

PROJECT SPECIFICATIONS

INTERIOR ALTERATIONS to
**DENIS MORIS CATHOLIC
HIGH SCHOOL**

40 GLEN MORRIS DRIVE
ST. CATHARINES, ON

for



NIAGARA CATHOLIC
DISTRICT SCHOOL BOARD
427 Rice Road
WELLAND ON L3C 7C1

ISSUED FOR TENDER - APRIL 2023

WHITELINE | Architects Inc.

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ST. CATHARINES

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NIAGARA CATHOLIC DISTRICT SCHOOL BOARD

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WHITELINE ARCHITECTS INC. SPECIFICATIONS

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00101	OAA Recommended Supplementary Conditions
01005	General Requirements
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01340	Shop Drawings, Product Data and Sample Submissions
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**Interior Alterations at
DENIS MORRIS CATHOLIC HIGH SCHOOL
40 Glen Morris Drive, St. Catharines ON
for the Niagara Catholic District School Board**

Issued for Tender: April 2023

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E4.01	Single Line Diagram, Details & Panel Schedule

END OF DRAWING INDEX

- | | | |
|---|----|---|
| 1.1 Outline of Work | .1 | The work is outlined in General Requirements Section 01001. |
| 1.2 Qualification to Bid | .1 | Invitations to bid are extended to any and all contractors. |
| | .2 | Contractors intending to bid are expected to extend similar minimum standards of qualification to all sub-trades they intend to use. |
| 1.3 Bid Depository | .1 | The Niagara Construction Associations Bid Depository System of bid collection for sub-contractors will not be entertained on this project. |
| 1.4 Examination and Pre-Bid Site Meeting | .1 | Before submitting their bid, each bidder shall examine the Contract Documents, visit the site, take note of all conditions that exist and difficulties that may arise; and shall include in their Tender a fixed price to cover the cost of all Work required to complete this contract. No provision will be made during the Work for failure to comply with this requirement. |
| 1.5 Form of Specification | .1 | These specifications generally follow the Canadian National Master Specification 2004. |
| 1.6 Document Availability | .1 | The Niagara Catholic District School Board of Niagara (NCDSB) or "Owner" is not distributing hard copies of the construction documents. |
| | .2 | The tender, drawing and specifications are made available by NCDSB to contractors by download from Biddingo at https://portal.biddingo.com/landingpage/cbrelimited Any contractors, sub-contractors and suppliers interested in tendering on this project are responsible for obtaining the documents themselves. |
| | .3 | Addenda and supplementary information distribution will also be online through Biddingo. |

End of Section 00010

PART 1 - INVITATION

1.1 Tender Call

- .1 Contractors must register for the project on **Biddingo** to be able to download documents, submit questions, receive addenda and be able to submit a bid.
- .2 Offers which are not accompanied by acceptable forms of bonding will be rejected.
- .3 Tender submission on Biddingo shall consist of:
 - Agreement to Bond
 - Original tender Form
 - Original Appendices

Tender closing on **Tuesday May 30, 2023 at 2:00 p.m. local time**

1.2 Intent

- .1 The intent of this Tender call is to obtain an offer to perform work to complete **Interior Alterations at Denis Morris Catholic High School generally comprised of:**
 - a) Renovations of 2 gymnasiums and change rooms
 - b) New LULA lift installation
 - c) Mechanical upgrades
- .2 **Contractor Mobilization Date (construction commencement):**
June 19th, 2023. At this time, the Contractor may fully access to the entirety of the construction area and any other parts of the facility deemed necessary at such time.

Upon school startup on September 5th, 2023, Contractor access will be limited to the incomplete construction zones only, with available access to existing servicing rooms and related infrastructure, at any time presuming that providing such does not disrupt daily school operations.
- .3 **Occupancy Dates:**
Partial occupancy of the Large Gymnasium (Room 159), is **to be October 1st, 2023**. Full occupancy for the remainder of the scope **to be completed before January 2, 2024**.
- .4 **Substantial Completion Dates:**
No later than December 15, 2023, with full completion no later than December 31, 2023; takeover procedures are to follow the process outlined in the latest and current OGCA100-OAA/OGCA Takeover Procedures unless noted otherwise.
- .5 The Tender shall be based upon on the Work and materials as specified in/on the Tender Documents.
- .6 The Work shall be performed within the timelines stated herein from the date of execution of the Contract Documents.

1.3 Contract Documents

- .1 The Contract Documents are identified as "**Interior Alterations Denis Morris Catholic High School**" for the Niagara Catholic District School Board as prepared by Whiteline Architects Inc., 83 Ontario Street, St. Catharines, Ontario L2R 5J5.

PART 2 – CONTRACT/TENDER DOCUMENTS**2.1 Definitions**

- .1 Contract Documents: Defined in CCDC 2, 2020 Definitions with General Conditions and Owner's modifications outlined in Section 07100 Form of Contract and Amendments.
- .2 Tender Documents: Contract Documents supplemented with Instructions to Bidders, Tender Form, Tender securities, and Tender Supplementary Forms identified herein.
- .3 Tender: Act of submitting an offer under seal.

2.2 Document Availability

- .1 Tender Documents may only be obtained by registering as a plan taker through **Biddingo**.
- .2 Tender Documents are made available only for the purpose of obtaining offers for this project. Their issue does not confer a license or grant for other purposes.

2.4 Discrepancies

- .1 The Bidder shall immediately notify the Architect in writing of all discrepancies, errors, omissions, conflicts, departures from building code and/or by-laws and good building practice (i.e. items considered to be of a dubious nature), which the Bidder discovers during the Tender period and prior to the tender close.
If desired, the Architect may issue an addenda prior to the tender close. Neither the Architect nor Client will be held responsible for verbal instructions not issued in writing as addenda.

2.5 Queries/Addenda

- .1 Direct questions regarding the Drawings and Specifications through the portal on Biddingo website only. No phone calls or emails to consultants or NCDSB will be answered.
- .2 Addenda may be issued during the Tender period. All addenda become an integral part of the Contract Documents. Include the costs of the Addenda in the Tender price or as directed on the Addenda.
- .3 Verbal answers are only binding when confirmed by written Addenda.
- .4 Clarifications requested by bidders must be in writing no later than end of day **Tuesday May 16th, 2023**. The reply will be made in the form of addendum, a copy of which will be made available to Biddingo registered bidders.

PART 3 - SITE ASSESSMENT**3.1 Site Examination**

- .1 Visit the project site and surrounding properties before submitting a bid. Bidders are urged that due to the nature of the work, it is imperative that site investigation is done prior to submitting a bid.
- .2 **Mandatory Site Walk-Through:**
A mandatory pre-tender meeting is planned with the Board and Architect on:
Monday May 1, 2023 at 3:00 pm
at:
Denis Morris Catholic High School
40 Glen Morris Drive, St. Catharines, Ontario
- .3 Each bidder is reminded that operation of the existing school and school activities may not be hampered unduly during construction when construction overlaps with school hours of operation. Arrangements have to be made with the Niagara Catholic District School Board and the Architect to maintain the school operational in the normal sense. All construction related to fire safety and other safety measures and requirements, such as maintaining safe exits as per the Ontario Building Code, must be allowed for, and coordinated with the Board Representative and Architect.

PART 4 - QUALIFICATIONS**4.1 Sub-contractors**

- .1 The Owner (as further described in the General Conditions) reserves the right to reject a proposed Subcontractor for reasonable cause.
- .2 Refer to CCDC 2-GC 3.7 of General Conditions.

PART 5 - TENDER SUBMISSION**5.1 Bid Depository**

- .1 The Niagara Construction Association Bid Depository system of bid collection will **not** be used for Mechanical and Electrical trades.

5.2 Tender Ineligibility

- .1 Tenders that are unsigned, improperly signed or sealed, conditional, illegible, obscure, those containing mathematical errors, erasures, alterations, or irregularities of any kind may be considered informal, at the Owner's discretion.
- .2 Tender Forms and enclosures which are improperly prepared, or incomplete may be considered informal, at the Owner's discretion.
- .3 Failure to provide bonding or insurance requirements will result in the tender being declared informal.
- .4 Supplemental information on Contractors Letterhead will not be considered.

- 5.3 Submissions**
- .1 Bidders shall be solely responsible for the submission of their Tenders in the manner and time prescribed.
- 5.4 Consent of Surety (Agreement to Bond)**
- .1 Submit with the Tender a "Consent of Surety" stating that the Surety providing the Bid Bond is willing to supply the 50% Performance and 50 % Labour and Material Payment Bond required, in the amounts as stipulated in the 'Tender Proposal Form'.
 - .2 Include the cost of bonds in the Tender Price.
- 5.5 Tender Form Requirements**
- .1 State in the Tender Form the time required to complete the work. The completion date in the agreement shall be this completion time added to the date of execution of the Agreement.
 - .2 The Client requires that the Work under this Contract be completed as quickly as possible and consideration will be given to time of completion when reviewing the submitted tenders.
- 5.6 Tender Signing**
- .1 The Tender shall be signed under seal by the bidder.
 - .2 Sole Proprietorship: Signature of Sole Proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under signature. Affix seal.
 - .3 Partnership: Signature of all partners in the presence of A witness who will also sign. Insert the word "Partner" against each signature. Affix seal.
 - .4 Limited Company: Signature of a least two duly authorized offers in their normal signatures. Insert the officer's capacity in which the signing officer acts against each signature. Affix the corporate seal. If the tender is signed by officials other than the President and Secretary of the company, a copy of the by-law resolution of the Board of Directors authorizing them to do so must also be submitted with tender envelope.

6.1 Acceptance of Offer

- .1 The Niagara Catholic District School Board reserves the right to accept or reject any or all offers.
- .2 Where all the offers submitted exceed the estimated budget cost of the work, the Niagara Catholic District School Board reserves the right to negotiate with the lowest bidder or three lowest bidders or to retender to a number of the lowest bidders at its discretion.
- .3 After acceptance by the Owner of a tender, all rejected Tenders will be returned to the respective bidders with the submitted tender securities.
- .4 **The Tender shall be kept open for a period of up to 90 days for the Board to award a Contract.**

6.2 Contract Award

- .1 The contract may be awarded on the basis of the base bid submitted, in conjunction with the separate prices submitted. The best price for the Owner will be that lowest price combination of Base Bid with Separate Prices showing areas of cost reduction/cost increase. The Board and the Architect shall exclusively decide which separate prices will be accepted, if any.

The Owner reserves the right to award the contract based on any number of factors including previous experience in construction and satisfactory performance since pre-qualification for this project.

Lowest or any Bid will not necessarily be accepted.

- .2 **Contract award will be subject to the requirements and approval of the Ministry of Education and Training and/or the Niagara Catholic District School Board.**

6.3 Insurance

- .1 General Liability Insurance shall be as per Canadian Construction Document Committee, CCDC 2020. This Insurance will be maintained by and paid for by the General Contractor.
- .2 Builders' Risk Insurance and/or all risk Policy up to the total value of the Tender, will be maintained by and paid for by the General Contractor, with the Board named as insured.
- .3 Where cranes or hoists are used, provide a copy of Hook Insurance acceptable to the Niagara Catholic District School Board.

END OF SECTION 00100

The following supplementary conditions to the CCDC 2-2020 Stipulated Price Contract have been developed in consultation and agreement with the Ontario General Contractors Association (OGCA) and are in alignment with supplementary conditions that have been established previously in consultation with specific owner groups and industry partners. This document updates the previous supplementary conditions document which was jointly developed for use with CCDC 2-2008. Revisions to this document are indicated by a vertical bar in the right margin of the paragraph where the revision was made.

The OGCA has issued this same set of supplementary conditions to their members with the advice that they have been developed in consultation with the Ontario Association of Architects (OAA).

Recommended Supplementary Conditions for the Stipulated Price Contract – CCDC 2-2020

September 15, 2021 (Revised February 10, 2022)

The Standard Construction Document for CCDC 2 Stipulated Price Contract, 2020 English version, consisting of the Agreement Between *Owner* and *Contractor*, Definitions, and General Conditions of the Stipulated Price Contract, Parts 1 to 13 inclusive, governing same is hereby made part of these *Contract Documents*, with the following amendments, additions and modifications. Where these amendments, additions, and modifications specifically reference a change to the Agreement, Definitions, or General Conditions, these amendments, additions and modifications shall govern.

Where a General Condition or paragraph of the General Conditions of the Stipulated Price Contract is deleted by these Supplementary Conditions, the numbering of the remaining General Conditions or paragraphs shall remain unchanged, and the numbering of the deleted item will be retained, unused

AMENDMENTS TO AGREEMENT

ARTICLE A-5 – PAYMENT

- .1 In paragraph 5.1.1 of Article A-5 add the following words to the end:
“or, where there is no *Payment Certifier*, jointly by the *Owner* and *Contractor*”

ARTICLE A-6 – RECEIPT AND ADDRESSES FOR NOTICES IN WRITING

- .1 Delete paragraph 6.5 of Article A-6 in its entirety and replace it with the following:
“6.5 Contact information for a party may be changed by *Notice in Writing* to the other party setting out the new contact information in accordance with this Article.”

AMENDMENTS TO DEFINITIONS

- .1 Add the following definition: Proper Invoice
“*Proper Invoice* means a “proper invoice” as defined in the *Payment Legislation*, if any, and as may be modified by written agreement between the parties to the extent permitted by such *Payment Legislation*.”
- .2 Add the following definition: Submittals
“*Submittals* are documents or items required by the *Contract Documents* to be provided by the *Contractor* such as:
 - *Shop Drawings*, samples, models, mock ups to indicate details or characteristics, before the portion of the *Work* that they represent can be incorporated into the *Work*, and
 - As-built drawings and manuals to provide instructions to the operation and maintenance of the *Work*.”

SUPPLEMENTARY CONDITIONS

PART 1 GENERAL PROVISIONS

GC 1.1 CONTRACT DOCUMENTS

- .1 Delete paragraphs 1.1.3 and 1.1.4 in their entirety and replace them with the following:
 - “1.1.3 The *Contractor* shall review the *Contract Documents* for the purpose of facilitating and co-ordination and execution of the *Work* by the *Contractor*. The *Contractor* shall report promptly to the *Consultant* any ambiguities, design issues or other matters requiring clarification made known to the *Contractor* or that the *Contractor* may discover from such a review. Such review by the *Contractor* shall comply with the standard of care described in paragraph 3.9.1 of the *Contract*.
 - 1.1.4 Except for its obligation to review the *Contract Documents* and report the result pursuant to paragraph 1.1.3, the *Contractor* is not responsible for ambiguities, design issues or other matters requiring clarification in the *Contract Documents* and does not assume any responsibility to the *Owner* or to the *Consultant* for the accuracy of the *Contract Documents*. Without limiting the foregoing, the *Contractor* shall not be liable for any damages or costs resulting from any ambiguities, design issues or other matters requiring clarification in the *Contract Documents* which the *Contractor* could not reasonably have discovered from such a review in accordance with the standard of care. If the *Contractor* does discover any ambiguities, design issues or other matters requiring clarification in the *Contract Documents*, the *Contractor* shall not proceed with the work affected until the *Contractor* has received modified or additional information from the *Consultant*. The impacts of any ambiguities, design issues or other matters requiring clarification in the *Contract Documents*, including to the *Contract Price* and *Contract Time*, shall be addressed by the parties in accordance with Part 6 – CHANGES.”
- .2 Add the following to the end of subparagraph 1.1.6.2:

“Except to the extent the *Consultant* is indemnified as a third party beneficiary as provided in subparagraphs 9.2.7.4 and 9.5.3.4 and in paragraph 13.1.3.”

PART 2 ADMINISTRATION OF THE CONTRACT

GC 2.2 ROLE OF THE CONSULTANT

- .1 In paragraph 2.2.3 add the following to the end:

“Without limiting the foregoing, the *Consultant* may appoint one or more authorized representatives in writing who may fulfill the obligations of the *Consultant* under this *Contract*.”
- .2 In paragraph 2.2.8 add the words “, written statements” after the word “interpretations” in both the first and second sentences; and
 - i. add the following to the end of paragraph 2.2.8:

“The *Owner* and the *Contractor* shall waive any claims against the *Consultant* arising out of its making of any interpretations, written statements or findings in accordance with paragraphs 2.2.6, 2.2.7, 2.2.8, and 7.1.2, but only to the extent that any such interpretations, written statements, and findings are made by the *Consultant* in an unbiased manner, and in accordance with the *Consultant*’s professional standard of care at law.”
- .3 In paragraph 2.2.13 add the words “which are provided” before the words “by the *Contractor*”.

GC 2.4 DEFECTIVE WORK

- .1 In paragraph 2.4.1:
 - i. Add after the words “shall promptly correct” the phrase “in a manner acceptable to the *Owner* and the *Consultant*”; and
 - ii. Add after the words “*Contract Documents*” the phrase “or work that the *Contractor* discovers to be defective, whether or not the defective work had been identified by the *Consultant*, and”.
- .2 Add new paragraph 2.4.4 as follows:

“2.4.4 The *Contractor* shall prioritize the correction of any defective work which, in the sole discretion of the *Owner*, adversely affects the day-to-day operation of the *Owner*.”

PART 3 EXECUTION OF THE WORK

GC 3.1 CONTROL OF THE WORK

- .1 Add new paragraph 3.1.3 as follows:

“3.1.3 Prior to commencing individual procurement, fabrication and construction activities, the *Contractor* shall verify, at the *Place of the Work*, all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the *Work* and shall further carefully compare such field measurements and conditions with the requirements of the *Contract Documents*. Where dimensions are not included or contradictions exist, or exact locations are not apparent, the *Contractor* shall immediately notify the *Consultant* in writing and obtain written instructions from the *Consultant* before proceeding with any part of the affected work.”

GC 3.2 CONSTRUCTION BY OWNER AND OTHER CONTRACTORS

- .1 Add new paragraph 3.2.7 as follows:

“3.2.7 At the commencement of the *Work*, the *Contractor* shall prepare for the review and acceptance of the *Owner* and the *Consultant*, a schedule indicating the times, within the construction schedule referred to in GC 3.4, that items that are specified to be *Owner* purchased and *Contractor* installed or hooked up are required at the site to avoid delaying the progress of the *Work*.”

GC 3.7 LABOUR AND PRODUCTS

- .1 Add the following to the end of paragraph 3.7.1:

“The *Contractor* represents that it has sufficient skilled employees to replace, subject to the *Owner's* approval, acting reasonably, its designated supervisor and project manager in the event of death, incapacity, removal or resignation.”

- .2 Add new paragraphs 3.7.4 and 3.7.5 as follows:

“3.7.4 The *Owner* shall provide the *Contractor* in a timely manner with all relevant information (including storage, protection, and installation requirements) regarding *Products* to be supplied by the *Owner* or other contractors and, prior to delivery of any such *Products* to the *Place of the Work*, the *Owner* shall obtain the *Contractor's* written approval of the delivery date and proposed storage, protection and installation requirements.

3.7.5 Once the *Contractor* has accepted delivery of *Products*, the *Contractor* shall be responsible for the safe storage and protection of *Products* as required to avoid dangerous conditions or contamination to the *Products* or other persons or property. *Products* shall be stored in locations and at the *Place of the Work* to the satisfaction of the *Owner* and the *Consultant* as agreed and approved by the *Contractor* pursuant to paragraph 3.7.4.

Notwithstanding the foregoing, the *Contractor* shall not be responsible for any *Products* supplied by the *Owner* or other contractors unless:

- (i) the *Contract Documents* expressly stipulate that such *Product* is to be the *Contractor's* responsibility and to be installed by the *Contractor* as part of the *Work*;
- (ii) the *Contractor* has or has received from the *Owner* proof of insurance coverage sufficient, at a minimum, to cover the replacement cost of such *Product*; and
- (iii) the *Owner* obtained the *Contractor's* approval as required by paragraph 3.7.4.”

GC 3.8 SHOP DRAWINGS

- .1 Add the words “AND OTHER SUBMITTALS” to the title of GC 3.8 after the words “SHOP DRAWINGS”.

- .2 Add the words “and *Submittals*” after the words “*Shop Drawings*” in paragraphs 3.8.1, 3.8.2, 3.8.3, 3.8.3.2, 3.8.5, 3.8.6, and 3.8.7.

- .3 Delete paragraph 3.8.2 in its entirety and replace it with new paragraph 3.8.2 as follows:

“3.8.2 Prior to the first application for payment, the *Contractor* and the *Consultant* shall jointly prepare a schedule of the dates for submission and return of *Shop Drawings* and *Submittals* in an orderly sequence.”

- .4 Delete the words “with reasonable promptness so as to cause no delay in the performance of the Work” and replace them with the words “within 10 *Working Days* or such longer period as may be reasonably required” in paragraph 3.8.7.

GC 3.9 PERFORMANCE BY CONTRACTOR

- .1 Add new General Condition GC 3.9 as follows:

“GC 3.9 PERFORMANCE BY CONTRACTOR

- 3.9.1 In performing its services and obligations under the *Contract*, the *Contractor* shall exercise a standard of care, skill and diligence that would normally be provided by an experienced and prudent contractor supplying similar services for similar projects. The *Contractor* acknowledges and agrees that throughout the *Contract*, the *Contractor’s* obligations, duties and responsibilities shall be interpreted in accordance with this standard. The *Contractor* shall exercise the same standard of due care and diligence in respect of any *Products*, personnel, or procedures which it may recommend to the *Owner*.”

PART 4 ALLOWANCES

GC 4.1 CASH ALLOWANCES

- .1 Delete paragraph 4.1.7 in its entirety and replace it with the following:
- “4.1.7 At the commencement of the *Work*, the *Contractor* shall prepare for the review and acceptance of the *Owner* and the *Consultant* a schedule indicating the times within the construction schedule referred to in GC 3.4 that items called for under cash allowances are required to be delivered to the *Place of the Work* to avoid delaying the progress of the *Work*.”
- .2 Add new paragraph 4.1.8 as follows:
- “4.1.8 The *Owner* reserves the right to call, or to have the *Contractor* call, for competitive bids for portions of the *Work* to be paid for from cash allowances.”

PART 5 PAYMENT

GC 5.4 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

- .1 Delete all paragraphs of GC 5.4 in their entirety and replace them with the following paragraphs:
- “5.4.1 When the *Contractor* considers that the *Work* is substantially performed, or if permitted by the lien legislation applicable to the *Place of the Work* a designated portion thereof which the *Owner* agrees to accept separately is substantially performed, the *Contractor* shall, within five (5) *Working Days*, deliver to the *Consultant* and to the *Owner* a comprehensive list of items to be completed or corrected, together with a written application for a review by the *Consultant* to establish *Substantial Performance of the Work* or substantial performance of the designated portion of the *Work*. Failure to include an item on the list does not alter the responsibility of the *Contractor* to complete the *Contract*.

- 5.4.2 The *Consultant* will review the *Work* to certify or verify the validity of the application and shall promptly, and in any event, no later than 10 calendar days after receipt of the *Contractor's* application:
- .1 advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or
 - .2 state the date of *Substantial Performance of the Work* or a designated portion of the *Work* in a certificate and issue a copy of that certificate to each of the *Owner* and the *Contractor*.
- 5.4.3 Where the holdback amount required by the applicable lien legislation has not been placed in a separate lien holdback account, the *Owner* shall, no later than 10 calendar days prior to the expiry of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*, place the holdback amount in a bank account in the joint names of the *Owner* and the *Contractor*.
- 5.4.4 Subject to the requirements of any *Payment Legislation*, all holdback amounts prescribed by the applicable lien legislation for the *Place of the Work* shall become due and payable to the *Contractor* no later than 10 *Working Days* following the expiration of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*, as certified or verified by the *Consultant* when permitted by any *Payment Legislation*.
- 5.4.5 The *Contractor* shall submit an application for release of the lien holdback amount in accordance with the lien legislation applicable to the *Place of the Work*. Except to the extent required by any *Payment Legislation*, such application for release of the holdback shall not constitute an application for payment that is subject to *Proper Invoice* requirements.
- 5.4.6 Where legislation permits progressive release of the holdback for a portion of the *Work* and the *Consultant* has certified or verified that the part of the *Work* has been performed prior to *Substantial Performance of the Work*, the *Owner* hereby agrees to release, and shall release the holdback for such portion of the *Work* to the *Contractor* in accordance with such legislation.
- 5.4.7 Notwithstanding any progressive release of the holdback, the *Contractor* shall ensure that such parts of the *Work* are protected pending the issuance of a final certificate for payment or until the *Owner* takes early occupancy in accordance with GC12.2, whichever comes first, and shall be responsible for the correction of defects or work not performed regardless of whether or not such was apparent when the holdback was released."

GC 5.5 FINAL PAYMENT

- .1 Add to the end of paragraph 5.5.1 the following sentence:
"The application for final payment shall meet the requirements of a *Proper Invoice*."
- .2 Add the following to the end of paragraph 5.5.3:
"Subject to any *Payment Legislation*, when the *Consultant* finds the *Contractor's* application for final payment to be not valid, the *Contractor* shall revise and resubmit the application when the *Contractor* has addressed the reasons given by the *Consultant*."

PART 6 CHANGES IN THE WORK

GC 6.3 CHANGE DIRECTIVE

- .1 Delete the word “and” from the end of subparagraph 6.3.7.18.
- .2 Delete the period from the end of subparagraph 6.3.7.19 and replace it with “; and”.
- .3 Add new subparagraph 6.3.7.20 as follows:
“.20 safety measures and requirements.”

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

- .1 Add new paragraph 6.4.5:
“6.4.5 The *Contractor* confirms that, prior to bidding the *Project*, it carefully reviewed the *Place of the Work* and applied to that review the degree of care and skill described in paragraph 3.9.1, given the amount of time provided between the issue of the bid documents and the actual closing of bids, the degree of access provided to the *Contractor* prior to submission of bid, and the sufficiency and completeness of the information provided by the *Owner*. The *Contractor* is not entitled to compensation or to an extension of the *Contract Time* for conditions which could reasonably have been ascertained by the *Contractor* by such review undertaken in accordance with this paragraph 6.4.5.”

GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

- .1 Add the words “as noted in paragraph 6.6.3” after the words “of the claim” in paragraph 6.6.5 and add the words “and the *Consultant*”, at the end of paragraph 6.6.5.

PART 8 DISPUTE RESOLUTION

GC 8.3 ADJUDICATION

- .1 Delete the word “prescribed” from paragraph 8.2.1 and substitute the words “provided for”.

GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION

- .1 Add the following new paragraphs 8.3.9 to 8.3.13:
“8.3.9 Within five days of receipt of the notice of arbitration by the responding party under paragraph 8.3.6, the *Owner* and the *Contractor* shall give the *Consultant* a written notice containing:
 - .1 a copy of the notice of arbitration;
 - .2 a copy of supplementary conditions 8.3.9 to 8.3.14 of this *Contract*, and;
 - .3 any claims or issues which the *Contractor* or the *Owner*, as the case may be, wishes to raise in relation to the *Consultant* arising out of the issues in dispute in the arbitration.”

- 8.3.10 The *Owner* and the *Contractor* agree that the *Consultant* may elect, within ten days of receipt of the notice under paragraph 8.3.9, to become a full party to the arbitration under paragraph 8.3.6 if the *Consultant*:
- .1 has a vested or contingent financial interest in the outcome of the arbitration;
 - .2 gives the notice of election to the *Owner* and the *Contractor* before the arbitrator is appointed;
 - .3 agrees to be a party to the arbitration within the meaning of the rules referred to in paragraph 8.3.6, and,
 - .4 agrees to be bound by the arbitral award made in the arbitration.
- 8.3.11 Without limiting and subject to the *Owner* and *Contractor's* rights under paragraph 8.3.12 to challenge whether the *Consultant* has satisfied the requirements of paragraph 8.3.10, if an election is made under paragraph 8.3.10:
- .1 the *Owner* or *Contractor* may request particulars and evidence of the *Consultant's* vested or contingent financial interest in the outcome of the arbitration;
 - .2 the *Consultant* shall participate in the appointment of the arbitrator; and,
 - .3 notwithstanding the rules referred to in paragraph 8.3.6, the time period for reaching agreement on the appointment of the arbitrator shall begin to run from the date the respondent receives a copy of the notice of arbitration.
- 8.3.12 The arbitrator in the arbitration in which the *Consultant* has elected under paragraph 8.3.10 to become a full party may:
- .1 on application of the *Owner* or the *Contractor*, determine whether the *Consultant* has satisfied the requirements of paragraph 8.3.10, and;
 - .2 make any procedural order considered necessary to facilitate the addition of the *Consultant* as a party to the arbitration.
- 8.3.13 The provisions of paragraph 8.3.9 shall apply (with all appropriate changes being made) to written notice to be given by the *Consultant* to any sub-consultant."

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.1 PROTECTION OF WORK AND PROPERTY

- .1 Delete subparagraph 9.1.1.1 in its entirety and replace it with the following:
 - "1 errors or omissions in the *Contract Documents* which the *Contractor* could not have discovered applying the standard of care described in paragraph 3.9.1;"
- .2 Delete paragraph 9.1.2 in its entirety and replace it with the following:

"9.1.2 Before commencing any *Work*, the *Contractor* shall determine the locations of all underground utilities and structures indicated in the *Contract Documents*, or that are discoverable by applying to an inspection of the *Place of the Work* the degree of care and skill described in paragraph 3.9.1."

GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

- .1 Add the following words to paragraph 9.2.6 after the word "responsible":

"or whether any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damage to the property of the *Owner* or others,"
- .2 Add the words "and the *Consultant*" after the word "*Contractor*" in subparagraph 9.2.7.4.
- .3 Add the following words to paragraph 9.2.8 after the word "responsible":

"or that any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damage to the property of the *Owner* or others,"

GC 9.5 MOULD

- .1 Add the words "and the *Consultant*" after the word "*Contractor*" in subparagraph 9.5.3.4.

PART 10 GOVERNING REGULATIONS

GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

- .1 Delete from the first line of paragraph 10.2.5 the word, "The" and substitute the words "Subject to paragraph 3.9.1, the".

PART 12 OWNER TAKEOVER

GC 12.1 READY-FOR-TAKEOVER

- .1 After the second occurrence of the term "*Ready-for-Takeover*" insert before the term "*Ready-for-Takeover*" in paragraph 12.1.3 the words "determination of".

GC 12.2 EARLY OCCUPANCY BY THE OWNER

- .1 Delete the word "achieve" in paragraph 12.2.4 and replace it with the words "have achieved".

GC 12.3 WARRANTY

- .1 Delete the word "The" from the first line of paragraph 12.3.2 and replace it with the words "Subject to paragraph 3.9.1, the".

PART 13 INDEMNIFICATION AND WAIVER

GC 13.1 INDEMNIFICATION

- .1 Add new paragraph 13.1.0 as follows:
 - "13.1.0 The *Contractor* shall indemnify and hold harmless the *Consultant*, its agents and employees from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings by third parties that arise out of, or are attributable to the *Contractor's* performance of the *Contract*, provided such claims are:
 - .1 attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, and
 - .2 caused by negligent acts or omissions of the *Contractor* or anyone for whose negligent acts or omissions the *Contractor* is liable, and
 - .3 made by *Notice in Writing* within a period of 6 years from the *Ready-for-Takeover* date or within such shorter such period as may be prescribed by any limitation statute or the Province or Territory of the *Place of Work*."
- .2 Add the words "13.1.0," after the word "paragraphs" in paragraph 13.1.3.

[End of recommended supplementary conditions]

*The items outlined herein under Section 01005 shall comprise "PART 1/Division One" General Instructions/General Requirements for the project and apply **to all subsequent Specification sections as if repeated therein.***

**1.1 General Description
of Work**

- .1 Work under this Contract generally includes (without strict limitation to) the items noted below:

Interior alterations at **Denis Morris Catholic High School, 40 Glen Morris Drive, St. Catharines, ON** for the Niagara Catholic District School Board including:

- 1) Renovations to 2 gymnasiums and change rooms
- 2) Installation of new LULA lift
- 3) Mechanical upgrades

The work shall be as outlined in all project drawings, specifications and supplementary reports (by outside Consultants) provided herein, all comprising the Tender Documents/Contract Documents.

1.2 Project Documents

- .1 Maintain at the job site, one copy each of following:
- a) Contract Drawings (architectural, engineering and all related consulting drawings)
 - b) Specifications
 - c) Addenda
 - d) Reviewed shop drawings
 - e) Change Orders, Contemplated Change Orders and Change Directives/Notices
 - f) Site/Field Instructions
 - g) Other modifications to contract
 - h) Field test reports
 - i) Copy of approved Construction Schedule
 - j) Manufacturers' installation and application instructions.
 - k) List of Sub-contractors
 - l) Progress photographs
 - m) Record Set of Drawings (being progressively updated)
 - n) Minutes of Site Meetings

1.3 Specifications

- .1 Portions of Specifications are written in short form. Therefore, it shall be understood that where item of Work is stated in heading followed by material, equipment, component, or operation, words "shall be", "shall consist of" or similar words or phrases are implied which denote supply, fabricate and supply, install, provide or commission of such materials, equipment or operations for component of Work designated by heading.
- .2 Whenever used in Specifications following definitions shall apply:
 - a) SUPPLY - Procurement or fabrication of standard components not to special design of materials, equipment, or components, or performance of services to extent indicated. Where used with respect to materials, equipment, or components, term shall include delivery to Site but is not intended to include installation of item, either temporary or final.
 - b) FABRICATE AND SUPPLY - Fabrication of materials, equipment or component, to special customized design to extent indicated including delivery to Site, assisting in form of supervision to those Section(s) installing materials, equipment or component. Term does not include installation of item either temporary or final.
 - c) INSTALL - Placement of materials, equipment, or components, including receiving, unloading, transporting, storage, uncrating and installing, and performance of such testing and finish work as is compatible with degree of installation specified complete ready for use.
 - d) PROVIDE - To Supply and Install, compete and in place, including accessories, finishes, tests and services as required to render item so specified complete ready for use.
 - e) COMMISSION - Startup and initial operation of equipment as required and/or as specified in respective Sections, to demonstrate satisfactory operation of components and entire system including calibration of any control instrumentation as required to maintain operations.
- .3 Drawings, Lists or Schedules of Items are intended to show scope and arrangement of work. For location of item described refer to such Drawings, Lists or Schedules unless location stipulated in Specifications.

- .4 Wherever words "acceptable", "approved", "reviewed", "satisfactory", "selected", "directed", "designated", "permitted", "inspected", "instructed", "clarification", "required", "report", "submit", "obtain", "consult", "advise", or similar words or phrases are used in Standards or in Contract Documents, it shall be understood that, unless context provides otherwise words "by/to/with/from the Architect shall follow them as applicable.
- .5 'Related Work', 'Related Divisions', 'Related Sections' etc.: Specifications sections provided herein may note and/or itemize specific sections or divisions of related work. This information if provided for general reference only. In all circumstances, the actual scope of related work is to be as shown/required by the full scope of work outlined in all of the Contract Documents (including the drawings) and in ***no way*** is to be limited to any information, provided, not provided and/or referenced only in the Specification documents.
- 1.4 Construction Schedule**
- .1 Provide within 14 working days after Contract award, a Schedule showing anticipated progress stages and final completion of work within time periods and phases stated in the Tender Form.
- .2 In accordance with the established project schedule, provide a detailed Construction Schedule showing dates for:
- a) Submission of material sample submittals (along with an itemized list of samples to be submitted)
 - b) Submission of shop drawings (along with an itemized list of shop drawings to be submitted)
 - c) Supply and installation of [without strict limitation to]:
 - a. Architectural Millwork
 - b. Steel Doors and Frames
 - c. Finish Hardware
 - d. Barrier Free Door Operators
 - e. Glass and Glazing
 - f. Flooring/Floor Finishes
 - g. Mechanical Section
 - h. Electrical Section
- .3 Interim reviews of actual progress related to the Construction Schedule prepared by the Contractor will be conducted as by the Architect. Progressive updating and distribution of the Schedule (in conjunction with the input of the Architect and building Owner) will be the responsibility of the Contractor throughout the duration of the project.

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| 1.5 Contractor's Use of Site | <ul style="list-style-type: none">.1 Contractor's use of site is limited to those areas of the site designated by the Owner and/or the Architect (as applicable). Operators' activities should allow for the ongoing needs of parking, deliveries, exits, fire safety access etc. on site throughout the course of construction..2 Do not unreasonably encumber ongoing use or access of site with materials or equipment. Stage, receive and store construction materials on site only as and where permitted by Owner or as directed by the Architect..3 Obtain and pay for use of additional storage facilities or work areas as needed throughout the course of construction. |
| 1.6 Partial Occupancy of Use | <ul style="list-style-type: none">.1 Contractor to coordinate the Work with the continuing use of the remainder site. |
| 1.7 Standards | <ul style="list-style-type: none">.1 Where reference is made to specification standards produced or enforced by various organizations, conform to most current edition of standards specified or, if not specified, to latest edition as amended and revised to date of Contract..2 If requested provide copy on Site of such standard(s)..3 Where standard designated authorities such as "Engineer", Designer", "Purchaser" or some other such designation, these designations shall be taken to mean "Architect". |
| 1.8 Building Codes | <ul style="list-style-type: none">.1 Comply with most recent and applicable versions of: The Building Code Act, as amended; the Ontario Building Code, as amended; Regulations and By-Laws of other authorities having jurisdiction including latest amendments thereto, all hereafter referred to as 'Code'. Where Code or Contract Documents do not cover a particular requirement which is covered by National Building Code, conform to requirements of NBC including its related supplements. Where Drawings and/or Specifications exceed Code requirements, satisfy such additional requirements..2 Where material is designated in Contract Documents for certain applications, unless otherwise specified, that material shall conform to minimum standards designated in appropriate divisions of the Code. In the absence of more restrictive requirements, comply with Division B Part 3 of the Ontario Building Code as a minimum standard. Similarly, unless otherwise specified and/or not required otherwise by Code, minimum installation methods and standards of workmanship shall conform to standards of Part 9 in the Ontario Building Code. |

1.9 Project Meetings

- .1 Hold and chair project meetings at times, locations and frequencies requested by the Architect, but generally occurring at least once every two weeks.
- .2 Notify all parties concerned (identified at the project outset by the Architect and Owner) of meeting times and dates.
- .3 Record Minutes of meetings, and distribute to all parties within **three** calendar days after meetings.

1.10 Setting Out of Work

- .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
- .2 Provide devices needed to lay out and construct work.
- .3 Supply such devices as ladders, measuring tapes, straight edges and templates required to facilitate Architect's inspection of work.
- .4 Supply stakes and other survey markers required for laying out work.
- .5 Any deviation from line and level shall be corrected without additional cost, to the Architect's satisfaction.

1.11 Location of
Equipment and
Fixtures

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate. Do not scale drawing for locating of position. Obtain Architect's direction.
- .2 Locate equipment, fixtures, and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access, and maintenance.
- .3 Inform Architect of impending installation and obtain his approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Architect.

1.12 Concealment

- .1 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

**1.13 Cutting, Fitting,
Patching**

- .1 Execute cutting including excavation, fitting, and patching required to make work fit properly together.
- .2 Obtain Engineer's approval before cutting, boring or sleeving load-bearing members.
- .3 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
- .4 Fit work airtight to pipes, sleeves, ducts, and conduits.
- .5 Cutting and patching to be by tradesmen qualified in the respective sections of the work.

1.14 Existing Services

- .1 Before commencing Work, establish location and extent of existing services in area of Work and notify Architect.
- .2 Whenever it is necessary to cut, interfere with, or connect to existing services or facility do so at hours and times recommended by governing authorities and approved by Architect; and with minimum disturbance to occupants, pedestrian and vehicular traffic and public and private property.
- .3 Submit schedule to and obtain approval from Architect for each proposed shut-down of active service or facility. Adhere to approved schedule and provide notice to affected parties.
- .4 If unknown services are encountered, immediately notify Architect and confirm findings in writing and/or on Drawings. Obtain Architect's written direction if such services require cutting, capping or relocation to do Work.
- .5 Remove abandoned service lines within 2m of structures. Cap or otherwise seal lines at cut-off points as directed by Architect.
- .6 Protect and record locations of maintained or rerouted service lines. Record locations of abandoned service lines.

1.15 Additional Drawings

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

**1.16 Relics and
Antiquities**

- .1 Relics and antiquities and items of historical or scientific interest such as cornerstones and contents commemorative plaques, inscribed tablets, and similar objects found on site or in buildings to be demolished, shall remain property of Owner. Protect such articles and request directives from Architect.

1.17 Coordination

- .1 The Contractor will coordinate the work of all sub-contractors, including mechanical and electrical trades.
- .2 Coordinate work of each Section as required for satisfactory and expeditious completion of Work. Take field dimensions as required. Take into account existing installations to assure best arrangements of components in available space. Consult before commencing Work in critical locations. Fabricate and erect Work to suit field dimensions and field conditions.
- .3 Provide forms, templates, anchors, sleeves, inserts and accessories or other components required to be fixed to or inserted in the Work. As applicable set them in place or instruct related Sections as to their location.
- .4 Pay cost of extra work caused by, and make up time lost as result of failure to comply with these requirements within established project timelines.
- .5 Cutting and patching as specified in sub-section above.

1.18 Modular Coordination

- .1 Where work incorporates metric modular components, the following rules apply:
 - a) Actual opening dimensions in masonry including doors, windows, walls, louvres and actual room sizes are 10 mm (3/8") greater than nominal dimensions given on Drawings. Actual thicknesses of walls, piers and overall lengths of walls or buildings are 10 mm (3/8") less than nominal dimensions given on Drawings unless indicated otherwise.
 - b) Unless indicated otherwise Drawing details at scales of 1:10 and less indicate "actual" rather than "nominal" dimensions.

