
GYMNASIUM RENOVATIONS AT OUR LADY OF SORROWS CATHOLIC SCHOOL

32 Montgomery Road, Toronto, ON M8X 1Z4

TCDSB Tender No. P-110-18

FOR

TORONTO CATHOLIC DISTRICT SCHOOL BOARD

ARCHITECTURAL AND ELECTRICAL SPECIFICATIONS Project Manual - Issued for Tender



ward99 Architects

Prime Consultant

Suri & Associates Ltd. Engineering Consultants

Electrical Consultant

**PROJECT MANUAL PROCUREMENT, CONTRACTING REQUIREMENTS, ARCHITECTURAL AND
ELECTRICAL SPECIFICATIONS**

Project Information Page
Professional Qualifications
List of drawings

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

Toronto Catholic District School Board, Contracting Requirements and Instructions to Bidders.

DIVISION 01 - GENERAL REQUIREMENTS

Section 01 10 00	General Instructions
Section 01 24 00	Valuation of Changes
Section 01 31 00	Project Management and Coordination
Section 01 32 00	Construction Progress Documentation
Section 01 33 00	Submittal Procedures
Section 01 33 23	Shop Drawings, Product Data and Samples
Section 01 35 20	Safety Requirements
Section 01 35 43	Hazardous Materials
Section 01 41 00	Regulatory Requirements
Section 01 42 13	Abbreviations and Acronyms
Section 01 43 00	Quality Assurance
Section 01 51 00	Temporary Utilities
Section 01 52 00	Construction Facilities
Section 01 56 00	Temporary Barriers and Controls
Section 01 73 00	Execution
Section 01 74 00	Cleaning and Waste Management
Section 01 77 00	Closeout Procedures
Section 01 78 00	Closeout Submittals

DIVISION 02 - EXISTING CONDITIONS

Section 02 40 00	Demolition
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DIVISION 03 - CONCRETE

Section 03 35 00	Concrete Floor Finishing
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DIVISION 04 – MASONRY

Not Used.

DIVISION 05 - METALS

Not Used.

DIVISION 06 – WOODS, PLASTICS AND COMPOSITES

Not Used.

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

Not Used.

DIVISION 08 – OPENINGS

Not Used.

DIVISION 09 - FINISHES

Section 09 65 00 Resilient Flooring

Section 09 90 00 Painting and Coating

DIVISION 10 – SPECIALTIES

Section 10 11 00 Visual Display Boards

Division 11 – EQUIPMENT

Not Used.

Division 12 – FURNISHINGS

Section 12 49 50 Window Shades

DIVISION 16 - ELECTRICAL

Section 16010 Electrical General Requirements

Section 16050 Basic Materials and Methods

Section 16500 Lighting Systems

OWNER:

Toronto Catholic District School Board
80 Sheppard Ave East, Toronto, ON M2N 6E8

CONSULTANT:

ward99 architects, 2053 Williams Parkway, Unit 49A, Brampton ON L6S 5T4
Contact Person: Ms. Tina Ranieri-D'Ovidio, Principal, Tel: 416-613-5880

ELECTRICAL SUB-CONSULTANT:

Suri & Associates Ltd., 1022 White Clover Way, Mississauga ON L5V 1C8
Contact Person: Rohin Suri, Project Manager, Tel: 905-290-7861

COMPANY



ward99 architects

2053 Williams Parkway, Unit 49A
Brampton, Ontario
L6S 5T4

Tel: 416 613 5880
info@ward99architects.com

Certificate of Practice Number 5227

I reviewed and take responsibility for the design work on behalf of a firm registered under subsection 2.1 7.4 of the Ontario Building Code.

COMPANY



Suri & Associates Ltd.
Engineering Consultants
1022 White Clover Way
Mississauga, Ontario
LV5 1C8

Tel: 905 290 7861
Fax: 289 327 3420

Certificate of Practice Number: 100077984

Electrical:
I reviewed and take responsibility for the design work on behalf of a firm registered under subsection 2.1 7.4 of the Ontario Building Code.

LIST OF DRAWINGS

Architectural:

- A0 Project Title and Drawing List
- A1 Site Plan / Construction Mobilization Plan, Legend and Notes, Project Information and Key Plan
- A2 Existing Ground Floor Plan and Ground Floor Reflected Ceiling Plan - Demolition
- A3 Proposed Ground Floor Plan and Ground Floor Reflected Ceiling Plan
- A4 Gymnasium Interior Elevations

Electrical:

- E1 Electrical Legend, Notes and Key Plan
- E2 Gymnasium Electrical Layouts



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

**Gymnasium Renovations at
Our Lady of Sorrows Catholic School**

Tender: P-110-18, ID: TCDSB.10324.0016

Dear Sir:

The Toronto Catholic District School Board requires tenders for:

Tender P-110-18

TCDSB Project ID: TCDSB.10234.0016

Gymnasium Renovations at Our Lady of Sorrows Catholic School

We would be pleased to receive a tender from you.

If you require further information, please only contact the

TENDER CONTACT PERSON:

Tina Ranieri-D'Ovidio of ward99 architects at 416-613-5880.

Enclosed find the Tender Package including the Tender form. The Tender Form is to be completed, signed sealed and delivered to the Tender Box, Materials Management Department Reception at 80 Sheppard Avenue East, before the closing date along with all relevant bid documents noted in Section 1.5 of the Instructions to Bidders.

Tender closing date and time for the above is **3:00:00 p.m. local time Thursday June 28, 2018**. Please return your bid in a sealed envelope labelled with a description of the project.

Yours truly,

Vince Artuso P. Eng.
Supervisor, Contract Administration



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

**Gymnasium Renovations at
Our Lady of Sorrows Catholic School**

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<u>TABLE OF CONTENTS</u>		# Pages
PART 1	INSTRUCTIONS TO BIDDERS	
PART 2	GENERAL REQUIREMENTS	
PART 3	SCOPE OF WORK	
APPENDIX A	TENDER FORM FOR (P-110-18)	
APPENDIX B	TENDER CHECK OFF LIST	
APPENDIX C	SPECIFICATION INDEX & DRAWING INDEX	
APPENDIX D	SAMPLE LETTER OF INTENT	



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

PART 1 – INSTRUCTIONS TO BIDDERS

1.1. GENERAL

1.1.1. OWNER

Toronto Catholic District School Board
80 Sheppard Avenue East
Toronto, Ontario, M2N 6E8.

1.1.2. Except where otherwise specified, the TCDSB project coordinator shall act as the Owner's Representative in regard of the project execution and all associated requirements.

1.2. PLACE OF WORK

1.2.1. Our Lady of Sorrows Catholic School, 32 Montgomery Road, Toronto M8X 1Z4, Tel: 416-393-5246.

1.2.2. A MANDATORY pre-tender site meeting is scheduled for Thursday June 21, 2018 at 9:30am.

1.2.3. All Bidders shall make advance arrangements with the School Principal for any additional site visits.

1.3. SUBMISSION OF TENDERS

1.3.1. Submit Tenders complete with all bid documents in sealed, addressed envelope, clearly identified as to contents, before **3:00:00 p.m. local time** on the closing Date.

1.3.2. The closing date is Thursday June 28, 2018.

1.3.3. Tenders will be received, during business hours only, at the Materials Management reception desk on the 4th floor of the Owner's premises as addressed above at article titled General. Bidders are entirely and solely responsible for the method and timing of delivery of the Tender.

1.3.4. Use the Tender Form "Appendix A" for tendering. Fill in all blanks and sign and seal the Tender Form. Incorporated companies shall affix their corporate seal under the signature of their proper Officers.

1.3.5. Tenders are generally opened in public; however, the Owner reserves the right to open Tenders in private. Information provided in the Tenders may be presented at Board meetings and may be divulged publicly in response to requests for information.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

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- 1.3.6. Tenders which are incomplete, contain qualifications, or are improperly filled-in, may, or may not be considered, at the discretion of the Owner. The Owner shall not be obliged to accept the lowest or any Tender and reserves the right to accept, or reject any Tender received, or to re-tender the project. Bids without the proper security as specified in section titled Bidding Requirements will be disqualified. The Owner may contact bidders for clarification after the Tender Closing.
 - 1.3.7. The Tender shall be open for acceptance by the Owner and irrevocable by the Tenderer for a period of ninety (90) days from the date the Tender closes.
 - 1.3.8. All bidders must be prequalified to do work for the Owner. If you are not prequalified, fill out Contractor Prequalification form available on the Board's web site and return (as per instructions) at least five (5) working days before the Tender Closing date.
 - 1.3.9. If you have any questions regarding this Tender you are asked to contact **Tina Ranieri-D'Ovidio from ward99 architects at 416-613-5880**. Your bid may be disqualified if you contact anyone other than this person.
 - 1.3.10. Tender submissions must include all bid documents as described in section titled Bid Documents.

1.4. BIDDING REQUIREMENTS

- 1.4.1. All Bidders shall submit with their tender a Bid Bond, in favour of the Owner, from a Surety Company licensed to operate in the Province of Ontario, acceptable to the Owner. Bid Bond shall be in the amount of 10% of the Tender.
- 1.4.2. Bid Bonds shall remain valid for the duration of the Tender Acceptance Period.
- 1.4.3. The Bid Security of the Bidder whose Tender is accepted will be used by the Owner to apply against the Owner's damages, should the successful Bidder fail to execute a contract, and/or fail to provide the specified Performance Bond and Labour and Materials Bond.
- 1.4.4. The successful Bidder's bid security will be returned to him upon the successful execution of the Contract.
- 1.4.5. The bid securities of all other Bidders will be retained until a decision on the award of the contract is reached and will be returned after that time. These Bid securities will be held by Board's Contract Administrator.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

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- 1.4.6. Agreement to Bond – All Bidders shall submit with their tenders an Agreement to Bond issued by an acceptable bonding company licensed to carry on Business in the Province of Ontario.
 - 1.4.7. Said Agreement to Bond shall state that the surety will provide the Bidder with a Performance Bond and a Labour and Material Payment Bond, each in the amount of Fifty percent (50%) of the Contract amount, should the Bidder be awarded the Contract.
 - 1.4.8. Performance and Labour and Material Payment Bond – The successful Bidder shall submit to the Owner the specified Performance Bond and Labour and Material Payment Bond within ten (10) days after written notification of the Contract award. Failure to submit the required Bonds will result in the Contract award being voided and the Bid Bond being invoked by the Owner.
 - 1.4.9. The Performance Bond shall state that the surety agrees to pay to the Owner all expenses incurred by the Owner in the event of the failure of the surety's obligee to faithfully perform this Contract for whatever reason. Said expenses shall include legal fees, additional Consultant's fees and any other expense arising by reason of the failure of the Surety's obligee to faithfully perform this Contract.
 - 1.4.10. The Performance and Labour and Material Payment Bond shall state that the Owner will not be held responsible if payment to Subcontractors for material and/or labour supplied by the Subcontractor and as certified by the Architect, is not made by the Contractor as work progresses.
 - 1.4.11. Bidders shall include the cost for all Bonds in their Tender price.

1.5. BID DOCUMENTS

- 1.5.1. Tender submissions are to include all of the following documents, correctly signed, sealed or executed as appropriate and which collectively comprise the Bid Documents:
 - 1.5.1.1. Appendix A – the Tender Form;
 - 1.5.1.2. Bid Security (Original Bid Bond and Agreement to Bond) as noted in section titled Bidding Requirements);

1.6. OWNER'S RIGHT TO TERMINATE THE CONTRACT



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

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- 1.6.1. If it is deemed that sufficient cause exists, the Owner may notify the Contractor, in writing, that he is in default of his Contractual obligations, if the Contractor:
 - 1.6.1.1. Refuses or fails to supply sufficient properly skilled tradespersons, or proper workmanship, products or construction machinery and equipment for the scheduled performance of the work (within five (5) working days of receiving written notice from the Owner);
 - 1.6.1.2. Fails to make payment due to his sub-contractors, his suppliers, or his workmen;
 - 1.6.1.3. Persistently disregards laws or ordinances or the Owner's instructions;
 - 1.6.1.4. Otherwise violates the provisions of the Contract.
 - 1.6.2. Such written notice by the Owner may instruct the Contractor to correct the default within two (2) working days from the receipt of the written notice.
 - 1.6.3. If the correction of the default cannot be completed within the two (2) working days specified, the Contractor shall be considered to be in compliance with the Owner's instructions if he:
 - 1.6.3.1. Commences the correction of the default within the specified time, and;
 - 1.6.3.2. Provides the Owner with an acceptable schedule for such correction, and;
 - 1.6.3.3. Completes the correction in accordance with such schedule.
 - 1.6.4. If the Contractor fails to correct the default within the time specified, or in the time subsequently agreed upon, the Owner may, without prejudice to any other right or remedy he may have, terminate the Contract.
 - 1.6.5. If the Owner terminates the Contract under the conditions set out above, he is entitled to:
 - 1.6.5.1. Take possession of the chattel and products of the Contractor and utilize the construction machinery and equipment, the whole subject to the rights of third parties, and to finish the work by whatever methods he may deem expedient but without undue delay or expense;



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

1.6.5.2. Withhold any further payments to the Contractor until the work is finished; and

1.6.5.3. Use any bid/security deposit to rectify Contractor's deficiencies.

1.7. FAIR WAGES AND LABOUR

1.7.1. The successful Contractor shall provide Province of Ontario fair wages and work conditions for their employees applicable to related work. If this policy is violated, the Owner will not consider letting further contracts to the said Contractor. In all cases of dispute, the decision of the Owner is final.

1.8. WORKER'S COMPENSATION AND OCCUPATIONAL HEALTH AND SAFETY ACT

1.8.1. The Contractor shall provide workers' Compensation coverage for all employees who are employed under the Contract. Proof of this coverage shall be presented to the Owner by the successful Contractor prior to the issuance of a Purchase Order for the work of the Contract and prior to the Contractor commencing any work on the site. Proof of this coverage shall also be submitted to the Owner with each invoice when requesting payment.

1.8.2. The work of this Contract shall be executed in strict accordance with the current Occupational Health and Safety Act of the Province of Ontario.

1.8.3. The Contractor shall be responsible for ensuring that his workmen abide by the Rules and Requirements set forth under the Act. A copy of the Act shall be available on the site at all times when work is being performed. The Contractor shall assume the role of "Constructor" for this project.

1.8.4. The Contractor shall provide proof that a Notice of Project and Registration of Constructors and Employers Engaged in Construction forms have been submitted to and approved by the Ministry of Labour prior to commencing work.

1.8.5. Keep copy of WHMIS Material Safety Data Sheets (MSDS), for controlled products, at work site throughout installation, as required by legislation.

1.9. PERMITS AND LAYOUT

1.9.1. The TCDSB is an Electrical Safety Authority (ESA) registered institution.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

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- 1.9.1.1. All work of an electrical nature is to be registered on completion of the project, in the school's ESA Log Book.
 - 1.9.1.2. The Contractor is to acquire and pay for any associated and/ or mandatory ESA permits and inspections.
 - 1.9.1.3. The Contractor is to submit a copy of the ESA Inspection Reports to the Owner prior to submittal of their final invoice.
 - 1.9.2. The Contractor is to obtain and pay for permits and ESA plans approvals (note: Building Permit will be obtained by owner, if applicable) and inspections required for work performed. Provide Certificate (s) of Acceptance from the Authorities Inspection Department, upon completion of work and prior to submission of final invoice. The costs for these permits, inspections, etc., shall be included in the Tender Price.
 - 1.9.3. All work shall be carried out in strict accordance with all existing applicable By-laws and Amendments thereto, the Ontario Building Code, all requirements of the Ontario Fire Marshal's Office and/or all other Jurisdictional Authorities, including the Electrical Safety Authority and save harmless, in all respects, the Owner. In particular, regulations and codes regarding asbestos remediation shall be strictly complied with.
 - 1.9.4. The Contractor will be held to have visited the place of work and to have carefully examined all conditions affecting the execution of the work. Tender shall include all costs imposed by site conditions known or implied at the time of tendering.

1.10. ASSIGNMENT OF CONTRACT OR PROCEEDS OF CONTRACT AND SUB-CONTRACTORS

- 1.10.1. The Contractor acknowledges that neither the Contract nor any part of the proceeds thereof may be assigned or sublet without the written consent of the Owner.
- 1.10.2. When notified by the Owner that his Tender has been accepted, the Contractor shall submit, within forty-eight (48) hours of such notification, a list of Sub-Contractors proposed to perform the Work under the Contract. No substitution shall be made later without the written approval of the Owner.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

1.11. GOVERNMENT TAXES

- 1.11.1. The Contractor shall include in his Tender all taxes in force or applicable, during the progress of this project. The Harmonized Sales Tax (H.S.T.) is to be identified as a separate amount or as required on the Tender Form. The Owner may require separate breakdowns of tax amounts included in each Tender Price.
- 1.11.2. Any tax differences legislated prior to date of the Tender and scheduled to come into effect during the life of this project shall be added or deducted from the Contract price on evidence submitted by the Contractor. The Owner reserves the right to request and receive evidence to support any cost changes attributed to changes in tax structures that occur during the life of this project. The Owner will only be responsible for increases that can be substantiated by such evidence and expects to benefit from any decreases.

1.12. LIENS AND DAMAGES

- 1.12.1. The successful Contractor agrees to protect and save harmless the Owner from all liens including construction liens, damages, etc., arising from or caused by his work.

1.13. INSURANCE

- 1.13.1. The Contractor shall provide, maintain and pay for insurance and supply a Certificate of Insurance on a Form acceptable to the Owner, including coverage that will indemnify the Owner for loss of use of the property with limits not less than:
 - 1.13.1.1. Comprehensive General Liability Insurance: \$2,000,000.00 Inclusive Limits – Bodily Injury & Property Damage.
 - 1.13.1.2. Leased/Owned Automobile Insurance - \$1,000,000.00 Inclusive Limits – Bodily Injury & Property Damage Combined.
 - 1.13.1.3. Non-Owned Automobile Insurance - \$1,000,000.00 Inclusive Limits - Bodily Injury & Property Damage Combined.
- 1.13.2. The Comprehensive General Liability Policy shall:
 - 1.13.2.1. Be endorsed to include the name of the Owner with respect to operations described in these Contract Documents.
 - 1.13.2.2. Contain a Cross Liability clause as between all insured named in the policy.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

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- 1.13.2.3. Insure the Products and Completed Operations exposure.
 - 1.13.2.4. Contain no exclusion, including but not limited to blasting, vibration, shoring, underpinning, building collapse, or damage to underground property.
 - 1.13.2.5. Contain Blanket Written Contractual Liability.
 - 1.13.2.6. Contain Personal Injury Coverage.
 - 1.13.2.7. Contain Occurrence Property Damage.
 - 1.13.2.8. Contain Broad Form Property Damage.
 - 1.13.2.9. Contain Contingent Employers' Liability.
 - 1.13.2.10. Contain Owners' and Contractors' protective liability.
- 1.13.3. Property Insurance:
- 1.13.3.1. The Owner shall subscribe and maintain an All Risks Property Insurance Policy or loss or damage to the full replacement cost value of the project.
 - 1.13.3.2. The policy shall be in the name of the Owner and shall include the interest of the Contractor. Such insurance is subject to a deductible of \$50,000.00 in respect of each occurrence.
 - 1.13.3.3. Should any claims against the Owner's insurance arise out of this Contract for any reason, the Contractor shall be responsible for the first \$50,000 or any amount up to \$50,000 in respect of each occurrence and he shall also be responsible for any direct loss or damage to the building, construction materials, or tools, equipment and machinery not covered by the policy.
- 1.13.4. Contractor's Tools and Equipment:
- 1.13.4.1. The Contractor's tools, equipment and machinery shall be the sole responsibility of the Contractor and he shall keep the Owner harmless from any damages to the tools, equipment and machinery resulting from the operations or ownership of the tools, equipment and machinery not covered by any Property Insurance.
- 1.13.5. The Contractor shall conform to the statutory conditions in the Insurance Policies and Agreements.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

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- 1.13.6. If the insurance described is to be cancelled or materially changes, for any reason, during the duration of the Contract or operations referred to, thirty (30) days prior written notice will be given to the Owner.
 - 1.13.7. Insurance shall be maintained continuously from commencement of the Work until twelve (12) months following the date of substantial performance of the work, as set out in the Certificate of Substantial Performance of the Work, or until the Statement of Contract Deemed Completed is issued, whichever is the later, and with respect to completed operations coverage for a period of not less than twenty-four (24) months from the date of contract deemed completed as set out in the Statement of Contract Deemed Completed.

1.14. VALUATION OF CHANGES

- 1.14.1. Charges for changes in the work, or for extra work, which is not required by the Drawings and Specifications, will be authorized through the medium of a "Change Order" issued by the Consultant on the Owner's standard form. No bill or claim for extra payment based on verbal orders or any other instructions not authorized by a Change Order will be considered or accepted.
- 1.14.2. All proposals for extra work not covered by the Drawings and Specifications shall be itemized. The Contractor may include overhead and profit clearly stated as separate items, on such work, at the rates of five percent (5%) overhead, and five percent (5%) profit for work by his own forces. Overhead and Profit may not be added to any "Cash Allowance" expenditure. Overhead and Profit may only be claimed for changes not included in the contract.
- 1.14.3. No extra work shall be commenced or invoiced unless approved in advance by the Owner via the change order process.
- 1.14.4. The Owner reserves the right to contract extra work out to a third party.

1.15. PAYMENT AND HOLDBACK

- 1.15.1. Unless otherwise directed, the Contractor shall submit an invoice on a monthly basis for work completed and accepted. After the final acceptance of the work the Contractor shall submit a final invoice to the Owner. Said invoices shall be accompanied by a signed certification form provided by the Consultant. Payment will be based value of work certified complete less 10% holdback.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

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- 1.15.2. The Board has now moved to EFT as method of payment to all vendors. The successful vendor is expected to provide their banking information when requested.
 - 1.15.3. Upon Substantial Performance the consultant shall issue a Certificate of Substantial Performance of the Contract conforming with OAA/OGCA Document 100.
 - 1.15.4. Holdback payment and expiry of liens shall be regulated by the Construction Lien Act, R.S.O. 1990, C.C. 30, amended, and any applicable Regulations hereunder, and shall conform to OAA/OGCA Document 100.
 - 1.15.5. Final invoice shall be accompanied by all warranties and guarantees properly executed in the name of the Owner and shall conform to the Project Close-out Procedures. In particular, the final invoice is not to be submitted until all test reports are complete, submitted, and meet the contract requirements.
 - 1.15.6. Final acceptance shall be granted when the Work is deemed complete and when the Consultant in consultation with the Owner has inspected all the completed work and issued a Statement of Contract Deemed Completed conforming with OAA/OCGA Document 100. Remediation of all noted defects shall be completed prior to issuance of said certificate.

1.16. AWARD OF CONTRACT AND REQUIRED DATE OF COMPLETION

- 1.16.1. The Owner anticipates awarding the Contract to the successful Contractor by **Friday June 29, 2018**.
- 1.16.2. The contract will be awarded by letter of intent (see appendix D) followed by a purchase order, which together with the Tender Documents constitutes the Contract Documents.
- 1.16.3. The contract Work shall commence as soon as possible after July 1, 2018. The Contract Work shall be completed by **Friday August 31, 2018**, henceforth referred to as the Date of Completion.
- 1.16.4. Time shall in all respects be of the essence of the completion of the scope of work for this project provided that the time for doing or completing of any matter provided for herein may be extended or abridged by an agreement in writing by the Owner and the Contractor.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

1.17. OCCUPATIONAL HEALTH AND SAFETY - SPECIAL NOTE:

1.17.1. Not Applicable.

1.18. LOBBYING

1.18.1. The TCDSB has established a prohibition on lobbying during all competitive tenders, RFP's or RFQ's. The Board will designate a Tender Contact Person for all tenders or proposal calls to respond to all communications with respect to the call from the time of issuance, during the competitive process, and up to and including the announcement of award.

1.18.2. Vendors or any representatives employed or retained by them, or any unpaid representatives acting on behalf of either to promote a bid/proposal or oppose any competing bid/proposal are strictly prohibited from communicating, either verbally or in writing, with any other Board employees or elected officials from the time of issuance until the time of award.

1.18.3. Any vendor found to be in breach of the policy will be subject to disqualification from this particular call or future calls at the discretion of the Board.

1.19. RELEVANT POLICIES

1.19.1. The Board has a number of relevant Policies regarding Tenders and Acquisitions. Proponents should familiarize themselves with the following policies:

Purchasing Policy-<http://www.tcdsb.org/Board/Policies/Pages/FP01.aspx>

Sweatshop Free Purchasing-

<http://www.tcdsb.org/Board/Policies/Pages/FP04.aspx>

Conflict of Interest-Employees-

<http://www.tcdsb.org/Board/Policies/Pages/HM31.aspx>

Conflict of Interest- Trustees-

<http://www.tcdsb.org/Board/Policies/Pages/T01.aspx>

Acceptance of Hospitality or Gifts-

<http://www.tcdsb.org/Board/Policies/Pages/HM33.aspx>

1.20. NOTICE TO ALL BIDDERS / PROPONENTS

1.20.1. As outlined in the Purchasing Policy FP 01 TCDSB wishes to reinforce the fact that:



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

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- 1.20.1.1. All Bidders / Proponents for TCDSB tenders, RFPs or RFQs should be aware that Trustees and Board employees are not permitted under this policy to accept hospitality and gifts except those of nominal value, and that any gifts must be reported. Although the offering of gifts does not disqualify them, bidders / proponents should keep in mind that staff or trustees are discouraged from accepting gifts.
 - 1.20.1.2. All Bidders / Proponents for TCDSB tenders, RFPs or RFQs should be aware that they should communicate only with the designated "tender contact person" listed for any tender, RFP or RFQ.
 - 1.20.1.3. All Bidders / Proponents should be aware that the Board may, at its sole discretion, also exclude a contractor from participating in the tender process if contractor is involved in litigation with the Board or if the Bidder/Proponent has in previous projects failed to deliver contracted requirements.

1.21. PROJECT CONTACTS

- 1.21.1. A list of the Board and Consultant contacts will be provided to the successful Contractor.

1.22. INTEGRATED ACCESSIBILITY STANDARDS REGULATION

- 1.22.1. It shall be the sole and exclusive responsibility of the Contractor to understand, develop and deliver accessibility standards and Ontario Human Rights Code training to all of their sub-contractors, employees and contractors in accordance with Section 7(1) of the Integrated Accessibility Standards Regulation of the AODA. Online training can be found as a resource to deliver and complete the statutorily required training at <http://www.ohrc.on.ca/en/learning/working-together-code-and-aoda>
- 1.22.2. The Contractor acknowledges that in accordance with Section 7(5) of the of the Integrated Accessibility Standards Regulation of the AODA that the Contractor must update, maintain and keep records of all those sub-contractors, employees and contractors who have completed the accessibility standards and Ontario Human Rights Code training delivered by the Contractor and that these records may be requested to be produced, within five (5) business days, by the Toronto Catholic District School Board to ensure contractual compliance.

END OF PART 1 – INSTRUCTIONS TO BIDDERS



PART 2 - GENERAL REQUIREMENTS

2.1. TENDER DOCUMENTS

- 2.1.1. All Bidders shall consult the Tender Documents. Tender Documents consist of:

This tender package **P-110-18** and all appendices listed in Table of Contents;

Specifications as listed on the Specification Index;

All drawings as listed on the Drawing Index;

Any Addenda issued prior to the Tender Closing Date.

2.2. SCHEDULE

- 2.2.1. Within two (2) working days of receiving written notification of the award of the Contract, the Contractor shall submit to the Owner's Representative a Construction Schedule. Such Schedule shall give a complete breakdown of the project timing. This schedule must show project completion by required Date of Completion. Every effort must be made to strictly adhere to the Schedule. Any changes to the schedule shall be done in writing only.
- 2.2.2. For complex schedules, the Owner at his discretion may require that the schedule be delivered in electronic format readable on the Owner's computer.
- 2.2.3. The date of completion is **Friday August 31, 2018**.

2.3. CONTRACTOR ON SITE

- 2.3.1. The Contractor shall organize his work at the school in co-operation with the Principal or SQS or TCDSB Project Coordinator so that the academic program of the school is not disrupted. Such organization shall take place at least forty- eight (48) hours prior to commencing work.
- 2.3.2. During the regular school year (September to June), work shall be done after school hours, between the hours of 4:00pm to 8:00pm. The Contractor shall make special arrangements with the Owner to perform work outside these hours. Requests for special arrangements shall be made at least forty-eight (48) hours in advance.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

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- 2.3.3. During the summer months (July and August), work shall be done between the hours of 7:30am to 4:00pm. The Contractor shall make special arrangements with the Owner to perform work outside these hours. Requests for special arrangements shall be made at least forty-eight (48) hours in advance.
- 2.3.4. Any cost associated with work outside of regular hours will be charged to and shall be the responsibility of the Contractor. On site access problems are to be referred to the Project Coordinator first and in the absence of a response, the SQS.
- 2.3.5. The Contractor is responsible for applying to the Permits Department for a School Use Permit for all work in the existing school building outside of regular school hours. There are no fees for permits obtained during regular caretaker working hours, i.e. 8:00 a.m. – 11:00 p.m. Monday to Friday during the school year (for most schools) and 8:00 a.m. – 4:00 p.m. during the summer and other school breaks. Permit fees to cover caretaker overtime are applicable at all other times (after 4:00 p.m. Monday to Friday during the summer and other school breaks and on weekends year round) and these permit fees must be paid by credit card or debit prior to permits being issued. There will be **NO** exceptions. Current overtime rates are \$30.86/hour Monday to Saturday and \$41.14/hour Sunday. All rates are subject to HST (13%).
- 2.3.6. For the safety of students and staff, no heavy equipment or machinery shall be used on the job site between 8:00 a.m. and 4:00 p.m., Monday to Friday during the regular school year except as permitted by the Principal and under the supervision of the Principal, or his designate.
- 2.3.7. Upon arrival at the school, the Contractor shall report to the school office identifying himself and the purpose for which he is in the school.
- 2.3.8. The Contractor shall clean up and remove debris on a daily basis. Under NO circumstances, shall the Contractor use the school's garbage disposal containers.
- 2.3.9. Smoking is NOT permitted in any of the OWNER's buildings or on any of the OWNER's properties. All smoking must be done off School Board premises.
- 2.3.10. The Owner reserves the right to request criminal background verification of the Contractor's personnel at no expense to the Owner.
- 2.3.11. The Owner reserves the right to require Contractor's personnel to carry and display identification.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

2.3.12. The Contractor shall familiarize themselves with the School Board's Emergency Lock Down Procedures. The refer to the following link:
<http://www.tcdsb.org/Board/BoardAdministration/AdministrationOffices/purchasing/TenderingInformation/Documents/EmergencyResponseProcedures.pdf>

2.4. PROTECTION AND MAKING GOOD

2.4.1. The Contractor shall provide proper and adequate protection for all school property and equipment. The Contractor shall ensure that dust is kept to a minimum. The Contractor shall make good, at no additional cost to the Owner, all surfaces disturbed by the execution of this Contract whether such surfaces are located within the area of work or not. The Contractor shall make good to new condition matching surrounding surfaces.

2.5. SPECIFICATIONS AND DIVISIONS OF WORK

- 2.5.1. The work specified in the sections of the Specifications has generally been divided into trade sections for purpose of ready reference.
- 2.5.2. The Specifications and Drawings form an integral part of the Tender and Contract Documents. Any subject or item either of the Specifications or Drawings omitted from, but which is mentioned, or reasonably implied in the other, shall be considered as properly and sufficiently specified and is part of the work.
- 2.5.3. The Owner is the prime interpreter of the Specifications and Drawings and his decisions shall be final and binding.
- 2.5.4. The division of the work among the Subcontractors and suppliers is solely the responsibility of the Contractor. The Owner assumes no responsibility to act as an Arbitrator to establish subcontract limits between sections or divisions of work. No deviations from the Specifications and Drawings shall be made by the Contractor without the written approval of the Owner.
- 2.5.5. Bidders shall promptly examine the tender package after receipt. Any errors, omissions, or ambiguities discovered therein should be reported to the Tender Contact Person of the Instructions to Bidders. Clarification as a result of such reports will be issued as addenda.

2.6. DAMAGE TO UTILITIES, SERVICES OR PROPERTY

2.6.1. The Contractor shall verify limitations imposed on project work by presence of utilities and services and ensure that no damage occurs to the utilities or services. The Contractor shall assume liability for any direct or



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

indirect damage to any property resulting from damage caused by the Contractor or his trades or sub trades to utilities, services or property and will make good any such damage to the satisfaction of the owner of the utility, service or property and indemnify and hold harmless the TCDSB in such an event.

2.7. REGULATIONS

- 2.7.1. All work shall be carried out in strict accordance with the rules, regulations and by-laws of all Jurisdictional Authorities and all work shall be done to the complete satisfaction of the Owner and the Jurisdictional Authorities.

2.8. CONSTRUCTION SAFETY

- 2.8.1. The Contractor shall include all provisions for construction safety such as but not limited to fences, electrical protection, barricades, bracing supports, storage facilities, fire protection, ventilation, construction ramps, platform runways, ladders, scaffolds and guardrails, all as required by the Occupational Health and Safety Act and other Regulations of the Province of Ontario as well as all applicable Regulations of Jurisdictional Authorities including Electrical Safety Authority. The successful Contractor shall provide a Safety Policy to the Owner.
- 2.8.2. Work to be registered in on-site ESA log book by the Contractor upon completion.

