cold rolled, galvanized steel sheet.

.1 Bailey Metal Products Limited

.2 Corus Metal Profiles

.2 Steel studs and track runners: ASTM C645; Formed from galvanized steel sheet, minimum 0.91mm thick or as indicated on the contract drawings, galvanized steel studs and runners, to match stud thickness, depth as indicated on Contract Drawings.

.3 Galvanized Steel Straps: 12 gauge galvanized steel straps spaced 24 in. O.C., anchored to structure with 1/4" diameter tapcon screws, min. 2 in embedment. Site bend steel straps to suit profile of tapered joist structure.

.4 Cold-Rolled Channels — 2 in. deep, No. 16 MSG cold-rolled steel, spaced at 24 in. OC and attached to each joist with ¼” diameter tek screws.

.5 Furring channels: ASTM C645; Formed from galvanized steel sheet, 22mm winged flange type, cold rolled.

.6 Furring channels (hat type): ASTM C645; 0.5mm base steel thickness, galvanized. 70mm wide x 22mm deep hat shaped channel.

.7 Heavy duty furring channels: ASTM C645; 0.9mm (20 ga.) steel thickness, galvanized hat shaped channel with a wider and deeper size as required by manufacturers.

.8 Hanger wires: 4.1mm minimum diameter galvanized pencil rod.

.9 Tie wire: 1.6mm thick minimum diameter, soft annealed, galvanized steel wire.

.10 Corner bead, casing bead, and special shapes: Formed from 0.6 mm thick minimum, galvanized steel sheet, designed to be concealed by joint compound.

Control joint strip: Roll formed from galvanized steel sheet, with a tape protected recess, 6mm wide x 11mm deep.

.11 Deflection track: ASTM C 645 top runner with 50.8 mm deep flanges, in thickness indicated for studs and in width to accommodate depth of studs.

.12 Deflection track fire rated: 25mm deep leg deflection track on rated walls. “Fire Trak Shadowline” by Fire Trak Corp. or approved alternative.

.13 Ceiling clips: Hot dip galvanized partition attachment clips, in square and reveal edge, “PAC15 Series” to match grid system by CGC Inc. or approved alternative.

.14 Screw fasteners: ASTM C1002 Type S-12; Corrosion resistant. 1-1/2 in. long Type G bugle-head steel screws

.15 Concrete anchors: tie wire sleeve anchors, ‘Redi-Drive TW' by Red Head or approved alternative.

.16 Acoustical sealant: CGSB 19-GP-21M; Single component, non-skinning synthetic rubber sealant. Acoustical Sealant by Tremco.

.17 Gypsum Board: ASTM C1396, Type X, gypsum board 12.7mm thick of maximum practical lengths to minimize end joints, unless indicated otherwise, by CGC Inc. Georgia- Pacific Canada LP or CertainTeed Canada.

.18 Primer: Where indicated by board manufacturer, provide primer as required to achieve finishes as defined in ASTM C840, such as Level V Wall and Ceiling, by CertainTeed, or approve alternate.

.19 Interior Paperless sheathing: Dens Armour Plus by G-P Products

.20 Sheathing screws: to ASTM C1002, Type S-12, corrosion resistant, 1/2" penetration into steel.

.21 Joint reinforcing tape: ASTM C475; 2" wide x 0.01" thick, perforated paper, with chamfered edges.

.22 Bonding adhesive: Type for purpose intended and as recommended and approved by manufacturer.

.23 Joint and patching compound: ASTM C475; Asbestos-free, supplied by manufacturer of gypsum board used.

.24 Fast setting patching compound: ASTM C475; Asbestos-free, Sheetrock or Durabond by CGC Inc, or Machine Pro by CertainTeed Canada Inc., or approved alternative.

3.0 Execution

3.1 SUSPENSION FRAMING

.1 Install ceiling systems in accordance with manufacturer's written instructions and reviewed shop drawings.

.2 Install hanger wires plumb and securely anchored to the building structural framing, independent of walls, pipes, ducts, and metal deck; install additional framing and hangers to bridge interference items.