1.19 Examination

- .1 Examine work upon which your work depends. Report in writing defects in such work. Application of your work shall be deemed acceptance of work upon which your work depends.
- .2 Drawings are, in part, diagrammatic and are intended to convey scope of Work and indicate general and approximate location, arrangement and sizes of fixtures, equipment, ducts, piping, conduit and outlets and similar items. Obtain more accurate information about locations, arrangement and sizes from study and coordination of Drawings, including shop drawings and manufacturers' literature and become familiar with conditions and spaces affecting these matters before proceeding with Work.

- .3 Where job conditions require reasonable changes in indicated locations and arrangements, make such changes with approval of Architect at no additional cost to Client. Similarly, where existing conditions interfere with new installation and require relocation, such relocation is included in Work.
 - .4 Install and arrange fixtures, equipment, ducts, piping and conduit to conserve as much headroom and space as possible, and avoid interference and obstruction of access. Observe good installation practice for safety, access, maintenance and follow manufacturer's recommendations. Make changes requested to comply with these requirements at no additional cost to Client.
 - .5 If requested by Architect, and before installation, relocate equipment, services, doors, openings, furring and other work at no additional cost to Client; providing such relocation involves only reasonable minor adjustments and reasonable advance notice is given in writing.
- 1.20 Cold Weather Work**
- .1 Continue Work including winter months, if applicable, until Work is completed and accepted. Provide winter heat to maintain project timelines and to ensure completion (and Occupancy) by the date specified Tender Documents. No additional costs for cold weather heating will be entertained.
- 1.21 Materials, Plant and Equipment**
- .1 Materials, plant and equipment specified shall form basis of Bid and Contract. Where more than 1 brand or manufacturer is named in Specifications, or on Drawings, choice is Bidders/Contractors provided requirements of Drawings and Specifications are met.
 - .2 Unless explicit statement is made in Bid/Contract Documents to say no substitutions will be permitted; then works "or approved alternate" are hereby deemed to apply to material, plant and equipment specified by brand or manufacturer, subject to following conditions:
 - a) Request for substitution is made after Contract award and in accordance with provisions for substitutions set out in the General Conditions of the Contract.
 - b) Proposed substitution satisfies all other indicated or specified requirements and conditions.
 - .3 Materials, plant and equipment shall not be damaged or defective and shall be of quality compatible with Specifications for purpose intended. If requested provide evidence as to type, source and quality. Remove and replace defective products, at own expense, regardless of previous inspections, and be responsible for delays and expenses caused thereby.

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| | | .4 | Replace factory finished equipment, or parts thereof, whose paint finish is damaged and cannot be reasonably remedied by paint touch-up. |
| 1.22 | Material Storage and Handling | .1 | Store packaged materials in original, undamaged containers with manufacturer's labels and seals intact. Handle and store materials in accordance with manufacturer's and suppliers' recommendations and in manner to prevent damage to materials during storage and handling. |
| 1.23 | Concealment of Work | .1 | Conceal pipes, ducts conduits, tubing, wiring and other items requiring concealment in floor, wall and ceiling construction of finished areas except where indicated or specified otherwise. If in doubt as to method of concealment, or intention of Contract Documents in this connection, request clarification from Architect before proceeding with work in question. |
| | | .2 | Lay out mechanical and electrical work in advance of concrete placement and furring installation to allow for its proper concealment. |
| | | .3 | Test and inspect work before applying pipe covering and before Work is concealed. |
| 1.24 | Lines, Levels and Dimensions | .1 | Have registered Ontario Land Surveyor establish 1 permanent benchmarks on Site, referenced to established benchmarks by survey control points. Provide and maintain control lines and level required. |
| | | .2 | Lay out work in accordance with lines, levels and dimensions indicated and/or provided on benchmarks established by survey. |
| | | .3 | Verify lines, levels and dimensions. Report errors or inconsistencies in Drawings and obtain direction from Architect before commencing Work and prior to ordering of associated products and materials. |
| | | .4 | Except as provided by survey, provide lines, levels dimensions necessary to relate work to that of other Sections. |
| 1.25 | General Workmanship | .1 | Complete Work in accordance with industry standards for related type of work unless Contract Documents stipulate more precise requirements. |
| | | .2 | Complete all Work in neat and careful manner to retain Work plumb, square and straight. |
| | | .3 | Ensure Work is properly related to form close joints and appropriately aligned junctions, edges and surfaces and is free of warp, twist, wind, wave or other irregularities. |

- .4 When required by Specifications or by manufacturer's recommendations, have manufacturer, supplier or accredited agent, inspect work which incorporates their products.
- .5 Do not permit materials to come in contact with other materials or environmental conditions which may result in corrosion, staining, discolouration, degradation or any adverse impact on completed Work. Provide compatible, durable separators where such contact is unavoidable.

1.26 Fasteners

- .1 Supply appropriate fasteners, anchors, accessories, and adhesives required for fabrication and erection of Work.
- .2 Unless specified otherwise use exposed metal fasteners and accessories of same texture, colour and finish as product being fastened.
- .3 Use metal fasteners of same material as metal component being fastened, or of metal which will not generate electrolytic action and cause damage to fastener or metal component under moist conditions. In general use noncorrosive or hot dip galvanized steel anchors occurring on or in exterior wall, slab, or other exterior locations, unless higher standard is indicated or specified.
- .4 Fastening devices or adhesives shall be of appropriate type, used in sufficient quantity and in such manner to provide positive, permanent fastening which will not shift, work loose or fail during occupancy of building due to vibration or other causes resulting from normal use of building. Install anchors at spacing to provide required load/stress carrying capacity. Do not use wood plugs.
- .5 Lay out fasteners neatly, evenly spaced and aligned. Keep exposed fasteners to minimum.
- .6 Supply adequate instructions and templates and, if necessary, supervise installation, where fasteners or accessories for your Section are required to be built into work of other Sections.
- .7 Do not use fasteners which will cause spalling, cracking, or deformation or deterioration of material being fastened by or to.
- .8 Do not use powder actuated fastening devices, which are used in tension, without approval. Take stringent safety precautions when using powder actuated fasteners. Use only low velocity plunger-type devices.
- .9 Use adhesives specified, or if not specified, those recommended by manufacturer of materials involved, compatible with materials to be joined, and effective in forming permanent joint of adequate strength.

- .10 Use screws, nails, staples, and other similar, driven fasteners suitable to materials to be joined and to conditions under which they are installed and used. Ensure that in finished work, fasteners are sized to take durable hold under stress to be encountered without damage to, or weakening of, elements secured together, and that fastenings will not corrode or cause staining of exposed surfaces.
 - .11 Do brazing or soldering to form durable connections of strength adequate to resist stresses to be encountered without deformation of elements joined. Prepare base metals and use methods and materials to ensure clean joint, and to prevent staining, corrosion, discolouration, deformation or other damage to finished Work.
 - .12 Do welding to CSA W59-M89 (for steel) or CSA W59.2-M91 (for aluminum) for material and methods, unless specified otherwise. Have welding performed by industry certified operatives to CSA W47.1-83 or CSA W47.2-M87.
- 1.27 Accessories**
- .1 Provide accessory items or materials required, such as brackets, cleats, connectors, sealants, lubricants, cleaners, protection, and similar items, whether specified or not, so that Work is complete and will perform as required.
- 1.28 Design and Safety Requirements for Temporary Work**
- .1 Be responsible for design, erection, operation, maintenance and removal of temporary structural and other temporary facilities. Engage and pay for registered Professional Engineering personnel skilled in appropriate disciplines to perform these functions where required by law or by the Contract Documents; and in cases where such temporary facilities and their method of construction are of such nature that Professional Engineering skill is required to produce safe and satisfactory results.
- 1.29 Protection and Safety**
- .1 Comply with requirements of Acts and Regulations with respect to health and safety including Occupational Health and Safety Act, as amended, and Workplace Hazardous Materials Information System (WHIMIS) Regulation, including following:
 - a) Before commencement of Work, and throughout Contract, maintain on Site, and readily accessible to all those who may be exposed to hazardous materials, list of hazardous materials proposed for use on Site or Workplace together with current Materials Safety Data Sheet (MSDS).
 - b) Ensure hazardous materials used and/or supplied on Site are labelled in accordance with WHIMIS requirements.

- c) Know and be aware of the procedures for safe handling, storage and use of such hazardous materials including special precautions, safe clean-up, and disposal procedures. Conform to Environmental Protection Act for disposal requirements.
 - d) ensure that those who handle, and/or are exposed to, or are likely to handle or be exposed to, hazardous materials are fully instructed and trained in accordance with WHIMIS requirements.
-
- .2 Protect excavation, trenches and building from damage from rainwater, ground water, backing up of drains or sewers and other water, frost, and other weather conditions. Provide sheeting, piling, shoring, pumps, equipment, temporary drainage, protective covering, and enclosures. Provide necessary pumps including spare pump for keeping project free of water throughout construction period.
 - .3 Protect, relocate and maintain existing, active services wherever they are encountered. Wherever inactive services are encountered, cap them off and remove unwanted portion, with approval of authorities having jurisdiction or public utility concerned in manner approved by them.
 - .4 Load no part of structure during construction with load greater than it is calculated to bear safely when completed. Make every temporary support as strong as permanent support. Place no load on concrete structure until it has sufficient strength to safely carry such load.
 - .5 Adequately protect floors and roofs from damage. Take special measures when moving heavy loads or equipment on them.
 - .6 Keep floors free of oils, grease or related contaminants likely to dis-colour them or adversely affect bond of applied surfaces including fumes generated by temporary heating devices. Take care not to spill or allow oil, grease, gasoline, diesel and fuel oil, chemicals and other substances to contaminate soil or water on or adjacent to Site. Should such contamination accidentally occur report it immediately and clean up to satisfaction of Architect.
 - .7 Protect work of other Sections from damage resulting from your work.
 - .8 Damaged work shall be made good wherever possible by Section whose work is damaged but at expense of those causing damage.

- .9 Protect glass and other finishes against heat, slag and weld splatter using suitable protective shields or covers.
 - .10 Prior to beginning of construction, design fire safety plan in conjunction with local Fire Chief. Post fire plan throughout construction and recommended. Do not allow accumulation of waste that may constitute fire hazard.
 - .11 Conform to Construction Safety Association of Ontario's manual on Propane in construction. Watch work area for minimum of 30 minutes after hot work is completed. Provide Site fire security when required by local building department and/or municipal fire department. Ensure that water supply is adequate for firefighting.
 - .12 Provide and maintain in working order, suitable Underwriters' labelled fire extinguishers and locate in suitable positions, to approval of authorities having jurisdiction.
 - .13 Provide minimum of 3 safety helmets for Architect and any other authorized visitors to Site if required.
 - .14 Protect public and those employed on Work from injury. Equipment (mobile) when not in use shall have keys removed and locked up in secure location.
- 1.30 Scaffolding**
- .1 Erect scaffolding independent of walls. Use it in manner as to interfere as little as possible with other Sections. When not in use, move it as necessary to permit installation of other work. Construct and maintain scaffolding in rigid, secure and safe manner. Remove it promptly when no longer required.
- 1.31 Temporary Cleaning**
- .1 Keep Site and building, including concealed spaces, free from accumulation of dirt, debris, garbage, and excess material. Remove oily rags and waste from premises at close of each day, or more often if required.
- 1.32 Manufacturers Directions**
- .1 Except where specified otherwise, use each product in accordance with manufacturer's published or written instructions, specifications or recommendations regarding handling, storage, preparation, Site conditions, ancillary products or accessories, methods of installation, protection and cleaning. Submit copy of such instructions and indicate if and where there is discrepancy between them and requirements of Specifications and obtain direction.

1.33 Spare Products

- .1 Where specified in other Sections, provide spare materials and products for future repair and replacement.
- .2 Ensure such materials are of same production run as those incorporated in Work.
- .3 Deliver quantities required, in separate labelled containers, and store where directed.
- .4 Labels shall state material description, colour, pattern and location of installation.

1.34 Environmental Practices

- .1 Take active role in implementing environmentally sound business practices and producing goods and services that lessen burden on environment in production, use and final disposition. Support implementation of reduction, reuse and recycling strategies and use of environmentally sound products. Reduce or eliminate excessive packaging and promote use of environmentally responsible packaging practices.
 - a) Environmentally Sound Products: Product that is made, used and disposed of in a manner that significantly reduces harm it would otherwise cause the environment. Product may be certified as environmentally sound because it is made in a way that improves energy efficiency, reduces hazardous by-products, uses recycled material, or because the product itself can be recycled or reused, or in some way is environmentally benign.
 - b) Packaging requirements: Implement waste reduction by reducing or eliminating excessive packaging practices.
 - c) Use, where appropriate, combination of packaging materials such as re-usable containers, blanket wrap or cushioning material provided that all reasonable requirements of materials handling, transportation and storage are observed.
 - d) Packaging materials such as kraft paper and corrugated cartons shall be made from reclaimed products to facilitate recycling of secondary materials.
 - e) Packaging material shall be clearly labelled to display their recycled content and recyclability.
 - f) Ensure that packaging materials are removed from Site and disposed of in environmentally responsible manner.

GENERAL REQUIREMENTS

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1.35 Waste Disposal

- .1 All refuse generated by and/or related to construction shall be removed from the project site and disposed of by the Contractor at an approved sanitary landfill site, recycling depot or waste collection facility suited to the nature of items being removed. All costs related to on-site handling of debris (including rental of on-site waste handling bins, dumpsters etc.) and the subsequent shipping and drop-off of waste is the sole responsibility of the Contractor throughout the duration of the project.
- .2 Coordinate all waste handling procedures within occupied buildings with Building Owners.
- .3 Coordinate all site locations of waste handling dumpsters with Building Owners.

1.36 Polychlorinated Biphenyl (PCB's)

- .1 In event of unexpected discovery of PCB's immediately notify Architect orally and in writing and do not handle, disturb or remove items containing PCB's. Architect will authorize remedial work, if any, in writing. Do such remedial work as addition to Contract.

1.37 Spill Response Procedures

- .1 The Contractor shall have written spill response procedures and material on-site to respond to pollutants and contaminants into the natural environment in excess of levels permitted in regulations or cause or are likely to cause an adverse effect.

END OF SECTION 01005

- 1.1 Allowance Overview** .1 Expend Cash Allowances only as directed and authorized by the Architect, and confirm in writing. Supply detailed and itemized costs for all Allowances in writing for the Architect's approval prior to proceeding with work.
- .2 Unexpended amount(s) of cash allowances may be relocated to other specified cash allowances at the sole discretion of the Architect.
- .3 Unexpended amount(s) of cash allowances shall be deducted from the Contract Price at completion of the work.
- .4 Overhead and Profit for the General Contingency (held by the Owner) will be as set out in Section 00710.
- .5 Do not include overhead and profit for work to be done under Cash Allowance Items noted below.
- Overhead and Profit on cash allowances only applies when the cash allowance expenditure exceeds the sum stated for the particular allowance.
- Then the overhead and profit on the excess amount will be allowed for the allowance in question as set out in Section 00710.
- .6 General Contingency and all cash allowances do not include H.S.T. It is understood that 13% is to be added to the General Contingency and Cash Allowances.
- 1.2 Contingency** .1 **GENERAL CONTINGENCY FUND/ALLOWANCE:**
General Contingency Allowance will be held by the Building Owner.
- 1.3 Cash Allowances**
- The following Cash Allowances value are to be carried by the General Contractor and is to be included in the Total Contract Price submitted by the General Contractor in the Form of Tender.
- .1 **CASH ALLOWANCES**
This Allowance includes for the supply and installation of additional items and/or services [related to the scope of work and to the categories noted below] as requested/approved by the Client during the course of construction.

a) INSPECTION AND TESTING SERVICES:**(Allowance by General Contractor)**

For Testing and/or Inspection services to be determined at a later date throughout the course of construction. This Allowance is to include all services related to inspection and/or testing of building materials, compaction, systems, concrete slab moisture testing and components, including travel to and from site, laboratory testing, technological services and all other costs incidental to this work. The testing and inspection work will be segregated into appropriate segments as per the Boards direction in coordination with the Architect.

Include the sum of\$20,000.00

b) HAZARDOUS MATERIALS ABATEMENT**(Allowance by General Contractor)**

For the remediation of any hazardous materials over and above the specified work noted within the Tender Documents

Include the sum of\$25,000.00

c) GYM STORAGE EQUIPMENT**(Allowance by General Contractor)**

For supply and install of gymnasium equipment

Include the sum of\$50,000.00

d) BALANCING**(Allowance by Mechanical Contractor)**

For testing and balancing of the mechanical systems for any related items over and above the specified work noted within the Tender Documents

Include the sum of\$20,000.00

TOTAL CASH ALLOWANCE VALUE FOR ALL ITEMS NOTED ABOVE:

(to be included in Price listed in the 'Form of Tender'

document issued by NCDSB through CBRE) \$115,000.00

END OF SECTION 01020

1.1 Sample Submissions

- .1 Submit samples in sizes and quantities noted in Specifications and/or as requested by the Architect throughout the course of construction.
- .2 Where a variety of colours, patterns, textures or finish options are provided by product manufacturers (for items not previously specified by the Architect), submit the manufacturer's full range of samples/options to the Architect.
- .3 All samples of colours, materials and/or finishes are to be submitted to the Architect as actual material samples in hardcopy submission. NO virtual/electronic colour cards viewed on-line (i.e. from supplier or manufacturer websites), electronic photos etc. will be accepted as compliant submission formats.
- .4 All samples are to be submitted, forwarded and delivered to the Architect's office. It shall not be the responsibility of the Architect to pick up or order any required samples (from product suppliers) under any circumstances.
- .5 All samples shall be submitted to the Architect at least 21 days prior to product ordering. The Architect reserves the right to allow 7 days min. for sample submittal review.

Any item or samples not submitted in sufficient time for Architectural review and approval [relative to subsequent ordering, production and delivery of product to site when required] shall be the sole responsibility of the Contractor to rectify and make good to the satisfaction of the Architect. *Neither the Owner [nor the Architect and related consultants] shall be financially responsible for any additional costs associated with express shipping options, accelerated production premiums and/or substitute materials which are necessary due to delays by the Contractor [his Sub-Trades and/or related product suppliers] in submitting and receiving the necessary approvals.*

1.2 Co-ordination of
Shop Drawings

- .1 Prior to first draw for payment being processed, the complete list of all shop drawings for the project shall be submitted and approved by all Consultants. Updated shop drawing schedule to be submitted with each draw until all shop drawings have been processed.

The Contractor shall formulate all Shop Drawing submission dates into the Project Construction Schedule only after verifying and allowing for sufficient product delivery times (product lead times) required to meet the Owner's schedule for completion of individual project phases.

- .2 Review shop drawings, product data and of samples prior to submission to ensure their conformance to project requirements.
- .3 Prior to the submission of Shop Drawings, verify and reflect in the shop drawings all related:
 - (a) Field measurements (taken from project job site)
 - (b) Field Construction Criteria (taken from project job site)
 - (c) Product requirements, complete with proper identification of related manufacturer's catalogue, model and/or product numbers
- .4 Co-ordinate each submission with requirements of work and Contract documents. Individual shop drawings will not be reviewed until all related drawings are available.
- .5 Contractor's responsibility for errors and omissions in submission is not relieved by Architect's review of submittals.
- .6 Contractor's responsibility for deviations in submission from requirements of contract documents is not relieved by Architect's review of submission, unless Architect gives written acceptance of specified deviations.
- .7 Notify Architect, in writing at time of submission, of deviation from requirements of Contract documents.
- .8 After Architect's review, distribute copies.
- .9 All shop drawings shall be submitted to the Architect *at least 45 days prior to product ordering. This submission timeline in all circumstances shall be increased to allow for all required production and lead times relative to delivery of the product when required on site (identified within the Contractor's Construction Schedule).*

The Contractor must allow (within his Submission Schedule) for the possibility that all initial Shop Drawing submissions may not be approved, and that additional time is required for their subsequent revision and resubmission.

All shop drawings identified for re-submission are to be rectified and returned to the Architect's office within 7 days after previous review date on the Shop Drawings.

Any delays in the re-submission of rectified or approvable shop drawings are the sole responsibility of the Contractor, along with any and all related expenses to accelerate product production, shipping and delivery and (where necessary) substitution to an alternate product deemed acceptable by the Architect.

**1.3 Shop Drawing
Submission Req'ts**

- .1 Schedule submissions at least forty-five (45) days prior to time at which related product must be ordered to ensure delivery to the construction site when required by the Contractor's Construction Schedule.
- .2 Submit shop drawings electronically as a pdf format document for consultant review and distribution.
- .3 Accompany submissions with transmittal letter, containing:
 - (a) Date
 - (b) Project title and number
 - (c) Contractor's name and address
 - (d) Number of each shop drawing, product data and sample submitted.
 - (e) Other pertinent data.
- .4 Where additional copies of shop drawings or product data are required for distribution, they shall be marked by the Contractor to accord with the copies reviewed by Consultants.
- .5 Submissions shall include:
 - (a) Submission Date and revision dates
 - (b) Project title and number
 - (c) Name of:
 - (i) Contractor
 - (ii) Sub-contractor
 - (iii) Supplier
 - (iv) Manufacturer
 - (v) Separate detailer when pertinent
 - (d) Identification of product or material with manufacturer's related codes and identification numbers
 - (e) Relationship to adjacent structure or materials
 - (f) Field Dimensions, clearly identified as such
 - (g) Specification Section number
 - (h) Applicable standards, such as CSA or CGSB numbers
 - (i) Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with Contract documents.
- .6 Send finalized copies of shop drawings to the Client for record purposes (as/if requested).
- .7 Shop Drawings not stamped with the Contractor's "Approved" stamp will be rejected. It is required that all shop drawings be reviewed by the Contractor (for completeness and accuracy) prior to submission to the Architects and/or his Consultants.
- .8 Shop Drawings being submitted by the Contractor which are specified herein as requiring an Engineer's seal will be rejected without review if the appropriate seal is not shown or present at the time of submission to the Consultant.

- .9 Shop Drawings not stamped or otherwise marked with the Architect's acknowledgment of review shall not be used or integrated into the construction in any manner.

END OF SECTION 01340

TEMPORARY FACILITIES

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| 1.1 Access | <ul style="list-style-type: none">.1 Provide and maintain adequate access to project site..2 Build and maintain temporary roads and parking areas where directed and provide snow removal when required during period of work. |
| 1.2 Contractor's Office | <ul style="list-style-type: none">.1 The General Contractor may use the interior construction area as an office within the school..2 The General Contractor is also responsible to provide a temporary fenced-in compound and/or storage container on-site for the receipt, storage and staging of construction materials as may be required..3 Contactor is responsible to:<ul style="list-style-type: none">• maintain all site facilities in clean and operational order throughout the course of construction• remove all temporary site facility items at completion of construction• restore affected areas to their pre-construction condition following removal of temporary facilities• Clean corridors and exterior areas of any debris resulting in materials leaving or arriving from the construction area..4 No existing interior spaces of the subject facility (outside of the designated construction areas) are to be used for the storage or staging of construction materials. |
| 1.3 Sanitary Facilities | <ul style="list-style-type: none">.1 Washrooms noted as part of the construction area may be used as construction washrooms. If separate washrooms are needed then they must be secured in the contractor's compound area..2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition. |
| 1.5 Storage Facilities | <ul style="list-style-type: none">.1 If required, provide adequate weather tight sheds with raised floors or storage containers for the storage of construction materials, tools, and equipment which are subject to damage by weather. Locations of storage facilities on the property are to be located within fenced compound. |
| 1.6 Parking | <ul style="list-style-type: none">.1 Parking spaces off the subject property will not be allowed unless reviewed and approved by the Municipality. |
| 1.7 Enclosure of Structure | <ul style="list-style-type: none">.1 Provide temporary weather tight enclosures and protection for exterior openings until permanently enclosed..2 Erect enclosures to allow access for installation of materials and working inside enclosure. |

- .3 Design enclosure to withstand wind pressure and snow loading.
- .4 Provide and maintain dustproof and sound resistant barriers or partitions between the Work and existing occupied building.
- 1.8 Power
 - .1 The General Contractor will be provided with power for general construction activities at the existing facility.
- 1.9 Water Supply
 - .1 The General Contractor will be provided with water for general construction activities at the existing facility.
- 1.10 Heating and Ventilating
 - .1 Day-to-day heat and ventilation during the course of construction will be provided under the normal operations of the facility. Supplemental heat as required for construction (above and beyond the daily environmental conditions provided in the facility) shall be the responsibility of the Contractor. All supplemental heat sources and locations shall be approved by the Building Owner if used while the building is occupied during regular hours of operation.
 - .2 Maintain minimum temperature of 10°C or higher where specified as soon as finishing work is commenced and maintain until acceptance of structure by Architect.
 - .3 Ventilating:
 - (a) Prevent hazardous accumulations of dust, fumes, mists, vapours, or gases, in areas occupied during construction.
 - (b) Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - (c) Provide mechanical ventilation to accelerate drying out of building if necessary to maintain schedule.
 - (d) Ventilate storage spaces containing hazardous or volatile materials.
 - (e) Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful elements.
 - .4 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - (a) Conform with applicable codes and standards
 - (b) Enforce safe practices
 - (c) Prevent abuse of services
 - (d) Prevent damage to finishes
 - (e) Vent direct-fired combustion units to outside.

- .5 Activate air system under direction of Engineer to provide temporary heat, after Engineer is satisfied that system will not be damaged by freezing. Product ducting system by disposable filters 50% effective NDS inspected daily and replaced as necessary. Finally, vacuum clean entire ducting system and renew filters.
 - .6 Refer to Section 01710 for replacement of filters at time of final acceptance of work.
- 1.11 Site Signs and Notices**
- .1 Only project identification and approved job sign and notices for safety or instruction are permitted on site.
 - .2 Signs and notices for safety or instructions to be in the English language, or commonly understood graphic symbols.
 - .3 Maintain sign and notices for duration of project. Remove sign and deliver to Owner off site on completion of project.
- 1.12 Scaffolding**
- .1 Supply and install all scaffolding required to perform the prescribed scope of work. Construct and maintain scaffolding in rigid, secure and safe manner.
 - .2 Erect scaffolding independent of walls. Remove promptly when no longer required. Refer to Section 01545 for safety requirements for scaffolding.

END OF SECTION 01500

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| 1.1 Construction Safety Measures | <ul style="list-style-type: none">.1 Observe and enforce construction safety measures required by the Ontario Building Code, Provincial Government regulatory agencies, Workplace Safety Insurance Board (WSIB), municipal agencies and all prevailing statutes and authorities. Safety requirements throughout the project include both the safety of workers and the safety of building occupants present elsewhere in the facility throughout the course of construction..2 In event of conflict between any provision of the above authorities the most stringent provision will apply. |
| 1.2 Fire Safety Requirements | <ul style="list-style-type: none">.1 Provide and maintain in good working order, sufficient fire fighting equipment, tools, and extinguishers to contain an outbreak of fire..2 Comply with all requirements of the local authorities having jurisdiction in the storage and handling of flammable materials..3 Ensure all persons working at the site are conversant with action to be taken in the event of an outbreak of fire at the Work. |
| 1.3 Overloading | <ul style="list-style-type: none">.1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation. |
| 1.4 Falsework | <ul style="list-style-type: none">.1 Design and construct falsework in accordance with CSA S269.1-1975. |
| 1.5 Scaffolding | <ul style="list-style-type: none">.1 Design and construct scaffolding in accordance with CSA S269.2-M1980. |
| 1.6 Hoarding | <ul style="list-style-type: none">.1 Construct temporary construction hoarding as required within and outside of the facility as required to ensure the safety of occupants within the building. Hoarding shall be 6'-0" tall minimum, comprised of opaque plywood on wood framing to and related supports to suit..2 Hoarding shall be self-supporting and not permanently tied into any building materials or finishes..3 Coordinated hoarding locations and scheduling for hoarded areas with Building Owner or operator as required to facilitate use and related access to building areas. No hoarding shall inhibit exit or egress routes in the facility unless expressly permitted by related Authorities Having Jurisdiction. |
| 1.6 Smoking | <ul style="list-style-type: none">.1 Smoking is not permitted on School Board Property. |

END OF SECTION 01545

1.1 General

- .1 Use new material and equipment unless otherwise specified or directed in writing by the Architect.
- .2 Within (7) days of written request by Architect, submit the following information for any or all material and products proposed for supply:
 - (a) Name and address of manufacturer
 - (b) Product name, model, and catalogue number
 - (c) Performance, descriptive and test data
 - (d) Manufacturer's installation or application instructions
 - (e) Evidence of arrangements to procure
- .3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- .4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.

1.2 Manufacturer's Instructions

- .1 Unless otherwise specified, comply with all product manufacturer's latest written instructions for materials and installation methods for the intended application. Comply with and supply all prescribed installation techniques, and materials recommended by the manufacturer as required to ensure the integrity and first-rate installation of related materials.
- .2 Notify Architect in writing of any conflict between these specifications and manufacturers' instructions. Architect will designate which document is to be followed.

1.3 Fasteners - General

- .1 Provide metal fasteners and accessories in same texture, colour and finish as base metal in which they occur. Prevent electrolytic and all similar negative reactions between dissimilar metals using appropriate materials or techniques. Use non-corrosive fasteners, anchors and spacers for securing exterior work.
- .2 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood plugs not acceptable.
- .3 Keep exposed fasteners to minimum, space evenly and lay out neatly.
- .4 Fasteners which cause spalling or cracking of material to which anchorage is made are not acceptable.

- .5 Obtain Owner's approval before using explosive actuated fastening devices. If approval is obtained comply with CSA Z166-1975.
 - .6 Use fasteners of standard commercial Equipment sizes and patterns with material and finish suitable for service.
 - .7 Use heavy hexagon heads, semi-finished unless otherwise specified. Use no. 304 stainless steel for exterior areas.
 - .8 Bolts may not project more than one diameter beyond nuts.
 - .9 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur and resilient washers with stainless steel.
- 1.4 Delivery and Storage**
- .1 Deliver, store and maintain packaged material and equipment with manufacturers' seals and labels intact.
 - .2 Prevent damage, adulteration and soiling of material and equipment during delivery, handling and storage. Immediately remove rejected material and equipment from site.
 - .3 Store material and equipment in accordance with suppliers' instructions and Section 01500.
 - .4 Touch-up damaged factory finished surfaces to Architect's satisfaction. Use primer or enamel to match original. Do not paint over name plates.
- 1.5 Product Substitutions**
- .1 **All Tenders are to be based STRICTLY UPON THE ITEMS SPECIFIED IN/ON THE CONTRACT DOCUMENTS (INCLUDING DRAWINGS AND SPECIFICATIONS.) Tender submissions based upon Contractor-elected alternate items, products and/or materials [not approved by the Architect prior to Tender Close] will not be accepted.**
- No Contractor-suggested alternate materials will be accepted following Tender if not expressly approved by the Architect in accordance with item .2 below.**
- Proposals for alternate materials or products *may* be submitted after Award of Contract if required by the circumstances outlined below. Such requests must include statements relating respective costs of items originally specified against proposed substitutions.

- .2 Alternate materials may be considered by Architect **post-Tender** if:
 - (a) Products specified at time of Tender are no longer available *OR*
 - (b) Products specified at the time of Tender cannot be ordered and produced within the Owner's timeframes for project completion (including interim dates for various project phases) *OR*
 - (c) the proposed alternate products meet with the Architect's approval (relative to qualitative and performance standards) and it also results in a credit amount to the Contract value
 - .3 Should proposed substitution be accepted either in part or in whole, the Contactor shall assume full responsibility of additional costs when substitution affects other work on project, including the costs of design or drawing changes required as result of substitution.
 - .4 Amounts of all credits arising from approval of substitutions will be determined by Architect and Contract price will be reduced accordingly. No substitutions will be permitted without prior written approval of Architect.
 - .5 The Owners reserve the right not to allow substitutions. Products specified are in the Tender Documents reflect Owner's standards for related system and components.
- 1.6 Construction Equipment and Plant**
- .1 On request, prove to the satisfaction of Architect that the construction equipment and plant are adequate to manufacture, transport, and install items to the standards, schedule and all related requirements specified. If inadequate, replace or provide additional equipment or plant as directed.
 - .2 Maintain construction equipment and plant in good operating order.
- 1.7 Work Surfaces**
- .1 Existing millwork, cabinets, countertops or other similar permanent surfaces, including loose or fixed and installed furniture and equipment are not to be used as work surfaces. Contractors and Subcontractors shall provide their own temporary work surfaces as required.

END OF SECTION 01600

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| 1.1 General | <ul style="list-style-type: none">.1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws..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. |
| 1.2 Materials | <ul style="list-style-type: none">.1 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer. |
| 1.3 Cleaning During Construction | <ul style="list-style-type: none">.1 On a daily basis maintain premises free from debris and waste material..2 Maintain project site and public properties free from accumulations of waste materials and rubbish..3 Provide on-site container for collection of waste materials and rubbish..4 Remove waste materials, and rubbish from site at regular intervals, or when container is full..5 Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for substantial completion or occupancy..6 Schedule cleaning operations so that resulting dust and other contaminants will not fall on areas prepared for finishes and/or wet, newly painted surfaces. |
| 1.4 Final Cleaning | <ul style="list-style-type: none">.1 In preparation for substantial completion or occupancy, conduct inspection of sight-exposed interior surfaces..2 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from sight-exposed interior finished surfaces including glass and other polished surfaces, resulting from own work..3 Clean finished floors ready for sealing and waxing (if req'd). |

CLEANING

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- .4 Clean lighting reflectors, lenses, and other lighting surfaces.
- .5 Broom clean paved surfaces; rake clean other surfaces of grounds.
- .6 Remove debris and surplus materials from accessible concealed spaces.
- .7 Replace heating, and ventilating filters if units were operated during construction.
- .8 Replace broken, damaged or scratched glass and mirrors, which are part of the Work.
- .9 Use appropriate apparatus and cleaning materials. Clean Work in accordance with applicable Sections and/or manufacturer's directions.
- .10 Upon completion of final cleaning, remove cleaning equipment, materials and debris from building and Site.

END OF SECTION 01700

1.1 Record Drawings

- .1 Contractor will provide with two sets of white prints at the outset of construction for the progressive recording of items deviating from the drawings. At the completion of construction, this set of record drawings should reflect final 'as-built' conditions.
- .2 Maintain project record drawings by accurately and progressively recording deviations from Contract documents caused by site conditions, and changes subsequent to Tender.
- .3 Mark changes in coloured (red) ink.
- .4 Record following information:
 - (a) Location and nature of mechanical and electrical building systems and related components not otherwise shown on the drawings.
 - (b) Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvement.
 - (c) Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
 - (d) Field changes of dimension and detail.
 - (e) All changes made by Change Order.
- .5 At completion of project and prior to final inspection, neatly transfer notations from the original working set of drawings (for all structural, architectural, electrical and mechanical drawings) to the second final set. Submit both sets to Architect, Mechanical and Electrical Engineers.
- .6 **The General Contractor, Mechanical Contractor and Electrical Contractor, shall each note a \$5,000.00 Hold Back value (to be identified in all draws) to cover final submission and of As-built drawings and Operation and Maintenance Manuals. Hold back values will be released upon consultant review and approval of completed submittal requirements.**

END OF SECTION 01720

1.1 Manuals

- .1 On completion of project submit to Architect **one USB electronic copy** of Operating and Maintenance Manuals in English, made up as follows:
 - a) Label USB "Operating and Maintenance Data Manual" providing project name and date.
 - c) Organize contents into applicable sections of work to parallel project specification breakdown. Mark each section with Section dividers titled appropriately.
- .2 Include the following information:
 - a) Maintenance instruction for finished surfaces and materials.
 - b) Copy of hardware and Paint Schedules, paint layout drawings, Interior and Exterior Colour and Finish Schedules
 - c) Description, operation and maintenance instructions for equipment and systems, including complete list of equipment and parts list. Indicate nameplate information such as make, size, capacity and serial number.
 - d) Names, addresses and phone numbers of Sub-contractors and Suppliers.
 - e) Guarantees, warranties and bonds showing:
 - i) Name and address of projects
 - ii) Guarantee commencement date (date of Final Certificate of Completion).
 - iii) Duration of guarantee.
 - iv) Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
 - v) Signature and seal of Contractor.
- .3 Neatly type all information. Use clear diagrams or manufacturer's literature.
- .4 Final payments will not be made until complete packages, as described at 1.1.1. to 1.1.3, are received by the Board. Promptness and completeness of these packages will be taken into account as part of pre-qualification applications for future Board projects regarding the 'past performance' criteria.
- .5 The General Contractor, Mechanical Contractor and Electrical Contractor, shall each note a \$5,000.00 Hold Back value (to be identified in all draws) to cover final submission and of as-built drawings and Operation and Maintenance Manuals. Hold back values will be released upon consultant review and approval of completed submittal requirements.

1.1 General

- .1 Work of this Section includes demolition and removal from site of materials, finishes, fixtures, equipment etc., [related to the proposed scope of work] which may or may not be specifically spelled out on drawings.
- .2 Division One [General Requirements] applies as if repeated herein.

1.2 Description

- .1 Work included in this section but not limited to may involve the following:
 - the demolition of portions of the existing building, siteworks, related services and associated features as noted on drawings and/or as required for completion of the scope of work outlined in the Contract Documents
 - the selective demolition of the interior partitions, finishes, building systems, building components, system components etc. noted on the demolition drawings and/or as required for the full scope of work outlined in the Contract Documents
 - the removal (and temporary storage) of items as identified in the drawings for re-use/re-integration into the project [as/where noted on the drawings]
 - the salvaging of items (denoted for removal not intended for re-integration into the project) to be offered to Owner for first right of refusal prior to discarding
 - the removal of items from site and subsequent discard at an approved sanitary landfill site, recycling depot or similar approved facility suited to the nature of materials being removed

The work of this division shall include all temporary and permanent service disconnects required by items being demolished and/or disconnected as part of the scope of work illustrated in the Contract Documents.

- .2 Clarify all unclear and ambiguous items with Architect immediately prior to demolition and construction.

1.3 Relocation

- .1 Ensure that all items to be relocated (as per drawings), are carefully removed and stored on site for future relocation complete with all related components and accessories integral to their operation. Protect items during the course of construction to ensure their safety.
- .2 Clarify all items, which may be ambiguous or unclear with the Architect and/or respective Engineer prior to any removal activity on the site.

- | | |
|--------------------------------|---|
| 1.4 Examination | <ul style="list-style-type: none">.1 Examine site and premises and be satisfied as to condition of premises and means of access to same, and nature and quantity of work required..2 Examine drawings and documents and report ambiguous items and/or possible errors or omissions to the Architect immediately for clarification. |
| 1.5 Coordination | <ul style="list-style-type: none">.1 Coordinate all demolition activities with Building Owner relative to hours of operation and acceptable level of impact on ongoing building operations (as/if applicable). Work cooperatively with Owner and/or Occupants to determine acceptable hours and activities. |
| 1.6 Protection | <ul style="list-style-type: none">.1 Protect building occupants from demolition activities via construction hoarding or other means deemed acceptable to the Owner. Hoarding provisions to conform to related specification sections elsewhere herein..2 Throughout demolition, protect all existing building items and areas adjacent to demolition as required to prevent or minimize adverse impact on materials otherwise to remain. Repair and make good all existing finishes damaged throughout the course of construction to pre-construction condition and/or as designated by the Architect. |
| 1.7 Utilities | <ul style="list-style-type: none">.1 Where required, ensure that water, sewer, mechanical and electrical services are cut off and properly capped before commencing remainder of work, and notify appropriate authorities, building owner, building occupants etc. as required. |
| 1.8 Removal of Debris | <ul style="list-style-type: none">.1 All debris from the site and structure demolition, shall be removed from site immediately. There shall be no accumulation of demolished materials any shape or form in any location. All debris shall be removed in accordance with Section 01005 and related divisions as prescribed elsewhere herein. |
| 1.9 Hazardous Materials | <ul style="list-style-type: none">.1 All hazardous materials shall be removed from the facilities prior to demolition otherwise required for the scope of work. Refer to related Specifications and Appendix items contained herein for Designated Substances, Hazardous Materials Abatement and associated items. |

END OF SECTION 02100

PART 1 - GENERAL

- 1.1 Description of Work** .1 The work to be done under this section shall consist of the supply of all materials, labour, supervision, plant, and equipment to complete all concrete work shown on the drawings and specified herein. Carefully examine all drawings and the site to determine the extent of the work. Without limiting the foregoing, the following is included in this division.
- (a) Footings, piers and foundation walls.
 - (b) Interior concrete floor slabs at or above grade.
 - (c) Setting of anchor bolts.
 - (d) Supply of beam and vertical reinforcing bars for Section 04220.
 - (e) Patching of concrete floor slabs and existing concrete structural systems at all points of demolition and/or installation of new items associated with the scope of work.
 - (f) Supply and installation of concrete hardeners, densifiers and/or sealers
 - (g) Supply and installation of new concrete toppings, self-levelers etc.
- NOTE: this Section and the requirements herein are provided as complementary to [and not over-riding] concrete specifications otherwise prepared by the Structural Engineer.
- 1.2 Work not Included** (a) Mortar for masonry.
- 1.3 Standards** .1 In referring to standards, it shall be understood that reference is made to the latest edition available at the time of the tender submission.
- .2 Reference Standards:
- CSA A23-1/A23-2 Concrete Materials and methods of concrete construction/methods of test for concrete.
 - CSA A23-3 design of concrete structures.
 - CSA S269-3 Concrete Formwork.
 - CSA G30-14 Deformed Steel wire for Concrete reinforcement
- 1.4 Protection** Store materials to protect them from deterioration. Protect the work of this section from damage resulting from the work of other sections. Repair or replace at no cost to the Contract.