2.9. COORDINATION OF WORK

- 2.9.1. The Contractor shall correlate and coordinate his work with that of other Contractors having separate contracts with the Owner or third parties having permits with the Owner in order to complete the work as expeditiously as possible. The TCDSB Project Coordinator is the point of contact in this regard.
- 2.9.2. Prior to commencement of work, the Contractor shall ensure that all other contractors are fully conversant with the extent of the work, the conditions and materials on the project, the schedule of completion, restrictions on safety and access. The Contractor shall also ensure that all Subcontractors are fully conversant with the extent of work involved with other contractors.
- 2.9.3. The Contractor shall ensure that Subcontractors whose own work is dependent on this preparatory work assist other Subcontractors in the execution of required preparatory work.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

2.10. BUILDING MEASUREMENTS

- 2.10.1. The Contractor shall ensure that all necessary job dimensions are taken for the proper execution of the work. The Contractor shall assume complete responsibility for the accuracy and completeness of such dimensions.
- 2.10.2. The Contractor shall verify that all work as it proceeds, is executed in accordance with dimensions, which maintain position, levels and clearances to adjacent work as set out by requirements of the Drawings and shall ensure that work installed in error is rectified before construction continues.
- 2.10.3. The Contractor shall check and verify all dimensions referring to the work. All dimensions, when pertaining to the work of other trades, shall be verified with the trade concerned. It shall be the responsibility of the Contractor to ensure that Subcontractors for various trades cooperate in the proper performance of the work.
- 2.10.4. The Contractor shall avoid scaling directly from the Drawings. If there is ambiguity or lack of information, the Contractor shall immediately inform the Project Consultant. Any error, through the disregarding of this notice, shall be the responsibility of the Contractor.
- 2.10.5. All details and measurements of any work, which is to fit or to conform to work installed, shall to be taken on the job.

2.11. EXAMINATION BEFORE EXECUTION OF WORK

- 2.11.1. The Contractor shall inform the Project Consultant of defects in the work on which further execution of work depends.
- 2.11.2. The Contractor shall verify dimensions of prepared work before fabrication of that work which is dependent on the prepared work. The Contractor shall not proceed with the execution of the work unless the work which is to receive it and site conditions is satisfactory. Commencement of any work shall imply that prepared work and site conditions are satisfactory.

2.12. TEMPORARY FACILITIES

- 2.12.1. Throughout the duration of the project, water and power may be taken from the existing services in a school building. Only the amount of water and power required for the normal and proper execution of the work may be used. The Contractor will pay for unusual or unwarranted consumption of water and power. The decision of the Owner on this matter will be final



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

and binding. The school building shall remain totally operational during school hours.

- 2.12.2. The Contractor may make arrangements with the school Principal for the use of the school's washroom facilities.
- 2.12.3. The Contractor is confined to the area of work for storage of equipment and materials. Such storage shall not violate the terms and conditions set forth in the fire insurance policies of the Owner, or any other Jurisdictional Authority.
- 2.12.4. Material and equipment shall not be left in areas accessible to the students, but may be left in areas assigned by the Principal or his designate.

2.13. WORKMANSHIP AND MATERIAL

- 2.13.1. The Contractor shall employ workmen skilled in each phase of the work as their recognized trade. The Contractor shall also provide a competent Foreman to be fully responsible for the coordination of all trades involved with their part of the project and shall identify the Foreman to the Owner prior to work commencing.
- 2.13.2. All material used in the execution of this Contract shall be new and of the best quality to do the work for which it is intended. No defective, unsound, or used material will be permitted.
- 2.13.3. Manufactured articles, material and equipment used to perform the Work shall be applied, installed, connected, erected, cleaned and conditioned in strict accordance with the applicable manufacturer's instructions and directions.
- 2.13.4. No deviations from the Specifications or the Drawings shall be made by the Contractor without written approval of the Consultant in consultation with the Owner.

2.14. FINAL CLEANING

- 2.14.1. Prior to calling for a final inspection, the Contractor shall remove all excess material, equipment and debris and the site shall be left in a clean and tidy condition.

2.15. GUARANTEES AND WARRANTIES

- 2.15.1. All material and workmanship on this project shall be guaranteed for a minimal period of two (2) years dated from the date of issue of the Statement of Contract Deemed Completed. Refer to Specifications for



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

items or OEM warranties that extend beyond the two (2) year guarantee period.

- 2.15.2. All warranties including OEM warranties are to be executed in the name of the Owner.
- 2.15.3. A warranty inspection shall be conducted no later than **Monday August 3, 2019**. The contractor shall ensure representation.

2.16. SCOPE OF WORK (BASE BID)

- 2.16.1. The Contractor shall provide and furnish all labour, material, equipment and services necessary for the complete and proper execution of the work set forth in this tender package.
- 2.16.2. The Scope of Work for this project includes, but is not limited to, the following:
 - Architectural and electrical interior renovations to the existing Gymnasium on the first floor level of the existing school building and includes replacement to athletic flooring and base, painting of game lines, walls and other items, electrical work including replacement of light fixtures and replacement of window shades and inclusion of visual display boards.
 - Construction Work is to occur as soon as possible after July 1, 2018 and is to be completed by August 31, 2018 to ensure that Gymnasium is operational for the commencement of the school year in September 2018.
- 2.16.3. Cash Allowance in the amount of \$10,000.00 is to be carried in the project price to accommodate unforeseen conditions encountered on site and other items. *Refer to architectural specifications Division 01 10 00, Section 1.25.1.*
- 2.16.4. The Scope of Work is further defined at Part 3 of this document.

2.17. GENERAL PERFORMANCE

- 2.17.1. Nothing contained in this Contract, nor on the Drawings, shall be construed to relieve the Contractor from making good and perfect (in all the usual details of construction), the work involved in the completion of this Contract.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

2.18. PROJECT CLOSE OUT PROCEDURES

- 2.18.1. Prior to holdback release and/or final payment, the contractor shall:
 - 2.18.1.1. Complete all construction deficiencies to the satisfaction of the Owner.
 - 2.18.1.2. Provide copy of “as-built” drawings in AutoCAD format readable on the Owner’s computers in accordance with the current Board Specifications for Drawings.
 - 2.18.1.3. Provide all Original Equipment Manufacturer (OEM) warranties made in the name of the Owner with a warranty start date which shall be the date set out in the Statement of Contract Deemed Completed or any subsequent acceptance date for individual equipment as may be stipulated in writing by the Owner.
 - 2.18.1.4. Provide all Technical documents to include:
 - 2.18.1.4.1. Maintenance Manual specifying maintenance schedules and maintenance procedures for duration of warranty period, if applicable;
 - 2.18.1.4.2. An Operations Manual prepared by the Contractor or an OEM supplier to the satisfaction of the Owner, if applicable.
 - 2.18.1.4.3. All passwords necessary to the operation and administration of any electronic systems or files in a sealed envelope to the project coordinator of the Owner, if applicable.
 - 2.18.1.4.4. OEM Operating Manual, if applicable.
 - 2.18.1.4.5. Parts Manuals, if applicable.
 - 2.18.1.4.6. Original version on CD ROM of any new system software installed, if applicable.
 - 2.18.1.4.7. Adequate training for school board staff. This may be more than one session, if applicable.
 - 2.18.1.4.8. Any other documentation or reports required by the Specifications.
 - 2.18.1.4.9. Confirmation of time-of-day scheduling.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

2.18.1.5. All technical documentation is to be provided on paper in one (1) bound copy and two (2) in electronic format on USB drives both readable on the Owner's computer.

2.18.2. In addition, the Contractor shall ensure that he is in compliance with the provisions of OAA /OGCA Document 100 in regards to project completion.

2.19. FAILURE TO PERFORM

2.19.1. In the event that the Contractor is unable to provide for building occupancy in time for school start or as per the schedule, the Contractor shall be liable for cost and implementation of any additional, exceptional or emergency measures required to ensure building operation adequate for normal school operations in whole or in part of the building to the satisfaction of the Owner.

2.19.2. In this event, the contractor is responsible to advise the Owner in sufficient time for the said measures to be implemented and for the school community to be advised.

2.20. CHANGE ORDER PROCESS

2.20.1. The Contractor shall familiarize himself and conform to the Owner's change order procedure.

2.20.2. The Contractor shall inform the Consultant and Owner of any requests for changes.

2.20.3. Pricing for changes shall be competitive where ever possible and shall demonstrate any discount for materials. The Owner at his discretion may request proof of payment matching quotations.

2.21. POST CONTRACT AWARD DOCUMENTS

2.21.1. For ease of reference, Appendix B lists (non-exhaustive) documents required to be submitted by the Contractor to the Owner after contract award and prior to commencement of the Work or at contract completion.

2.22. CONFLICT WITH SPECIFICATIONS

2.22.1. Should there exist a conflict between Part 1, 2 or 3 and the Specifications and/or Drawings, the Contractor shall bring this conflict to the attention of the Owner.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

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- 2.22.2. In all cases the more comprehensive or better option shall take precedent at the discretion of the Owner.

2.23. DISPUTE RESOLUTION

- 2.23.1 In the event of a dispute arising in connection with this bid process including, without limitation, a dispute concerning the existence of the Bid Contract or a breach of the Bid Contract, or a dispute as to whether the Bid of any bidder was submitted on time or whether a Bid meets the Mandatory Requirements, the parties to the dispute agree:

to use their best efforts to resolve the dispute through amicable and good faith negotiations for a period of at least ten (10) days, having such written and oral communications and meetings as appropriate;

if a dispute is not resolved through negotiations any party may request that a mediator be retained to assist in resolving the dispute. In the event a request for mediation is made, the parties shall, within five (5) Working Days, make reasonable attempts to agree on a mediator and shall mediate the dispute;

if the dispute is not resolved through negotiations or within thirty (30) days of a request for the appointment of a mediator, the Owner, in its unqualified subjective discretion, may refer the dispute to confidential binding arbitration before a single arbitrator, selected by the Owner, at Toronto, Ontario pursuant to the Arbitration Act, 1991 (Ontario), as amended. In the event that the Owner refers the dispute to arbitration, the bidder agrees that it is bound to arbitrate such dispute with the Owner. Unless the Owner shall refer such dispute to arbitration, there shall be no arbitration of such dispute.

END OF PART 2 – GENERAL REQUIREMENTS



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

PART 3 – SCOPE OF WORK

3.1. SCOPE OF WORK

The scope of work includes but is not limited to the following interior renovations in the existing Gymnasium on the first floor level of the school building as follows:

- Removal and disposal of existing rubber flooring and wall base and supply and installation of new athletic flooring and wall base.
- Removal and disposal of existing light fixtures and supply and installation of new light fixtures.
- Inclusion for a power receptacle at the high level for the future installation of a score board.
- Painting of game lines on new rubber flooring and painting of existing walls, hollow metal door and screen frames and hollow metal doors.
- Cleaning of acoustic block walls.
- Supply and installation of two white boards.
- Removal of existing interior window shades and the supply and installation of black-out window shades.

3.2. LOCATION OF WORK

3.1.1 32 Montgomery Road, Toronto Ontario M8X 1Z4

3.3. UNIT PRICES

3.1.2 Not Applicable.

3.4. SITE VISIT - RECOMMENDED SITE MEETING

3.1.3 A recommended pre-tender site meeting will occur on Thursday June 21, 2018 at 9:30am.

3.5. TIME OF WORK

3.1.4 The Construction Work is to begin as soon as possible after July 1, 2018 and is to be completed by Friday, August 31, 2018.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

Gymnasium Renovations at Our Lady of Sorrows Catholic School

Tender: P-110-18, ID: TCDSB.10324.0016

3.6. QUALITY OF WORKMANSHIP

3.1.5 Workmanship shall be to the satisfaction of the Owner.

3.7. SPECIFICATIONS INDEX AND DRAWING INDEX

3.1.6 All work is to be performed in accordance with Appendix C – Specifications Index and Drawing Index.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

**Gymnasium Renovations at
Our Lady of Sorrows Catholic School**

Tender: P-110-18, ID: TCDSB.10324.0016

APPENDIX A - TENDER FORM FOR (P-110-18):

CLOSING DATE OF TENDER: **Thursday June 28, 2018 @ 3:00:00 P.M.**

Attn: Vince Artuso P.Eng., Supervisor, Contract Administration
Toronto Catholic District School Board
80 Sheppard Avenue East Toronto, Ontario M2N 6E8

NAME OF BIDDER _____

ADDRESS _____

TELEPHONE _____

BASE BID PRICE

I/We the undersigned, having carefully examined the Bid Documents, having visited and investigated the Place of the Work, and examined all conditions, circumstances and limitations affecting the Work, offer to enter into a Contract with the Owner to perform the Work required by the Bid Documents for the stipulated price of:

\$ _____ + HST

The price offered includes a cash allowance of **\$10,000**. The price offered excludes (HST) but includes all other eligible taxes.

SEPARATE PRICE

Work may be added to or deleted from the base bid price by the Owner for the amount quoted hereunder.

<u>Product/Work Specified in the Tender</u>	<u>Deduct from Price:</u>
Separate Price No.1: Provide a credit for all wall painting.	\$ _____
Separate Price No.2: Provide a credit for all painting of hollow metal doors, door frames and window frames.	\$ _____
Separate Price No.3: Provide a credit for the supply and installation of new resilient flooring and base and for the demolition and disposal of the existing rubber flooring and base.	\$ _____
Separate Price No.4: Provide a credit for the supply and installation of new light fixtures and for the demolition and disposal of the existing light fixtures.	\$ _____



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

**Gymnasium Renovations at
Our Lady of Sorrows Catholic School**

Tender: P-110-18, ID: TCDSB.10324.0016

Separate Price No.5: Provide a credit for the supply and installation of the new motorized window shades and for the demolition and disposal of the existing window shades. \$_____

Separate Price No.6: Provide a credit for the cleaning of the acoustic block wall areas. \$_____

ADDENDA

I/We the undersigned have received, carefully examined and incorporated Addenda No. ___ to No. ___ inclusive.

BID SECURITY

Attached to this Bid Form is a bid bond issued in the amount of 10% of the Bid Price shown above. No other form of bid security is acceptable.

AGREEMENT TO BOND

Attached to this bid is a separate agreement to bond issued agreeing to provide the bonds required by the Bid Documents.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

**Gymnasium Renovations at
Our Lady of Sorrows Catholic School**

Tender: P-110-18, ID: TCDSB.10324.0016

DECLARATIONS

I/We the undersigned declare that:

1. I/We agree to perform the Work in compliance with the Contract documents and reach Substantial Performance of the Work as noted in these tender documents.
2. No person, firm or corporation other than the undersigned has any interest in this bid or in the proposed Contract for which this bid is made.
3. This bid is open for acceptance by the Owner for a period of ninety (90) days from the date of submission.

DATE _____

SIGNATURE _____

WITNESS _____

Name and Title _____

Telephone No. _____

SEAL

END OF DOCUMENT



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

**Gymnasium Renovations at
Our Lady of Sorrows Catholic School**

Tender: P-110-18, ID: TCDSB.10324.0016

APPENDIX B – TENDER CHECK OFF LIST

Documents Required Subsequent to Contract Award Notification

	Required for:			Date Received
	Tender Submission	Contract Commencement	Contract Completion	
Appendix A - Tender Form(s)	✓			
Bid Security (Bid Bond and Agreement to Bond)	✓			
Proof of WSIB Coverage		✓		
Proof of Notice of Project		✓		
Proof of Registration of Constructor and Employee		✓		
Certificate of Insurance		✓		
Construction Schedule		✓		
Contractor Safety Policy		✓		
Performance and Labour and Materials Bond		✓		
Building Permit		✓		
OAA/OGCA Document No. 100			✓	
Warranty Certificates			✓	
Commissioning/ Test Reports			✓	
Air Sampling Reports			✓	

This appendix is for convenience only. In case of conflict, error or omission from the above table, the tender package takes precedent.



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

**Gymnasium Renovations at
Our Lady of Sorrows Catholic School**

Tender: P-110-18, ID: TCDSB.10324.0016

APPENDIX C – SPECIFICATION INDEX AND DRAWING INDEX

**PROJECT MANUAL PROCUREMENT, CONTRACTING REQUIREMENTS, ARCHITECTURAL AND
ELECTRICAL SPECIFICATIONS**

Project Information Page
Professional Qualifications
List of drawings

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

Toronto Catholic District School Board, Contracting Requirements and Instructions to Bidders.

DIVISION 01 - GENERAL REQUIREMENTS

Section 01 10 00	General Instructions
Section 01 24 00	Valuation of Changes
Section 01 31 00	Project Management and Coordination
Section 01 32 00	Construction Progress Documentation
Section 01 33 00	Submittal Procedures
Section 01 33 23	Shop Drawings, Product Data and Samples
Section 01 35 20	Safety Requirements
Section 01 35 43	Hazardous Materials
Section 01 41 00	Regulatory Requirements
Section 01 42 13	Abbreviations and Acronyms
Section 01 43 00	Quality Assurance
Section 01 51 00	Temporary Utilities
Section 01 52 00	Construction Facilities
Section 01 56 00	Temporary Barriers and Controls
Section 01 73 00	Execution
Section 01 74 00	Cleaning and Waste Management
Section 01 77 00	Closeout Procedures
Section 01 78 00	Closeout Submittals

DIVISION 02 - EXISTING CONDITIONS

Section 02 40 00	Demolition
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DIVISION 03 - CONCRETE

Section 03 35 00	Concrete Floor Finishing
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DIVISION 04 – MASONRY

Not Used.

DIVISION 05 - METALS

Not Used.

DIVISION 06 – WOODS, PLASTICS AND COMPOSITES

Not Used.

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

Not Used.

DIVISION 08 – OPENINGS

Not Used.

DIVISION 09 - FINISHES

Section 09 65 00 Resilient Flooring

Section 09 90 00 Painting and Coating

DIVISION 10 – SPECIALTIES

Section 10 11 00 Visual Display Boards

Division 11 – EQUIPMENT

Not Used.

Division 12 – FURNISHINGS

Section 12 49 50 Window Shades

DIVISION 16 - ELECTRICAL

Section 16010 Electrical General Requirements

Section 16050 Basic Materials and Methods

Section 16500 Lighting Systems

LIST OF DRAWINGS

Architectural:

- A0 Project Title and Drawing List
- A1 Site Plan / Construction Mobilization Plan, Legend and Notes, Project Information and Key Plan
- A2 Existing Ground Floor Plan and Ground Floor Reflected Ceiling Plan - Demolition
- A3 Proposed Ground Floor Plan and Ground Floor Reflected Ceiling Plan
- A4 Gymnasium Interior Elevations

Electrical:

- E1 Electrical Legend, Notes and Key Plan
- E2 Gymnasium Electrical Layouts



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

**Gymnasium Renovations at
Our Lady of Sorrows Catholic School**

Tender: P-110-18, ID: TCDSB.10324.0016

APPENDIX D – SAMPLE LETTER OF INTENT

DATE: *[NOTE: insert date]*

TO: *[NOTE: insert name, address and fax no. of the bidder to whom the Contract is awarded]* (hereinafter called the “Contractor”)

Dear Sirs:

Re: *[NOTE: insert name / project number]*

And Re: **Toronto Catholic District School Board** (hereinafter called the “Owner”) **award of Contract to the Contractor**

This Letter of Award is being issued to inform you that the Contractor’s bid for *[NOTE: insert name / project number]* has been accepted. Purchase Order Number *[NOTE: insert PO no.]* has been issued for this project. Kindly refer to the Purchase Order Number when invoicing.

This Letter of Award, once counter-signed, constitutes a contract (hereinafter called the “Contract”) between the Owner and Contractor.

The Owner and Contractor agree as follows:

1. The Contractor shall provide and furnish all labour, material, equipment and services necessary for the complete and proper execution of the Work set forth in the Contract Documents.
2. The Contractor shall:
 - (a) perform the Work required by and in accordance with the Contract Documents;
 - (b) assume the role of "Constructor" for this project;
 - (c) observe the Owner’s protocol on dealing with asbestos;
 - (d) commence the Work by no later than *[NOTE: insert date]* ; and
 - (e) attain Substantial Completion of the Work by *[NOTE: insert date from the Bid Form]* .
3. The following are the Contract Documents:*[Note: delete any item below as necessary]*
 - (a) this Letter of Award and Schedules:
 - (i) Schedule A – Scope of Work; *[NOTE: ensure that Schedule A includes or lists any applicable specifications and drawings]*



TORONTO CATHOLIC DISTRICT SCHOOL BOARD

**Gymnasium Renovations at
Our Lady of Sorrows Catholic School**

Tender: P-110-18, ID: TCDSB.10324.0016

-
- (ii) Schedule B – Project Schedule;
 - (iii) Schedule C – Contract Price and Terms of Payment;
 - (b) General Conditions;
 - (c) Special Conditions; *[NOTE: delete if there are no Special Conditions]*
 - (d) Specifications; *[NOTE: delete if already included in Schedule A]*
 - (e) Drawings; *[NOTE: delete if already included in Schedule A]*
 - (f) Addenda issued during the bidding process, but only in so far as applicable to the Contract and or the Work.
4. The intent of the Contract Documents is to include all labour, products, equipment and services necessary for the performance of the Work by the Contractor in accordance with the Contract Documents. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all.

At this time we would like to receive, along with the counter-signed original of this Letter of Award, all applicable bonds, copies of the insurance policies applicable to the Work, a current WSIB clearance certificate, a copy of the Contractor’s in-house safety-related programs, and a copy of the “Notice of Project” filed with the Ministry of Labour naming the Contractor as “constructor” under the *Occupational Health and Safety Act*, all as required by the Contract Documents.

We look forward to working with you on this project.

Yours truly,

SIGNED BY: *[NOTE: insert name]*

Per: _____	Per: _____
Title: _____	Title: _____

I/we have authority to bind the corporation.

COUNTER-SIGNED BY: *[NOTE: insert Contractor name]*

Per: _____	Per: _____
Title: _____	Title: _____

I/we have authority to bind the corporation.

1.1 CONTRACT DOCUMENTS

- .1 Contract documents for work under this contract consists of the following:
 - .1 Toronto Catholic District School Board (TCDSB) Procurement and Contracting Requirements and Instructions to Bidders and Supplementary Conditions.
 - .2 Specifications as listed in Index to Specifications
 - .3 Drawings as listed in List of Drawings
 - .4 All Addenda issued prior to closing of the tender
 - .5 Amendments incorporated prior to the signing of the Contract, as agreed to between the signing parties.

1.2 PRODUCTS SUPPLIED BY OWNER

- .1 Products, including accessories, indicated on the drawings as “N.I.C.”, or so noted in specifications, are not included in the Contract but will be supplied by the Owner. These are to be put in place and connected to services by the Contractor.
- .2 The Owner will provide manufacturer's installation instructions for each such product, when available.
- .3 The Contractor's duties with respect to products supplied by the Owner include:
 - .1 Unload and handle at site.
 - .2 Remove and dispose of packaging. Inspect delivered products notify Owner and Consultant of any damage or missing components.
 - .3 Temporarily store products in secure and suitable storage, if they are not to be installed immediately. Storage to be within the area of work only.
 - .4 Install and connect to services as applicable.

1.3 RELATION OF TRADES

- .1 These specifications have been divided generally into sections conforming to Construction Specifications Canada Master Format 2004 for the purpose of ready reference. They must be read as a whole. The responsibility for apportioning the work or of settling disputes related to same shall rest entirely with the Contractor.
- .2 The Contractor is responsible for coordinating all trades. He is solely responsible for determining the lines of demarcation between Contractor and/or trades. Neither the Consultant nor the Owner assume any responsibility for any such determination or for any dispute arising concerning it. No extras will be considered due to any such dispute concerning either labor or materials.
- .3 Specifications and drawings form an integral part of the Contract Documents. Any subject or item omitted from one but which is mentioned or reasonably implied in the other, shall be considered properly and sufficiently specified and will be part to the work.

1.4 EXAMINATION OF SITE

- .1 Examine site immediately prior to commencing Work to confirm that site as received by the Contractor, including adjoining Municipal lands, conform to information on tender documents.
- .2 Notify Consultant immediately if site conditions are not acceptable. Commencement of the Work of this Contract will be taken as acceptance of site conditions. No extras will be considered unless accepted in advance of performance of the work, in writing, by Owner and Consultant.
- .3 Contractor must make himself familiar with conditions on the roadway which may affect construction i.e. location of services, road widening, site access, etc.

1.5 CONTRACTOR ON SITE

- .1 The Contractor shall organize his work at the school in co-operation with the Principal or SQS or TCDSB Project Coordinator so that the academic program of the school is not disrupted. Such organization shall take place at least forty-eight (48) hours prior to commencing work.
- .2 During the regular school year (September to June), work shall be done between the hours of 4:00pm and 11:00pm. The Contractor shall make special arrangements with the Owner to perform work outside these hours. Requests for special arrangements shall be made at least forty-eight (48) hours in advance.
- .3 During the Summer months (July and August), work shall be done between the hours of 7:30am to 4:00pm. The Contractor shall make special arrangements with the Owner to perform work outside these hours. Requests for special arrangements shall be made at least forty-eight (48) hours in advance.
- .4 Any cost associated with work outside of regular hours will be charged to and shall be the responsibility of the Contractor. On site access problems are to be referred to the Project Coordinator first and in the absence of a response, the SQS.
- .5 Caretaker overtime is applicable after 4:00pm, Monday to Friday, during the summer break and on weekends year-round. The Contractor is responsible for applying to the Board Permits Department for school permits for all work outside regular school hours, whether or not overtime is applicable, including regular daytime work during summer. The current overtime rates are Monday to Saturday: \$30.86/hr and Sunday: \$41.41/hr.
- .6 For the safety of the students and staff, no heavy equipment or machinery shall be used on the job site between 8:00am and 4:00pm, Monday to Friday during the regular school year except as permitted by the Principal and under the supervision of the Principal, or his designate.
- .7 Any work creating excessive noise, vibration or dust or requiring blocking off of certain areas, interruption of or connection to any building services including fire alarm, water or electrical panels and services must be coordinated with the school caretaker, including the provision of a fire watch by the contractor if fire alarm is shut down. The contractor must also assure that existing exiting for all areas is maintained at all times.

- .8 Upon arrival at the school, the Contractor shall report to the school office identifying himself and the purpose for which he is in the school.
- .9 The Contractor shall clean up and remove debris on a daily basis, Under NO circumstances, shall the Contractor use the school's garbage disposal containers.
- .10 Smoking is NOT permitted in any of the Owner's buildings or on any of the Owner's properties, all smoking must be done off of School Board premises.
- .11 The Owner reserves the right to request criminal background verification of the Contractor's personnel at no expense to the Owner.
- .12 The Owner reserves the right to require Contractor's personnel to carry and display identification.
- .13 Work is to be registered in an on-site ESA log book by the Contractor upon completion.

1.6 ACCEPTANCE OF WORK IN PLACE

- .1 Before starting his work and from time to time as the work progresses, each subcontractor shall examine the work and materials installed by the other subcontractors insofar as it affects his own work, and shall promptly notify the Consultant IN WRITING, if any condition exists that will prevent him from giving a satisfactory result in his own work.
- .2 Should the subcontractor start his own work without such notification, it shall be construed as an acceptance by him of all preceding work and as a waiver of all claims or questions as to its suitability for receiving his work.
- .3 All Subcontractors installing building finishes and site work shall submit written confirmation of acceptance of existing conditions, to the Consultant, prior to commencing their work. Finishing work and landscaping work may not commence without submission of this confirmation. Receipt of this confirmation will be considered a prerequisite for certification of payment to the relevant Subcontractors.

1.7 MATERIALS AND WORKMANSHIP

- .1 All materials shall be new and the best of their respective kinds. Where a specific grade or brand is not indicated preference shall be given to materials of Canadian manufacture. Pre-packaged materials shall be delivered and stored in unopened containers.
- .2 All work performed under this Contract shall be done by mechanics skilled in their respective trades. They shall make use of such templates, jigs or special tools as may be required for the operation involved.
- .3 The Contractor is responsible for maintaining quality of workmanship. He shall report to the Consultant whenever the Work or material of any trade does not meet the required standard.

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- .4 The acceptance of any materials or workmanship shall not be a bar to their subsequent rejection, if found defective.
 - .5 Rejected materials and workmanship, and any work which is found defective, shall be removed and replaced or made good by the Contractor without cost to the Owner and to the satisfaction of the Consultant.
 - .6 Adequate, dry storage facilities shall be provided and all stored materials shall be protected from damage and theft. Materials on site can only be stored in the area of work.
 - .7 All contractors will do Work in accordance with the best industry practice of the type of work specified, unless the Contract Documents stipulate more precise requirements, in which case, the more precise requirements shall govern.
 - .8 Do Work in a neat, plumb and square manner. Ensure that various work components are properly installed, forming tight joints and appropriately aligned junctions, edges and surfaces, free of warps, twists, waves, or other such irregularities.
 - .9 Wherever indicated on the drawings or specifications, or in the manufacturers'/suppliers' written instructions, arrange to have manufacturers'/installer's representatives inspect the Work which incorporates their materials, products or items.
 - .10 Do not permit materials to come in contact with other materials such conditions may result in corrosion, staining, discolouration or deterioration of the completed Work. Provide compatible, durable separators where such contact is unavoidable.
 - .11 Where fixtures or elements are supported by the walls or structure, shop drawings must be stamped by an Ontario Registered Professional Engineer confirming that the wall/structure is capable of supporting the equipment/element and that the anchorage provided is adequate to support the equipment/element together with any potential load or stress.
 - .12 The design of the Work is based on the full interaction of its component parts. No provisions have been made for conditions occurring during construction. Ensure that no part of the Work is subjected to a load which will endanger its safety or which might cause permanent deformation.
 - .13 Conceal pipes, ducts, conduit, wiring and other such items requiring concealment preferably in, wall or ceiling construction of all finished areas. If in doubt as to method of concealment, or intent of the Contract Documents in this regard, request clarification from the Consultant before proceeding with the Work.
 - .14 Lay out electrical work well in advance of furring installation to allow for proper concealment. Test and inspect Work before applying pipe covering and before it is concealed.
 - .15 Provide and maintain control lines and levels required for the Work. Lay out the Work in accordance with these lines and levels and dimensions indicated on the drawings.
 - .16 Verify lines, levels and dimensions and report any errors or inconsistencies on the drawings to the Consultants.

- .17 Final responsibility of satisfactory completion of all the Work, however, lies with the Contractor.

1.8 SCAFFOLDING

- .1 All necessary scaffolding shall be provided and constructed according to by-law and safety regulations.
- .2 Construct and maintain scaffolding in rigid, secure and safe manner.
- .3 Erect scaffolding independent of building walls.
- .4 Avoid interference with other trades.
- .5 Move when not in use to permit installation of other work and promptly remove when no longer required.
- .6 The provision of scaffolding shall be a matter of agreement between the Contractor and Subcontractors.

1.9 PROTECTION OF OTHER WORK

- .1 Each trade shall avoid damage to other trades and shall take all measures necessary and provide all masking and materials necessary to provide adequate protection.
- .2 Each Contractor and Subcontractor shall be held responsible for all damage to work installed by others that is caused by this work or by anyone employed by him.
- .3 Patching and repairing of damaged work shall be done by the contractor who installed the work, as directed by the Consultant, but the cost of same shall be paid for by the contractor who is responsible for the damage.

1.10 FASTENINGS

- .1 All fastenings must be permanent, of same metal or compatible with any metals with which they are in contact, of adequate size and spacing to ensure permanent anchorage against load or shear.
- .2 Exposed fastenings must be evenly spaced, neatly laid out and must not mar surfaces of prefinished materials.
- .3 No ram setting or similar techniques will be permitted without prior written approval of the Consultant.
- .4 No wood plugs and no anchorages which cause spalling or cracking will be accepted.
- .5 Generally, use plain washers. Where vibration may occur, use lock type washers and where fasteners are stainless steel use resilient washers.

1.11 SUPPLY AND INSTALL

- .1 Unless specifically noted "supply only", any reference to supply intends the supply and installation of material or item so noted.

1.12 OCCUPATION BEFORE COMPLETION

- .1 If the Contractor, for any reason, does not have the job completed by the completion date and the Owner, of necessity, is forced to occupy any part of the building before the whole of the work is completed, the Contractor will not be entitled to any indemnity for interference with his operation.

1.13 GENERAL REQUIREMENTS

- .1 All Subcontractors shall examine carefully all drawings and specifications to inform themselves fully of all conditions and limitations pertaining to the work of the contract.
- .2 All Subcontractors shall co-operate and co-ordinate their work for the proper completion of the work, including co-ordination of delivery dates and commencement of sub-trades work.
- .3 The responsibility for all work, including temporary structures, shoring and erection shall at all times rest with the Contractor and his Subcontractors. The Consultant will review construction methods and shop drawings for general arrangements only. The method of obtaining the results contemplated by the Contract Documents shall be determined by the Contractor.
- .4 The undertaking of periodic site review by the Consultant or Owner's representative shall not be construed as supervision of actual construction, nor make him responsible for providing a safe place for work, visit, use, access, travel, or occupancy of their employees or agents.
- .5 The Contractor shall be fully responsible for coordinating and expediting the work of all Subcontractors and shall employ the necessary and qualified personnel to provide the required quality of labour and materials and to prevent delays in the progress of the project. Each trade shall be afforded all reasonable opportunities for the installation of its work and for the storage and handling of its materials.

1.14 COORDINATION

- .1 Coordinate all work and preparation on which subsequent work depends to facilitate mutual progress, and to prevent any conflict.
- .2 Review all drawings to identify interference issues prior to commencing construction. Request and review interference drawings from all mechanical and electrical trades. Review all shop drawings, samples, product data, mock-ups, and other required

- submittals for potential interference issues and co-ordinate with the trades to avoid these conflicts.
- .3 Where interference issues arise during construction, correct work at no expense to the Owner where the interference could have reasonably been foreseen.
 - .4 Ensure that each trade makes known, for the information of the Contractor and other trades, the environmental and surface conditions required for the execution of its work; and that each trade makes known the sequence of others' work required for installation of its work.
 - .5 Ensure that each trade, before commencing work, knows requirements for subsequent work and that each trade is assisted in the execution of its preparatory work by trades whose work depends upon it.
 - .6 Electrical trades in particular, shall ensure that items, such as electrical panels, outlets, diffusers, switches, etc., are located where they will not interfere with the installation or operation of other items.
 - .1 Check all drawings for the location of items to be installed later, such as accessories, and other wall or ceiling mounted items.
 - .2 Ensure items installed do not interfere with the operation of equipment or fittings, such as the swinging of doors, etc.
 - .7 Review all shop and layout drawings, templates, and other required submittals for coordination purposes.
 - .1 Ensure that all information necessary for the location and installation of materials, openings, inserts, anchors, accessories, fastenings, connections and access panels are provided by each trade whose work requires co-operative location and installation by other trades and that such information is communicated to the applicable installer.
 - .2 Ensure that shop drawings for aluminum and hollow metal work are coordinated with the openings for doors, frames and windows; site measurements must be indicated on the drawings.
 - .3 Review millwork shop drawings to ensure adequate clearance from walls, doors, windows, mechanical and electrical equipment, etc.
 - .8 Deliver materials supplied by one trade to be installed by another well before the installation begins.
 - .9 Trades giving installation information in error, or too late to incorporate in the work, shall be responsible for any extra work caused thereby.
 - .10 Immediately remove any work which is unsatisfactory for subsequent work, as directed by the Consultant or by the appointed inspection firms.