.3 Install hanger wires at 4'-0" maximum centres along carrying channels, not less than 1", and not more than 6" from channel ends.

.4 Cold-Rolled Channels — 2 in. deep, No. 16 MSG cold-rolled steel, spaced at 32 in. OC and attached to each joist with No. 14 SWG galv steel wire.

.5 Furring Channel — No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 16 in. OC, and 2 in. on each side of end joints of inner layer. Secured to each cold-rolled channel with a double strand of No. 18 SWG galv wire. Adjoining lengths of channels lapped 12 in. and tied together with two double strand wire ties, one at each end of overlap.

3.2 FIRE RATED ASSEMBLIES

.1 Install fire rated assemblies in accordance with applicable ULC tested and approved designs:

.1 Two layers nom 1/2 in. thick by 48 in. wide, installed with long dimension perpendicular to furring channels.

.2 Inner layer positioned with end joints midway between furring channels. Secured to furring channels with 1 in. long Type S-12 screws spaced 12 in. OC, and located 5/8 in. from side joints and 2 in. from end joints.

.3 Outer layer positioned with end joints between furring channels. End joints and side joints offset joints 16 to 32 in. from end and side joints of inner layer.

.4 Outer layer secured to furring channels with 1-5/8 in. long Type S-12 screws spaced 12 in. OC.

.5 End joints of outer layer attached to inner layer with 1-1/2 in. long Type G bugle-head steel screws spaced 8 in. OC and 3/4 in. from end of boards

3.3 GYPSUM BOARD

.1 Comply with ASTM C840. Install gypsum board in accordance with manufacturer's written instructions.

.2 Install gypsum board vertically or horizontally, whichever results in fewer end joints. Locate end joints over supporting members.

.3 Install gypsum board in lightly butted contact at edges and ends and with 1.6 mm maximum open space between boards; do not force gypsum board into place. Do not install imperfect, damaged or damp boards.

.4 Install gypsum board butting paired tapered edge joints, and mill-cut or field-cut end joints; do not place tapered edges against cut edges or ends.

.5 Install vertical joints minimum 12" from the jamb lines of openings and stagger vertical joints over different studs on opposite sides of partitions.

.6 Do not locate joints within 8" of corners or openings, except where control joints occur at jamb lines or where openings occur adjacent to corners. Where necessary, place a single vertical joint over the centre of wide openings.

.7 Install gypsum board over concrete and concrete masonry units with adhesive as recommended by gypsum board manufacturer where indicated on Drawings.

.8 Cut, drill and patch gypsum board as may be necessary to accommodate the Work of other trades.

3.4 CORNER, CASING BEADS AND TRIM

.1 Corner reinforcing bead: Install along all external angles, erect plumb, level and with a minimum of joints. Secure with screws at 9" o.c. apply filler over flanges flush with nose of the bead and extending at least 3" onto surface of board each side of corner. When filler dries, apply a thin coat of topping cement and blend onto adjoining surfaces.

.2 Casing bead: Install where wallboard butts against a surface having no trim concealing the juncture and where shown on drawings. Erect casing beads plumb or level, with minimum

joints, and secure with screws at 12" o.c. apply filler over flange flush with bead and extending at least 3" onto surface of board. When dry, apply a thin coat of topping cement and blend onto adjoining surfaces.

.3 Recess channels and trim: Install recess channels and special metal trim where shown. Secure to substrate. Provide casing beads full height on wallboard edges at recess channels and metal trim.

3.5 JOINT TAPING AND FINISHING

.1 Install reinforcing tape and a minimum of 3 coats of joint compound over gypsum board joints, metal trim and accessories, and screw fasteners in accordance with the gypsum board manufacturer's instructions.

.2 Fill gaps between, and any imperfections in, gypsum boards with joint compound, allow to dry, and sand smooth ready for painting

.3 Install finished gypsum board Work smooth, seamless, plumb, true, flush, and with square, plumb, and neat corners.