PART 2 - PRODUCTS

- 2.1 Materials** .1 Portland Cement, Normal Type 10, in accordance with C.S.A. Specification (CAN 3.A5).

- .2 Steel reinforcing bars shall comply with C.S.A. Specifications G30.12 and G30.16 for deformed bars having a guaranteed minimum yield strength of 60,000 p.s.i. (400MPa)
- .3 Wire mesh shall comply with C.S.A. Specification G30.5 and shall be of minimum size 6 x 6 - W6\W6 unless noted. Mesh shall be delivered to site in flat sheets.
- .4 Concealed aggregate: In accordance with C.S.A. Specification CAN 3-A23.1-M. In general, coarse aggregate shall be no greater than one-quarter minimum section being poured. Maximum aggregate dimension 3/4". Fine aggregate to be water-washed lake sand free from organic material.
- .5 Water reducing Agent: "Plastiment: as manufactured by SIKA Chemical of Canada Ltd. or approved equal. Use in accordance with manufacturer's directions.
- .6 Control Joint: Premoulded joint shall be "Zip-Strip" by Blok-Lok.
- .7 Air Entrainment Agent: Add for any concrete exposed to freeze-thaw action according to manufacturer's instructions. Shall be SIKA AER as manufactured by SIKA Chemical of Canada Limited or equal conforming to CAN 3 A266.1 and A266.2. Add according to manufacturer's recommendations to entrain 5% to 8% air by volume as set down in CAN3.A23.1 Table 7 & 8.
- .8 Water: Fresh and clean, taken from municipal water supply, free from deleterious substances and salts that may cause efflorescence.
- .9 Dry Pack Non-shrink Mortar: "Embeco" by Master Builders Co. Ltd., or equal premixed to 30MPa strength, for setting below column and beam baseplates.
- .10 Form Materials: Exterior grade fir plywood of good quality and sound construction and in new condition. Form lumber shall be free from defects and warp.
- 2.1 Materials (Cont'd) .11 Expansion Joint: At slab perimeter 1/2" "Flexcell" by Sternson or W. R. Meadows Sealtight asphalt impregnated cane fibre.
- .12 Vapour Barrier sheet: 10 mil polyethylene; see Section .07165.
- .13 Concrete Properties/Minimum Standards:

Mix Location	28-Day Compressive Strength (Mpa)	Slump (mm)	Air Content	Exposure Class

Lean Concrete Fill	15	150	Nil	-
Slabs-on-grade (interior)	30	75+25	Nil	-
Concrete Toppings	30	75+25	Nil	-
Exposed Concrete Foundation walls	32	75+25	5%+1%	F2
Footings	20	75+25	Nil	-
Exterior slabs-on-grade, and side-walks	32	75+25	6%+1%	C2

- .14 Concrete strengths, slumps, and air entrainment contents are to be as indicated on attached table.

.15 **Clear Concrete Hardener and Sealer [CSH]:**

Where indicated on drawings and as noted herein, supply and install clear concrete hardener/densifier sealer. Product to be used on all concrete floors not being covered with another flooring material/finish.

Acceptable concrete hardener/sealers include:

- W.R. Meadows Sealtite Liqui-Hard
- Niagara Protective Coatings Lithi-Glas Densifier

All items are to be applied in full accordance with manufacturer's recommendations for the intended application to provide recommended max. dry film thickness. Products to be applied in full accordance with manufacturer's recommended application techniques and ambient environmental conditions at time of installation.

- .16 Accelerating or retarding chemical mixtures shall only be used with prior approval of Consultant. **Do not** use calcium chloride or products containing calcium chloride.

- .17 Concrete for repair and patching of concrete floor slabs shall be suitable for the thickness and extent of the work. Use shrinkage reducing admixture to minimize the gap in the cold joint between new and existing concrete. Submit specifications for the material to be used for approval by the Engineer.

.18 **Concrete Self-Levelling [CSL] Toppings:**

Supply and install self-levelling concrete toppings where specified on drawings, where noted on Room Finish Schedule and/or as noted herein.

All toppings to be cement-based or other non-gypsum based products. Toppings to be selected to suit the intended application ensuring:

- compatibility of topping with applicable substrate material and conditions

- full adhesion between topping and substrate
- compatibility of topping thickness capabilities to site requirements [min. and max. topping thicknesses]
- use of appropriate aggregates in topping [if required] to achieve high-build thickness requirements
- ability of topping to be feathered or tapered to 0 as/if required
- viscosity, flow and self-levelling capabilities of topping suited to site requirements and environmental conditions
- pumping ability of topping as/if required suited to site requirements
- compatibility of topping dry-time with project requirements

Prior to installation of self-levelling topping, also ensure use of the following [as/if required]:

- manufacturer-recommended adhesion primers
- manufacturer-recommended sub-floor patch materials, fill and crack repair agents etc. and miscellaneous items as required to ensure the integrity of the topping installation

Acceptable self-levelling concrete toppings include:

Ardex K16

Ardex K15

or approved alternates.

PART 3 - EXECUTION

3.1 Formwork

- .1 Obtain approval of forms prior to erection. Forms may be omitted only as and where directed on site by the Architect.
- .2 Neatly build forms to exact dimensions of members substantially water-tight and of sufficient strength to amply carry loads imposed thereon without deflection. Clean forms prior to and after placing steel. Provide all necessary ties to ensure that no metal will be within 25mm(1") of the exposed concrete surface.
- .3 Provide 12-15mm (1/2" - 5/8") chamfers on all exposed concrete edges unless otherwise specified in the details.
- .4 Use a non-staining form release agent on the inside of all forms. Extreme care should be taken to ensure that the reinforcement is clean of all agents.
- .5 Build in anchor bolts and other items furnished by other Trades.
- .6 Tolerances in formwork:

Footings	+/- 1/2"
Slabs on Grade	+/- 1/16"
Walls/Suspended Slabs	+/- 1/16"

- .7 No tolerances at doors or partitions.
- .8 Be solely responsible for the safety of the structure before and after forms are removed. The following are minimum times for removal of formwork after concrete is placed:
- .9 Formwork shall be removed in such a manner as to ensure the safety of the structure and to prevent chipping or cracking of the concrete. Do not remove before the concrete has gained sufficient strength to support the imposed loads and not before that period specified by CAN3- A23.1M

3.2 Preparation

- .1 All reinforcing bars shall be bent cold. All bends in reinforcement shall have an inside radius of at least 5-bar diameters and all hooks a straight return of 4-bar diameter.
- .2 Material used in handling concrete shall be freshly cleaned; forms shall be thoroughly wetted and oiled and reinforcement shall be cleaned of ice, frost, or other deleterious material.
- .3 Sub base: Ensure the sub grade below all slabs on grade has been proof rolled to the minimum specified compaction of 98% Standard Proctor Maximum Dry Density(SPMDD). Place and compact to a minimum of 100% SPMDD, a minimum of 200mm (8") of granular sub base. The placement and compaction of additional fill required shall be in accordance with Division 2 of the specification. Ensure all under-floor services are installed and approved and trenches backfilled and compacted. Placing of concrete shall indicate that the contractor has found the sub base acceptable.
- .4 All footings shall be placed on native undisturbed material capable of supporting the design bearing capacity shown on the drawing. A Soils Engineer may be required to verify the nature and capacity of the material prior to placing concrete. The elevation of the top of the native soil is shown on the foundation plan for general guidance and tender purposes only.
- .5 Pour slabs over vapour barrier, which has been tapped and sealed along the edges. Use runways to protect vapour barrier from damage.
- .6 Remove all water from footings and forms. Do not permit water to flow over concrete within 24 hours of placing.
- .7 Notify Engineer at least 24 hours in advance of placing concrete to enable the reinforcement and inclusions to be reviewed. Do not close forms until reinforcement has been reviewed.

3.3 Reinforcement Bars And Wire Mesh

- .1 Place reinforcement in strict accordance with requirements of Ontario Building Code, 1990 and RSIO Manual.

- .2 Bars shall be free from scale, rust, grease, oil, clay, or other coating deleterious to bond. Bend bars cold in accordance with standard bending procedure. Bars with bends or kinks not specified may be rejected.
- .3 Place reinforcement in exact location and secure in place by steel chairs, spacers, and wire ties. No masonry chairs will be permitted.
- .4 Reinforcement specified as continuous shall be spliced a minimum of 30-bar diameters unless otherwise noted and securely wired.
- .5 Unless otherwise noted, floor slabs, exterior slabs and other locations particularly shown shall be reinforced with wire mesh placed at 1.5"(40mm) from the top of the slab.
- .6 Unless noted otherwise on the structural plans, all floor slabs shall be a minimum 100mm (4" thick)

3.4 Joints

- .1 Pour floor panels alternately in checkerboard pattern as defined by control joints on ground floor plan. The area of each panel shall not exceed 250 sq. ft. with maximum dimension to be 18'-0". See Structural drawings for saw cut locations.
- .2 At the Contractor's option pour slabs monolithically (except at expansion joints) and finish. As soon as the slabs are set firm enough to work on, but no longer than 20 hrs after placing, cut control joints with carborundum bladed saw to a depth of 1/4 the slab thickness. After the concrete has set and contraction cracks have appeared in the bottom of these control joints, but no sooner than fifteen days after pouring, fill joints up to the top with purpose made joint filler and level off flush with the surface of the concrete.
- .3 All saw cut locations must be verified with flooring contractor to ensure joints align in brittle surface finishes such as vinyl or ceramic tile.

3.5 Concrete Placement

- .1 Place concrete as close as possible to final location to avoid segregation and flowing. While placing concrete ensure all forms remain plumb and true. Do not place concrete during rain. Protect from physical damage for a minimum of seven days.
- .2 Place in one continuous operation until clean keyed construction joint is reached. Thoroughly vibrate into old concrete to promote mixing. Where the break in pouring is greater than 1.5 hours place a keyed construction joint
- .3 Thoroughly work concrete into voids using mechanical high frequency vibrators. Vibrate slabs at 2'-0"o.c.

- .4 Place slabs in one monolithic thickness to correct levels and slope to drains as required or shown.
 - .5 Carefully examine concrete after stripping for unfilled areas and honeycombing. Honeycombing shall be chipped away and entire area filled with cement mortar after cleaning, water washing and roughening. Fill voids with cement mortar to neat, smooth area flush with finished surface.
 - .6 At concrete floors or at concrete slabs being covered by flooring finish slabs as follows:
 - a) Inspect underfloor condition and approve arrangements made for floor finish. Install screeds, or other straight edges for perfect alignment of floors.
 - b) Rake concrete (see Slump) into place and compact with mechanical vibrator. Strike off level with previously set screeds.
 - c) Thoroughly float surface using 200 lbs. or heavier mechanical float. Continue process until voids are completely filled. Test surface with straight edge and eliminate high and low areas.
 - d) When floor has sufficiently hardened, bring to smooth, level, even surface by mechanical trowel, including areas covered with resilient flooring, porcelain flooring and carpet.
 - .7 Depress concrete slab at all areas where finished surface is to receive a topping as shown on drawings. Such surfaces need not be steel toweled.
 - .8 Protect concrete from premature drying, excessive temperatures and mechanical injury. Minimize loss of moisture following final finishing of concrete by immediately applying Sika "Florseal" or equal using a roller coater or low pressure spray in quantity as recommended by manufacturer. Ensure surface finish is compatible with the sealant before application.
 - .9 Supply, install and form concrete work indicated on mechanical and electrical drawings unless specifically called for in specifications for those trades.
 - .10 Concrete for Mechanical and Electrical Trades under Division 15 and 16.
 - .11 Set items furnished by others for building into concrete, include column plates, anchor bolts, etc.
 - .12 For application of concrete hardener, apply at an application rate of 5 kg/m².
- 3.6 Cold-Weather
- .1 Adequate protection must be provided when low

Concrete	temperatures occur during placing and during the early curing period in accordance with CAN3. A23.1M.
	.2 Protection must be continued until the concrete has attained the minimum properties required by the environment and the loading to which it will be exposed.
	.3 Concrete should never be placed on a frozen subgrade. When the subgrade is frozen for a depth of only 50mm (2") to 75mm (3"), the surface can be thawed by: a) steaming b) Spreading a layer of hot sand, gravel, or other granular material c) burning straw or hay
	.4 Commercial insulating blankets or bat insulation can be used to retain heat in the concrete during curing.
	.5 Heated enclosures are required to use for protecting concrete when air temperatures are near or below freezing. They can be made of wood, canvas, building board, and plastic film.
	.6 For the fresh concrete within the enclosure, a vented or indirect - fired heater is required.
	.7 For the fresh concrete above the enclosure, an unvented or direct-fired heater is required.
3.7 Field Quality Control	.1 Inspection and testing of concrete and concrete materials will be carried out by a Testing Laboratory designated by Owner in accordance with CAN3-A23.1-M90.
	.2 Cost of testing will be paid from allowance in Section 01020 - Cash Allowances. Materials shall be supplied by the Contractor at no cost to the contract.
	.3 Non-destructive Methods for Testing Concrete shall be in accordance with CAN3-A23.2-M90.
	.4 Inspection or testing by Consultant will not augment or replace Contractor quality control nor relieve him of his contractual responsibility.
	.5 Three specimens shall be made for each strength test. Quantity of test for each class of concrete to conform to CSA CAN3-231. Specimens shall be moulded, stored and laboratory cured to conform to CSA-23.1.
	.6 During the placing of concrete under conditions of "Cold Weather Requirements", two additional specimens shall be made and shall be stored on the job site under conditions similar to the concrete it represents. These specimens shall be intended as a field

control test and shall be cured to conform with CSA 3-23 1.14.3.5.3. These specimens shall be tested at 7 and 28 days respectively.

- .7 Slump shall be determined for each set of specimens to conform with CSA CAN3-23.1. When air entrained concrete is specified and air content shall be determined for each set of specimens to conform with CSA CAN3-23.1 and CSA CAN3-23.2.
- .8 Test Reports - Reports of results of the above test shall be made and copies distributed promptly to the Consultants by the Inspection and Testing Company as directed by the Architect. Reports shall include comment of abnormal conditions, explanation of any lack of strength indicated and location of the concrete is question. Designate whether specimens are laboratory or field cured.
- .9 Contractor shall pay for any further tests required for questionable concrete. These tests shall consist of one or more of the following procedures:
 - 1) Schmidt Percussion Hammer
 - 2) Tests to determine quantity or quality of cement
 - 3) Specimens cut out and tests using recognized methods of testing (CSA, A.A.T.M., or CSI).
 - 4) Load tests according to the requirements of the American Concrete Institute Code "Building Code Requirements for Reinforced Concrete (318)".
- .10 Correct any areas below specified values at not extra cost to Owner.
- .11 Owner reserves the right to reduce payment for any concrete below specified values which is allowed to remain in place subject to Architects approval.

3.8 Cleanup

Upon completion of the work of this section, the contractor shall clear the site of all tools equipment excess waste and debris resulting from the operations and leave the site in an acceptable condition.

END OF SECTION 03300

PART 1 - GENERAL

1.1 Description of Work

- .1 The work to be done under this section shall consist of the supply of all materials labour, supervision, plant and equipment to construct all miscellaneous metal items shown on the drawings and/or specified herein (metal support brackets, metal support legs, metal lintels, metal handrails, metal stair guards, metal running track guard, metal ballustrades and all similar items noted and/or shown on drawings).
- .2 Carefully examine all drawings and the site to determine the extent of the work. Ensure that all Drawings and Specification Sections, including those for structural, mechanical and electrical work, are consulted to establish the extent of work required for this Section.

1.2 Shop Drawings

- .1 Submit 5 (five) copies of Shop Drawings to the Architect for examination, giving complete information necessary for the fabrication of the various members and components of the stairs, including structural steel material specifications and the location, type and size of all bolts and welds. Distinguish clearly between shop and field bolts and welds.
- .2 All modifications and substitutions proposed by the Contractor must be submitted for approval to the Engineer for the structural adequacy. All modifications and substitutions must be shown on shop drawings for final approval.
- .3 Do not commence fabrication until final approval of the drawings is received.

1.3 Shop Painting

- .1 The steel shall be cleaned by shot blasting, scraping and abrading or wire brushing to remove all loose mill scale, rust, oil dirt and other foreign matter. Surfaces shall be completely dry before painting.
- .2 One coat of paint shall be applied in the shop unless noted on the drawings, conforming to CGS-G2-40D.
- .3 Surfaces which will be inaccessible after assembling shall be given two coats prior to assembly. Touch up all bolts, welds and surfaces of connecting members damaged during construction.
- .4 Areas to be embedded or encased in concrete, edges and surfaces adjacent to field welds and bolted connections, shall be left unpainted.

1.4 Storage and Handling

- .1 All materials shall be handled and stored at the site in a manner to avoid damage of any kind.

PART 2 - PRODUCTS

2.1 Material

- .2 Materials damaged due to faulty storage or handling shall be repaired or replaced, without additional expense to the Owner, all to the satisfaction of the Architect.
- .1 Lintels:
 - a) Steel of sizes shown on Lintel Schedules and Structural Drawings.
 - b) Provide concealed angle clips welded to lintels and anchored with bolts at lintel supports.
 - c) Finish: Prime and paint.
- .2 Miscellaneous Steel Items [Channels, Clips, Angles, Bar Stock, Plate Stock, Hollow Structural Steel and all other Shapes]: as required and/or as indicated to complete all work as part of this project.
- .3 Steel for lintel and structural steel plates shall be in accordance with C.S.A. specification G.40.21-44W.
- .4 Expanded Metal Mesh at Running Track Guard:
to be $\frac{3}{4}$ " opening [diamond-shape] #9 [9- gauge] Raised Surface plain steel expanded metal sheet stock in 4'-0" x 8'-0" sizes. Product to be as supplied by Duke's Wire Mesh or alternate supplier. Product to be cut to suit [related opening sizes] and tack-welded into fanned opening sizes [as per drawings]. Final assembly to be paint-finished as per Specifications.

PART 3 - EXECUTION

3.1 Fabrication

- .1 Use welded joints throughout wherever practical. All welding shall conform to the requirements of the current edition of C.S.A. Standard W59 and the fabricator shall be fully approved by the Canadian Welding Bureau, in conformance with the requirements of C.S.A. Standard W47. Wherever possible (without affecting integrity of the weld), grind welds smooth and flush on all miscellaneous metal items exposed to view during daily operations of the facility.
- .2 The seaming of built-up components shall be made with hairline joints in the least conspicuous location and manner. All work shall be assembled in the most substantial manner and reinforced where necessary with fastenings. All screws and forms of mechanical attachment shall be countersunk unless otherwise noted. Exposed surfaces of all metal components shall be smooth and free of irregularities.
- .3 Apply a coat of primer to all interior ferrous metals before leaving the shop unless noted otherwise. Touch up any areas damaged after erection.
- .4 All items shall be fabricated, finished and assembled in the shop as much as is possible, consistent with the size and shipping problems. Assembly on the jobsite and site-welding shall be kept to a minimum.

3.2 Anchors

- .1 Provide and install all anchors required for fastening miscellaneous metal items in concrete or masonry anchors shall be strap steel bent to shape, welded to backs of members with bent end for building facing inward. Sizes and spacing shall be as indicated but where not specially noted, they shall be not less than 38 x 4.mm (1-1/2" x 3/16") and spaced at not over 914mm (3'-0") c/c with minimum of 3 anchors per member.
- .2 For attaching work to masonry or concrete where anchors or insert cannot be built in, provide approved self-drilling anchors.

3.3 Installation

- .1 Install all work level, plumb and true throughout [unless noted otherwise].
- .2 Ensure continuity of finished assemblies when installed in components.
- .3 Ensure structural integrity of anchored components prior to leaving job site.

END OF SECTION 05500

PART 1 - GENERAL

- | | | | |
|--------------------------------------|----|--|---------------|
| 1.1 Description of Work | .1 | Including the following but not limited to: sheathing, furring, rough framing, grounds, blocking, rough hardware, wood preserving, concealed wood anchoring within stud wall assemblies for all metal door and glazing screen frames, concealed wood anchoring for all wall and/or ceiling mounted fitments, features and equipment items identified on the drawings, etc. | |
| | .2 | Temporary carpentry, including fencing, hoarding, etc. as required throughout the course of construction to comply with all items in Division 1. | |
| 1.2 Related Work Specified Elsewhere | .1 | Finish Carpentry | Section 06200 |
| | .2 | Architectural Woodwork/Millwork | Section 06400 |
| 1.3 Source Quality | .1 | Identify lumber by grade stamp of an agency certified Control by Canadian Lumber Standard Administration Board. | |
| | .2 | Identify pressure treated wood by stamp of approval and Licensed applicator of Kopper's "Wolmanized" system. | |

PART 2 - PRODUCTS

- | | | |
|------------|----|--|
| 2.1 Lumber | .1 | Except as indicated or specified otherwise, lumber materials shall be softwood, not greater than 19% moisture content at time of installation, in accordance with the following standards:
(a) CSA 0141
(b) NLGA Standard Grading Rules for Canadian Lumber, effective 1979. |
| | .2 | Machine stress-rated lumber is acceptable for all purposes. |
| | .3 | Framing and board lumber; in accordance with Table 9.3.2A of O.B.C. 1990 except as indicated or specified otherwise. |
| | .4 | Plywood coping and sheathing: exterior grades thickness as shown. |
| | .5 | Preserved wood: pressure treated softwood, to CSA 080, using Wolman CCA preservative. |
| | .6 | Plywood: CSA 0151M - Softwood. |

2.2 Fastenings and Hardware

- .1 Nails, spikes and staples.
 - (a) Use common spiral nails and spiral spikes except where indicated otherwise.
 - (b) Use hot galvanized finish steel for exterior work, pressure-preservative treated lumber except where indicated otherwise.
- .2 Bolt, nut, washer, screw and pin type fasteners: with hot-dip galvanized finish for exterior work, interior highly humid areas and for pressure-preservative treated lumber; elsewhere with primer paint finish where installed on sight-exposed surfaces.
- .3 Use surface fastenings of following types, except where specific type is indicated.
 - (a) To hollow masonry, plaster and panel surfaces use toggle bolt.
 - (b) To solid masonry and concrete use expansion shield with lag screw or lead plug with wood screw.
 - (c) To structural steel use bolts through drilled hole or welded stud-bolts or power driven self-drilling screws.

PART 3 - EXECUTION**3.1 Furring and Blocking**

- .1 Install furring and/or solid wood blocking as required to support and/or to solidly anchor finishes, fitments, features, white boards and all wall and ceiling-mounted equipment items throughout. Use solid wood blocking within concealed wall, ceiling and/or bulkhead assemblies as required.
- .2 Align and plumb face of furring and blocking to tolerance of 1:600.
- .3 Ensure provision of continuous 2" wide x depth to suit wood blocking around all door frames in steel stud wall assemblies. Blocking depth to be full depth of steel studs surrounding door/glazing screen framing.

3.2 Rough Bucks

- .1 Install wood bucks and nailers as indicated and/ or where nailers required.
- .2 Except where indicated otherwise use material at least 38mm thick secured with 9mm bolts located within 300mm from ends of members and uniformly spaced at not over 1200mm between.
- .3 Countersink bolts where necessary to provide clearance for other work.

**3.3 Coping, Curbs
and Sheathing**

- .1 Install backing, curbs and other wood supports for roofing and sheet metal work, and roof mounted equipment, as indicated.
- .2 Secure with galvanized bolts where indicated, galvanized screws elsewhere. Locate fastenings within 300mm from ends and uniformly spaced between. Space bolts at 1200mm maximum and nails at 600mm centers maximum except where indicated otherwise.
- .3 Install wood nailers for roof hopper, dressed, tapered and recessed slightly below surface of roof insulation.

**3.4 Electrical
Equipment
Blackboard**

- .1 Provide backboards for mounting electrical equipment as indicated. Use 19mm thick poplar or fir face veneer CPS/SIS or DFP/GIS on 19 x 38mm furring around perimeter maximum 300mm intermediate spacing

END OF SECTION 06100

PART 1 - GENERAL

The work under this section consists of the following but is not limited to:

- | | | |
|---|--|---|
| 1.1 Description | <ul style="list-style-type: none"> .1 Installation of milled wood slat benches and wall-mounted shelves. .2 Installation of architectural wood trimwork items identified on the drawings. .3 Installation of white boards and tack boards. .4 Installation of miscellaneous wood and/or millwork trim items as indicated on drawings. .5 Installation of hollow metal door frames. .6 Installation of hollow metal glazing screens. .7 Hanging of hollow metal doors. .8 Hanging of solid core wood doors. .9 Installation of Finished Hardware supplied under Section 08710. | |
| 1.2 Related Work Specified Elsewhere | <ul style="list-style-type: none"> .1 Rough Carpentry .2 Architectural Woodwork .3 Steel Doors and Frames .4 Wood Doors .5 Finish Hardware .6 Painting and Finishing .7 White Boards and Tack Boards | <ul style="list-style-type: none"> Section 06100 Section 06400 Section 08100 Section 08210 Section 08710 Section 09900 Section 10120 |
| 1.3 Reference Standards | <ul style="list-style-type: none"> .1 Do millwork to millwork standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC). | |

- 1.4 Samples**
- .1 Submit duplicate 300mm x 300mm samples of each type of panelling and each type of solid wood or plywood to receive paint finish, in accordance with Section 01340.
 - .2 Submit duplicate 300mm long samples of each type of trim moulding, in accordance with Section 01340.

PART 2 - PRODUCTS

- 2.1 Materials**
- .1 Softwood Lumber: to CSA 0141 and National Lumber Grades Authority requirements, with maximum moisture content of 10%.
 - .2 Hardwood Lumber: to National Hardwood Lumber Association (NHLA) requirements; moisture content to AWMAC - premium grade; species, red oak or birch as indicated or scheduled.
 - .3 Stain-Finished or Clear-Finished Hardwood Trims: Grade 1 solid clear maple free of knots and/or fillers.
 - .4 Paint-Finish Hardwood Trims: Paint-grade solid poplar.
- 2.2 Trimwork**
- .1 Mill wood components to dimensions and profiles indicated on the drawings.
 - .2 All faces to be machine dressed finish. All faces to be progressively sanded to smooth finish suited to the specified finish.

PART 3 - EXECUTION

- 3.1 Interior Trim**
- .1 Standing and running trim to be AWMAC custom grade construction.
 - .2 Trim to be of species as detailed.
 - .3 Install all wood trims plumb, level and true throughout unless shown otherwise on design drawings. Seam all trims [where required] flush and true with adjacent trims, mitring and overlapping joints in single runs. Mitre joints at 90 degree corners unless noted otherwise.
 - .4 Fill all holes [from setting nails and related anchors] and other irregularities with appropriate wood filler finished flush and true to surrounding wood surfaces. Select wood filler type to ensure suitability to specified final finish [stain-finish vs. paint grade finish].

3.2 Erection

- .1 Set and secure materials and components in place, rigid, plumb, true and square.
- .2 Join wood components together with a combination of carpenter's glue and mechanical fasteners as applicable.
- .3 Provide heavy duty fixture attachments for wall mounted items. For trims, ensure use of construction adhesive [where applicable] to minimize requirements for exposed fasteners requiring filling.
- .4 Provide solid and secure fastening of finish wood elements to rough blocking or other supporting material.
- .5 Prepare external exposed and semi-exposed surfaces ready for painting.
- .6 Apply bituminous coating over wood framing members in contact with masonry or cementitious construction.

3.3 Hardware

- .1 Install hinges, latches and pulls and specified hardware at wood doors. Install using templates supplied by Hardware consultant; hang wood doors in specified frames; adjust for smooth free movement, free of binding. Ensure that all doors are properly balanced to close and do not 'hang' open.
- .2 Install latches, locks, striker plates, pulls, pushes, closers, panic devices, etc., in pre-fabricated openings in steel doors and frames.

END OF SECTION 06200

PART 1 - GENERAL**1.1 Description
of Work**

The work shall consist of but not be limited to the following:

- .1 Supply and installation of shop-fabricated counters, countertops, cupboards, cabinetry, shelves, storage units, display cases, built-in millwork items, kneewall caps, trims, millwork wall panels etc. and all other similar and/or related millwork items shown on the Architectural drawings.
- .2 Supply and installation of all miscellaneous solid wood trims, bench slats and similar items otherwise indicated on the drawings.
- .3 Supply and installation of all hardware for Architectural millwork items [covered in this Section] is to be by Division 06400. This includes (without strict exception to) all hinges, drawer glides, cabinet knobs and pulls, cabinet catches/latches, cabinet locks at doors and drawers, cabinet leveling legs, countertop support legs, casters, coat rods, coat hooks, glass shelving, glass shelving support suspension systems, sliding glass doors and tracks, glass at glazed cabinet doors, cabinet glazing stops, shelf support pilasters, pilaster clips, shelf support pins etc.
- .4 Supply and installation of countertops, window sills and similar horizontal surfacing items in the specified materials as indicated on the Architectural drawings.
- .5 Installation only of all cabinetry hardware items associated with this Division.

**1.2 Related Work
Specified
Elsewhere**

- | | | |
|-----|----------------------------------|---------------|
| .1 | Rough Carpentry | Section 06100 |
| .2 | Finish Carpentry | Section 06200 |
| .3 | Sealant | Section 07900 |
| .4 | Finish Hardware | Section 08710 |
| .5 | Glass & Glazing | Section 08800 |
| .6 | Resilient Tile Flooring | Section 09660 |
| .7 | Painting | Section 09900 |
| .8 | White Boards and Tack Boards | Section 10120 |
| .9 | Steel Stud and Gypsum Board | Section 09111 |
| .10 | Mechanical | Section 15000 |
| .11 | Electrical | Section 16000 |
| .12 | Metal Fabrication (Misc. Metals) | Section 05500 |

- | | | | |
|------------|--|----|---|
| 1.3 | Requirements
of Regulatory
Agencies | .1 | All finishes shall meet the flame spread and smoke development requirements of the Ontario Building Code for the specific location and application for all parts of the Work. |
| 1.4 | Prevailing
Performance Standard | .1 | Notwithstanding information provided elsewhere herein, all millwork items supplied and/or installed by this Division are to be fabricated to the 'Custom Grade' standards outlined in the most current edition of the Architectural Woodwork Manufacturers Association of Canada (AWMAC) 'Architectural Woodwork Quality Standards' Guide prepared by the Architectural Woodwork Institute. This Guide is to be taken as the standard for fabrication of all items herein and shall be acknowledged by the Millwork Trade as a mandatory supplementary reference guide (in addition to this Specification) for the completion of all related work for this project. |
| 1.5 | Samples | .1 | Submit duplicate 300mm x 300mm samples of each type laminate, melamine and solid surfacing material specified herein for Architect's approval prior to product ordering. All samples shall fully conform to the colours and finishes specified. |
| 1.6 | Shop Drawings | .1 | Submit shop drawings in accordance with Section 01340. |
| | | .2 | Clearly indicate details of construction, profiles, jointing fastening and other related details. All finishes to be noted respective to rooms and locations. Ensure that all millwork items bounding pieces of equipment are coordinated with actual equipment dimensions supplied by Owner. |
| 1.7 | Product Handling | .1 | Cover finished laminated plastic surfaces with heavy kraft paper or put in cartons during shipment. Protect installed laminated surfaces by approved means. |
| | | .2 | Do not store or install materials in areas where relative humidity is less than 25% or greater than 60% at 22°C (72°F). |
| 1.8 | Warranty | .1 | Contractor hereby warrants that laminated plastic work, solid surface countertops, stainless steel countertops and melamine finish items will not warp, crack or delaminate for two years from the date of Occupancy. |

PART 2 - PRODUCTS

2.1 Materials

.1 **Softwood Lumber:** to CSA 0141 and National Lumber Grades Authority requirements, with maximum moisture content of 6% for interior work. Pine species, to AWMAC custom grade for concealed framing.

.2 **Hardwood Lumber:** to National Hardwood Lumber Association (NHLA) requirements, moisture content of maximum 6% for interior work.

Clear Topcoat-Finished Hardwood:

Maple species, to AWMAC custom grade for all solids as detailed, including nosing and edging. Millworker to select only clear, regular grained pieces, free of all knots, warps, splits, sapwood streaks and any visible irregularities. The Architect reserves the right to refuse any pieces deemed unsatisfactory for replacement to his satisfaction at no cost increase.

Paint-Finished Hardwood:

Poplar species, to AWMAC standard grade for all solids as detailed, including nosing and edging. Millworker to select only clear, regular grained pieces, free of knots, warps, and irregularities that adversely impact the finished appearance.. The Architect reserves the right to refuse any pieces deemed unsatisfactory for replacement to his satisfaction at no cost increase.

.3 **Hardwood Veneered Plywood:** to CSA 0115 in thicknesses indicated on drawings. Maple veneer on plywood core or on industrial grade particle board core having minimum 720 kg/m³ (45 lb/cu. ft.) density and meeting CAN30 018801 M78. Grade "R" Maple veneer, free of visible irregularities including knots, grain warbles, heavily contrasting grain patterns etc. The Architect reserves the right to reject any pieces deemed unsatisfactory for replacement to his satisfaction at no cost increase.

.4 **Particle Board:** Laminated surfaces to have substrate of industrial grade particle board having minimum 720 kg/m² (45 lb/cu. ft) density and meeting CAN-3001881. Particle board thickness as noted on drawings.

.5 **Medium Density Fiberboard (MDF):** MDF materials to conform to ANSI A208.2-2009 (Grade 155) with a density of 46 - 48 lbs/cubic ft. MDF thickness as noted on drawings. Product to be Uniboard Excel + Grade or approved alternate.

Where MDF is used in exterior applications and in interior

applications subject to even infrequent water exposure, ensure use of Extirra water-resistant MDF throughout.

.6 PLASTIC LAMINATE FOR COUNTERTOPS:

General Purpose Laminate:

For cabinet bodies and general surfacing applications (excluding post-formed countertops) laminate to conform to CAN3 A172 M79, Grade standard GP (R) grade, 1.15 mm (1/64") thick throughout, with resin-impregnated kraft-paper core.

Post-Forming Grade Laminate:

Post-forming grade plastic laminate to be used only where post-formed countertops are indicated.

Plastic Laminate #1 [P.Lam 1]:

Arborite P-395-VL, Arctic Ice in Velvutex Finish

.7 MELAMINE PRODUCTS:

Melamine surfaces (melamine component panels) are to be used in locations where noted on Architect's drawings. Colours to be selected by Architect and as noted in the drawings. All melamine finished panels to be thermo-fused melamine resins (with specified photo paper) on particle board backing in thicknesses noted on drawings.

Melamine Finishes at Visible Exteriors:

For all visible and/or exposed melamine finishes (i.e. finishes at exterior cabinet faces and/or at interior cabinet faces visible through glass doors, melamine wall panels etc.), acceptable products (in locations noted on Architectural drawings) to be:

Melamine #1 (MEL#1):

Product:	Uniboard Setting the Trend Collection [by Mercury Wood Products]
Colour:	Classic Maple #290
Finish/Texture:	Supermat
Edgebanding:	matching [as noted below]

NOTE for Melamine Grain Control:

- woodgrain orientation to be vertical on all door and drawer facings throughout (as illustrated on architectural drawings)
- ensure continuity of the grain on vertically stacked facing panels (i.e. between stacked drawers and/or doors) to ensure that finished installation appears to be cut from one consistent veneer

Melamine Finish at Concealed Interiors

Melamine surfaces at concealed cabinet interiors (i.e. concealed behind opaque cabinet doors and/or drawers) may be standard "Cabinet White" melamine throughout.

.8 MILLWORK EDGEBANDING:

All edgebanding to be as noted below for respective application. Edgebands are to be finished true and flush with adjacent surfaces throughout. Unless noted otherwise edgebanding to be:

a) Polyester Edgebanding at Concealed Melamine Interiors:

"Cabinet White" polyester tape to match adjacent finishes

b) PVC Edgebanding at Visible/Exposed Melamine Items:

At all exposed melamine cabinet edges, full perimeter of exposed shelves, drawer faces, cupboard doors, gables, panelized wall cladding, melamine trims, etc. (and all similar items shown on drawings) are to be finished in PVC edgebanding to match panel faces throughout as noted below:

Edgebanding at MEL#1:

Supplier:	Tekanform by Mercury Wood Products
Colour:	to match MEL#1 [Uniboard Classic Maple #290]
Thickness:	1.0 mm ABS/PVC
Width:	to suit (23mm stock width)

ABS/PVC edgebanding on facing panels is to be supplied in over-sized widths and finished flush to adjacent melamine surfaces in shop by commercial grade edgebander.

Edgebanding to be applied to melamine boards in full accordance with edgeband manufacturer's specifications for recommended application, including all related materials, adhesives and execution techniques.

Ensure ABS/PVC edgebanding specified above is used below all millwork components in contact with floor (side gables, toekicks etc.) to provide optimal water-resistance. Supply and install continuous clear silicone sealant at junctures of millwork with resilient flooring finishes throughout.

Ensure that all shelves are finished with edgebanding on

all 4 sides (typical throughout).

.9 **Solid Surfacing (SS):**

Solid surfacing material to be 1/2" thick throughout c/w 1" thick built-up nosing profiles as shown on architectural drawings unless noted otherwise.

Solid Surfacing to be
Wilsonart Silver Smoke #9226SS

.10 **Garment Hooks:**

Garment Hooks [at upper shelves above wood slat benches in Boys Changeroom 156A and Girls Changeroom 158A] to be:

Richelieu #RH1143021125 brushed nickel double metal hook #1143, measuring 111mm high x 40mm deep c/w 2 setting screws.

Hook quantities to be as required to facilitate mounting at 12" on centre horizontally.

.11 Nails and staples: to CSA B111, plain finish.

.12 Caulking/sealants for interior use in accordance with Section 07900.

.13 Paints, stains, and clear topcoats: see Section 09900.

PART 3 - EXECUTION

3.1 Fabrication of Cabinetwork

.1 Fabricate caseworks to AWMAC conventions and standards for 'Custom Grade' construction as noted in Part 1 herein.

.2 Site measure rooms and spaces to verify/obtain governing dimensions before fabricating millwork items, particularly those between architectural openings and those accommodating equipment or fixturing (supplied by others). Millwork trade is to verify the size of all related fixtures and equipment items prior to fabrication.

.3 Report all dimensional discrepancies between the drawings and subsequent site conditions to the Architect for input prior to fabrication.

.4 Fabricate all product to the dimensions, material and details shown on the drawings.

.5 Finish all edgebanding flush and true to surrounding millwork faces, easing edges slightly to remove sharpness of outside edges.

- .6 Countersink all nails and apply plain wood filler to indentations, finishing it smooth and ready to receive finish. Touch up all filled fasteners to match surrounding finish.
 - .7 Shop install cabinet hardware for doors, shelves and drawers. Recess pilaster strips for adjustable shelves throughout [unless noted otherwise].
 - .8 Ensure that all millwork cabinet facings, trims and panelized wall cladding is installed flush, plumb and true throughout. Cabinet facings to be adjusted as required to ensure correct operation of doors and drawers, with consistent, straight and aligned gaps between doors, drawers and filler strips throughout.
 - .9 Provide cutouts for plumbing fixtures, electrical pass-throughs and all related items to be accommodated.
 - .10 Provide concealed wood support members (or substrate products) below rigid countertop materials to prevent countertop cracking under heavy load during use.
- 3.3 Fabrication of Pl. Laminate Work**
- .1 Comply with CAN3-A172-M79, Appendix 'A'.
 - .2 Ensure adjacent parts of continuous laminate facings or abutting laminate facings match in colour and pattern.
 - .3 Laminates with a directional pattern (wood grains or patterned designs) to be oriented as per Architect's instructions. Fabricator to clarify related uncertainties with Architect prior to fabrication.
 - .4 Bond plastic laminate to core material in accordance with manufacturer's instructions for the intended application. Ensure that core and laminate materials contact uniformly throughout to ensure 100% bond over entire surface. Use continuous laminate lengths up to 3000mm (10').
 - .5 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material as indicated. Do not mitre laminate edges.
 - .6 Install work plumb, true and square, neatly scribed to adjoining surfaces.
 - .7 Backsplashes and countertops to be post-formed only where shown on drawings. Post-formed countertops to have integral backsplashes only where shown on drawings. Backsplash heights to be 3" above countertop level (typical). Countertops to have post-formed bullnose edging types as shown on drawings, and projecting 1 1/2" beyond face of adjacent cabinets below (typical). Only those bullnose types

shown on the Architectural drawings will be accepted.

**3.3 Fabrication of
Solid Surfacing
Countertops & Panels**

- .1 All solid surfacing countertop are to be fabricated in full accordance with the product manufacturer's fabrication guide (and related requirements therein) respective to the intended application. Particular attention should be paid to:
 - provision of proper supporting substrates throughout
 - provision of matching solid surfacing seam blocks at all joints in material
 - provision of radiused inside blocks at all inside countertop corners
 - provision of gaps between solid surface material and substrate to provide adequate allowance for thermal expansion and contraction, including use of manufacturer-recommended adhesives
- .2 All 'L-shaped' solid surface countertops must not be seamed on a 45° angle, but rather on an 'L-shaped' joint, with a min. 1" radius plus a 1" straight run at the inside corner, ensuring a 90° joint between adjacent surfaces. Consult manufacturer's fabrication guide for full requirements.
- .3 Ensure provision of adequate support below all countertop cut-outs, and use of thermal isolation tape at any cut outs to accommodate heat generating equipment items.
- .4 Ensure that all joints in solid surface materials are chemically welded with manufacturer-recommended colour-matching seaming adhesive. All joint seams are to be sanded and buffed smooth and co-planar throughout, free of perceptible lines and distinction between adjacent surfaces when complete.
- .5 All solid surfacing used as wall and/or bulkhead facing are to be adhered to full plywood substrates in full accordance with the manufacturer's recommendations for the intended application, utilizing recommended products and techniques.
- .6 Solid surfacing materials are to be left in natural 'matt' finish throughout and are not to be buffed to a higher sheen.