1.15 ACCESS TO THE PROJECT AND SCHOOL OPERATION

- .1 The Contractor for this work shall at all times allow the Owner or any other contractor or their employees in the building or around the premises, undisturbed, whether union or

non-union, as may be required in the execution of other portions of the building work and installation of equipment, etc.

- .2 Cooperate fully with forces carrying out any work on behalf of the Owner.
- .3 Where work interferes with the School program the Contractor shall organize his work at the school in cooperation with the Principal, through the Owner's Representative, so that the academic program of the existing school is not disrupted. The Contractor shall include in his/her tender price, all costs required to phase or stage the project so that construction does not interfere with normal operations of the school.
- .4 Take reasonable measures for the control of noise and dust during operations while the building is in use.
- .5 Prevent excessive noises which will be disturbing to school operation. Machine tools which are set up in fixed locations shall be so located as to minimize noise and suitable sound deflectors shall be used if directed by the Consultant. Air compressors and pneumatic hammers shall be used only with the express authorization of the Consultant at times as directed by him or her. Gasoline welding machines or gasoline driven compressors shall not be used. The Contractor may be requested from time to time to suspend noisy or otherwise objectionable operations during certain functions, should such operations cause undue interference with the said functions. The Contractor will be expected to extend the fullest co-operation and courtesy in such cases.

1.16 SUB-TRADE AWARDS

- .1 The Contractor shall, on notice of award of the contract, obtain the Consultant's approval of a complete list of all persons or firms to which he proposes to sublet any part of the work, the trades or divisions of work which are to be sublet to each, and the amount of each trade. He shall provide to the Consultant a financial breakdown showing all divisions of the work amounting to the full sum of the contract. Mechanical and Electrical trades shall be further broken down as required by the mechanical and electrical consultants.

1.17 SAFETY DATA SHEETS

- .1 The Contractor shall submit material and safety data sheets prior to commencing installation and application of at least the following:
 - .1 lead-free solder
 - .2 sealants and caulking
 - .3 resilient flooring
 - .4 painting and finishing
 - .5 fertilizers
 - .6 pesticides
 - .7 herbicides
 - .8 all adhesives
 - .9 any other product which may give off air borne particles after installation

- .2 The Contractor and all of his Subcontractors must note that specifically, Asbestos and Asbestos containing materials, solder for piping containing lead, and Painting & Coatings containing lead and/or mercury must be excluded from any part of the Work.
- .3 The Contractor must submit Certificates of Compliance, prior to the application for Substantial performance, for each of the following items:
 - .1 An affidavit relative to the use of Lead-free solder for all domestic water lines, regardless of location.
 - .2 Products for which Material Safety Data Sheets have been submitted and accepted.
 - .3 Other Work/Products identified in the Contract Documents as requiring a Certificate of Compliance.
- .4 Each Certificate of Compliance must indicate names and addresses of the project, the Owner, the date of Issue, produce description including name, number, manufacturer, with a statement verifying that the Work/Product installed meets specified requirements and, if applicable, complies with the submitted and accepted Material Safety Data Sheets.
- .5 Each Certificate of Compliance must be issued on the trade's letterhead, properly executed, under whose work the respective Work/Product has been provided.
- .6 Each Certificate of Compliance must be endorsed by the Contractor with his authorized stamp/signature.
- .7 The Contractor must ensure that submissions are made to allow sufficient time for review without delaying progress of scheduled completion.
- .8 WHMIS Material Safety Data Sheets (MSDS) are required to be provided before or with the first delivery of every controlled product.
- .9 Ensure that worksite copies of MSDS's are available to workers wishing to consult them and to the health and safety representative and/or joint health and safety committee.
- .10 Ensure that workers are instructed in the purpose and content of MSDS.
- .11 WHMIS MSDS sheets to be kept on site at all times.
- .12 The completion security account will not be paid to the Contractor without submission of all required affidavits and requested material and safety data sheets.

1.18 REGULATING DOCUMENTS

- .1 Refer to Section 01 41 00, Regulatory Requirements. Conform to applicable Codes and Building By-Laws. Conform to the requirements of the authorities having jurisdiction, such as public utilities. Where required under The Occupational Health and Safety Act, engage a Professional Engineer to design formwork and falsework for concrete.
- .2 Provide copies of documents referred to in the Specification for joint use of Contractor and Consultant, on site.

1.19 CONTRACTOR'S RESPONSIBILITY

- .1 The Contractor will be responsible to take all necessary steps to protect personnel (workers, visitors, general public, etc.) and property from any harm during the course of the contract. The list of Contractor's responsibilities identified below is by no means comprehensive, nor is it in any priority or critical order. It is here, merely to identify the most often forgotten or ignored responsibilities of the Contractor and is reproduced only as a reminder. The Consultants and the Owner advise the Contractor that it is he who is responsible for all aspects and facets of the Project, from start to completion, from compliance with Occupational Health and Safety regulations to compliance with all codes and statutes.
- .2 The Owner may perform periodic monitoring to ensure that safety requirements are met, and that safety records are properly kept and maintained. Continued disregard for safety standards can cause the Contract to be cancelled and the Contractor removed from the site.
- .3 All work procedures and equipment shall be in accordance with Owner and Legislation standards.
- .4 All equipment shall be in safe operating condition and appropriate to the task.
- .5 Only competent personnel will be permitted on site. During the site introduction, the Owner will determine who is competent. The Contractor will cause to remove from the site any persons not observing or complying with safety requirements.
- .6 The Contractor shall comply with all Federal, Provincial and Municipal Safety Codes and Regulations and the Occupational Health and Safety Act. He shall insure that all of his Subcontractors, suppliers, installers, etc. comply with all applicable codes, regulations, and acts.
- .7 The Contractor shall supply competent personnel to implement his safety program and ensure that the Owner's standards, and those of the Occupational Health and Safety Act, are being complied with.
- .8 The Owner may hire Commissioning Agents to perform inspections of building systems at the closing stages of the work of this contract. The Contractor shall cooperate with and coordinate the work of the Owner's Commissioning Agent on site.
- .9 The Contractor shall report to the Owner and jurisdictional authorities any accident or incident involving personnel and/or property of the Contractor, Owner, or Public, arising from the Contractor's or any of his Subcontractors, execution of the work.
- .10 Provide the Owner with a copy of each site visit report by the Ministry of Labour, as soon as the report is issued.
- .11 The Contractor shall include all provisions of this contract in any agreement with Subcontractors, and hold all subcontractors equally responsible for safe work performance.

- .12 If the Contractor is responsible for a delay in the progress of the work due to an infraction of legislation or Owner Health and Safety requirements, the Contractor will, without additional cost to the Owner, work such overtime, and acquire and use for the execution of the work such additional labour and equipment as to be necessary, in the opinion of the Owner's Representative, to avoid delay in the final completion of the work or any operations thereof.

1.20 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .2 Notify Consultant in writing of any conflict between these specifications and manufacturer's instructions. Consultant will clarify any such conflict when requested.

1.21 AIR, VAPOUR, AND THERMAL SEAL

- .1 Ensure that the existing vapour barrier system is not compromised by the work of this project. Maintain air-tight and vapour-tight membrane system in exterior walls, windows, floor and roof.

1.22 SAFETY REQUIREMENTS

- .1 Comply with safety requirements outlined in Section 01 35 20.

1.23 TRUCKING COSTS

- .1 The Contractor is responsible for all costs related to trucking required for the Contract. No extra costs will be considered for weight load or limits due to seasonal conditions or restrictions on load capacities imposed by any authorities, or any similar limitations.

1.24 INDEPENDENT TESTS AND INSPECTIONS

- .1 The Contractor shall appoint inspection firms as directed by Consultant and make payments from the cash allowances specified in Division noted, except for the following, which shall be included in the contract.
 - .1 Inspection and testing required by laws, ordinances, rules, regulations or authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Testing, adjustment and balancing of mechanical and electrical equipment and systems.
 - .4 Mill tests and certificates of compliance.
 - .5 Re-testing as described in 1.28, Quality Control,

01 10 00 – GENERAL INSTRUCTIONS

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- .2 The Consultant will authorize payment of inspection services from specified cash allowances.
 - .3 Where tests or inspections reveal work not in accordance with Contract requirements, Contractor shall pay costs for additional tests or inspections as Consultant may require to verify acceptability of corrected work. In the case of soil compactions, the first retest only will be considered as part of inspection allowance.
 - .4 The Contractor shall furnish labour and facilities to:
 - .1 Provide access to work to be inspected and tested.
 - .2 Facilitate inspections and tests.
 - .3 Make good work disturbed by inspection and test.
 - .4 Pour concrete test cylinders and store as directed by Inspection Firm.
 - .5 Notify Inspection Firms sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
 - .6 Where materials are specified to be tested, delivery representative samples in required quantity to testing laboratory
 - .7 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by Consultant.

1.25 CASH ALLOWANCES

- .1 Include in the Contract Price, a stipulated sum Cash Allowance in the amount of **\$10,000.00**, which shall apply to the following aspects of the Work:
 - .2 Testing and Inspections
Unforeseen Conditions and Additional Work not indicated on the Drawings and in the Project Manual.
 - .3 Additional cash allowances, to be carried by Electrical Subcontractors, may be included in the Electrical Specifications.
 - .4 All cash allowances are supply and installation unless noted otherwise.
 - .5 The listing of a cash allowance in this section shall not be construed to imply the deletion from the base contract of any work which may be specified elsewhere. Where the expenditure of a cash allowance is not specifically outlined in the specifications, it shall be expended as per instructions and specifications to be provided by the Consultant at a later date.
 - .6 Cash Allowances, unless otherwise specified, cover the net cost to the Contractor of services, products, construction, machinery and equipment, freight, handling, unloading, storage installation and other authorized expenses incurred in performing the Work.
 - .7 The Contract Price, and not the Cash Allowance, includes the Contractor's profit in connection with such cash allowance.

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- .8 The Contract Price will be adjusted by written order by the Consultant to provide for an excess or deficit to the Cash Allowance. Any unused portion of the allowance shall be returned to the Owner at the conclusion of the Contract.
- .9 A schedule shall be prepared by the Contractor to show when items called for under Cash Allowances are required, so that the progress of the Work is not delayed.
- .10 Expend cash allowances as directed by Consultant in writing. Allowances will be adjusted to actual cost with no adjustment to Contractor's charges. Cash expenditure must identify the H.S.T. separately.
- .11 Material Allowances:
- .1 Material allowances shall include the following:
 - .1 Net cost of material
 - .2 Applicable taxes and duties, excluding H.S.T.
 - .3 Delivery to site
 - .2 For Material Allowance, the contract shall include:
 - .1 Handling at site, including unloading, uncrating, storage and hoisting.
 - .2 Protection from elements, from damage.
 - .3 Labour, installation, and finishing.
 - .4 Other expenses required to do cash allowance work (ie contract co-ordination).
 - .5 Overhead and profit.
- .12 Material and Installation Allowances:
- .1 Material and Installation Allowances shall include the following:
 - .1 Net cost of material
 - .2 Applicable taxes and duties, excluding H.S.T.
 - .3 Deliver to site
 - .4 Handling at site, including unloading, uncrating, storage and hoisting.
 - .5 Labour, installation and finishing.
 - .2 For Material and Installation Allowances, the contract shall include:
 - .1 Protection from elements, from damage
 - .2 Overhead and profit
 - .3 Other expenses required to do cash allowance work (ie contract co-ordination)
- .13 Testing and Inspection Allowances:
- .1 Testing and Inspection Allowances shall include the following:
 - .1 Net cost of testing and inspection firm, and laboratory services, designated and authorized by Consultant.
 - .2 Applicable Taxes, excluding H.S.T.
 - .2 For Testing and Inspection Allowances, the contract shall include:
 - .1 Overhead and profit
 - .2 Supply of material tested
 - .3 Other testing and re-testing work specified

- .4 Other expenses required to do cash allowance work (ie contract co-ordination)

1.26 WARRANTIES

- .1 The following is a summary of the warranties required by the contract:

	# Years
Entire Building, General Contract	2
Resilient Flooring	5
Painting	3
Visual Display Boards	2
Window Shades	5

1.27 ADDITIONAL DRAWINGS

- .1 Consultant may furnish additional drawings to assist proper execution of the Work. These drawings will be issued for clarification only. Such drawings, however, shall have the same meaning and intent as if they were included with plans referred to in the Contract Documents.

1.28 QUALITY CONTROL

- .1 The Consultants and authorized Owner staff shall have access to all areas of the Work, including any off-site construction facilities.
- .2 The Contractor shall give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals by the Consultants, or any other authorized Owner staff, or testing and Inspection Company.
- .3 If the Contractor covers, or permits to be covered Work that has been designated as outlined above, he shall uncover such work, have the inspections and tests satisfactorily completed and make good such work at no additional cost to the Owner.
- .4 The Consultants or the authorized Owner Staff may order any part of the Work to be examined, if such Work is suspected not to be according to the Contract Documents. If, upon examination, such work is found not to be in accordance with the Contract Documents, then the Contractor shall correct such Work and pay for cost of examinations and correction. If such Work is found to be in full accordance with the Contract Documents, the Owner shall pay for the cost of examination and making good.
- .5 If defects are revealed during inspection and/or testing, the appointed agency may request additional inspection and/or testing to ascertain the full degree of defects. The Contractor shall correct the defects and irregularities as reported by the inspection and/or testing agency, at no additional cost to the Owner and the Contractor shall pay all associated costs for retesting and re-inspection.

- .6 The Contractor shall provide any tools, materials or equipment that may be required by the inspection and/or testing agencies in retesting the Work.
- .7 The employment of inspection and/or testing agencies does not, in any way, affect the Contractor's responsibility to perform the Work in strict accordance with the Contract Documents.
- .8 The Contractor shall remove all defective work, whether the result of poor workmanship by him or his subtrades, use of defective or damaged products, whether or not incorporated into the Work and any Work that has been rejected by the Consultants or authorized Owner Staff as failing to conform to the Contract Documents. Replacement and execution of the affected Work shall be done in full accordance with the Contract Documents, making good other trades' work damaged by such removals or replacements at no additional charge to the Owner.
- .9 If, in the opinion of the Consultant and/or the authorized Owner Staff, it is not expeditious to correct the defective Work, or Work not performed in accordance with the Contract Documents, the Owner, may, at its sole discretion, deduct from the Contract Price, the difference in value between the work performed and that required by the Contract Documents, the amounts of which shall be determined by the Owner.

1.29 START-UP

- .1 Demolition work may start immediately upon receipt of Letter of Award from Owner, and Contractors submission of start-up documents and insurance.

1.30 PAYMENT PROCEDURES

- .1 Refer to CCDC2 2008, Stipulated Price Contract, Part 5, Payment, and amendments included in Section 00 73 00, Supplementary Conditions.
- .2 Before submitting first request for payment, submit a Schedule of Values, which shall be a detailed breakdown of the Contract price, as directed by the Consultant and as per the Owner's format. Breakdown must equal Contract price. After approval by Consultant, cost breakdown will be used as basis for progress payments.
- .3 Notwithstanding the amounts indicated on the Schedule of Values for the various aspects of the Work, the Owner reserves the right to retain additional funds for some items, where listed in the specifications. This includes amounts to be retained for maintenance manuals and for commissioning, as outlined in the applicable specification sections.
- .4 Applications for payment shall list HST separately.

1.31 REQUESTS FOR SUBSTITUTIONS

- .1 Products, materials, equipment, and methods of construction included in the Contract Documents are to be used in the execution of the Work of this Contract unless otherwise

- accepted by the Consultant in writing. Substitute products and materials may not be ordered or installed without written acceptance from the Consultant.
- .2 Changes proposed by the Contractor are considered requests for "Substitutions". Requests for Substitutions are to be submitted only by the Contractor.
- .3 Submit a complete package, including information and documentation outlined below, for evaluation by the Consultant.
- .4 A Request for Substitution must include the following information:
- .1 Data sheets for both the specified item and the proposed substitution, enabling side by side comparisons.
 - .2 Complete description of the proposed alternative product or material, including:
 - .1 Laboratory tests results
 - .2 dimensions, gauges, weights, etc.
 - .3 An explanation of how the proposed substitute differs from the specified product:
 - .1 in physical properties
 - .2 in quality and performance
 - .4 A list of any effects the proposed substitution would have:
 - .1 on service connections (wiring, piping, ductwork, etc.)
 - .2 on the work of other trades
 - .3 on construction Schedules
 - .5 Evidence that manufacturers warranties and guarantees for the proposed substitutes are the same, or exceed those required under the Contract.
 - .6 Information on the availability of maintenance services and replacement materials for proposed substitute.
 - .7 Names, addresses, and phone numbers of fabricators and suppliers for proposed substitute(s).
 - .8 Confirmation that the proposed substitution, if accepted, would have no cost impact, or indication of a credit (or extra cost) associated with the substitution.
- .5 Submissions of Requests for Substitution must be received by the Consultant well prior to any shop drawing submissions. The Shop Drawing process is not an acceptable means of requesting a substitution, and submission of drawings for products that have not been accepted will result in the automatic rejection of the Shop Drawing submission.
- .6 The burden of proof of the merit of the proposed substitution lies with the Contractor.
- .7 Substitution requests deemed incomplete or incorrect by the Consultant will be rejected.
- .8 The Consultant may require the submission of further information in order to make an informed determination on the suitability of the proposed substitution. Allow a minimum of 10 working days, upon receipt of all required information, for the Consultant's decision. Substitutions requested too late, not allowing sufficient time for thorough review by the Consultant, will be rejected.
- .9 The Owner's decision, based upon recommendations of the Consultant, of acceptance or rejection, of a proposed substitution shall be final.

1.32 PROJECT CLOSE OUT PROCEDURES

- .1 Prior to holdback release and/or final payment, the contractor shall:
 - .1 Complete all construction deficiencies to the satisfaction of the Owner.
 - .2 Provide copy of 'as-built' drawings in AutoCAD 2007 form in accordance with the current Board Specifications for Drawings.
 - .3 Provide all Original Equipment Manufacturer (OEM) warranties made in the name of Owner with a warranty start date which shall be the date set out in the Statement of Contract Deemed Completed or any subsequent acceptance date for individual equipment as may be stipulated in writing by the Owner.
 - .4 Provide all Technical documents to include:
 - .1 Maintenance Manual specifying maintenance schedules and maintenance procedures for duration of warranty period, if applicable;
 - .2 Any Operations Manual prepared by the Contractor or an OEM, supplied to the satisfaction of the Owner, if applicable.
 - .3 All passwords necessary to the operation and administration of any electronic systems or files in a sealed envelope to the project coordinator of the Owner, if applicable.
 - .4 OEM Operating Manual, if applicable.
 - .5 Parts Manuals, if applicable.
 - .6 Original version on CD ROM of any new system software installed, if applicable.
 - .5 Any other documentation or reports required by the Specifications.
 - .6 Provide adequate training for school board staff. This may be more than one session, if applicable. Coordinate training between subcontractors, school caretaker and TCDSB.
 - .7 All technical documentation is to be provided on paper in one (1) hardcopy bound, in 3-ring-binder format including table of contents and labelled tab dividers; and in two (2) electronic format on USB drives both readable on the Owner's computer.
 - .8 Shop drawings are to be provided on paper in one (1) hardcopy bound, in 3-ring-binder format; and in one (1) electronic format on USB drives both readable on the Owner's computer.
 - .9 Refer to the Toronto Catholic District School Board Procurement, Contracting Requirements and Instructions to Bidders under Division 00 – Procurement and Contracting Requirements, Part 2 General Requirements, Paragraph 2.18. Project Close Out Procedures.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL PROCEDURES

- .1 Changes in the Work ordered by the Consultant in accordance with the General Conditions of the Stipulated Price Contract shall be valued in accordance with the General and Supplementary Conditions of the Stipulated Price Contract and as more fully specified herein.
- .2 The standard documentation for effecting changes in the Work shall be as follows:
 - .1 Consultant's Notice of Change issued to the Contractor on standard form and accompanied by necessary Drawings, Schedule, Details and Specifications.
 - .2 Contractor's Quotation submitted to the Consultant showing amount by which the Contract Sum shall be adjusted by way of increase or decrease if the change is ordered.
 - .3 Consultant's formal Change Order issued to the Contractor on Standard Form after Owner's approval. Formal Change Order becomes valid when signed by Consultant, Contractor, and Owner.
- .3 Standard form of Notice of Change and Change Order may be viewed at the Consultant's office during normal working hours.

1.2 VALUATION OF CHANGES

- .1 Quotations submitted by the Contractor in response to Consultant's Notice of Change shall be fully detailed and itemized to facilitate checking and processing by the Consultant. Quotations shall be submitted in triplicate and shall:
 - .1 List Work proposed to be carried out by Contractor's Own Forces showing labour, material, plant and equipment charges together with quantities and costs (unit rates if applicable) in the assessment of such charges.
 - .2 List Work proposed to be carried out by Subcontractors showing the amount quoted by each Subcontractor as verified by the Subcontractor's quotation which shall show labour, material, plant and equipment charges together with quantities and costs (unit rates if applicable) upon which the quotation is based.
 - .3 In evaluating a change, the net cost shall be the net difference in quantity between the original and revised Work. For example: If the change affects the omission of 3m³ and the addition of 4m³ of an item, the value of the change will be assessed by applying the net difference of 1m³ (extra) and applying the appropriate mark-up specified herein.
- .2 Unit rates are only applicable if they have been accepted by the Owner in advance and included in the Contract.
- .3 Where unit rates are not established in the Contract, quote costs as follows:
 - .1 Material prices shall be the net price paid by the Contractor (or Subcontractor) after deduction of all trade discounts and the like other than reasonable discount for prompt payment.

- .2 Plant and equipment costs shall not be more than rates quoted in the latest edition of "Rental Rates on Contractor's Equipment" published by the Canadian Construction Association.
- .3 Labour costs shall be the actual rate paid to the workers in accordance with the fair wage provision of the Contract plus a "fair wage burden" mark-up of thirty-eight percent to cover Welfare contribution, Pension contribution, Vacation Pay, Trade Improvement Fund, Promotional Fund, Training Fund, Supplementary Unemployment Benefits, Check Off, Apprenticeship, Trust Fund and similar labour contract payments; Worker's Compensation Insurance, Canada Pension Scheme and other statutory charges on labour.
- .4 Unless otherwise specified in the Form of Tender, unit rates quoted in Tender and incorporated in the Contract shall include the "fair wage burden" for labour as specified in paragraph 1.2.3.3 hereof, but shall be exclusive of mark-up for overhead and profit.
- .5 Where Contract unit rates (if applicable) are to be modified:
 - .1 Where a change involves an extra/credit of more than \$10,000.00 (using Contract unit rates), a new unit rate must be negotiated to reflect a fair rate considering the volume of work involved.
- .6 "Overhead", means all expenses to carry on work, except items included in the cost as defined above, and shall include but shall not be limited to: use of Plant, tools, supervisory staff, bonds, and insurance.
- .7 The following maximum mark-ups for overhead and profit may be applied, as appropriate, to the net costs assessed as above where the effect of the proposed change is an increase in the Contract Sum. If the effect of the change is a decrease in the Contract Sum no mark-up shall be applied:
 - .1 Mark-up on Contractor's work will be 10% combined overhead and profit.
 - .2 Contractor's mark-up on Subcontractor work will be 5% combined overhead and profit.
 - .3 mark-up charged by Subcontractors on their own work will be 10% combined overhead and profit
 - .4 Main Subcontractor's mark-up on minor subcontractor's work will be 5% combined overhead and profit.
 - .5 Changes involving a decrease in the contract sum will be calculated in the same way except that no overhead or profit shall be charged.
- .8 When work deleted from the Contract is later added back into the Contract, additional overhead and profit will not apply to the reinstated work. Overhead and profit amounts are not included in credits and so remain included in the Contract amount.
- .9 Where overhead and profit mark-ups are to be modified:
 - .1 Where a change involves an extra/credit of more than \$20,000.00, smaller mark-up percentages must be negotiated to reflect a fair mark-up considering the volume of work involved.
- .10 It shall be understood and agreed that the mark-ups specified above shall be deemed to provide for payment in full for all items that in the custom of the Construction Industry in Ontario are considered to be site or head office overhead, profit, supervision, administration and labour costs.

- .11 Claims for extras will not be considered unless they can be verified by the Consultant. Site work, excavation, backfill, footings and all below grade work must be visually inspected by the Consultant and documented by an independent third party (ie Surveyor) BEFORE the work is hidden.
- .12 The signing of a Change Order by all parties shall be deemed to be formal acceptance by the Owner of the Contractor's quotation. Following the issue of a Change Order the Owner will not entertain claims for extra payments due to errors alleged to have been made in the Contractor's Quotation.
- .13 Under no circumstances will a claim for extra be considered if it is for work recommended by the Inspection Company unless the Consultant has been advised and his approval obtained PRIOR TO THE EXECUTION OF THE WORK.

END OF SECTION

PART 1 – GENERAL

1.1 SITE SUPERVISOR

- .1 The Contractor shall be fully responsible for co-ordinating and expediting the work of all Subcontractors and shall employ a qualified Site Supervisor who shall be in full time attendance on this project.
- .2 Prior to the Preconstruction Meeting, the Contractor shall inform the Consultant of their choice for Site Supervisors and shall provide resumes outlining qualifications and related work experiences.
- .3 Site Supervisor shall have as a minimum:
 - .1 Recent, previous experience with renovation or addition projects involving schools and similar institutional facilities.
 - .2 Successful completion of a multi-session Supervisor's training course conducted by a recognized Construction Association in Ontario.
- .4 The Supervisors must be assigned to projects for the duration of the construction period, until the buildings are fully occupied by the Owner.
- .5 The Owner and the Consultant reserve the right to reject the proposed Supervisors should they feel that they are not fully qualified to assume the responsibilities of the positions.
- .6 There shall be a minimum of one full time Site Supervisor dedicated to the site.
- .7 Site Supervisor must carry a cell phone at all times during construction with the ability to be reached directly during all work hours and the ability to have voicemail recorded during all non-work hours including weekends and holidays.
- .8 Once the Supervisors are confirmed, there will be no change permitted without the written consent of the Consultant.

1.2 CONSULTANT/CONTRACTOR MEETING

- .1 Prior to the commencement of the Work, the Contractor together with the Consultant shall mutually agree to a sequence for holding regular "site meetings" on same day (to be determined) of every second week.

1.3 PRE-CONSTRUCTION MEETING

- .1 Immediately prior to construction, upon notification, attend at location of Owner's choice, pre-construction meeting, along with authoritative representatives of certain key Subcontractors as specifically requested by the Consultant.
- .2 Purpose of meeting is as follows:

- .1 Review project communications procedures.
- .2 Review contract administration requirements including submittals, payment and change order procedures.
- .3 Identify all critical points on Construction Schedule for positive action.
- .4 Identify any product availability problems and substitution requests.
- .5 Establish site arrangements and temporary facilities.
- .6 Review any items which, in the Owner's, Consultant's and Contractor's opinion, require clarification.
- .7 Exchange names & addresses of all key personnel representing Owner, Consultant, Contractor and Subcontractors.
- .8 Identify Consultant's inspection requirements.

1.4 PROJECT MEETINGS

- .1 Contractor shall Chair project meetings on Site, every two weeks during the course of the work and will issue minutes to Owner's Representative, Consultants, and all other affected parties.
- .2 Contractor shall take minutes of meeting showing:
 - .1 List of persons attending.
 - .2 Decisions taken.
 - .3 Instructions required or issued - Allocating responsibilities to action items.
 - .4 All matters discussed.
 - .5 Schedule Update - Progress, Delays.
- .3 Contractor shall provide suitable on-site accommodation for meeting, attend all meetings, arrange for attendance of all necessary Subcontractors, and distribute minutes of previous meeting to Subcontractors and Suppliers as appropriate.
- .4 The Contractor's representatives at site meetings must include the project co-ordinator as well as site Supervisor.
- .5 Contractor shall hold regular co-ordination meeting with Subcontractors and shall chair and minute each meeting. Copies of minutes shall be distributed to relevant Trades and Consultants and Owner.
- .6 In addition to jobsite meetings, Contractor shall arrange for, chair, and record safety meetings and regular meetings with his Subcontractors and suppliers. He shall distribute copies of the minutes of these meetings to all Subcontractors, Owner and Consultant.

1.5 ON SITE DOCUMENTS

- .1 The Contractor shall maintain the following documents, up to date, in the site office:
 - .1 Contract Documents
 - .2 Reviewed Shop Drawings - Printed in full colour or redline
 - .3 All instructions and changes, i.e. Work Authorization, Jobsite Instructions, Notices of Contemplated Change, Change Orders, etc.
 - .4 All inspection and test reports

- .5 Permit drawings and specifications
 - .6 Authorizations, approval documents, permits, special rulings, etc., issued for the project by Authorities Having Jurisdiction.
 - .7 Details of tested assemblies being used on the project; ULC, cUL, etc.
 - .8 As-Built drawings.
-
- .2 Documents listed above shall be printed, full size documents, not only digit format.
 - .3 Maintain copies of Regulating Documents referred to in the specifications, up to date, in the site office.
 - .4 Maintain a file of Material Safety Data Sheets (MSDS) for all materials being used on site and make available to all concerned, in the site office.

END OF SECTION

PART 1 – GENERAL

1.1 SCHEDULE

- .1 Within two (2) days of receiving written notification of the contract award, the Contractor will submit a detailed construction schedule. Base the submission on the commencement of completion dates of the Contract and indicate specified restraints and milestones, activities and durations for shop drawing submission and approval, testing, fabrication and delivery, construction sequence and timing, interdependencies and constraints. Include the procurement activities for major elements and mechanical equipment. Ensure the participation of all major Subcontractors and Suppliers. Schedule must include reasonably detailed breakdown of mechanical, and electrical work.
- .2 Schedule shall show:
 - .1 Commencement and completion dates of Contract.
 - .2 Commencement and completion dates of stipulated stages if any.
 - .3 Commencement and completion dates of Trades.
 - .4 Order and delivery times for materials and equipment, where possible.
 - .5 Dates for submission of Shop Drawings, material lists and samples.
 - .6 Any other information relating to the orderly progress of Contract, considered by Contractor to be pertinent.
- .3 The schedule shall be reviewed and updated at every Site meeting.
- .4 Include with each update a written report of activity progress reflected in the revised Schedule, and the corrective actions which have been made or are to be taken to maintain progress on the schedule in the future, anticipated delays, resources availability, schedule changes, and work to be completed in the next 2 week period.

1.2 UPDATING AND MONITORING

- .1 Set up format of Construction Schedule to allow plotting of actual progress against scheduled progress.
 - .1 Allow sufficient space for modifications and revisions to the Schedule as Work progresses.
 - .2 Format shall be approved by the Consultant.
- .2 Display copy of Schedule in Site office during complete construction period and plot actual progress weekly.
- .3 Updating:
 - .1 Arrange participation, on Site and off Site, with Subcontractors and Suppliers, as and when necessary for the purpose of updating schedule and monitoring progress.
 - .2 Conduct reviews of progress and update schedule, distributing copies to Consultant, Owner and Sub-Trades weekly or as directed by Consultant.

1.3 PROGRESS REPORTS

- .1 Keep a permanent written report on the Site of progress of the Work. This record to be open to review by the Consultant. A copy to be furnished to the Consultant upon request.
- .2 Indicate daily the number of persons engaged on the work (including subtrades) and the division and section of the work upon which each group of workers is engaged, in sufficient detail to record dates of construction of each particular section of work.
- .3 Record to show dates of commencement and completion of trades and parts of the work coming under the Contract, including reports on daily weather conditions, excavation work, erection and removal of forms, and other similar pertinent information.
- .4 Report delays (and potential delays) giving reason for delay and action being taken to resolve the problem.

1.4 PROGRESS PHOTOGRAPHS

- .1 Concurrently with monthly application for payment, submit 10 electronic format colour images, which shall clearly show overall progress of Work. Provide an index with printed images clearly identified with name of project, description of view and date taken.

1.5 QUALITY OF WORK / STATUS REPORTS

- .1 The Contractor shall take full responsibility for the quality of work on site. The Contractor shall furthermore notify workers of deficient work immediately upon receipt of notification of deficiencies by the Consultant, Subconsultants and/or Owner.
- .2 The Contractor shall provide a weekly status report on the status of deficiencies identified by the Consultant and Subconsultants. The report shall include a description of each deficiency, status of the deficiency, description of corrective action taken, value (cost) to the correct deficiency and trade (person) responsible for deficiency. The report shall be typewritten on the Contractors letterhead. A copy of the report format shall be submitted at least 2 weeks prior to the first progress draw, for review. Submit monthly status reports with each progress draw.
- .3 After Substantial Performance, the Contractor shall continue provide the deficiency status reports on a monthly basis, including updated lists of deficiencies identified by the Owner and consultants

END OF SECTION

PART 1 – GENERAL

1.1 BEFORE COMMENCEMENT OF WORK

- .1 Obtain the documents listed under this heading and supply to Consultant within the time stipulated in the Specification, or if not so stipulated, before issue of the first Certificate.
 - .1 Performance Bond/Labour and Material Bond.
 - .2 Insurance Policies required under General Conditions of Contract - Insurance.
 - .3 Certificates of good standing from the Workplace Safety & Insurance Board for the Contractor and all Subcontractors.
 - .4 Shop Drawing Schedule.
 - .5 Permits required for work of Electrical Trades.
 - .6 Permits for temporary structures, hoists, etc.
 - .7 Schedule of Values: Refer to General Conditions of Contract.
 - .8 Estimate of monthly progress claims (cash flow schedule).
 - .9 Construction Schedule.
 - .10 Equipment Delivery Schedule.
- .2 Concurrently, with schedule of values, submit cash flow schedule broken down on a monthly basis, indicating anticipated monthly progress billings for duration of the Contract.
- .3 Submit schedule in a format acceptable to the Consultant. Indicate anticipated submission dates and review periods. Highlight critical items.
- .4 Submit, in a format acceptable to the Consultant, a list of manufactured equipment complete with order dates, anticipated delivery dates, and dates required on site to meet progress schedule. Update schedule at least once a month or more often if directed by the Consultant. Clearly indicate late deliveries and anticipated impact on construction schedule. Include in schedule required delivery dates for products supplied by Owner.
- .5 Schedule of Values:
 - .1 Before submitting first request for payment, submit a detailed breakdown of the Contract price, as directed by the Consultant and as per the Owner's format. Breakdown must equal Contract price. After approval by Consultant, cost breakdown will be used as basis for progress payments.