.4 Finish gypsum board in accordance with ASTM C840 to the following grades:

.1 Level 0: No taping, finishing, or accessories required. Use above suspended ceilings and within other concealed spaces, unless the assembly is fire rated, sound rated, sound or smoke controlled, or unless the space serves as an air plenum.

.2 Level 1: At joints and interior angles embed tape in joint compound. Leave surface free of excess joint compound. Tool marks and ridges are acceptable. Use above suspended ceilings and within other concealed spaces if the gypsum board assembly is fire rated, sound rated, sound or smoke controlled, or the space serves as an air plenum.

.3 Level 2: At joints and interior angles embed tape in joint compound with one separate coat of joint compound applied over joints, angles, fastener heads, and accessories.

.4 Level 3: At joints and interior angles embed tape in joint compound with two separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. Apply joint compound smooth and free of tool marks and ridges. Use where heavy grade wall coverings are the final decoration.

.5 Level 4: At joints and interior angles embed tape in joint compound with three separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. Apply joint compound smooth and free of tool marks and ridges. Use for all locations except those indicated for other finish levels.

.6 Level 5: At joints and interior angles embed tape in joint compound with three separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. Apply a thin skim coat of joint compound, or a material manufactured especially for this purpose, to the entire surface. Leave surface smooth and free of tool marks and ridges. Use where semi-gloss or gloss finish coatings are the final decoration, areas with natural light or very well-lit with artificial light.

3.6 ACCESS DOORS

.1 Install access doors supplied as part of other parts of the Work.

3.7 SITE TOLERANCES

.1 Install metal support systems to ensure that, within a tolerance of +1/8" and -1/16" for plaster thickness, finish surfaces will be flat within 1/8" under a 10'-0" straightedge, and with no variation greater than 1/16" in any running 1'-0", and that surface planes shall be within 1/8" of dimensioned location.

3.8 WORK IN EXISTING AREAS

.1 In existing areas, where existing gypsum board work has been demolished and/or damaged and repair work is required, provide new gypsum board finish.

.2 Thoroughly prepare areas to be repaired. Provide neat, clean, and straight cuts.

.3 Finish all repair work as specified for new work.

.4 In existing areas where existing openings are to be filled in with gypsum board, provide new gypsum board wall and ceiling construction. Ensure new board faces are flush with faces of abutting existing walls and ceilings.

3.9 REPAIR

.1 Make good cut-outs for services and other work, fill in defective joints, holes and other depressions with joint compound.

.2 Make good defective work, and ensure that surfaces are smooth, evenly textured and within specified tolerances to receive finish treatments.

END OF SECTION 09 21 16

DIVISION 9 – FINISHES

Section 09 51 113 – Acoustical Panel Ceilings

1. GENERAL

1.1 SUMMARY

.1 Section includes:

.1 Mineral Fibre Acoustical ceiling panels

.2 Exposed “Clean Room” standard Suspension System

1.2 RELATED SECTIONS

.1 01 11 13 Work Covered by Contract Documents

1.3 ALTERNATES

.1 Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than TEN (10) working days prior to the date established for receipt of bids. Acceptability of a proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be set forth by the Addenda. If included in a Bid are substitute products that have not been approved by Addenda, the specified products shall be provided without additional compensation

.2 Submittals that do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified in Section 1.5); Underwriters' Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards

.3 Fibreglass based Ceiling systems or other “soft core substrate” ceiling systems are not an acceptable alternate.

1.4 REFERENCES

.1 ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability

.2 ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

.3 ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.

.4 ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

.5 ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

.6 ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.

.7 ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

.8 ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.

.9 ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint.

.10 ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.

.11 ASTM E 1414 Standard Test Method for Airborne Sound Attenuation between Rooms Sharing a Common Ceiling Plenum.

.12 ASTM E 1264 Classification for Acoustical Ceiling Products.

.13 International Building Code.

.14 NFPA 70 National Electrical Code.

.15 ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures.

.16 ESR 1308 - Armstrong Suspension Systems.

.17 ICC-ES Evaluation Report ESR-1112.