3.4 Cabinetry Installation

- .1 Set and secure all materials and components in place ensuring that they are, plumb, true and square.
- .2 Provide heavy-duty mechanical attachment for wall-mounted items and cabinets.
- .3 Apply bitumous water-resistant coating over wood framing members in contact with masonry or cementitious construction subject to moisture.

- .4 After installation, fit and adjust operating hardware for cabinet doors, drawers and shelves to ensure operation.
 - .5 Make allowances around perimeter where fixed objects pass through or project into work to permit normal movement without restriction.
 - .6 Provide cutouts for inserts, appliances, outlets boxes and penetrations. Round internal corners, chamfer edges and seal exposed core.
 - .7 Scribe all materials neatly and tight to surrounding walls and related architectural features free of gaps and irregularities.
 - .8 At junction of millwork items and adjacent walls (including around projections) apply a small continuous bead of sealant in accordance with Section 07900. Sealant/caulking colour to match adjacent wall surface.
 - .9 Setting Agents at Solid Surface Countertops:
All solid surface countertops are to be adhered to substrates with dabs of clear silicone in full accordance with the manufacturer's recommendations. No rigid adhesive setting agents may be used unless specifically recommended by solid surfacing manufacturer.
 - .10 Handling, storing, cutting, finishing and fastening of all compact laminate panels are to be in full accordance with manufacturer's recommendations throughout.
 - .11 Install all cabinetry hardware items specified herein in full accordance with the manufacturer's recommendations for the intended application. Ensure that all hardware is firmly anchored and performing correctly, adjusting as required to suit. Ensure that all cabinetry facing hardware is adjusting to provide plum and level facing panels, with consistent gapping throughout.
- 3.4 Trimwork Installation**
- .1 Set and secure all materials and components in place ensuring that they are plumb, true and square unless noted otherwise.
 - .2 All seams between adjacent trims in continuous run are to be mitred and overlapped. Glue and mechanically fasten joints to suit, filling and finishing to match specified trim finish. Ensure finished joints are flush and co-planar, free of gaps and visual irregularities.
 - .3 Joints at 90 degree corners are to be mitred to suit, unless otherwise noted. Ensure finished joints are flush and co-planar, free of gaps and visual irregularities.

ARCHITECTURAL MILLWORK

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END OF SECTION 06400

PART 1 - GENERAL

- | | | |
|--|----|---|
| 1.1 General | .1 | Division One, General Requirements, is part of this Section and shall apply as if repeated here. |
| 1.2 Description of Work | .1 | Provide all labour, materials, and equipment required or called for in this specification, and as shown on the drawings or which is necessary, to complete the work without any extra cost. This work may require any or all, but not limited to any of the following: |
| | .2 | The supply and installation of a waterproofing membrane, applied to the exterior of the Elevator pit. |
| | .3 | Work to include preparation of all substrates to a condition acceptable for the installation of the waterproofing membrane, installation of the waterproofing membrane system and detailing of all interruptions in and penetrations through the waterproofing plane around the elevator pit. |
| 1.3 Relate Work | .1 | Excavation, Backfill, and Compaction Section 312310 |
| | .2 | Cast-in-Place Concrete Section 03300 |
| 1.4 Submittals | .1 | Upon request, submit certified copy of test data confirming performance requirements of waterproofing membrane specified in Section 2.2.1. |
| | .2 | Submit appropriately sized samples of waterproofing membrane, 305mm x 305mm (12" x 12") for verification of compliance with material specified in Section 2.2.1. |
| 1.5 Quality Assurance | .1 | All waterproofing membrane and accessories shall be applied by a professional Contractor who has placed similar materials. |
| 1.6 Delivery, Storage, and Handling | .1 | Deliver all waterproofing membrane and accessory materials to the project site in original and unopened packaging with manufacturer's labels intact. |
| | .2 | Waterproofing membrane and accessory materials shall be stored on site in such a manner so as to protect them from precipitation and ground moisture. Raised platforms and waterproof coverings shall be used where necessary. |
| | .3 | All materials including: Membrane, Sealants, Mastics, Liquid Membrane and Primer, shall be stored at temperatures no less than 4°C (40°F) and no greater than 32°C (90°F). Consult precautionary statements on product labels before use. |

PROTECTED MEMBRANE WATERPROOFING SYSTEM

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Condition Liquid Membrane and Mastic to at least 16°C (60°F) prior to using.

- .4 Pallets of waterproofing membrane shall not be double stacked.
- 1.7 Job Conditions
 - .1 The waterproofing membrane and accessory materials shall be applied at temperatures satisfactory to the manufacturer and under dry conditions.
 - .2 Concrete shall be cured a minimum of 7 days and be free of surface moisture prior to the installation of the waterproofing membrane. Lightweight structural concrete must dry for 14 days. Allow a minimum of 24 hours following precipitation to provide for adequate drying.
 - .3 Prior to installation, the Contractor shall inspect those areas to receive the waterproofing membrane to ensure that they are clean, dry, sound and smooth.
- 1.8 References
 - .1 Proceed with the installation of the waterproofing system in accordance with any and all codes and standards of practice governing work of the nature described herein.

PART 2 - PRODUCTS

- 2.1 Manufacturer
 - .1 The waterproof system as described herein shall be as manufactured by WR Meadows of Canada Ltd. For information pertaining to this specification, contact WR Meadows of Canada, Milton, Ontario, phone (416) 878-4122 or Fax (416) 878-4125 or approved equivalent.
- 2.2 Materials
 - .1 Waterproofing membrane: SEALTIGHT MEL-GARD, composite of a polymeric membrane integrally bonded to a weather coated, asphalt-saturated protection course layer. It is protected on the membrane side as well with an easy to remove plastic release liner. Membrane, maintaining a minimum thickness of 2.23mm (88 mils), shall be provided in rolls of dimension 1.219m x 15.24m (3.9' x 50').
 - .2 Primer: MEL-PRIME Solvent-Base Primer, dispersed in solvent, designed to provide good initial adhesion of membrane. Primer is dark red when wet and dries to a lighter shade. Packaged in 19 litre (5 US gal) pails.
Primer: MEL-PRIME Water-Base Primer, dispersed in water, designed to provide good initial adhesion of membrane at a temperature above 4.4°C (40°F). Primer is pink when wet and dries with a pink tinge. Packaged in 19 litre (5 US gal) pails.

- .3 Liquid Membrane: MEL-ROL Liquid Membrane, 2 component high performance sealant, 100% solids in content. Packaged in 3.8 litre (1 US Gal) units for application by trowel or bulk loading caulking gun.
- .4 Mastic: MEL-ROL Mastic, single component sealant. Packaged in 857 ml (29oz.) caulking tubes and 19 litre (5 US Gal) pails.

PART 3 - EXECUTION

3.1 General

- .1 Examine all areas to receive the MEL-GARD Membrane to ensure that they are suitably prepared for its installation. Have deficiencies addressed prior to commencement of the installation.
- .2 Concrete surfaces shall be smooth, clean, dry and free of any foreign matter that would otherwise hinder either the adhesion or regularity of MEL-GARD installation.
- .3 The MEL-GARD Membrane and Accessory Products shall be installed only in suitable weather where air and surface temperatures are above -4°C (25°F), 4.4°C (40°F) if MEL-PRIME Water Base Primer is employed and there is no threat of precipitation. Do not apply to frost covered surfaces.

3.2 Preparation

- .1 PRIMING
 - i) Prime concrete surfaces using a MEL-PRIME Primer, applied by means of roller or spray and at the rate recommended for the primer chosen. Coverage will vary with surface porosity.
 - ii) Allow primer to dry until tack free before proceeding with the membrane installation. Avoid pooling of the primer as well as over priming.

3.2 Preparation (Cont'd)

- iii) To avoid excess pick up of airborne dust once priming has been completed, prime only as much area as can be covered with MEL-GARD Membrane the same working day. If not covered in the same working day, re-prime.
- iv) Metal or other dense surfaces need not be primed, but should however be free of; grease, oil, dirt, loose paint, rust or any other contaminants.

.2 CRACK TREATMENT

- i) Over all non working cracks or joints up to a maximum of 1.6mm (1/16"), apply a reinforcing strip of MEL-GARD not less than 225mm (9") in width centered over the crack.
- ii) In the case of non working cracks or joints greater than 1.6mm (1/16") in width, it should be brought to the attention of the design authority that this condition exists. If deemed acceptable these cracks should be filled flush to the level of the surrounding surface prior to the placement of a 225mm (9") reinforcing strip, use MEL-ROL Liquid Membrane for this purpose.

.3 JOINTS

- i) MEL-GARD Membrane is not in itself an expansion joint system, rather the membrane should be terminated at and tied in to a recognized expansion joint assembly. For additional assistance, contact your local WR Meadow representative.
- ii) Cold pour joints should be treated in the same manner as non working joints (less than 1.6mm (1/16") in width), that is, following any grinding or chipping which may be required to smoothen the joint area, a reinforcing strip shall be centered over the joint prior to the field membrane application.

.4 DETAILING

- i) It is recommended that a fillet of MEL-ROL Liquid Membrane be placed in all inside corners of vertical applications prior to covering the membrane. A fillet of Liquid Membrane and a reinforcing strip 304mm (12") wide are recommended at the footing/wall juncture in vertical applications and at the slab/wall juncture in horizontal applications.

3.2 Preparation (Cont'd)

- i) All drains and other protrusions should be sealed with 2 layers of membrane applied at least 150mm (6") in all directions. Around drains, apply a bead of MEL-ROL Mastic between the membrane and clamping rings.
- ii) Dowelling, conduits, equipment supports, etc. which penetrate the membrane should also be sealed by an applications of MEL-ROL Liquid Membrane.
- iii) All end laps in the membrane application as well as file cuts, shall be over coated using MEL-ROL Mastic or MEL-ROL Liquid Membrane at least 3.2mm (1/8") thick and 25mm (1") wide.

- iv) During final inspection of the in place membrane, conduct repairs as necessary. Reinforce damaged or questionable areas by means of an additional ply of MEL-GARD Membrane, appropriately sized to extend a minimum of 150mm (6") in all directions from the perimeter of the affected area.

3.3 Membrane Installation .1

HORIZONTAL APPLICATIONS

- i) Positive slope to drain is regarded as a good design practice and as such should be provided. Membrane installation should then commence at the low point of all slopes and proceed to the high point.
- ii) Provide a chalk line or alternate means of establishing a square start location. Align first sheet with straight edge by removing the first few feet of release paper from the roll and laying membrane in place. Continue to pull release paper from roll thereby dispensing the membrane onto the deck. Proceed at a rate that allows for the ability to broom out any entrapped air from beneath the membrane as the roll proceeds.
- iii) Continue with subsequent rolls, aligning each with the previous maintaining a minimum overlap of 75mm (3"). For ultimate protection, as would be required for flood testing, place a bead of MEL-ROL Mastic in the center of each areas to be overlapped.
- iv) End laps as encountered at roll ends and splices should overlap the previous membrane sheet a minimum of 150mm (6"). Stagger all end laps. Apply Mastic at all "T" Joints.
- v) Lay membrane carefully to ensure a uniform applications and to minimize wrinkles/fish mouths.

3.2 Membrane Insulation (Cont'd)

- vii) Immediately following placement, roll the membrane in its entirety to ensure continuous adhesion to the deck. The roller should be approximately 760mm (30") in width and 68 kg (150 lbs in weight). Wrap the roller with carpeting to allow the roller to conform to the slight irregularities of the surface, ensuring complete adhesion.
- viii) Do not allow membrane to pick up any dirt or foreign material as it is being installed.

.2 VERTICAL APPLICATIONS

- i) Cut MEL-GARD into lengths required to extend from the face of the footing and up the wall to the final grade elevation. Cut with a sharp knife prior to removal of release paper.

- ii) Provide a chalk line or alternate means of establishing a square start location. Align the first strip with the straight edge by removing the first few feet of release paper and putting membrane in place gradually. Proceed at a rate that allows hand smoothing for a wrinkle free application with not entrapped air bubbles.
 - iii) Continue with subsequent strips aligning each with the previous maintaining a minimum overlap of 75mm (3").
 - iv) Do not allow membrane to pick up any dirt or foreign materials as it is being installed.
 - v) End laps as encountered at roll ends and splices should overlap the previous membrane sheet a minimum of 150mm (6"). Stagger all end laps.
 - vi) Immediately following placement press roll the membrane in its entirety to ensure continuous adhesion to the wall surface using a hand-held, multi-roll, tile roller or equivalent.
- 3.4 Inspect and Repair .1** Inspect and repair immediately before covering. Tears and inadequate overlaps should be covered with MEL-GARD Membrane slit fish mouths and patch. Seal patch edges with MEL-ROL Mastic. Where possible, horizontal applications should be flood tested for 24 hours. All leaks to be marked and repaired when membrane dries.
- 3.5 Membrane Protection .1** Backfilling should be done immediately using care and caution to avoid damaging the waterproofing application. Compaction of a maximum of 450mm (18") at a time is recommended.
- .2** Place selected cover, ie: landscaping, interlocking pavers, etc. over horizontal applications as soon as possible - do not leave exposed to the elements for more than 48 hours.

End of Section 07100

PART 1 - GENERAL

- 1.1 General** Division One, General Requirements, is part of this section and shall apply as if repeated here.
- 1.2 Description of Work** Provide all labour, materials, and equipment required or called for in this specification, and as shown on drawings or which is necessary, to complete the work without any extra cost. This work may require any or all, but not be limited to any of the following:
- .1 Firestop and smoke seal at:
 - i) Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
 - ii) Top of fire-resistance rated masonry and gypsum board partitions.
 - iii) Intersection of fire-resistance rated masonry and gypsum board partitions.
 - iv) Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
 - v) Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
 - vi) Openings and sleeves installed for future use through fire separations.
 - vii) Around mechanical and electrical assemblies penetrating fire separations.
 - viii) Rigid ducts: greater than 129 cm²: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.
- 1.3 Related Work** .1 Fire stopping and smoke seals within mechanical assemblies (ie. Inside ducts, dampers) and electrical assemblies (ie. Inside cable trays) are specified in Division 15 and 16 respectively.
- 1.4 References** .1 CAN4-S115-M85, Standard Method of Fire Tests of Firestop Systems.
- 1.5 Samples** .1 Submit samples in accordance with General Conditions.

PART 2 - PRODUCTS

- 2.1 Materials** .1 Fire stopping and smoke seal systems: in accordance with CAN4-S115.
- i) Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke, and gases in compliance with requirements of CAN4-S115 and not to exceed opening sizes for which they are intended and conforming to special requirements specified in 3.5.

- ii) Firestop system rating: 2hr & 1hr.
 - iii) Fire Rated Joints for Concrete Steel Fluted Decks to Concrete Walls Assemblies using TREMstop Acrylic. This detail is to be used for all rated walls throughout scope of project.
- .2 Service penetration assemblies: certified by ULC in accordance with CAN4-S115 and listed in ULC Guide NO. 40 U19.
 - .3 Service penetration firestop components: certified by ULC in accordance with CAN4-S115 M85.
 - .4 Fire-resistance rating of installed fire stopping assembly not less than the fire-resistance rating of surrounding floor and wall assembly.
 - .5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.
 - .6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.
 - .7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.
 - .8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
 - .9 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.
 - .10 Sealants for vertical joints: non-sagging.
 - .11 Acceptable material: Tremco, "TREMstop Acrylic".

PART 3 - EXECUTION

3.1 Preparation

- .1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.
- .2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
- .3 Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.

- .4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.
- 3.2 Installation**
 - .1 Install fire stopping and smoke seal material and components in accordance with ULC certification and manufacturer's instructions.
 - .2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
 - .3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
 - .4 Tool or trowel exposed surfaces to a neat finish.
 - .5 Remove excess compound promptly as work progresses and upon completion.
- 3.3 Inspection**
 - .1 Notify consultant when ready for inspection and prior to concealing or enclosing fire-stopping materials and service penetration assemblies.
- 3.4 Clean Up**
 - .1 Remove excess materials and debris and clean adjacent surfaces immediately after application.
 - .2 Remove temporary dams after initial set of fire stopping and smoke seal materials.

END OF SECTION 07270

PART 1 - GENERAL

- | | | | | | | | | | |
|---|---|--------------------|---------------|-------------------------|--|---|---------------|---------------|---------------|
| 1.1 General | Division One, General Requirements, is part of this section and shall apply as is repeated here. | | | | | | | | |
| 1.2 Description of Work | <p>Provide all labour, materials, and equipment required or called for in this specification, and as shown on the drawings or which is necessary, to complete the work without any extra cost. This work may require any or all, but not be limited to any of the following:</p> <ul style="list-style-type: none"> .1 Prefinished metal cladding at building interior including perforated acoustic metal wall cladding [with all associated components] in Gymnasium 159 as illustrated on architectural drawings. | | | | | | | | |
| 1.3 Standards and design Criteria | <p>Design cladding system in accordance with:</p> <ul style="list-style-type: none"> .1 Canadian Sheet Steel Building Institute Standards. .2 National Building Code of Canada .3 Deflection of the cladding system is not to exceed 1/180th of the span for the specified dead loads, wind and suction forces acting on it. .4 Design expansion joints to accommodate movement in cladding and between cladding and structure, to prevent permanent distortion or damage to the cladding. .5 Design wall system to maintain the following erection tolerances: <ul style="list-style-type: none"> a) Maximum variation from plane or location shown on shop drawings: 20mm/10m (3/4 inch/30 feet). b) Maximum offset from true alignment between two adjacent members abutting end to in line: 1.00mm (0.04 inches). | | | | | | | | |
| 1.4 Related Work | <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">.1 Rough Carpentry</td> <td>Section 06100</td> </tr> <tr> <td>.2 Sheet Metal Flashing</td> <td>Section 07620
Metal Flashing and Trim</td> </tr> <tr> <td>.3 Air/Vapour Barrier Membrane & Insulation</td> <td>Section 04220</td> </tr> <tr> <td>.4 Demolition</td> <td>Section 02100</td> </tr> </table> | .1 Rough Carpentry | Section 06100 | .2 Sheet Metal Flashing | Section 07620
Metal Flashing and Trim | .3 Air/Vapour Barrier Membrane & Insulation | Section 04220 | .4 Demolition | Section 02100 |
| .1 Rough Carpentry | Section 06100 | | | | | | | | |
| .2 Sheet Metal Flashing | Section 07620
Metal Flashing and Trim | | | | | | | | |
| .3 Air/Vapour Barrier Membrane & Insulation | Section 04220 | | | | | | | | |
| .4 Demolition | Section 02100 | | | | | | | | |
| 1.5 References | <ul style="list-style-type: none"> .1 CSA B35.3-1962 Tapping and Drive Screws Slotted and Recessed head, Thread Forming and Thread Cutting Screws, and Metallic Drive Screws. .2 CGSB 93-GP-4M-78 Siding, Soffits and Fascia, Steel, Galvanized, Prefinished. | | | | | | | | |

- 1.6 Samples**
 - .1 Submit samples in accordance with Section 01340 - Submittals.
 - .2 Submit duplicate 300 x 300 mm samples of each siding material, colour and profile to be selected by Architect. Products to be approved by the Architect prior to ordering, production and installation of any items.
- 1.7 Quality Assurance and Substitutions**
 - .1 Manufacturer of cladding, and installer shall demonstrate at least five years experience in projects similar in scope.
 - .2 This section establishes the standard of quality required for the cladding system. Proposed substitutions must meet this standard, and will be considered as follows:
 - a) A written request for approval of a substitution is received at least ten (10) days prior to tender closing.
 - b) The request includes a complete item-by-item description comparing the proposed substitution to the specified system, together with manufacturer's literature, samples, test data, engineering standards and performance evaluation indicating comparable standards to those specified.
- 1.8 Shop Drawings**
 - .1 Submit shop drawings in accordance with Section 01340.
 - .2 Indicate dimensions, profiles, attachment methods, schedule of wall elevations, trim and closure pieces, soffits, fascia, metal furring, and related work.
 - .3 Each shop drawing shall be stamped by a Professional Engineer.
 - .4 Submit samples of prefinished metal cladding for review by the consultant, prior to fabrication.
- 1.9 Handling and Protection**
 - .1 Store cladding products in accordance with manufacturer's recommendations, and protected from elements.
 - .2 Protect prefinished steel during fabrication, transportation, site storage and erection, in accordance with CSSBI Standards.

PART 2 - PRODUCTS

2.1 Prefinished Metal Siding

Supply and installation of the following metal siding items:

.1 Prefinished Metal Siding-Acoustic (PMS-AC) at Building Interior:

Interior acoustic prefinished metal siding to be as shown on Interior Building Elevations and all related Architectural drawings. Acoustic metal siding profile to be as noted below:

Profile:	Agway 7/8" Corrugated
Depth:	0.88"/22 mm
Base Steel Thickness:	24 gauge, 0.024"
Perforation Pattern:	Round Hole, 60 degree Staggered Pattern, 1/16"/0.0625" hole @ 0.1250" stagger, 22.7% open area
Finish/Colour:	Perspectra Plus series in colour 'QC 28783 Bright White'
Metal Standards:	CGSB 93-GP-4M, CSA S136-01
Finish Coating Standards:	Class F1S
Coating Gloss Sheen:	Medium
Coil Width:	48" coil stock finishing to 37.25" wide after rolling to spec'd profile
Installation Direction:	vertical
Location:	Gym 159

Product is to be supplied with all clips, accessories and trims, colour-matching fasteners etc. as required for a complete installation. Full top and bottom perimeter of acoustic wall panels are to be trimmed with matching metal j-mouldings throughout. Ensure that this product is installed with colour-matching fasteners as specified elsewhere herein.

Note: *As a perforated product, supporting sub-girts, furring strips and related items will be visible through the installed siding. Ensure that all such items are installed level, plumb and square (as applicable). Horizontal supporting members (behind vertical PMS-AC installations) are to be fully aligned throughout and consistently spaced apart. Coordinate supporting member spacing and locations with Architect as required prior to installation to ensure aesthetic integrity of final installation. All fasteners are to be installed at consistent spaces and fully aligned across installed areas of product.*

.3 Prefinished Metal Siding Trims & Accessories:

Prefinished metal siding trims are to be used at all outside corners, inside corners, tops and bottoms of siding expanses (including required closures, edging strips, drips, sills, jambs, j-moulds etc.) between adjacent (differing) siding profiles and at decorative joints (at/between/adjacent to prefinished metal siding where shown on Architectural Building Elevations) and at all locations as required to ensure a fully finished product. All metal trims are to be provided by the metal siding manufacturer, and are to be fully compatible with the siding profiles specified.

Trim Colours:

'Self-edge' trims required for the installation of pre-finished metal siding materials are to match the colour of adjacent prefinished metal siding throughout in materials and colours noted elsewhere herein.

- .4 Supply and install all manufacturer-recommended supporting sub-girts, furring strips, spacers, flashings, trims and closures, fasteners etc. as required to complete the installation. Ensure that all supporting members are at manufacturer-recommended spacings relative to the intended application.

Ensure that all exposed fasteners match specified material colours throughout.

- .5 Sealants for exterior sheet, (factory applied) flashings all to make the installation water tight.

2.2 Supporting Sub-Girts, Spacers and Integral Thermal Clips

- .1 Minimum 1.2mm (0.048 inches) thick formed galvanized steel, ASTM A446 Grade A with Z275 zinc coating. Ensure use of matching and compatible metal clips, thermal clips, hat-channels, spacers etc. in accordance with manufacturer's recommendations for the intended application and related siding profile properties. Girt quantities and centre to centre spacing as per manufacturer recommendations for the intended application.

2.3 Fasteners

- .1 **Exposed Fasteners at Interior Metal Siding PMS-AC:**
Exposed metal fasteners at metal siding (PMS-AC) at building interior are to be colour-matched to the siding, as supplied by Agway Metals Inc. Fasteners are to be installed in recessed flutes of corrugated siding materials throughout. Ensure that fastener type is suited to the applicable materials being anchored into). Supply colour matching washers (as required) to suit.

2.4 Accessories

- .1 Flashing, Trim and Closures: Fabricate to profiles indicated on shop drawings, or as required to meet performance requirements. Use preformed corner pieces only. Double

back exposed edges. Inside corners, outside corners, cap strips, drip cap, undersill trim, starter strip trim of same material, colour and finish sheen as cladding, with fastener holes pre-punched. Material to match cladding in exposed locations, galvanized material in concealed locations.

- .2 Sealants:
 - .1 Concealed: Tape or compound, non-skinning, non-drying, butyl rubber.
 - .2 Exposed: One part silicone to CGSB 19-GP-18M. In accordance with Section 07900, Tremo 'Dymeric' Range.

2.5 Fabrication

- .1 Fabricate wall components to comply with dimensions, profiles, gauges and details as shown on the shop drawings, including fascia and soffit panels and all companion flashing.
- .2 Fabricate all components of the system in the factory, ready for field installation.
- .3 Provide cladding and all accessories in longest practicable length to minimize field lapping of joints.

PART 3 - EXECUTION

3.1 Installation

- .1 Install all prefinished metal cladding products in accordance with CGSB 93-GP-5M, and product manufacturer's recommendations respective to the intended application and all related design conditions.
- .2 Install grits, thermal clips and subgirts as required to suit. Spacing and location of supporting members to suit the specified material types, gauge, installation orientation and application requirements throughout.
- .3 Install continuous starter strips, inside and outside corners, edgings, drip, cap, sill and louvre opening flashings as indicated.
- .4 Install outside corners, fillers, and closure strips with carefully formed and profiled work.
- .5 Install fascia facings and exposed trim as indicated.
- .6 Maintain joints in exterior cladding, true to line, tight fitting, hairline joints.
- .7 Attach components in manner not restricting thermal movement.
- .8 Install all fasteners in quantities at centreline dimensions as recommended by the cladding manufacturer to suit the

intended application.

NOTE: At all siding items with exposed fasteners, ensure that fasteners are installed plumb, true and aligned with each other. Following installation, all fasteners should look equally spaced and consistently aligned throughout. Ensure that all required sub-girts are installed to facilitate this final finished appearance.

- .9 At installations of perforated/acoustic metal panels (PMS-AC), plan and align locations and spacing of supporting components in accordance with 2.1.2 herein. Similarly, plan and install fasteners in accordance with 2.3.2 and 3.1.8 herein.
- .10 Install all PMS-AC fitting neatly and tightly to and around existing wall obstructions throughout. Provide cut-outs in siding to suit. Finish openings and cut edges by with colour-matching edge trims throughout. Maintain continuity of siding profile in and around all obstructions.
- .11 Caulk junctions with dissimilar adjoining materials with sealant. Do work in accordance with Section 07900 - Sealants.

3.2 Final Touch-Up

- .1 Touch up minor paint abrasions with manufacturer approved touch-up paint.
- .2 Clean installed materials by damp wiping as required to remove all dirt and construction debris.

END OF SECTION 07465

PART 1 - GENERAL

1.1 Scope

- 1.1.1 This specification covers labor, materials, equipment, and application necessary for, and incidental to, the complete and proper installation of intumescent fire-protection for application to steel structures, supports, assemblies and related components in accordance with all applicable requirements of contract documents.
- 1.1.2 This specification shall be supplemented by the applicable requirements of the Ontario Building Code, insurance rating organizations and all other authorities having jurisdiction.
- 1.1.3. This work shall include the supply and installation of fire-resistant intumescent mastic coating sufficient to achieve a 1-hour fire-resistance rating at/on
 - ***all structural steel support columns in Fitness Room 155 [below new upper-level running track]***
 - ***all structural steel channels, metal beams, metal deck and misc. metal items comprising and/or associated with the floor assembly below the new upper level running track in Fitness Room 155***

1.2 Section Includes

- 1.2.1 Intumescent fire protection material.
- 1.2.2 Topcoat protective decorative finish.

1.3 Related Sections

- 1.3.1 Section 051000: Structural Steel.
- 1.3.2 Section 051200 - 055000: Structural steel and metal fabrications with reference to primer receiving fire protection materials.
- 1.3.3 Section 078100 Spray-Applied Fire Resistive Material.
- 1.3.4 Section 072700: Firestopping and Smoke Seals.
- 1.3.5 Section 099000: Painting & Decorating

1.4 References

- 1.4.1 Underwriters Laboratories Inc. (UL) Fire Resistance Directory.
- 1.4.2 Underwriters Laboratories of Canada (ULC) - List of Equipment and Materials.
- 1.4.3 Evaluation Services – ES Report
- 1.4.3 Test Standards
 - a) UL 263 (ASTM E119) - Fire Tests of Building Construction and Materials.

- b) CAN/ULC-S101 - Standard Methods of Fire Endurance Tests of Building Construction and Materials.
 - c) ASTM E84 (UL723, CAN/ULC-S102) - Surface Burning Characteristics of Building Materials. Flame Spread Maximum: 5 and Smoke Developed Maximum: 35.
 - d) ASTM D2240 – Durometer Hardness (Shore D Only). Minimum: 67 Shore D.
 - e) ASTM D2794 – Impact Resistance. Intrusion minimum: 152 inch-lb. (17.17 Nm).
 - f) ASTM D4060 – Abrasion Resistance. Maximum 0.2600 grams/1000 cycles.
 - g) ASTM D4541 – Bond Strength. Minimum: 340 psi. (2344 k Pa.)
- 1.4.4 Steel Structures Painting Council (SSPC) Surface Preparation Standards.
- 1.4.5 Material manufacturer's current published information including, but not limited to, application guide.
- 1.4.6 AWCI Technical Manual 12-B "Standard Practice for the Testing and Inspection of Field Applied Thin-Film Intumescent Fire-Resistive Materials; an Annotated Guide", Latest Edition.

1.5 System Description

- 1.5.1 The intumescent fire protection materials shall be applied at the required thickness to provide the UL fire resistive ratings.

1.6 Submittals

- 1.6.1 Manufacturer's Data: Submit manufacturer's specifications, including independent laboratory physical property test reports and certifications as may be required to show material compliance with contract documents.

1.7 Quality Assurance

- 1.7.1 Manufacturer - Company specializing in manufacturing fire protection products.
- 1.7.2 The intumescent fire resistive material shall be manufactured under the Follow-Up Service program of UL or ULC and bear the UL and/or ULC label (mark).
- 1.7.3 Applicator - A firm with expertise in the installation of fire resistive or similar materials.
- 1.7.4 Product - The product shall be approved by the architect and applicable authorities having jurisdiction.

1.8 Delivery, Storage And Handling

- 1.8.1 Deliver materials to the project in manufacturer's unopened packages, fully identified as to trade name, type and other identifying data. Packaged materials shall bear the appropriate labels, seals and UL label (mark) for fire resistive ratings and shall be stored

at temperatures in compliance with manufacturer instructions in a dry interior location away from direct sunlight.
DO NOT FREEZE.

1.9 Project/Site Conditions

- 1.9.1 When the temperature at the job site is less than 50° F (10° C), a minimum substrate and ambient temperature of 50° F (10° C) shall be maintained prior to, during, and a minimum of 72 hours after application. If necessary for job schedule, the General Contractor shall provide enclosures and heat to maintain proper temperatures and humidity levels in the application areas.
- 1.9.2 In enclosed areas, ventilation shall not be less than 4 complete air exchanges per hour until the material is dry.
- 1.9.3 Relative humidity shall not exceed 85% throughout the total period of application and drying for the intumescent fire resistive material, and must not exceed 85% throughout the application and drying for the protective decorative topcoat.

1.10 Sequencing And Scheduling

- 1.10.1 Applicator shall cooperate in the coordination and scheduling of fire protection work to avoid delays in job progress.
- 1.10.2 The installation of piping, ducts, conduit or other suspended equipment shall not commence until the application of the thin-film fire resistive material is complete in that area.

PART 2 - PRODUCTS**2.1 Compatible Metal Primer**

- 2.1.1 Primer shall be approved by intumescent paint manufacturer and shall applied in full accordance with the primer manufacturer's written instructions.

2.2 Intumescent Fire Protection System

- 2.2.1 The intumescent fire resistive material shall be CAFCO® SprayFilm® WB 5™ as supplied by Isolatek International or CAFCO INDUSTRIES.
- 2.2.2 Intumescent fire resistive material shall be applied in accordance with drawings and/or specifications, and shall have been tested in accordance with the procedures of UL 263 or ASTM E119 or CAN/ULC-S101, and reported by Underwriters Laboratories, Inc. or Underwriters Laboratories of Canada only.
- 2.2.3 Thin-Film Fire-Resistive Intumescent Mastic Coating: Factory-mixed formulation.
 - A. Water-Based Formulation: Approved by manufacturer and authorities having jurisdiction for indicated use.
 - B. Verify with manufacturer that products selected are suitable for use indicated.

- C. UL Fire Tested Designs Only based on UL 263 (ASTM-E119).
- D. Current ICC Evaluation Service Report
- E. To assure an acceptable Architectural finish, no mesh is allowed.
- F. A representative mock-up sprayed Architectural finish sample must be submitted, reviewed, and accepted by the architect in advance.
- G. All fire-resistance rating levels shall be as directed by the Architect. Locations for items requiring ratings shall be as directed by the Architect. All film thicknesses of applied coating shall ensure as a minimum, the fire-resistance ratings noted and required.

2.3 Decorative Topcoating

- 2.3.1 Painted topcoat materials shall be as required for color-coding, aesthetics or additional surface protection, approved by the thin-film fire resistive material manufacturer and applied in full accordance with the coating manufacturer's written instructions. Paint topcoat colours to be as selected by the Architect.

PART 3 - EXECUTION

3.1 Preparation

- 3.1.1 All surfaces to receive thin-film fire resistive material shall be clean, dry and free of oil, grease, loose mill scale, dirt, dust or other materials which would impair bond of the thin-film fire resistive material to the surface. Any cleaning of the surfaces to receive fire resistive material shall be the responsibility of the General Contractor or steel erector, as outlined in the structural steel section.
- 3.1.2 Confirm compatibility of surfaces to receive thin-film fire resistive material. Steel surfaces shall be primed with a compatible primer approved by the thin-film fire resistive material manufacturer.
- 3.1.3 Provide masking, drop cloths or other suitable coverings to prevent overspray onto surfaces not intended to be coated with intumescent coating.

3.2 APPLICATION

- 3.2.1 The thin-film fire resistive material shall be applied at the required dry film thickness per the appropriate UL design number guidelines and manufacturers written application instructions.

Coating Locations & Rating Requirements:

- structural steel columns supporting second floor level below Service Room 201 including columns at intersection of structural steel lines Fx/21 and CC/21; these items require a 1-hour fire-resistance rating

3.3 Mock Up

- 3.3.1 Before proceeding with the work, the applicator shall apply the thin-film fire resistive material to a section witnessed by the architect's or owner's representative. The application shall be subject to their approval and shall be used as a guide for texture and thickness of the finished work.

3.4 Clean Up And Repair

- 3.4.1 Upon completion of installation, all excess material, overspray and debris shall be cleared and removed from the job site.
- 3.4.2 All patching of and repair to thin-film fire resistive material, due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage. Patching shall be performed by an applicator with expertise in the installation of fire resistive or similar materials. Repair shall be in accordance with UL design number guidelines and manufacturers written application instructions.

3.5 Inspection And Testing

- 3.5.1 In addition to continuous Wet Film Thickness checks performed by applicator during application, the installed intumescent material shall be inspected by a qualified independent testing laboratory for thickness in accordance with the AWCI Technical Manual 12-B "Standard Practice For The Testing and Inspection Of Field Applied Thin-Film Intumescent Fire-Resistive Materials; an Annotated Guide", Latest Edition, before application of the topcoat.
- 3.5.2 The results of the above tests shall be made available to all parties at the completion of each area and approved prior to the application of topcoat.

END OF SECTION

PART 1 - GENERAL

- 1.1 General** Division One, General Requirements, is part of this section and shall apply as if repeated here.
- 1.2 Description of Work** Provide all labour, materials, and equipment required or called for in this specification, or which is necessary, to complete the work without any extra cost. This work may require any or all, but not be limited to any of the following:
- 1.3 Related Work** Shall include the following but not limited to:
- .1 Architectural Woodwork Section 06400
 - .2 Steel Doors & Frames Section 08100
 - .3 Painting Section 09900
- 1.4 Environmental Conditions** .1 Sealant and substrate materials to be at temperature recommended by manufacturer for each type of sealant.
- 1.5 Samples** .1 Submit samples, in accordance with Section 01340, of each specified type of compound to be used together with the recommended primers and joint filler proposed to be used. Provide samples of available colours for selection by the Architect.
- 1.6 Warranty** .1 Contractor hereby warrants that caulking work will not leak, crack, crumble, melt, shrink, run, loose adhesion, or stain adjacent surfaces for three years.
- 1.7 Qualifications** .1 Only skilled and experienced tradesmen shall carry out the work in this section.
.2 Report to the Architect any discrepancies or unclear items.

PART 2 - PRODUCTS

- 2.1 Materials**
- .1 Primers: type recommended by sealant manufacturer.
 - .2 Joint Fillers:
 - (a) General: compatible with primers and sealants, outsized 30% to 50%.
 - (b) Polyethylene, urethane, neoprene or vinyl: extruded closed cell foam, Shore A hardness 20, tensile strength 140 to 200 kPa.
 - (c) Neoprene or butly rubber: round solid rod, Shore A hardness 70.
 - (d) Polyvinyl chloride or neoprene: extruded tubing with

6mm minimum thick walls.

- .3 Bond breaker: pressure sensitive plastic tape, which will not bond to sealants.
- .4 Joint cleaner: xylol, methylethyleketon or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.
- .5 Vent tubing: 3mm inside diameter extruded polyvinyl chloride tubing.
- .6 Sealants:
 - (a) General Exterior Sealant: single component polyurethane base sealant to meet C.G.S.B. Specification 19GP5M and CAN 2-19-24-M90 such as Sikaflex 1A, Vulkem 116 by Tremco, or approved alternate.
 - (b) General Interior Sealant: single component sealant to meet C.G.S.B. specification 19GP17M and which can be painted, such as Tremflex 834 by Tremco, an approved alternate.
 - (c) Rubber asphalt sealing compound: one component, black rubberized asphalt: Bakor "570-05".
 - (d) High humidity sealant: one component, coloured, mildew resistant, silicone; Dow "786".
 - (e) Isolation paint: black asphaltic bitumastic paint; Bakor "410-02" or Domtar "Ace of Spades".

2.2 Preparation

- .1 Remove dust, paint, loose mortar and other foreign matter. Dry joint surfaces.
- .2 Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sandblasting.
- 3 Remove oil, grease and other coatings from non-ferrous metals with a compatible cleaner.
- .4 Prepare concrete, masonry and glazed surfaces to sealant manufacturer's instructions.
- .5 Examine joint sizes; minimum width of 6mm (1/4"); maximum width 25mm (1").
- .6 Install joint filler to achieve correct joint depth to width ratio; minimum depth 1/2 width. Joint filler shall be oversized to remain under 25% compression within the joint, at minus 7 degrees C (20 degrees F.); set back in joint to achieve depth to width ratio as above.
- .7 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

- .8 Apply bond breaker tape where required to manufacturer's instructions.
 - .9 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.
- 2.3 Application**
- .1 Apply sealants, primers, joint fillers and bond breakers to manufacturer's instructions and as required by job conditions.
 - .2 Coordinate with work of other sections to determine correct position of sealant application in sequence of work.
 - .3 Apply sealants using gun with proper size nozzle. Shape nozzle so as to finish sealant in a neat concave bead.
 - .4 Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.
 - .5 Exposed sealant shall be smooth, free from ridges, wrinkles, sags, air pockets and embedded impurities.
 - .6 In masonry cavity construction, vent caulked joints from cavity to 3 mm beyond external face of wall by inserting vent tubing at bottom of each joint and maximum of 1500 mm (5') oc vertically. Position tube to drain to exterior.
 - .7 Remove excess sealant and droppings using a recommended cleaner without damaging finished surfaces. Remove masking after tooling joints.
- 2.4 Schedule of Projections**
- Materials and application to be in accordance with manufacturer's recommendations and verified by their technical representative.
- .1 General exterior sealant: joints between exterior metal door frames and masonry; joints between window frames and siding control and expansion joints; sealing of joints between underside of concrete floor slabs and masonry; continuously at underside of metal sills; around all projections through exterior wall, hose bibs, pipes and the like; around all metal louvers; as per drawings and not necessarily covered herein; locations not filled with trim.
 - .2 General Interior Sealant: joints between door frames and masonry; masonry control and expansion joints; between built-in architectural woodwork and adjacent surfaces;

control joints in gypsum board assemblies above suspended ceilings where pipes, ducts or other mechanical equipment passes through walls; at any other location indicated on drawings but not described herein; locations not covered by trim; at window sills and all toilet bases.

- .3 Rubber-Asphalt Sealant: around penetrations in foundation wall damp proofing; between roof sleeves and pipes, conduits, etc., penetrating roof; as bed for and between joints in concealed metal flashing; between sheet damp proofing and adjacent concrete and masonry surfaces; etc.
- .4 High Humidity Sealant: joints between plumbing fixtures and surrounding material; joints between mirrors and metal fixtures; etc.
- .5 Isolation paint: back priming of metal flashing; coating aluminum frame and structural components in contact with steel or masonry; priming of metal components built into roof assembly; etc.