1.2 DOCUMENTS AND ACTION REQUIRED DURING PROGRESS OF CONTRACT

- .1 Perform the action and/or obtain the documents listed under this heading and supply to the Consultant, within the time stipulated in the Specification or, if not so stipulated, as soon as possible following Consultant's request.
- .2 Adjust Cash Allowances by award of separate Contracts, where appropriate.
- .3 Documents specified under Section 01 10 00, General Instructions and Section 01 33 23, Shop Drawings, Product Data and Samples.

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- .4 Progress photographs, submitted concurrently with monthly application for payment. Refer to Section 01 32 00.

 - .5 As-Built Documents:
 - .1 The Owner requires as-built documents for all architectural and electrical changes on completion of the construction.
 - .2 The Contractor, and Electrical Subcontractor shall print a complete and separate set of white prints of Contract Drawings and Project Manual to keep on the site at all times.
 - .3 The drawing prints shall be marked up by responsible personnel of the Contractor and Subcontractors to record clearly, neatly, accurately and promptly showing all locations of buried mechanical work and deviations from the contract documents.
 - .4 The Project Manual shall be similarly marked up to reflect deviations from the Contract Documents, as well as indicate materials used, colours selected, etc.
 - .5 The accurate location, depth, size and type of each underground utility and service line shall be recorded before concealment to ensure accurately directed future access to these buried lines.
 - .6 The as-built documents will be reviewed at regular intervals by the Consultant and the quality of performance by the Contractor and Subcontractors in developing these records will be taken into consideration when reviewing the monthly applications for payment submitted by the Contractor.
 - .7 Prior to the date of Substantial Performance incorporate all changes made to the building through Change Orders and Jobsite Instructions to the as-built documents. Return them to the Consultant for review, as specified in Section 01 78 00, Close-out Submittals.
 - .8 Mark "as-built" changes in red coloured ink.
 - .9 Record following information:
 - .1 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
 - .2 Field changes of dimension and detail.
 - .3 Changes made by Change Order or Supplementary Instructions.
 - .10 Clearly mark each of the drawings, "Project As-Built Record Copy".
 - .11 Final completion of these Drawings shall be a condition precedent to the issuance of Consultant's final payment certificate.
 - .12 Refer to Electrical Specification Divisions for more specific requirements regarding preparation and submission of final Record Drawings.
 - .13 For additional submittal requirements, refer to the Toronto Catholic District School Board Procurement, Contracting Requirements and Instructions to Bidders under Division 00 – Procurement and Contracting Requirements, Part 2 General Requirements, Paragraph 2.18. Project Close Out Procedures.

END OF SECTION

PART 1 – GENERAL

1.1 SCHEDULE

- .1 Within 5 working days after award of Contract, prepare and submit to Consultant for comment, a schedule fixing the dates for the submission of all Shop Drawings, product data and samples.
- .2 Allow reasonable promptness for Consultant to review submissions, exclusive of time required for inter-office transmissions.
- .3 All shop drawings must be reviewed and stamped by the Contractor prior to submission to the Consultant.

1.2 GENERAL

- .1 Submit to Consultant, for review, Shop Drawings, Product Data, Samples, and other required submittals specified.
- .2 All shop drawings and related submittals must be reviewed and stamped by the Contractor prior to submission to the Consultant.
- .3 Until submittal is reviewed, Work involving relevant product may not proceed.
- .4 Do not use for construction, Shop or setting Drawings or diagrams which do not bear Consultant's stamp and signature.
- .5 Shop drawing reviews do not authorize changes in cost or time, which may only be accomplished by an appropriate Change Order issued through the Consultant.
- .6 Shop drawings shall be for products as specified or otherwise approved by the Consultant. The shop drawing process is not a means of requesting substitutions.
- .7 Submission and subsequent review of Shop Drawings constitute a service and does not entitle the Supplier or Subcontractor to the right to remuneration until the materials are supplied and installed on the Site in accordance with the Contract.
- .8 The Contractor must include for delivery and pick up of shop drawings to/from the Consultant by hand or courier.
- .9 The Contractor must include for reproduction of shop drawings after review by the consultants.

1.3 SHOP DRAWINGS

- .1 Drawings shall be copies of original drawings prepared by Contractor, subcontractor, supplier or distributor, for the work of the Contract which illustrate appropriate portions of

the Work. Shop drawing submissions shall show pertinent information for incorporation of the products and equipment, including the following, as applicable:

- .1 fabrication details
 - .2 dimensioned layout drawings, including clearances, with site dimensions
 - .3 relationship to adjacent work
 - .4 setting or erection details
 - .5 performance requirements
 - .6 operating weights of equipment
 - .7 installation instructions
 - .8 service connection requirements, including wiring diagrams
 - .9 single line and schematic diagrams
 - .10 additional information as may be specified in applicable Specification Sections.
- .2 Submit Shop Drawings with transmittal forms listing:
- .1 the project name and number
 - .2 the names of the manufacturer, supplier, subcontractor
 - .3 the applicable Drawing numbers
 - .4 the number of copies
 - .5 the names of the items included the submittals
 - .6 number of Specification section to which the Shop Drawings refer
 - .7 dates and revision numbers, and submission numbers
- .3 All dimensions on shop drawings must be in metric.
- .4 Where approvals are required by Authorities having jurisdiction, submit Shop Drawings to those authorities and obtain the approvals required.
- .5 Email Submission:
- .1 Submittals are to be formatted for 11" x 17" (279 x 432mm) sheets and submitted by email.
 - .2 Submittals must be submitted in the same size and scale as they were originally prepared. Drawings may not be reduced in size for email transmission.
 - .3 Email submissions must be in pdf format and must be high quality documents, preferably generated by computer from the original documents (rather than scans of printed documents). If digital submissions are of insufficient quality, hard copies will be required.
 - .4 Emailed documents shall be reviewed and stamped digitally by the Contractor, or accompanied by a separate sheet from the Contractor listing the documents reviewed and bearing the Contractor's review stamp, along with copies of any revisions made.
 - .5 Email submission is only used as a convenient means of distributing drawings, in lieu of sending hard copies by courier. Reviewed drawings must still be printed for job site files, record copies, etc. All site copies shall be red line prints or colour prints.
- .6 Drawings shall be of a size and quality which will be readily reproduced. Shop drawings must be certified to have been reviewed and corrected by Contractor and sub-contractor responsible for forwarding to the Consultant.
- .7 Shop drawings are to be to scale. Scale shall be large enough to adequately review details included. Provide site measured dimensions on drawings wherever possible.

- .8 All requirements for shop drawings apply also to resubmissions of shop drawings, as may be required by the Consultant.
- .9 Revise all reviewed shop drawings to incorporate Consultant's comments. One complete set of final, revised Shop Drawings, used for construction, shall be submitted to the Consultant.
- .10 Shop Drawings are required for the following items:
 - Resilient Flooring
 - Visual Display Boards
 - Window Shades
 - Electrical equipment as listed in relevant specification sections.
 - Other items as may be requested within the specifications.
- .11 Refer also to the General Conditions of the Contract.

1.4 PRODUCT DATA

- .1 Certain Specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of Shop Drawings.
- .2 The above will be accepted if they conform to the following:
 - .1 Delete information which is not applicable to project.
 - .2 Supplement standard information to provide additional information applicable to project.
 - .3 Show dimensions and clearances required.
 - .4 Show performance characteristics and capacities.
 - .5 Indicate operating weight of equipment.
 - .6 Show wiring diagrams and controls.
 - .7 Add to standard sheet the Project identification data.

1.5 SAMPLES AND MOCK-UPS

- .1 Where specified, shown or considered necessary, submit duplicate samples for Consultant's approval.
- .2 Where colour, pattern or texture is criterion, submit full range of samples.
- .3 Samples must correspond in every respect to materials supplied for project.
- .4 Construct field samples and mock-ups at locations acceptable to Consultant. Construct each sample or mock-up complete, including work of all trades required to finish work.
- .5 Do not proceed with fabrication or delivery of materials until samples are approved.
- .6 Reviewed samples or mock-ups will become standards of workmanship and material against which installed work will be checked on project.

- .7 Approval of samples does not imply acceptance of finished work.

1.6 CONTRACTOR'S RESPONSIBILITY

- .1 Prior to submission to the Consultant, review all shop drawings, samples, product data, and other required submittals as follows:
 - .1 Verify that the submission is for products as specified, or otherwise approved by the Consultant.
 - .2 Ensure that the submission is complete.
 - .3 Note any potential interference issues and co-ordinate with the trades to avoid these conflicts.
 - .4 Verify:
 - .1 Field measurements.
 - .2 Field construction criteria.
 - .3 Catalogue numbers and similar data.
- .2 Coordinate each submittal with requirements of Work and Contract Documents. Refer to Section 01 10 00, General Instructions, and the subsection on Coordination.
- .3 Notify Consultant, in writing at time of submission of any deviations in submittal from requirements of Contract Documents.
- .4 Stamp, initial or sign each Drawing, certifying approval of submission, verification of field dimensions and measurements and compliance with Contract Documents, prior to submission to the Consultant(s).
- .5 The Contractor shall be responsible for reproducing and distributing reviewed shop drawings, except for those copies required by the Architect and Consultants.
- .6 After Consultant's review, distribute copies as follows:
 - .1 Job Site file (2 copies) - colour or redline copies
 - .2 As-built documents file.
 - .3 Other prime contractors.
 - .4 Subcontractors.
 - .5 Supplier.
 - .6 Fabricator.
 - .7 Authorities having jurisdiction, where required by Codes and/or By-Laws, i.e. structural steel and sprinklers.
 - .8 Owner's Maintenance Manual (revised, as-built copies).
- .7 Distribute samples as directed by the Consultant.
- .8 Ensure that all samples are approved by authorities having jurisdiction, supplier for correct application in Project, and other parties such as Owner in time to permit approval prior to ordering of quantity delivery to Site.
- .9 The Contractor shall advise all Trades, Subcontractors and suppliers of the limits of the Consultant's responsibility with respect to Shop Drawings and other submittals, as detailed below.

1.7 CONSULTANT'S RESPONSIBILITY

- .1 With reasonable promptness from the receipt of samples and Architectural shop drawings, the Consultant shall review them and return them to the Contractor. Allow 10 working days for review of shop drawings.
- .2 Review by the Consultant is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that the Consultant approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to the processes or techniques of construction and installation and for co-ordination of the work of all subtrades.
- .3 Shop drawing markings shall be interpreted as follows:
 - .1 Shop drawings marked "REVIEWED" by Consultant and/or Subconsultants are released for construction.
 - .2 Shop drawings marked "REVIEWED AS NOTED" by the Consultant or his Subconsultants are also released for construction, after revisions noted are made; with final copies sent to the Consultant.
 - .3 Shop drawings marked "REVISE AND RESUBMIT" by the Consultant or his Subconsultants are NOT released for construction and must be resubmitted after being revised in accordance with the consultants' comments.
 - .4 Shop Drawings marked with the Consultant's "RECEIVED" stamp only have not been reviewed by the Consultant.
- .4 Review by the Architect does not in any way constitute review of the design of engineering elements, which form part of the Contract Document's prepared by others.
- .5 Shop drawings for products that are not a specified item, or an approved substitution, will be rejected without being reviewed.
- .6 Shop drawings which have not been requested will be returned to the Contractor with no action taken by the Consultant.

END OF SECTION

PART 1 – GENERAL

1.1 CONSTRUCTION SAFETY

- .1 Observe and enforce construction safety measures required by the Ontario Building Code, Canadian Construction Safety Code, Ontario Occupational Health and Safety Act, Workplace Safety & Insurance board (WSIB) and Municipal Statutes and Authorities.
 - .1 The Contractor is again reminded that the Contractor is responsible for Occupational Health and Safety on this project. The items listed below are only guidelines of the Owner's expectations in this regard and not to be construed to be comprehensive or total in nature.
- .2 In particular, the Ontario Construction Safety Act, the regulations of the Ontario Department of Labour and Ontario Hydro Safety Requirements shall be strictly enforced.
- .3 In event of conflict between any provisions of above authorities the most stringent provisions will apply.
- .4 The Owner will take every reasonable precaution to prevent injury or illness to employees and the public, participating in Owner activities, or performing their duties. This shall be accomplished by providing and maintaining a safe, healthy working environment and by providing the education necessary to perform these activities or duties safely.
- .5 The Owner is also vitally interested in the health and safety of Contractors and their workers performing work for the Owner. Cooperation and support of the Contractor in the protection of the workers from injury or occupational disease is a major, continuing objective of the Owner. To achieve these goals, the Owner, in concert with the Contractors, will endeavour to make every effort to ensure that the Contractors provide a work site which is a safe and healthy work environment. The Owner insists that all Contractors and their workers are dedicated to the continuing objective of reducing risk and injury.
- .6 The Contractor covenants and agrees to comply with all statutory and other obligations, including without limitation, the provisions of the Occupational Health and Safety Act (Ontario) and all Regulations thereto, and all amending and successor legislation, in connection with all work performed by either the Contractor, Sub-contractors, or any Other Contractor on, or in connection with, the Project.
- .7 Without limiting the foregoing, for the purposes of this Contract, the Contractor agrees that it shall be the "constructor" of the Project within the meaning of the Act, and as such, shall assume all the obligations and responsibilities, and observe all construction safety requirements and procedures, and duties of inspection imposed by the Act on the "constructor", as therein defined, for all work and services performed by the Contractor, Subcontractors and Other Contractors on or in connection with the Project. The Contractor further covenants and agrees that the Owner and its existing and former officers, trustees, employees and agents, and their respective heirs, executors, administrators, successors and assigns shall be released from any obligations or liabilities otherwise imposed on the Owner, or on any of them, pursuant to the Act in connection with the Project, and that the Contractor shall assume all liability and responsibility in connection with same. The Contractor agrees to save harmless and

indemnify the Owner from any losses, damages, costs and expenses of any kind, or nature whatsoever, including all legal expenses, and all defense costs and related expert or consulting fees, incurred by the Owner, or any of them, arising in connection with the failure, default, or inability of the Contractor of the Owner, or any of them, to comply with any of the aforementioned statutory, or other legal requirements, or arising in connection with any breach by the Contractor of any of its covenants, agreements and obligations under this Contract.

- .8 The Contractor shall inform and instruct Other Contractors that they, while performing work on this project, are under the authority of the Contractor. Other Contractors are to discuss and co-ordinate with, and follow instructions from, the Contractor on all matters of site access, vehicles, deliveries, storage, temporary facilities, coordination with the work of other subcontractors, work methods, scheduling, labour conditions, construction safety, environmental protection, security and all other matters which relate to the safe and proper execution of construction work.
- .9 The Contractor shall ensure that all supervisory personnel on job site are fully aware of the procedures and requirements outlined herein and comply with all requirements specified.
- .10 All contractors are responsible to ensure that all machinery and/or equipment are/is safe and that the workers perform their tasks in compliance with established safe work practices or procedures. Workers must receive adequate training in their specific work tasks to protect their health and safety.
- .11 The Contractor shall be responsible for all persons and companies performing work, including other Contractors, on this project, at all times, up to and including, the date of Substantial Performance of the Work. Authority for coordination and instructions relating to all matters which relate to the safe and proper execution of construction work shall rest with the Contractor. The Contract Price will include the Contractor's fees for the coordination and supervision of the work of all other contractors.
- .12 In addition to the responsibility of all contractors as outlined in 1.1.10, above, Subcontractors will be held accountable for the health and safety of workers under their supervision.
- .13 Every worker must protect his/her own health and safety by working in compliance with the law and with safe work practices and procedures established by the authorities having jurisdiction.
- .14 All sections of the Occupational Health and Safety Act for Industrial Establishments, latest edition, and the Occupational Health and Safety Act for Construction Projects, latest edition, shall be enforced, by the Contractor, in their entirety, throughout the duration of the construction project.
- .15 The Contractor shall provide the Consultant with the telephone number where the Contractor or his representative can be reached at any time, day or night, for the duration of the contract.
- .16 Where an accident, explosion, or fire causes a person injury at the work place, and the worker is disabled from performing the usual task, the Contractor shall prepare a written notice and shall forward same to the Ministry of Labour within four days of the occurrence

with a copy to the health and safety representative or the Joint Health and Safety Committee, containing such information and particulars as may be prescribed.

- .1 Where a person is killed or critically injured from any cause at the work place, the Contractor shall immediately call the Ministry of Labour. A written notice from the Contractor shall be given to the Ministry of Labour within forty-eight hours after the occurrence, containing such information and particulars as may be prescribed, with copies to the Consultant and the Owner's Representative.
- .2 The Contractor is advised that the accident scene is under the jurisdiction of the Ministry of Labour and no wreckage, articles, etc., shall be interfered with, disturbed, destroyed, altered or carried away at the scene, or connected with the occurrence, until the Ministry of Labour has given permission.

1.2 REPORT ACCIDENTS

- .1 Promptly report in writing to the Consultant all accidents which cause death, personal injury or property damage, arising out of or in connection with the performance of the work on or adjacent to the site. Where death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the Consultant and to the relevant public authorities.
- .2 If any claim is made by anyone against the Contractor or Subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Consultant giving full details of the claim.

1.3 FIRST AID FACILITIES

- .1 Provide at the site the equipment and medical facilities necessary to supply first-aid service to anyone who may be injured in connection with the Work, and to conform to the requirements of the authorities having jurisdiction over the Work.

1.4 FIRE SAFETY REQUIREMENTS

- .1 The appropriate clauses of the Ontario Building Code, Ontario Fire Code, National Building Code of Canada and National Fire Code relating to fire safety and protection shall be strictly followed.
- .2 Provide and maintain free access to temporary or permanent fire hydrants acceptable to local fire department.
- .3 Provide sufficient temporary standpipes and connections, fire hose, valves, temporary cabinets, extinguishers, etc. to comply with the requirements of the governing Municipal and Provincial authorities.
- .4 Make necessary adjustments and modifications to temporary fire protection as required during progress of the work. Remove such temporary work when permanent system is installed and operating.

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- .5 Conform to “Guidelines for Maintaining Fire Safety During Construction in Existing Buildings”, provided by the Office of the Ontario Fire Marshal.
 - .1 Maintain existing exits and access to exits. Where an exit must be blocked, provide an alternate exit acceptable to Authorities Having Jurisdiction.
 - .2 Provide minimum 45 minute rated fire separations at junction between existing corridors in occupied spaces and new corridors under construction. Any required access through these partitions shall be with rated doors, frames with closers and latching.
 - .3 Maintain exiting fire department access route or provide new, or temporary, access route acceptable to the fire department.
 - .4 Do not store combustible materials adjacent to existing building or where such materials could pose a fire hazard to the building or the occupants.
 - .5 Where temporary openings are made in existing floors, pack with mineral wool insulation to create temporary fire barrier.
 - .6 Existing fire alarm system is to be kept operational throughout the construction period. Keep fire department informed of any temporary shutdowns and arrange for alternate fire safety measures to be implemented during that period.
 - .7 Refer to the Ontario Fire Code for requirements for temporary shutdown of fire protections systems, including sprinklers and standpipe systems.
 - .8 Modify Fire Safety Plan in accordance with the Fire Code, when required to facilitate construction. Such modifications shall be determined in cooperation with the Owner and the local fire department.

1.5 OVERLOADING

- .1 Ensure no part of Work is subjected to a load which exceeds the design live loads shown on the structural drawings. Ensure that scaffolding and false work are not overloaded. Do not cut load bearing members without approval of Consultant.

1.6 FALSEWORK

- .1 Design and construct falsework in accordance with CSA S269.1 latest version.

1.7 VISITORS

- .1 Provide hard hats for use by all visitors.

1.8 ADDITIONAL REQUIREMENTS FOR OCCUPIED SITES

- .1 The existing Schools may partially be occupied throughout the Construction Period, additional safety requirements will apply, as outlined below:
- .2 Access Control:
 - .1 The Contractor shall instruct all suppliers and subcontractors that they are required to contact the Site Supervisor by cell phone prior to entering the site and await escort.

- .2 Gates and construction enclosure must remain closed and locked at all times and only opened for the time required for access/egress of authorized vehicles or personnel.

- .3 Site Communication:
 - .1 The Contractor shall provide the Owner with an emergency contact telephone number at which the Site Supervisor or other Contractor representative can be contacted directly during work hours and with voicemail available at all other times, including weekends and holidays, which will be checked regularly.
 - .2 Site Supervisor and flagman must have means of direct communication available at all times during work hours.
 - .3 Contractor shall be in daily communication with the Owner to determine any activities which may involve safety concerns, whether school related or construction related.

1.9 SIGNAGE

- .1 Provide signage indicating " Danger - Keep Out", "Hard Hats must be worn at all times", "Safety Shoes must be worn at all times", "No Trespassing", etc., mounted on all sides of Site, and additional signs as necessary to adequately warn the public and workmen of the inherent dangers of the site and requirements to maintain personal safety. Safety Signage is also required at all construction entrances.

END OF SECTION

PART 1 – GENERAL

1.1 HAZARDOUS MATERIALS

- .1 The Ontario Occupational Health and Safety Act requires the Owner to provide a list of Designated Substances to all prospective Contractors and they in turn must supply the list to their sub-trades who are likely to handle or disturb the material.
- .2 Materials that may be present in the area of construction may include any or all of the following and would be expected in normal construction:
 - .1 Lead: in paint films, in solder or pipe for drinking water, in solder for other pipe or electrical components.
 - .2 Mercury : found in elemental form in an ampoule in thermostats or in electrical soft switches, as a gas in fluorescent light tubes or in paint films and caulk.
 - .3 Silica: primarily as Quartz, bound in building materials including but not limited to concrete, brick and block.
- .3 In accordance with the Ontario Health and Safety Act and regulations enacted under the Act the Contractor and sub-trades shall take appropriate precautions for the building and their work force. Such precautions may include, for the substances listed, the measures outlined below.
- .4 Lead:
 - .1 Any operation involving lead-based paints may potentially produce significant exposures to lead if adequate controls are not provided. Exposure varies with the type of operation being employed.
 - .2 The presence of lead in building finishes left intact or found peeling in a few locations produces little exposure for workers to lead through contact, inhalation or ingestion.
 - .3 Operations involving the hand sanding and scraping of lead based paints can elevate exposure through inhalation. The use of a negative pressure respirator equipped with high efficiency particulate air (HEPA) filters is recommended to reduce exposure.
 - .4 Operations involving the machine sanding or abrasive cutting of paint and other surface coatings containing lead can elevate levels of much finer dust. The spray application of a lead bearing paint or coating produces a respirable fume. These operations increase the likelihood of exposure by inhalation. A negative pressure air-purifying respirator equipped with HEPA filters is recommended for these operations.
 - .5 Operations involving oxyacetylene torches or other heating operations produces the most significant exposure to lead in particular through inhalation and by contact of lead fumes solidifying on skin. A powered air-purifying respirator equipped with HEPA filters and full body covering is recommended for these operations.
 - .6 Lead found in solder of other pipe systems and electronic components poses no threat to the work force by inhalation, ingestion or by contact with the exception of maintenance or renovation activities. The maintenance of the pipe or electrical component may produce some exposure to lead fume during the seating on of lead solders but for a short duration of time. Inhalation is the source of entry and exposure is not very significant.

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- .7 All items identified in this section may be disposed of as regular non-hazardous waste unless concentrated. Metallic lead may be reclaimed through scrap metal dealers.
- .5 Mercury:
- .1 Fluorescent light tubes contain small quantities of mercury gas. These sealed units do not pose any harm in the workplace except in the case of breakage. There are no liquid or residue present after breakage and spill cleaning is not a concern. A recommended practice is to evacuate the work area when breakage occurs. The gas will diffuse in about five to ten minutes and cleanup of the tubes can be performed. Mercury can be taken into the body by inhalation only from this source.
- .2 The same precautions as those indicated for lead-based paints would apply to mercury in paints.
- .3 Elemental mercury found in ampoules in electrical equipment may be disposed of as regular waste and should be turned over to the Owner for disposal through commercial recyclers. The other forms (light tubes and painted surfaces that have been concentrated) can be disposed of as regular waste.
- .6 Silica:
- .1 Silica is presumed to be present in cement, cement blocks, bricks and mortar of the building. Unless the silica in these materials is reduced to respirable size (5 um or less) and the airborne concentration exceeds the time weighted average exposure of 0.2 milligrams per cubic metre in air, no adverse health effects are expected to occur. Building construction, renovation or demolition do not normally raise excessive exposure to silica with the exception of jack hammering, dry saw cutting or sand blasting. There is little likelihood for the work force to be exposed to excessive levels of respirable silica dust if the material is suppressed with water spray or flow. Respiratory protection is dependent on the type and airborne concentration of respirable silica present in the particular work environment.
- .2 Prior to the disposal of building materials a leachate toxicity test in compliance with Water Management Regulation (Revised Regulation of Ontario 1990/Regulation 347) may be required by the local waster receiving site or the Ontario Ministry of Environment and Energy. Prior to disposal these authorities should be consulted with and tests performed where required.
- .3 Where a friable building material enclosed in a wall, floor or ceiling such as fireproofing, insulation on pipe or ducts etc. (that is not fibrous glass) or an acoustical textured material (stucco) or a non-friable material such as cement board or cement pipe, the Contractor shall refer to the Consultant who shall contact the Owner for further direction.

END OF SECTION

PART 1 – GENERAL

1.1 REGULATING DOCUMENTS

- .1 Conform to the Ontario Building Code (Ontario Reg. 332/12), Ontario Fire Code (Ontario Reg. 213/07), Accessibility for Ontarians with Disabilities Act (Ontario Reg. 191/11), National Building Code of Canada 2010, 2012 Canadian Electrical Code (CEC), CSA B44 - Safety Code for Elevators and Escalators, CSA W59 - Welded Steel Construction, The Occupational Health and Safety Act, Ontario (R.S.O. 1990), the National Fire Code, the local municipal Fire Code, and all other applicable Codes and Building By-Laws. Conform to the requirements of the authorities having jurisdiction, such as public utilities. Where required under The Occupational Health and Safety Act, engage a Professional Engineer to design formwork and falsework for concrete.
- .2 Contract forms, codes, standards and manuals referred to in these specifications are the latest published editions at the date of close of tenders. Meet or exceed requirements of specified standards.
- .3 Provide copies of documents referred to in the Specification for joint use of Contractor and Consultant, on site.
- .4 Other Purchasing Policies:
 - .1 The Contractor shall be familiar with and, where required, comply with Province of Ontario Fair Wage and Labour policies and all School Board policies.
 - .2 Refer to the Toronto Catholic District School Board Procurement, Contracting Requirements and Instructions to Bidders under Division 00 – Procurement and Contracting Requirements, Part 1 Instructions to Bidders, Paragraph 1.19. Relevant Policies.

END OF SECTION

PART 1 – GENERAL

1.1 DESCRIPTION

- .1 This section describes abbreviations and acronyms that may be used in these specifications and on the drawings and schedules.
- .2 When references are made in these specifications to the standards, specifications, or other published data of various international, national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only.
- .3 The list of abbreviations and acronyms is provided to aid in the interpretation of notations in the construction documents and shall not be used to alter the meaning of notes for which the meaning is readily inferable from the context.
- .4 Abbreviations and acronyms can have more than one meaning. Their use shall be considered with respect to different subjects and disciplines where the context in which each is used makes the meaning clear.
 - .1 Example:
 - .1 CB on floor plans typically refers to a chalkboard
 - .2 CB on site plans typically refers to a catchbasin
 - .3 CB on electrical plans typically refers to a circuit breaker
- .5 Where additional or alternate abbreviations and acronyms are listed and used on drawings, schedules, and in the specification sections prepared by subconsultants, those shall apply to the documents on which they are noted.
- .6 Discrepancies shall be noted and brought to the Consultant's attention for interpretation.
- .7 Refer to architectural drawings for additional abbreviations.

1.2 LIST OF ABBREVIATIONS

A	The following is a list of abbreviations used in the specifications, schedules and on the drawings:	B	
A/B	ANCHORBOLT	BD	BOARD
AC	AIR CONDITIONING	BEV	BEVELLED
ACT	ACOUSTIC CEILINGTILE	BF	BARRIER-FREE
ADD	ADDENDUM	BH	BORE HOLE
ADJ	ADJUSTABLE	B/H	BULKHEAD
AFF	ABOVE FINISHED FLOOR	BIT	BITUMINOUS
AFG	ABOVE FINISHED GRADE	BLDG	BUILDING
AHU	AIR HANDLING UNIT	BLK	CONCRETE BLOCK
ALM	ALARM	BM	BEAM
ALUM	ALUMINUM	B/M	BENCH MARK
ANN	ANNUNCIATOR PANEL	BN	BULL NOSED
ANO	ANODIZED	BOT	BOTTOM
AUTO	AUTOMATIC	BP	BEARING PLATE
A/V	AUDIO VISUAL	BRDG	BRIDGING
AVB	AIR/VAPOUR BARRIER	BRK	BRICK
AWT	ACOUSTIC WALL TREATMENT	BUR	BUILT-UP ROOFING
		BV	BLOCK VENT

DIVISION 01 – GENERAL REQUIREMENTS

**TCDSB Tender No. P-110-18
GYMNASIUM RENOVATIONS AT**

01 42 13 – ABBREVIATIONS AND ACRONYMS

OUR LADY OF SORROWS CATHOLIC SCHOOL

C		E	
CAB	CABINET	EF	EACH FACE
CAP	CARPET	EJ	EXPANSION JOINT
CB	CHALKBOARD, OR CATCHBASIN	EHD	ELECTRIC HAND DRYER
C/B	CATCHBASIN	EL	ELEVATION
CBMH	CATCHBASIN MANHOLE	ELEV	ELEVATOR
C/C	CENTRE TO CENTRE	EQL	EQUAL
CEM	CEMENT	EQ/T	EQUIVALENT THICKNESS
CER	CERAMIC	EQPT	EQUIPMENT
CH	CABINET HEATER	EX	EXISTING
CJ	CONTROL JOINT	EXH	EXHAUST
CL	CENTRE LINE	EXP	EXPANSION
CLF	CHAIN LINK FENCE	EXP STR	EXPOSED STRUCTURE
CLG	CEILING	F	
CLR	CLEAR	FBD	FIBREBOARD
CMU	CONCRETE MASONRY UNIT	FD	FLOOR DRAIN
COL	COLUMN	F/D	FIRE DAMPER
CONSTR	CONSTRUCTION	FCD	FIRE DEPARTMENT CONNECTION
CONC	CONTINUOUS	FDN	FOUNDATION
CONTR	CONTRACT OR CONTRACTOR	FEC	FIRE EXTINGUISHER CABINET
CONV	CONVECTOR	FFL	FINISH FLOOR LEVEL
CORR	CORRIDOR	FH	FIRE HYDRANT
CP	CONTROL PANEL	FHC	FIRE HOSE CABINET
CPT	CARPET	FIN	FINISH
CR	COAT RACK	FIX	FIXTURE
CS	CONVENIENCE SHELF	FLG	FLASHING
CT	CERAMIC TILE	FLEX	FLEXIBLE
C-UL	UL TESTED FOR CANADA	FLUOR	FLUORESCENT
CTR	CENTRE	FPR	FIRE PROTECTION RATING
C/W	COMPLETE WITH	FR	FIRE RETARDANT/RATED
C/S	CONCRETE, SEALED	FRR	FIRE RESISTANCE RATING
D		FSS	FIRE SEPARATION
DAM	DAMPPROOFING	FTG	FOOTING
DAT	DATUM	FURR	FURRING
DBL	DOUBLE	G	
DET	DETAIL	GA	GAUGE
DF	DRINKING FOUNTAIN	GALV	GALVANIZED
DIA	DIAMETER	GB	GYPSUM BOARD
DIAG	DIAGONAL	GL	GLASS
DIFF	DIFFUSER	GRB	GRAB BAR
DIM	DIMENSION	GVL	GRAVEL
DISP	DISPENSER	GYP BD	GYPSUM BOARD
DL	DOOR LOUVER	GWG	GEORGIAN WIRED GLASS
DN	DOWN	H	
DSP	DOWNSPOUT	HB	HOSE BIBB
DVTL	DOVETAIL JOINT	H/C	HANDICAPPED CLOTHING HOOK
DRY	DRYER	HCH	HANDICAPPED
DW	DISHWASHER	HD	HAND DRYER
DWG	DRAWING	HM	HOLLOW METAL