1.5 SYSTEM DESCRIPTION

.1 Smooth faced mineral fibre ceiling that meets clean room guidelines with associated clean room suspension system.

1.6 SUBMITTALS

.1 Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required

.2 Samples: Minimum samples of specified acoustical panel and suspension system, including main runner and 4 foot cross tees

.3 Shop Drawings: Layout and details of acoustical ceilings show locations of items that are to be coordinated with, or supported by the ceilings

.4 Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, products must be tested to the E400 method

.5 If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.7 QUALITY ASSURANCE

.1 Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

.2 Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization

.1 Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 Classification.

.3 Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.8 DELIVERY, STORAGE & HANDLING

.1 Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes

.2 Provide labels indicating brand name, style, size and thickness.

.3 Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

.4 Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.9 PROJECT/SITE CONDITIONS

.1 Locate materials onsite at least 24 hours before beginning installation to allow materials to reach temperature and moisture content equilibrium.

.2 Maintain temperature and relative humidity conditions per manufacturer's installation guidelines, in areas where acoustical materials are to be installed 24 hours before, during and after installation.

1.10 COORDINATION

.1 Coordinate Work of this section with mechanical and electrical fixtures that will be installed in the ceiling system.

.2 The Ceiling system is an imperial sized suspension grid and panel.

1.11 WARRANTY

.1 Refer to DDSB Front End Documents.

1.12 MAINTENANCE

.1 Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels

.1 Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed

.2 Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed

2. PRODUCTS

2.1 ACOUSTIC PANELS (ACOUSTICAL CEILING TILES)

.1 Acoustic panels: Non fire rated ceilings to CAN/CGSB-92.1

.2 Type: Mineral Composition & Sag Resistant.

.3 Pattern: Non-directional fissures.

.4 Flame Spread Rating of 25 or Less

.5 Smoke development class of 50 or less.

.6 Noise reduction Coefficient (NRC) designation of .55 minimum.

.7 Edge type: Square.

.8 Colour: White.

.9 Size: Match existing (site verify each room), 16mm thickness, 610mm x 1220mm

.10 Shape: Flat

.11 Acceptable Products:

.1 Armstrong World Industries Canada Ltd. : Fine Fissured 1729.

.2 Certainteed Ceiligns: Vantage 10, Van-197.

.3 CGC Interiors: Radar Climaplus 2410

2.2 SUSPENSION SYSTEM

.1 Type 1 (T-bar – 1), Two Directional, Exposed Tee-Bar Grid, Double Web

.2 Acceptable Product:

.1 Prelude XL Exposed Tee System by Armstrong World Industries Canda Ltd. or approved equivalent.

3. EXECUTION

3.1 EXAMINATION

.1 Do not proceed with installation until all wet work such as concrete, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations

3.2 PREPARATION

.1 Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans.

.2 Coordinate panel layout with mechanical and electrical fixtures.

.3 Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

.1 Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

3.3 INSTALLATION

.1 Install all ceiling suspension and panels in strict accordance with manufacturer's written instructions.

.2 Coordinate work of this section with other division including but not limited to:

.1 Electrical and Mechanical equipment, registeres, grilles, diffusers, lighting.

.2 Other equipment shown on reflected ceiling plan.

3.4 ADJUSTING AND CLEANING

.1 Replace damaged and broken panels.

.2 Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove any ceiling products that cannot be successfully cleaned and or repaired. Replace with attic stock or new product to eliminate evidence of damage.

.3 Before disposing of ceilings, contact the Manufacturer's Recycling Center to review with a consultant the condition and location of building where the ceilings will be removed. The consultant will verify the condition of the material and that it meets the Manufacturer's requirements for recycling. The Manufacturer's consultant with provide assistance to facilitate the recycle of the ceiling.

3.5 PROTECTION

.1 Protect installed work from damage due to subsequent construction activity, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the time of acceptance by the Owner.

3.6 SURPLUS MATERIAL

.1 Provide one (1) sealed carton of acoustical panels for each pattern and type required for the project.

END OF SECTION 09 51 13