END OF SECTION 07900

PART 1 - GENERAL

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|--------------------------------|--|---------------|-----------------------------------|---------------|----|------------------|---------------|----|-----------------|---------------|----|----------|---------------|----|---------|---------------|----|----------|---------------|
| 1.1 General | .1 Division One, General requirements, is part of this Section and shall apply as if repeated here. | | | | | | | | | | | | | | | | | | |
| 1.2 Description of Work | <p>The work shall consist of the following but not limited to the supply and installation of the following:</p> <ul style="list-style-type: none">.1 Fire-rated and non-rated interior hollow-metal steel doors, door frames and glazing screens (uninsulated) as indicated on the drawings..2 Prepare frames with continuous steel bar reinforcement at head of frames for door closures..3 Prepare frames with continuous bar reinforcement at jambs of frames for continuous piano hinges as shown on Door and Frame schedule..4 Prepare frame and doors to receive electrical wiring and control switches for barrier-free door operators supplied by other sections..5 Prepare frames and doors for intrusion alarms and all similar security items..6 Prepare frames and doors as required to receive electrical wiring for door strikes for card access system..7 All steel frames shall be metric-sized for metric concrete block coursing unless noted or required otherwise..8 Prepare frames and doors for all door hardware items supplied by other sections..9 The removal of existing steel doors, frames and/or glazing screens and all associated existing items thereon as required for the new scope of work outlined on the architectural drawings. | | | | | | | | | | | | | | | | | | |
| 1.3 Related Work | <table border="0"><tr><td style="vertical-align: top; padding-right: 20px;">.1</td><td>Structural Concrete Block Masonry</td><td>Section 04220</td></tr><tr><td style="vertical-align: top; padding-right: 20px;">.2</td><td>Finish Carpentry</td><td>Section 06200</td></tr><tr><td style="vertical-align: top; padding-right: 20px;">.3</td><td>Finish Hardware</td><td>Section 08710</td></tr><tr><td style="vertical-align: top; padding-right: 20px;">.4</td><td>Sealants</td><td>Section 07900</td></tr><tr><td style="vertical-align: top; padding-right: 20px;">.5</td><td>Glazing</td><td>Section 08800</td></tr><tr><td style="vertical-align: top; padding-right: 20px;">.6</td><td>Painting</td><td>Section 09900</td></tr></table> | .1 | Structural Concrete Block Masonry | Section 04220 | .2 | Finish Carpentry | Section 06200 | .3 | Finish Hardware | Section 08710 | .4 | Sealants | Section 07900 | .5 | Glazing | Section 08800 | .6 | Painting | Section 09900 |
| .1 | Structural Concrete Block Masonry | Section 04220 | | | | | | | | | | | | | | | | | |
| .2 | Finish Carpentry | Section 06200 | | | | | | | | | | | | | | | | | |
| .3 | Finish Hardware | Section 08710 | | | | | | | | | | | | | | | | | |
| .4 | Sealants | Section 07900 | | | | | | | | | | | | | | | | | |
| .5 | Glazing | Section 08800 | | | | | | | | | | | | | | | | | |
| .6 | Painting | Section 09900 | | | | | | | | | | | | | | | | | |

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| 1.4 Requirements of Regulatory Agencies | .1 | Fabrication and installation of steel doors and frames is to be in accordance with Canadian Steel Door and Frame Manufacturers' Association, "Canadian Manufacturing Specifications for Steel Doors and Frames", (most current edition) except where specified otherwise. |
| | .2 | Fabrication and installation of fire-rated steel doors and frames is to be in accordance with the requirements of NFPA-80. Rated doors and frames are to carry ULC Labels, permanently anchored; unlabelled units will be rejected. |
| 1.5 Shop Drawings | .1 | Submit shop drawings in accordance with Section 01340. |
| | .2 | Indicated each type of door and frame, fire rating, material, core type and thickness, mortices and reinforcements, location of anchors and exposed fasteners, arrangement of hardware, openings, glazing stops and finishes. |
| | .3 | Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and in door schedule. |

PART 2 - PRODUCTS

All material notations provided below reflect minimum acceptable standards. For all fire-rated products, suppliers are to provide items fully achieving required/noted fire-resistance ratings. Modify and upgrade material gauges, material composition, fabrication techniques etc. as required to achieve specified ratings (noted on drawings and/or in Door Schedule) in accordance with hollow-metal manufacturer options and offerings.

All exterior doors, frames, hollow metal transoms and glazing screens are to be insulated throughout.

All interior doors, frames, hollow-metal transoms and glazing screens are to be un-insulated throughout.

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| 2.1 Manufacturers | .1 | Fleming Door Products, Baron Steel Doors and Frames, Metal Door Ltd., Vision Hollow Metal Ltd. or approved alternate. |
| 2.2 Materials-Steel Frames | .1 | Sheet steel: commercial grade steel W25 wiped zinc finish. |
| | (a) | Frames: 1.5 mm (16 U.S. std. ga.) base thickness steel. |
| | (b) | Floor anchors, channel spreaders and wall anchors: minimum 1.5 mm (16 ga.) base thickness steel. |
| | (c) | Guard boxes: minimum 0.8 mm (22 ga.) base thickness steel. |
| | (d) | Glazing stops: minimum 1.0 mm base thickness steel, screw fixed tamperproof (19 ga.) |
| | (e) | Hardware reinforcing: 6 mm (1/4") steel plate. |

- .2 Reinforcing channel: 100 x 40 mm (C4 x 6.25).
 - .3 Door bumpers: black neoprene double stud
 - .4 Primer: to CGSB 1-GP.
 - .5 Anchors: Wire "T" masonry or welded in UL type.
- 2.3 Materials-Steel Doors**
- .1 Interior Door Skins:
Sheet Steel: 1.2 mm (18 ga.) base thickness, commercial grade steel with wiped zinc finish, interior doors.
 - .2 Glazing and panel stops: minimum 1 mm (19 ga.) base thickness sheet steel with wiped zinc finish; tamperproof, screw fixed.
 - .3 Door Cores:
 - a) Interior Non-Insulated Doors: Honeycomb structural core consisting of kraft paper having 20 mm (3/4" max.) cell size to thickness indicated, pressure-laminated to face sheets
 - .4 Top and bottom channels: 1.5 mm (16 ga.) galv. steel channels.
 - .5 Reinforcing: hinges, 5 mm (6ga.): Lock and flush bolt 3 mm (10 ga.); surface hardware 1.5 mm (16 ga.)
 - .6 Primer: for touch up to CGSB 1-GP.
- 2.4 Fabrication-Frames**
- .1 Form profiles accurately to approved shop drawings, free of kinks, twists and warps.
 - .2 Cut mitres and joints accurately and weld continuously on inside of frame profile. Where site welding or splicing is required due to size of unit, location of field joints shall be shown on Shop Drawings and strictly adhered to; avoid field welding where possible.
 - .3 Grind welded corners and joints to flat plane, fill with metallic paste filler and sand to uniform smooth finish.
 - .4 Mortice, reinforce, drill and tap frames to receive templated strikes, butt hinges, and continuous piano hinges; check Hardware Schedule for requirements. Manufacturer to make allowance for morticed hardware.
 - .5 Weld guard boxes to frame at all strikes, hinges and concealed closers to completely enclose same.

- .6 Install stiffener plates or spreaders between frame trim where required to prevent bending of trim and to maintain alignment when setting and during adjacent construction work.
 - .7 Provide 1.5 mm (1/16") clearance at head and jambs, and no more than 9mm (3/8") at floor. Provide clearance for intended finish flooring. Locate top hinges with top 125 mm (5") below door top, bottom hinges with bottom 250 mm (10") from floor, and intermediate hinges equi-distant between top and bottom hinges.
 - .8 Provide adjustable "T" anchors or welded in UL type anchors for each jamb at approximately 600 mm (2'-0") centres. Provide floor anchors on frames that terminate at finished floor. Provide jamb extension anchorage on frames that terminate at slab.
 - .9 Provide two welded-in channel or angle spreaders per door frame at bottom to ensure frame alignment.
 - .10 Reinforce head of frames over 1200 mm (4') in width. Reinforce jambs of frames over 2400 mm (8') in height or where frame heads are unsupported by adjacent material; install reinforcing continuous from floor to structure above.
 - .11 Install 3 bumpers on strike jamb for each single door and 2 bumpers at head for pairs of doors.
 - .12 Construct thermally broken frames with continuous polyvinylchloride thermal breaks between inner and outer portions of frame.
 - .13 Provide glazing stops in all areas requiring glass or panels, as indicated; stops to be on interior side of exterior frames.
 - .14 All frames shall be bonderized and receive one coat of baked on rust inhibitive primer.
 - .15 Install all glass with isolation and glazing tapes to suit, included any and all related fabrication techniques or accessories required to achieve specified fire-resistance ratings.
- 2.5 Fabrication-Doors**
- .1 Doors shall be of hollow metal construction reinforced and stiffened with sound deadening kraft honeycomb, or rigid polyurethane insulation cores. Laminate core to both inside faces of the panels.

- .2 Doors shall be flush with no face seams. Doors shall have vertical mechanically interlocking seams.

18 gauge interior doors shall be welded at 6" centres minimum and seam filled on both hinge and lock edges.
 - .3 Mortice, reinforce, drill and tap doors and reinforcements to receive hardware using templates provided by Finish Hardware supplier. Manufacturer to make allowance for morticed hardware.
 - .4 Make provision for glazing as indicated and provide necessary glazing stops. Stops on interior side of exterior doors.
 - .5 Doors shall be cleaned and sanded, given a coat of air drying past filler, again sanded to eliminate all unevenness or irregularities and given a baked on coat of rust-inhibitive primer.
 - .6 Install all glass in doors with isolation and glazing tapes to suit, included any and all related fabrication techniques or accessories required to achieve specified fire-resistance ratings.
- 2.6 Fire-Rated Doors, Door Frames, and Window Frames**
- .1 Fabricate fire rated doors and frames in accordance with details and approved Shop Drawings; materials and fabrication shall conform to the requirements of NFPA-80.
 - .2 Glazing stops, anchor types and fastening shall conform to NFPA-80. Install all glass with isolation and glazing tapes to suit, included any and all related fabrication techniques or accessories required to achieve specified fire-resistance ratings.
 - .3 Attach ULC Labels to doors and frames with permanent fasteners.

PART 3 - EXECUTION

- 3.1 Frames**
- .1 Set frames plumb, square, level and at correct elevation.
 - .2 Secure frames and screens to floor construction with two

fasteners at each jamb, and set and brace them securely to maintain true alignment until built-in.

- .3 Install temporary horizontal wood spreaders at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built in.
 - .4 Make allowance for deflection to ensure structural loads are not transmitted to frames.
 - .5 Install labeled fire rated frames with anchorage as required by NFPA-80.
- 3.2 Doors**
- .1 Install hollow metal doors complete with hinges as supplied under the work of Section 08710.
 - .2 Install doors only when work has progressed to a stage when no damage will occur to them in place.
- 3.3 Adjusting and Cleaning**
- .1 Hang doors to swing easily and freely on their hinges, to remain stationary in any position and to close tightly and evenly on frames without binding.
 - .2 Refinish damaged and defective work before completion of project. Refinishing of exposed surfaces shall show no discernible variation in appearance.

END OF SECTION 08100

PART 1 - GENERAL

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| 1.1 Description of Work | .1 | All Finish Hardware [related to doors throughout] is to include [without strict limitation to] the following: <ul style="list-style-type: none">a) Hardware for all hinged man doors (butt hinges, adjustable piano hinges, closers, locks and latches, bolts, panic bars, kick plates, pulls etc.)b) Mortised hardware (where specified)c) Door stops in floor or wall types as required.d) Metal thresholds, sweeps, weather-stripping. |
| 1.2 Preparation | .1 | Supply of Finish Hardware is to be as per attached Appendix containing "Finish Hardware Schedule". |
| | .2 | Installation of the above noted Finish Hardware to be done by a certified hardware installer. Installation by General Contractor will not be permitted. |
| 1.3 Related Work | .1 | Finish Carpentry: Section 06200 |
| | .2 | Steel Doors and Frames: Section 08100 |
| | .3 | Architectural Woodwork: Section 06400 |
| 1.4 Requirements of Regulatory Agencies | .1 | All Hardware on fire rated doors and frames to conform to requirements of NFPA-80 and to bear ULC label. |
| 1.5 Qualification | .1 | Personnel who will be responsible for scheduling detailing, ordering, and coordination hardware for this project, shall be experienced hardware consultants. Regular membership in the American Society of Architectural Hardware Consultants is acceptable evidence of such experience. |
| 1.6 Coordination | .1 | The finish hardware contract shall be the responsibility of hardware supplier to request shop drawings from related trades for coordinating. |
| | .2 | Before supplying materials, ensure by check of drawings, shop drawings and details prepared for the Project, that listed hardware is suitable by dimension and function for intended purposes. |

- .3 Work of this Section shall include assistance and supervision of installation when requested, and as otherwise provided by the supplier, to ensure correct installation. After installation of all hardware and before building is accepted, the Contractor shall request the hardware supplier to inspect the installations and certify that the hardware is properly installed in accordance with the manufacturer's recommendations. The guarantee, as published by each manufacturer, will begin when the Owner accepts the building.

1.7 Submittals

- .1 Hardware Supplier to prepare required submittals of product noted in Appendix "A" with cut-sheets of all items as per Section 01340.

1.8 Delivery and Storage

- .1 Receive and check all hardware from supplier. Protect from pilferage at all times.
- .2 Store finishing hardware in locked, clean and dry area.
- .3 Package each item of hardware, including fastenings, separately or in like groups of hardware. Label each package as to item, definition and location.

PART 2 - PRODUCTS**2.1 Material**

- .1 Products shall be as noted in accompanying 'Hardware Schedule'.
- .2 Supply with specified hardware screws, bolts, expansion shields, inserts, and other items and parts required for complete installation and function.

2.2 Manufacturers

- .1 Refer to accompanying "Hardware Schedule".

2.3 Keying

- .1 Refer to accompanying "Hardware Schedule".

PART 3 - EXECUTION

- All items to be installed in full accordance with manufacturers' recommendations for the intended application relative to the door types noted on the Architectural drawings.

END OF SECTION 08710

PART 1 - GENERAL

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| 1.1 General | .1 Division One (01000 series specifications) General requirements, is part of this Section and shall apply as if repeated here. | |
| 1.2 Description of Work | The work shall consist of the following but not limited to: | |
| | .1 Single pane glass (in varying types specified herein) at interior doors, frames, glazing screens etc. (in varying frame types as shown on the drawings). Ensure provision of fire-rated and/or safety glass in areas specified herein, on Architectural drawings and/or on Door, Frame and Glazing Screen Schedules. | |
| 1.3 Related Work | .1 Final Cleaning | Section 01710 |
| | .2 Demolition | Section 02100 |
| | .3 Rough Carpentry | Section 06101 |
| | .4 Finished Carpentry | Section 06200 |
| | .5 Fire Stopping & Smoke Seals | Section 07270 |
| | .6 Aluminum Composite Panels | Section 07420 |
| | .7 Sealants | Section 07900 |
| | .8 Steel Door Frames & Glazing Screens | Section 08100 |
| | .9 Aluminum Curtain Wall & Doors | Section 08150 |
| | .10 Metal Louvres | Section 10700 |
| 1.4 Dimensions | .1 The Contractor shall carefully check all frames and openings to be glazed in the field to determine all opening sizes; do not cut the glass until dimensions have been site-verified. | |
| 1.5 Glass Breakage | .1 The Contractor shall be responsible for all glass broken or unsuitable because of faulty setting or manufacturer's errors or product failure Glass broken by others shall be replaced by the glazing sub-contractor. | |
| 1.6 Environmental Conditions | .1 Glaze with compounds, sealants or tapes only when glazing surfaces are at temperatures over 45°F (7.5°C), and when positive that no moisture is accumulating on them from frost, rain, mist, or condensation. | |
| 1.7 Glass Design | .1 This contractor shall be responsible for proper glass thickness, design and type as required by all prevailing Codes and mandated legislations. Report any such discrepancies in glass design, type and thickness immediately to the Architect during tendering. | |

- .2 Glass types, sizes and locations to be as shown on Architectural drawings and all related door, frame, window and glazing Schedules as applicable.

PART 2 - PRODUCTS

2.1 Glass Materials

- .1 Polished float glass to CAN2-12.3M and amendments; glazing "A" quality, thickness and tint as indicated. Units to be tempered, laminated where specified or where required by the O.B.C.
- .2 Sealant compound: multicomponent, chemical curing to CAN2-19.24 M80 type 2, class A, black colour.
- .3 Glazing tape for non-rated applications: pre-formed butyl tape, Tremco 440 black colour, 5mm thick x 10mm wide.
- .4 Glazing tape for fire-rated glass: must be PVC, 3mm thick x 12 mm wide
- .5 Setting blocks: neoprene, Shore "A" durometer hardness 80, 75mm long x 2.4mm thick x 5mm high.
- .6 Spacer shims: neoprene, Shore "A" durometer hardness 70, 75mm long x 2.4mm thick x 5mm high.
- .7 Primer-sealers and cleaners: to glass manufacture's standard.
- .8 Low-E solar rejection film shall be as specified, applied to surfaces noted.

2.2 Fabrication

.1 GLASS at INTERIOR DOORS and GLAZING SCREENS:

Standard Applications:

Single pane glass at interior doors, sidelights and glazing screens (denoted on drawings as 'gl.' and/or 'glass') is to be clear 6mm min. thick glass throughout as noted:

- clear tempered impact-resistant glass in all panes below 7'-2" a.f.f
- clear float glass in all panes above 7'-2" a.f.f.

Fire-Rated Applications:

Fire-rated glass in doors, sidelights, transoms, glazing screens and related applications (denoted on the Schedule and/or drawings as 'F.R.GL.' and/or 'fire-rated glass') is to be selected by the glazing trade (from the material options below or approved alternate materials) in the appropriate thickness and material type required to accommodate the glass sizes and fire-protection ratings shown on Drawings and/or as indicated on the Schedules. [NOTE: Re-design of the frames and/or reduction of glass unit sizes specified to attain required ratings will not be permitted. -rated and

labelled throughout].

All fire-rated glass is to be impact safety-rated throughout without the use of surface-applied films. Impact resistance is to be achieved either by use of tempering or laminating.

Product options include:

- Vetrotech 'Keralite Select Laminated Safety Glass', fire-rated impact-safety ceramic glass, 8 mm thick as manufactured by Saint-Gobain; ensure glass is labeled to minimum fire-rating as indicated on drawings
- or*
- Pyran 'Platinum L' fire-rated impact-safety ceramic glass, 8 mm thick as manufactured by Schott AG; ensure glass is labeled to minimum fire-rating as indicated on drawings
- or*
- Vetrotech 'Contraflam' fire-rated impact-resistant glass (annealed glass laminated to intumescent inter-layers) as manufactured by Saint-Gobain; ensure glass is labeled to minimum fire-rating as indicated on drawings

Fire-rated glass material selection is to be determined by the Glazing Trade from the noted options [or from approved alternates] and is to be suited to the required fire-protection rating level (and to and the glazing sizes) shown on the Drawings and related Schedules. Select glass type to ensure that the finished door assembly (with related door, sidelights, and transoms) and/or the assembled glazing screen (as applicable) can be certified (labeled) to the specified fire-protection rating according to recognized Canadian Testing authorities/agencies having jurisdiction.

Note that acceptable glass options include materials that provide both fire-protection and impact safety. Non-impact resistant fire-rated glass products will not be accepted.

Ensure that all installed panes of impact-protection fire-rated glass are duly labeled (with a permanent etching) to provide Manufacturer's Name, Product Name, UL or ULC mark, indication of fire-resistance rating/duration in minutes and/or any alternate information required by Code.

PART 3 - EXECUTION

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| 3.1 Examination | <ul style="list-style-type: none">.1 All wood and steel shall be properly primed by others before glazing, and primer must be hard and dry. All openings must be free from moisture, frost, rust, dirt, plaster, cement, oil or grease..2 The Glazing sub-contractor shall examine all openings to be glazed and shall report any conditions which may affect the work of this trade before commencing. Commencement of work will be construed as an acceptance of existing conditions. |
| 3.2 Installation of Interior Glazing | <ul style="list-style-type: none">.1 Remove protective coatings and clean contact surfaces with Interior solvent and wipe dry. Apply primer-sealer to contact surfaces..2 Glazing compound shall be neatly run in straight line paralleled with glazing rebate. Corners shall be carefully made..3 All glass shall be back and face bedded in glazing compound with 3mm (1/8") clearance on all sides. Glass shall be set on setting blocks as required, with equal bearing on the entire width of plane. Convex side of glass shall be on exterior..4 Insert spacer shims to centre glass in space. Place shims at 100mm o.c. Keep 6mm below sight line..5 Install removable stops, without displacing tape or sealant..6 Apply cap bead of sealant, at exterior void, in a uniform and Level line, flush with sight line, tooled or wiped with solvent to smooth appearance. |
| 3.3 Thermal Glazing Installation | <ul style="list-style-type: none">.1 Accurately measure glass openings and calculate glass size based on manufacturer's installation tables allowing for proper edge engagement, rabbet width, rabbet depth, tolerances for expansion and contraction etc..2 Before glazing, verify openings to see that they are square, plumb, and in true planes. If found otherwise, do not proceed with glazing until proper corrections are made. |

- .3 Set hermetically sealed insulated glass units on setting blocks placed at $\frac{1}{4}$ points from each corner of glass.
 - .4 Dry glaze by means of EPDM gaskets on interior and preformed glazing tape with built-in shim on exterior.
- 3.4 Cleaning
- .1 Immediately remove all excess sealant and compound and droppings from finished surfaces.
 - .2 Clean all glass prior to handover to Owner, ensuring it is clear of surface soiling and debris of any sort.

END OF SECTION 08800

PART 1 - GENERAL

1.1	Description of Work	The general scope of work shall include, but not be limited to the following:		
		.1	All gypsum wall board, cement board, steel studwork, steel furring and framing etc. throughout the building interior and exterior.	
		.2	Supply and installation of all sound and fire insulation materials at interior building assemblies.	
1.2	Related Work	.1	Steel Doors and Frames	Section 08100
		.2	Mechanical	Section 15000
		.3	Finish Carpentry	Section 06200
		.4	Acoustical Ceilings	Section 09130
		.5	Painting & Decorating	Section 09900
		.6	Structural Steel Stud	Section 09110
1.3	Product Handling	.1	Store product in protected dry areas. Store gypsum board lying flat in piles with edges protected.	
		.2	Ensure that metal members are not bent, dented, or otherwise deformed.	
		.3	Deliver products supplied under the work of this Section only to those who are responsible for installation, to the place they direct, and to meet installation schedules.	
1.4	Environmental Conditions	.1	Install work only in areas closed and protected against weather, and maintained between 10 degrees C and 21 degrees C. In cold weather ensure that heat is introduced in sufficient time, before work commences, to bring surrounding materials up to these temperatures; and maintained until materials installed by this Section have cured.	
1.4	Environmental Conditions	.2	Provide adequate ventilation to carry off excess moisture during curing of joint compound and textured finishes.	

PART 2 - PRODUCTS

2.1 Materials

- .1 All materials to be supplied by Canadian Gypsum Company, Domtar or approved alternates.
- .2 Steel stud framing: to ASTM C645 formed from minimum 0.5mm (25 ga.) thickness hot-dipped galvanized steel sheet, meeting ASTM A525 and A568, for screw attachment of gypsum board. Knockout service holes at 450mm minimum o.c. Stud size to be as noted on the drawings.

Steel gauge of studs to be as noted above only as a minimum and shall be increased in gauge as required to suit job requirements. Select stud gauge to related wall heights utilizing one single stud for height of wall. Select stud gauge for bulkheads respective to length of bulkhead and any anchoring loads to be accommodated by the studs from glazing screens, doors and similar items.
- .3 Furring Channel: ASTM C645, 1.5mm (16 ga.) 32 x 22 mm (1 1/4" x 7/8") galvanized metal.
- .4 Corner bead: galvanized metal 32 mm (1 1/4") flange.
- .5 Edge trim: "J" or "L" profile galvanized metal, minimum 22 mm (7/8") flange.
- .6 Runner channels: meeting ASTM A525 and A568; 1.2 mm (18 ga.), 38 mm x 19 mm (1 1/2" x 3/4") galvanized metal.
- .7 Hanger wire: galvanized 4 mm (8 ga.).
- .8 Tie Wire: galvanized 1.2 mm (18 ga.)
Fasteners Type S Bugle head or as otherwise required, in lengths to suit application.
- .9 **General-Use Gypsum Wall Board (GWB) on Walls & Ceilings:**
Gypsum board on Interior Wall Surfaces above 8'-0" (2440 mm) above finished floor:
Product to be 15.9 mm (5/8") thick standard paper-faced gypsum board Type 'X' fire rated; 1200 mm (4') width sheets in lengths to suit tapered edges and square cut meeting CSA A82-27-M.

Gypsum Board on Interior Ceilings, Bulkheads, Underside of Stairs and general overhead applicaitons: use 5/8" thick gwb generally throughout with Type 'X' fire-resistance rating

Note: various ceilings on drawings may require 2 layers of 5/8" type X GWB to provide a 1-hour fire-resistance rating in accordance with SB-2 of the O.B.C.
- .10 **Abuse-Resistant Gypsum Wall Board (GWB):**
GWB on Interior Wall Surfaces below 8'-0" (2440 mm) above finished floor:
Product to be 5/8" thick Georgia-Pacific 'Dens Armor Plus

Abuse Resistant Interior Panels' with moisture-resistant core faced in coated fibre-glass matt. Product inherently meets type 'X' fire-rating requirements. Board widths to be 4'-0" x longest practical lengths to suit.

.11 Moisture-Resistant GWB for Ceilings:

Moisture-resistant gypsum wall board to be used on ceilings in the following rooms:

- 156B Shower
- 156C Change Area & B.F. Washroom
- 158B Shower
- 158C Change Area & B.F. Washroom

Acceptable product to be 5/8" thick CGC 'Sheetrock Brand Mold Tough Fire Code' board with moisture and mould-resistant cores & facing paper all c/w integral fire-resistance rating.

.12 Joint tape: perforated paper; 50 mm (2") width.

.13 Joint filler compound: to ASTM C474.67, ready-to-use; all purposed, for base coats, special topping grade for final coat.

.14 Vapour Barrier 0.25 mm (6 mil) polyethylene sheet.

.15 VOC content of all adhesives and sealants used shall be as per limits specified in Section 01359.

PART 3 - EXECUTION

3.1 Examination

.1 The installing sub-contractor shall examine all ceilings and wall surfaces to which his work is attached; report to the Contractor, in writing, any defects of work prepared by other trades and unsatisfactory site conditions.

.2 Before work of this Section commences ensure that services have been installed, tested, and approved by relevant jurisdictional authorities, that conduit, pipes, cables, and outlet are plugged, capped, or covered; and that fastenings and supports installed by others are in place. Do not permit work of others to touch the back of wallboard.

3.2 Installation

.1 Framing and furring shown on Drawings is indicative but do not regard it as exact or complete. Construct work to provide adequate strength to withstand stresses imposed by use and application conditions without distortion. Maintain dimensions indicated on Drawings and execute work in accordance with regulations governing fire rated assemblies and separations.

Ensure that all gwb panels/panel types are installed and finished in full accordance with panel manufacturer's recommendations, notwithstanding notations to the contrary herein. Use all manufacturer recommended fasteners, joint tapes, joint compounds, application products and installation techniques suited to the intended application.

- .2 Erect supporting and finish materials to dimensions indicated on Drawings; plumb, level, straight, and square to adjoining elements. Install work within 3 mm (1/8") of dimensioned location unless otherwise approved, flat to a tolerance of 1:1000 (1/8" in 10.0") overall and 1.5 mm (1/16") maximum in any 300 mm (1.0").
 - .3 Do not support the work of this Section from, nor make attachment to: ducts, pipes, conduit, or the support framing of the work of other sections.
 - .4 Do not apply gypsum board in close proximity to hot pipes or heating ducts.
 - .5 Install materials with the minimum of joints. Tightly butt joints, without force, and neatly align them.
 - .6 Provide clearances required at mechanical and electrical services, such as grilles, diffusers, access panel, and lighting fixtures only after verification of requirements in each case.
 - .7 Provide freedom for deflection under beams and structural slabs.
 - .8 Do not use or install metal framing, trim, or accessories which have bent or otherwise deformed.
- 3.3 Installation:
Steel studs and
Wall Furring**
- .1 Install steel stud and wall furring as specified and/or as otherwise required for fire rated separations or protection.
 - .2 Align partition tracks plumb and level at ceiling or bulkheads as shown on the drawings, secure at 600 mm o.c. (2'-0") maximum.
 - .3 Place studs in tracks vertically at 400 mm (16") o.c. and not more than 50 mm (2") from abutting walls, and at each side of openings. Cross brace steel studs or add horizontal stiffeners as required to provide rigid installation to manufacturer's instructions.
 - .4 Attach studs to bottom and ceiling track using screws. No crimping allowed.
 - .5 Coordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
 - .6 Coordinated erection of studs with installation of doors and

special supports or anchorage for work specified in other Sections.

- .7 Erect studs for fascia in similar manner.
 - .8 Install wall furring for gypsum board wall finished at 400 mm (16") o.c.; install furring for other material as indicated nest channels 200 mm (8") at splices.
 - .9 Furr duct shafts, beams, columns, pipes and exposed serviced where indicated. Provide access doors at clean outs and fire dampers.
- 3.4 Installation:
Gypsum Bd.
Ceiling Framing**
- .1 Erect hangers, runner and furring channels for suspended gypsum board ceiling as specified or as otherwise required to provide fire rated ceilings separation or protection.
 - .2 Anchor hangers to structure.
 - .3 Space hangers for runner channels to suite structure, to support ceiling load, at a maximum distance of 1,200 mm o.c., and at no greater distance than 150 mm (6") from ends of runner channel. Bend rod hangers securely in place with saddle ties.
 - .4 Install runner channels at 1200 mm (4'-0") o.c., generally, and at no greater distance than 150 mm (6") from terminations of supported cross furring members or adjacent walls. Provide 25 mm (1") clearance between runners and abutting walls and partitions.
 - .5 Splice runner channels by lapping at least 300 mm (12") with interlocking flanges and wired at each end with two loops. Splice only where unavoidable. Do not bunch or line up spliced.
 - .6 Install cross furring at 600 mm (24") o.c., no closer than 25 mm (1") and at no greater distance than 150 mm (6"), from walls, openings, breaks in continuity of ceiling, and changes of direction. Space furring in all cases to suite incorporated services, and so as to avoid contact with perimeter walls, span furring channels no greater than 1200 mm (4'-0"); use metal studs for greater spans as approved by Architect.
 - .7 Secure cross furring to supports with double loops of tie wire or approved equivalent attachment. Splice by nesting and tying together within 200 mm (8") overlap.
 - .8 Frame perimeter of openings for access panels, light fixtures, diffusers, grilles, etc. with furring channels to maintain integrity of framing.
 - .9 Furr for gypsum board faced vertical bulkheads within or at termination of ceilings.

- .10 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .11 Erect entire hanger and suspension system to adequately support the ceiling assembly, including services incorporated, with a maximum deflection of 1/360 in the span of each component member, and free from horizontal movement. Install work level to tolerance of 1:1200 (1/8" in 12'-6").
- 3.5 **Installation:
Gypsum Board Panels**
 - .1 Install gypsum board wall and ceiling finishes in gypsum panel type and thicknesses indicated and/or as otherwise required to provide required fire-rated separations, ratings or protection.
 - .2 Apply wallboard with long dimension perpendicular to supports. Back all joints with framing member.
 - .3 Install wallboard in maximum lengths and widths to minimize joints, and never in lengths of under 1800 mm (6'-0"). Stagger end joints where they are unavoidable. Locate joints in soffits where least prominently discerned.
 - .4 Form neat joints at mill ends and at field cut edges of wallboard panels. Cut paper on face with a knife. Smooth by sanding and rubbing edges together.
 - .5 Fasten wallboard to metal support members by sheet metal screws no closer than 9 mm (3/8") to, and no farther than 12.5 mm (1/2") from, centre of joints, and at 300 mm (12") maximum o.c. at edges and on intermediate supports. Where two layers of wallboard are used, screw outer layer through inner to metal framing.
 - .6 Finish all exposed edges of wall board panels, or where gypsum board butts against a surface having no trim concealing its juncture, with appropriate metal trim, Erect plumb or level with minimum joints. Where trim abuts block or brick walls, the joint shall be carefully caulked to overcome irregularities in the masonry wall.
 - .7 At external corners install corner beads secure through wallboard, to framing at 150 mm (6") o.c. on alternate flanges.
 - .8 Ensure that all gwb reveals are installed level and true throughout and are compounded in place, flush with surrounding gwb faces. Ensure that joints between adjacent reveals are seamed imperceptibly.
- 3.6 **Taping and
and Filling**
 - .1 Fill joints between boards, at edge trim and corner beads, all screw holes and depressions on wallboard surfaces exposed to view to provide smooth seamless surfaces and square neat corners. Use jointing compounds and reinforcing tapes in conformance with manufacturer's specifications.

Ensure that wall board is tight against framing members, fasteners are properly depressed, and adhesives have sufficiently cured.

- .2 Fill at joints by three-coat method:
 - (a) Embed reinforcing tape in a cover of joint filler.
 - (b) Apply level coat of joint filler when cover coat has dried.
 - (c) Apply skim coat of topping cement when level coat has dried.
 - .3 At beveled joints: apply cover coat 178 mm (7") wide, level coat 254 mm (10") wide, and skim coat 300 mm (12") wide.
 - .4 At end joints, and butt joints formed at cut edges of wallboard: apply cover coat 356 mm (14") wide level coat 508 mm (20") wide, and skim coat 600 mm (24") wide. Camber treatment over end joints to 0080 mm (1/32") thick.
 - .5 At Internal Corners: first fill gaps between boards with joint filler. Embed creased reinforcing tape in a thin coat of joint filler applied 52 mm (2") wide at each side of corner. Apply cover coat as specified for beveled joints. Apply skim coat (as specified for beveled joints) to just one side of joint, and when dry apply skim coat to other side.
 - .6 At External Corners: fill to nose of corner bead with joint filler and topping cement as specified for beveled joints.
 - .7 At edge trim: as specified for beveled joints.
 - .8 At screws and heads: fill holes and depressions with a two coat application of joint filler so as to be invisible after painting is complete.
 - .9 At control joints: as specified for beveled joints both sides. Do not fill control joint.
 - .10 Feather edges of compounds into surfaces of wallboards. After skim coat has dried for at least 24 hours sand lightly to leave smooth for decoration. Do not sand paper face of wallboard.
 - .11 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for painting.
 - .12 Cement Board Finishing: wherever cement board is used as a ceiling finish, supply and install fiberglass mesh and cementitious plaster skim coat(s) as required to provide a smooth consistent surface, suitable for painting and resistant to moisture and vapour from showers, cooking equipment and/or any other fixtures, equipment items etc.
- 3.7 Patching and Cleaning
- .1 Remove droppings and excess joint compound from work before it sets.

- .2 Vacuum clean working areas at the end of each day to reduce traffic of gypsum dust through other areas.
 - .3 Make good to cut-outs for services and other work. Fill in defective joints, holes and other depression with joint compound; ensure that surfaces are smooth, evenly textured and within specified tolerances to receive finish treatments.
 - .4 Clean off beads, casings and other metal trim, and leave all surfaces ready for specified finishes.
- 3.8 Protection**
- .1 Provide adequate protection of materials and work of this section from damage by weather and other causes. Protect other work from damage resulting from work of this section.
 - .2 Any damage caused to work of this section shall be repaired by this section at this sections expense to the satisfaction of the Architect.

END OF SECTION 09111

PART 1 - GENERAL

- A. The scope of work covered herein includes ceiling-hung acoustic baffles/acoustic panels [supplied in pre-made 'cloud' assemblies] in quantities, arrangements and locations as shown on Architectural Drawings [in Fitness Centre Track Level 155].
- B. The General Conditions and the requirements of Division 1 of the specifications shall apply to all work hereunder.
- C. All work shall be performed in accordance with the manufacturer's instructions, and in a manner satisfactory to the Architect.

1.01 SCOPE

- A. The specified product manufacturers shall furnish all acoustic panel products and assemblies necessary to complete installation by the contractor, in accordance with plans and specifications, including manufacturer-supplied hanging clips/cleats at the back of the panels and related accessories.

1.02 QUALITY ASSURANCE

- A. Installer Qualifications: The installer shall be a firm with a minimum of two (2) years of successful experience in installation of products with similar requirements to this project. The installer shall be acceptable to the architect, manufacturer, and owner's representative.
- B. Fire Performance Characteristics: Products are to conform to ASTM E84 Class A and CAN/UL-S102.2-10

1.04 PROJECT CONDITIONS

- A. Installation shall be done only when the temperature and humidity closely approximate the interior conditions that will exist when the building is occupied. The heating and cooling systems shall be operating before, during, and after installation, with the humidity of the interior spaces maintained between 25% and 55%, temperature between 60 to 90 degrees F.
- B. It is important that area have proper ventilation, especially in high moisture areas. There shall be no excessive build up of heat in the space.
- C. Prior to the start of installation, all exterior windows and doors are to be in place, glazed, and weather-stripped. The roof is to be watertight, and all wet trades' work is to be completed, and thoroughly dry.

- D. Mechanical, electrical, and other utility service installations affecting the work shall have been completed. No materials should rest or wrap around, the wall suspension components.

1.05 COORDINATION OF WORK

- A. The layout and installation of all Acoustical Ceiling Baffles shall be coordinated with other work penetrating the finished panels including all trades and divisions related to the ceiling assembly, ceiling finishing, integration of mechanical and electrical items etc., and all related construction considerations in the subject areas.

1.06 SUBMITTALS

- A. Product Data: Panel manufacturer shall provide product specifications and installation instructions for all items being supplied as a part of this division.
- B. Shop Drawings: Panel manufacturer shall supply shop drawings showing Acoustic Panel sizes and locations, and other details deemed pertinent to proper installation. Shop drawings are to be submitted to the Architect for review and approval prior to production.
- C. Samples: A 12" (305mm) wide x 12" (305mm) long sample of panel material and colour, shall be submitted to the Architect for approval prior to production.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Ceiling-hung acoustical baffle assemblies shall be delivered to the project site in original, unopened packages.
- B. Acoustic panels shall be stored in a fully enclosed space, environmentally controlled to panel-manufacturer recommendations for the intended application.
- C. Care in handling must be exercised to avoid damage to any panel surfaces.

1.08 WARRANTIES

- A. Manufacturer' Warranty: All materials supplied by the Wall Panel manufacturer shall be guaranteed against manufacturing defects for one (1) year. Because of differing site conditions, wood stains and colorings can vary with age, and are excluded from this warranty.
- B. Contractor's Warranty: All work shall be guaranteed for one (1) year from final acceptance of completed work.

PART 2 - PRODUCT**2.01 CEILING-HUNG ACOUSTIC BAFFLES PANELS****A. Ceiling-Hung Acoustic Baffles in Fitness Centre 155 [Track Level]:**

Ceiling-Hung Acoustic Baffle Panels to be:

- **Akustus 'Aero Baffle' pre-made clouds/assemblies with each assembly measuring 2240 mm x 2745mm [96.1" x 108.1"]**. **Product number to be # AER-BF=CDx-277-244**; each cloud to have 11.8" high acoustic felt baffle panels at 11.8" on centre [equating to 9 panels per cloud]; baffle panels to be 24mm thick c/w 'filleted' edges throughout; system to be supplied complete with all hardware required for a complete installation including [without strict limitation to]: airline suspension cables, aluminum spacing channel [running perpendicular to panels], channel splicers to connect clouds in a single run, ceiling-mounted cable couplers, cable connectors at top of aluminum spacing channel etc. Manufacturer to select suspension hardware components and locations suited to the intended application. Ensure cable lengths permit mounting of clouds at height specified on Architectural drawings.

24mm thick Acoustic baffle panels to be non-combustible 100% polyester felted fibre in colour:

Warm Grey SP-76

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Acoustic Baffle Layout: Prior to manufacture, field dimensions shall be taken as required to verify production sizes of baffle clouds relative to site conditions and the Architects design intent shown on the Architectural drawings. The contractor shall measure applicable areas prior to installation to confirm application and location of Panel handing components, in accordance with installation instructions.
- B. Coordination: The contractor shall coordinate with other trades the location of lighting, misc. ceiling-mounted devices and related items which will penetrate the cloud panels or interfere with the installation.

3.02 INSTALLATION

- A. General: The contractor shall install materials in accordance with product manufacturer's printed instructions and the intent shown on the architect's drawings. The installation shall comply with applicable regulations and manufacturer recommendations for the intended application.

- B. All items are to be hung plumb and level throughout. Link and align adjacent clouds in a single run. Ensure alignments of connections between clouds and that clouds are connected to provide consistent spacing of fins/panels in the finished installation.
- C. All panels shall be securely anchored to the hardware system and to the existing overhead roof or ceiling structure.
- D. All panels to be factory-cut with fillet [radiused] outside edge detail throughout.

3.03 ADJUSTMENT, CLEANING, and REPAIR

- A. The contractor shall make final adjustments as directed by the Architect for work not in conformance to requirements.
- B. Upon completion of installation, all ceiling baffle assemblies and surrounding ceiling surfaces shall be cleaned free of dirt, dust, grease, oils, fingerprints, adhesive and any other blemishes or visible irregularities
- C. All work which cannot be successfully cleaned or repaired (free of visible irregularities) shall be removed and replaced.

3.04 INSPECTION

- A. Upon completion of installation, the Architect shall inspect all finished surfaces to ensure that work has been performed in a manner satisfactory to the owner. Any deficiencies in the installed panels shall be corrected by the contractor at no additional cost to the Building Owner.