HRD	HAIR DRYER	MLWK	MILLWORK
HTD	HIGH TRAFFIC DOORS	MM	MILLIMETRES
HVAC	HEATING, VENTILATION AND AIRCONDITIONING	MO	MASONRY OPENINGS
HWT	HOT WATER TANK	MR	MOISTURE RESISTANT
HYD	FIRE HYDRANT	MTD	MOUNTED
		MWP	MEMBRANE WATERPROOFING
I		N	
ID	INSIDE DIAMETER	NAT	NATURAL
INS	INSULATION	NBCC	NATIONAL BUILDING CODE OF CANADA
ISOL	ISOLATION	NFHB	NON-FREEZE HOSE BIBB
L		NIC	NOT IN CONTRACT
LAB	LABORATORY	NO	NUMBER
LAM	LAMINATE	NOM	NOMINAL
LAT	LAY-IN ACOUSTICAL TILE	NSF	NON-SLIP FLOORING
LAT -1	LAY-IN ACOUSTICAL TILE (TYPE 1)	NTS	NOT TO SCALE
LAV	LAVATORY	O	
LBL	LABEL	OA	OVERALL
LDBR	LOAD BEARING	OBC	ONTARIO BUILDING CODE
LDG	LANDING	OC	ON CENTRE
LF	LIGHT FIXTURE	OD	OUTSIDE DIAMETER
LH	LEFT HAND	O/H	OVERHEAD
LHR	LEFT HAND REVERSE	OPG	OBSCURE PLATE GLASS
LIB	LIBRARY	OWSJ	OPEN WEB STEEL JOIST
LINO	LINOLEUM	OV	OVEN
LLH	LONG LEG HORIZONTAL	P	
LLV	LONG LEG VERTICAL	P	PAINT
LNTL	LINTEL	PAP	PREFINISHED ALUMINUM PANEL
LONG	LONGITUDINAL	PA	PUBLIC ADDRESS SYSTEM
LPT	LOW POINT	PB	PORCELAIN BASE
LMC	LINEAR METAL CEILING	PAR	PARALELL
LS	LIGHT STANDARD	PB	PUSH DOOR OPERATOR
LVL	LEVEL	PBD	PARTICLEBOARD
LV -1	LOUVRE (TYPE 1)	PC	PRECAST CONCRETE
LWB	LIGHT WEIGHT BLOCK	PE	PORCELAIN ENAMEL
M		PERF	PERFORATED
M	METRES	PERIM	PERIMETER
MAT	MINERAL ACOUSTIC TILE	PERP	PERPENDICULAR
MAX	MAXIMUM	PG	PLATE GLASS
MDF	MEDIUM DENSITY FIBREBOARD	PL	PLASTER
MECH	MECHANICAL	PLAM	PLASTIC LAMINATE
MEMB	MEMBRANE	PLUMB	PLUMBING
MET	METAL	PLYWD	PLYWOOD
MEZZ	MEZZANINE	PMF	PREFINISHED METAL FLASHING
MH	MANHOLE	PMS	PREFINISHED METAL SIDING
MIN	MINIMUM	PMP	PREFINISHED METAL PANEL
MIR	MIRROR	PML	PANEL
MISC	MISCELLANEOUS	POLY	POLYETHYLENE OR POLYOLEFIN
MLWK	MILLWORK	POR	PORCELAIN TILE
		PR	PAIR

DIVISION 01 – GENERAL REQUIREMENTS

**TCDSB Tender No. P-110-18
GYMNASIUM RENOVATIONS AT**

01 42 13 – ABBREVIATIONS AND ACRONYMS

OUR LADY OF SORROWS CATHOLIC SCHOOL

PREFIN	PREFINISHED	SIM	SIMILAR
PRELIM	PRELIMINARY	SK	SINK
PT	PAINT, OR PORCELAIN TILE	SL	SLATE
PTD	PAPER TOWEL DISPENSER	SND	SANITARY NAPKIN DISPENSER
PTN	PARTITION	SNR	SANITARY NAPKIN RECEPTACLE
PTW	PRESERVATIVE TREATED WOOD	SOG	SLAB ON GRADE
PVG	PAVING	SP	SPANDREL PANEL
PWC	PLASTIC WALL COVERING	SPECS	SPECIFICATIONS
		SPC	SPECIAL COATING
		SPF	SPORTS FLOORING
Q		SPKR	SPEAKER
QT	QUARRY TILE	SRCONV	SEMI RECESSED CONVECTOR
		SS	STAINLESS STEEL
R		ST	STEEL
R	RADIUS	STAG	STAGGERED
RA	RETURN AIR	STC	SOUND TRANSMISSION CLASS
RAD	RADIATOR	STD	STANDARD
RB	RUBBER BASE	STIFF	STIFFENER
RD	ROOF DRAIN	STOR	STORAGE
REBAR	REINFORCING BAR	STR	STRUCTURE
RCONV	RECESSED CONVECTOR	SUPPL	SUPPLEMENT/AL
RCH	RECESSED CABINET HEATER	SURF	SURFACE
REC	RECESSED	SUSP	SUSPENDED
REF	REFERENCE / REFER	SVF	SHEET VINYL FLOORING SIDEWALK
REFR	REFRIGERATOR	SWF	SPECIAL WALL FINISH
REINF	REINFORCE/D/ING/MENT	SYM	SYMBOL
REM	REMOVE/ABLE	T	
RES	RESILIENT	TB	TACKBOARD
REV	REVISE / REVISION	TB	TOP AND BOTTOM
RFG	ROOFING	TBD	TO BE DETERMINED
RH	RIGHT HAND	TC	TEACHER'S CLOSET, OR TOP OF CURB
R/H	ROOF HOPPER		
RLG	RAILING	TD	TOWEL DISPENSER
RM	ROOM, OR RECESS MOUNTED	TEC	TECTUM PANEL
RMC	REINFORCED MASONRY COLUMN	T&G	TONGUE AND GROOVE
RUBB	RUBBER	TEMP	TEMPERED GLASS
RUH	RECESSED UNIT HEATER	TERR	TERRAZZO
RWL	RAINWATER LEADER	TEL	TELEPHONE
		TEMP	TEMPORARY
S		TH	TOWEL HOOK
S -1	STAIN (TYPE) 1	TMIR	TILT MIRROR
SAD	SECURITY ALARM DEVICE	T/O	TOP OF
SAN	SANITARY	TOC	TOP OF CURB
SC	SOLID CORE	TOCS	TOP OF CONCRETE SLAB
SCB	SLIDING CHALKBOARD	TOS	TOP OF STEEL
SCHED	SCHEDULE	TPG	TEMPERED PLATE GLASS
SD	SOAP DISPENSER	TPH	TOILET PAPER HOLDER
SEC	SPECIAL EPOXY COATING	TR	TRANSOM
SF	SHEET FLOORING	TTD	TOILET TISSUE DISPENSER
SH.ROD/C	SHOWER ROD W/ CURTAIN	TYP	TYPICAL
SH.ST	SHOWER SEAT		

U		W	
U/C	UNDERCUT	W/	WITH
U/G	UNDERGROUND	WASH	WASHING MACHINE
UH	UNIT HEATER	WB	WHITE BOARD
ULC	UNDERWRITER'S LABORATORIES OF CANADA	WC	WATERCLOSET (TOILET)
UL	UNDERWRITER'S LABORATORIES (USA)	WD	WOOD
UNEX	UNEXCAVATED	WDF	WOOD FLOORING
UNF	UNFINISHED	WF	WASH FOUNTAIN
UNO	UNLESS NOTED OTHERWISE	WG	WIRED GLASS
U/P	UNPAINTED	W/O	WITHOUT
UR	URINAL	WP	WATERPROOFING, WORKING POINT
U/S	UNDERSIDE	WR	WASTE RECEPTACLES
UTIL	UTILITY	W/R	WATER RESISTANT
V			
VAR	VARIABLE, VARIES		
VB	VAPOUR BARRIER		
VCT	VINYL COMPOSITION TILE		
VERT	VERTICAL		
VEST	VESTIBULE		
VT	VINYL FACED		
VR	VAPOUR RETARDER		

END OF SECTION

PART 1 – GENERAL

1.1 QUALITY ASSURANCE

- .1 Refer also to the Quality Control Provisions of Section 00 10 00, General Instructions.
- .2 Provide a system of quality control to ensure that the minimum standards specified herein are attained.
- .3 Bring to the attention of the Consultant any defects in the work or departures from the Contract Documents which may occur during construction. The Consultant will decide upon corrective action and state recommendations in writing.
- .4 The Consultant's general review during construction and inspection by independent inspection and testing agencies reporting to the Consultant are both undertaken to inform the Owner of the Contractor's performance and shall in no way augment the Contractor's quality control or relieve him of contractual responsibility.

1.2 NOTIFICATION

- .1 Give the Consultant advance notice of shop fabrication, field erection and other phases of the work so as to afford him reasonable opportunity to inspect the work for compliance with contract requirements. Failure to meet this requirement may be cause for the Consultant to classify the work as defective.

1.3 DEFECTIVE MATERIALS AND WORKMANSHIP

- .1 Where factual evidence exists that defective workmanship has occurred or that work has been carried out incorporating defective materials, the Consultant may have tests, concrete cores, inspections or surveys performed, analytical calculation of structural strength made and the like in order to help determine whether the work must be replaced. Test, inspections or surveys carried out under these circumstances will be made at the Contractor's expense, regardless of their results, which may indicate that, in the Consultant's opinion, the work may be acceptable.
- .2 All testing shall be conducted in accordance with the requirements of the Ontario Building Code, except where this would, in the Consultant's opinion, cause undue delay or give results not representative of the rejected material in place. In this case, the tests shall be conducted in accordance with the standards given by the Consultant.

END OF SECTION

PART 1 – GENERAL

1.1 TEMPORARY TELEPHONE AND FAX

- .1 Install and pay for all mobile telephone services for Contractor's own use as it pertains to this project.

1.2 POWER AND WATER SUPPLY

- .1 Provide all temporary light and power complete with all wiring, lamps and similar equipment as required for completion of the Work. Provide adequate lighting for all workmen, sufficient for safety and for execution of good workmanship, taking particular care to observe all safety requirements. Adequate temporary lighting will be insisted upon. The Owner will not be liable for any loss, damage, delay, or claims for extra costs resulting from lack of services.
- .2 Existing building services may be used, as available. This does not include emergency generators or batteries. All costs resulting from the use of these services are the responsibility of the Contractor.
- .3 Water supply: The existing building water service may be used to supply potable water for construction use.
- .4 Refer to the Toronto Catholic District School Board Procurement, Contracting Requirements and Instructions to Bidders under Division 00 – Procurement and Contracting Requirements, Part 2 General Requirements, Paragraph 2.12. Temporary Facilities.

1.3 TEMPORARY VENTILATION AND HEATING

- .1 Provide local exhaust ventilation to prevent harmful accumulations of hazardous substances into atmosphere of occupied areas. Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
- .2 Ventilate storage spaces containing hazardous or volatile materials. Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful elements. Store paints & solvents in secure, locked, ventilated room at all times.
- .3 Protect existing ducting system with filters, inspect daily and replace weekly or more frequently as necessary. Finally vacuum clean ducting system and replace filters at completion of the Work.
- .4 Provide temporary heating as required for storage of materials and equipment.
- .5 Maintain strict supervision of operation of temporary ventilating equipment. Contract documents for work under this contract consists of the following:
 - .1 Enforce conformance with applicable codes and standards.

- .2 Enforce safe practices.
- .3 Prevent abuse of services.
- .4 Prevent damage to finishes.
- .5 Vent direct-fired combustion units to outside.

1.4 FIRE EXTINGUISHERS

- .1 An adequate number of ABC type fire extinguishers shall be provided for the protection of the work during construction.

1.5 REMOVAL OF TEMPORARY UTILITIES

- .1 Remove temporary utilities from site when directed by Consultant and/or at the completion of the project

END OF SECTION

PART 1 – GENERAL

1.1 CONTRACTOR'S SITE OFFICE

- .1 Provide and maintain a site office in the school for site conference and job meetings.
- .2 The site office location will be confirmed by the School Board and the Contractor will provide for the following as a minimum requirement:
 - .1 Desk and chair
 - .2 File cabinets as required for storage
 - .3 Plan file for storage of drawings
 - .4 Table and stacking chairs to provide seating at job meetings
 - .5 Printer, or other acceptable means of communication as noted below.
- .3 Site supervisor's mobile telephone will be the contact number for the site and will be available at all times when construction personnel are on site.
- .4 A printer and computer will be provided as a form of communication to the site.
- .5 The Contractor shall maintain the following documents, up-to-date, in site office:
 - .1 Contract Documents
 - .2 Reviewed shop drawings
 - .3 All instructions and change documents, ie Work Authorizations, Jobsite Instructions, Notices of Contemplated Change, Change Orders
 - .4 All inspection and test reports
 - .5 Permit drawings and specifications
 - .6 As-built drawings

1.2 STORAGE SHEDS

- .1 As required, provide adequate weather-tight sheds with raised floors, for storage of materials, tools and equipment which are subject to damage by weather.
- .2 Storage sheds shall be painted and doors shall be fitted with locks.
- .3 Locate storage sheds adjacent to building away from road to approval of the Consultant.
- .4 Material stored on site must be protected by tarpaulins until enclosed in building.

1.3 SANITARY FACILITIES

- .1 Workers will be permitted to use the existing washrooms in the School.

- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.4 REMOVAL OF TEMPORARY FACILITIES

- .1 Remove temporary facilities from site when directed by Consultant and/or at the completion of the project.

END OF SECTION

PART 1 – GENERAL

1.1 PROTECTION

- .1 Supply, install and maintain all guard rails, barriers, night lights, sidewalk and curb protection as may be necessary or as the by-laws may require.
- .2 Supply, install and maintain all necessary temporary coverings to protect work areas.
- .3 Protect existing asphalt and concrete paving and curbs from damage and make good any damage at completion of project.
- .4 Properly protect floors from any damage. Take special precautions when moving heavy loads or equipment over floors.
- .5 Keep floors free of oils, grease or other such materials likely to discolour them and/or affect bonding of applied surfaces.
- .6 Protect glass and other finishes against heat, slab and weld splatters, using appropriate protective shields and covers.
- .7 Provide and maintain, in good working order, appropriately labelled ULC fire extinguishers, to the approval of Authorities Having Jurisdiction.
- .8 Provide a minimum of two safety helmets on site at all times for the use of any other Owner authorized visitors to the site. It is the Contractor's responsibility to make certain that any such visitors wear the protective headgear and any other safety gear which may be necessary at that particular time of construction.
- .9 Should the job be stopped for any cause, the Contractor shall be responsible for and provide all necessary protection to prevent damage by weather or other cause until the cause of stoppage has been cleared.
- .10 The Contractor shall be entirely responsible for supervision of project and for protection of public from vehicles in movement, stockpiled materials and construction.
- .11 The Contractor is responsible for the prevention of vandalism and theft of all tools, equipment and materials.
- .12 Any damage to roadways must be repaired immediately, to municipal standards.
- .13 Any damage to site by the Contractors forces, delivery vehicles, etc., must be made good at the end of the job. Similarly any damage to curbs, sidewalks, or other municipal property shall be made good by the Contractor.

1.2 TEMPORARY DUST PROOF PARTITIONS

- .1 Supply and install dust proof partitions in the existing school corridors and doorways at entrance to work areas prior to any work taking place. Refer to Section 02 40 00 for specific requirements for dust proof partitions.

- .2 Dust proof partitions shall be erected outside of operating hours and shall remain in place until the new Work is ready for occupancy, and accepted by the Owner.

1.3 SECURITY

- .1 The Contractor shall be entirely responsible for supervision of project and for protection of public from vehicles in movement, for stockpiled materials and construction. Vehicular parking and stockpile materials must be maintained on the construction staging area only. No street parking or stockpiling will be allowed on the Municipal streets.
- .2 The Contractor is responsible for the prevention of vandalism and theft of all tools, equipment and materials until date of Substantial Performance of Contract.

1.4 REMOVAL OF TEMPORARY BARRIERS

- .1 Remove temporary barriers and enclosures from site when directed by Consultant and/or at the completion of the project.

END OF SECTION

PART 1 – GENERAL

1.1 CUTTING AND PATCHING

- .1 Before cutting, drilling or sleeving load-bearing elements, obtain approval of location and method.
- .2 Do not endanger work or property by cutting, digging, or similar activities. No trade shall cut or alter the work of another trade who has installed it unless approved by that trade.
- .3 Cut and drill with true smooth edge to minimum suitable tolerances.
- .4 Fit construction tightly to ducts, pipes and conduit to stop air movement completely. The trade performing work that penetrates a fire, air, vapour, moisture, thermal or acoustic separation element of the building shall pack voids tightly with insulation, rated where required; seal air, vapour and moisture barriers; and caulk joints as may be required to ensure that no air movement through the penetration is possible.
- .5 Cutting, drilling and sleeving of work shall be done only by the trade who has installed it. The trade requiring drilling and sleeving shall inform the trade performing the work of the location and other requirements for drilling and sleeving. The Contractor shall directly supervise performance of cutting and patching.
- .6 Replace and/or make good damaged work.
- .7 Patching or replacement of damaged work shall be done by the subcontractor under whose work it was originally executed, and at the expense of the subcontractor who caused the damage.

1.2 CONCEALMENT

- .1 Conceal all pipes, ducts and wiring in finished areas except where indicated otherwise. This includes new work in existing building.
- .2 Where furring out is required, use material similar to adjacent surfaces except where indicated otherwise.
- .3 All new horizontal runs of ducts, pipes and conduits shall be concealed in ceiling spaces.
- .4 All new duct drops and risers shall be concealed in ceiling spaces, bulkheads or furred out duct shafts. All new pipe and conduit drops and risers shall be buried in walls. New devices in walls shall be recessed.

1.3 MECHANICAL AND ELECTRICAL EQUIPMENT

- .1 Mechanical and Electrical services must be temporarily capped or terminated to permit renovation in existing areas to proceed.

- .2 Cutting of holes up to 100mm in size in the existing structure and surfaces required by the trades shall be by those Subcontractors. Cutting and patching of openings greater than 100mm in size shall be by the Contractor in co-ordination with the trades. PATCHING OF ALL HOLES IN EXPOSED FINISHED SURFACES SHALL BE BY THE CONTRACTOR. Mechanical and Electrical trades shall do their own coring of existing slabs as required.

1.4 GENERAL NOTES

- .1 All masonry and drywall shall be extended to u/s steel deck or slab above. Where walls run parallel and under OWSJs the OWSJs shall be enclosed both sides with gypsum board to provide sound barrier between rooms. Fill with minimum 100 mm batt insulation.
- .2 Scanning and x-raying of existing concrete floors is required where concrete floors are required to be cut and areas of concrete slab are to be removed to accommodate new mechanical work. Scanning and x-raying is carried in the Contract Price.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL

- .1 Conduct cleaning and disposal operations to comply with local ordinances, anti-pollution laws, and recommendations of Construction Safety Association.
- .2 Store volatile wastes in covered metal containers, and remove from premises daily.
- .3 Prevent accumulation of wastes which create hazardous conditions.
- .4 Provide adequate ventilation during use of volatile or noxious substances.
- .5 Provide instructions designating proper methods and materials to be used in final cleaning of Work.
- .6 Do not burn any rubble, waste or packaging, or surplus materials. No dumping of waste, such as oil or paint, into sewers will be permitted.

1.2 MATERIALS

- .1 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.3 POLLUTION CONTROL

- .2 Cover dry materials and rubbish to prevent blowing dust and debris.
- .3 Prevent dust nuisance to adjacent properties, existing Schools and general public by taking appropriate pollution control measures as directed by Consultant.

1.4 FIRES

- .1 Fires and burning of rubbish on Site are not permitted.

1.5 CLEANING DURING CONSTRUCTION

- .1 Maintain entire site and adjoining municipal and/or private property free from accumulations of waste materials and rubbish. Do not allow rubbish to accumulate in work under construction or on roofs. Clean site daily.
- .2 Provide on-site containers for collection of waste materials, and rubbish. Empty containers on a regular basis in conformance with Municipal and Provincial Regulations.

- .3 Cleaning operations shall include those areas used for temporary site access or used on a temporary basis to facilitate the Work.
- .4 Broom clean and vacuum areas as required for application of finishes. Continue to clean on an “as needed” basis and insure that areas which receive paint, floor tile and other critical finishes are kept dry, dust free, and at acceptable temperatures.
- .5 Keep all areas of the Work clean and orderly, free from accumulation of dirt, debris, garbage, oily rags, excess material, or such other trash items. Remove such items from all areas of the Work on a daily basis.
- .6 Vacuum and/or broom interior building areas when ready to receive painting and other finishes. Continue cleaning on an “as needed” basis until the building is ready for inspection and take-over.
- .7 Schedule cleaning operations so that resulting dust and other contaminants do not affect wet, newly painted surfaces, or newly installed equipment, or devices.

1.6 CLEANING AT COMPLETION OF WORK

- .1 In addition to the progressive removal of rubbish from the entire building and Site, and leaving the buildings broom clean, the Contractor shall perform the following work in preparation for Substantial Performance.
- .2 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from all exposed interior and exterior finishes, including glass and other polished surfaces. Clean glass both sides, and replace broken glass. Vacuum inside all cabinets and drawers and leave millwork ready for use. Remove paint spots and smears from all surfaces, including hardware.
- .3 Remove stains, spots, marks and dirt from decorated work, electrical and mechanical fixtures, and the like. Remove protective materials.
- .4 Remove all protective film from mechanical equipment and fixtures, switchplates and hardware, particularly kick plates. Clean hardware, aluminum, stainless steel and the like.
- .5 Clean all floor and wall tile.
- .6 Clean lighting reflectors, lenses and other lighting surfaces.
- .7 Replace heating, ventilation and/or air conditioning filters at Substantial Performance, whether or not the units were operated during construction operations.
- .8 Vacuum clean all building interiors affected by construction operations before occupancy.
- .9 Broom clean paved surfaces and rake clean other disturbed surfaces in the area of the Work, to remove site debris caused by the Work of this Contract. Inspect for damages and make good.

- .10 Clean exterior walkways, driveways and the like.
- .11 Conduct final inspection of interior and exterior surfaces, and concealed spaces.
- .12 Leave premises ready for immediate occupation without further cleaning, all to the Owner's and Consultant's approval.

END OF SECTION

PART 1 – GENERAL

1.1 SUBMITTALS REQUIRED FOR OCCUPANCY

- .1 Refer to Section 01 41 00, Regulatory Requirements for documents required to be submitted to Authorities having Jurisdiction, for occupancy.

1.2 SUBMITTALS REQUIRED AT SUBSTANTIAL PERFORMANCE

- .1 Prior to Substantial Performance of the Contract, perform the actions detailed in section 01 77 00, Closeout Procedures, and submit the following documents and materials:
 - .1 Deficiency list prepared by Contractor for all areas of the project.
 - .2 Certificates of good standing from the Workplace Safety & Insurance Board for the Contractor and all Subcontractors
 - .3 Operations and Maintenance Manuals, including warranties
 - .4 One complete set of final approved Shop Drawings (bound separately) indicating corrections and changes made during fabrication and installation, plus one digital copy of the same (on USB).
 - .5 Keys and construction cores
 - .6 Maintenance materials
 - .7 As-Built Documents as specified in Section 01 33 00, Submittal Procedures
 - .8 Electrical panel directories (typed and mounted in panels); refer to electrical specifications.
 - .9 Pressure Vessels Inspection Certificates
 - .10 Balancing Report for Ventilation System.
 - .11 Inspection Certificates required by Provincial, Municipal and other authorities having jurisdiction.
- .2 Deliver all required submittals to the Consultant for approval prior to Substantial Performance of the Work. Final payment will not be made until all these items have been received and approved.
- .3 Refer to the Toronto Catholic District School Board Procurement, Contracting Requirements and Instructions to Bidders under Division 00 – Procurement and Contracting Requirements, Part 2 General Requirements, Paragraph 2.18. Project Close Out Procedures.

1.3 MAINTENANCE MANUALS

- .1 At Substantial Performance submit to Consultant one (1) printed copy, and two (2) digital copy, of Architectural and Electrical Operations Data and Maintenance Manuals made up as follows:
 - .1 Bind printed data in vinyl hard covered, three-ring loose leaf binder for 212.5mm x 275mm (8-1/2" x 11") size paper.
 - .2 Enclose title sheet, labelled "Operation Data and Maintenance Manual - Architectural", project name, date and list of contents. Enclose similar sheet

labelled Mechanical and Electrical in applicable manuals. Include the following information:

- .1 name of project
 - .2 name of Owner
 - .3 name of Consultant
 - .4 name of Contractor
 - .5 date of Substantial Performance.
- .3 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labelled tabs protected with celluloid covers fastened to hard paper dividing sheets.
- .4 All data related to a section of work or product shall be grouped together, except for shop drawings, unless otherwise requested by the Owner. Confirm method of organization with Owner prior to assembling manuals. Typically, each section shall be organized, as applicable, as follows:
- .1 General information; identify section of work, subcontractor(s) responsible
 - .2 Warranty
 - .3 Guarantees, Bonds
 - .4 Schedules (hardware, paint)
 - .5 Product data sheets
 - .6 Material safety data sheets (MSDS)
 - .7 Operating manual
 - .8 Maintenance instructions
 - .9 Receipts for maintenance materials, keys, etc.,
 - .10 Maintenance contracts (applicable to elevator, wheelchair lift, planting, sod, etc.)
 - .11 Inspection and testing reports
- .2 Provide one copy of each of the following in the first binder:
- .1 Contractor's final statutory declaration on CCDC form 9A-2001
 - .2 Major Subcontractor's final statutory declarations on CCDC form 9B-2001
 - .3 Workers' Compensation and Insurance Board (WSIB) certificate
 - .4 Certificates of approval of the work by the Building Department (if applicable).
 - .5 Ontario Hydro certificate of inspection (if applicable).
- .3 Provide a disk or memory stick containing all construction progress photos submitted; refer to Section 01 32 00. Provide an index with printed images clearly identified with name of project, description of view and date taken. Disks are to be clearly labelled.
- .4 Include the following information, plus any additional data required within the specifications.
- .1 List of all Subcontractors, major suppliers, and local equipment service representatives, their addresses and telephone numbers.
 - .2 Date of Substantial Performance (commencement of warranty periods) and termination dates of warranties.
 - .3 Operating manuals including lubricating, repair and other instructions to keep all mechanical and electrical/electronic equipment in good working order. Reviewed

- shop drawings of same. Refer to Electrical Specifications for further requirements.
- .4 Final finish/colour schedule; insert in front of Division 09 section in manuals.
 - .5 Provide paint schedule indicating paint brand and formulas used.
 - .6 Maintenance instructions for all types of floor finish and other special finishes. Include instructions for cleaning, repairing, refinishing and freshening, and warnings of damaging or dangerous practices where necessary.
 - .7 Maintenance and service instructions and manufacturer's literature for all special architectural features.
 - .8 Description, operations and maintenance instructions for equipment and systems, including complete list of equipment and parts list.
 - .9 All warranties, guarantees, bonds, etc., properly completed and signed, which extend beyond the general warranty period, for all work and equipment as specified or as otherwise supplied and installed, from manufacturers and trades. Warranties, guarantees and bonds shall include:
 - .1 Name and address of project.
 - .2 Warranty commencement date.
 - .3 Duration of warranty.
 - .4 Clear indication of what is being warranted and what remedial action will be taken under warranties.
 - .5 Signature and seal of Contractor.
 - .5 List additional material used in project showing name of manufacturer and source of supply.
 - .6 Neatly type lists and notes. Use clear drawings, diagrams or manufacturer's literature.
 - .7 Supply copies of inspection and testing reports, inspection and acceptance certificates, balancing reports, all bound in all three copies of manuals.
 - .8 Supply Operations and Maintenance manuals, and other required documentation as specified for Mechanical and Electrical work.
 - .9 Manuals must bear seal and signature of Contractor.
 - .10 Maintenance Manuals must be delivered, complete and in one package, to Consultant. The final Certificate for payment will not be issued until ALL documentation has been received, reviewed, and approved, by Consultant.
 - .11 Due to the high value to the Owner of these manuals, for the purpose of project administration and calculation of Substantial Performance, the manuals will be assigned a value of \$1,000.00.

1.4 SHOP DRAWING MANUAL

- .1 Provide one (1) complete set of final approved Shop Drawings, bound separately and one (1) electronic copy on USB. Shop drawings shall be the drawings reviewed and stamped by the consultants. Mark-up shop drawings to indicate corrections and changes made during fabrication and installation.

- .2 Refer to the Index to Shop Drawing Manual included in the Appendix to this Project Manual.

1.5 MAINTENANCE MATERIALS

- .1 Where supply of maintenance materials is specified, deliver items as follows:
 - .1 Materials in unbroken cartons or, if not supplied in cartons, they shall be strongly packaged.
 - .2 Clearly mark as to content.
 - .3 If applicable give colour, room number of area where material used.
 - .4 Obtain signed receipt from the Owner's designated representative and store in an assigned, lockable room.
- .2 Copies of signed receipts for maintenance materials are to be included in the maintenance manuals.
- .3 Replacement materials are for the sole use of the Owner and must not be used by Contractor to replace deficient work.

1.6 AS-BUILT DRAWINGS AND RECORD DOCUMENTS

- .1 Provide As-Built Drawings, as specified in Section 01 33 00, and Record Documents (electronic files).
- .2 Prior to the date of Substantial Performance transfer all "as-built" markups from the on-site drawings to new updated drawings in electronic format and return them to the Consultant.
- .3 Refer to Electrical Specification Divisions for specific requirements regarding preparation and submission of final Electrical Record Drawings.

1.7 REVIEW OF MANUALS BY CONSULTANT

- .1 Submit all manuals for review by the Consultant. Electrical manuals may be forwarded directly to the consulting engineers for review.
- .2 The Contractor is responsible for confirming the completion of the manuals prior to forwarding to the Consultant for review. If any items are outstanding, provide tabs at the appropriate locations and indicate the nature of the outstanding documents to be inserted.
- .3 Do not submit partially complete manuals to the Consultant; only documents which cannot be provided at the time of Substantial Performance are permitted to be flagged for later insertion. The Consultant will review manuals once for completion and will then review only one resubmission. If additional reviews are required, the Contractor will be invoiced for the Consultant's time at a rate of \$180/hour.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED WORK

- | | | |
|----|---------------------------------|------------------|
| .1 | Temporary Barriers and Controls | Section 01 56 00 |
| .2 | Execution | Section 01 73 00 |

1.2 REFERENCES

- .1 Conform to all laws, By-Laws and regulations of the authorities having jurisdiction and, in particular, the Ontario Occupational Health and Safety Act; The Environmental Protection Act; The Ontario Building Code, Ontario Regulation 332/12; The Ontario Fire Code; The National Building Code, 2010; and the National Fire Code.
- .2 CSA S350-M, code of practice for safety in demolition of structures.
- .3 Ontario regulations under the Environmental Protection Act:
 - .1 O.Reg. 102/94 Waste Audits and Waste Reduction Work Plans
 - .2 O.Reg. 103/94 Industrial, Commercial and Institutional Source Separation Programs
 - .3 O.Reg. 347/90 General - Waste Management; refer to "Definitions"
- .4 Ontario regulations under the Occupational Health and Safety Act:
 - .1 O.Reg. 213/91 Construction Projects
 - .2 All regulations regarding "Designated Substances"
 - .3 O.Reg. 860/90 Workplace Hazardous Materials Information System (WHMIS)
- .5 Conform to "Guidelines for Maintaining Fire Safety During Construction in Existing Buildings", provided by the Office of the Ontario Fire Marshal.
- .6 RFCI Recommended Work Practices for Removal of Resilient Floor Coverings

1.3 EXAMINATION OF EXISTING SITE AND STRUCTURE

- .1 Examine the existing site and building before tendering to be familiar with the detailed extent of demolition, dismantling, relocation and reassembly required.
- .2 Include all costs associated with after-hours work and remobilization. Work is to be completed by August 31, 2018. The cost for any and all work and remobilization required after August 31, 2018 is to be carried in the Contract Price.
- .3 No allowance will be made for failure to obtain complete information prior to close of tenders.

1.4 SUMMARY OF WORK

- .1 Carry out all alteration and demolition work required to accommodate new work indicated on drawings. Make good any damage caused by alterations required.
- .2 Remove electrical fixtures and devices and all other items as noted on drawings as required for the renovation, unless otherwise noted.
- .3 Unless noted otherwise, building materials resulting from demolition under this contract shall become the property of the Contractor, and shall be removed by the Contractor.
- .4 Supply and install temporary dust proof partitions at junctions with work area, as indicated on the drawings. Dust proof partitions shall be erected outside of school operating hours and shall remain in place until the work is fully commissioned and accepted by the Owner.

1.5 SCHEDULE OF WORK

- .1 Safety and required exiting from the existing building must be maintained at all times, particularly during operating hours and scheduled events. Work must be suspended if the Owner advises that noise and/or dust is interfering with the building operation.
- .2 During the summer months (July and August), work shall be done between the hours of 7:30am to 4:00pm. The Contractor shall make special arrangements with the Owner to perform Work outside of these hours. Requests for special arrangements shall be made at least forty-eight (48) hours in advance. Refer to Toronto Catholic District School Board Procurement, Contracting Requirements and Instructions to Bidders, Division 00 – Procurement and Contracting Requirements, Part 2 – General Requirements, Paragraph 2.3 Contractor On Site for additional requirements.
- .3 Any Work that will generate excessive noise, dust, vibration or odour, must be undertaken outside of the School's hours of operation. Requests for special arrangements shall be made at least forty-eight (48) hours in advance. Refer to Toronto Catholic District School Board Procurement, Contracting Requirements and Instructions to Bidders, Division 00 – Procurement and Contracting Requirements, Part 2 – General Requirements, Paragraph 2.3 Contractor On Site for additional requirements.
- .4 Dust proof partitions must be installed prior to any work being undertaken.
- .5 All Work is to be completed by August 31, 2018.

1.6 PROTECTION

- .1 Protect adjacent properties against damage which might occur from falling debris or other cause. Make good damage to adjacent public or private properties resulting from Work of this Contract.
- .2 Protect existing building from damage and contamination during demolition activities. All openings must be made weatherproof. Provide temporary barriers, dust control

measures, security controls, supports, and such additional protection as may be required by specific demolition work.

- .3 Dust proof partitions:
 - .1 Provide dustproof membranes at the doorway to all construction work areas.
 - .2 Dustproof partitions shall consist of 10 mil polyethylene sheet taped all around doorways, openings and vents.
- .4 Prevent movement, settlement, and damage to existing building to remain, including services, paving, landscaped areas to remain, and adjacent structures. Provide temporary supports, including shoring and bracing, as required. All shoring must be designed by a professional engineer licensed in the Province of Ontario.
- .5 Employ licensed rodent and vermin exterminators to destroy all discovered vermin and rodents.
- .6 Remove contaminated and dangerous material from the site and dispose of safely and legally. Meet all M.O.E. requirements.
- .7 Take precautions to guard against movement or settlement of adjacent land, existing building, and remaining services and utilities. Provide and place bracing or other means of support.
- .8 Take precaution against contamination of air and adjacent properties.

1.7 MAINTAINING FIRE SAFETY IN EXISTING BUILDING

- .1 Maintain all required exiting for safe operations within the existing building. Where an exit is closed off due to construction activities, provide alternate exit acceptable to both the Consultant and to Authorities Having Jurisdiction. Any temporary exits must be clearly identified with appropriate signage.
- .2 Maintain access roadways for fire department vehicles, acceptable to the fire department. Access must be approved prior to commencement of construction activities.
- .3 Store all combustible materials in accordance with the Fire Code and the Occupational Health and Safety Act. Do not store combustible materials within the existing building or against the building. All combustibles shall be stored in a manner which minimizes risks to building and occupants.
- .4 Maintain dust proof partitions and protection at openings, as specified above, with fire separation ratings as required by Authorities Having Jurisdiction.
- .5 Maintain fire alarm system in operating condition in existing building. Notify the fire department and Owner of any temporary shutdowns of service and provide alternative measures during such periods of time.
- .6 Coordinate with Owner and Authorities Having Jurisdiction for all changes to fire emergency procedures as may be required during construction.

1.8 SERVICES

- .1 Seal and cap mechanical and electrical services in order to facilitate removals indicated on drawings. Mark location and type of service of all capped services at the site. Submit record drawing showing locations and dimensions of all capped services.

PART 2 – PRODUCTS

2.1 Not Used

PART 3 – EXECUTION

3.1 GENERAL

- .1 Remove and dispose of any remaining furniture, fixtures, fittings and equipment remaining in the work area, which are not shown to be relocated or reused in the completed project.
- .2 Protect all items indicated to be removed and later reinstalled. These items shall be removed prior to demolition work wherever possible. It will be the responsibility of the Contractor to repair or replace any such items damaged by careless handling.
- .3 Refer also to demolition and alteration notes on drawings.

3.2 DEMOLITION

- .1 Remove and carefully lower wood or steel framing as applicable.
- .2 Remove and dispose of all items not indicated or noted to remain or be re-used.
- .3 Remove electrical equipment and piping indicated to be abandoned. Refer to electrical demolition drawings.
- .4 Any items noted to be re-used or re-located are to be removed carefully, cleaned, packaged appropriately, and handed over to Contractor.
- .5 Upon discovery of mold or moldy materials remove and dispose of these separately.
- .6 If materials suspected to contain asbestos and other designated substances are encountered, do not disturb these materials. Inform the Consultant of the location and extent of suspect material. Do not resume work in this area until it has been cleared by an Abatement Consultant.
- .7 At the end of each day's work, leave work in a safe condition so that no part of the remaining structure is in danger of collapse.

- .8 Do not burn any refuse or debris at the site.

3.3 REMOVAL OF EXISTING FLOOR FINISHES

- .1 Existing floor finishes shall be removed and old adhesive removed from the existing concrete slab by scraping or solvent, in accordance with Health & Safety requirements.
- .2 Remove paint from existing concrete floors by scraping or grinding. The use of solvents to remove paint will not be accepted, as these chemicals may interfere with the bonding of new floor finishes or adhesives.
- .3 Existing concrete floors shall be prepared according to manufacturer's instructions for new adhesive applied finishes or for polished finish where indicated on the drawings.

3.4 ELECTRICAL WORK

- .1 Electrical services must be temporarily capped or terminated to permit renovation in existing areas to proceed.
- .2 Refer to electrical drawings for the extent of removals, relocations, and alterations required.
- .3 Ceiling mounted mechanical and electrical equipment which is to be removed and reused is to be carefully removed and stored as specified above.
- .4 Cutting of holes up to 100mm in size in the existing structure and surfaces required by the electrical trades shall be by those Subcontractors. Cutting and patching of openings greater than 100mm in size shall be by the Contractor in co-ordination with those trades. PATCHING OF ALL HOLES IN EXPOSED FINISHED SURFACES SHALL BE BY THE CONTRACTOR. Mechanical and Electrical trades shall do their own coring of existing slabs as required.

3.5 COMPLETION OF WORK

- .1 Remove all surplus materials, equipment and rubbish from the site.
- .2 Leave site in condition to meet approval of the Consultant.
- .3 On completion of Demolition work, thoroughly clean all existing surfaces to remain, including ceiling space. No debris or dirt shall remain to be enclosed by new construction.

END OF SECTION

PART 1 – GENERAL

1.1 SECTIONS INCLUDES

- .1 Cleaning of existing concrete floor slab in preparation of installation of new resilient athletic flooring.

1.2 RELATED SECTIONS

- .1 Division 1- General Requirements.
- .2 Resilient Flooring Section 09 65 00

1.3 ENVIRONMENTAL REQUIREMENTS

- .1 Temporary Lighting: Minimum one 200 W light source, placed 2.5m above the floor surface, for each 40m² of floor being finished.
- .2 Temporary Heat: Ambient temperature of 10 degrees C minimum.
- .3 Ventilation: Sufficient to prevent carbon monoxide or high levels of carbon dioxide and other injurious gases from affecting concrete.
- .4 Electrical Power: Sufficient to operate equipment normally used.

PART 2 – PRODUCTS

2.1 MATERIALS

- .1 Water: clean, potable and not detrimental to quality of concrete.

PART 3 – EXECUTION

3.1 EXAMINATION

- .1 Verify that existing concrete slab surface is ready to receive new resilient athletic flooring after the existing rubber flooring and associated adhesives are removed. Refer to flooring finish manufacturer for substrate requirements.
- .2 Beginning of installation shall mean acceptance of substrate and site conditions.

3.2 PREPARATION

- .1 Thoroughly clean all existing adhesives from the existing concrete floor slab in preparation for the installation of new resilient athletic flooring.
- .2 Refer to flooring manufacturer's instructions regarding providing for a flush and clean concrete slab surface to receive new resilient athletic flooring and associated adhesives.

3.3 PROTECTION

- .1 Protect and clean finished installation in accordance with the requirements of Section 01 74 00 -Cleaning and Waste Management.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Resilient athletic flooring, rubber wall base, painting of games lines and school logos and associated adhesives.
- .2 Flooring preparation.

1.2 RELATED SECTIONS

- .1 General Requirements Division 1
- .2 Concrete Floor Finishing Section 03 35 00

1.3 SUBMITTALS

- .1 Submit samples as Product Data: For each type of product indicated.
- .2 LEED Submittals:
 - .1 Product Data for Credit EQ 4.1: For adhesives, include printed statement of VOC content and chemical components.
- .3 Samples for Initial Selection: For each type of product indicated.
- .4 Samples for Verification: For each type of product indicated, in manufacturer's standard-size samples of each resilient product color, texture, and pattern required.
- .5 Product Schedule: For resilient products. Use same designations indicated on Drawings.

1.4 QUALITY ASSURANCE

- .1 Mockups: Provide resilient products with mockups specified in other Sections.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by Johnsonite, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

1.6 PROJECT CONDITIONS

- .1 Install resilient products after other finishing operations, including wall painting, have been completed.
- .2 Maintain ambient temperatures within range recommended by Johnsonite, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C) in spaces to receive resilient products during the following time periods:

09 65 00 – RESILIENT FLOORING

- .1 48 hours before installation.
- .2 During installation.
- .3 48 hours after installation.

- .3 Maintain the ambient relative humidity between 40% and 60% during installation.
- .4 Until Substantial Completion, maintain ambient temperatures within range recommended by Johnsonite, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

1.7 WARRANTY

- .1 Submit manufacturer’s warranty warranting material and performance for a period of five (5) years following the date of Substantial Performance of the Work.

PART 2 – PRODUCTS

2.1 RESILIENT ATHLETIC FLOORING

- .1 Heterogeneous Vinyl Resilient Athletic Sheet Flooring:
 - .1 Acceptable Manufacturer: Johnsonite, Inc. 16910 Munn Road Chagrin Falls, Ohio 44023. (Tel): 800-899-8916, E-mail: info@johnsonite.com, Web: www.tarketna.com
 - .2 TRAINING Specify – Heterogeneous Vinyl Resilient Athletic Sheet Flooring with the following physical characteristics:
 - .1 Complies with requirements for ASTM F 1303 Standard Specification for Sheet Vinyl Sheet Floor Covering With Backing, Type I Grade 1, Class C.
 - .2 Constructed with a .028" (0.7 mm) thick urethane coated clear wear layer.
 - .3 Roll/Sheet Width: 6' 6" (2 m).
 - .4 Wear layer/Overall thickness: .197" (5.0 mm).
 - .5 ASTM D 2047, Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring or 0.6 or greater.
 - .6 ASTM F 970, Standard Test Method for Static Load Limit – 175 PSI.
 - .7 ASTM E 648, Standard Test method for Critical Radiant Flux of 0.45 watts/cm² or greater, Class I.
 - .8 Johnsonite offers a RESTART reclamation program for returning jobsite scrap
 - .9 Vinyl Athletic Sheet contains 22% pre-consumer recycled content
 - .10 100% Recyclable
 - .11 Phthalate-free
 - .12 SCS FloorScore® Certified and meets California Specifications Section 01250
 - .13 Johnsonite facilities are ISO 9001 and ISO 14001 Certified
 - .14 LEED contributions for Vinyl Athletic Flooring include MR2; MR4; EQ4.3
 - .3 Colour:
 - .1 RVAF-1 (field): 9001 Beech
 - .2 RVAF-2 (accent): 8016 Royal Blue

2.2 INSTALLATION MATERIALS

- .1 Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation.
- .2 Adhesives: As recommended by Johnsonite to meet site conditions.
 - .1 Heterogeneous Vinyl Resilient Athletic Sheet Flooring.
 - .1 Johnsonite #925 Resilient Flooring Adhesive.
 - .2 Johnsonite #975 Two-Part Urethane Adhesive.
 - .3 Johnsonite 150 SpraySmart Adhesive

2.3 PAINT FOR GAMES LINES AND SCHOOL LOGO

- .1 Acceptable Manufacturers for Game Lines Paint:
 - .1 JFB Hart Coatings Inc. 820 Jorie Blvd. Suite 410, Oak Brook, IL.
Tel: 630-633-6228. Web: www.jfbhartcoatings.com
 - .2 Can Am Coatings Inc. 466 Vernon Way, El Cajon, CA 92020
Tel: 619-937-0430, Web: www.canamcoatings.com
Contact: Tom Whitelock
- .2 Game Line and Logo Paint Applicators:
 - .1 Complete Commercial Line Marking, Tel: 416-737-1229,
E-mail: billforbes.cclm@gmail.com Contact: Bill Forbes
- .3 Prior to application of painted games lines and school logo, clean in its entirety the resilient athletic flooring and ensure that the resilient flooring is free from debris and dust.

2.4 RUBBER WALL BASE

- .1 Resilient Base (RB 100): to CAN/CSA-A126.5, Type 1, rubber.
 - .1 Coved typical.
 - .2 Minimum 1200mm length and 100mm high by 3mm thick, with grooved back.
 - .3 Colour: 18 Navy Blue by Johnsonite.
 - .4 Cove base; Johnsonite: Rubber Wall Base, DC.
 - .5 Rubber base adhesive: Mapei Ultrabond ECO 575 or equal. Adhesive must produce good and permanent waterproof bond between wall surfaces and cove base.

2.5 TRANSITION STRIPS

- .1 Transition strips at dissimilar materials at all doorways:
 - .1 Aluminum or brass alloy with lip of edge strip extending under and with shoulder finishing flush with top of resilient floor.
 - .2 Stainless steel Schiene Profile by Schluter, type Reno-TK or equivalent.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the work.
- .2 Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

- .3 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- .1 Prepare substrates according to Johnsonite written instructions to ensure adhesion of Resilient Athletic Flooring.
 - .1 Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - .2 Remove substrate paint, coatings and other substances that are incompatible with adhesives or contain soap, wax, oil, solvents, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
 - .3 Mechanically remove contamination on the substrate that may cause damage to the resilient athletic flooring material. Permanent and non-permanent markers, pens, crayons, paint, etc., must not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and stain the flooring material.
 - .4 Prepare Substrates according to ASTM F 710 including the following:
 - .1 For glue down tile:
 - .1 Moisture Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - .2 Perform anhydrous calcium chloride test, ASTM F 1869. Results must not exceed 5 lbs. Moisture Vapor Emission Rate per 1,000 sq. ft. in 24 hours. OR
 - .1 Perform relative humidity test using in situ probes, ASTM F 2170. Must not exceed 80%.
 - .3 A pH test for alkalinity must be conducted. Results should range between 7 and 9. If the test results are not within the acceptable range of 7 to 9, the installation must not proceed until the problem has been corrected.
 - .4 Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer.
 - .2 Fill cracks, holes, depressions and irregularities in the substrate with good quality Portland cement based underlayment leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
 - .3 Floor covering shall not be installed over expansion joints.
 - .4 Do not install resilient products until they are same temperature as the space where they are to be installed.
 - .1 Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
 - .5 Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT ATHLETIC FLOORING INSTALLATION

- .1 Comply with manufacturer's written instructions for installing resilient athletic flooring.

- .2 Resilient Athletic Vinyl Sheet Flooring:
 - .1 Install with Johnsonite adhesive specified for the site conditions and follow adhesive label for proper use.
 - .2 Install rolls in sequential order following roll numbers on the labels.
 - .3 Reverse sheets unless instructed otherwise in Johnsonite Installation Instructions.
 - .4 Roll the flooring in both directions using a 100 pound three-section roller.
 - .5 Resilient Athletic Vinyl Sheet Flooring must be heat welded.
 - .6 Johnsonite Resilient Vinyl Sheet Flooring may be flash coved.
 - .1 Use Johnsonite CFS-00-A Cove Filler Strip.
 - .2 Net fit flooring material into the appropriate Johnsonite cove cap.

3.4 CLEANING AND PROTECTION

- .1 Comply with manufacturer's written instructions for cleaning and protection of resilient products.
- .2 Perform the following operations immediately after completing resilient product installation:
 - .1 Remove adhesive and other blemishes from exposed surfaces.
 - .2 Sweep and vacuum surfaces thoroughly.
 - .3 Damp-mop surfaces to remove marks and soil.
- .3 Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
 - .1 No traffic for 24 hours after installation.
 - .2 No heavy traffic, rolling loads, or furniture placement for 72 hours after installation.
- .4 Wait 72 hours after installation before performing initial cleaning
- .5 A regular maintenance program must be started after the initial cleaning.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

- | | | |
|----|--------------------|-------------------|
| .1 | Electrical | Division 16 |
| .2 | Resilient Flooring | Division 09 90 00 |

1.2 SCOPE OF WORK

- .1 With exceptions specified above or specifically called for in other Sections of the Specification, all paintwork is included in the scope of this Section of the Specification. Colours will be specified at a later date by the Consultant.
- .2 In locations where Drawings do not call for paint or similar finish on walls and/or ceilings, the intent of this Specification is that items, new work and existing surfaces in areas affected by the Work of this project, including miscellaneous metal work, shall be painted.
- .3 Work includes moisture testing and surface preparation of substrates as required for acceptance of paint, including cleaning, small crack repair, patching, caulking, and making good surfaces, and specific pre-treatments, sealing, and priming of surfaces.
- .4 Check conditions of all existing surfaces to be repainted before commencing new work, including assessing the level of degradation of the surface, the type of coating existing, and the thickness of the existing coating. Perform adhesion tests on all existing coatings to be repainted to ensure that surfaces are sound and well adhered before applying new coatings. It is expected that the Contractor will have visually assessed the existing conditions during the pre-tender site visit, and no contract extras will be considered for addressing conditions which were readily apparent at that time.
- .5 Perform interior painting called for in Room Schedule and noted on drawings. Paint all new walls, ceilings, bulkheads, and all surfaces which normally receive a paint finish, whether noted on schedules, or not noted. Walls shall be completely painted before installation of acoustic wall panels, tackboards and whiteboards, etc.
- .6 All heating units, recessed convectors, grilles, pipes, access panels, hangers and miscellaneous exposed metal work (other than stainless steel, anodized aluminum and baked enamel) to be painted to match the surfaces on which they occur, unless otherwise directed by Consultant.
- .7 For games lines, school logo, special painted graphics, colour changes, accent stripes, etc. refer to drawings and Section 09 65 00 Resilient Flooring.
- .8 In all renovated areas, paint affected walls as specified for new construction. All other walls in the room are to be cleaned and painted with one coat. If more than one colour is used in the room, confirm colours with Consultant.
- .9 Paint exposed drywall and the like in locations where finish is not otherwise specified or noted. Do not paint such surfaces in mechanical shafts, unless specifically noted.

- .10 Paint all exposed structural steel and mechanical ducts in finished areas where noted on the drawings.
- .11 Make good paint finish on shop coated work where damaged.
- .12 Paint visible portions of steel shelf angles, lintels and structural steel.
- .13 Paint edges and all faces of metal doors.
- .14 Paint entirely, including all top and bottom edges, of all wood doors.
- .15 Painting, as referred to herein shall include paint, enamel, stain, varnish and other finishes herein specified and normally applied to the various materials by the painting Subcontractor.

1.3 REFERENCE STANDARDS

- .1 Do painting and finishing to CAN/CGSB-85-GP series standards including Appendix A and to material manufacturer's instructions and to The Master Painters Institute (MPI) Architectural Painting Specification Manual and Maintenance Repainting Manual, except where specifically specified otherwise. The most stringent standards shall apply.
- .2 All coatings must conform to Regulation SOR/2009-264, Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations, and the VOC limits set therein.
- .3 All paints and coatings used must conform to Green Seal Standard GS-11 for paints and coatings based on performance requirements and reduced use of hazardous substances and reduced volatile organic compounds:

1.4 QUALIFICATIONS

- .1 The Painting Subcontractor must be a member in good standing of the Ontario Painting Contractors' Association.

1.5 INSPECTION

- .1 A cash allowance has been included for independent painting inspections. The cost of the painting inspection is to be paid from the Cash Allowance included in the Contract. Refer to Section 01 10 00.
- .2 Painting shall not commence until the inspection company has been notified and the Inspector makes the initial site visit.

- .3 Supply the Inspector with a schedule of materials intended for use on the job at the commencement of the painting.
- .4 The Inspector will issue Inspection Reports during the Project. On completion of the job, the final Inspection Report will be issued.

1.6 WORK ENVIRONMENT

- .1 Do not apply paint finish in areas where dust is being generated.
- .2 Maintain environmental conditions within limits recommended by manufacturer, for optimum results. Do not apply coatings under environmental conditions outside manufacturer's absolute limits.
- .3 Conform to requirements of MPI Architectural Specification Manual including recommendations for surface preparation.

1.7 ACCEPTANCE OF WORK IN PLACE

- .1 Submit written confirmation of acceptance of existing conditions, to the Consultant, prior to commencing painting work. Painting may not commence without submission of this confirmation.
- .2 Receipt of this confirmation will be considered a prerequisite for certification of payment for this work.
- .3 Notify the Consultant, in writing, immediately if any existing condition is encountered that will prevent the attainment of satisfactory results in this work

1.8 SUBMITTALS

- .1 Samples:
 - .1 Submit triplicate samples consisting of 300mm x 200mm panels of each type of paint finish specified.
 - .2 Panels shall be of same material as that on which sample coatings are to be applied in the field where possible.
 - .3 Identify each sample as to job, name of paint manufacturer, finish, colour, name and number, sheen and gloss units and name of Contractor.
 - .4 Retain one set of approved samples on site until completion of the Work.
- .2 Submit manufacturer's data sheets for each paint product, including:
 - .1 Product characteristics
 - .2 Surface preparation instructions and recommendations Primer requirements and finish
 - .3 specifications
 - .4 Storage and handling recommendations
 - .5 Application methods

- .6 Cautions
- .7 VOC data

- .3 Submit written confirmation of acceptance of existing conditions, as specified above.

1.9 STORAGE AND HANDLING

- .1 Store paint and painter's materials in clean, dry locations approved by the Consultant. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.

- .2 All paint shall be in unopened containers, labelled with:
 - .1 manufacturer's name,
 - .2 product name, product type,
 - .3 instructions for surface preparation and product application,
 - .4 VOC content,
 - .5 environmental issues,
 - .6 batch date, and
 - .7 colour name and number.

- .3 Provide CO2 fire extinguisher minimum 9 kg capacity in paint storage area.

- .4 Dispose of materials in accordance with the requirements of authorities having jurisdiction.

1.10 SIGNS

- .1 Provide legible signs throughout the Work reading "WET PAINT" in prominent positions during painting and while paint is drying.

- .2 Use 75mm high letters on white card or board.

1.11 TEMPORARY COVERS AND PROTECTION

- .1 Protect floors and other surfaces with temporary covers such as dust sheets, polyethylene film or tarpaulins. All to Consultant's approval.

- .2 Mask identification plates occurring on equipment, switch boxes, and fire rating labels, etc. which require painting.

- .3 Protect, remove and replace hardware, accessories, lighting fixtures, and similar items as required except primed for paint door closers which shall be painted. Light switches and electrical communication outlet plates to be removed and reinstalled on completion of painting.

- .4 Keep oily rags, waste and other similar combustible materials in closed metal containers; take every precaution to avoid spontaneous combustion, remove waste and combustible materials daily.
- .5 Clean surfaces soiled by spillage of paint, paint spattering and the like. If such cleaning operations damage the surface, repair and replace damaged work at no cost to the Owner.

1.12 RETOUCHING

- .1 Do all retouching, etc. to ensure that the building may be handed over to the Owner in perfect condition, free of spatter, finger prints, rust, watermarks, scratches, blemishes of other disfiguration.
- .2 After fully decorating and retouching a room or other area, notify Consultant. After inspection and final approval by Consultant post sign 'DECORATING COMPLETE - NO ADMITTANCE WITHOUT PERMISSION'.

1.13 TEST AREAS

- .1 In areas to be repainted, test existing coatings for adhesion before applying new coatings, in accordance with the recommended practices in the MPI Repainting Specification Manual. Check for loose paint using a scraper and check for adhesion by cutting through the coatings and performing duct tape tests, or other acceptable means of testing adhesion. Once adequate adhesion is confirmed, apply a test section of the proposed new coating, allow to dry, and perform adhesion tests in area of new coating to confirm compatibility with existing coatings before proceeding with repainting work. Perform tests in all areas and on all surface types to ensure positive repainting results. Advise Consultant of any areas in which existing or new coatings fail adhesion tests. Do not proceed with the work until a recommended course of action is agreed upon by all parties. Commencement of work will signify acceptance of existing conditions.
- .2 In areas of new construction, A room or area in the building will be designated by the Consultant as a test area to establish standard of workmanship, texture, gloss and coverage.
- .3 Prior to any painting being started, request a meeting on Site between Consultant, Contractor, and Subcontractor and Inspector to review conditions, surfaces, anticipated problems and to clarify quality of workmanship acceptable to Consultant.
- .4 Apply finishes to each type of surface within room with correct material, coats, colour, texture and degree of gloss in sample area and have same approved prior to providing Work of this Section.
- .5 Retain test area until after completion of Work. Test area to be minimum standard for the Work.
- .6 Failure to comply with the above will be cause for Consultant to request all Work previously painted to be repainted.

1.14 MAINTENANCE MATERIALS

- .1 Provide one sealed can, one litre capacity, of each product in each colour used in the Work for Owner's use in maintenance Work.
- .2 Container to be new fully labelled with manufacturer's name, type of paint, and colour.

1.15 WARRANTY/GUARANTEE

- .1 Furnish a warranty valid for three (3) years from date of Substantial Performance, or from date of completion of Work if work is not complete at date of Substantial Performance, will be required.
- .2 Subcontractor's Maintenance Bond shall warrant that the work has been performed in accordance with the standards and requirements of the MPI Architectural Painting Specification Manual, most recent edition.

PART 2 – PRODUCTS

2.1 MATERIALS

- .1 Paint and finishing materials - highest grade, first line quality, low VOC products provided by any of the following manufacturers:
 - .1 Benjamin Moore & Co.
 - .2 Dulux
 - .3 General Paints
 - .4 Sico Paints
 - .5 PPG Canada
 - .6 Para Paints.
- .2 Paint will be selected by the Consultant from any one of the above manufacturers. Contractor to carry one of the manufacturers listed and is required to colour match the paint colours selected by the Consultant to the Consultant's satisfaction.
- .3 Paints, enamels, fillers, primers, varnishes and stains - ready mixed products of one of the manufacturers listed. Substitutes will not be allowed.
- .4 Thinners, cleaners - type and brand recommended by the paint manufacturer, or Inspector.
- .5 Only products manufactured by paint manufacturer stated at time of submission of samples will be allowed on Site unless other materials specifically specified herein. No painting to be performed until paint manufacturer identified and acceptance received from the Consultant and Inspector.

- .6 Deliver materials to Site in original unbroken containers bearing brand and maker's name. The presence of any unauthorized material or containers for such, on Site shall be of sufficient cause for rejection of ALL paint materials on Site at that time, and all previous painted work repainted with proper material.

2.2 COLOUR SCHEDULE

- .1 Consultant will provide detailed colour schedule at a later date. Conform to schedule including patterns, colours, and locations for all finishes.
- .2 A minimum of ten (10) paint colours may be selected by the Consultant.
- .3 In each room, the Consultant may select one wall where an accent colour may be applied.
- .4 Refer to room finishing notes for detailed application instructions.

2.3 FINISHING SYSTEMS

- .1 Interior Work:
 - .1 Drywall:
 - .1 INT 9.2M Institutional Low Odour/ Low VOC, semi-gloss finish
 - .2 1 coat Primer; MPI #149
 - .3 Walls: 2 coats MPI #147
 - .4 Ceilings: 2 coats of one of the following:
 - .1 2 coat Dulux Lifemaster Interior Acrylic Ceiling Flat # 59170 Zero VOC
 - .2 or equal by one of the approved manufacturers.
 - .5 All drywall, whether requiring finish painting or not, must receive prime coat.
 - .2 Concrete Block, paint:
 - .1 INT 4.2E (modified), Institutional Low Odour/ Low VOC, semi-gloss finish, 4 coat system
 - .2 2 coats latex blockfiller; MPI #4
 - .3 2 coats finish; MPI #147
 - .4 Provide gloss finish, MPI #148, where noted as "gloss" in Room Finish Schedule.
 - .3 Concrete Block, glaze:
 - .1 INT 4.2J (modified), Epoxy-modified Latex Finish, 4 coat system
 - .2 2 coats latex blockfiller; MPI #4
 - .3 2 Coats epoxy-modified latex finish; MPI #115
 - .4 Provide in all hallways and washrooms, and where noted as "glazed" in Room Finish Schedule.
 - .4 Concrete Block, wet areas:

- .1 INT 4.2G (modified), Epoxy “Tile like” Finish, 4 coat system
- .2 2 coats latex blockfiller; MPI #116
- .3 2 Coats epoxy-modified latex finish; MPI #77
- .4 Provide in all hallways and washrooms, and where noted as “glazed” in Room Finish Schedule.

- .5 Cast in Place Concrete walls, ceilings:
 - .1 INT 3.1M Institutional Low Odour/ Low VOC, semi-gloss finish
 - .2 1 coat MPI #149
 - .3 2 coats MPI #147

- .6 Woodwork (Opaque Finish):
 - .1 INT 6.4T Institutional Low Odour/ Low VOC, semi-gloss finish
 - .2 1 coat latex primer MPI #39
 - .3 2 coats institutional low VOC latex finish; MPI #147

- .7 Stain Finish:
 - .1 LEED Complaint Stain
 - .2 Coats Varnish, Water Based, clear gloss; MPI #130

- .8 Ferrous Metal:
 - .1 INT 5.1S Institutional Low Odour/ Low VOC, semi-gloss finish
 - .2 1 coat MPI #107
 - .3 2 coats MPI #147

- .9 Shop Primed Ferrous Metal:
 - .1 INT 5.1S Institutional Low Odour/ Low VOC, semi-gloss finish
 - .2 Confirm type of shop primer used with structural steel supplier.
 - .3 Confirm compatibility of all coatings with manufacturers.
 - .4 Touch up prime coat where damaged, with compatible primer, type MPI#107.
 - .5 2 coats interior latex, MPI #147

- .10 Galvanized Metal:
 - .1 Includes all hollow metal doors, frames and screens.
 - .2 INT 5.3N Institutional Low Odour/ Low VOC, semi-gloss finish
 - .3 1 coat galvanized Primer MPI #134
 - .4 2 coats Acrylic Semi-Gloss MPI #147

- .11 Insulation on Pipes & Ducts:
 - .1 INT 6.8F Institutional Low Odour/ Low VOC, semi-gloss finish
 - .2 1 coat Primer MPI #17
 - .3 2 coats Acrylic Semi-Gloss MPI #147

- .12 Mechanical Equipment:
 - .1 Institutional Low Odour/ Low VOC, semi-gloss finish

-
- .2 As specified for metal types.

 - .13 Piping, Conduit & Ductwork (uncoated):
 - .1 INT 5.3N Institutional Low Odour/ Low VOC, semi-gloss finish
 - .2 1 coat galvanized Primer MPI #134
 - .3 2 coats Acrylic Semi-Gloss MPI #147

 - .14 Surfaces behind grilles, within 30mm of grille:
 - .1 INT 5.3N Institutional Low Odour/ Low VOC, flat finish
 - .2 1 coat galvanized Primer MPI #134
 - .3 2 Coats Acrylic Flat, Black; MPI #143

 - .15 Concrete Floors:
 - .1 1 Coat Water-Borne Epoxy (diluted 10-20% with water) MPI #115
 - .2 2 Coats Water-Borne Epoxy MPI #115
 - .3 VOC emissions of coating not to exceed 200 g/l.

 - .16 NOTE: Use heat resistant paint where required.

PART 3 - EXECUTION

3.1 PREPARATION OF SURFACES

- .1 Prepare surfaces in accordance with the following standards and to MPI Architectural Specification Manual Chapters 2 and 3; the most stringent requirements shall apply. Preparation of surfaces must be reviewed with painting inspector. Prepared surfaces must be inspected before application of prime coat.
 - .1 Prepare wood surfaces to CGSB 85-GP-IM. Use CAN/CGSB 1.126 vinyl sealer over knots and resinous areas. Use CGSB 1-GP -103M wood paste filler for nail holes. Tint filler to match.
 - .2 Touch up damaged spots of shop paint primer on steel with CAN/CGSB 1.40M to CGSB 85-GP-14M.
 - .3 Prepare galvanized steel and zinc coated surfaces to CGSB 85-GP-16M. This includes wiped coated steel surfaces.
 - .4 Prepare masonry and concrete surfaces to CGSB 85-GP-31M.
 - .5 Prepare wallboard surfaces to CGSB 85-GP-33M. Fill minor cracks with plaster patching compound for stained woodwork.
 - .6 Prepare concrete floors to CGSB 85-GP-32M.
 - .7 Prepare copper piping and accessories to CGSB 85-GP-20M.

-
- .8 Apply prime coat on wood scheduled for paint finish before installation.
 - .9 Back prime wood scheduled for transparent finish. Do not prime surfaces scheduled for transparent finish.
 - .10 Remove all surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mould, mildew, mortar, efflorescence, and sealers from existing surfaces to assure sound bonding to tightly adhering old paint.
 - .11 Scape peeling paint off existing masonry surfaces and apply a compatible masonry sealer, approved for use by the paint manufacturer, before applying new coatings.
 - .12 Glossy surfaces must be clean and dull before repainting. Wash with abrasive cleanser, or, wash thoroughly and dull by sanding.
 - .13 Spot prime any existing bare areas with an appropriate primer.
 - .14 Check for compatibility between existing and new coatings by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow surface to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required.
 - .15 NOTE: ABOVE NOTED SURFACES MAY NOT ALL BE APPLICABLE TO THIS PROJECT.

3.2 APPLICATION

- .1 Apply coatings in accordance with manufacturer's printed instructions.
- .2 Use suitable, clean equipment in good condition.
- .3 Maintain dust-free suitable conditions on the surfaces free from machine, tool or sandpaper marks, insects, grease, or any other condition liable to impair finished work to prevent production or good results.
- .4 At all hollow metal doors and frames, prime coat must be inspected and signed off by painting inspector before painting work may proceed.
- .5 Apply evenly, uniform in sheen, colour and texture, free from brush or roller marks, well brushed or rolled in and free of crawls, runs, join marks or other defects.
- .6 Permit paint to dry between coats. Touch up uneven spots after applying first coat. Tint various coats of multiple coat work in light shades of the final colour selected, to distinguish between coats.
- .7 Give Consultant and Inspector due notice and sufficient opportunity (minimum 48 hours) to inspect each coat. Do not proceed with subsequent coat until preceding coat

- approved. Consultant reserves the right to order complete retreatment if this condition is not observed.
- .8 Painting coats are intended to cover surfaces perfectly; if in painter's opinion, formula specified is inadequate to provide a first class finished surface, report to the Consultant and have formulas rectified before commencing work. Surfaces imperfectly covered shall receive additional coats at no additional cost. Provide additional coat where ever dark colours are used.
 - .9 Use paint unadulterated. Use same brand of paint for primer, intermediate and finish coats. Factory mix all paints.
 - .10 Paint finish shall be applied by roller except in the case of wood trim, door frames, base board and similar work of small surface area which shall be painted by brush. Do not use roller for applying finish other than paint.
 - .11 Spray painting will not be permitted unless specifically approved in writing by the Consultant in each instance. Consultant may withdraw approval at any time and prohibit spray painting for reasons such as carelessness, poor masking or protection measures, drifting paint fog, disturbance to other Trades, or failure to obtain a dense, even, opaque finish. Spray painting shall be full double coat, i.e. at least two passes for each coat. Do not use spray or roller on wood or metal surfaces, brush only unless approved in writing by Consultant.
 - .12 Paint entire surfaces, including areas where millwork, white boards, tackboards and acoustic wall panels or other items are to be installed on top of walls.
 - .13 Finish edges of doors with paint or stain treatment as required to match face of door. Seal hidden edges of wood doors with one coat of shellac and one coat gloss varnish or two coats paint. Repaint tops and edges of wood doors after fitting.
 - .14 Even up stained woodwork in colour as required by nature of wood and as directed by Consultant. Apply same finish on trim, fitments cupboards and other protecting ledges as on surrounding work, disregard sight lines.
 - .15 Carefully hand smooth and sandpaper wood between coats (including priming). Apply one coat sealer before applying first coat paint filler to knots or sap blemishes on wood surfaces to receive paint or stain finish.
 - .16 After first coat, fill nail holes, splits and scratches, using putty coloured to match finish.
 - .17 Remove rust, oil, grease and loose shop paint from metal work by brushing or with wire brushes and make good shop coat before proceeding with final finish. Feather out edges to make touch up patches inconspicuous.
 - .18 Clean castings with wire brush before application of first paint coat.
 - .19 Do not etch galvanized metal. Use zinc rich primer. This includes metal door frames and the like with wiped zinc coating.