END OF SECTION

PART 1 - GENERAL

- A. The scope of work covered herein includes wall-mounted acoustic wall panels in quantities, arrangements and locations as shown on Architectural Drawings [in Gymnasium 159].
- B. The General Conditions and the requirements of Division 1 of the specifications shall apply to all work hereunder.
- C. All work shall be performed in accordance with the manufacturer's instructions, and in a manner satisfactory to the Architect.

1.01 SCOPE

- A. The specified product manufacturers shall furnish all acoustic panel products and assemblies necessary to complete installation by the contractor, in accordance with plans and specifications, including manufacturer-supplied hanging clips/cleats at the back of the panels and related accessories.

1.02 QUALITY ASSURANCE

- A. Installer Qualifications: The installer shall be a firm with a minimum of two (2) years of successful experience in installation of products with similar requirements to this project. The installer shall be acceptable to the architect, manufacturer, and owner's representative.
- B. Fire Performance Characteristics: Products are to conform to ASTM E84 Class A and CAN/UL-S102.2-10

1.04 PROJECT CONDITIONS

- A. Installation shall be done only when the temperature and humidity closely approximate the interior conditions that will exist when the building is occupied. The heating and cooling systems shall be operating before, during, and after installation, with the humidity of the interior spaces maintained between 25% and 55%, temperature between 60 to 90 degrees F.
- B. It is important that area have proper ventilation, especially in high moisture areas. There shall be no excessive build up of heat in the space.
- C. Prior to the start of installation, all exterior windows and doors are to be in place, glazed, and weather-stripped. The roof is to be watertight, and all wet trades' work is to be completed, and thoroughly dry.

- D. Mechanical, electrical, and other utility service installations behind the wall plane shall have been completed. No materials should rest or wrap around, the wall suspension components.

1.05 COORDINATION OF WORK

- A. The layout and installation of all acoustic panels shall be coordinated with other work penetrating the finished panels including all trades and divisions related to the wall assembly, wall finishing, integration of mechanical and electrical items etc., and all related construction considerations in the subject areas.

1.06 SUBMITTALS

- A. Product Data: Panel manufacturer shall provide product specifications and installation instructions for all items being supplied as a part of this division.
- B. Shop Drawings: Panel manufacturer shall supply shop drawings showing Acoustic Wall Panel sizes and locations, and other details deemed pertinent to proper installation. Shop drawings are to be submitted to the Architect for review and approval prior to production.
- C. Samples: A 12" (305mm) wide x 12" (305mm) long sample of panel material and fabric colours shall be submitted to the Architect for approval prior to production.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Acoustic wall panels [with all coordinating trims and mounting products] shall be delivered to the project site in original, unopened packages.
- B. Acoustic panels shall be stored in a fully enclosed space, environmentally controlled to panel-manufacturer recommendations for the intended application.
- C. Care in handling must be exercised to avoid damage to any panel surfaces.

1.08 WARRANTIES

- A. Manufacturer' Warranty: All materials supplied by the Wall Panel manufacturer shall be guaranteed against manufacturing defects for one (1) year. Because of differing site conditions, wood stains and colorings can vary with age, and are excluded from this warranty.
- B. Contractor's Warranty: All work shall be guaranteed for one (1) year from final acceptance of completed work.

PART 2 - PRODUCT**2.01 ACOUSTIC WALL PANELS****A. Acoustic Wall Panels at South Wall in Gym 159:**

Wall-mounted acoustic panels to be:

- **Artotfix 'Topaz' triangular impact-resistant tiles for Sports Facilities;**
Tiles to be modular-system equilateral triangles measuring 30" wide x 26" high x 1" deep. Finished product to meet ASTM-E-84 Class A and CAN/ULCS102.2 fire-resistance ratings. Tiles are to be fabric-wrapped rockwool [stonewool] core in the fabric types and colours noted. Tile installation pattern is to be manufacturer's TO-02 assembly as illustrated on Architectural drawings in the tile colours, quantities and locations as shown thereon.

Product is to be supplied complete with all manufacturer-supplied finishing trims [for tiles and plywood backing panels] as required for a finished installation. Trims to be clear anodized aluminum throughout.

All tiles are to be installed on 5/8" plywood [supplied and installed by Acoustical Panel trade] mechanically fastened into concrete block wall assembly behind. Ensure that plywood surfaces are flush and true to ensure consistency of finished acoustic panel installation.

All acoustic panels are to be hung in full accordance with the manufacturers recommendations for the intended application using manufacturer-recommended screws, installation techniques and accessories.

Fabric coverings to be Guilford-of-Maine 'Anchorage #2335' in colours noted below, in quantities and locations shown on Architectural drawings:

- White 2664
- Asteroid 2053
- Graphite 2079
- Onyx 2016
- Geranium 2084

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Layout: Prior to manufacture, field dimensions shall be taken as required to verify production sizes of finished assembly relative to site conditions and the design intent shown on the Architectural drawings. The contractor shall measure applicable areas prior to installation to confirm application and location of Panel handing components, in accordance with installation instructions. Ensure that panels are factory-cut wherever viable to suit site conditions. All tiles to be cut and fitted neatly to and around existing conditions [and/or obstructions] within and abutting the finished tile assembly.

- B. Coordination: The contractor shall coordinate with other trades the location of lighting, misc. ceiling-mounted devices and related items which will penetrate the cloud panels or interfere with the installation.

3.02 INSTALLATION

- A. General: The contractor shall install materials in accordance with product manufacturer's printed instructions and the intent shown on the architect's drawings. The installation shall comply with applicable regulations and manufacturer recommendations for the intended application.
- B. All items are to be mounted level and true throughout, ensuring alignments and tight fitting of individual tiles throughout.
- C. All panels shall be securely anchored to the plywood substrate using manufacturer-recommended screws, installation techniques and finishing accessories.
- D. At outside perimeter of tiled wall areas, supply and install clear aluminum edging trim on both the tiles and plywood backing board. Mitre outside corners of trims and ensure imperceptible seams where trims meet.

3.03 ADJUSTMENT, CLEANING, and REPAIR

- A. The contractor shall make final adjustments as directed by the Architect for work not in conformance to requirements.
- B. Upon completion of installation, all Acoustic Wall Panels and surrounding wall faces shall be cleaned free of dirt, dust, grease, oils, fingerprints, adhesive and any other blemishes or visible irregularities
- C. All work which cannot be successfully cleaned or repaired (free of visible irregularities) shall be removed and replaced.

3.04 INSPECTION

- A. Upon completion of installation, the Architect shall inspect all finished surfaces to ensure that work has been performed in a manner satisfactory to the owner. Any deficiencies in the installed panels shall be corrected by the contractor at no additional cost to the Building Owner.

END OF SECTION

PART 1 - GENERAL

- | | | | |
|-----|---------------------|---|---|
| 1.1 | General | Division One, General Requirements, is part of this section and shall apply as if repeated here. | |
| 1.2 | Description of Work | <p>Provide all labour, materials, and equipment required or called for in this specification, or which is necessary, to complete the work without any extra cost. This work may require any or all, but not be limited to the supply and install of the following:</p> <p>.1 Porcelain and ceramic tile finishes on floors, walls and all other locations noted on drawings.</p> <p>.2 Porcelain tile base as specified herein.</p> | |
| 1.3 | Related Work | <p>.1 Cast-in-Place Concrete</p> <p>.2 Resilient Flooring</p> <p>.3 Masonry</p> <p>.4 Steel Stud and Gypsum Board</p> <p>.5 Architectural Millwork</p> <p>.6 Carpeting</p> | <p>Section 03300</p> <p>Section 09660</p> <p>Section 04220</p> <p>Section 09111</p> <p>Section 06400</p> <p>Section 09680</p> |
| 1.4 | Samples | <p>.1 Submit at least 2 units of each tile, selected at random from stock, and typical base and corner accessories in accordance with Section 01340. All tile samples s are to be submitted to the Architect for approval prior to ordering.</p> <p>.2 Submit manufacturer's maintenance instructions in accordance with Section 01340.</p> <p>.3 Provide min. 10% of the quantity of each specified material, at least one each of base corner accessories; deliver extra stock in a sealed labeled package to owner at their direction.</p> | |

PART 2 - PRODUCTS

- | | | | |
|-----|------------------|----|---|
| 2.1 | Materials | .1 | <p><u>Porcelain Mosaic Tile [PMT]:</u>
 Porcelain mosaic floor tile is to be as noted below, in the locations shown on architectural drawings.</p> <p>PMT MIKI 'BEE BOX' 2" X 2" UNGLAZED HEXAGONAL PORCELAIN TILE #MBU2X002MIX [SUPPLIED IN PRE-MOUNTED 1 SQ. FT. SHEETS] IN COLOUR 'UNGLAZED MIX 2, SLATE GREY/CHARCOAL/BLACK'; PRODUCT TO BE AS SUPPLIED BY CENTURA</p> |
| | | .2 | <p><u>PORCELAIN TILE 1 [PT-1]:</u>
 Porcelain floor tile is to be as noted below, in the</p> |

locations and applications shown on the drawings.

PT-1 24" x 24" x 9.5mm THICK 'QUARRAZZO' PORCELAIN TILE
#QUNS24 IN COLOUR 'NIGHT SKY - MATTE FINISH' AS
DISTRIBUTED BY CENTURA

.3 PORCELAIN TILE 2 [PT-2]:

Porcelain wall tile is to be as noted below, in the locations and applications shown on the drawings.

PT-2 12" x 24" x 9.5mm THICK 'QUARRAZZO' PORCELAIN TILE
AS DISTRIBUTED BY CENTURA IN COLOUR SILVER
PEARL #QUSP1224, MATTE FINISH

.4 Ceramic Tile [CT-1]:

Ceramic wall tile is to be as noted below, in the locations and layouts as shown on the architectural drawings.

CT-1 40 cm x 120 cm x 6mm THICK 'MATERIKA' CERAMIC TILE
IN MATTE FINISH AS DISTRIBUTED BY STONETILE
INTERNATIONAL; COLOURS TO BE:

CT-1a: GRIGIO NAT

CT-1b: FANGO NAT

.5 Ceramic Tile [CT-2]:

Ceramic wall tile is to be as noted below, in the locations, coursing sizes and orientations as shown on the architectural drawings.

CT-2 7/8" X 5 5/8" X 9.5mm THICK CERAMIC FINGERS
[SUPPLIED IN 12" X 12" MESH-MOUNTED SHEETS] TO BE
'CONCAVE' MOSAIC AS SUPPLIED BY CENTURA IN
COLOUR 'WEATHERED GREY' AND PRODUCT
#BHTH02126

.7 TILE MORTARS/ADHESIVES:

Mortar formulations are to be in full accordance with each tile manufacturer's recommendations for the intended application and applicable substrate type. Tile trade is responsible to verify conformity of specifications herein to tile manufacturers' recommendations throughout.

Mortar formulations specified herein. Alternates from Mapei, Laticrete, Ardex or Flextile may also be considered.

Mortar at Porcelain and Ceramic Tile:

Mapei 'Kerabond/Keralastic' flexible 2-part mortar system [Kerabond premium dryset mortar with Keralastic acrylic latex additive]

.8 TILE GROUT:

All grout products and formulations are to be in full accordance with each tile manufacturer's recommendations acknowledging tile type, substrate material, required joint widths and the intended location/application. Tile trade is responsible to verify conformity of specifications herein to tile manufacturers'

recommendations throughout.

Grout colours and formulations specified herein are Mapei products. Alternates from Laticrete, Ardex or Flextile may also be considered.

Grout at all porcelain tile to be Mapei "Flexcolour CQ" pre-mixed stain-resistant grout in colours noted:

Grout Colours:

Grout Colour at PMT:	Mapei #107, Iron
Grout Colour at PT-1:	Mapei #47, Charcoal
Grout Colour at PT-2:	Mapei #104 Timberwolf
Grout Colour at CT-1:	Mapei #27, Silver
Grout Colour at CT-2:	Mapei #104 Timberwolf
Grout Colour at PTB:	Mapei #104 Timberwolf

.9 TRANSITION STRIPS & PROTECTION STRIPS at Porcelain Tile

Tile Edging strips to be as manufactured by Schluter Systems throughout. Flooring trade responsible to select and verify required profile depth against actual thicknesses of the tile products being specified. All strips to be installed in longest practical lengths throughout.

Edging profiles and colours respective to applications to be as follows:

Transition Strip at Installations of Porcelain Tile Flooring:

At all locations of porcelain floor tile meeting adjacent dissimilar floor finishes [of different thicknesses], supply and install Schluter RENO-TK-AE satin anodized aluminum transition strip [in adjoining depths to suit the intended application] in longest practical lengths throughout.

At all locations of porcelain floor tile meeting adjacent dissimilar floor finishes [of matching thicknesses], supply and install Schluter SCHIENE-AE satin anodized aluminum edge protection strip [in adjoining depths to suit the intended application] in longest practical lengths throughout.

.10 FLOOR/WALL SPECIALTY COVE STRIP:

At the juncture of PMT floors and CT-# wall tile and at juncture of PT-1 floors with PTB [porcelain tile base] supply and install Schluter DILEX-HK wall/floor transition strip with soft CPE cove in colour 'G Gray'. Product to be installed in longest practical material lengths c/w pre-moulded inside and outside corners in profile dimensions all as required to suit the intended application.

.11 TILE EDGING/FINISHING STRIPS:

Outside Corners of CWT-1, CWT-2 and PT-2:

At all outside wall corners of ceramic and/or porcelain wall tile installations, and/or where tiled wall faces terminate [against dissimilar wall finishes] supply and install Schluter-SCHIENE-AE clear anodized aluminum edging strip in depth to suit the intended application.

Top of PTB [Porcelain Tile Base]:

At all tops of porcelain tile base, supply and install Schluter-SCHIENE-AE clear anodized aluminum edging strip in depth to suit the intended application. Use longest practical lengths throughout.

- | | | |
|----------------|----|---|
| 2.2 Layout | .1 | Tile layouts, installation patterns, pattern orientations, and locations as per Architectural drawings, Room Finish Schedule and Colour/Finish Schedule throughout. |
|----------------|----|---|

PART 3 - EXECUTION

- | | | |
|----------------------|----|--|
| 3.1 Installation | .1 | All floor and wall tiles to be installed in full accordance with tile manufacturer's recommendations for intended application. |
| | .2 | Examine surfaces to which tile is to be applied to ensure that they are clear, sound and at appropriate levels and locations; report any discrepancies to Contractor before proceeding. |
| | .3 | Remove sub floor/substrates ridges and bumps. Fill low spots, cracks, joints, holes and other defects with appropriate subfloor filler. Grind down to even surface where necessary. |
| | .4 | Coordinate with the installation of adjacent differing flooring finishes to establish and provide appropriate joints and junctures between the two finishes. Make all joints straight and flush. |
| | .5 | Apply any patching or leveling base coats in accordance with best trade practice. |
| | .6 | Install tile edging and transition strips in full accordance with manufacturer's recommendations for the intended application; provide 45° mitre-cuts at 90° outside corners of tiled wall surfaces where required. |
| | .7 | <p><u>Mortar/Adhesive Installation and Tile Setting:</u></p> <p>All tile-setting mortars are to be installed in full accordance with adhesive manufacturer's recommendations for the intended application including trowel types and notch sizes, percentage of coverage on substrate and back of tile, and all related installation considerations [environmental conditions, substrate preparation application techniques, etc.] Immediately upon setting, ensure that all tiles are co-planar between one another to comprise a flat and consistent plane in the finished installation.</p> |

When setting tiles, use levels, leveling strings and leveling

lasers as required to ensure uniform, straight, and consistent tile lines. Lines between rows of tiles are to be parallel and/or perpendicular throughout (as applicable).

When setting tiles, use spacers to ensure continuity and consistency in tile joint widths throughout. Variation in joint widths shall not exceed $\frac{1}{4}$ of the joint dimension specified herein.

Immediately upon setting tiles, remove all excess (uncured) mortar from tile joints which might adversely affect the subsequent installation of grout.

in parallel joint widths/dimensions throughout. All joint lines to be level and plumb both horizontally and vertically throughout.

.8 Grout Widths at Ceramic Tile:

Grout widths at ceramic tile to be approx. $\frac{1}{8}$ - $\frac{3}{16}$ " wide throughout, but may be varied marginally to suit final installation dimensions.

Use tile setting spacers throughout as required to ensure tile alignments with no variations exceeding $\frac{1}{4}$ of the specified grout widths (typical).

.9 Grout installation:

- a) Do not disturb or grout tiles until the adhesive or dryset mortar is sufficiently cured.
- b) All joints must be clean and free from standing water, dust and foreign substances and tile-setting spacers.
- c) Surface temperatures must be raised and maintained at a recommended level of between 15°C (60°F) and 32° (90°F).
- d) Tile surfaces must be clean and dry. Clean as required.
- e) Remove excess mortar/adhesive from joints so that min. $\frac{2}{3}$ of the depth of the tile is available for grouting.
- f) Prepare and mix grout as per manufacturer's recommendations, to ensure uniformity and consistency in colour and quality.
- g) Pour the mix over the grouting surfaces.
- h) Use manufacturer's recommended float.
- i) Force grout into joints flush with the tile surface applying enough grout and pressure to fill joints free of voids and air pockets.
- j) Fill joints with a tooled profile.
- k) Remove excess grout from tile face, using a float at a 45 - 90° angle as a squeegee diagonally across tile face.
- l) Clean tiles after applying each unit of grout, to ensure no grout remains on tile face.

.10 Protect tiled surfaces from use or contact until tile mortar and grouting has adequately cured.

3.2 Cleaning

.1 Immediately remove any and all excess grout haze from tiled

surfaces. Wipe tile faces with a sponge and clean potable water (rinsed progressively) until no grout haze is left. Do not flood floor with excess water which may adversely affect grout setting and remove excess water with a clean dry sponge.

- .2 If any grout haze remains after tile grout is sufficiently set, remove haze with applicable grout haze sealer, as manufactured by Mapei or Miracle Sealants. Formulation of haze remover to be selected relative to the flooring products in question and degree of haze residue. All haze removers are to be utilized in full accordance with the manufacturer's recommendations for the intended application.
- .3 Clean all installed tile surfaces prior to hand-over to the building owner, ensuring removal of all construction-related dirt, grime and residue. Protect cleaned tile surfaces as required.

END OF SECTION 09315

PART 1 - GENERAL

1.1 Work Included	.1	Floating Portland Cement Terrazzo infill in all locations noted in the Contract Documents.	
	.2	Localized patch and repair of existing terrazzo flooring and coved terrazzo base where/as required by construction and related demolition, matching new terrazzo to surrounding existing terrazzo (to remain).	
1.2 Related Work	.1	Cast-in-Place Concrete	Section 03300
	.2	Masonry	Section 04220
	.3	Porcelain Tile	Section 09315
	.4	Resilient Tile Flooring	Section 09660
1.3 Requirements Regulatory Agencies	.1	All terrazzo must be installed in full accordance with the methods prescribed by the Terrazzo Tile and Marble Association of Canada, as outlined in their latest Specification and Installation Guides/manual.	
1.4 Quality Assurance	.1	Terrazzo Contractor must have a minimum of 5 years of experience in installations of equal or greater size than the scope of work required for this project. Experience must include installations of the terrazzo type specified for this project.	
1.5 References	.1	C.S.A.: Canadian Standards Association	
	.2	C.G.S.B.: Canadian General Standards Board	
	.3	N.S.C.: National Standards of Canada	
	.4	ANSI: American National Standards Institute	
	.5	T.T.M.A.C.: Terrazzo, Tile and Marble Association of Canada	

- | | | |
|---|----|--|
| 1.6 Samples | .1 | Submit two 300mm x 300mm (12" x 12 "control samples" of each terrazzo colour (once approved by the Architect), in accordance with Section 01340 prior to beginning work on-site. The Architect reserves the right to request up to 3 different samples per terrazzo colour, varying chips and matrix as requested prior to determining the approved "control sample" for each colour. Sample colours and properties as selected by the Architect. Approved "control samples" will be held by the Architect and the terrazzo applicators on site, and all work on site must conform to the control samples without exception. |
| | .2 | Submit manufacturer's maintenance instructions in accordance with Section 01340. |
| 1.7 Environmental | .1 | Maintain minimum heat 12 degrees C (54 degrees F) and not more than 21 degrees C (70 degrees F) for a period of seven days before, during and following installation. |
| 1.8 Qualifications | .1 | Application shall be by franchised approved applicators of the TTMAC only. |
| 1.9 Delivery, Storage and Handling | .1 | Deliver, store and handle products in a manner to avoid damage. Minimum temperature 15 degrees C (60 degrees F) to storage. |
| 1.10 Site Conditions | .1 | Examine the areas which the work of this section is to be located. |
| | .2 | Do not begin installation of any terrazzo until all improper site conditions have been rectified in accordance with the requirements of the Terrazzo Tile and Marble Association of Canada. |
| | .3 | Protect work during installation and protect finished corners exposed to construction operations and traffic. |
| 1.11 Maintenance | .1 | Provide data for maintenance of terrazzo flooring in accordance with Section 01730. |

PART 2 - PRODUCTS**2.1 MATERIALS****TERRAZZO (TZ):**

Product to be Floating Terrazzo in depths and thicknesses as noted in PART 3 herein and as noted in TTMAC manual.

Terrazzo Repair:

Localized terrazzo repair is required at various areas of demolition and related new construction. Approximate extent and locations is indicated on Architectural drawings, though actual extent may vary.

Colour of localized terrazzo patch and repair (chip colours, chip sizes, matrix colour) is to match abutting existing terrazzo colour(s) throughout as closely as possible.

Note that existing terrazzo [requiring repair] involves 2 [similar] colours: an existing field and an existing border/integral cove base. Both colours are affected by this scope of work.

Floating Terrazzo Materials:

- .1 Cement: Portland cement to CAN 3-A5-M77 Type 10
- .2 Sand: Sharp, screened sand: CAN 3-A23.1-M77. Sand colours to be as required to support Architect's specified grout/matrix colour.
- .3 Water: Clean drinkable water, free from oil, acids, alkali or organic matter.
- .4 Marble Chips: marble chips, a blend of sizes up to but not exceeding T.T.M.A.C. standard No. 3 chips size. Mix shall be defined by chip sizes and chip colours, specified in percentages as determined by the Architect. The Architect reserves the right to select any combination and colour of chips available from the full T.T.M.A.C. colour range, including both domestic and foreign chips.
- .5 Colour pigments: non-fading mineral pigments to British standard 1014. Number, degree and quantity of pigments to be as required to match Architect's supplied colour sample.
- .6 Reinforcing mesh: 50mm x 50mm No. 16 x No. 16, steel mesh, electrical welded, galvanized after fabrication, conforming to CSA Standard G30.5.

- .7 **Divider Strips:** 32mm deep x 1/8" wide white alloy zinc with integral anchorage.

Minimum number of divider strips as noted below plus additional strips at all points of differing terrazzo colours, adjacent differing materials, at all points in change of flooring direction etc.

The flooring contractor is responsible to supply and install additional divider strips at intervals and spacing in full accordance with T.T.M.A.C. installation recommendations, so as not to exceed recommended unbroken floor areas. General spacing for divider strips to be 48" o.c. in both directions (4'-0" x 4'-0" grid) except where otherwise dictated/required for pattern purposes. Flooring contractor also responsible to provide and install divider strips immediately above all points of saw cuts in concrete sub-floor below.

- .8 Slip sheet: 2 mil (25um) polyethylene film to CGSB Specification 70-GP-1, type 1.
- .9 Curing compound: Type 11 non-staining to CGSB 90-GP-1. Moisture retention shall not exceed 0.015 grams
- .10 Cleaners, sealers and floor finish: Terrazzo Tile and Marble Association of Canada Types 1001, 1002, 1003, 1004, 2001, 2002, and 3001, as applicable.

2.2 Mixes/Proportions

- .1 Underbed: one part of cement to four parts sand by volume. Wet and mix thoroughly. Generally use no more than 18 liters of water per bag of cement for underbed mix.
- .2 Standard terrazzo topping: 40 kg bag of cement, and 90 kg of chips, mixed dry. Chip sizes, colour and percentage of mixtures as per Architect's approved sample. For floors, use no more than 18 liters of water per bag of cement.

PART 3 - EXECUTION

3.1 Preparation

- .1 Examination of surfaces: examine surfaces upon which the work of this section is to be installed and report any defects to the Architect prior to beginning work.
- .2 Clean concrete slab. Remove laitance by wet grind or acid etch and rise thorough with clean water, or sand blasting, or steel shot blasting, or method approved by T.T.M.A.C.
- .3 Underbed preparation: broom clean base slab. Fill all voids with loose sand. Apply slip sheet of 1 ply polyethylene film over sand. Lap joints 100mm.

3.2 Installation

Note:

Total thickness of floating terrazzo to be not less than 64mm thick throughout (including 16mm finished topping thickness on 48 mm of underbed, with wire reinforcing and polyethelene separation layer all on top of depressed structural concrete slab).

- .1 Underbed: Apply underbed and reinforcing mesh over prepared substrate and screed level making allowances for terrazzo topping. Permit underbed to cure minimum 24 hours prior to receiving terrazzo topping.
- .2 Divider strips: install divider strips in underbed while it is still in plastic state. Set strips true and level in accordance with required pattern, utilizing a typical 48" x 48" grid unless noted otherwise.

Divider strips are to be installed between all differing colours, and as required in intervals, spacings and configurations as recommended by the T.T.M.A.C. relative to the intended application.

3.3 Installation of Terrazzo Toppings

- .1 Standard Terrazzo Topping: after a minimum of 24 hours following installation of underbed, soak underbed, remove excess water and place a slurry consisting of cement and colour using same proportions as used for topping. Wet topping mixture, mix thoroughly and apply to underbed while slurry is still wet. Sprinkle topping with wetted marble chips using same formula used in topping mix, to ensure finished surface will consist of marble chips to match approved samples. Roll topping with heavy rollers to compact topping and remove excess water and cement. Hand trowel to level terrazzo topping with top of divider strips and cure.

Surface and grout terrazzo when it has set sufficiently hard. Surface by machine rubbing with No. 24 grit or finer abrasive blocks. Use plenty of water during grinding. Immediately following initial grinding, flush terrazzo surfaces thoroughly using water only and apply a grout to fill the voids. Mix grouts in same proportions as used in topping.

Allow grouted surface to cure for at least 48 hours and then re-surface by machine rubbing using No. 120 grit abrasive blocks and plenty of water.

Following removal of grout, scrub terrazzo thoroughly using machine scrubbers and ample clean water. Rinse terrazzo with clean water and then dry thoroughly. Apply coat of sealer as soon after cleaning as possible.

Apply sealer in accordance with manufacturer's written instructions. Wipe off excess water before it dries.

Apply second coat of sealer in same manner as first, but not until all other work is complete and terrazzo has been cleaned again as previously specified above. Apply two coats of surface finish.

- .2 Coved Terrazzo base: apply underbed with sufficient water to form a stiff mix. For terrazzo topping, omit sprinkling of surface chips and rolling specified for standard terrazzo topping. Base height to be 4" above finished floor unless noted otherwise. Form base with integral 38mm radius coved juncture with floor. Terrazzo at cove to be 10 mm topping on 13mm underbed. Carry all divider strips in floors into and up all coved terrazzo bases. Cap top of all coved terrazzo bases with continuous zinc capping strips to suit.
- 3.4 Patching
 - .1 Remove and replace all defective or damaged work promptly or when directed by Architect.
- 3.5 Cleaning and Sealing
 - .1 Cleaning and sealing shall be as recommended by the Terrazzo, Tile and Marble Association of Canada. All work to be executed by Terrazzo Contractor.
- 3.6 Protection
 - .1 Provide adequate protection to complete work until final acceptance. Protect work of other trades. Prohibit traffic during installation and for 48 hours after completion.

END OF SECTION 09401

PART 1 - GENERAL

- | | | | | | | | | | | | | | | | | |
|----------------------------------|---|---------------|------------|---------------|----|------------------------|---------------|----|---------------------------|---------------|----|-------------------------------------|---------------|----|----------|---------------|
| 1.1 General | Division One, General Requirements, is part of this section and shall apply as if repeated here. | | | | | | | | | | | | | | | |
| 1.2 Description of Work | <p>Provide all labour, materials, and equipment required or called for in this specification, or which is necessary, to complete the work without any extra cost. This work may require any or all, but not be limited to the supply and installation of the following:</p> <ul style="list-style-type: none"> .1 Resilient flooring materials (in types and formats as specified herein and in locations and scope as shown on the drawings). .2 Rubber wall base (at all walls and/or the base of all millwork items as indicated on the Drawings) .3 Resilient flooring transition strips (between resilient floors and dissimilar flooring finishes) .4 Preparation of all existing floors and applicable substrates as required to ensure first-rate installation, adhesion and performance of new resilient flooring products specified herein. This work may include (without strict limitation to) removal of existing flooring and wall base; scraping and removal of existing sub-floor irregularities down to a smooth substrate; dustless diamond grinding of existing concrete floors as required; isolated patching and repair of existing substrates to provide smooth and consistent finish for newly installed resilient flooring materials and related items specified herein. .5 Supply and installation of moisture mitigation barrier below resilient flooring as noted herein. | | | | | | | | | | | | | | | |
| 1.3 Related Work | <table border="0" style="width: 100%;"> <tr> <td style="width: 5%;">.1</td> <td style="width: 80%;">Demolition</td> <td style="width: 15%;">Section 02100</td> </tr> <tr> <td>.2</td> <td>Cast-in-Place Concrete</td> <td>Section 03300</td> </tr> <tr> <td>.3</td> <td>Steel Stud & Gypsum Board</td> <td>Section 09111</td> </tr> <tr> <td>.4</td> <td>Porcelain and Ceramic Tile Flooring</td> <td>Section 09315</td> </tr> <tr> <td>.5</td> <td>Millwork</td> <td>Section 06400</td> </tr> </table> | .1 | Demolition | Section 02100 | .2 | Cast-in-Place Concrete | Section 03300 | .3 | Steel Stud & Gypsum Board | Section 09111 | .4 | Porcelain and Ceramic Tile Flooring | Section 09315 | .5 | Millwork | Section 06400 |
| .1 | Demolition | Section 02100 | | | | | | | | | | | | | | |
| .2 | Cast-in-Place Concrete | Section 03300 | | | | | | | | | | | | | | |
| .3 | Steel Stud & Gypsum Board | Section 09111 | | | | | | | | | | | | | | |
| .4 | Porcelain and Ceramic Tile Flooring | Section 09315 | | | | | | | | | | | | | | |
| .5 | Millwork | Section 06400 | | | | | | | | | | | | | | |
| 1.4 Maintenance Data | .1 Provide data for maintenance of resilient tile flooring in accordance with Section 01730. | | | | | | | | | | | | | | | |
| 1.5 Maintenance Materials | <ul style="list-style-type: none"> .1 Deliver 2 square meters of each colour, pattern and type of flooring material required for this project, for maintenance use, excluding sheet goods. Package and clearly identify each type. Deliver to Owner as directed. .2 Maintenance materials to be same production run as installed materials. | | | | | | | | | | | | | | | |
| 1.6 Environmental | .1 Maintain minimum 20° air temperature at flooring installation area for 3 days before, during and for 48 hours after installation. | | | | | | | | | | | | | | | |

- .2 Acclimate all resilient flooring and wall
- 1.7 Samples
 - .1 Submit a 300mm x 300mm (12" x 12") sample of each colour and material indicated, including insets/accents as applicable. All samples are to be approved by the Architect prior to product ordering.
- 1.8 Maintenance Materials
 - .1 Deliver 2 square meters of each colour, pattern and type of flooring material required for this project, for maintenance use, excluding sheet goods. Package and clearly identify each type. Deliver to Owner as directed.
 - .2 Maintenance materials to be same production run as installed materials.

PART 2 - PRODUCTS

- 2.1 Materials
 - .1 **RUNNING TRACK FLOORING [RTF]:**

MONDO 'ADVANCE' RUBBER SHEET FLOORING; 8MM THICK X 6'-1" WIDE ROLL GOODS TO BE 'NEXT GENERATION NG' 2-LAYER PRODUCT AS SUPPLIED BY GYM-CON; PAINTED LANE INDICATION MARKINGS AS ILLUSTRATED ON DRAWINGS TO SUIT [AS INSTALLED BY SPORTS FLOORING TRADE]
 - .2 **SPORTS FLOORING [SF-#]:**

SPORTS FLOORING 1:
24" X 24" X 3/8" THICK TARKETT 'TRIUMPH' RUBBER SPORT FLOORING IN SPECKLED COLOUR 'LB9 RAINSTORM' IN SQUARE EDGE PROFILE

SPORTS FLOORING 2:
24" X 24" X 1/4" THICK TARKETT 'INERTIA' RUBBER SPORT FLOORING IN SPECKLED COLOUR 'LB9 RAINSTORM' IN SQUARE EDGE PROFILE
 - .3 **RUBBER TREADS & RISERS [RTR]:**

TARKETT ANGLEFIT ONE-PIECE 'HAMMERED TREAD /RISER VISUALLY IMPAIRED' #VIHNTR' IN SPECKLED COLOURWAY '#VG2, DUNGENESS CRAB' C/W #44 SILVER GREY INSET RUBBER ACCENT STRIP

All items to be supplied in one-piece width to suit the intended application.

Uppermost step at all landings to utilize RST with vertical riser removed. Removed riser to be installed on first step at base associated flight.

2.1 Materials (Cont'd)**.4 Rubber Landing Tile (RLT):**

Rubber landing tile to be as indicated on drawings and Schedules therein.

Product to be:

24" x 24" x 1/8" THICK TARKETT 'COLOURSPLASH' SPECKLED RUBBER TILE IN HAMMERED TEXTURE & COLOUR '#VG2, DUNGENESS CRAB'

.5 HOMOGENOUS VINYL TILE FLOORING (HVT):

All homogenous vinyl tile is to be installed in locations and patterns shown on the architectural drawings. Product to be

24" X 24" X 2.0 mm TARKETT 'IQ EMINENT' HOMOGENOUS VINYL FLOOR TILE IN COLOUR '21030 819 DARK GREY'; PRODUCT TO BE INSTALLED IN STANDARD GRID PATTERN THROUGHOUT

.6 RUBBER BASE 1 (RB-1):

Rubber base locations to be as indicated on drawings and Schedules therein.

RB-1 to be 4" high Tarkett 'Perceptions Recess' rubber base with toe. Product to be supplied in roll goods throughout and installed in longest practical lengths with seams only at inside corners.

Product colour to be:

- RB-1: TH3, Inkwel

RUBBER BASE 2 (RB-2):

RB-2 to be 4.5" high Tarkett 'Tightlock Carpet' rubber base with toe. Product to be supplied in roll goods throughout and installed in longest practical lengths with seams only at inside corners.

Product colour to be:

- RB-2: 179 Steel

RUBBER BASE 3 (RB-3) at Stage Hardwood Flooring:

RB-3 to be 4" high Tarkett/Johnsonite 'Vent Cove' base with toe. Product to be supplied in longest practical lengths throughout in colour black.

Rubber base is to be installed with Johnsonite #960 Adhesive on porous substrates and Johnsonite #945 Contact Base Adhesive on non-porous surfaces.

Flooring trade to note requirement for rubber base on millwork items where shown on Architectural drawings.

.7 Resilient Flooring Adhesives:

- a) **LVT Adhesives @ Vertical Applications:** confirm specification to that as recommended by LVT manufacturer for the specified flooring material and intended application on applicable substrate (above, at, or below grade).

Acceptable adhesive includes:

Crane Composites RFP [Fibre-Reinforced Panel] adhesive

- b) **LVT Adhesives @ Floors:** to be as recommended by product manufacturer for the specific flooring material and intended application on applicable substrate (above, at, or below grade). *Ensure use of water-resistant [high moisture] adhesives for all on-grade applications.*

Acceptable adhesive include:

Interface XL Brand 2500 Plus or

Interface XL Brand HM99 High Moisture Adhesive

- c) **Rubber Flooring Adhesives:** to be Tarkett/Johnsonite #965 Flooring and Tread Adhesive and/or Tarkett/Johnsonite #975 two-part urethane adhesive and/or Tarkett/Johnsonite #996 two-part epoxy adhesive (or as recommended by the manufacturer relative to the specified product, the intended application and applicable substrate conditions.)

- d) **HVT Adhesive:** confirm specification to that as recommended by HVT manufacturer for the specified flooring material and intended application on applicable substrate (above, at, or below grade).

Acceptable adhesive includes:

Tarkett 'Rollsmart' high moisture-content adhesive.

.8 Transition Strips & Protective Capping Strips:

Transition strips shall include all 'reducers', 'adaptors' 'slimline transitions' and/or 'wheeled traffic transitions' as manufactured by Tarkett (unless noted otherwise).

Transition strips are to be supplied and installed at all flooring transitions throughout where dissimilar flooring materials meet [unless noted otherwise]. Flooring trade to determine the required profile of the transition strips for the intended application, supplying and installing suitable transitions strips to:

- mediate/transition between new flooring of different thicknesses
- mediate/transition between a new flooring finish and an adjacent existing flooring finish which is not co-planar (i.e. with a different finish level)

- protectively cap seams between differing flooring materials/types of the same or differing thicknesses

Transition/Protection Profiles:

Flooring trade to select appropriate profiles from Tarkett's full product range suited to the intended application relative to abutting flooring types and thickness.

Transition Strip Colours:

Architect to select colours from Tarkett's full colour range.

.9 **Sub-Floor Preparation Materials [Leveling and Patching]:**

Flooring trade is responsible to prepare existing concrete floors as required for newly specified materials, ensuring that final installation of resilient flooring is free of calendaring and any evidence of substrate irregularities.

This may include the installation of subfloor treatment products including (without strict limitation to): subfloor primers, patching and skimcoat products, slope & deep fill products; dry-pack mortars, self-leveling (poured-on) underlayments etc. [as and where required throughout]. All sub-floor preparation materials are to be selected to suit to the intended application, substrate conditions, and manufacturer installation requirements for newly specified products outlined herein. All preparation materials utilized are to provide a lasting bond to the subfloor and are to support long-term use of the specified finished flooring products.

The flooring trade is responsible to coordinate subfloor preparation and installation requirements with flooring manufacturers, allowing for and providing all related materials and techniques herein.

All sub-floor preparation products are to be:

- fully bonded to substrate
- finished flush, level and smooth with surrounding subfloors
- fully compatible with both substrate material and the new newly specified floor finishes
- installed to provide a smooth and consistent finish for the finished flooring to be installed free of visible calendaring and sub-floor irregularities

Acceptable manufacturers for sub-floor preparation products include Mapei and Ardex.

.10 **Sub-Floor Moisture-Mitigation Barrier:**

Flooring trade is responsible to supply and install a moisture mitigation barrier below all resilient flooring products applied on any form of slab on or at grade. Typically this will include flooring on Ground Floor level only.

Moisture-mitigation systems shall be 2-part epoxy products, suitable for concrete substrates and newly specified flooring

materials [noted herein]. Acceptable products include:

- Uzin PE 460
- Mapei Planiseal EMB
- Laticrete VaporBan Primer ER

Final selection of moisture-mitigation product shall be based upon moisture-testing results determine by 'in-floor' probes testing of the slabs.

PART 3 - EXECUTION

- 3.1 Sub-floor Assessment .1** Ensure concrete sub-floors are clean and dry, exhibiting negative alkalinity and no signs of efflorescence, carbonization, dusting, excess moisture levels and/or any other condition adversely impacting the integrity of the final flooring installation.

Moisture Testing:

Perform moisture testing on sub-floors as recommended by flooring manufacturer relative to the intended application. Topical moisture tests are not acceptable. All sub-floor moisture tests shall be conducted using in-floor probes. Probe locations and quantities to be as recommended by the flooring manufacturer.

Wherever sub-floor moisture test results do not conform to manufacturer's standards, assess available options with Client including:

- use of moisture-resistant adhesives [as/if specified]
- installation of moisture mitigation membranes [of varying types suited to the intended installation] prior to installation of flooring

- 3.2 Sub-floor Preparation**
- .1** Remove sub-floor ridges and bumps. Remove residue from any previous materials and/or finishes. Grind down to even surface where necessary. As required, provide dustless diamond grinding (via commercial dustless diamond grinder) to ensure flatness and smoothness of substrate free of irregularities.
- .2** Clean floors and substrates to remove all dust and irregularities which might adversely affect the work. Ensure use of suitable cleansing agents for areas of oil or other contaminants on the sub-floor surface. Rinse all cleansing agents from the floor to with clean water to ensure that no residue remains.
- .3** Fill all low spots, dishing, cracks, joints, holes and other inset irregularities in the sub-floor, choosing a patching, skimming, levelling or filler agent as required related to each subfloor irregularity. Utilize primers where necessary to ensure proper

bond. Trowel and float filler agents as required to leave a smooth, hard surface once cured. Sand or grind cured fillers where required. Ensure that all filling materials provide a smooth, consistent and flat finish which is permanently bonded to the subfloor.

3.3 Environmental Acclimation

- .1 All resilient flooring products (including both sheet and tile products) are required to acclimate to ambient indoor temperatures within related installation spaces (at temperatures between 65°F and 75°F for a min. 72 hours prior to installation). Ensure that all resilient flooring materials are installed in full accordance with the manufacturer's environmental conditions throughout.

3.4 Resilient Tile Installation

- .1 Apply adhesive uniformly using recommended trowel type in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place. All tile must be installed prior to adhesives 'setting-up' and curing in order to promote optimal and lasting bond.
- .2 All tile installation patterns, colours and locations are to be as per Architectural drawings and Colour and Finish Schedule.
- .3 ***Verify installation orientation of all resilient flooring products with Architect prior to installation.***, particularly for resilient flooring products which are 'directional' (i.e. have a distinct visual 'grain' running in a single direction).
Unless noted otherwise, square-format resilient floor tile is to be installed in each room with all tiles (and visual 'grain' thereon) running in a single direction throughout. Quarter-turned (tessellated) tile installations will ***not*** be accepted. Installation orientation is to be as indicated on architectural drawings and/or as directed by the Architect.
- .4 Unless noted otherwise, install tile flooring in half offset brickwork pattern with all lines aligned and parallel to building lines wherever possible. All joints between tiles to be tight and free of gaps, ensuring same is true at patterned installations throughout.
- .5 Double-cut any patterned installations involving angles or curves using plywood scribing templates to suit.
- .6 Cut and fit neatly around fixed or excessively heavy objects.
- .7 Install flooring in removable floor access covers where applicable) maintaining floor pattern.
- .8 Terminate flooring at centerline of door (where possible) in openings where adjacent floor finish or colour is dissimilar.
- .9 Roll all installed products with commercial flooring roller as

recommended by flooring product manufacturer to remove air bubbles below flooring and to ensure that all product lays flat and true, free of any lifting edges and irregularities throughout.

- | | | |
|--|----|---|
| 3.4 Base Installation | .1 | Set base in adhesive tightly against wall and floor surfaces. Use lengths as long as practical and not less than 500mm (20") long. |
| | .2 | Install straight and level to variation of 1:100. |
| | .3 | All base products are to be installed in full accordance with manufacturer's recommendations, including scribing details at all interior and exterior corners. Fit base goods neatly to all doorframes. All short returns of base goods (and at any locations where base product may not sit firmly against wall surface), base to be secured in place with construction adhesive or contact cement adhesive, sufficient to ensure full adhesion. |
| 3.5 Protection of Finished Work | .1 | Prohibit traffic on floor for 48 hours after installation. |
| | .2 | Where floors are to be subject to traffic before final inspection, provide suitable protection following installation of initial wax and seal by flooring trade. |

END OF SECTION 09660

PART 1 – GENERAL

1.01 WORK

- A. Furnishing, delivery, installation and warranty of a complete artificial turf system in Fitness Room 155.

1.02 RELATED SECTIONS

A. CONCRETE SUBFLOORS

- a. The general contractor shall furnish and install the concrete subfloor depressing the slab sufficiently to accommodate the turf system. The slab shall be steel troweled smooth to a tolerance of 1/4" in any 10' radius by the general contractor. High spots shall be ground level, and low spots filled in with approved leveling compound by the general contractor to the full approval of the flooring contractor.

B. MEMBRANE WATERPROOFING-SECTION

- a. Concrete subfloors on or below grade shall be adequately waterproofed beneath the slab and at the perimeter walls and on earth side of below grade walls by general contractor using suitable type membrane.

1.03 REFERENCES

A. ATSM Standard Test Methods

- **D1577** – Standard Test Method for Linear Density of Textile Fiber
- **D5848** – Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Covering
- **D418** – Standard Test Method for Testing Pile Yarn Floor Covering Construction
- **D1338** – Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
- **D1682** – Standard Method of Test for Breaking Load and Elongation of Textile Fabrics
- **D5034** – Standard Test Method of Breaking Strength and Elongation of Textile Fabrics (Grab Test)
- **F1015** – Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing Surfaces
- **F1551** – Standard Test Methods for Water Permeability

- **D2859** – Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials
 - **F355** – Standard Test Method for Shock-Absorbing Properties of Playing Surfaces
 - **F1936** – Standard Test Method for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field
 - **D1557** – Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
- B. National Federation of High School (NFHS) Rules, as applicable. FIFA Rules of the Game or NCAA Soccer Rules, as applicable.
- C. ASBA Sports Fields Contractor Manual
- D. Carpet & Rug Institute suggested guidelines.
- E. STC Suggested Guidelines for the Essential Elements of Synthetic Turf Systems

1.04 SITE EXAMINATION

- A. **A 24 Hour Relaxation Period is recommended before gluing down turf to prevent shrinking and /or expanding after glue down. IDEAL temperatures should be above 70 degrees.**
- B. **When turf is delivered:** Check its texture, color, and style; make sure there are no visible defects before installation. Be sure the installer will adhere to the CRI 105 installation methods (www.carpet-rug.com). Among other things, it requires for proper installation that turf must be power-stretched to minimize wrinkling and rippling. Seam edges must be sealed with appropriate adhesive to prevent delaminating and edge ravel.
- C. **Floor Preparation (when not using seaming tape):** Each subfloor shall be inspected to determine the special care required to make it a suitable foundation for turf. All cracks 1/8 inch (3 mm) wide or protrusions over 1/32 inch (.8 mm) should be filled or leveled.
- D. **Temperature and Humidity:** The environment in which the turf is to be installed must be controlled with the temperature between 65o F and 95o F (18o C and 35o C) and the relative humidity between 10%and 65%. If installing over concrete, the slab temperature should not be less than 65o F (18o C). These conditions must be maintained for at least 48 hours before, during, and 48 hours after the installation.
- E. **Concrete:** Concrete shall be cured, clean, and dry. If the turf is to be installed using an adhesive, the concrete shall be free of paint, dirt, grease, oil, curing or parting agents, and other contaminants, including sealers, that may interfere with the bonding of the adhesive. Whenever a powdery or porous surface is encountered, a primer compatible

with the adhesive shall be used to provide a suitable surface for the glue-down installation. Patching of cracks and depressions shall be made with appropriate and compatible latex or polymer fortified patching compound. Do not exceed manufacturer's recommendations for patch thickness. Large patched areas must be primed.

- F. **Moisture Testing (when not using seaming tape):** Concrete floors, even with adequate curing time, can present an unacceptable moisture condition by allowing excessive amounts of moisture vapor to pass through to the surface. This can be a problem even on suspended concrete floors. All concrete floors should be tested for moisture emission rate by utilizing an anhydrous calcium chloride moisture test kit available from installation supplies and accessories distributors. This quantitative method is very precise and must be conducted carefully, with strict attention to the test kit manufacturer's detailed instructions. Moisture emission rate is expressed in lbs/1000 sq. ft. /24 hours. Because the calcium chloride test for emission rate requires 3 days to conduct, proper installation planning is a must. As a general guideline, an emission rate of 3 lbs (1.4 kg) or less is acceptable for most turf. In the range from 3 lbs to 5 lbs (1.4 to 2.3 kg), carpet with porous backings can usually be installed successfully; but the risk of moisture-related problems increases. Since some floor covering products are less tolerant of moisture than others, always consult the individual manufacturer to determine the emission rate for specific products. When any or all corrective procedures have been completed, the finished sub-floor surface must be re-inspected, with the same representatives attending as the initial inspection. If required, additional repair and inspections are to be conducted until the sub-floor surface is deemed acceptable by the Engineer and Synthetic Turf Installer
- G. Once the sub-floor surface has been deemed acceptable, the Contractor shall submit a written certificate indicating the acceptance of:
1. The sub-floor construction finished surface as totally suitable for the application of the selected synthetic turf system, and
 2. The sub-floor construction as totally suitable for work under this section to proceed with the final installation and fully warrant the athletic surface installation for the period and conditions specified herein.
- H. Commencement of work under this section shall constitute acceptance of the work completed under other sections by the Contractor, acceptance of dimensions of the sub-floor, and hence, no claims for extra work based upon these conditions will be permitted.

1.05 ENVIRONMENTAL CONDITIONS

- A. Install synthetic turf surfacing only when ambient air temperature is 35 F or above and the relative humidity is below 35% or as specified by the product manufacturer. Installation will not proceed if rain is imminent.
- B. Install product only when prepared sub-floor is suitably free of dirt, dust, and petroleum products, is moisture free and sufficiently secured to prevent unwanted pedestrian and vehicular access.

1.06 QUALITY CONTROL

- A. **Manufacturer Qualifications:** Company specializing in manufacturing products specified in this section. The Turf Manufacturer:
 - 1. Basis of design shall be "Fast Grass AT740" synthetic turf system as provided by Sporturf™. (800) 562-4492, www.sporturf.com
 - 2. Materials other than those listed must be approved 15 days prior by written addendum. Materials from non-approved manufacturers will not be accepted.
 - 3. Must be experienced in the manufacturing of synthetic grass systems with the same fiber as specified.
 - 4. Must have at least 30 fields of 16,000 sq. ft. or more of the specified material, fiber, infill material and backing, or similar system, in play in the United States.
 - 5. Manufacturer must be a member in good standing with the STC.
 - 6. Manufacturer must utilize best practices as certified by ISO-9001 and ISO-14001.
 - 7. Manufacturer must be owned and operated in the U.S.A.
 - 8. Manufacturer must have no periods of insolvency over the last 25 years.
- B. **Installer Qualifications:** Company specializing in performing the work of this section.
 - 1. The Synthetic Turf Installer must provide competent workmen skilled in this type of synthetic grass installation. All technicians must have installed tall pile synthetic turf.
 - 2. The designated Supervisory Personnel on the project must be certified, in writing by the Turf Manufacturer, as competent in the installation of this material, including seaming and proper installation of the infill mixture.
 - 3. Installer to follow CRI (Carpet and Rug Institute) guidelines.
- C. Prior to the beginning of installation, the Synthetic Turf Installer shall inspect the sub-floor. The installer will accept the sub-floor in writing when the general contractor

provides test results that are in compliance with the synthetic turf manufacturer's recommendations and as stated herein.

- D. The Synthetic Turf Installer shall provide the necessary testing data to the Owner that the finished field meets the required initial shock attenuation, as per ASTM F1936.
- E. Remove defective Work, whether the result of poor workmanship, defective products or damage, which has been rejected by the Engineer as unacceptable. Replace defective work in conformance with the Contract Documents.

1.07 SUBMITTALS

A. Submit the following with Proposal:

- 1. Submit the exact product name/description as well as the name and location of the manufacturers and suppliers of each component. Manufacturers and suppliers must not be changed after the contract is awarded unless approved by the Owner in writing.
- 2. Submit two (2) samples, 12"x12" minimum size, illustrating details of finished product as bid, turf, and infill material if required.
- 3. Product Literature: Submit two (2) copies of manufacturer's recommended installation and maintenance information, including any technical criteria for evaluation of the installed product. Descriptions of all equipment recommended for the maintenance and repair of turf product, as well as a list of any activities not recommended relative to the warranty.
- 4. Submit a 1-lb sample of the selected bid infill material(s) if required.
- 5. A letter and specification sheet certifying that the products of this section meet or exceed specified requirements.
- 6. Certified copies of independent (third-party) laboratory reports on ASTM tests as follows:
 - a. Pile Height, Face Width & Total Fabric Weight, ASTM D418 or D5848
 - b. Primary & Secondary Backing Weights, ASTM D418 or D5848
 - c. Tuft Bind, ASTM D1335
 - d. Grab Tear Strength, ASTM D1682 or D5034
 - e. Verification that product meets Pill test minimums for ASTM D-2859 for life of installation.
- 7. ASTM test submittals may vary by no more than ¼" and 6 oz. of the specified product to bid. Bid winner must show NEW ASTM TESTS with contract submittals.

8. Name and experience of the designated supervisory personnel assigned to this project shall be submitted with the proposal. Changes to this assignment after contract can only be made if approved in writing by the Owner. Include a listing of other on-site personnel and their experience.
 9. The Synthetic Turf Installer and Turf Manufacturer shall provide evidence that the turf system does not violate any other manufacturer's patents, patents allowed or patents pending.
 10. The Synthetic Turf Installer and the Turf Manufacturer shall provide complete information on its warranty/insurance policy and coverage, as noted in Section 1.08. Provide a complete sample copy of all warranty documentation.
- B. Prior to ordering of materials:**
1. The Contractor shall submit Shop Drawings indicating:
 - a. Field Layout.
 - b. Field Marking Plan and details for Soccer, Men's Lacrosse, and Women's Lacrosse if required.
 - c. Mid-field emblem layout with color samples.
 - d. Roll/Seaming Layout.
 - e. Methods of attachment, field openings and perimeter conditions.
 2. The Turf Manufacturer must submit the fiber manufacturer's name, type of fiber and composition of fiber.
 3. **Shop Drawings:** Shop drawings are to be submitted for review by the Engineer prior to manufacture of product and are to contain information regarding locations of seams, anchorage details, goal post/insert details, line and event marking locations and dimensions, turf roll widths and dimensions.
- C. Prior to Final Acceptance, the Contractor shall submit to the Owner:**
1. Two (2) copies of Maintenance Manuals, which will include all necessary instructions for the proper care and preventative maintenance of the synthetic turf system, including painting and markings. Also address remedial measures for graffiti removal.
 2. Written verification of a suitable training session for the Owner's maintenance staff on how to maintain the completed installation.
 3. Project Record Documents: Record actual locations of seams, drains or other pertinent information.
 4. Enter into a contract with the Owner to provide annual operations and maintenance assistance for two (2) years. Provide contract, contact information

and schedule first visit. Quarterly each year provide operations and maintenance that includes:

- a. On-site inspection analysis of seams, infill, inlay, edge, and field inserts.
 - b. The contractor shall sweep and groom the field at each quarterly visit.
 - c. Synthetic turf report with results of inspection analysis, photos, results of cleaning process, recommendations for future cleaning/maintenance.
 - d. The Contractor must execute an annual operations and maintenance assistance contract before substantial completion can be approved.
5. Test Results: Test certifications issued by an independent testing agency that the synthetic surface meets with the requirements of the ASTM tests noted herein are to be submitted.

Sub-floor Conditions Acceptance: Prior to installation of the synthetic turf system, the Contractor is to submit in writing an acceptance of the sub-floor as being acceptable by the turf manufacturer and suitable for the successful installation of the proprietary synthetic turf system.

1.08 WARRANTY

- A. The Contractor shall provide a minimum five (5) year warranty policy by the manufacturer, against defects in materials and workmanship. Defects shall include, but not be limited to ultraviolet ray fading, degradation, or excessive wear of fiber.
- B. Warranty must be backed by a surety licensed to do business in the State of Georgia.
- C. Submit information listing the owner on the COI (Certificate of Liability Insurance).
- D. Limited Warranty shall be for replacement of any damaged product within the warranty period. Warranty shall be comprehensive and sufficient to replace entire field if necessary.
- E. Warranty shall become effective from the date of substantial completion.
- F. The Warranty shall contain no usage limits for warranted field.
- G. Submit Manufacturer Warranty and ensure that forms have been completed in Owner's name and registered with Manufacturer.
- H. Supply Insurance Certificate with complete information on contacting the Insurance Carrier should a claim need to be made. Product/Warranty insurance policy shall have the Owner listed as insured.

PART 2 PRODUCTS

2.01 SUPPLIER QUALIFICATIONS

- A. The Owner has conducted an extensive review of synthetic turf products, including visiting installed sites and review of other agencies' review criteria. Based upon their research, they have established the following criteria for acceptance of a synthetic turf product. No variation from these criteria shall be allowed. The Owner's review is considered final.
- B. The Synthetic Turf Installer shall have been in business for at least 5 years, actively selling, installing and maintaining sports flooring.
- C. The Synthetic Turf Installer must provide a list of references based on previous installations.
- D. The Respondent must be a member in good standing with the ASBA (Athletic Sports Builders Association).
- E. Installation team shall be established, insured installation firm experienced as a premium turf installer with suitable equipment and supervisory personnel, with a minimum of 5 years' experience.
- F. Installation team shall be trained and certified, in writing, by the turf manufacturer, as competent in the installation of the specified material, including seaming and proper installation of the infill mixture.

2.02 TURF SYSTEM

- A. **Turf Fiber:**
 - 1. ACCEPTABLE PRODUCT: **Sport Turf Fast Grass 40 #AT740**
 - 2. The turf fiber must be tufted to the ArmorLoc™3L and coated with SilverBack™ with a minimum tuft bind of 8 pounds.
 - 3. The tufted fiber weight shall be a minimum of 40 ounces per square yard.
 - 4. The turf fiber shall be polyethylene slit film and texturized nylon.
 - 5. The turf fiber shall be non-abrasive and a minimum of 100 microns thick.
 - 6. The turf fiber must contain less than 100 ppm of lead in all colors.
 - 7. The turf fibers must be from the same dye lots.
 - 8. The turf fibers must be guaranteed for a period of Eight Years not to fade or fail (as distinguished from a change in texture) or have a pile height decrease to 50% of pile height as result of UV degradation.
 - 9. The infill must be within ¼" of the tips of the fibers upon completion of the install if required.
 - 10. The turf fiber must retain a minimum of 75% of its original fibril width after 10,000 cycles on the Lisport Studded Roll Test Machine.

11. The pile fiber shall possess the following characteristics:

Characteristic	Value	Test
Linear Density (Denier)	9,000 Combined	ASTM D 1577
Yarn Thickness	100 Microns (slit); 100 Microns (mono)	ASTM D 3218
Pile Weight*	40 oz./yd ²	ASTM D 5848
Fiber manufacturer must be from the same source		
The above specifications are nominal. *Values are +/- 5%.		

12. The pile fabric shall possess the following physical characteristics:

Characteristic	Value	Test
Finished Pile Height*	3/4" (19mm)	ASTM D 5823
Product Weight (total)*	125 oz./yd ²	ASTM D 3218
Primary Backing Weight*	7.4 oz./yd ²	ASTM D 2256
Secondary coating Weight**	78 oz./yd ²	ASTM D 5848
Fabric Width	12' (3.6m)	ASTM D 5793
Tuft Gauge	1/4"	ASTM D 5793
Grab Tear Strength	200-1b-F	ASTM D 5034
Tuft Bind	>8-1b-F	ASTM D 1335
Infill (Sand)*optional	2 lbs Silica Sand	None
Except where noted as a minimum, the above specifications are nominal.		
* Values are +/- 5%. **All values are +/- 3 oz./yd ² .		

B. Backing Material

a. Primary Backing:

- i. Primary backing must be a dual layered woven polypropylene material, ArmorLoc™3L.
- ii. Primary backing system weight must be a minimum of 7.0 ounces/square yard.

b. Secondary Backing:

- i. Secondary backing SilverBack™ system weight must be a minimum of 75 ounces/ square yard.

C. **Turf roll seams:** to be glued on site so that no openings larger than the porous backing mat openings are created. Roll width to coincide with tufted-in sports line markings where possible. All turf fabric edges to be securely bound as per the perimeter detail design. Adhesives for joining seams of turf together shall be Nordot 34G, Mapei 2K, Turf Claw or equivalent. No substitutions.

- D. **Fabric surface:** shall be constructed and installed in minimum widths of 12 feet with no longitudinal or transverse seams, except for inlaid lines with a finish roll assembly. Seams shall be 12'-0" apart. Rolls that do not comply with the proper length or conform to the seaming diagram, as approved prior to installation, shall be rejected from the site. No fitted pieces shall be allowed to true alignment. Parallel seams only are acceptable in the main playing areas.
- E. The entire system shall be resistant to weather, including ultra-violet light and heat degradation; insects, rot, mildew and fungus growth and be non-allergenic and non-toxic.
- F. **Fiber Colors:** Submit samples of the full available color palette for owner approval prior to placing order for turf including at a minimum the below listed colors: (Specify or Delete)
 - Color 1: Grass, green in standard color, as selected by the Owner
- G. The turf material shall be non-combustible and pass the DIN standard Pill Burn test or ASTM D 2859.

2.03 SYNTHETIC GLUE MATERIAL

- A. Adhesive products shall be Nordot 34G, Mapei 2K, Turf Claw or equivalent as approved by the engineer.
- B. Any adhesive products required for the installation of a proposed turf system shall be purpose-suited to the system. The material and application methods shall be as recommended by the adhesive manufacturer.
- C. Disposal of adhesive containers and unused adhesives as well as any fees resulting from such disposal shall be the responsibility of the Contractor.

PART 3 EXECUTION

3.01 GENERAL

- A. Installation of the synthetic turf system is to comply with the manufacturer's recommendations, requirements and the reviewed and approved shop drawings.
- B. Perform all work in strict accordance with the Contract Documents and the manufacturer's specifications and instructions. Only those skilled technicians proposed in the bid phase are to be assigned to this project by the Contractor.
- C. The designated Supervisor for the Synthetic Turf Installer must be present during any and all construction activity associated with the field installation, including testing, cleanup and training.

- D. All products and equipment are to be from sources approved by the authorized turf manufacturer and conform to the specifications.

3.02 PRODUCT DELIVERY, STORAGE & HANDLING

- A. Deliver products to site in original containers and wrappers as agreed between the Engineer and Contractor. Inspect products upon delivery for damage.
- B. Store products in a location and in a position that protects them from crush damage or any other defects.
- C. Handle and store (on and off site) all materials safely to ensure their physical properties are not adversely affected and that they are not subject to vandalism or damage.
- D. Sand infill shall arrive dry and loose
- E. Adhesives shall arrive in dry, sealed containers.

3.03 PLUGS AND FITTINGS

- A. All permanent field fittings penetrating the turf indicated on the drawings shall be securely sealed to the turf surface.

3.04 TURF INSTALLATION

- A. Install synthetic turf system in accordance with the manufacturer's written installation instructions for the intended application, utilizing all related installation tools, methods, materials, and product accessories.
- B. All inlaid areas shall have full fastenings and no loose areas. At no time can pulling on the section separate the material.
- C. Turf shall be attached to the perimeter edge as shown in the construction plans and as per the manufacturer.
- D. All terminations shall be as detailed and approved in the shop drawings.

3.05 INFILL INSTALLATION IF REQUIRED

- A. The synthetic turf shall be thoroughly brushed prior to installation of infill materials to remove wrinkles.
- B. The infill materials shall be installed in layers, in accordance with the turf manufacturer's installation instructions. Any mix of materials shall be uniform and even in thickness.
- C. Turf shall remain free draining at all times before, during and after the infill materials are installed.

3.06 CLEANING AND COMPLETION

- A. Protect all installed work from other construction activities as installation progresses.
- B. The Contractor shall keep the area clean throughout the construction period and free from the installation process.
- C. Upon completion of the installation, thoroughly clean surfaces and site of all refuse resulting from the installation process.
- D. Any damage to existing fixtures or facilities resulting from the installation of the synthetic turf system shall be repaired to original condition at the Contractor's expense prior to Substantial Completion and commencement of the Warranty Period.
- E. A deficiency list will be produced by the Engineer at the conclusion of the project. All installation project deficiencies not in dispute must be remedied by the Contractor prior to the issuance of a certificate of Substantial Completion.
- F. Contractor to provide a written acceptance by the Turf Manufacturer that the turf and base system is installed in accordance with their recommendations prior to final completion.

END OF SECTION

PART 1 - GENERAL

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|-----|------------------------------------|--|----|-------------------------------|---------------|----|------------------------------------|---------------|----|----------------------|---------------|----|-----------------------------|---------------|----|------------------------|---------------|
| 1.1 | General | Division One, General Requirements, is part of this section and shall apply as if repeated here. | | | | | | | | | | | | | | | |
| 1.2 | Description of Work | <p>Provide all labour, materials, and equipment required or called for in this specification, or which is necessary to complete the work without any extra cost. This work may require, without strict limitation to the following (at the building interior and/or exterior):</p> <ul style="list-style-type: none"> .1 Priming and painting of interior masonry, gypsum board, cement plaster, plaster and other surfaces as indicated on Drawings and Schedules. .2 Finish priming and painting of steel doors and frames, and other non-prefinished metal components including priming and finish painting of all miscellaneous steel items contained within the Architectural and related Engineering drawings. .3 Staining and topcoating or other finishing of all wood and wood veneer items (including trimwork, wood perimeter of plastic laminate doors, hardwood veneered cabinetry etc.) as applicable. .4 Painting and/or priming (as required) of all new non-prefinished miscellaneous metal items (convector cabinets, fire-hose cabinets, access hatches) etc. .5 Re-painting and/or priming (as required) of existing metal items (convector cabinets, fire-hose cabinets, access hatches) etc. specified for new paint finish. .6 Painting of exposed metal ducts, grilles, louvers and related equipment as indicated on the drawings and schedules. .7 Painting of steel structural items throughout. .8 Painting of miscellaneous non-prefinished steel and metal items (bench supports, countertop supports, lintels etc.) .9 Complete preparation of existing painted surfaces (specified for re-paint) including all related sanding, scraping, and removal of loose existing paint, testing of existing paint (for determination of compatible paint formulations), and priming of all existing surfaces (following Preparation) prior to re-painting as specified. .10 Other associated work as indicated on drawings and schedules, including painting of hardboard stage flooring. | | | | | | | | | | | | | | | |
| 1.3 | Related Work by Others | <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; padding-right: 20px;">.1</td> <td style="vertical-align: top; padding-right: 20px;">Shop priming structural steel</td> <td style="vertical-align: top;">Section 05120</td> </tr> <tr> <td style="vertical-align: top; padding-right: 20px;">.2</td> <td style="vertical-align: top; padding-right: 20px;">Shop painting miscellaneous metals</td> <td style="vertical-align: top;">Section 05500</td> </tr> <tr> <td style="vertical-align: top; padding-right: 20px;">.3</td> <td style="vertical-align: top; padding-right: 20px;">Steel Doors & Frames</td> <td style="vertical-align: top;">Section 08100</td> </tr> <tr> <td style="vertical-align: top; padding-right: 20px;">.4</td> <td style="vertical-align: top; padding-right: 20px;">Metal Stud and Gypsum Board</td> <td style="vertical-align: top;">Section 09111</td> </tr> <tr> <td style="vertical-align: top; padding-right: 20px;">.5</td> <td style="vertical-align: top; padding-right: 20px;">Concrete Masonry Units</td> <td style="vertical-align: top;">Section 04220</td> </tr> </table> | .1 | Shop priming structural steel | Section 05120 | .2 | Shop painting miscellaneous metals | Section 05500 | .3 | Steel Doors & Frames | Section 08100 | .4 | Metal Stud and Gypsum Board | Section 09111 | .5 | Concrete Masonry Units | Section 04220 |
| .1 | Shop priming structural steel | Section 05120 | | | | | | | | | | | | | | | |
| .2 | Shop painting miscellaneous metals | Section 05500 | | | | | | | | | | | | | | | |
| .3 | Steel Doors & Frames | Section 08100 | | | | | | | | | | | | | | | |
| .4 | Metal Stud and Gypsum Board | Section 09111 | | | | | | | | | | | | | | | |
| .5 | Concrete Masonry Units | Section 04220 | | | | | | | | | | | | | | | |

		.6	Sealants	Section 07900
1.4	Requirements of Regulatory Agencies	.1	All finishes shall meet the flame spread and smoke development requirements of the Ontario Building Code for the specific location and application for all parts of the Work.	
1.5	Environmental Requirements	.1	Apply finishing materials only when air and surface temperatures have reached the minimum level recommended by the manufacturer's specification for each product, and have been maintained at this temperature for a minimum of 24 hours.	
		.2	Do not apply exterior finish in direct sunlight that raises surface temperatures above that for proper application and drying, nor in rainy, foggy or windy weather.	
		.3	Do not apply finishes when relative humidity is over 50%, when condensation has formed or is likely to form, nor immediately following rain, frost or dew.	
		.4	Do not apply paint where moisture content, in gypsum board, pipe insulation or wood is above paint manufacturer's recommended maximum allowances. Confirm results of moisture test with Architect before proceeding.	
		.5	Do not apply paint finish in areas where dust is being generated.	
1.6	Colours and Samples	.1	All colours shall be as scheduled by the Architect on the Colour and Finish Schedule or as specified herein.	
		.2	Paint samples shall be prepared as directed by the Architect in accordance with Section 01340 and 1.11 of Section 09900. All site work on site must be completed to match approved sample. All product mixing and work on-site must be preceded with Architect's approved samples for paint & stain, lacquer and varnish, etc. Acceptable paint and stain samples include 8" x 11" (minimum) sample size. Only "draw down" samples of actual paints will be accepted for paint colours. Minimum requirements are 2 draw down samples per paint colour per different paint product and per different paint finish. Stain samples to be applied to wood sample of wood species specified for use in the project.	
1.7	Cooperation with Others	.1	This contractor shall examine all drawings and specifications of all trades throughout the building for information affecting the work of this trade.	
1.8	Plant and Scaffolding	.1	The contractor shall provide all plant and scaffolding necessary for proper and efficient performance of the work.	
1.9	Field Quality Control	.1	Arrange for periodic visits to site by paint manufacturers' representatives while work is in progress. On each visit he shall verify that specified materials and methods are used, and that procedures agreed upon at the initial site meeting are followed.	

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|------|---|----|---|
| 1.10 | Product
Delivery, Storage
and Handling | .1 | Deliver to site each container sealed and labeled with manufacturer's name, catalogue number or brand name, colour, and formulation type, reducing instructions, and reference standard specification number if applicable |
| | | .2 | Store materials on site, and in an area specifically set aside for purpose, that is locked, ventilated, maintained at a temperature of over 4 degrees C (40 degrees F) and protected from direct rays of sun. |
| | | .3 | Ensure that health and fire regulations are complied with in storage area. Provide carbon dioxide fire extinguishers of 9 kg (20 lbs.) minimum capacity in each storage area while materials are contained within. |
| | | .4 | On each container, for materials requiring a fire hazard classification, attach an Underwriter's label verifying that the material is listed under their label service, and giving the hazard classification. |
| 1.11 | Protection | .1 | Cover or mask surfaces adjacent to those receiving treatment and finishing to protect work of others from damage and soil. Mask instruction and specification plates attached to equipment being painted. |
| | | .2 | Take particular care in storage and mixing areas that floors are protected by tarpaulins and metal pans. |
| | | .3 | Place cloths and other disposable finishing materials, that are a fire hazard, in closed metal containers containing water, and remove from building every night. |
| | | .4 | Coordinate with the appropriate trades for the removal from finished surfaces, storage and reinstallation after finish work is completed of finish hardware, switch and receptacle plates, escutcheons, luminaries frames, and similar items. |
| | | .5 | Post "No Smoking" signs and ensure that spark-proof electrical equipment is used in areas where flammable painting materials are being applied. |
| | | .6 | Post "Wet Paint" signs throughout freshly finished areas and remove when finishes are dry. |
| 1.12 | Colour and Product
Fidelity and Finish | .1 | Draw Down samples of each paint colour and paint sheen for each different paint product must be approved by the Architect prior to installation. The Contractor will retain 1 full set of the approved samples on site and is responsible to verify the application of the proper colours and products throughout the project. The Architect reserves the right to enforce full conformance of the finished work to the approved samples and specified products as shown on drawings, Schedules, Addenda's, and all Contract Documents. Any colours or products which the Architect deems unsuitable due to lack of colour or sheen fidelity, improper application, poor workmanship or any conditions not in strict accordance with the Contract Documents will be rectified by the Painting Contractor to the full satisfaction of the Architect in accordance with the Contract Documents at no cost increase. |

PART 2 - PRODUCTS

- 2.1 Paint Materials**
- .1 Painting materials such as primers, paints, rust-inhibiting agents, stains, fillers, varnishes, lacquers, etc., to be supplied by Benjamin Moore, Sherwin Williams or ICI/Dulux only. All paint to be highest professional/commercial grade products available from each manufacturer as prescribed in PART 3 below, relative to the intended application. Only OPCA/CPCA/CGSBQ approved equivalents within the noted manufacturers will be accepted.

Painting contractors must inform the Architect in writing which product line he intends to use and is to receive approval prior to mixing. Selection of final product line is completely at the Architect's discretion and the Architect reserves the right to select any of the specified product lines at no cost increase.
 - .2 All materials to be the highest professional/commercial grade available from the manufacturer for each finish type, to meet or exceed CGSB Specifications, as outlined in PART 3 herein.
 - .3 Materials for application of each finish type shall be products from a single manufacturer.
 - .4 Materials such as putty, linseed oil, shellac, turpentine, etc., shall be pure, or of the highest quality produced or recommended by the paint manufacturer, and bear an identifying label on the container.
 - .5 Gypsum Board patching compound: Resurfo by Reardon or alternate.
 - .6 Specialty Paint at Stage Hardboard Flooring:

PART 3 - EXECUTION & INSTALLATION

- 3.1 Paint Colours**
- .1 All paint/pigment colours and locations to be in full and strict accordance with Architect's drawings, Room Finish Schedule and Colour Finish Schedule. Any areas or items requiring paint finishes which appear unclear or which are insufficiently documented, are to be reported to the Architect for direction prior to paint mixing and installation. Any site work relative to such items undertaken by the Contractor or trades without the consultation of the Architect is the sole responsibility of the Contractor and is subject to further rectification of the work for unacceptable materials, colours, or finishes, as per the Architect's direction, at no cost increase.
 - .2 Except where noted otherwise within the Contract Documents, and excluding those surfaces featuring painted wall graphics, the Architect reserves the right to select any number of paint/pigment colours for each room, up to one individual colour per wall surface/wall plane (or ceiling surface/ceiling plane), at no cost increase. This applies only to wall and ceiling surfaces and excludes trims and other architectural features thereon. For all other architectural items associated with the walls, floors, ceilings, etc. in each room, the Architect reserves the right to select another paint colour differing from that of the adjacent

surfaces at no cost increase. All paint colours to be noted on Colour/Finish Schedule (issued post-Tender).

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| 3.2 Examination | .1 | Verify that specified environmental conditions are ensured before commencing work. |
| | .2 | Ensure that surfaces to receive finishing materials are satisfactory for specified materials and will not adversely affect execution, permanence, or quality of work. |
| | .3 | Maintain on site at all times until work is completed a moisture meter, hygrometer and thermometer to verify surface and environmental conditions. Test all surfaces for moisture content with an electronic moisture meter, and concrete, masonry, exterior insulation and finish systems, plus plaster surfaces for acid alkali balance with appropriate equipment and procedures. |
| 3.3 Mixing | .1 | Unless specified otherwise paints shall be ready-mixed. All catalyzed products to be mixed on site to as required to provide a uniform and optimal finish quality. |
| 3.4 Workmanship | .1 | All work must be executed by skilled, experienced mechanics under the direction of a competent foreman. All paint and enamel shall be evenly spread, and no coat shall be applied until the previous coat is perfectly dry. |
| | .2 | All products are to be applied in full accordance with the paint manufacturer's recommendations, including surface preparations, recommended application tools, techniques, intermediate drying times, etc. All products are to be applied in full accordance with the manufacturer's <u>maximum</u> recommended dried film thicknesses (dft) throughout. |
| | .3 | There shall not be any drips or runs of materials. The woodwork shall be well-rubbed down before the first coat and between all coats. All work shall be to the satisfaction of the Architect. |
| | .4 | Brush on all painting materials covered by this division, except where noted in 3.4.8 below. If this contractor wishes to spray certain surfaces, obtain prior approval from the Architect. Apply painting materials evenly and smoothly. |
| | .5 | Sand and dust between each coat to remove defects visible from distance up to 1.0m (3' -0"). |
| | .6 | Finish bottoms, tops, edges and sides of all doors, including returns to cutouts where applicable. |
| | .7 | In the opinion of the Architect, the number of coats of paint specified should produce a superior finish. However, if more coats than the number specified are required to meet the approval of the Architect, they shall be supplied and applied at no extra charge. Painting contractor may be required to verify dry film thickness (dft) of any products applied under this Section, at no cost increase. |

3.5 Preparation

- .1 All surfaces or materials to receive paint finish are to be prepped in full accordance with the finish manufacturer's specifications relative to the material substrate, using the finish manufacturer's recommended products. It will be assumed by the Architect that any improperly adhering paint finishes are the result of inadequate preparation or improper application and are subject to full rectification at no cost increase.
- .2 Touch-up shop painted primer on steel with approved primer. Tint filler to match stains for stained woodwork.
- .3 Prepare galvanized steel and zinc coated surfaces with one coat of copper sulfate solution in water (1:16 proportion).
- .4 Prepare exposed concrete, plaster, and masonry to make free of dust, dirt, grease, loose mortar on face, etc. Apply filler to concrete block of sufficient density to eliminate pinholing.
- .5 Interior gypsum board to be prepared by cutting out minor imperfections, such as scratches, cracks, abrasions in surface, and filled with patching compound; sand smooth when dry. Seal before prime coat application.
- .6 Prepare wood finishes (designated for stain and/or clear topcoat finish) by applying matching (or stainable) wood filler to suit, at nail holes, gaps, cracks and imperfections, blending filled spots with adjacent surfaces. Sand all filler smooth and flush with adjacent surface, applying in multiple coats as required. Ensure that all wood is adequately sanded and free of contaminants which may adversely affect quality and consistency of subsequent stain and/or topcoat finishes.

.7 PREPARATION of PREVIOUSLY COATED SURFACES:

Painting Contractor to investigate all previously coated surfaces to determine necessary requirements to ensure proper adhesion and formulation compatibility of newly specified paint finishes throughout.

Existing painted surfaces (specified to be re-painted) are to be tested with methyl-hydrate to determine if they are alkyd or water-based materials to determine compatible formulation of new paint materials.

All existing coatings are to be properly cleaned, scraped and prepared for recoat to ensure full and lasting adhesion of new paint finish. Preparation shall include any form of mechanical abrasion required (sanding, scraping, sandblasting, shot-blasting etc.) to remove peeling and/or loose paint finishes to ensure a proper and lasting bond of new paint finish.

Existing clear top-coated surfaces (varnish, polyurethane, oil-based or water-based clearcoats etc.) are to be properly scraped, sanded and de-glossed as required to remove any topcoats which are not fully adhered to their substrate.

Supply and install new high-adhesion bonding primers, stain-blocking primers and/or sealant primers as required prior to repainting. Bonding primers should be selected to ensure adhesion and performance of the final paint finish. Non-waterbased primers are acceptable to ensure adhesion throughout.

3.6 Mechanical and Electrical Equipment

- .1 Paint exposed conduits, pipes, hangers and other mechanical and electrical equipment in and adjacent to finished areas. Colour and sheen to match adjacent surfaces.
- .2 Paint both sides and all edges of plywood backboards for electrical equipment before installation. Leave equipment in original finish except for touch-up as required.

3.7 Exterior Coatings

The items noted in this section below are provided for reference as/if required.

- .1 Steel Doors, Exposed Steel Lintels, Non-prefinished metal louvres, and All Miscellaneous unfinished Steel Items:
 - 1 coat Sherwin Williams "Kem Bond Hi-Solids" Universal Metal Primer (alkyd); VOC compliant
 - 2 coats Sherwin Williams "Industrial Enamel Urethane" topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant [spray applied finish at steel doors]
- .2 Exterior Steel Door Frames & Sidelight Frames and Hollow Structural Steel Posts (HSS-P):
 - 1 coat Sherwin Williams "Corothane GalavPac Zinc Primer"
 - 2 coats Sherwin Williams "Corothane I Mio-Aluminum" matt leafing-aluminum topcoat (spray applied) in natural aluminum colour
- .3 Miscellaneous Ferrous Metals:
 - 1 coat Sherwin Williams "Kem Bond Hi-Solids" Universal Metal Primer (alkyd); VOC compliant
 - 2 coats Sherwin Williams "Industrial Enamel Urethane" topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant
- .4 Miscellaneous Galvanized Items:
 - 1 coat Sherwin Williams "Galvite HS" acrylic primer, B50 WZ30 Series, spray applied
 - 2 coats Sherwin Williams "Industrial Enamel Urethane" topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant

3.8 Interior Coatings

It is the intention that various (existing) interior [previously painted] items are to be re-painted as part of this scope of work. These items are identified on the Architectural drawings and the related Room Finish Schedule.

Whether or not expressly noted below, it is required that all items to be repainted are to be prepped in accordance with Section 3.5 (Preparation), using additional products (as required) including suitable bonding primers and/or sealing primers (such as Sherwin Williams 'Extreme Bond - Bonding Primer', Sherwin Williams 'PrimeRX Peel Bonding Primer', Zinsser 'Bullseye Shellac Bonding Primer' and/or similar

products). Primers to be selected specific to individual application requirements based upon site conditions and previous paint formulations being re-painted.

Primers noted below apply to new wall materials only. Substitute primers as required for re-coat applications on existing wall surfaces.

- .1 Concrete Block:
 - 1 coat Sherwin Williams "Prep Rite" Blockfiller, B25 Series
 - 2 coats Sherwin Williams abrasion resistant "Duration Interior Latex" A98 Series or Dulux "Diamond Interior 100% Acrylic", satin finish
- .2 Gypsum Wall Board Walls - Paint Finish
 - 1 coat Sherwin Williams "Prep Rite 200" Primer, B28W200 Series
 - 2 coats Sherwin Williams abrasion resistant "Duration Interior Latex" A98 Series or Dulux "Diamond Interior 100% Acrylic", satin finish
- .3 Standard Gypsum Wall Board Ceilings/Bulkheads - Paint Finish:
 - 1 coat Sherwin Williams "Prep Rite 200" Primer, B28W200 Series
 - 2 coats Sherwin Williams "Promar 200 Zero VOC" Interior Latex" Interior Acrylic, eggshell finish
- .4 Moisture/Mould-Resistant Gypsum Board Ceilings - Waterborne Epoxy Coating/Finish:
[Rooms 156B, 156C, 158B, 158C]
 - 1 coat Sherwin Williams "Prep Rite 200" Primer, B28W200 Series
 - 2 coats Dulux 'Pitt-Glaze WB1' pre-catalyzed, mildew-resistant water borne acrylic epoxy in eggshell finish
- .5 Steel Door and Frames and All Miscellaneous Non-prefinished Steel Items (u.n.o.) - Paint Finish:
 - 1 coat Sherwin Williams "Kem Bond Hi-Solids" Universal Metal Primer (alkyd); VOC compliant
 - 2 coats Sherwin Williams "Industrial Enamel Urethane" topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant
- .6 Galvanized and Zinc coated Metals - Paint Finish:
 - 1 coat Sherwin Williams "Galvite HS" acrylic primer, B50 WZ30 Series, spray applied
 - 2 coats Sherwin Williams "Industrial Enamel Urethane" topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant
- .7 Exposed Underside of Metal Deck, Open Web Steel Joists, Steel Roof Structure, Exposed Metal Ducts, Conduit, etc. - Paint Finish:
 - 2 coats Sherwin Williams "Waterborne Acrylic Dryfall", B42 Series, eggshell finish, spray applied
- .8 Repainted Hollow Metal Doors, Door Frames and Glazing Screen frames (as applicable):
 - 1 coat appropriate bonding primer
 - 2 coats Sherwin Williams "Industrial Enamel Urethane" topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant

- .9 Solid Maple Hardwood Trims [Clear Topcoat Finish]:
 - 1 Coat Sanding Sealer [as/if required]
 - 4 coats Minwax Ultimate Floor Finish, Water-Based Urethane Topcoat, Satin sheen

- 3.10 Touch-Up & Cleaning
 - .1 Touch up and finish visible defects in the work. Refinish entire wall, ceiling or finished surface where substrate and/or finish is significantly damaged or not deemed acceptable by the Architect.