- .20 Note that primer is required on all hollow metal doors, frames and screens. Three coat system is required. Sand between all coats.
- .21 Remove form oil or parting compounds from concrete surfaces. Use Xylol or approved compound.
- .22 Paint interior of pipe spaces, ducts, etc. visible through grilles or through linear metal ceilings in black matt finish.
- .23 Conform with Consultant's colour schedule and exactly match approved samples.
- .24 Mechanical and Electrical Pipes, Ducts and Conduits:
 - .1 Commence Work when piping installation is complete in the area concerned.
 - .2 Do not paint plated or other prefinished surfaces, unless otherwise noted.
 - .3 Paint conduit in same colour as background paint.
 - .4 Apply formulae specified even though surface prime painted at shop prior to delivery. Touch up shop priming where damaged.
 - .5 Use heat resistant epoxy paint on pipes and surfaces where operating surface temperature exceeds 65 degrees C.

3.3 REPAIRS

- .1 Cracks occurring in walls or ceilings requiring patching during "Warranty Period" shall be repainted in such a way that the patch is not visible at a distance of 1m.
- .2 If patch painting is not acceptable, repaint entire wall, or ceiling.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 This Section Includes requirements for supply and installation of the following, as required for complete and proper installation:
 - .1 Visual Display Surfaces:
 - .1 Porcelain Writing Surfaces; White Boards (WB)
 - .2 Aluminum Trim Systems:
 - .1 Permanent Trim System
 - .3 Accessories:
 - .1 Display and Marker Rails

1.2 RELATED SECTIONS

- .1 General Requirements. Division 01
- .2 Painting Section 09 91 00

1.3 REFERENCE STANDARDS

- .1 Specification American Society for Testing and Materials (ASTM):
 - .1 ASTM B221, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
 - .2 ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2 Underwriters Laboratories Canada (ULC):
 - .1 CAN/ULC S102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .3 Porcelain Enamel Institute (PEI):
 - .1 PEI 901, Special Finish for Porcelain Enamel
 - .2 PEI 1001, Specifications for Architectural Porcelain Enamel
 - .3 PEI 1002, Manual and Performance Specifications for Porcelain Enamel Writing Surfaces.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination: Coordinate the Work of this Section with the installation of interior substrate and adjacent finishes; Sequence work so that installation of visual display units and trim coincides with installation of substrate preparation without causing delay to the Work.
- .2 Pre-Construction Conference: Arrange a site meeting attended by the Contractor, the Subcontractor, the Architect, materials supplier, and other relevant personnel before commencement of work for this Section.

- .1 Review methods and procedures related to installation, including manufacturer's written instructions;
- .2 Examine substrate conditions for compliance with manufacturers installation requirements.

1.5 SUBMITTALS

- .1 Samples: Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
 - .1 Provide Manufacturer's colour charts showing the full range of colours and textures for initial selection of materials for actual sections of porcelain enamel finish for each type of marker board required. To be selected by the Consultant.
 - .2 Submit samples for verification for the following products, showing colour and texture or finish selected; include sample sets showing the full range of variations expected where finishes involve normal colour and texture variations; prepare samples from the same material to be used for the work.
 - .1 Visual Display Boards: Sample panels not less than 300mm x 300mm, mounted on the substrate indicated for the final Work.
 - .1 Include a panel for each type, colour and texture required.
 - .2 Aluminum Trim and Accessories: Samples of each finish type and colour, on 150mm long sections of extrusions and not less than 100mm squares of sheet or plate. Include Sample sets showing the full range of colour variations expected.
- .2 Product Data:
 - .1 Submit Product data in accordance with Section 01 33 00 – Submittal Procedures.
 - .2 Submit manufacturer's data sheets covering the care and recommended maintenance procedures for incorporation into maintenance manuals.
- .3 Shop Drawings:
 - .1 Submit Shop Drawings for porcelain writing (white board – WB) systems in accordance with Section 01 33 00 – Submittal Procedures.
 - .2 Shop Drawings shall indicate the following:
 - .1 Include dimensioned elevations
 - .2 Show location of joints between individual panels where unit dimensions exceed maximum panel length.
 - .3 Include sections of typical trim members.
 - .4 Show anchors, grounds, reinforcement, accessories, layout and installation details.
- .4 Maintenance Data: Provide operations and maintenance submittals in accordance with Section 01 78 00 – Closeout Submittals.
 - .1 Submit recommended procedures for normal cleaning and removal of stains. Include precautions in use of cleaning materials that may be detrimental to surfaces.

1.6 QUALITY ASSURANCE

- .1 Source Limitations: Obtain pre-manufactured visual display units through one source from a single manufacturer.
- .2 Submit in writing, a document stating that the applicator of the visual display units specified in this section is recognized by the manufacturer as suitable for the execution of the Work.
- .3 Perform Work in accordance with the manufacturer's written instructions.
- .4 Maintain one copy of manufacturer's written instructions on site.
- .5 At all times during the execution of the Work of this Section, allow access to Work site by the manufacturer's representative.
- .6 Components used in this section shall be sourced from one manufacturer, including face sheet, core and balancing rear sheet, trim, accessories, mounting brackets and fasteners.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Schedule delivery of visual display units for spaces which are sufficiently complete so that visual display units can be installed upon delivery.
- .2 Delivery: At the time of delivery, visually inspect all materials for damage. Note any damaged to materials on the receiving ticket and immediately report to the shipping company and the material manufacturer.
 - .1 Remove damaged materials from the site immediately.
- .3 Storage:
 - .1 Store products as recommended by manufacturer, within unopened packaging until ready for installation.
 - .2 Store materials off the ground and cover with a weather proof flame resistant sheeting or tarpaulin, protecting the products from exposure to harmful weather conditions and at temperatures and humidity conditions recommended by manufacturer.
- .4 Handle products in accordance with sound material handling practices and in accordance with manufacturer's written instructions.

1.8 SITE CONDITIONS

- .1 Verify field measurements before preparation of shop drawings and before fabrication to ensure proper fitting and as follows:
 - .1 Coordinate fabrication schedule with construction progress to avoid delaying the Work.

- .2 Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.
- .2 Establish dimensions and proceed with fabricating visual display surfaces without field measurements where field measurements cannot be made without delaying the work. Coordinate wall construction to ensure actual dimensions correspond to established dimensions.

1.9 WARRANTY

- .1 Provide two (2) year warranty from date of purchase to replace defective materials or workmanship in the visual display unit, trim and hardware, providing the visual display unit has been correctly installed on an approved substrate according to the installation procedures of the manufacturer.
- .2 Writing Surfaces: Provide manufacturer's Lifetime warranty against defects due to normal usage and wear.

PART 2 – PRODUCTS

2.1 MATERIALS MANUFACTURER

- .1 Acceptable Manufacturers:
 - .1 ASI Visual Display Products, 2200 Bromsgrove Road, Mississauga, Ontario, Canada, L5J 1L4. Tel: 905-822-4287, Web: www.asi-visualdisplayproducts.com

2.2 VISUAL DISPLAY SURFACES

- .1 White Board/Marker Board Writing Surfaces (WB):
 - .1 Porcelain enamel writing surface, manufactured in accordance with the Porcelain Enamel Institute's specification, and consisting of a sandwich type construction of face panel, core and balancing rear sheet.
 - .1 Face Sheet: Ceramic-on-steel, ultra-smooth writing surface, scratch, stain, bacterial and fire resistant.
 - .1 Continuous coil-coating process, consisting of a steel core of light gauge covered on both sides with thin enamel coatings, for a thickness of 0.48mm (0.019").
 - .2 Core: Use any one of the following core materials to the manufacturer's standards:
 - .1 11.1mm (7/16") thick, impregnated sound absorbing fibreboard laminated under heat and pressure to face panel and rear sheet utilizing adhesives that ensure rupturing of the component materials before failure of joint contact surfaces.
 - .2 11mm (7/16") thick particle board or MDF core material

- complying with requirements of ANSI A208.1, Grade 1 M 1.
- .3 Rear Balancing Sheet: 0.318mm (30 gauge) thick, zinc coated stretcher leveled steel, one piece, sized to span full panel without joints.
 - .4 Laminating Adhesive: Manufacturer's standard, moisture resistant, thermoplastic type adhesive.
 - .5 Panel Characteristics:
 - .1 Overall Thickness: 12.7mm (1/2") Thick
 - .2 Colour: White
 - .3 Gloss: Low Gloss
 - .4 Max Panel Size: 1220mm x 2440mm (48" x 96")
 - .6 Basis of Design Materials: e³ CeramicSteel Writing Surface by ASI Visual Display Products – ASP.

2.3 ALUMINUM TRIM SYSTEMS AND ACCESSORIES

- .1 Permanent Trim System: Extruded from aluminum alloy 6063 T5, clear anodized satin finish, free from extruding draw marks and surface scratches. Full length for each visual display unit.
 - .1 Perimeter Trim: No.205
 - .2 Dividerstrip: No.207
 - .3 Marker/Chalk Tray: No.212, complete with end pieces to be provided at full length of each white board (WB)

2.4 FABRICATION

- .1 Shop fabricated visual display units in one piece for lengths 3658mm (12'-0") or less, for longer sections colour match adjacent pieces.
- .2 Laminate face sheets rear balancing sheet to the core in accordance with the visual display unit manufacturer's recommendations.
- .3 Apply pre-finished trim in continuous horizontal and vertical lengths, cut and mitred at corners, and as follows:
 - .1 Marker Boards/White Board (WB):
 - .1 Provide continuous marker/chalk trays below all white boards.
 - .2 Use adhesive to secure center portions of panels.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions:
 - .1 Examine Substrates to receive work and surrounding adjacent surfaces for conditions affecting installation.

- .2 Sheathing panels must be securely fastened and installed flush to ensure a continuous substrate in accordance with manufacturer published literature.
 - .3 Fastener penetrations must be set flush with sheathing and fastened in to solid backing.
 - .4 Notify Architect in writing of any discrepancies. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrate.
-
- .2 Notify Contractor in writing of any conditions that are not acceptable.
 - .3 The installing contractor shall examine and determine that surfaces and conditions are ready to accept the Work of this section in accordance with published literature. Commencement of Work or any parts thereof shall mean installers acceptance of the substrate.
 - .4 Final Observation and Verification:
 - .1 Final inspection of visual display units shall be carried out by the Owner's representative, and the contractor.
 - .2 Contact Manufacturer for warranty issuance requirements.

3.2 CLEANING AND PROTECTION

- .1 Progress Cleaning: Leave work area clean at the end of each work day, ensuring safe movement of passing pedestrians.
- .2 Waste Management: Co-ordinate recycling of waste materials and packaging at appropriate facility, diverting waste from landfill. Certified installer shall be responsible for ensuring waste management efforts are practiced.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE OF WORK

- .1 Supply and install motorized black-out windows shades/blinds and associated window shade accessories, complete with all hardware and fittings, as required to secure window shades to existing aluminum framed exterior windows, and as indicated on drawings.
- .2 Connect motorized black-out windows shades/blinds to existing power connection.

1.2 SUBMITTALS

- .1 Submit shop drawings in accordance with Section 01 33 23.
 - .1 Clearly indicate fabrication details, plans, deviations, hardware and installation details. Indicate finishes, dimensions, operator details, anchorage details and accessories details.
 - .2 Show full-size details, edge details, attachments, etc,
 - .3 Indicate material types and finishes.
 - .4 Take measurements on site of spaces and conditions to which work must conform. Indicate field dimensions on shop drawings.
- .2 Samples: Submit samples of shade fabric and hardware, for confirmation of colour selections by Consultant.
- .3 Submit Test Reports affirming that the shade fabric conforms to flame retardance criteria as tested in accordance with CAN/ULC-S109.

Operation and Maintenance Manuals: Provide manufacturer's care and maintenance information for inclusion in maintenance manuals.

1.3 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver product in manufacturer's standard protective packaging.
- .2 Do not product, including all components and accessories, to Project site until immediately prior installation.
- .3 Store material flat, in a dry area, protected from the elements.
- .4 Handle materials so as to prevent damage to finished surfaces.

1.4 PROTECTION

- .1 Protect installed work from damage, with protective coverings, until building is turned over to the Owner.
- .2 Comply with the printed directions, issued by surface manufacturers.

1.6 WARRANTY

- .1 Provide a warranty for window shades in conformance with the Contract Requirements, but for a period of five (5) years.
- .2 The warranty shall cover the complete installation against defective materials and workmanship.
- .3 Warranties shall be issued to the Owner within two (2) Working Days following the date of Substantial Performance of the Work.

PART 2 PRODUCTS

2.1 MATERIALS AND FABRICATION

- .1 Motorized Window Shading System: Linear motor shade tube and all necessary electrical accessories for switch or automatic operation in accordance with the control specifications.
 - .1 Internal Limit Switches: hex key adjustable limit switches to allow exact setting of top and bottom stop positions.
 - .2 Brake: solenoid activated disc brake, providing stop and hold capability in any position. Brake shall automatically disengage when the motor is operating.
 - .3 Motor: CSA approved, maintenance free, asynchronous with built-in reversible capacitor start and run, 95-125V, AC at 60Hz, single phase. Maximum temperature rating of 140°C. Thermally protected and totally enclosed. Motor operator shall be concealed inside the shade tube.
 - .4 Gear Box: 3 levels of satellite gears, planetary type, tempered steel.
 - .5 Controls: maximum two motors shall be operated by a white three position rocker switch, located remotely as directed by the Consultant. Where required, motors shall be connected to a Motor Group Control (MGC) located as shown on the manufacturer's wiring diagrams. Control from a single location.
 - .6 Shade Tube: extruded aluminum tube, 6063-T5 alloy, 64mm outside diameter with internal keyway to receive tubular motor. Tube shall be extruded with two fabric mounting channels designed to accept extruded vinyl, snap-lock splines to support fabric shade. Tube shall be complete with all required support brackets, hardware and end plugs.
 - .7 Hem Bar: Exposed type, extruded 6063-T5 aluminum, clear anodized finish with steel inserts and end caps.
 - .8 Fascia: Extruded 6063-T5 aluminum with clear anodized finish. Fascia shall be complete with extruded aluminum mounting clips and brackets. Do not use exposed fasteners.
 - .9 Side and Bottom Blackout Channels: Extruded aluminum channels, 57mm by 29mm complete with blackout bristles on both sides of channels to minimize light infiltration.
- .2 Blackout Fabric: 100% opaque, vinyl-coated glass fibre shade material laminated with two-ply PVC blackout film. If sewn, needle holes shall not permit light penetration. The fabric shall be washable with soap and water. Colour will be selected by the Consultant from the manufacturer's standard range. The fabric shall be dimensionally stable, hang flat without buckling or distortion and shall be certified by an independent laboratory to pass flame retardant tests according to CAN/ULC-S109.

2.2 ACCEPTABLE MANUFACTURERS AND PRODUCTS

- .1 Motorized Window Shades:
 - .1 Hunter Douglas Contract Window Coverings: Motorized RB 500 Roller Shades with Morocco Blackout Fabric.
 - .2 Nysan Shading Systems Ltd.: Vertical Motorized Roller Shading System with Morocco Blackout Fabric.
 - .3 Solarfective Products Limited: Motorized Room-Darkening Shading System with SolarStop Blackout Fabric.

PART 3 EXECUTION

- .1 Installation:
 - .1 Install motorized window shades where shown on Drawings following the manufacturer's printed specifications.
 - .2 Install all components of the shading system including control equipment. This section shall be responsible for the connection of the motorized window shade electrical components to the existing electrical power.
 - .3 Provide support brackets as required to prevent deflection of components.
 - .4 Use non-corroding metal fasteners for installation.
 - .5 Adjust system to provide for smooth operation without binding.
- .2 Demonstration:
 - .1 Demonstrate to the Owner's personnel the operation and maintenance requirements for the equipment of this section.

3.1 CLEANING AND PROTECTION

- .1 After installation is complete, clean surfaces of installed work. Cleaners shall be of type recommended by the screen manufacturer, and shall be performed in accordance with manufacturer's maintenance instructions.
- .2 Provide protection in a manner acceptable to the manufacturer, to ensure window shades are without damage or deterioration at time of occupancy of the building by the Owner.

END OF SECTION

CONTENTS

<u>SECTION</u>	<u>TITLE</u>
16010	Electrical General Requirements
16050	Basic Materials and Methods
16500	Lighting Systems

END OF SECTION

CONTENTS

<u>SUBSECTION</u>	<u>TITLE</u>
1.1	References
1.2	Application
1.3	Work Included
1.4	Intent
1.5	Workmanship
1.6	Temporary & Trial Usage
1.7	By-Laws & Regulations
1.8	Permits & Fees
1.9	Certificates
1.10	Guarantee - Warranty
1.11	Specifications, Drawings & Job Conditions
1.12	Reserved
1.13	Shop Drawing Material & Lists
1.14	Record Documents
1.15	Job Site Work Shop and Storage
1.16	Protection
1.17	Instructions to Operator
1.18	Cleaning and Adjustment
1.19	Completion
1.20	Submission Requirements
1.21	Alteration to Existing Building
1.22	Contract Documents
1.23	Project Related Notes
1.24	Definitions

1.1 REFERENCES

- .1 Division 1, General Requirements, is a part of this Section and shall apply as if repeated here.

1.2 APPLICATION

- .1 This Section applies to and is a part of all Sections of Division 16.

1.3 WORK INCLUDED

- .1 Sections of these Electrical Specifications are not intended to delegate functions nor to delegate work and supply to any specific trade and the work shall include all labour, materials, equipment and tools required for a complete and working installation as described.

1.4 INTENT

- .1 Mention herein or indication on drawings of articles, materials, operations or methods requires: supply of each item mentioned or indicated, of quality, or subject to qualifications noted; installation according to conditions stated and; performance of each operation prescribed with furnishing of necessary labour, equipment and incidentals for Electrical Trade, Division 16.
- .2 Supplementary to definitions established are: `Supply' shall mean furnishing to site in location required or directed complete with accessory parts. `Install' shall mean set in place and secured or affixed to building structure as noted or directed. `Provide' shall mean supply and install as each is described.
- .3 Where used, wordings such as "approved, to approval, as directed, permitted, permission, accepted, acceptance", shall mean: approved, directed, permitted, accepted, by authorized representative of the Owner.
- .4 Equipment and installation provided under this Division shall conform to applicable standards and regulations of the following organizations:
- Canadian Standards Association (CSA)
Underwriter's Laboratories of Canada (ULC)
Ontario Electrical Safety Code (OESC)
Electrical Safety Authority (ESA)
Ontario Building Code (OBC)

1.5 WORKMANSHIP

- .1 Workmanship and method of installation shall conform to best standards and practice. Where required by local or other By-Laws and Regulations, tradesmen shall be licensed in their trade.

1.6 TEMPORARY & TRIAL USAGE

- .1 Temporary or trial usage of any equipment or materials shall not be construed as evidence of acceptance of same and no claim for damage shall be made for injury to or breaking of any part of such work which may be so used..

1.7 BY-LAWS & REGULATIONS

- .1 Work shall conform with latest rules, regulations and definitions of Canadian Electrical Code and applicable Municipal and Provincial Codes and Regulations, and with requirements of other authorities having jurisdiction in the area where work is to be performed. Minor changes required by an authority having jurisdiction shall be carried out without change to the Contract amount. Standards established by drawings and specifications shall not be reduced by applicable codes or regulations.

1.8 PERMITS & FEES

- .1 File Contract Drawings with proper authorities and obtain their approval of installation and permits for same before proceeding with work. Prepare and submit necessary detailed shop drawings as required by Authorities.
- .2 Arrange and pay all fees in connection with examination of drawings, permits, inspections (including inspections by ESA), and final certificate of approval.

1.9 CERTIFICATES

- .1 Furnish necessary certificates as evidence that work installed conforms with laws and regulations of authorities having jurisdiction.

1.10 GUARANTEE - WARRANTY

- .1 Guarantee and warranty requirements of the Contract for at least two (2) years shall apply, unless noted otherwise.

1.11 SPECIFICATIONS, DRAWINGS & JOB CONDITIONS

- .1 Electrical Drawings do not show structural and related details. Take information involving accurate measurement of building from building drawings, or at building. Make, without additional charge, any necessary changes or additions to electrical work or equipment locations to accommodate structural conditions. Equipment locations may be altered by Engineer without extra charge provided change is made before installation and does not necessitate major additional material.
- .2 Examine site and local conditions. Examine carefully all drawings and complete specifications to ensure that work can be satisfactorily carried out as shown. Before commencing work, examine the work of other Sections and report at once any defect or interference affecting the work, its completion or warranty. No allowance will be made

later for any expense incurred through failure to make these examinations or to report any such discrepancies in writing.

1.12 RESERVED.

1.13 SHOP DRAWING MATERIAL & LISTS

- .1 Prepare and submit shop drawings and lists of materials for review in accordance with applicable sections. Make submittals of more than two pages in booklet form. Individual and loose drawings will not be accepted for review.
- .2 Prior to equipment fabrication, delivery or installation, submit complete lists of materials proposed, indicating manufacturer, catalogue numbers and complete performance data.
- .3 Review of Shop Drawings by Consultant is for sole purpose of ascertaining conformance with general design concept. This review shall not mean that Architect and/or Engineer approves detail design inherent in Shop Drawings, responsibility for which shall remain with Contractor and such review shall not relieve Contractor of his responsibility for meeting all requirements of Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of work with all trades.

1.14 RECORD DOCUMENTS

- .1 Conform to General Requirements. Maintain at least 2 sets of documents and clearly mark on same as job progresses, changes and deviations from work shown so that on completion Owner will have records of exact location of ducts and equipment and record of material and equipment changes.
- .2 Record all homerun conduits, junction boxes for complete lighting system on As-Built Drawings.
- .3 Contractor shall obtain clean set of prints from Consultant at start of Contract Work and shall keep these prints up-to-date at jobsite, accurately recording all changes made on project and locating all services, equipment, etc. which may have been shown only diagrammatically on Contract Documents.
- .4 Contractor shall ensure that as-built information is accurately recorded and shall check same. As-Built drawings shall be reviewed with Consultant at each jobsite meeting.
- .5 Upon completion of Contract Work, prior to Substantial Performance inspection and after final review with Consultants, Contractor shall neatly transfer recorded information and make final As-Built submission to Consultant in the following form:
 - One (1) set of clean, legible prints.
 - Updated ACAD R2010 drawings.

- .6 Consultants shall be responsible for reviewing As-Built information provided by Contractor. Revise drawings to suit any comments until acceptable for submission to owner.

1.15 JOB SITE WORK SHOP AND STORAGE

- .1 Supply job site office, workshop, tools, scaffolds and material storage as required completing the work of this Division. Location of temporary buildings, use of space on site or within building shall be to later direction.

1.16 PROTECTION

- .1 Securely plug or cap open ends of electrical raceways or equipment to prevent entry of dirt, dust, debris, water, snow or ice. Clean all equipment inside and outside before testing.
- .2 Equipment stored on site shall be protected from weather and kept dry and clean at all times. Take care to avoid corrosion of metal parts.
- .3 Protect work installed from damage. Secure all unfinished or loose work to prevent movement.

1.17 INSTRUCTIONS TO OPERATOR

- .1 Instruct Building Operators in repair, maintenance and operation of Electrical Systems and associated equipment.
- .2 Supply three (3) full Operation and Maintenance Instructions each in stiff cover, three-ring binder suitably indexed, separated and labeled. Operate each item of equipment in presence of Operators to ensure understanding of working parts and function of each item of equipment. Supply one complete set of "Reviewed" Shop Drawings in separate hard cover binder suitably separated and labeled for Owner's use.
- .3 Operation and maintenance manuals shall be carefully prepared in co-operation with equipment manufacturers and include miscellaneous parts necessary for proper, efficient operation of all equipment.
- .4 Manuals shall also include spare parts list for each type of equipment, component, control and device installed together with manufacturer's name and address so such items can be suitably identified and purchased. Include list of recommended spares.

1.18 CLEANING AND ADJUSTMENT

- .1 Immediately prior to completion of work:
 - 1. Remove all dust, dirt and other foreign matter from internal surfaces of enclosed electrical apparatus and equipment.

2. Remove all temporary protective coverings and coatings, temporary labels.

1.19 COMPLETION

- .1 Provide receipts from designated representative of Owner for portable and loose materials (e.g. fixture re-lamping equipment and the like).
- .2 Provide copy of final inspection certificate from Electrical Inspection Authority.
- .3 Provide manufacturers corrected "as built" shop drawings for all major electrical items and systems, including all shop drawings returned for modifications.

1.20 SUBMISSION REQUIREMENTS

- .1 Contractor shall submit original product (fixture/ballast/driver), invoicing for the purposes of the Board applying for incentive monies from the Local Distribution Company.

1.21 ALTERATIONS TO EXISTING BUILDING

- .1 Note that certain alterations are to be made to existing building. Site shall be examined to determine extent of alterations affecting existing electrical systems. Where existing conduits and wires run through areas to be altered, to feed other parts of existing building, they shall be re-routed and reconnected to maintain their original function. Drawings do not necessarily indicate outlets, switches, receptacles, and the like, and other electrical equipment which are required to be relocated or abandoned. Provide decorative blank cover plates for obsolete outlet boxes remaining.
- .2 Electrical services and auxiliary services (fire alarm, P.A. intercom, and the like) shall be maintained continuously without interruption. Interruptions to services shall be confined to periods of time to be designated by Architect, and/or Owner's designated representative. Include in tender for temporary connections, overtime labour charges, and such related allowances in order to conform to these conditions.
- .3 The Electrical Contractor is responsible for removal, reinstallation, cutting and patching of ceiling and walls as required in the existing building.
- .4 Cutting directly related to electrical work, regardless of whether such work occurs in new or existing construction, shall be coordinated and paid for by Electrical Subcontractor involved, under supervision of Contractor.
- .5 Where existing electrical items or systems are demolished and removed from existing construction assemblies, Electrical Subcontractor involved shall be responsible for infilling entire hole left after removal of item or system with new construction assembly to match existing. Where new electrical items or systems are installed through existing construction assemblies, Electrical Subcontractor involved shall be responsible for properly sized and accurate cutting of existing construction assembly to allow

installation of new work.

- .6 In finished areas, all exposed and surface mounted raceway and backboxes shall be Wiremold #V500/ V700 Series. Colour finish shall match with existing surface finish. Finished areas where there is precedence of surface mounted conduit, new painted conduit with die-cast aluminium backboxes can be used subject to acceptance by architect/consultant. Coverplates shall be brushed stainless steel to match backboxes size (No sharp edges shall be present).

1.22 CONTRACT DOCUMENTS

- .1 The Contractor is responsible for thoroughly reviewing all contract documents including, but not limited to, the RFQ for the project, the Pricing/Construction Drawings, the Pricing/Construction Specifications, Addendums, Site Instructions, and Contemplated Change Notices prior to pricing as well as prior to commencing construction (as applicable). Any discrepancy must be reported to the Consultant prior to pricing. In case of any discrepancies not presented to the Consultant for clarification prior to pricing, allow for the highest-priced option in the tender price. However, all discrepancies must be clarified in writing with the Consultant prior to commencing any work on site.
- .2 Any amendments to the Contract documents must be done so in a formal, written manner. No other manner will be considered acceptable.

1.23 PROJECT RELATED NOTES

- .1 All devices/equipment shown on the new/proposed layouts are expected to be fully supplied and installed c/w all new wiring and new raceways as a part of this project.
- .2 All devices/equipment shown on the existing/demolition layouts are expected to be fully removed c/w all wiring and new raceways as a part of this project. All patching, repairing, painting and making good of existing surfaces shall be done under this Contract. Remove all redundant electrical boxes. Remove all existing 120V power connections.
- .3 Unless otherwise noted in writing in the Contract Documents, the Contractor is responsible to furnishing all materials, labour, equipment, etc. required to complete the work as per the Contract Documents. It should not be assumed whatsoever that the Owner or any other party will furnish any material, labour, equipment, etc. required to complete the work unless explicitly noted in the tender documents.
- .4 All conduits, raceways, electrical boxes and unistruts installed in finished areas shall be painted on site to match the adjacent paint colour and finish. Paint prior to installation. Touch up upon installation to ensure consistency.
- .5 All waste material, devices, parts, light fixtures, lamps, raceways/conduits, wiring, and equipment shall be removed off site by the Contractor and disposed of on a daily basis. All removal and disposal costs shall be included for in the tender price. Disposal of the old system (c/w wiring, raceways, devices, panels, etc.) shall be included for in the tender

price.

- .6 All firestopping work associated with penetrations through all walls, floors, and ceilings shall be done by the Electrical Contractor under this Contract. Firestopping shall be completed in compliance with ULC requirements, Code requirements and the requirements of all Authorities having Jurisdiction.
- .7 The intent is to install new wiring and conduit from the light fixture to the existing electrical panels serving the lighting. New fixtures shall be installed and operational before old ones are removed. Note that the location of new fixtures differs from the existing locations. Upon installation of new fixtures, old ones may be removed. Wire new light fixtures through the existing switches and occupancy sensors to maintain the same control sequence to match existing. Remove lighting load, fixtures and wiring as required to stay with amperage requirements of the existing branch circuit.
- .8 Any alternates in products and/or Manufacturers shall be submitted and approved by the Consultant in writing prior to tender closing. No substitutions will be permitted after tender closing.
- .9 All work shall be done after hours during hours approved by the Board.
- .10 New conduits shall be run recessed or above drop ceilings where possible.
- .11 Protect surroundings, the Board's Property and the Building throughout Construction. Repair all damages done at no cost to the Board.
- .12 Include for all cutting, coring, trenching, excavating, xraying and scanning work as required to complete the proposed or demolition scope of work. Repair to match original condition.

1.24 DEFINITIONS

- .1 The following words shall be interpreted as listed below when found anywhere in the tender package:
 1. "Concealed" means hidden from normal sign in furred spaces, shafts, ceiling spaces, walls, or partitions.
 2. "Exposed" means work normally visible, including work in equipment rooms, tunnels, and similar spaces.
 3. "Provide" (and all tenses) means supply and install for a complete and operational system.
 4. "Install" (and all tenses) means secure in position, connect as specified, test, and verify.

5. “Supply” means to supply all devices/equipment to the responsible trade.
6. “Remove” means to disconnect, remove all devices and all associated wiring and raceways to the source, dispose of all redundant parts, materials, etc., and patch and make good all surfaces affected by the removal.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

- .1 Conform to Section 16010 - Electrical - General Requirements.

1.2 MATERIALS

- .1 Materials shall be new, of Canadian manufacture where available, first quality and uniform throughout. Submit tender based on the use of materials and equipment specified, or on the listed acceptable alternate equipment as further detailed.
- .2 Electrical materials shall be C.S.A. approved and be so labeled. Material not C.S.A. approved shall receive acceptance for installation by Electrical Safety Authority (ESA) Special Inspections Branch before delivery, and modifications and charges required for such acceptance shall be included in work of this Section. Material shall not be installed or connected to the source of electrical power until approval is obtained.
- .3 Confirm capacity, ratings and characteristics of equipment items being provided to supply power to equipment provided under other Sections of the work. Resolve discrepancies before such items are purchased.

1.3 MATERIAL ACCEPTANCE

- .1 Acceptance of materials installed presumes that materials have not been damaged or exposed to conditions that would adversely affect performance and life expectancy.
- .2 If in the opinion of the Consultant, materials have sustained damage, or have been exposed to abnormal conditions it shall be the responsibility of the Contractor to have such tests performed as deemed necessary by the Consultant to establish condition and therefore, acceptability of installed materials.

PART 2 - PRODUCTS

2.1 RACEWAYS

- .1 Rigid galvanized steel conduit shall comply with CSA Specification C22.2 No. 45.
- .2 Electrical metallic tubing (EMT) shall comply with CSA Specification C22.2 No. 83. Connectors and couplings to be forged steel and raintight in sprinklered areas. Connectors to have factory-installed insulated throats.

- .3 Rigid PVC conduit shall comply with CSA Specification C22.2 No. 136.
- .4 Watertight flexible conduit: "Sealtite" PVC jacketed flexible steel with Hubbell-Kellum strain relief grips; shall comply with CSA Standard C22.2 No. 56.
- .5 Surface wall-mounted raceways shall be Wiremold No. DS 4000 metallic type complete with two channels and all necessary fittings, closers, device modules, etc. Wiremold or approved equal only.

2.2 WIRE & CABLE

- .1 Branch wire and cable shall comprise copper conductors, sized as noted, rated 75 deg. C., 600 volt minimum flame retardant insulation, and CSA approved for application.
- .2 Wire and cable installed in conduit shall be PVC insulated Type TWH - Flame retardant and comply with CSA Specification C22.2 No. 75.
- .3 Use Electrovert "Z-Type" code markers for control & communication conductors.
- .4 All branch wiring shall be RW90 in dry locations.
- .5 All feeder cables shall be XPLE R90 in dry locations and XLPE RW90 in wet/damp locations.
- .6 All underground feeders and branch circuits run from and to outdoor environment shall be XLPE RWU90.

2.3 DEVICES

- .1 Wiring devices unless otherwise specified herein, or noted, shall be as manufactured by Hubbell, Leviton or Pass & Seymour.
- .2 Switches for 120 volt branch lighting circuits, generally shall be A.C. "Quiet Type" rated 20 Ampere, 120 Volt, totally enclosed phenolic housing Hubbell 1200 Series, brown toggle handle.
- .3 Double Pole lighting switches shall be connected to 2 pole circuit breakers.
- .4 Key-operated switches shall be Hubbell 1221-L Series of the types listed above, except key-operated, and shall be keyed-alike.
- .5 Standard 15 Ampere, 125 volt duplex receptacles generally shall be specification grade Hubbell Cat. No.5262, brown, CSA #5-15R.

- .6 Standard Duplex receptacles indicated to have `split-feed' shall be two-circuit type wired and connected to a 2 pole common trip circuit breaker in associated panelboard. Orientation of common circuit shall be similar throughout project.
- .7 Special purpose receptacles as noted on the drawings shall be Hubbell Conforming to CSA configurations (Table 46 and Table 47 of Canadian Electrical Code) for non-locking and locking receptacles. Provide attachment cap for each special purpose receptacle.
- .8 "Range" receptacles shall be CSA Type 14-50R, 50 amp. 3 pole, 4 wire, grounding 125/250V flush receptacle. Provide the above with 5 foot rubber cord set, 50 amp. and connect equipment.
- .9 Receptacles with integral ground fault interrupter shall be Hubbell No. GF-5252 or approved equal.
- .10 Service receptacle shall be Hubbell No. 5262-RD.
- .11 Kindergarten receptacle shall be 15A, 125V, 5-15R duplex and tamperproof. Hubbell No. TR 621 or approved equal.

2.4 DEVICES - SPECIALIZED

- .1 Flush floor boxes shall be Hubbell Cat. No. 3SFB-SSC 3-service box complete with devices shown on drawings.
- .2 Provide for each location shown on drawings, a 12" diameter, analog, non-self regulating, 12 hours face, v-plug-in, battery backup in case of power failure, complete with sweep second hand, protruding stem for correcting, sealed motor, 120V. Edwards, Simplex or approved equal.
- .3 Provide low-voltage lighting control, as detailed.

2.5 DEVICE COVER PLATES

- .1 Switch and receptacle and other device faceplates for flush mounted devices, generally shall be single or multi-gang as required, type 301, stainless steel, #4 brushed finish with removable protective covering.
- .2 Weatherproof enclosures for outdoor receptacles shall be P & S 4600 with 4600-26 Mounting Plate, duplex ground fault receptacles and two #4609 Keys.
- .3 Cover plates for other devices such as flush fan controls, telephone, etc., shall be stainless steel to match above.

2.6 PANELBOARDS

- .1 Panelboards as scheduled, shall comprise "Branch" panelboards, with fixed bolted connection thermal-magnetic, quick-make, quick-break, 40°C, calibrated ULC rated 'SWD' switching duty, molded-case circuit breaker branches. "Plug-in" breakers are not acceptable. Multipole breakers shall be common trip type.
- .2 Panelboards shall include the following features:
 - .1 Flush or surface trim as noted.
 - .2 Concealed hinges and lockable door.
 - .3 Combination catch and lock semi flush tumbler type - all keyed alike.
 - .4 Adjustable self-positioning trims.
 - .5 Plain trims not displaying any names or Symbols.
"Vault" type handles shall not be used except in unfinished areas.
 - .6 Typed schedules of circuits indicating equipment and area controlled on the backs of panel doors, in a steel trim pocket, covered with transparent non-inflammable plastic.
 - .7 Insulated neutral block.
 - .8 Supplementary ground block.
 - .9 Copper Bus.
 - .10 Isolated ground bar, as noted.
 - .11 Surge-suppression system, as noted.
 - .12 Sprinkler-proof
- .3 Power and Distribution type panelboards shall be breaker type, as scheduled on the drawings.
- .4 Unless noted otherwise, panelboards with main breakers or remote controlled switches shall be provided with an indicating pilot lamp flush mounted in top of face trim which shall be connected to a 15 amp. circuit in the panelboard which shall be locked on and shall serve to indicate when the main breaker is in the closed position. Pilot lamp units shall be LED type or other approved types designed to provide maximum lamp life. Provide lamacoid nameplate to identify main breaker.
- .5 Panelboards of the types scheduled shall comprise the following:

Type 1
Branch panelboards circuit breaker type, 120/208 volt, 3 phase, 4 wire mains, minimum interrupting rating of 10,000 amps. RMS asymmetrical at 120 volts.

Type 2
Power distribution panelboard, circuit breaker type 120/208 volt, 3 phase, 4 wire mains, minimum interrupting rating of 35,000A, RMS symmetrical at 208 volt.

Type 3

Branch panelboards circuit breaker type, 120/208 volt, 3 phase, 4 wire mains, minimum interrupting rating of 10,000 amps. RMS asymmetrical at 120 volts. Panel shall be c/w main contactor rated same as panel bus, pilot lamps (LED Green – Power ON & Red – Power OFF), key switch to enable/disable contactor and emergency power off mushrooms style button.

- .6 All panels shall be of code gauge steel with prime coat finish for painting. All locks on all panels shall be common to one key and shall also be common to the locks on the distribution panel. The Subcontractor shall be deliver three duplicate keys to the Owners. All panel hardware shall be chrome plated. All tubs shall be a minimum of 6" deep. Where panels are surface mounted they shall be sprinkler-proofed.
- .7 Acceptable Manufacturers are:
 - .1 Eaton (Cutler-Hammer)
 - .2 Schneider (Square `D')
 - .3 Siemens

2.7 SWITCHES

- .1 Provide fusible and non-fusible switches, NEMA Type `HD' with quick-make, quick-break contacts, horsepower-rated where required, to match the motor protected. Provide holders to accept specified fuses. Switches to include mechanical cover interlocks and line side barriers.
- .2 Where applicable and available, switches shall be CSA "Approved For High Service Factor".
- .3 Provide safety disconnect switches adjacent to motors and other equipment when required by regulations.

2.8 FUSES

- .1 Provide fuse holders in fusible equipment with a complete set of proper size Form 1, HRC Nema J or L current limiting fuses. Fusible equipment so provided shall be adapted to reject CSA Standard C22.2 No. 59 fuses. Fuses shall be Federal Pioneer - "Econolim".
- .2 Provide one complete set of spare fuses for each rating and type used, unless otherwise scheduled.
- .3 Apply Thomas & Betts "Kopr/Shield" conductive anti-seize compound to all fuse

ferrules and holders.

2.9 CLOCKS AND PROGRAM BELLS

- .1 Provide new battery-operated clocks where shown on the drawing. See legend for specifications and product.

2.10 TIMESWITCHES AND PHOTOCELLS

- .1 Time switches shall be Tork '1100' Series, 24 hour, 7 day c/w skip-a-day feature, 120 volt as indicated on drawings. Photocell shall be Tork "2000" Series located as shown on drawings. Approved equal supplier shall be Paragon.

PART 3 - EXECUTION

3.1 EQUIPMENT LOCATIONS

- .1 Approximate locations of electrical equipment, fixtures switches, outlets, and the like, are given on the drawings. Refer to the architectural drawings and room elevations for application. In absence of definite detail exact location of outlets shall be determined on site as work progresses.
- .2 Device plates shall cover opening left for outlet box, and plates shall be attached to boxes in an approved manner. Outlets and fixtures are to be located symmetrically, (i.e. centered in wall panels, ceiling panels or tiles, columns, between and above doors and the like).
- .3 The right is reserved to alter the location of equipment and outlets a distance of up to 3 metres without involving a change to the Contract amount, providing notice is given prior to installation.

3.2 MOUNTING HEIGHTS

- .1 Mounting heights of outlets, top of outlet to finished floor, except for exposed masonry construction, shall generally be as follows:

Lighting Switches –1100 mm to the center.
Receptacles - 500 mm above finished floor
Television Outlets - 500 mm
Telephone Outlets - 500 mm
Manual Fire Alarm Stations - 1200 mm to the center
Panelboards - 2000 mm to top of trim for standard panels.
Thermostats - 1200 mm to the center

3.3 HOLES & DRILLING

- .1 Pneumatic hammers and percussion drills are prohibited.
- .2 Where not sleeved, make holes through concrete walls and floors by core-drill only. Obtain Architect's approval before drilling.
- .3 Seal holes and sleeves through floors to serve as water dam.

3.4 CUTTING & PATCHING

- .1 Layout and install work in advance of other Sections for all new work. Bear all costs resulting from failing to comply with this requirement.
- .2 Pay for cutting and patching and making good as required for work of this Division by reason of faulty or late work. Employ appropriate trades already engaged on the site to perform such cutting, patching and making good existing walls, floor, ceiling, etc. Before commencing, obtain Architect's approval for extent and nature of cutting. Make good, disturbed surfaces to the Architect's approval.

3.5 EXCAVATION & BACKFILL

- .1 Provide necessary excavating and backfilling inside and outside building required for work of this Division, performed as specified under another Division of the work, except as modified below.
- .2 Keep excavations free from water, pump as necessary.
- .3 Excavation for underground services shall be to required depths and dimension and shall be prepared as required, so that no portion of any conduit, bears directly against any rock or other hard surface.
- .4 Remove and dispose of all surplus excavated material.
- .5 Backfill promptly after approval of work. Prevent damage to or displacement of walls, piping, conduits, waterproofing and other work.
- .6 For direct buried conduit and cable in all soil conditions excavate to 150 mm (6") below and a minimum of 200 mm (8") to either side of the cable run. Fill back with a bedding of sand.
- .7 Backfill trenches within building, with clean sharp sand in individual layers of maximum 150 mm (6") thickness, compacted to a density of 100% Standard

Proctor. Hand compact the first layers up to a compacted level of minimum one foot. Hand or machine compact the balance up to grade, using approved equipment.

- .8 Backfill trenches outside buildings with granular `A' gravel in layers not exceeding 150 mm (6") thickness, compacted to 100% Standard Proctor density up to grade level; manual compaction up to 450 mm (18") and mechanical compaction, using approved equipment, for the balance.
- .9 Make good work where damaged by excavation and filling work of this Division. Repair any subsequent settlement of fill placed under this Division and pay all costs in replacement of other work damaged by such settlement and restoration.

3.6 CONCRETE WORK

- .1 Provide concrete work where required for work of this Division in accordance with applicable requirements specified in Concrete Division 3.
- .2 Provide concrete Lighting Standard Bases, required for the work of this Division. Refer to detail on drawings.
- .3 Provide concrete Duct Banks required for the work of this Division. Refer to detail on drawing for typical construction details.
- .4 Reinforced concrete duct banks shall be keyed into sides of foundation walls. Extend and connect reinforcing steel of duct banks to reinforcing steel of foundation wall construction to prevent failure at the junction of the pipe support and wall.
- .5 Provide 100 mm (4") high housekeeping pads for all floor mounted electrical equipment, such as switchboard, distribution panels and transformer, etc.

3.7 HANGERS & INSERTS

- .1 Provide necessary hangers and inserts for work of this Division.
- .2 Fasten to cast-in place concrete by suitable drilled or cast-in inserts.
- .3 Fasten to structural steel using bolts or welded fasteners.
- .4 Do not use wood, chain, wire lashings, strap or grappler bar hangers except where noted or detailed.
- .5 Support fixtures independently of ceiling suspension systems. Provide additional supports as required, which shall be fastened to building structure steel members,

- joists, beams, etc., but not metal pan or roof decking. Material for additional supports and their installation shall comply with requirements of U.L.C. Refer to "List of Equipment and Materials" Vol. 2, and "Supplement" for application to rated assemblies.
- .6 Support outlet and junction boxes independently of the conduits running to them where required by electrical code and where deemed necessary by the Architect, use steel angle brackets or steel rods to support outlets and fixtures, to the building structure.
 - .7 Drilled fastenings to concrete shall be self-drilling concrete anchors, Phillips 'Red-Head' or approved equal. The maximum weight per fastening shall not exceed 25% of manufacturer's 'pull-out' load data.
 - .8 Surface mounted or stem suspended fixtures fastened to non-removable ceilings, 2 hr. fire rated ceiling assemblies, or mounted between metal suspension of exposed T-grid ceilings, shall be provided with minimum of two points of attachment for each 300 mm x 1200 mm (1' x 4') luminaire, using metal 'channel-bar' fastened to building structure. Attach luminaires to 'channel-bar' by means of threaded steel rods. Channel-bar shall be adequately supported and of a construction to prevent deflection under load, as selected from manufacturer's published data, and to Architect's approval. 'Channel-bar' shall be Unistrut, Burndy, Flexibar, Cantrough or Canadian Strut Products or approved equal.
 - .9 Use support clips (e.g. Caddy Type IDS) for suspension of fixtures attached to exposed T-grid ceilings. Clips shall be supported directly from building structure and not from suspended ceiling system.
 - .10 Provide recessed fluorescent fixtures with support frames, and plastering frames where applicable.
 - .11 Chain where permitted and specified for the installation of fluorescent lighting fixtures shall be No. 4, 2 mm (.080") Tenso Pattern coil steel chain, plated with a strength of 82 kg (180 lbs.) as manufactured by Dominion Chain Co. Ltd. or approved equal. Where 'S' hooks are used with chain, they shall be No. 6 type with open strength of 82 kg (180 lbs.) minimum. Attachment of chain at both ends of support shall develop full strength of chain.
 - .12 Support outlet boxes, junction boxes, conduit and the like, mounted on exposed steel deck roofing by means of self-tapping minimum #10 gauge screws, secured through bottom member of deck corrugation. Do not pierce top of steel deck.

3.8 PAINTING

- .1 Hangers, support framing and all equipment fabricated from ferrous metals which are not protected with zinc or other suitable corrosion-resistant finish shall have at least one coat of a corrosion-resistant paint applied before shipment or immediately on arrival at the site.
- .2 After installation, touch up all scratches, chips, other damage and defects in paint, using zinc chromate primer or paint or special enamels as necessary to match the original.
- .3 Finish and colour of all equipment shall be coordinated to provide uniform appearance.
- .4 Painting of conduits and supports and other exposed surface work will be done under Painting Section except as noted. Install materials in time to be painted together with mounting surfaces.
- .5 Do not paint over nameplates.
- .6 Refer to other Sections for special paint finishes of equipment.
- .7 All electrical raceways, conduit, and boxes shall be painted to match adjacent surfaces unless restricted by Authorities having Jurisdiction or by local governing codes.

3.9 NAMEPLATES & SCHEDULES

- .1 Identify electrical equipment supplied under this Division with 3 mm thick black laminated plastic nameplate to indicate equipment controlled to provide instruction or warning. Fasten each plate with two chrome plated screws. Lettering shall be 6 mm high for small devices such as control stations and at least 13 mm high for all other equipment. Submit a list of proposed nameplates for approval before manufacture.
- .2 Provide panelboards with typewritten schedules identifying outlets and equipment controlled by each branch circuit including existing panels being changed. Protect schedules with non-flammable clear plastic.
- .3 Identify junction boxes, pull boxes, cover plates, conduits and the like, provided for future extension, indicating their function (e.g. power, fire alarm, communication).
- .4 Verify room names and numbers prior to listing on nameplates and schedules.

3.10 BRANCH CIRCUIT WIRING & FEEDER CABLES

- .1 Provide branch circuit wiring, conduits and feeders as required for Lighting, Power and Auxiliary Systems. Separate conduit systems shall be provided for feeder, lighting and power systems, for exit light system and auxiliary communication systems.

3.11 CONDUIT, RACEWAYS AND WIREWAYS

- .1 Wire and cable shall be installed in conduit as follows:

Rigid galvanized steel conduit with threaded IPS fittings to be used:
 - .1 Where noted and required by regulations.
 - .2 Where subject to mechanical damage.
 - .3 For all exposed conduit work.
- .2 Conduit embedded in concrete or buried below grade floors shall be CSA approved rigid PVC type.
- .3 Electrical metallic tubing (EMT) may be used in place of rigid conduit in dry locations subject to governing regulations, embedded in masonry walls, and concealed above suspended ceilings. Connectors shall be provided with factory-installed insulated throats.
- .4 Use flexible metallic conduit for connections to chain suspended and recessed fixture drops, motors and similar equipment to prevent transmission of vibration. A code-gauge green grounding conductor shall be provided for all such connections. Use "Sealtite" conduit with Hubbell-Kellum Sealtite conduit strain relief grips for all such connections at motors.
- .5 Fasten every conduit and cable to structure by means of approved conduit clamps or clips. Wire lashing is not acceptable.
- .6 Conceal conduits and wiring except where noted. Run exposed conduits parallel to building lines and to other conduits. Provide every empty conduit with a pull rope (3 mm polypropylene rope) and identify to designate its function (Power, Telephone, Fire Alarm and the like).
- .7 Where conduit is installed in concrete slabs, obtain general approval, prior to commencing the work, on both maximum dimension and cross-overs which may be used therein.
- .8 Install conduits in such a manner as to conserve head room and interfere as little

as possible with free use of space through which they pass. Obtain approval for routing of same. Keep conduits at least 150 mm clear high temperature work.

- .9 Conduit installed at the roof level of exposed structures, shall be run tight to roof deck, above purlins and beams.
- .10 Conduit and cables for electrical work in demountable type and drywall type partitions shall enter from above, from a junction box concealed in the ceiling above and shall comprise a flexible conduit connection.
- .11 All branch wiring shall be provided with a separate code gauge supplementary grounding conductor run in each conduit or duct, terminating at ground block at panelboards.
- .12 Run conduit exposed in mechanical equipment rooms, electrical rooms, fan rooms, and the like, and installed after mechanical and other equipment is completed. Install fixtures, outlets, starters, etc., to clear and to suit application.
- .13 Wiring, boxes, conduit fittings, etc., in hazardous areas shall conform with Ontario Electrical Code, covering explosion-proof areas. Provide conduit seals where required by these regulations.
- .14 Provide housekeeping curbs around exposed conduits feeding panels, disconnect switches, starters, etc. penetrating floors in front of walls.

3.12 WIRE & CABLE

- .1 Wire and cable shall not be installed at temperatures below 20°C unless "minus 40" type is used. Wiring to heating equipment shall be rated 90°C minimum, the ampacity of which shall be limited to 75°C value.
- .2 Conductors used for all auxiliary systems (e.g. Fire Alarm) shall be tagged and/or colour-coded, and where applicable shall agree with manufacturer's wiring diagrams.
- .3 Minimum wire size for power wiring shall be No. 12 AWG gauge unless specified otherwise. Minimum wire size for "Common" neutral conductors shall be No. 10 AWG. Control wiring shall be #14 AWG red insulation. Maximum voltage drop between furthest outlet of any circuit, when fully energized, and panel to which it is connected shall not exceed two percent except for electric heating circuits which shall not exceed one percent.
- .4 Cables shall be terminated with moisture-proof connectors, clamped to sheet metal enclosure by a single non-ferrous locknut and grounding bushing.

- .5 Sheaths of multi-conductor cables shall be grounded at both cable ends.
- .6 Sheaths of single conductor cables shall be grounded at supply end only. Provide a Code Gauge Grounding Conductor with each feeder cable run.
- .7 Number of wires indicated for lighting and power, motor and motor control, alarm, signal, communications, and auxiliary systems is intended to show general scheme only. The required number and types of wires shall be installed in accordance with equipment manufacturer's diagrams and requirements, and with requirements of the installation, except that specification standards shall not be reduced.
- .8 Solderless connectors with nylon-jacketted "Vibration-proof" screw-on wire connectors ideal "Wing Nuts", rated 600 volts shall be used for joints in Branch Wiring.
- .9 Use compression joints and terminals for all control wiring; and all conductors #4 AWG and larger. Mechanical connections are acceptable at panelboards and circuit breakers where these are part of factory-assembly.
- .10 Wire or cables in feeders, sub-feeders and branch circuits shall be colour-coded in accordance with Ontario Electrical Safety Code. Each end of feeder terminations (e.g. in Switchboard, Panelboards, switches, splitters and the like) Code Phase A - Red, Phase B - Black, Phase C - Blue, Neutral - White.
- .11 Use C.G.E. Vulkan X-Link insulated cables for circuits protected by ground fault circuit interrupters.
- .12 Include in each conduit, tubing and raceway, a code gauge green supplementary grounding conductor which shall be connected to suitable ground bus in equipment.
- .13 Armoured or sheathed cables may be used only for wiring within demountable and dry wall type partitions and if additionally specified or detailed; however it shall not be directly buried in or below concrete slabs.
- .14 The use of exposed plastic-jacketed cables shall be subject to approval of local inspection Authorities, but shall not be installed in ceiling spaces used as return air plenums for mechanical air-handling systems.

3.13 OUTLET, JUNCTION & PULL BOXES

- .1 Use suitable electrical boxes for terminations and junctions on conduit work. Install pull boxes where necessary to permit installation of conductors. Support

- pull boxes, outlet boxes, panels and other cabinets independently of conduit.
- .2 Provide each light switch, wall receptacle and other device with an outlet box of suitable dimensions and a faceplate. Outlet boxes shall be adapted to their respective locations.
 - .3 "Thruwall" and "Utility" type boxes shall not be used.
 - .4 Electrical boxes and panels shall be CSA approved, code-gauge sheet metal, galvanized or with suitable protective treatment. Secure covers with screws or bolts.
 - .5 Outlet boxes shall not be installed "Back-to-Back" in walls; separate by a minimum of 150 mm.
 - .6 Use "Masonry Type" outlet boxes for flush installation in masonry walls as detailed on standard Detail Drawings attached hereto.) Standard sectional boxes, 1004, 1104 and the like, shall not be used).
 - .7 Install surface mounted devices, in cast conduit fittings, with threaded hubs and suitable stainless steel faceplates.
 - .8 Main pull and junction boxes (excluding obvious outlet boxes) shall be clearly identified by painting the outside of the cover in accordance with the following schedule:

- Lighting	Yellow
- Power	Blue
- Fire Alarms	Red
- Telephone	Cream
- Control	Brown
- Intercom & Sound	Green
 - .9 In addition, each box shall be identified with a system and service designator of logic reference to the service.

3.14 ACCESS DOORS & ACCESS MARKERS

- .1 Supply access doors for installation under the work of other Division where electrical equipment requiring maintenance or adjustment or inspection is located above ceilings, within walls or behind furring; except ceilings of lay-in removable panel type.
- .2 Access doors shall be 12 gauge hinged metal Stelpro Ltd. or equal #722 flush

type, minimum size 300 mm x 300 mm (12" x 12") "Reach-in" 300 mm x 600 mm (12" x 24") "Crawl-in", with prime coat finish, concealed hinges, screwdriver lock and plaster key. Access doors in finished masonry or drywall construction shall be #722 less plaster key. Access doors shall be #726 in acoustic tile ceilings; #704 in drywall ceiling and #726E in plaster ceilings.

- .3 Access doors in fire rated ceiling assemblies, all fire rated walls, duct shaft or in corridor walls shall be UL, ULC or WHI listed 1-1/2 hour fire rated access doors equal to LeHage #L1010 or Acudor #150B with screwdriver lock.
- .4 Where lay-in removable panel ceilings requiring hold-down clips are used, access doors are not required but panels shall be secured with accessible hold-down clips and marked with Buildemup #6 RH brass paper fasteners inserted through acoustic panel and bent over. Paint heads with blue enamel before installation.
- .5 Obtain approval for sizes and locations.

3.15 PANELBOARDS

- .1 Provide handle locking devices on circuit breakers feeding Plumbing, Heating, Ventilating equipment and controls and all auxiliary systems, time switches, and other devices as noted. Paint handles white, to permanently identify location and function. Provide 30 spare handle locking devices for future use.
- .2 Circuit numbers on drawings do not necessarily correspond to the numbers on the lighting panels. Circuits sharing a common neutral shall not be connected to the same main. Panel circuit breakers which are used directly for the switching of lighting fixtures shall be grouped in consecutive numbers commencing at breaker number one.
- .3 Use "Panduit" lock-strap cable ties for panelboard branch wiring.
- .4 Provide empty conduits from flush panelboards, and others as noted, terminating in accessible ceiling spaces, sized to accommodate spare and space breaker provisions. One 25 mm (1") conduit for each three spare breakers or spaces.

3.16 ELECTRIC WORK FOR OTHER DIVISIONS

- .1 Examine Architectural and Mechanical (Plumbing, Heating, Ventilating and Air Conditioning) plans and specifications to determine extent of electrical work in connection with these Divisions which is to be done under the work of the Electrical Division.
- .2 In general, all loose motor starters and associated controls for mechanical

equipment will be supplied under Division 16 for installation and connection to both source and load side of the equipment.

- .3 Co-ordinate the exact location and verify characteristics of electrical provisions for the work of the Mechanical Division.
- .4 Coordinate locations of starters, motors and associated equipment with the work of the Division 15 Mechanical Trade Sections to ensure proper location of equipment. The exact locations of conduit terminations at Mechanical units shall be determined from equipment manufactures' approved shop drawings. Conduits must be installed to enter only in the locations designated by equipment manufactures.
- .5 Provide safety switches required for disconnection of remotely controlled motors, and where required at motors by C.E.C. regulations whether shown on the drawings or not. Where required at fan motors, they shall be concealed in the fan housing if possible.
- .6 Provide for the 120 volt mechanical equipment where noted, all necessary wiring and connections including wiring and installation of starters, thermostats, aquastats, speed controllers and time switches controlling equipment.
- .7 Where motor starters, switches and the like, are grouped together, a suitable 19 mm (3/4") thick plywood panelboard shall be provided to which all such equipment shall be secured. Provide all necessary angle iron supports for support of panelboard and paint entire assembly with two coats of fire retardant type enamel acceptable to Building Inspection Department.
- .8 Provide weatherproof unfused safety disconnect switches, fastened to exterior of roof mounted units, to approval.

3.17 GROUNDING - GENERAL

- .1 Ground all electrical systems in accordance with provisions of the Ontario Electrical Code.
- .2 Provide a grounding electrode in accordance with Section 10 of the Canadian Electrical Code.
- .3 Install grounding conductors to permit the shortest and most direct path from equipment to ground. Install grounding conductors in rigid galvanized conduit with both conductor and conduit bonded at both ends. Provide bonding jumpers with approved clamps to maintain ground continuity of metallic raceway systems at all expansion joints.

- .4 Ground connections to grounding conductors shall be accessible for inspection and made with approved solderless connectors bolted to the equipment of structure to be grounded. Clean contact surface prior to making connections to ensure proper metal to metal contact. Connections shall be of the type that grounds both conduit and conductor, and cap screws, bolts, nuts and washers shall be silicon bronze.

3.18 FIREPROOFING & SEALING

- .1 Make watertight seal at sleeves and other openings through floors above grade. Sleeves to extend minimum 25 mm (1 inch) above finished floors.
- .2 Provide fireproofing protection of openings through floors, fire rated walls, and fire rated ceilings in accordance with requirements of Authorities having Jurisdiction. Refer to Architectural Drawings for rated surfaces. Include for all such work in the tender price.
- .3 Caulk spaces between conduit, cables, bus ducts, raceways, cabletrays with "Cerafibre" 2300 F packing to Building Department approval. Pack and seal both sides of openings with Electrovert "Flameseal" putty, minimum thickness 25 mm (1"). Install in accordance with Electrovert Instruction Bulletin #3601.

3.19 ADDITIONAL PROJECT GUIDELINES

- .1 Where flush mounted panelboard are shown, Contractor shall supply and install three (3) 25mm (1") empty conduits terminated in the ceiling space for future circuits.
- .2 All wiring and conduit shall be run concealed except for in the Mechanical and Electrical room. Where exposed, conduits are acceptable and where surface conduits are applied, they shall run parallel to building lines and to other conduits.
- .3 In the new construction area of the project, surface mounted boxes are unacceptable. In the existing School, surface mounted boxes are acceptable, only if flush mounted ones cannot be economically installed. In these instances, both exterior and interior surface mounted boxes must be of cast construction.
- .4 Acceptable products for key switches are from Hubbell, P&S 501L, or Leviton 1201-L.
- .5 Only pressed steel EMT fittings shall be used, cast fittings are not acceptable.
- .6 All underground wiring shall be placed in PVC conduit when trenched and HD Poly when directional bored.

- .7 All outdoor surface (exposed) conduit must be rigid aluminum.
- .8 When installing conduits on exterior walls anti climbing devices must be installed
- .9 BX is only acceptable in minimal lengths (2 meters or less) shall be used for fixture drops etc. in open ceiling areas. BX may not be used within partitions.
- .10 Surface, exposed EMT can only be used in non-cosmetic sensitive areas such as boiler rooms, electrical rooms etc.
- .11 When surface raceways are required in areas such as classrooms, corridors office areas etc. Wiremold must be used.
- .12 700 series Wiremold is minimum size to be used and must be saddle strapped.
- .13 Surface 1110 boxes are not accepted, cast boxes must be used.
- .14 Drop cords C/W cast boxes for receptacles or similar applications where persons may be within the vicinity of the drop must be a minimum of 6' 6" AFF or low enough to be fastened to a work table or similar item. The purpose of this is to prevent someone from swinging the drop and hitting a person.
- .15 All receptacles must be Hubbell 5262 CN or equal.
- .16 All switches must be spec. Grade Hubbell 1221 or equal.
- .17 All recessed device covers must be Stainless Steel.
- .18 All conduits and surface raceway must have a separate grounding conductor.
- .19 All fuses must have a minimum of 200,000 amp interrupting capacity.
- .20 All circuits feeding power and receptacles shall be installed with a separate neutral for each branch circuit.
- .21 All outlets must be flush mounted or approved by the Board Designee.
- .22 All anchors must be zinc alloy type and where possible of the double expander type.
- .23 All T-Bar mounted light fixtures must be chain hung, using IDS caddy hangers where possible.
- .24 All outdoor fixtures must be fused individually.

- .25 Only black Marrette wire connectors are to be used.

Receptacles

- .1 Receptacles for photocopier/printers shall be Leviton 5280 Surge Suppressed Receptacle, T-slot.
- .2 Kindergarten Receptacles: Tamper-resistant type, 15A, 125V, 5-15R duplex. Tamper Resistant GFI type P+S 1595TR. Pass & Seymour TR621.
- .3 Clock Receptacles: Recessed fitting. Mounted 2300mm AFF or 300mm below ceiling which ever provides the lowest mounting height. Leviton 5261/CH clock receptacles.
- .4 Service receptacles on MCP's to be red and labelled "Custodial".
- .5 Domestic Range Receptacle: 50 Amp, 125/250V (14-50R) Leviton #279/801.
- .6 Domestic Dryer Receptacle: 30 Amp, 125/250V (14-30R) Leviton #278/801.

Scanning, X-Raying, and Locates

- .1 Include for all scanning, x-raying, and locates expenses incurred throughout construction and as required for a complete installation of all proposed devices or equipment. All such services must be performed by a third-party specializing and experience in this field of work.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED INSTRUCTIONS

- .1 Refer to Section 16010 - Electrical General Requirements.

1.2 WORK INCLUDED

- .1 Provide electrical lighting fixtures and systems scheduled complete with lamps, drivers and necessary accessories required for their installation and performance.

1.3 SHOP DRAWINGS

- .1 Conform with requirements of Section 16010.
- .2 Submit for review an electronic copy of the specified fixture complete with photometric study based on site measured dimensions. Illustrations to be complete showing dimensions light distribution and mounting requirements. Illustrations to be noted to indicate special features and finishes. A copy is to be retained by the Contractor on the site, to ensure co-ordination of installation requirements. Ordering of fixtures will not be permitted without review and approval of the fixture shop drawing by the Consultant.

PART 2 - PRODUCTS

2.1 REFERENCE NUMBERS

- .1 Catalogue reference numbers given for individual fixture types are intended as a guide when read with the description and the fixture as finally applied. Verify catalogue references with description and coordinated with installation conditions, with particular regard to ceiling construction details, type and finish before ordering fixtures.

2.2 FIXTURE SCHEDULE

- .1 Lighting fixtures shall be as scheduled on the drawings.

2.3 KEY SWITCH

- .1 Provide new key switches c/w keys as noted on the drawings. Key switch shall be suitable for the existing source voltage and amperage rating. Key switch shall be extra heavy duty, single-pole quiet switch. Switch shall be compatible with the new fixtures and existing occupancy sensors. Product shall be from Leviton or equivalent Manufacturer.

2.4 CONTACTOR

- .1 Provide new contactors for the new lighting as noted on the drawings. Contactor shall be mechanically held and have quiet operation. Install such that it is easily accessible. Exact

location to be coordinated and approved on site with the Project Team. Contactor shall be sized and rated for the new load. Contactor shall have a minimum of five (5) poles. Contactor shall be from Eaton or Schneider Electric.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Fixtures shall be installed such that the mounting height is as listed on the drawing.
- .2 Fixture shall be installed using a heavy duty method that is in full compliance with manufacturer recommendations, Ministry of Labour requirements and good practices in the industry of Lighting Installation.
- .3 Provide new unistruts spanning between existing structural members for each fixture location. Ensure a rigid support is maintained. Fixture shall be suspended from the unistrut using aircraft cable. Each fixture must be supported from four separate points. Provide all parts and labour required for a complete and safe installation. Verify acceptance of installation method with the Manufacturer prior to installation. Make amendments as required to suit their comments. Installation from the roof deck will not be permitted.
- .4 Aircraft cable shall be suitable to be cut on site to accomplish required mounting height without compromise to the cable's integrity.
- .5 Exact location of fixtures is to be advised by the Consultant on site prior to installation.
- .6 Include for all lifts and equipment required to facilitate installation.
- .7 Fixtures shall be installed away from ventilation diffusers and return air streams that might cause movement of fixtures.
- .8 Maintain all code mandated distances between the light fixtures and other elements in the adjacent area (sprinklers, etc.). Retain the services of the Fire Protection Professional Engineer to provide an on-site review/Consultation of the final installation and provide a Stamped Letter (with a seal of a 'Licensed Professional Engineer in the Province of Ontario') confirming that the installation of the new lights is in compliance with all applicable codes related to applicable clearances required from overhead sprinklers.

3.2 COMPLETION

- .1 Fixtures shall be clean at the time of final acceptance and in full working condition.

END OF SECTION