 - .2 Remove all overspray paint or similar finish from prefinished or unpainted items throughout. Clean and remove any paint overspray of one colour on a painted surface of dissimilar colour or finish. Repaint and restore finishes as required to blemish-free state.

 - .3 Leave storage and mixing areas clean and in same condition as adjacent spaces in project.

END OF SECTION 09900

PART 1 - GENERAL

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| 1.1 General | Division One, General Requirements, is part of this section and shall apply as if repeated here. |
| 1.2 Description of Work | <p>Provide all labour, materials, and equipment required or called for in this specification, or which is necessary, to complete the work without any extra cost. This work may require any or all, but not be limited to any of the following:</p> <ul style="list-style-type: none">.1 Preparation of new and existing concrete floors as required to accommodate new epoxy paint floor finishes specified herein, including removal of residue from all pre-existing flooring (to be removed) and all subsequent subfloor preparation including grinding, scraping, cleaning, patching and filling etc. to ensure seamless consistency and correct adhesion of new epoxy floor finishes..2 Supply and installation of new epoxy floor finishes as specified herein. |
| 1.3 Related Work by Others | <ul style="list-style-type: none">.1 Demolition Section 02100.2 Cast-in-place Concrete Section 03300 |
| 1.4 Requirements of Regulatory Agencies | <ul style="list-style-type: none">.1 All finishes shall meet the flame spread and smoke development requirements of the Ontario Building Code for the specific location and application for all parts of the Work. |
| 1.5 Environmental Requirements | <ul style="list-style-type: none">.1 Apply finishing materials only when air and surface temperatures have reached the minimum level recommended by the manufacturer's specification for each product, and have been maintained at this temperature for a minimum of 24 hours..2 Do not apply finishes when relative humidity is over 50%, when condensation has formed or is likely to form, nor immediately following rain, frost or dew..3 Do not apply finish where moisture content, in substrate above finish manufacturer's recommended maximum. Confirm results of moisture test with Architect before proceeding..4 Do not apply finish in areas where dust is being generated. |

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| 1.6 Colours and Samples | .1 | Finish colours shall be as selected by the Architect and are to match Architect supplied sample. |
| | .2 | Samples shall be prepared as directed by the Architect in accordance with Section 01340 and 1.11 of Section 09900. All samples are to be approved by the Architect prior to mixing any product and prior to related installation on site. |
| 1.7 Cooperation with Others | .1 | This contractor shall examine all drawings and specifications of all trades throughout the building for information affecting the work of this trade. |
| 1.8 Field Quality Control | .1 | Arrange for periodic visits to site by finish manufacturers' representatives while work is in progress. Visits shall verify that specified materials and methods are used, that substrates have been correctly prepared, and that procedures agreed upon at the initial site meeting are followed. |
| 1.9 Product Delivery, Storage and Handling | .1 | Deliver to site each container sealed and labeled with manufacturer's name, catalogue number or brand name, colour, and formulation type, reducing instructions, and reference standard specification number if applicable |
| | .2 | Store materials on site, and in an area specifically set aside for purpose, that is locked, ventilated, maintained at a temperature of over 4 degrees C (40 degrees F) and protected from direct rays of sun. |
| | .3 | Ensure that health and fire regulations are complied with in storage area. |
| | .4 | On each container, for materials requiring a fire hazard classification, attach an Underwriter's label verifying that the material is listed under their label service, and giving the hazard classification. |
| 1.10 Protection | .1 | Cover or mask surfaces adjacent to those receiving treatment to protect work of others from contamination. |
| | .2 | Place cloths and other disposable finishing materials, that are a fire hazard, in closed metal containers containing water, and remove from building every night. |

PART 2 - PRODUCTS

- 2.1 Materials .1 **Epoxy Paint Flooring (EPF):**
“Epoxal 100HP” high performance, two-part, high-build 100% solids epoxy coating c/w #55 medium-texture anti-slip aggregate. Colour to be determined by Architect from manufacturer’s standard range. Product shall be as manufactured and supplied by Niagara Protective Coatings (NPC) or approved alternate.
- .2 Materials for epoxy flooring finish shall be products from a single manufacturer and supplier.
- .3 Any thinning mediums, cleaning agents, etc. are to be as recommended by the finish manufacturer for the intended application.

PART 3 - EXECUTION

- 3.1 Colours .1 All epoxy floor coating colours are to match Architect supplied sample, and/or existing adjacent terrazzo materials as directed by the Architect).
- 3.2 Examination .1 Verify that manufacturer’s required environmental conditions are met before commencing work.
- .2 Ensure that surfaces to receive finishing materials are satisfactory for specified materials and will not adversely affect execution, permanence, or quality of work.
- .3 Maintain on site at all times until work is completed a moisture meter, hygrometer and thermometer to verify surface and environmental conditions. Test all surfaces for moisture content with an electronic moisture meter, and concrete, masonry, exterior insulation and finish systems, plus plaster surfaces for acid alkali balance with appropriate equipment and procedures. Do not proceed with work unless all manufacturer requirements are met.
- Moisture content should not be in excess of 4% and the surface temperature shall be a minimum of 15°C (59°F).
- .4 Surfaces to be coated shall be sound, clean, non-dusting, fully cured and free from oil, efflorescence and any contaminants.
- .5 Report to General Contractor in writing all defects and unsatisfactory conditions prior to beginning work on site. Commencement of work shall imply acceptance of the existing conditions.

- 3.3 Mixing**
- .1 Mix all finishes in accordance with manufacturer's recommendations, noting pot life and open times of product.
- 3.4 Workmanship**
- .1 All work must be executed by skilled, experienced mechanics under the direction of a competent foreman. All finished coatings shall be applied evenly, free of irregularities and blemishes.
- .2 All products are to be applied in full accordance with the paint manufacturer's recommendations, including surface preparations, recommended application tools, techniques, intermediate drying times, etc. All products are to be applied in full accordance with the manufacturer's recommended dried film thicknesses (dft) throughout.
- .3 There shall be no application marks visible in cured materials. All work shall be completed to the satisfaction of the Architect.
- 3.5 Preparation**
- .1 All surfaces or materials to receive epoxy floor finish are to be prepped in full accordance with the finish manufacturer's specifications relative to the existing conditions, and the material substrate using the finish manufacturer's recommended products. It will be assumed by the Architect that any improperly adhering floor finishes are the result of inadequate preparation or improper application and are subject to full rectification at no additional cost.
- .2 Minimum preparation procedures for each epoxy floor finish type to be as noted in 3.6 below and to be in full accordance with manufacturer's recommendations for the intended application.
- .3 Mechanical abrasion of existing concrete as well as new or existing concrete substrates is required to remove any loose conditions, and to create a surface profile sufficient for a correct mechanical bond of epoxy finish. This may require the use of shot-blast machinery, sand-blasting, scarifier or dustless diamond grinder. Ensure methods of mechanical abrasion are dust-free.
- .4 Previously coated surfaces may require special consultation from the epoxy flooring manufacturer. Ensure reporting and resolution of same for all indeterminate conditions prior to commencing with work on site.
- .5 Patch all subfloor irregularities and holes true and flush with NPC Epoxy Gel or Epoxy (as suited to the related conditions) to ensure seamless and consistent finish of epoxy floor finish specified.

3.6 Epoxy Floor
Finish Application.1 Epoxy Floor Paint (EFP) Application on New and/or Existing Concrete Floors:

Ensure max. 4% moisture content in the all substrates including new and existing substrates and patching materials.

- ensure that min. temperature of substrate is 59°F
- prepare entire concrete and/or terrazzo substrate with a dustless diamond grinder (or alternate abrasion system as required) removing all existing glue residues and irregularities adversely affecting the finish system
- on properly prepared concrete or terrazzo substrates, apply 3 coats of NPC "Epoxal 100 HP" (each coat to be 7-9 mil dft. For a total finish thickness of 21 - 27 dft.); gloss finish
- apply each coat by mixing material, pouring mixed material onto floor, spreading to a uniform thickness with a rubber squeegee, and backrolling to remove squeegee marks and provide a uniform visual finish
- mix EPOXAL 100 HP as per manufacturer's recommendations, and use as prime coat for subsequent coats on properly prepared concrete and/or terrazzo substrates
- pour product onto floor; spread with manufacturer-recommended squeegee, and backroll with a medium-nap roller to eliminate squeegee lines
- after prime coat, apply 'Epoxal 100 Gel' filler to all cracks and irregularities, filling them flush and level with adjacent surfaces
- second coat of EPOXAL 100 HP must be applied within 24-48 hours after initial coat is complete to ensure proper bond, utilizing same application technique (mix, pour, squeegee and backroll) as utilized for prime coat
- following second coat, apply 'Epoxal 100 Gel' filler to all remaining cracks and irregularities, filling them flush and level with adjacent surfaces
- apply third coat of EPOXAL 100 HP, utilizing same application technique (mix, pour, squeegee and backroll) as utilized for prime coat
- textured finish in third coat to be #55 medium texture, using a hopper blower to broadcast #55 silica grit into the wet floor, following rubber squeegee application
- back roll the coating immediately with manufacturer-recommended nap roller to encapsulate the grit and to achieve a uniform finish

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- 3.7 Adjustment, Cleaning & Protection**
- .1 Prohibit foot traffic on all floor finishes until fully cured.
 - .2 Touch-up any minor defects in floor finishes with manufacturer recommended product.
 - .3 Clean-up all mixing and storage areas.

END OF SECTION 09950

PART 1 - GENERAL

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| 1.1 General | Division One, General Requirements, is part of this section and shall apply as if repeated here. | | | | | | | | |
| 1.2 Description of Work | <p>Provide all labour, materials, and equipment required or called for in this specification, or which is necessary, to complete the work without any extra cost. This work may require any or all, but not be limited to any of the following:</p> <ul style="list-style-type: none"> .1 Supply and installation of all white boards indicated as 'WB' on Architectural floor plans, and/or as illustrated on interior elevation drawings. White board sizes, locations and quantities are to be as indicated on the Architectural drawings. .2 Supply and installation of all tack boards indicated as 'TB' on Architectural floor plans, and/or as illustrated on interior elevation drawings. Tack board sizes, locations and quantities are to be as indicated on the Architectural drawings. | | | | | | | | |
| 1.3 Related Work | <table border="0"> <tr> <td style="padding-right: 20px;">.1 Rough Carpentry</td> <td>Section 06100</td> </tr> <tr> <td>.2 Finish Carpentry</td> <td>Section 06200</td> </tr> <tr> <td>.3 Millwork</td> <td>Section 06400</td> </tr> <tr> <td>.4 Steel Stud & Gypsum Bd.</td> <td>Section 09111</td> </tr> </table> | .1 Rough Carpentry | Section 06100 | .2 Finish Carpentry | Section 06200 | .3 Millwork | Section 06400 | .4 Steel Stud & Gypsum Bd. | Section 09111 |
| .1 Rough Carpentry | Section 06100 | | | | | | | | |
| .2 Finish Carpentry | Section 06200 | | | | | | | | |
| .3 Millwork | Section 06400 | | | | | | | | |
| .4 Steel Stud & Gypsum Bd. | Section 09111 | | | | | | | | |
| 1.4 Shop Drawings | .1 Submit shop drawings showing sizes, trim profiles etc., in accordance with Section 01340. | | | | | | | | |

PART 2 - PRODUCTS

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| 2.1 Whiteboards | <ul style="list-style-type: none"> .1 All whiteboards/marker boards shall be as manufactured by ASi Visual Display Products Series 9800 or Global School Products, consisting of a sandwich type construction composed of face panel, core and rear balancing steel. Product surface to be suited to projection from overhead short through projectors mounted above board and for use of dry-wipe markers from face. .2 Writing face to be white porcelain enamel coating fused to steel backing. .3 Core 11.1mm (7/16") impregnated fibreboard laminated under heat and pressure to face panel and back sheet using adhesives that ensure no joint failure of the contact surfaces. .4 Backing (balancing) sheet to be 28 gauge zinc coated stretcher steel leveled in one unjointed section. Overall thickness of whiteboard to be 12.7mm (½"). |
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- .5 Aluminum trims as noted in 2.2 below.
- 2.2 Aluminum Trim
 - .1 Except where noted otherwise, aluminum trim to be Series 800 by ASi Visual Display Products or Global School Products. Aluminum to be 6063T5 alloy with clear etched and anodized 0.051mm (.002') satin finish free from extruding draw marks and surface scratches. All whiteboards to be supplied with full perimeter trims and accessories, as specified below.
 - .2 Marker tray: Series 800 complete with contour fitting end caps and castings by ASi Visual Display Products or Global School Products. Provide 1 marker tray at full bottom perimeter of each whiteboard.
- 2.3 Tackboards
 - .1 All tackboards shall be 12.7mm (1/2") factory prelaminated units consisting of 6mm (1/4") thick ASP Natural cork laminated to 6mm (1/4") particle board or masonite substrate as manufactured by ASi Visual Products or Global School Products. Units to be fabricated under mechanical pressure available in sizes up to 1219mm x 2438mm (4' -0" x 8' -0"). Unit dimensions as per Architect's drawings. Natural cork colour throughout. Bonding of materials by waterproof adhesive that will not delaminate or rupture at the contact surfaces. Finished unit to be trimmed all around with clear aluminum perimeter trim as note in 2.4 below.
 - .2 All tackboards shall meet the minimum requirements of the applicable building code and/or Ontario Fire Marshal's office.
- 2.4 Fabrication
 - .1 Fabricate panels to sizes as indicated on Architectural drawings and details shown therein. Site procession of panels is to be carried out in strict accordance to manufacturer's recommendations.

PART 3 - EXECUTION

- 3.1 Installation
 - .1 Install boards plumb and level in accordance with manufacturer's instructions and specifications, to provide rigid, secure surface.
 - .2 Install trim and framing around all tackboard panels. Make intersecting joints to hairline fit, free of rough edges. Use concealed brackets throughout, and to reinforce and hold joints tight and flush. No exposed fasteners permitted. Overlap trim 6mm onto panels.

- END OF SECTION 10120

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Phenolic partitions [shower compartments, change compartments, toilet compartments etc.] as shown on the drawings in the following rooms: Boys' Shower 156B, Boys' B.F. Washroom 156C, Girls' Shower 158B, Girls' B.F. Washroom 158C

1.2 RELATED SECTIONS

- A. Section 05500 - Metal Fabrications: Concealed steel support members.
- B. Section 06110 - Wood Framing: Concealed wood framing and blocking for compartment support.
- C. Section 10800 - Toilet and Bath Accessories.

1.3 REFERENCES

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

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. [Product Data]: Manufacturer's data sheets on each product to be used, including:
 - 1. Literature indicating typical panel, pilaster, door, hardware and fastening.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
 - 4. Installation methods.
- C. Shop Drawings & Submittals:
 - 1. Dimensioned plans indicating layout of toilet, shower and change room compartments.
 - 2. Dimensioned elevations indicating heights of doors, pilasters, separation partitions, and other components; indicate locations and sizes of openings in compartment separation partitions for toilet and bath accessories to be installed in partitions; indicate floor and ceiling clearances.
 - 3. Details indicating anchoring components (bolt layouts) and methods for project conditions; indicate components required for installation, but not supplied by toilet compartment manufacturer.
 - 4. Selection Samples: For each product type specified, submit one complete set of color selection guides representing manufacturer's full range of available colors, textures and patterns.
- D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, texture and pattern.
- E. LEED Green Building Rating System: Submit manufacturer's documentation of recycled content, in accordance with LEED credit calculations.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

- B. Lay cartons flat, with adequate support to ensure flatness and to prevent damage to pre-finished surfaces.
- C. Do not store where ambient temperature exceeds 120 degrees F (49 degrees C).

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Do not deliver materials or begin installation until building is enclosed, with complete protection from outside weather, and building temperature maintained at a minimum of 60 degrees F (15.6 degrees C).

1.7 WARRANTY

- A. Warranty: Provide warranty for Phenolic Material against delamination, breakage, or corrosion for 25 years, assuming proper maintenance according to manufacturer's recommendations.

1.8 COORDINATION

- A. Coordinate Work with placement of support framing and anchors in walls and ceilings.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: ASI Global Partitions, which is located at: 900 Clary Connector; Eastanollee, GA 30538; Tel: 706-827-2700; Fax: 706-827-2710; Email: request info (sales@asi-globalpartitions.com); Web: www.asi-globalpartitions.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 COMPARTMENTS AND SCREENS

- A. Toilet Compartments, Shower Compartments and Changeroom Changing Compartments: Floor anchored/overhead braced.
 - 1. Compartment Depth and Width: As indicated on drawings.
 - 2. Door Width: As indicated on the Drawings.
 - 3. Panel Height Above Floor: 12 inches (305 mm).
 - 4. Door/Panel Height: 58 inches (1473 mm).
 - 5. Pilaster Height: 82 inches (2083 mm).

2.3 BLACK PHENOLIC / SOLID PANEL COMPARTMENTS

- A. Doors, Panels, Screens, and Pilasters: Decorative surface sheet with solid phenolic [black] core of melamine resin impregnated kraft paper fused under high temperature and pressure; edges machine sanded with a 45 degree radius edge. Manufacturer's standard.
 - 1. Doors and Pilasters: 3/4 inch (19 mm) thick.
 - 2. Panels and Screens: 1/2 inch (13 mm) thick.

3. Edges: Black core.
 4. Fire Rated Material: Black core is Class B. Color thru Class A
- B. Finish: Solid phenolic/color-through black core with laminate face as selected by Architect from the manufacturer's standard color range. The Architect reserves the right to select up to 4 different colours from the manufacturer's standard range for use throughout the project.
- C. Door Hardware: Vault hinge.
1. Top Hinge: Heavy-duty "vault" type, die-cast aluminum alloy with brushed chrome-plated finish; wrap-around pilaster and door mounting, through- bolted.
 2. Bottom Hinge: Same as top hinge, with gravity-acting cams.
 3. Latch: Non-ferrous, satin chrome-plated, slide latch.
 4. Strike and Keeper: Permitting emergency access by lifting the door until latch is clear of keeper; satin chrome-plated finish.
 5. Coat Hook and Bumper: Non-ferrous, chrome-plated, with black rubber tip for doorstop.
 6. Fastening Hardware: Manufacturer's standard, Type 304 stainless steel, No. 4 satin finish, with theft-resistant barrel nuts and machine screws.
- D. Mounting Brackets: Die-cast Type 304 stainless steel stirrup bracket, No. 4 satin finish, with stainless steel theft-resistant barrel nuts and machine screws of same material and finish.
- E. Headrail: Manufacturer's standard anodized aluminum rail with anti-grip profile.
- F. Pilaster Anchors, Floor Anchored/Overhead Braced: Easy Stall shoe system. 1/4 inch by 2 inch steel screws attach Easy Stall shoe to floor. Pilaster to be inserted into shoe and secured after height adjusted. Leveling adjustment to be concealed by pilaster shoe. Height/leveling adjustment to be made via machine thread bolts inserted into threaded insert in bottom of pilaster. Shoe to be constructed of type 304 stainless steel and to be 3" high.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until installation conditions and substrates have been properly prepared.
- B. Verify dimensions of areas to receive compartments.
- C. Verify locations of built-in framing, anchorage, bracing, and plumbing fixtures.
- D. Verify substrates have been properly installed.
- E. If installation conditions and substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with approved shop drawings and manufacturer's instructions.
- B. Fasten components to adjacent materials and to other components using purpose-designed fastening devices.
- C. Adjust pilaster anchors for substrate variations; conceal anchors with pilaster shoes.
- D. Equip each compartment door with top and bottom hinges and door latch.
- E. Install door strike keeper on pilasters in alignment with door latch.
- F. Equip each compartment door with one coat hook and bumper.
- G. Installation Tolerances:
 - 1. Maximum variations from plumb or level: 1/8 inch (3 mm).
 - 2. Clearance between wall surface and panels or pilasters: 1-1/2 inch (38 mm) maximum.

3.4 ADJUSTING

- A. Adjust and align hardware to uniform clearance at vertical edge of doors.
- B. Adjust adjacent components for consistency of line or plane.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.
- C. Remove factory protective coverings and clean finish surfaces in accordance with manufacturer's instructions before substantial completion.

END OF SECTION

PART 1 - GENERAL

- 1.1 General** Division One, General Requirements, is part of this section and shall apply as if repeated here.
- 1.2 Description of Work** Provide all labour, materials, and equipment required or called for in this specification, or which is necessary, to complete the work without any extra cost. This work may require any or all, but not be limited to any of the following:
- .1 Supply and installation all washroom and caretaker accessories as specified herein [except as noted otherwise].
 - .2 Supply and install all wall-mounted mirrors in washrooms and other locations as indicated on drawings. Mirror quantities to be as shown on drawings.

PART 2 - PRODUCTS

- 2.1 General** .1 Washroom accessories shall be supplied and installed by the Contractor.
- 2.2 Items** .1 Washroom accessories shall be as manufactured by ASI Watrous, Bobrick, or approved equivalent.
- .2 **Washroom Grab Bars at Barrier-Free [B.F.] Washrooms and B.F. Toilets:**
 1.5" diameter by 1.2 mm wall thickness, stainless steel tubing [18-8 stainless steel, type 304] with peened gripping surface, 3 1/8" [80 mm] diameter wall anchoring flanges with cover for concealed screw attachment, flanges welded to tubular bar, provided with steel back plates and all accessories as required for proper mounting and capable of withstanding downward pull of 2.2 K/kN.
 Grab bar at back of toilets to be 600 mm long.
 Grab bar at side of toilets to be L-shaped 90 degree single piece unit, measuring 30" x 30".
 Bars to have 2" minimum clearance from good walls. Acceptable product: Bobrick Washroom Equipment B-6898.99, Frost 1003NP or approved alternates.
 requirement: each barrier-free toilet to be equipped with 1 grab bar at back of toilet, and one grab bar at side of toilet
- .3 **General-Use Mirrors:**
 24"x36"one-piece glass mirror [6mm thick silvered float glass with galvanized steel back] complete with 19 mm x 19mm type 18-8 stainless steel channel frame [welded] at full perimeter and concealed 'snap-lock' mounting hanger. Acceptable product: Bobrick B-290-2436
 requirement:
 - 4 mirrors in Girls Changeroom 158A
 - 2 mirrors in Boys Changeroom 156A

- 1 mirror in Boys BF Washroom 156C
- 1 mirror in Girls BF Washroom 158C

.4 Folding Shower Seat:

18" wide x 16" deep solid phenolic shower seat with stainless steel structure and self-locking mechanism. Acceptable product: Bobrick B-5191

requirement:

- 1 seat in Boys BF Shower 156C
- 1 seat in Girls BF Shower 158C

.5 Barrier-Free Coat Hooks:

Bobrick Washroom Equipment, B233. Product to be mounted on washroom door in single-use washrooms and on walls in shower areas where noted on drawings.

requirement:

- 4 hooks in Boys BF Shower 156C
- 4 hook in Girls BF Shower 158C
- 1 hook in Boys BF Washroom 156C
- 1 hook in Girls BF Washroom 158C
- 2 hooks in Boys Change Compartments in Room 156
- 2 hooks in Girls Change Compartments in Room 158

.6 Wall- Mounted Washroom Shelf [SLF]:

Surface mount 18" long x 8" deep x 1.2 mm [18 ga.] thick stainless steel [type 304, satin finish] with 2 @ 1.6 mm [16 ga.] stainless steel mounting brackets per shelf.

Acceptable product: Bobrick Washroom Equipment, B-298 x 18.

requirement: 1 per barrier-free [single-use] washroom

2.3 Fabrication

- .1 Weld and grind joints of fabricate components flush and smooth. Use mechanical fasteners only where approved.
- .2 Wherever possible form exposed surfaces from one sheet of stock, free of joints.
- .3 Brake form sheet metal work with 1.5mm radius bends.
- .4 Form surfaces flat without distortion. Maintain flat surfaces without scratched or dents.
- .5 Back paint components where contact is made with building finishes to prevent electrolysis.
- .6 Hot dip galvanize concealed ferrous metal anchors and fastening devices to CSA G164-M1981.
- .7 Shop assemble components and package complete with anchors and fittings.
- .8 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates, details and instructions for building in anchors and inserts.
- .9 Provide steel anchor plates and components for installation on studding and building framing.

PART 3 - EXECUTION

3.1 Installation

- .1 Install and secure accessories rigidly in place as follows:
 - i) Stud Walls: install steel back-plate to stud prior to plaster of drywall finish. Provide plate with threaded studs or plugs.
 - ii) Hollow masonry units or existing plaster/drywall: use toggle bolts anchored into cell/wall cavity.
 - iii) Solid masonry, marble, stone, or concrete: use bolt lead expansion sleeve anchored into drilled hole.
 - iv) Toilet/shower compartments: use male/female through-bolts.
- .2 Install grab bars on built-in anchors provided by bar manufacturer.
- .3 Use tamper proof screws/bolts for fasteners.
- .4 Fill units with necessary supplies shortly before final acceptance of building.

End of Section 10800

PART 1 - GENERAL**1.1 Scope****.1 Work Included in this Section:**

- .1 Includes the supply and installation of the Gymnasium Divider Curtain and includes without being limited to; aluminum drive tube, motor(s), curtain, accessories, mounting fasteners, and reinforcements.

.2 Related Work Specified Elsewhere:

- .1 Section 04200 - UNIT MASONRY (concrete fill, installation and positioning of through wall bolts)
- .2 Section 05500 - METAL FABRICATIONS (metal backing and reinforcing)
- .3 Section 06100 - ROUGH AND FINISH CARPENTRY (supply and installation of wood blocking items)
- .4 Section 09900 - PAINTING (field painting of metal framework)
- .5 Division 16 - ELECTRICAL (supply and installation of electrical power, conduits, field wiring and connections)

1.2 System Description**.1 Gymnasium Divider Curtain:**

- .1 Work in this section is based on product as manufactured by **Forum Athletic Products Inc.** telephone: (905) 405-1222 email: info@forumathletic.ca or equivalent approved via addendum only.

1.3 Quality Assurance**.1 General:**

- .1 Equipment provided shall incorporate the manufacturers latest design improvements and materials in place as of date of manufacture.
- .2 Bidders shall furnish with his bid a list and clarifications of deviations from the specifications.

.2 Manufacturer:

- .1 Shall be registered with the WSIB and safety certified at time of bid.
- .2 Shall be CWB certified under CSA standard W47.1 "Certification of Companies for Fusion Welding of Steel"
- .3 Shall be an established firm experienced in the field of gymnasium equipment.
- .4 Shall have no less than 5 years experience, dating from the bid date set for this project and have satisfactorily completed no less than 5 installations similar in complexity to that required here-in.

.3 Warranty/Guarantee:

- .1 Provide a written warranty covering defects in materials and workmanship for a period of one year from the date of installation.

1.4 Submittals**.1 Shop Drawings:**

- .1 Provide as directed under Section 01340; show complete details, mounting dimensions, mounting details, and any additional backing required for proper mounting.

- .2 Maintenance Information:
 - .1 Provide care and maintenance information for incorporation into the Project Maintenance Manuals.

1.5 Product Delivery, Storage, and Handling

- .1 Delivery:
 - .1 Deliver materials of this section to suit construction schedules; ensure related trades have completed their work.
- .2 Storage:
 - .1 Materials shall be stored in a secure location provided by the General Contractor.

1.6 Site Conditions

- .1 Building Conditions:
 - .1 Ensure the area is neat and clean and that there are no obstructions which may affect the safety of the installers.
 - .2 Ensure that all related trades which affect the work of this section have completed their work.
- .2 Surface Tolerances:
 - .1 Ensure that work is smooth and level and is adequately reinforced to take the loads imposed by this sections work.

PART 2 - PRODUCTS

2.1 Fabrication

- .1 Overhead Suspension:
 - .1 Provide custom designed mounting clamps or clips to be supported to the building superstructure at maximum [10'-0"] [3050mm] on centre.
 - .2 Where positioning does not permit direct attachment to the building structure, Metal Fabrications Section 05500 shall provide support structure for mounting curtain system.
- .2 Drive Pipe:
 - .1 Drive pipe shall be a [3.35"] [85 mm] diameter extruded 6063-T6 aluminum profile, located at mid height of divider.
- .3 Motor(s):
 - .1 Shall be [880 in. lbs.] [100Nm], 14 RPM, 120V 60Hz, 3.8A tubular motor(s) featuring internal end limit switches. Number of motors provided to be determined by curtain size and weight.
 - .2 Provide motor synchronizer box when curtain requires two motors.
- .3 Torque Mechanism:
 - .1 Provide mechanism to counteract reactive torque forces from motor(s).
- .4 Curtain Fabrication:
 - .1 All seams to be [2"] [50mm] single turned and placed at approximately [60"] [1525mm] on centre.
 - .2 Bottom hem shall contain a separate enclosed hem containing the continuous ballast bar.
 - .3 Top hem shall contain a separate enclosed hem containing the continuous hanger bar.

.5 Curtain Materials:

- .1 Vinyl shall be heavy duty solid vinyl at [20 oz. per sq. yd.] [0.68 Kg. per sq. m.] vinyl coated, heat set polyester material, flammability rated as self-extinguishing by the California State Fire Code and Class A rated in accordance with requirements of NFPA-101. Colour to be selected from manufacturer's standard colour range.
- .2 Mesh shall be [9 oz. per sq. yd.] [0.306 Kg. per sq. m.] vinyl coated woven polyester fabric allowing for through mesh lighting, observation, and air circulation. Flammability rated as self-extinguishing by the California State Fire Code and Class A rated in accordance with requirements of NFPA-101. Colour to be selected from manufacturer's standard colour range.

.6 Accessories:

- .1 Provide Forum F49026 safety belt(s) attached to torque mechanism(s).

2.2 **Divider Curtain Assembly**

.1 System:

- .1 Shall be Forum F3500 Centre Drive Divider Curtain System
 - Lower half solid vinyl and upper half vinyl coated mesh

.2 Egress Openings:

- .1 End curtain [39"] [1000mm] from wall on both sides to allow for passage around curtain.

PART 3 - EXECUTION

3.1 **Inspection**

.1 Site Dimensions:

- .1 Verify by obtaining actual site measurements prior to any fabrication modification, or cutting, all dimensions as required for a complete first class installation.

.2 Receiving Surfaces:

- .1 Ensure that all receiving surfaces are smooth and level and adequately reinforced to support the work of this section; additional backing shall be provided as and where required to ensure a safe and proper installation.
- .2 Report any discrepancies to the General Contractor who shall have deficient work corrected immediately.

3.2 **Installation and Performance**

.1 Standard:

- .1 Installation to conform to the manufacturers latest approved installation methods and procedures.

.2 Methods:

- .1 Install divider curtain systems to locations as shown on the architectural plans and in accordance with the approved shop drawings.
- .2 Drive system is to be securely mounted to the building structure and sway braced as required to provide a safe and quality installation.

- .3 Where drive is fixed to structural components, the system shall be mounted using manufacturers recommended mounting procedures or if required, fastening devices or methods custom designed to withstand the loads imposed by the equipment which shall not affect the structural requirements of the components.
- .3 Structural Supports:
 - .1 Additional structural supports to span trusses (as required) to be provided by structural trade.
- .4 Electrical Wiring:
 - .1 Electrical conduit, hook up, key switch wiring and 120V 60Hz power receptacle to be provided by electrical trade.

END OF SECTION

PART 1. GENERAL

1.1 SECTION INCLUDES

- A. Commercial LU/LA elevator.

1.2 RELATED SECTIONS

- A. Division 16 Sections for electrical service for elevators to and including disconnect and fused switches at machine room.
- B. Division 16 Sections for standby power source, transfer switch, and connection from auxiliary contacts in transfer switch to controller.
- C. Division 16 Section "Voice and Data Communication Cabling" for telephone service to elevators.
- D. Section 03300 - Cast-in-Place Concrete: Concrete for elevator machine foundation, and pit.
- E. Section 06100 - Rough Carpentry: Hoistway framing, building-in hoistway door frames and overhead hoist beams.
- F. Section 09650 - Resilient Flooring: Floor finish in cab.
- G. Section 13850 - Detection and Alarm: Fire and smoke detectors and interconnecting devices.

1.3 REFERENCES

- A. American National Standards Institute (ANSI) B-29.2 - Chain Standards for Inverted Tooth (Silent) Chains and Sprockets.
- B. American Society of Mechanical Engineers (ASME) A17.1 - Safety Code for Elevators and Escalators.
- C. American Society of Mechanical Engineers (ASME) A18.1 - Safety Standard for Platform and Stairway Chair Lifts.
- D. CSA B44.1 - Elevator and Escalator Electrical Equipment.
- E. CSA B355 - Lifts for Persons with Physical Disabilities.
- F. CSA B613 - Private Residence Lifts for Persons with Physical Disabilities.
- G. U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)".
- H. ICC/ANSI A117.1 - Accessible and Usable Buildings and Facilities.
- I. NFPA 70 - National Electric Code.
- J. CSA - National Electric Code.

1.4 REQUIREMENTS OF REGULATORY AGENCIES:

- A. Fabricate and install work in compliance with applicable jurisdictional authorities.
- B. File shop drawings and submissions with local authorities as the information is made available. Company pre-inspection and jurisdictional authority inspections and permits are to be made on timely basis as required.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Provide a complete layout of lift equipment detailing dimensions and clearances as required.
- D. Selection Samples: For each finish product specified requiring selection of color or finish, two complete sets of color charts representing manufacturer's full range of available colors and patterns.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Skilled tradesmen shall be employees of the installing contractor approved by the manufacturer, with demonstrated ability to perform the work on a timely basis.
 - 2. Execute work of this section only by a company that has adequate product liability insurance.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install systems under environmental conditions outside manufacturer's absolute limits.

1.9 WARRANTY

- A. Coverage - this warranty applies to the repair or replacement, at Manufacturer's option, of parts that fail due to defective material or workmanship. Manufacturer may, at its option, provide factory reconditioned parts. This warranty is provided to the Authorized Dealer on behalf of the final purchaser of the product and is not transferable. The Manufacturer's warranty does not cover labor charges for the removal, repair or replacement of warranty parts but such costs may be covered for a period of time by Authorized Dealer's warranty, which is provided to purchaser separately.

1. The manufacturer shall offer a 36-month limited warranty on parts from date of shipment.

PART 2. PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Savaria, which is located at: 2 Walker Drive, Brampton, ON, Canada, L6T 5E1; Toll Free Tel: 800-661-5112; Tel: 905-791-5555; Fax: 905-791-2222; Email: [request info](#); Web: www.savaria.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 COMMERCIAL PASSENGER ELEVATOR

- A. Limited Use Limited Application elevator model:
 1. Savaria Orion - Hydraulic
 - a. 2:1 roped hydraulic drive.
 - b. Duty cycle: normal 30 trips per day, heavy 75 trips per day with a maximum number of start per hour on a standard installation of 15x
- B. Work described in this section includes providing equipment, incidental material and labor required for complete, operable roped hydraulic passenger elevator installation. Elevator shall be erected, installed, adjusted, tested and placed in operation by system manufacturer, or manufacturer's authorized installer.
 1. Elevators shall be in accordance with the ASME A17.1-B44 and ADA compliant including local codes and regulations except where specified otherwise.
- C. The following preparatory work to receive the lifts specified in this section is part of the work of other sections:
 1. Permanent 208 VAC, 30 amp three phase power to operate lift to be provided from a lockable fused/cartridge type disconnect switch with auxiliary contacts for battery operation. 110 VAC, 15 amp single phase power to operate the lighting circuit. Refer to drawings for permanent power specifications and location of disconnects.
 2. Provide a plumb and square hoistway with smooth interior surfaces, including fascias or furring of the hoistway interior.
 3. Provide rough openings per lift contractor's shop drawings.
 4. Provide substantial, level pit floor slab as indicated on the lift contractor's shop drawings.
- D. Limited Use Limited Application elevator: The elevator described here, manufactured by Savaria Lifts Inc., is a LULA Elevator consisting of:
 1. Rated Load: 1400 lb (635 kg)
 2. Rated Speed: 30 f.p.m. (nominal) (0.15 m/s)
 3. Travel: 11'-9 3/4". Maximum of 25 feet (300 inches).
 4. Cab Configuration:
 - a. Enter/exit front/rear.
 5. Car Platform Size:
 - a. 42" W by 60" D (1067mm by 1524 mm)
 6. Levels Serviced:
 - a. 2

7. Car Operation: Automatic.
 8. Power Supply:
 - a. 208 Volt, 3 Phase, 30 Amps + 110 Volt, 15 amp, 1 Phase 60 Hz
 9. Emergency Power: Battery operation in down direction
 10. Controller: PLC
 11. Manual Lowering: Outside the hoist way in machine room.
- E. Elevator Cab Design:
1. Orion 17 Car Enclosure: Steel cab with standard PLAM overlays & stainless steel dropped ceiling and trims.
 - a. Cab Walls: Laminate Overlay with Stainless Steel Trim
 - b. Plastic Laminate Overlay Finish:
 - a. Gray
 - c. Ceiling Finish: Stainless Steel Drop Down Ceiling with a combination of hidden panel lighting and LED pot lights
 - d. Car doors and frames shall be 1 1/2 hour ULC Fire rated and 2 speed horizontally sliding. Car door finish shall be Stainless Steel brushed #4
 - e. Handrail: A stainless steel single handrail, with 1-1/2 inch (38 mm) diameter rail shall be located on the control wall of the cab.
- G. Car Operation:
1. Car Operating Panel shall consist of metal push bottoms with illuminated haloes, tactile identifications, emergency stop/alarm button, on/off key switch and emergency light mounted on a removable stainless steel panel (Type 304 #4 Stainless Steel Finish).
 2. Digital floor indicator and directional indicator in cab and at each landing.
 3. An ADA hands free phone will be supplied within car operating panel.
 4. Emergency Operation - The car shall be equipped with a battery operated light fixture, emergency battery lowering device and alarm in case of normal building supply failure. The battery shall be the rechargeable type with an automatic recharging system. A manual lowering device shall be located outside the hoistway in the machine room.
 5. Fire Service:
 - a. No fire-service required (standard)
- J. Drive System:
1. Hydraulic 2:1 roped drive
 - a. Pumping Unit and Controller: The pumping unit and controller shall be in a separate machine room. The controller and pump unit shall be pre-wired and tested prior to shipment. Pump unit shall incorporate the following features:
 - a. Smooth stops at each landing.
 - b. Submersible pump and motor.
 - c. Adjustable pressure relief valve.
 - d. Manually operable down valve to lower lift in the event of an emergency. This valve shall be activated from the machine room.
 - e. Gate valve to isolate cylinder from pump unit.
 - f. Emergency lowering by battery power from the car control
 - b. Cylinder And Plunger:
 - a. The cylinder shall be constructed of steel pipe of sufficient thickness and suitable safety margin. The top of the cylinder shall be equipped with a cylinder head with an internal guide ring and self-adjusting packing.

- b. The plunger shall be constructed of a solid steel shaft of proper diameter machined true and smooth. The plunger shall be provided with a stop electrically welded to the bottom to prevent the plunger from leaving the cylinder
 - c. Cable: Aircraft Cable 2 X 3/8" (10 mm) DIA. Minimum breaking strength of 12,000 lb (5455 kg) each.
 - c. Guide Yoke: The 2:1 guide yoke assembly shall be supplied with one (1) sheave, guide shoes, bearings and guards.
 - d. Guide Rails and Brackets: Steel 8 lb per ft guide rails and adjustable brackets shall be used to guide the platform and sling.
 - e. Motor/Pump: 240 1 Phase or 208 3 Phase, / 5HP
- K. Leveling Device:
 - 1. The lift shall be provided with an anti-creep device which will maintain the carriage level within 1/2 inch (12 mm) of each landing.
 - 2. All limit switch and leveling device switches shall be located in a position to be inaccessible to unauthorized persons.
- L. Terminal Stopping Devices: Normal terminal stopping devices shall be provided at top and bottom of runway to stop the car positively and automatically.
- M. Wiring: All wiring and electrical connections shall comply with applicable codes. Insulated wiring shall have flame-retardant and moisture-proof outer covering and shall be run in conduit or electrical wire ways if located outside the unit enclosure. Quick disconnect harnesses shall be used when possible.

PART 3. EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until hoistway and machine room has been properly prepared.
- B. Site dimensions shall be taken to verify that tolerances and clearances have been maintained and meet local regulations.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 LIFT INSTALLATION

- A. Install all the components of the lift system that are specified in this section to be provided, and that are required by jurisdictional authorities to license the lift.
- B. Trained employees of the lift contractor shall perform all installation work of this section.

- C. Adjust lift for proper operation and clean unit thoroughly.
- D. Instruct users in operation procedures and Owner's maintenance person in trouble-shooting and maintenance procedures.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION